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**Note** The information is provided for reference only. Tool specifications are subject to change without prior notice.  
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YG1YUYBE210304001



**YG**  
**YGBasiX**

*X-Coated & Uncoated Solid Carbide End Mills*

*-General Purpose*

*-Variety of Types & Diameters*



## PRODUCT FEATURES

- Designed for Wide Range of Materials
- Mainly Using at Non-Heated Materials and Low-Hardness Materials  
Such as Cast Iron, Aluminum, Copper, Brass available



### Cutting Edge Geometries

Strong Cutting Edge Geometry for Longer Tool Life under Unstable Conditions

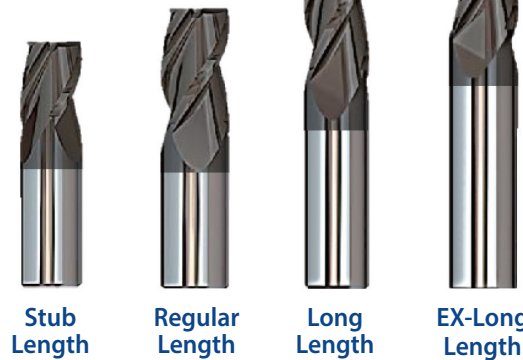


### High Technology X-Coating

Developed by YG-1, X-Coating is an AlCr Based coating perfect for excellent life and versatile performance for a wide range of materials.

### Variety of Sizes

Various diameters from 1/64" to 1"  
Various lengths offers to customer with more options.

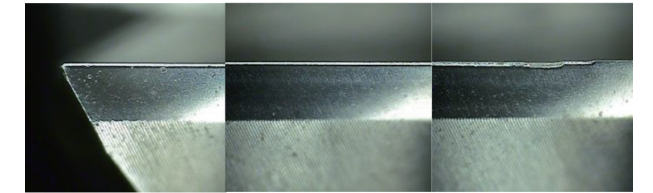


## CASE STUDY

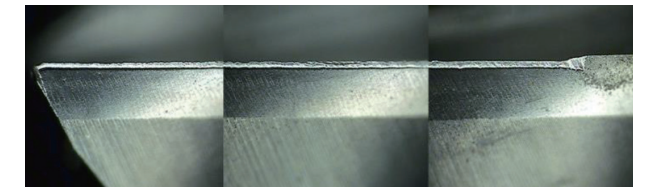
### ▶ Test 1

	YGBasix	Competitor
Wear(μm)	<b>36.594</b>	<b>49.638</b>
Milling Length(ft.)	315 ft.	
Size(mm)	Ø6xØ6x13x57	
Work Material	- JIS : S45C(HRc30) - DIN : C45 - AISI : 1045 - WR : 1.0503	
SFM	188.5 ft./min.	
RPM	3048 rev./min.	
IPM	17.44 inch/min.	
IPT	.0016 inch/tooth	
Milling Method	Down & Side Cutting	
Milling Depth	Ap : .354" (1.5xD) Ae : .024" (0.1xD)	
Coolant	Oil Mist	
Overhang	.787"	
Machine	Machining Center	

YGBasix(Ø 6)



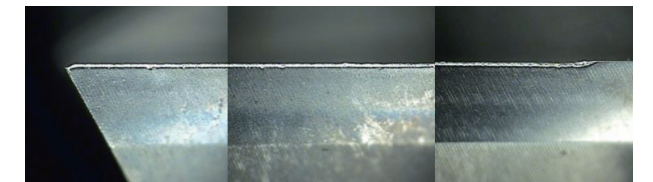
Competitor



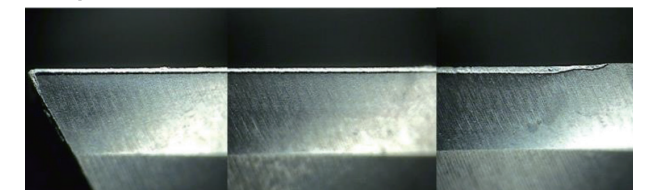
### ▶ Test 2

	YGBasix	Competitor
Wear(μm)	<b>32.79</b>	<b>43.841</b>
Milling Length(ft.)	368 ft.	
Size(mm)	Ø10xØ10x22x72	
Work Material	- JIS : S45C(HRc30) - DIN : C45 - AISI : 1045 - WR : 1.0503	
SFM	164.9 ft./min.	
RPM	1600 rev./min.	
IPM	15.71 inch/min.	
IPT	.0024 inch/tooth	
Milling Method	Down & Side Cutting	
Milling Depth	Ap : .591" (1.5xD) Ae : .039" (0.1xD)	
Coolant	Oil Mist	
Overhang	1.26"	
Machine	Machining Center	

YGBasix(Ø 10)



Competitor









# SELECTION GUIDE



**X-Coated & Uncoated Solid Carbide End Mills**  
 - General Purpose  
 - Variety of Types & Diameters

## METRIC

Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.56

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRC	G9H86 E5H86	G9H89 E5H89	G9H95 E5H95	G9I03 E5I03
P	1	Non-alloy steel	About 0.15% C Annealed	125		◎	◎	◎	◎
	2		About 0.45% C Annealed	190	13	◎	◎	◎	◎
	3		About 0.45% C Quenched & Tempered	250	25	◎	◎	◎	◎
	4		About 0.75% C Annealed	270	28	◎	◎	◎	◎
	5		About 0.75% C Quenched & Tempered	300	32	◎	◎	◎	◎
	6	Low alloy steel	Annealed	180	10	◎	◎	◎	◎
	7		Quenched & Tempered	275	29	◎	◎	◎	◎
	8		Quenched & Tempered	300	32	◎	◎	◎	◎
	9		Quenched & Tempered	350	38	◎	◎	◎	◎
	10		High alloyed steel, and tool steel	Annealed	200	15	◎	◎	◎
	11	Quenched & Tempered		325	35	◎	◎	◎	◎
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15				
	13		Martensitic Quenched & Tempered	240	23				
	14	Austenitic	180	10	○	○	○	○	
K	15	Grey cast iron	Pearlitic / ferritic	180	10	○	○	○	○
	16		Pearlitic (Martensitic)	260	26	○	○	○	○
	17	Nodular cast iron	Ferritic	160	3	○	○	○	○
	18		Pearlitic	250	25	○	○	○	○
	19		Ferritic	130		○	○	○	○
20	Malleable cast iron	Pearlitic	230	21	○	○	○	○	
N	21	Aluminum-wrought alloy	Not Curable	60		○	○	○	○
	22		Curable Hardened	100		○	○	○	○
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75		○	○	○	○
	24		≤ 12% Si, Curable Hardened	90		○	○	○	○
	25		> 12% Si, Not Curable	130		○	○	○	○
	26		Cutting Alloys, PB>1%	110		○	○	○	○
	27	Copper and Copper Alloys (Bronze / Brass)	CuZn, CuSnZn (Brass)	90		○	○	○	○
	28		CuSn, lead-free copper and electrolytic copper	100		○	○	○	○
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic			○	○	○	○
	30		Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15			
	32			Cured	280	30			
	33		Annealed	250	25				
	34		Ni or Co Based	Cured	350	38			
	35		Cast	320	34				
	36	Titanium Alloys	Pure Titanium	400 Rm					
	37		Alpha + Beta Alloys	1050 Rm					
H	38	Hardened steel	Hardened	550	55				
	39		Hardened	630	60				
	40	Chilled Cast Iron	Cast	400	42				
	41	Hardened Cast Iron	Hardened	550	55				

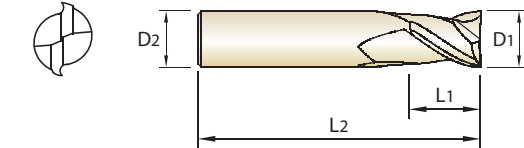
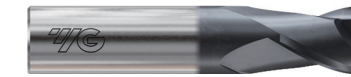
SERIES	G9H86 E5H86	G9H89 E5H89	G9H95 E5H95	G9I03 E5I03
FLUTE	2	4	4	2
HELIX ANGLE	30°	30°	30°	30°
CUTTING EDGE SHAPE	SQUARE	SQUARE	SQUARE	BALL NOSE
SIZE MIN	D1	D1	D4	R0.5
SIZE MAX	D25	D25	D20	R12.5
PAGE	52	53	54	55
	REGULAR	REGULAR	EXTRA LONG	REGULAR



# X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE SQUARE STUB LENGTH

X-Coated **G9H80** SERIES  
 Uncoated **E5H80** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H80002N	E5H80002	1/32	1/8	1/16	1-1/2
G9H80003N	E5H80003	3/64	1/8	3/32	1-1/2
G9H80004N	E5H80004	1/16	1/8	1/8	1-1/2
G9H80005N	E5H80005	5/64	1/8	5/32	1-1/2
G9H80006N	E5H80006	3/32	1/8	3/16	1-1/2
G9H80007N	E5H80007	7/64	1/8	7/32	1-1/2
G9H80008N	E5H80008	1/8	1/8	1/4	1-1/2
G9H80009N	E5H80009	9/64	3/16	9/32	2
G9H80010N	E5H80010	5/32	3/16	5/16	2
G9H80011N	E5H80011	11/64	3/16	5/16	2
G9H80012N	E5H80012	3/16	3/16	3/8	2
G9H80013N	E5H80013	13/64	1/4	3/8	2
G9H80014N	E5H80014	7/32	1/4	7/16	2
G9H80015N	E5H80015	15/64	1/4	7/16	2
G9H80016N	E5H80016	1/4	1/4	1/2	2
G9H80018N	E5H80018	9/32	5/16	1/2	2
G9H80020N	E5H80020	5/16	5/16	1/2	2
G9H80024N	E5H80024	3/8	3/8	5/8	2
G9H80028N	E5H80028	7/16	7/16	5/8	2-1/2
G9H80032N	E5H80032	1/2	1/2	5/8	2-1/2
G9H80040N	E5H80040	5/8	5/8	3/4	3
G9H80048N	E5H80048	3/4	3/4	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

\*Only Coated Tools in this series are recommended for stainless steel machining

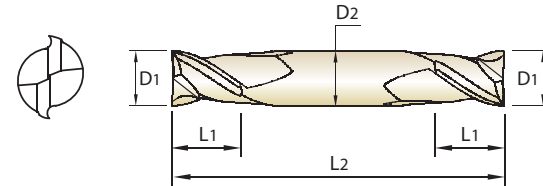
◎ : Excellent ○ : Good

ISO	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE SQUARE STUB LENGTH DOUBLE

X-Coated **G9H81** SERIES  
Uncoated **E5H81** SERIES

- Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.
- Same construction features as single end mill in a more economical version



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H81002N	E5H81002	1/32	1/8	1/16	1-1/2
G9H81003N	E5H81003	3/64	1/8	3/32	1-1/2
G9H81004N	E5H81004	1/16	1/8	1/8	1-1/2
G9H81005N	E5H81005	5/64	1/8	1/8	1-1/2
G9H81006N	E5H81006	3/32	1/8	3/16	1-1/2
G9H81007N	E5H81007	7/64	1/8	3/16	1-1/2
G9H81008N	E5H81008	1/8	1/8	1/4	1-1/2
G9H81009N	E5H81009	9/64	3/16	5/16	2
G9H81010N	E5H81010	5/32	3/16	5/16	2
G9H81011N	E5H81011	11/64	3/16	5/16	2
G9H81012N	E5H81012	3/16	3/16	3/8	2
G9H81013N	E5H81013	13/64	1/4	1/2	2-1/2
G9H81014N	E5H81014	7/32	1/4	1/2	2-1/2
G9H81015N	E5H81015	15/64	1/4	1/2	2-1/2
G9H81016N	E5H81016	1/4	1/4	1/2	2-1/2
G9H81017N	E5H81017	17/64	5/16	1/2	2-1/2
G9H81018N	E5H81018	9/32	5/16	1/2	2-1/2
G9H81019N	E5H81019	19/64	5/16	1/2	2-1/2
G9H81020N	E5H81020	5/16	5/16	1/2	2-1/2
G9H81022N	E5H81022	11/32	3/8	9/16	2-1/2
G9H81024N	E5H81024	3/8	3/8	9/16	2-1/2
G9H81028N	E5H81028	7/16	7/16	9/16	2-3/4
G9H81032N	E5H81032	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
D1=D2	+0/-0.002
D1≠D2	+0/-0.0012

\*Only Coated Tools in this series are recommended for stainless steel machining

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

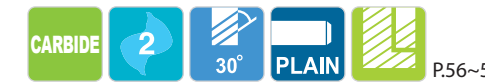
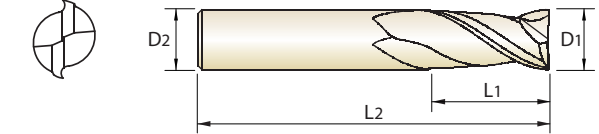
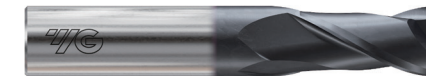
  

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE SQUARE REGULAR LENGTH

X-Coated **G9H85** SERIES  
Uncoated **E5H85** SERIES

- Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H85001N	E5H85001	1/64	1/8	3/64	1-1/2
G9H85002N	E5H85002	1/32	1/8	5/64	1-1/2
G9H85003N	E5H85003	3/64	1/8	7/64	1-1/2
G9H85004N	E5H85004	1/16	1/8	3/16	1-1/2
G9H85005N	E5H85005	5/64	1/8	3/16	1-1/2
G9H85006N	E5H85006	3/32	1/8	3/8	1-1/2
G9H85007N	E5H85007	7/64	1/8	3/8	1-1/2
G9H85008N	E5H85008	1/8	1/8	1/2	1-1/2
G9H85009N	E5H85009	9/64	3/16	1/2	2
G9H85010N	E5H85010	5/32	3/16	9/16	2
G9H85011N	E5H85011	11/64	3/16	9/16	2
G9H85012N	E5H85012	3/16	3/16	5/8	2
G9H85013N	E5H85013	13/64	1/4	5/8	2-1/2
G9H85014N	E5H85014	7/32	1/4	5/8	2-1/2
G9H85015N	E5H85015	15/64	1/4	3/4	2-1/2
G9H85016N	E5H85016	1/4	1/4	3/4	2-1/2
G9H85017N	E5H85017	17/64	5/16	3/4	2-1/2
G9H85018N	E5H85018	9/32	5/16	3/4	2-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

► NEXT PAGE

\*Only Coated Tools in this series are recommended for stainless steel machining

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

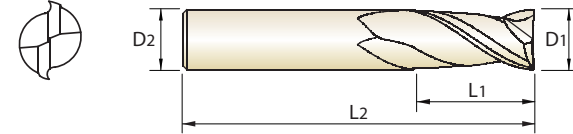
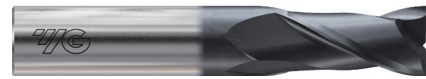
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE SQUARE REGULAR LENGTH

X-Coated **G9H85** SERIES  
Uncoated **E5H85** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H85019N	E5H85019	19/64	5/16	13/16	2-1/2
G9H85020N	E5H85020	5/16	5/16	13/16	2-1/2
G9H85021N	E5H85021	21/64	3/8	1	2-1/2
G9H85022N	E5H85022	11/32	3/8	1	2-1/2
G9H85023N	E5H85023	23/64	3/8	1	2-1/2
G9H85024N	E5H85024	3/8	3/8	1	2-1/2
G9H85025N	E5H85025	25/64	7/16	1	2-3/4
G9H85026N	E5H85026	13/32	7/16	1	2-3/4
G9H85027N	E5H85027	27/64	7/16	1	2-3/4
G9H85028N	E5H85028	7/16	7/16	1	2-3/4
G9H85029N	E5H85029	29/64	1/2	1	3
G9H85030N	E5H85030	15/32	1/2	1	3
G9H85031N	E5H85031	31/64	1/2	1	3
G9H85032N	E5H85032	1/2	1/2	1	3
G9H85908N	E5H85908	1/2	1/2	1-1/4	3
G9H85033N	E5H85033	33/64	9/16	1-1/4	3-1/2
G9H85034N	E5H85034	17/32	9/16	1-1/4	3-1/2
G9H85036N	E5H85036	9/16	9/16	1-1/4	3-1/2
G9H85040N	E5H85040	5/8	5/8	1-1/4	3-1/2
G9H85044N	E5H85044	11/16	3/4	1-1/2	4
G9H85048N	E5H85048	3/4	3/4	1-1/2	4
G9H85056N	E5H85056	7/8	7/8	1-1/2	4
G9H85064N	E5H85064	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.012	+0/-0.005

\*Only Coated Tools in this series are recommended for stainless steel machining

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	260	160	250	130	230		
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

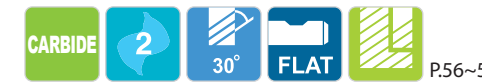
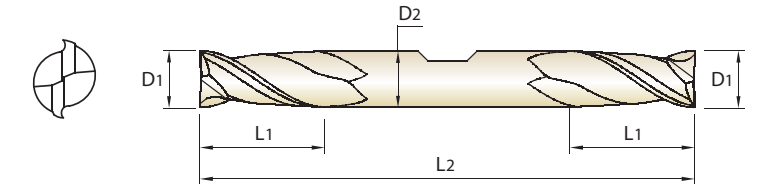
  

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34								55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE SQUARE REGULAR LENGTH DOUBLE

X-Coated **G9H87** SERIES  
Uncoated **E5H87** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.  
► Same construction features as single end mill in a more economical version



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H87008N	E5H87008	1/8	3/8	3/8	3
G9H87010N	E5H87010	5/32	3/8	7/16	3
G9H87012N	E5H87012	3/16	3/8	1/2	3
G9H87014N	E5H87014	7/32	3/8	9/16	3-1/2
G9H87016N	E5H87016	1/4	3/8	5/8	3-1/2
G9H87018N	E5H87018	9/32	3/8	11/16	3-1/2
G9H87020N	E5H87020	5/16	3/8	3/4	3-1/2
G9H87022N	E5H87022	11/32	3/8	3/4	3-1/2
G9H87024N	E5H87024	3/8	3/8	3/4	3-1/2
G9H87028N	E5H87028	7/16	1/2	7/8	4
G9H87032N	E5H87032	1/2	1/2	1	4

Mill Dia. Tolerance (inch)	
D1=D2	+0/-0.002
D1≠D2	+0/-0.0012

\*Only Coated Tools in this series are recommended for stainless steel machining

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	260	160	250	130	230		
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

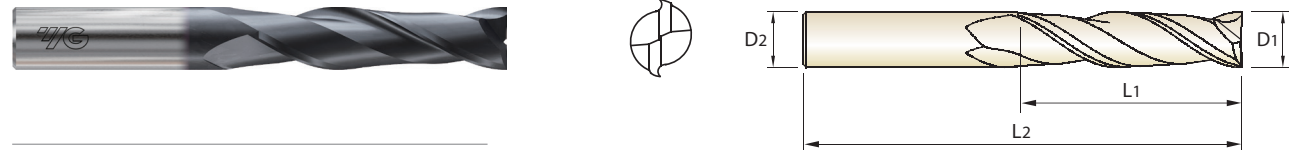
  

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34								55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE SQUARE LONG LENGTH

X-Coated **G9H91** SERIES  
Uncoated **E5H91** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

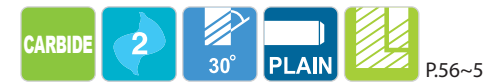
EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9H91008N</b>	<b>E5H91008</b>	1/8	1/8	3/4	2-1/4
<b>G9H91010N</b>	<b>E5H91010</b>	5/32	3/16	3/4	2-1/2
<b>G9H91012N</b>	<b>E5H91012</b>	3/16	3/16	3/4	2-1/2
<b>G9H91016N</b>	<b>E5H91016</b>	1/4	1/4	1-1/8	3
<b>G9H91020N</b>	<b>E5H91020</b>	5/16	5/16	1-1/8	3
<b>G9H91024N</b>	<b>E5H91024</b>	3/8	3/8	1-1/8	3
<b>G9H91028N</b>	<b>E5H91028</b>	7/16	7/16	2	4
<b>G9H91032N</b>	<b>E5H91032</b>	1/2	1/2	2	4
<b>G9H91040N</b>	<b>E5H91040</b>	5/8	5/8	2-1/4	5
<b>G9H91048N</b>	<b>E5H91048</b>	3/4	3/4	2-1/4	5
<b>G9H91064N</b>	<b>E5H91064</b>	1	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE SQUARE EXTRA LONG LENGTH

X-Coated **G9H93** SERIES  
Uncoated **E5H93** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9H93008N</b>	<b>E5H93008</b>	1/8	1/8	1	3
<b>G9H93010N</b>	<b>E5H93010</b>	5/32	3/16	1-1/8	3
<b>G9H93012N</b>	<b>E5H93012</b>	3/16	3/16	1	4
<b>G9H93016N</b>	<b>E5H93016</b>	1/4	1/4	1-1/2	4
<b>G9H93020N</b>	<b>E5H93020</b>	5/16	5/16	1-5/8	4
<b>G9H93024N</b>	<b>E5H93024</b>	3/8	3/8	1-3/4	4
<b>G9H93028N</b>	<b>E5H93028</b>	7/16	7/16	3	6
<b>G9H93032N</b>	<b>E5H93032</b>	1/2	1/2	3	6
<b>G9H93040N</b>	<b>E5H93040</b>	5/8	5/8	3	6
<b>G9H93048N</b>	<b>E5H93048</b>	3/4	3/4	3	6
<b>G9H93064N</b>	<b>E5H93064</b>	1	1	1-1/2	6
<b>G9H9307N</b>	<b>E5H9307</b>	3/4	3/4	4	7
<b>G9H9308N</b>	<b>E5H9308</b>	1	1	3	6
<b>G9H9309N</b>	<b>E5H9309</b>	1	1	4	7

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

\*Only Coated Tools in this series are recommended for stainless steel machining

◎ : Excellent ○ : Good

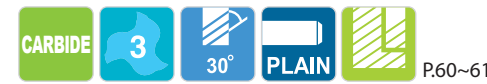
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	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel			Stainless steel			Grey cast iron			Nodular cast iron			Malleable cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122



### X-COATED & UNCOATED SOLID CARBIDE END MILLS 3 FLUTE SQUARE STUB LENGTH DOUBLE

X-Coated **G9H82** SERIES  
Uncoated **E5H82** SERIES

- Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.
- Same construction features as single end mill in a more economical version



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H82002N	E5H82002	1/32	1/8	1/16	1-1/2
G9H82003N	E5H82003	3/64	1/8	3/32	1-1/2
G9H82004N	E5H82004	1/16	1/8	1/8	1-1/2
G9H82006N	E5H82006	3/32	1/8	3/16	1-1/2
G9H82008N	E5H82008	1/8	1/8	1/4	1-1/2
G9H82010N	E5H82010	5/32	3/16	5/16	2
G9H82012N	E5H82012	3/16	3/16	3/8	2
G9H82014N	E5H82014	7/32	1/4	1/2	2-1/2
G9H82016N	E5H82016	1/4	1/4	1/2	2-1/2
G9H82020N	E5H82020	5/16	5/16	1/2	2-1/2
G9H82024N	E5H82024	3/8	3/8	9/16	2-1/2
G9H82028N	E5H82028	7/16	7/16	9/16	2-3/4
G9H82032N	E5H82032	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
D1=D2	+0/-0.002
D1≠D2	+0/-0.0012

◎ : Excellent ○ : Good

ISO Material Description	P										M			K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	38	40	42	45	48	50	52	54	56	58	60	62	64	66	68
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

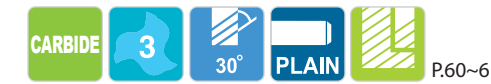
  

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 3 FLUTE SQUARE REGULAR LENGTH

X-Coated **G9I10** SERIES  
Uncoated **E5I10** SERIES

- Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9I10002N	E5I10002	1/32	1/8	1/8	1-1/2
G9I10003N	E5I10003	3/64	1/8	1/8	1-1/2
G9I10004N	E5I10004	1/16	1/8	1/4	1-1/2
G9I10005N	E5I10005	5/64	1/8	1/4	1-1/2
G9I10006N	E5I10006	3/32	1/8	3/8	1-1/2
G9I10007N	E5I10007	7/64	1/8	3/8	1-1/2
G9I10008N	E5I10008	1/8	1/8	1/2	1-1/2
G9I10010N	E5I10010	5/32	3/16	9/16	2
G9I10011N	E5I10011	11/64	3/16	5/16	2
G9I10012N	E5I10012	3/16	3/16	5/8	2
G9I10013N	E5I10013	13/64	1/4	5/8	2-1/2
G9I10014N	E5I10014	7/32	1/4	5/8	2-1/2
G9I10015N	E5I10015	15/64	1/4	3/4	2-1/2
G9I10016N	E5I10016	1/4	1/4	3/4	2-1/2
G9I10017N	E5I10017	17/64	5/16	3/4	2-1/2
G9I10018N	E5I10018	9/32	5/16	3/4	2-1/2
G9I10019N	E5I10019	19/64	5/16	13/16	2-1/2
G9I10020N	E5I10020	5/16	5/16	13/16	2-1/2
G9I10021N	E5I10021	21/64	3/8	1	2-1/2
G9I10022N	E5I10022	11/32	3/8	1	2-1/2
G9I10023N	E5I10023	23/64	3/8	1	2-1/2
G9I10024N	E5I10024	3/8	3/8	7/8	2-1/2
G9I10901N	E5I10901	3/8	3/8	1	2-1/2
G9I10025N	E5I10025	25/64	7/16	1	2-3/4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

◎ : Excellent ○ : Good

ISO Material Description	P										M			K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	38	40	42	45	48	50	52	54	56	58	60	62	64	66	68
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

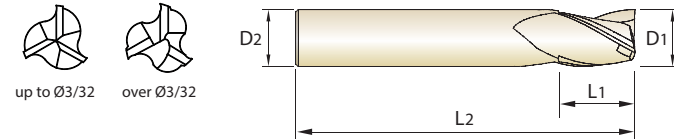
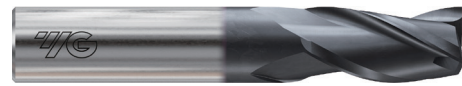
  

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 3 FLUTE SQUARE REGULAR LENGTH

X-Coated **G9110** SERIES  
Uncoated **E5110** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

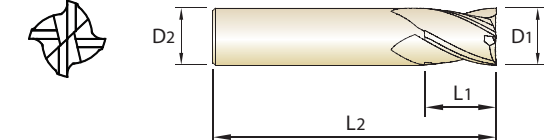
EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9110026N</b>	<b>E5110026</b>	13/32	7/16	1	2-3/4
<b>G9110028N</b>	<b>E5110028</b>	7/16	7/16	1	2-3/4
<b>G9110032N</b>	<b>E5110032</b>	1/2	1/2	1	3
<b>G9110036N</b>	<b>E5110036</b>	9/16	9/16	1-1/4	3-1/2
<b>G9110040N</b>	<b>E5110040</b>	5/8	5/8	1-1/4	3-1/2
<b>G9110044N</b>	<b>E5110044</b>	11/16	3/4	1-1/2	4
<b>G9110048N</b>	<b>E5110048</b>	3/4	3/4	1-1/2	4
<b>G9110056N</b>	<b>E5110056</b>	7/8	7/8	1-1/2	4
<b>G9110064N</b>	<b>E5110064</b>	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE SQUARE STUB LENGTH

X-Coated **G9H83** SERIES  
Uncoated **E5H83** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9H83001N</b>	<b>E5H83001</b>	1/64	1/8	0.046	1-1/2
<b>G9H83002N</b>	<b>E5H83002</b>	1/32	1/8	1/16	1-1/2
<b>G9H83003N</b>	<b>E5H83003</b>	3/64	1/8	3/32	1-1/2
<b>G9H83004N</b>	<b>E5H83004</b>	1/16	1/8	1/8	1-1/2
<b>G9H83005N</b>	<b>E5H83005</b>	5/64	1/8	5/32	1-1/2
<b>G9H83006N</b>	<b>E5H83006</b>	3/32	1/8	3/16	1-1/2
<b>G9H83007N</b>	<b>E5H83007</b>	7/64	1/8	7/32	1-1/2
<b>G9H83008N</b>	<b>E5H83008</b>	1/8	1/8	1/4	1-1/2
<b>G9H83009N</b>	<b>E5H83009</b>	9/64	3/16	9/32	2
<b>G9H83010N</b>	<b>E5H83010</b>	5/32	3/16	5/16	2
<b>G9H83011N</b>	<b>E5H83011</b>	11/64	3/16	5/16	2
<b>G9H83012N</b>	<b>E5H83012</b>	3/16	3/16	3/8	2
<b>G9H83013N</b>	<b>E5H83013</b>	13/64	1/4	3/8	2
<b>G9H83014N</b>	<b>E5H83014</b>	7/32	1/4	7/16	2
<b>G9H83015N</b>	<b>E5H83015</b>	15/64	1/4	7/16	2
<b>G9H83016N</b>	<b>E5H83016</b>	1/4	1/4	1/2	2
<b>G9H83018N</b>	<b>E5H83018</b>	9/32	5/16	1/2	2
<b>G9H83020N</b>	<b>E5H83020</b>	5/16	5/16	1/2	2
<b>G9H83024N</b>	<b>E5H83024</b>	3/8	3/8	5/8	2
<b>G9H83028N</b>	<b>E5H83028</b>	7/16	7/16	5/8	2-1/2
<b>G9H83032N</b>	<b>E5H83032</b>	1/2	1/2	5/8	2-1/2
<b>G9H83040N</b>	<b>E5H83040</b>	5/8	5/8	3/4	3
<b>G9H83048N</b>	<b>E5H83048</b>	3/4	3/4	1	3
<b>G9H83064N</b>	<b>E5H83064</b>	1	1	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

◎ : Excellent ○ : Good

ISO Material Description	P										M			K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO Material Description	P										M			K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

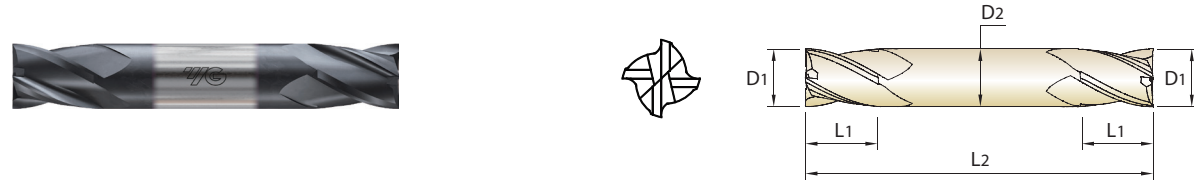
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE SQUARE STUB LENGTH DOUBLE

X-Coated **G9H84** SERIES  
Uncoated **E5H84** SERIES

- Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.
- Same construction features as single end mill in a more economical version



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H84002N	E5H84002	1/32	1/8	1/16	1-1/2
G9H84003N	E5H84003	3/64	1/8	3/32	1-1/2
G9H84004N	E5H84004	1/16	1/8	1/8	1-1/2
G9H84005N	E5H84005	5/64	1/8	1/8	1-1/2
G9H84006N	E5H84006	3/32	1/8	3/16	1-1/2
G9H84007N	E5H84007	7/64	1/8	3/16	1-1/2
G9H84008N	E5H84008	1/8	1/8	1/4	1-1/2
G9H84009N	E5H84009	9/64	3/16	5/16	2
G9H84010N	E5H84010	5/32	3/16	5/16	2
G9H84011N	E5H84011	11/64	3/16	5/16	2
G9H84012N	E5H84012	3/16	3/16	3/8	2
G9H84013N	E5H84013	13/64	1/4	1/2	2-1/2
G9H84014N	E5H84014	7/32	1/4	1/2	2-1/2
G9H84015N	E5H84015	15/64	1/4	1/2	2-1/2
G9H84016N	E5H84016	1/4	1/4	1/2	2-1/2
G9H84017N	E5H84017	17/64	5/16	1/2	2-1/2
G9H84018N	E5H84018	9/32	5/16	1/2	2-1/2
G9H84019N	E5H84019	19/64	5/16	1/2	2-1/2
G9H84020N	E5H84020	5/16	5/16	1/2	2-1/2
G9H84021N	E5H84021	21/64	3/8	1/2	2-1/2
G9H84022N	E5H84022	11/32	3/8	9/16	2-1/2
G9H84024N	E5H84024	3/8	3/8	9/16	2-1/2
G9H84028N	E5H84028	7/16	7/16	9/16	2-3/4
G9H84032N	E5H84032	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
D1=D2	+0/-0.002
D1≠D2	+0/-0.0012

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

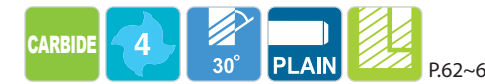
  

ISO Material Description	N										S					H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc											15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE SQUARE REGULAR LENGTH

X-Coated **G9H88** SERIES  
Uncoated **E5H88** SERIES

- Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H88001N	E5H88001	1/64	1/8	3/64	1-1/2
G9H88002N	E5H88002	1/32	1/8	5/64	1-1/2
G9H88901N	E5H88901	1/32	1/8	1/8	1-1/2
G9H88003N	E5H88003	3/64	1/8	1/8	1-1/2
G9H88004N	E5H88004	1/16	1/8	3/16	1-1/2
G9H88902N	E5H88902	1/16	1/8	1/4	1-1/2
G9H88005N	E5H88005	5/64	1/8	3/16	1-1/2
G9H88903N	E5H88903	5/64	1/8	1/4	1-1/2
G9H88006N	E5H88006	3/32	1/8	3/8	1-1/2
G9H88007N	E5H88007	7/64	1/8	3/8	1-1/2
G9H88008N	E5H88008	1/8	1/8	1/2	1-1/2
G9H88009N	E5H88009	9/64	3/16	1/2	2
G9H88904N	E5H88904	9/64	3/16	9/16	2
G9H88010N	E5H88010	5/32	3/16	9/16	2
G9H88011N	E5H88011	11/64	3/16	9/16	2
G9H88905N	E5H88905	11/64	3/16	5/8	2
G9H88012N	E5H88012	3/16	3/16	5/8	2
G9H88013N	E5H88013	13/64	1/4	5/8	2-1/2
G9H88014N	E5H88014	7/32	1/4	5/8	2-1/2
G9H88015N	E5H88015	15/64	1/4	3/4	2-1/2
G9H88016N	E5H88016	1/4	1/4	3/4	2-1/2
G9H88017N	E5H88017	17/64	5/16	3/4	2-1/2
G9H88018N	E5H88018	9/32	5/16	3/4	2-1/2
G9H88019N	E5H88019	19/64	5/16	13/16	2-1/2
G9H88020N	E5H88020	5/16	5/16	13/16	2-1/2
G9H88021N	E5H88021	21/64	3/8	1	2-1/2
G9H88022N	E5H88022	11/32	3/8	1	2-1/2
G9H88023N	E5H88023	23/64	3/8	1	2-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

► NEXT PAGE

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

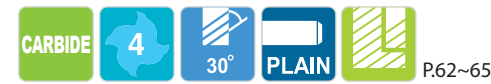
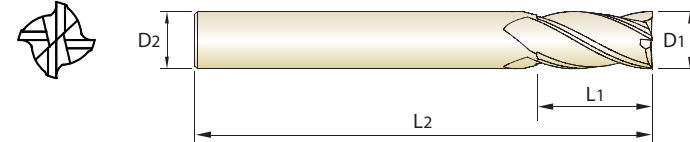
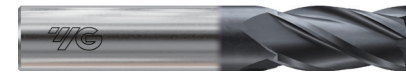
  

ISO Material Description	N										S					H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc											15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE SQUARE REGULAR LENGTH

X-Coated **G9H88** SERIES  
Uncoated **E5H88** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H88024N	E5H88024	3/8	3/8	1	2-1/2
G9H88025N	E5H88025	25/64	7/16	1	2-3/4
G9H88026N	E5H88026	13/32	7/16	1	2-3/4
G9H88027N	E5H88027	27/64	7/16	1	2-3/4
G9H88028N	E5H88028	7/16	7/16	1	2-3/4
G9H88029N	E5H88029	29/64	1/2	1	3
G9H88030N	E5H88030	15/32	1/2	1	3
G9H88031N	E5H88031	31/64	1/2	1	3
G9H88032N	E5H88032	1/2	1/2	1	3
G9H88906N	E5H88906	1/2	1/2	1-1/4	3
G9H88033N	E5H88033	33/64	9/16	1-1/4	3-1/2
G9H88034N	E5H88034	17/32	9/16	1-1/4	3-1/2
G9H88036N	E5H88036	9/16	9/16	1-1/4	3-1/2
G9H88038N	E5H88038	19/32	5/8	1-1/4	3-1/2
G9H88040N	E5H88040	5/8	5/8	1-1/4	3-1/2
G9H88041N	E5H88041	41/64	3/4	1-1/2	4
G9H88042N	E5H88042	21/32	3/4	1-1/2	4
G9H88044N	E5H88044	11/16	3/4	1-1/2	4
G9H88047N	E5H88047	47/64	3/4	1-1/2	4
G9H88048N	E5H88048	3/4	3/4	1	4
G9H88907N	E5H88907	3/4	3/4	1-1/2	4
G9H88052N	E5H88052	13/16	7/8	1-1/2	4
G9H88056N	E5H88056	7/8	7/8	1-1/2	4
G9H88060N	E5H88060	15/16	1	1-1/2	4
G9H88064N	E5H88064	1	1	1	4
G9H88908N	E5H88908	1	1	1-1/2	4
G9H88080N	E5H88080	1-1/4	1-1/4	2	4-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.012	+0/-0.005

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

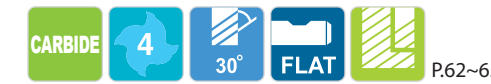
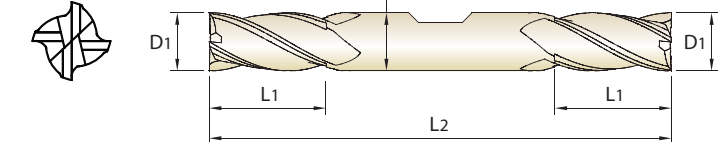
  

ISO Material Description	N				S										H							
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc						15	30	25	38	34								55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE SQUARE REGULAR LENGTH DOUBLE

X-Coated **G9H90** SERIES  
Uncoated **E5H90** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.  
► Same construction features as single end mill in a more economical version



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H90008N	E5H90008	1/8	3/8	3/8	3
G9H90901N	E5H90901	1/8	3/8	3/8	3-1/16
G9H90010N	E5H90010	5/32	3/8	7/16	3
G9H90902N	E5H90902	5/32	3/8	7/16	3-1/8
G9H90012N	E5H90012	3/16	3/8	1/2	3
G9H90903N	E5H90903	3/16	3/8	1/2	3-1/4
G9H90014N	E5H90014	7/32	3/8	9/16	3-3/8
G9H90904N	E5H90904	7/32	3/8	9/16	3-1/2
G9H90016N	E5H90016	1/4	3/8	5/8	3-3/8
G9H90905N	E5H90905	1/4	3/8	5/8	3-1/2
G9H90018N	E5H90018	9/32	3/8	11/16	3-3/8
G9H90906N	E5H90906	9/32	3/8	11/16	3-1/2
G9H90020N	E5H90020	5/16	3/8	3/4	3-1/2
G9H90022N	E5H90022	11/32	3/8	3/4	3-1/2
G9H90024N	E5H90024	3/8	3/8	3/4	3-1/2
G9H90028N	E5H90028	7/16	1/2	7/8	4
G9H90032N	E5H90032	1/2	1/2	1	4

Mill Dia. Tolerance (inch)	
D1=D2	+0/-0.002
D1≠D2	+0/-0.0012

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N				S										H							
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc						15	30	25	38	34								55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



## X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE SQUARE LONG LENGTH

X-Coated **G9H92** SERIES  
Uncoated **E5H92** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

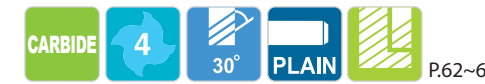
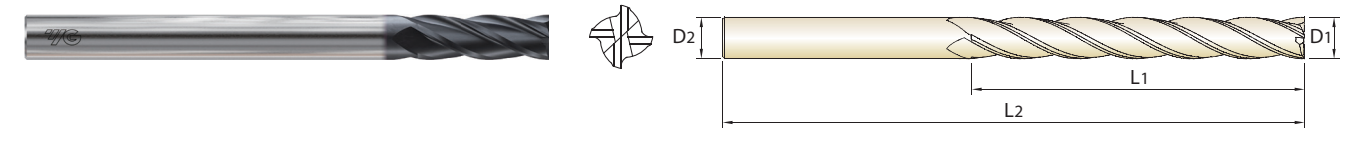
EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9H92008N</b>	<b>E5H92008</b>	1/8	1/8	3/4	2-1/4
<b>G9H92010N</b>	<b>E5H92010</b>	5/32	3/16	3/4	2-1/2
<b>G9H92012N</b>	<b>E5H92012</b>	3/16	3/16	3/4	2-1/2
<b>G9H92016N</b>	<b>E5H92016</b>	1/4	1/4	1-1/8	3
<b>G9H92020N</b>	<b>E5H92020</b>	5/16	5/16	1-1/8	3
<b>G9H92024N</b>	<b>E5H92024</b>	3/8	3/8	1-1/8	3
<b>G9H92028N</b>	<b>E5H92028</b>	7/16	7/16	2	4
<b>G9H92032N</b>	<b>E5H92032</b>	1/2	1/2	1	4
<b>G9H92901N</b>	<b>E5H92901</b>	1/2	1/2	1-1/2	4
<b>G9H92902N</b>	<b>E5H92902</b>	1/2	1/2	2	4
<b>G9H92040N</b>	<b>E5H92040</b>	5/8	5/8	2-1/4	5
<b>G9H92048N</b>	<b>E5H92048</b>	3/4	3/4	2-1/4	5
<b>G9H92064N</b>	<b>E5H92064</b>	1	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE SQUARE EXTRA LONG LENGTH

X-Coated **G9H94** SERIES  
Uncoated **E5H94** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9H94008N</b>	<b>E5H94008</b>	1/8	1/8	1	3
<b>G9H94010N</b>	<b>E5H94010</b>	5/32	3/16	1-1/8	3
<b>G9H94901N</b>	<b>E5H94901</b>	3/16	3/16	1	4
<b>G9H94012N</b>	<b>E5H94012</b>	3/16	3/16	1-1/8	3
<b>G9H94016N</b>	<b>E5H94016</b>	1/4	1/4	1	4
<b>G9H94902N</b>	<b>E5H94902</b>	1/4	1/4	1-1/2	4
<b>G9H94903N</b>	<b>E5H94903</b>	1/4	1/4	1-1/2	6
<b>G9H94904N</b>	<b>E5H94904</b>	5/16	5/16	1-1/2	6
<b>G9H94020N</b>	<b>E5H94020</b>	5/16	5/16	1-5/8	4
<b>G9H94024N</b>	<b>E5H94024</b>	3/8	3/8	1	4
<b>G9H94906N</b>	<b>E5H94906</b>	3/8	3/8	1-1/2	6
<b>G9H94905N</b>	<b>E5H94905</b>	3/8	3/8	1-3/4	4
<b>G9H94028N</b>	<b>E5H94028</b>	7/16	7/16	3	6
<b>G9H94032N</b>	<b>E5H94032</b>	1/2	1/2	1-1/2	6
<b>G9H94907N</b>	<b>E5H94907</b>	1/2	1/2	3	6
<b>G9H94908N</b>	<b>E5H94908</b>	1/2	1/2	4	7
<b>G9H94909N</b>	<b>E5H94909</b>	1/2	1/2	5	8
<b>G9H94040N</b>	<b>E5H94040</b>	5/8	5/8	1-1/2	6
<b>G9H94910N</b>	<b>E5H94910</b>	5/8	5/8	3	6
<b>G9H94911N</b>	<b>E5H94911</b>	5/8	5/8	4	7
<b>G9H94912N</b>	<b>E5H94912</b>	5/8	5/8	5	8
<b>G9H94913N</b>	<b>E5H94913</b>	5/8	5/8	6	9
<b>G9H94048N</b>	<b>E5H94048</b>	3/4	3/4	1-1/2	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

► NEXT PAGE

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

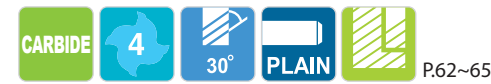
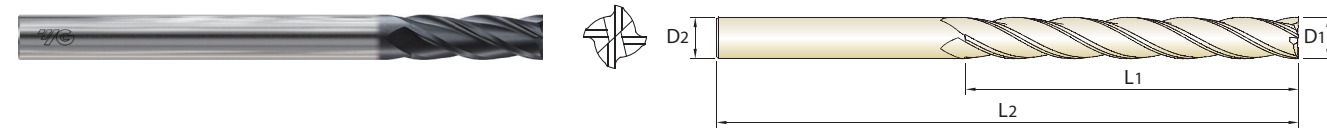
  

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE SQUARE EXTRA LONG LENGTH

X-Coated **G9H94** SERIES  
Uncoated **E5H94** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H94914N	E5H94914	3/4	3/4	3	6
G9H94915N	E5H94915	3/4	3/4	4	7
G9H94916N	E5H94916	3/4	3/4	5	8
G9H94917N	E5H94917	3/4	3/4	6	9
G9H94918N	E5H94918	3/4	3/4	8	12
G9H94064N	E5H94064	1	1	1-1/2	6
G9H94919N	E5H94919	1	1	3	6
G9H94920N	E5H94920	1	1	4	7
G9H94921N	E5H94921	1	1	5	8
G9H94922N	E5H94922	1	1	6	9
G9H94923N	E5H94923	1	1	7	10
G9H94924N	E5H94924	1	1	8	12

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE CORNER RADIUS REGULAR LENGTH

X-Coated **G9H96** SERIES  
Uncoated **E5H96** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9H96008N	E5H96008	R.010	1/8	1/8	1/2	1-1/2
G9H96901N	E5H96901	R.015	1/8	1/8	1/2	1-1/2
G9H96902N	E5H96902	R.020	1/8	1/8	1/2	1-1/2
G9H96903N	E5H96903	R.030	1/8	1/8	1/2	1-1/2
G9H96012N	E5H96012	R.010	3/16	3/16	5/8	2
G9H96904N	E5H96904	R.015	3/16	3/16	5/8	2
G9H96905N	E5H96905	R.020	3/16	3/16	5/8	2
G9H96906N	E5H96906	R.025	3/16	3/16	5/8	2
G9H96907N	E5H96907	R.045	3/16	3/16	5/8	2
G9H96908N	E5H96908	R.060	3/16	3/16	5/8	2
G9H96016N	E5H96016	R.015	1/4	1/4	3/4	2-1/2
G9H96909N	E5H96909	R.020	1/4	1/4	3/4	2-1/2
G9H96910N	E5H96910	R.025	1/4	1/4	3/4	2-1/2
G9H96911N	E5H96911	R.030	1/4	1/4	3/4	2-1/2
G9H96912N	E5H96912	R.045	1/4	1/4	3/4	2-1/2
G9H96913N	E5H96913	R.060	1/4	1/4	3/4	2-1/2
G9H96914N	E5H96914	R.090	1/4	1/4	3/4	2-1/2
G9H96020N	E5H96020	R.015	5/16	5/16	13/16	2-1/2
G9H96915N	E5H96915	R.020	5/16	5/16	13/16	2-1/2
G9H96916N	E5H96916	R.025	5/16	5/16	13/16	2-1/2
G9H96917N	E5H96917	R.030	5/16	5/16	13/16	2-1/2
G9H96918N	E5H96918	R.045	5/16	5/16	13/16	2-1/2
G9H96919N	E5H96919	R.060	5/16	5/16	13/16	2-1/2
G9H96920N	E5H96920	R.090	5/16	5/16	13/16	2-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

► NEXT PAGE

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

\*Only Coated Tools in this series are recommended for stainless steel machining

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

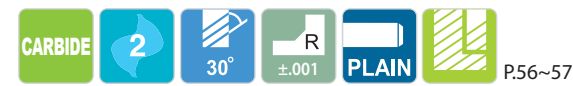
  

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE CORNER RADIUS REGULAR LENGTH

X-Coated **G9H96** SERIES  
Uncoated **E5H96** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9H96024N	E5H96024	R.015	3/8	3/8	1	2-1/2
G9H96921N	E5H96921	R.020	3/8	3/8	1	2-1/2
G9H96922N	E5H96922	R.025	3/8	3/8	1	2-1/2
G9H96923N	E5H96923	R.030	3/8	3/8	1	2-1/2
G9H96924N	E5H96924	R.045	3/8	3/8	1	2-1/2
G9H96925N	E5H96925	R.060	3/8	3/8	1	2-1/2
G9H96926N	E5H96926	R.090	3/8	3/8	1	2-1/2
G9H96028N	E5H96028	R.015	7/16	7/16	1	2-3/4
G9H96927N	E5H96927	R.020	7/16	7/16	1	2-3/4
G9H96928N	E5H96928	R.025	7/16	7/16	1	2-3/4
G9H96929N	E5H96929	R.030	7/16	7/16	1	2-3/4
G9H96930N	E5H96930	R.045	7/16	7/16	1	2-3/4
G9H96931N	E5H96931	R.060	7/16	7/16	1	2-3/4
G9H96932N	E5H96932	R.090	7/16	7/16	1	2-3/4
G9H96032N	E5H96032	R.015	1/2	1/2	1	3
G9H96933N	E5H96933	R.020	1/2	1/2	1	3
G9H96934N	E5H96934	R.025	1/2	1/2	1	3
G9H96935N	E5H96935	R.030	1/2	1/2	1	3
G9H96936N	E5H96936	R.045	1/2	1/2	1	3
G9H96937N	E5H96937	R.060	1/2	1/2	1	3
G9H96938N	E5H96938	R.090	1/2	1/2	1	3
G9H96939N	E5H96939	R.125	1/2	1/2	1	3
G9H96040N	E5H96040	R.015	5/8	5/8	1-1/4	3-1/2
G9H96940N	E5H96940	R.020	5/8	5/8	1-1/4	3-1/2

Unit : inch

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

► NEXT PAGE

\*Only Coated Tools in this series are recommended for stainless steel machining

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	260	160	250	130	230	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	S										H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE CORNER RADIUS REGULAR LENGTH

X-Coated **G9H96** SERIES  
Uncoated **E5H96** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9H96941N	E5H96941	R.025	5/8	5/8	1-1/4	3-1/2
G9H96942N	E5H96942	R.030	5/8	5/8	1-1/4	3-1/2
G9H96943N	E5H96943	R.045	5/8	5/8	1-1/4	3-1/2
G9H96944N	E5H96944	R.060	5/8	5/8	1-1/4	3-1/2
G9H96945N	E5H96945	R.090	5/8	5/8	1-1/4	3-1/2
G9H96946N	E5H96946	R.125	5/8	5/8	1-1/4	3-1/2
G9H96947N	E5H96947	R.250	5/8	5/8	1-1/4	3-1/2
G9H96048N	E5H96048	R.015	3/4	3/4	1-1/2	4
G9H96948N	E5H96948	R.020	3/4	3/4	1-1/2	4
G9H96949N	E5H96949	R.025	3/4	3/4	1-1/2	4
G9H96950N	E5H96950	R.030	3/4	3/4	1-1/2	4
G9H96951N	E5H96951	R.045	3/4	3/4	1-1/2	4
G9H96952N	E5H96952	R.060	3/4	3/4	1-1/2	4
G9H96953N	E5H96953	R.090	3/4	3/4	1-1/2	4
G9H96954N	E5H96954	R.125	3/4	3/4	1-1/2	4
G9H96955N	E5H96955	R.190	3/4	3/4	1-1/2	4
G9H96956N	E5H96956	R.250	3/4	3/4	1-1/2	4

Unit : inch

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

\*Only Coated Tools in this series are recommended for stainless steel machining

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	260	160	250	130	230	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

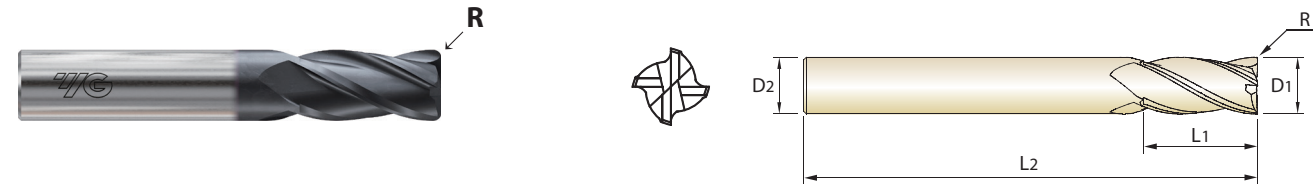
ISO Material Description	S										H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE CORNER RADIUS REGULAR LENGTH

X-Coated **G9H97** SERIES  
Uncoated **E5H97** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9H97008N	E5H97008	R.005	1/8	1/8	1/2	1-1/2
G9H97901N	E5H97901	R.010	1/8	1/8	1/2	1-1/2
G9H97902N	E5H97902	R.015	1/8	1/8	1/2	1-1/2
G9H97903N	E5H97903	R.020	1/8	1/8	1/2	1-1/2
G9H97904N	E5H97904	R.030	1/8	1/8	1/2	1-1/2
G9H97012N	E5H97012	R.010	3/16	3/16	5/8	2
G9H97905N	E5H97905	R.015	3/16	3/16	5/8	2
G9H97906N	E5H97906	R.020	3/16	3/16	5/8	2
G9H97907N	E5H97907	R.030	3/16	3/16	5/8	2
G9H97908N	E5H97908	R.045	3/16	3/16	5/8	2
G9H97909N	E5H97909	R.050	3/16	3/16	5/8	2
G9H97910N	E5H97910	R.060	3/16	3/16	5/8	2
G9H97016N	E5H97016	R.005	1/4	1/4	3/4	2-1/2
G9H97911N	E5H97911	R.010	1/4	1/4	3/4	2-1/2
G9H97912N	E5H97912	R.015	1/4	1/4	3/4	2-1/2
G9H97913N	E5H97913	R.020	1/4	1/4	3/4	2-1/2
G9H97914N	E5H97914	R.025	1/4	1/4	3/4	2-1/2
G9H97915N	E5H97915	R.030	1/4	1/4	3/4	2-1/2
G9H97916N	E5H97916	R.045	1/4	1/4	3/4	2-1/2
G9H97917N	E5H97917	R.060	1/4	1/4	3/4	2-1/2
G9H97918N	E5H97918	R.090	1/4	1/4	3/4	2-1/2
G9H97020N	E5H97020	R.015	5/16	5/16	13/16	2-1/2
G9H97919N	E5H97919	R.020	5/16	5/16	13/16	2-1/2
G9H97920N	E5H97920	R.025	5/16	5/16	13/16	2-1/2

► NEXT PAGE

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	260	160	250	130	230		
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE CORNER RADIUS REGULAR LENGTH

X-Coated **G9H97** SERIES  
Uncoated **E5H97** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9H97921N	E5H97921	R.030	5/16	5/16	13/16	2-1/2
G9H97922N	E5H97922	R.045	5/16	5/16	13/16	2-1/2
G9H97923N	E5H97923	R.060	5/16	5/16	13/16	2-1/2
G9H97924N	E5H97924	R.090	5/16	5/16	13/16	2-1/2
G9H97925N	E5H97925	R.125	5/16	5/16	13/16	2-1/2
G9H97024N	E5H97024	R.015	3/8	3/8	1	2-1/2
G9H97926N	E5H97926	R.020	3/8	3/8	1	2-1/2
G9H97927N	E5H97927	R.025	3/8	3/8	1	2-1/2
G9H97928N	E5H97928	R.030	3/8	3/8	1	2-1/2
G9H97929N	E5H97929	R.045	3/8	3/8	1	2-1/2
G9H97930N	E5H97930	R.060	3/8	3/8	1	2-1/2
G9H97931N	E5H97931	R.090	3/8	3/8	1	2-1/2
G9H97932N	E5H97932	R.125	3/8	3/8	1	2-1/2
G9H97028N	E5H97028	R.015	7/16	7/16	1	2-3/4
G9H97933N	E5H97933	R.020	7/16	7/16	1	2-3/4
G9H97934N	E5H97934	R.025	7/16	7/16	1	2-3/4
G9H97935N	E5H97935	R.030	7/16	7/16	1	2-3/4
G9H97936N	E5H97936	R.045	7/16	7/16	1	2-3/4
G9H97937N	E5H97937	R.060	7/16	7/16	1	2-3/4
G9H97938N	E5H97938	R.090	7/16	7/16	1	2-3/4
G9H97939N	E5H97939	R.125	7/16	7/16	1	2-3/4
G9H97032N	E5H97032	R.015	1/2	1/2	1	3
G9H97940N	E5H97940	R.020	1/2	1/2	1	3
G9H97941N	E5H97941	R.025	1/2	1/2	1	3

► NEXT PAGE

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	260	160	250	130	230		
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

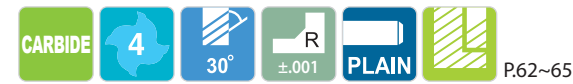
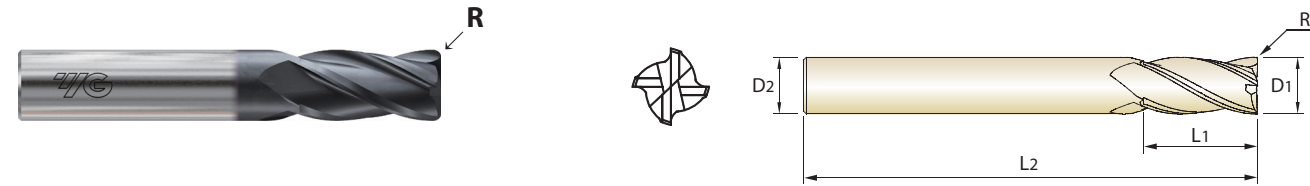
  

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE CORNER RADIUS REGULAR LENGTH

X-Coated **G9H97** SERIES  
Uncoated **E5H97** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9H97942N	E5H97942	R.030	1/2	1/2	1	3
G9H97943N	E5H97943	R.045	1/2	1/2	1	3
G9H97944N	E5H97944	R.060	1/2	1/2	1	3
G9H97945N	E5H97945	R.090	1/2	1/2	1	3
G9H97946N	E5H97946	R.125	1/2	1/2	1	3
G9H97040N	E5H97040	R.015	5/8	5/8	1-1/4	3-1/2
G9H97947N	E5H97947	R.020	5/8	5/8	1-1/4	3-1/2
G9H97948N	E5H97948	R.025	5/8	5/8	1-1/4	3-1/2
G9H97949N	E5H97949	R.030	5/8	5/8	1-1/4	3-1/2
G9H97950N	E5H97950	R.045	5/8	5/8	1-1/4	3-1/2
G9H97951N	E5H97951	R.060	5/8	5/8	1-1/4	3-1/2
G9H97952N	E5H97952	R.090	5/8	5/8	1-1/4	3-1/2
G9H97953N	E5H97953	R.125	5/8	5/8	1-1/4	3-1/2
G9H97048N	E5H97048	R.015	3/4	3/4	1-1/2	4
G9H97954N	E5H97954	R.020	3/4	3/4	1-1/2	4
G9H97955N	E5H97955	R.025	3/4	3/4	1-1/2	4
G9H97956N	E5H97956	R.030	3/4	3/4	1-1/2	4
G9H97957N	E5H97957	R.045	3/4	3/4	1-1/2	4
G9H97958N	E5H97958	R.060	3/4	3/4	1-1/2	4
G9H97959N	E5H97959	R.090	3/4	3/4	1-1/2	4
G9H97960N	E5H97960	R.125	3/4	3/4	1-1/2	4
G9H97961N	E5H97961	R.190	3/4	3/4	1-1/2	4
G9H97962N	E5H97962	R.250	3/4	3/4	1-1/2	4
G9H97064N	E5H97064	R.015	1	1	1-1/2	4

Unit : inch

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

► NEXT PAGE

Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting. ◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	260	160	250	130	230	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE CORNER RADIUS REGULAR LENGTH

X-Coated **G9H97** SERIES  
Uncoated **E5H97** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9H97963N	E5H97963	R.020	1	1	1-1/2	4
G9H97964N	E5H97964	R.025	1	1	1-1/2	4
G9H97965N	E5H97965	R.030	1	1	1-1/2	4
G9H97966N	E5H97966	R.045	1	1	1-1/2	4
G9H97967N	E5H97967	R.060	1	1	1-1/2	4
G9H97968N	E5H97968	R.090	1	1	1-1/2	4
G9H97969N	E5H97969	R.125	1	1	1-1/2	4
G9H97970N	E5H97970	R.190	1	1	1-1/2	4
G9H97971N	E5H97971	R.250	1	1	1-1/2	4

Unit : inch

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting. ◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	260	160	250	130	230	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

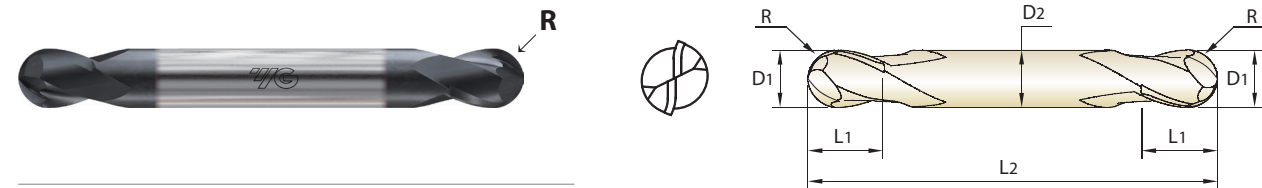
  

ISO Material Description	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE BALL NOSE STUB LENGTH DOUBLE

X-Coated **G9H98** SERIES  
Uncoated **E5H98** SERIES

- Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.
- Same construction features as single end mill in a more economical version



Unit : inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9H98002N	E5H98002	R1/64	1/32	1/8	1/16	1-1/2
G9H98003N	E5H98003	R.0234	3/64	1/8	3/32	1-1/2
G9H98004N	E5H98004	R1/32	1/16	1/8	1/8	1-1/2
G9H98005N	E5H98005	R.0391	5/64	1/8	1/8	1-1/2
G9H98006N	E5H98006	R3/64	3/32	1/8	3/16	1-1/2
G9H98007N	E5H98007	R.0547	7/64	1/8	3/16	1-1/2
G9H98008N	E5H98008	R1/16	1/8	1/8	1/4	1-1/2
G9H98009N	E5H98009	R.0703	9/64	3/16	5/16	2
G9H98010N	E5H98010	R5/64	5/32	3/16	5/16	2
G9H98011N	E5H98011	R.0859	11/64	3/16	5/16	2
G9H98012N	E5H98012	R3/32	3/16	3/16	3/8	2
G9H98013N	E5H98013	R.1016	13/64	1/4	1/2	2-1/2
G9H98014N	E5H98014	R7/64	7/32	1/4	1/2	2-1/2
G9H98015N	E5H98015	R.1172	15/64	1/4	1/2	2-1/2
G9H98016N	E5H98016	R1/8	1/4	1/4	1/2	2-1/2
G9H98018N	E5H98018	R9/64	9/32	5/16	1/2	2-1/2
G9H98020N	E5H98020	R5/32	5/16	5/16	1/2	2-1/2
G9H98022N	E5H98022	R11/64	11/32	3/8	9/16	2-1/2
G9H98024N	E5H98024	R3/16	3/8	3/8	9/16	2-1/2
G9H98028N	E5H98028	R7/32	7/16	7/16	9/16	2-3/4
G9H98032N	E5H98032	R1/4	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
D1=D2	+0/- .002
D1≠D2	+0/- .0012

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE BALL NOSE REGULAR LENGTH

X-Coated **G9I02** SERIES  
Uncoated **E5I02** SERIES

- Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9I02001N	E5I02001	R.0078	1/64	1/8	3/64	1-1/2
G9I02002N	E5I02002	R1/64	1/32	1/8	1/8	1-1/2
G9I02003N	E5I02003	R.0234	3/64	1/8	1/8	1-1/2
G9I02004N	E5I02004	R1/32	1/16	1/8	1/8	1-1/2
G9I02005N	E5I02005	R.0391	5/64	1/8	1/4	1-1/2
G9I02006N	E5I02006	R3/64	3/32	1/8	3/8	1-1/2
G9I02007N	E5I02007	R.0547	7/64	1/8	3/8	1-1/2
G9I02008N	E5I02008	R1/16	1/8	1/8	1/2	1-1/2
G9I02009N	E5I02009	R.0703	9/64	3/16	9/16	2
G9I02010N	E5I02010	R5/64	5/32	3/16	9/16	2
G9I02011N	E5I02011	R.0859	11/64	3/16	9/16	2
G9I02012N	E5I02012	R3/32	3/16	3/16	5/8	2
G9I02013N	E5I02013	R.1016	13/64	1/4	5/8	2-1/2
G9I02014N	E5I02014	R7/64	7/32	1/4	5/8	2-1/2
G9I02015N	E5I02015	R.1172	15/64	1/4	3/4	2-1/2
G9I02016N	E5I02016	R1/8	1/4	1/4	3/4	2-1/2
G9I02017N	E5I02017	R.1328	17/64	5/16	3/4	2-1/2
G9I02018N	E5I02018	R9/64	9/32	5/16	3/4	2-1/2
G9I02019N	E5I02019	R.1484	19/64	5/16	13/16	2-1/2
G9I02020N	E5I02020	R5/32	5/16	5/16	13/16	2-1/2
G9I02021N	E5I02021	R.1641	21/64	3/8	1	2-1/2
G9I02022N	E5I02022	R11/64	11/32	3/8	1	2-1/2
G9I02023N	E5I02023	R.1797	23/64	3/8	1	2-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/- .0012	+0/- .0005

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

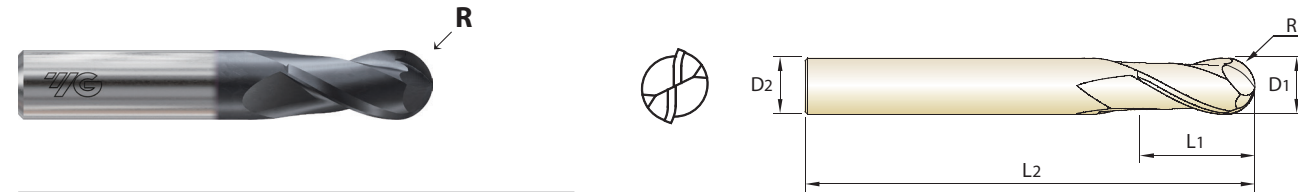
ISO Material Description	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE BALL NOSE REGULAR LENGTH

X-Coated **G9102** SERIES  
Uncoated **E5102** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

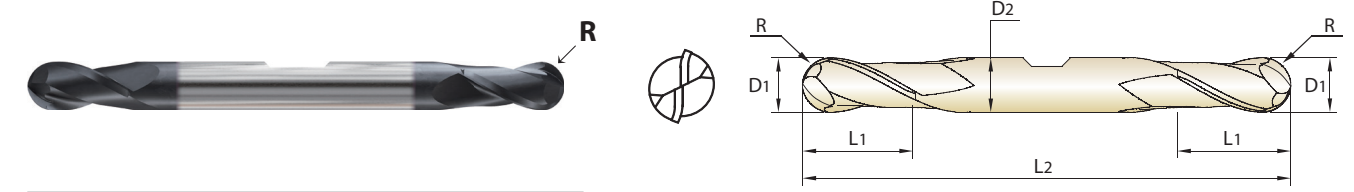
EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
<b>G9102024N</b>	<b>E5102024</b>	R3/16	3/8	3/8	1	2-1/2
<b>G9102025N</b>	<b>E5102025</b>	R.1953	25/64	7/16	1	2-3/4
<b>G9102026N</b>	<b>E5102026</b>	R13/64	13/32	7/16	1	2-3/4
<b>G9102027N</b>	<b>E5102027</b>	R.2109	27/64	7/16	1	2-3/4
<b>G9102028N</b>	<b>E5102028</b>	R7/32	7/16	7/16	1	2-3/4
<b>G9102029N</b>	<b>E5102029</b>	R.2266	29/64	1/2	1	3
<b>G9102030N</b>	<b>E5102030</b>	R15/64	15/32	1/2	1	3
<b>G9102031N</b>	<b>E5102031</b>	R.2422	31/64	1/2	1	3
<b>G9102032N</b>	<b>E5102032</b>	R1/4	1/2	1/2	1	3
<b>G9102036N</b>	<b>E5102036</b>	R9/32	9/16	9/16	1-1/4	3-1/2
<b>G9102040N</b>	<b>E5102040</b>	R5/16	5/8	5/8	1-1/4	3-1/2
<b>G9102044N</b>	<b>E5102044</b>	R11/32	11/16	3/4	1-1/2	4
<b>G9102048N</b>	<b>E5102048</b>	R3/8	3/4	3/4	1-1/2	4
<b>G9102056N</b>	<b>E5102056</b>	R7/16	7/8	7/8	1-1/2	4
<b>G9102064N</b>	<b>E5102064</b>	R1/2	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.012	+0/-0.005

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE BALL NOSE REGULAR LENGTH DOUBLE

X-Coated **G9104** SERIES  
Uncoated **E5104** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.  
► Same construction features as single end mill in a more economical version



Unit : inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
<b>G9104008N</b>	<b>E5104008</b>	R1/16	1/8	3/8	3/8	3
<b>G9104010N</b>	<b>E5104010</b>	R5/64	5/32	3/8	7/16	3
<b>G9104012N</b>	<b>E5104012</b>	R3/32	3/16	3/8	1/2	3
<b>G9104014N</b>	<b>E5104014</b>	R7/64	7/32	3/8	9/16	3-1/2
<b>G9104016N</b>	<b>E5104016</b>	R1/8	1/4	3/8	5/8	3-1/2
<b>G9104018N</b>	<b>E5104018</b>	R9/64	9/32	3/8	11/16	3-1/2
<b>G9104020N</b>	<b>E5104020</b>	R5/32	5/16	3/8	3/4	3-1/2
<b>G9104022N</b>	<b>E5104022</b>	R11/64	11/32	3/8	3/4	3-1/2
<b>G9104024N</b>	<b>E5104024</b>	R3/16	3/8	3/8	3/4	3-1/2
<b>G9104028N</b>	<b>E5104028</b>	R7/32	7/16	1/2	7/8	4
<b>G9104032N</b>	<b>E5104032</b>	R1/4	1/2	1/2	1	4

Mill Dia. Tolerance (inch)	
D1=D2	+0/-0.002
D1≠D2	+0/-0.012

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N				S										H							
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N				S										H							
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE BALL NOSE LONG LENGTH

X-Coated **G9I07** SERIES  
Uncoated **E5I07** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
<b>G9I07008N</b>	<b>E5I07008</b>	R1/16	1/8	1/8	3/4	2-1/4
<b>G9I07010N</b>	<b>E5I07010</b>	R5/64	5/32	3/16	3/4	2-1/2
<b>G9I07012N</b>	<b>E5I07012</b>	R3/32	3/16	3/16	3/4	2-1/2
<b>G9I07016N</b>	<b>E5I07016</b>	R1/8	1/4	1/4	3/4	2-1/2
<b>G9I07901N</b>	<b>E5I07901</b>	R1/8	1/4	1/4	1-1/8	3
<b>G9I07020N</b>	<b>E5I07020</b>	R5/32	5/16	5/16	1-1/8	3
<b>G9I07024N</b>	<b>E5I07024</b>	R3/16	3/8	3/8	1	2-1/2
<b>G9I07902N</b>	<b>E5I07902</b>	R3/16	3/8	3/8	1-1/8	3
<b>G9I07028N</b>	<b>E5I07028</b>	R7/32	7/16	7/16	2	4
<b>G9I07032N</b>	<b>E5I07032</b>	R1/4	1/2	1/2	2	4
<b>G9I07040N</b>	<b>E5I07040</b>	R5/16	5/8	5/8	2-1/4	5
<b>G9I07048N</b>	<b>E5I07048</b>	R3/8	3/4	3/4	2-1/4	5
<b>G9I07064N</b>	<b>E5I07064</b>	R1/2	1	1	2-1/4	5

Unit : inch

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE BALL NOSE STUB LENGTH

X-Coated **G9H99** SERIES  
Uncoated **E5H99** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
<b>G9H99002N</b>	<b>E5H99002</b>	R1/64	1/32	1/8	1/16	1-1/2
<b>G9H99003N</b>	<b>E5H99003</b>	R.0234	3/64	1/8	3/32	1-1/2
<b>G9H99004N</b>	<b>E5H99004</b>	R1/32	1/16	1/8	1/8	1-1/2
<b>G9H99005N</b>	<b>E5H99005</b>	R.0391	5/64	1/8	1/8	1-1/2
<b>G9H99901N</b>	<b>E5H99901</b>	R.0391	5/64	1/8	5/32	1-1/2
<b>G9H99006N</b>	<b>E5H99006</b>	R3/64	3/32	1/8	3/16	1-1/2
<b>G9H99007N</b>	<b>E5H99007</b>	R.0547	7/64	1/8	3/16	1-1/2
<b>G9H99902N</b>	<b>E5H99902</b>	R.0547	7/64	1/8	7/32	1-1/2
<b>G9H99008N</b>	<b>E5H99008</b>	R1/16	1/8	1/8	1/4	1-1/2
<b>G9H99009N</b>	<b>E5H99009</b>	R.0703	9/64	3/16	9/32	2
<b>G9H99903N</b>	<b>E5H99903</b>	R.0703	9/64	3/16	5/16	2
<b>G9H99010N</b>	<b>E5H99010</b>	R5/64	5/32	3/16	5/16	2
<b>G9H99011N</b>	<b>E5H99011</b>	R.0859	11/64	3/16	5/16	2
<b>G9H99012N</b>	<b>E5H99012</b>	R3/32	3/16	3/16	3/8	2
<b>G9H99013N</b>	<b>E5H99013</b>	R.1016	13/64	1/4	3/8	2
<b>G9H99904N</b>	<b>E5H99904</b>	R.1016	13/64	1/4	1/2	2-1/2
<b>G9H99014N</b>	<b>E5H99014</b>	R7/64	7/32	1/4	7/16	2
<b>G9H99906N</b>	<b>E5H99906</b>	R7/64	7/32	1/4	1/2	2-1/2
<b>G9H99015N</b>	<b>E5H99015</b>	R.1172	15/64	1/4	7/16	2
<b>G9H99905N</b>	<b>E5H99905</b>	R.1172	15/64	1/4	1/2	2-1/2
<b>G9H99016N</b>	<b>E5H99016</b>	R1/8	1/4	1/4	1/2	2
<b>G9H99907N</b>	<b>E5H99907</b>	R1/8	1/4	1/4	1/2	2-1/2
<b>G9H99017N</b>	<b>E5H99017</b>	R.1328	17/64	5/16	1/2	2-1/2
<b>G9H99018N</b>	<b>E5H99018</b>	R9/64	9/32	5/16	1/2	2

Unit : inch

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

► NEXT PAGE

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	15	29	32	38	15	35	15	23	10	10	26	3	25	13	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	15	29	32	38	15	35	15	23	10	10	26	3	25	13	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

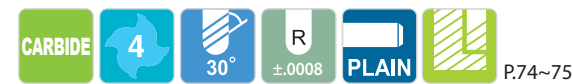
  

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE BALL NOSE STUB LENGTH

X-Coated **G9H99** SERIES  
Uncoated **E5H99** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
<b>G9H99019N</b>	<b>E5H99019</b>	R.1484	<b>19/64</b>	5/16	1/2	2-1/2
<b>G9H99020N</b>	<b>E5H99020</b>	R5/32	<b>5/16</b>	5/16	1/2	2
<b>G9H9908N</b>	<b>E5H9908</b>	R5/32	<b>5/16</b>	5/16	1/2	2-1/2
<b>G9H99022N</b>	<b>E5H99022</b>	R11/64	<b>11/32</b>	3/8	9/16	2-1/2
<b>G9H99024N</b>	<b>E5H99024</b>	R3/16	<b>3/8</b>	3/8	5/8	2
<b>G9H9909N</b>	<b>E5H9909</b>	R3/16	<b>3/8</b>	3/8	9/16	2-1/2
<b>G9H99028N</b>	<b>E5H99028</b>	R7/32	<b>7/16</b>	7/16	5/8	2-1/2
<b>G9H9910N</b>	<b>E5H9910</b>	R7/32	<b>7/16</b>	7/16	9/16	2-3/4
<b>G9H99032N</b>	<b>E5H99032</b>	R1/4	<b>1/2</b>	1/2	5/8	2-1/2
<b>G9H9911N</b>	<b>E5H9911</b>	R1/4	<b>1/2</b>	1/2	5/8	3
<b>G9H99040N</b>	<b>E5H99040</b>	R5/16	<b>5/8</b>	5/8	3/4	3
<b>G9H99048N</b>	<b>E5H99048</b>	R3/8	<b>3/4</b>	3/4	1	3

Unit : inch

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

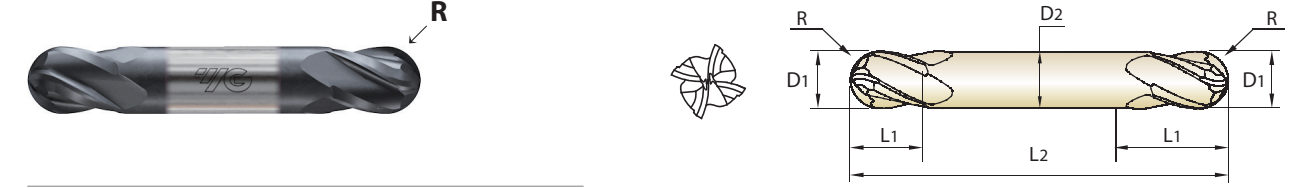
  

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34								55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE BALL NOSE STUB LENGTH DOUBLE

X-Coated **G9I01** SERIES  
Uncoated **E5I01** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.  
► Same construction features as single end mill in a more economical version



EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
<b>G9I01002N</b>	<b>E5I01002</b>	R1/64	<b>1/32</b>	1/8	1/16	1-1/2
<b>G9I01003N</b>	<b>E5I01003</b>	R.0234	<b>3/64</b>	1/8	3/32	1-1/2
<b>G9I01004N</b>	<b>E5I01004</b>	R1/32	<b>1/16</b>	1/8	1/8	1-1/2
<b>G9I01005N</b>	<b>E5I01005</b>	R.0391	<b>5/64</b>	1/8	1/8	1-1/2
<b>G9I01901N</b>	<b>E5I01901</b>	R.0391	<b>5/64</b>	1/8	5/32	1-1/2
<b>G9I01006N</b>	<b>E5I01006</b>	R3/64	<b>3/32</b>	1/8	3/16	1-1/2
<b>G9I01007N</b>	<b>E5I01007</b>	R.0547	<b>7/64</b>	1/8	3/16	1-1/2
<b>G9I01902N</b>	<b>E5I01902</b>	R.0547	<b>7/64</b>	1/8	7/32	1-1/2
<b>G9I01008N</b>	<b>E5I01008</b>	R1/16	<b>1/8</b>	1/8	1/4	1-1/2
<b>G9I01903N</b>	<b>E5I01903</b>	R.0703	<b>9/64</b>	3/16	9/32	2
<b>G9I01009N</b>	<b>E5I01009</b>	R.0703	<b>9/64</b>	3/16	5/16	2
<b>G9I01010N</b>	<b>E5I01010</b>	R5/64	<b>5/32</b>	3/16	5/16	2
<b>G9I01011N</b>	<b>E5I01011</b>	R.0859	<b>11/64</b>	3/16	5/16	2
<b>G9I01012N</b>	<b>E5I01012</b>	R3/32	<b>3/16</b>	3/16	3/8	2
<b>G9I01013N</b>	<b>E5I01013</b>	R.1016	<b>13/64</b>	1/4	3/8	2
<b>G9I01904N</b>	<b>E5I01904</b>	R.1016	<b>13/64</b>	1/4	1/2	2-1/2
<b>G9I01014N</b>	<b>E5I01014</b>	R7/64	<b>7/32</b>	1/4	7/16	2
<b>G9I01905N</b>	<b>E5I01905</b>	R7/64	<b>7/32</b>	1/4	1/2	2-1/2
<b>G9I01015N</b>	<b>E5I01015</b>	R.1172	<b>15/64</b>	1/4	7/16	2
<b>G9I01906N</b>	<b>E5I01906</b>	R.1172	<b>15/64</b>	1/4	1/2	2-1/2
<b>G9I01016N</b>	<b>E5I01016</b>	R1/8	<b>1/4</b>	1/4	1/2	2
<b>G9I01907N</b>	<b>E5I01907</b>	R1/8	<b>1/4</b>	1/4	1/2	2-1/2
<b>G9I01017N</b>	<b>E5I01017</b>	R.1328	<b>17/64</b>	5/16	1/2	2-1/2
<b>G9I01018N</b>	<b>E5I01018</b>	R9/64	<b>9/32</b>	5/16	1/2	2

► NEXT PAGE

Mill Dia. Tolerance (inch)	
D1=D2	+0/-0.002
D1≠D2	+0/-0.0012

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

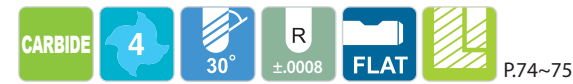
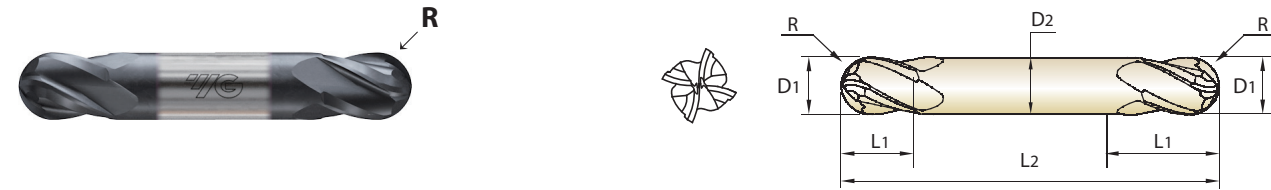
ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34								55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE BALL NOSE STUB LENGTH DOUBLE

X-Coated **G9101** SERIES  
Uncoated **E5101** SERIES

- Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.
- Same construction features as single end mill in a more economical version



Unit : inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut		Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2	
<b>G9101908N</b>	<b>E5101908</b>	R9/64	<b>9/32</b>	5/16	1/2	2-1/2	
<b>G9101019N</b>	<b>E5101019</b>	R.1484	<b>19/64</b>	5/16	1/2	2-1/2	
<b>G9101020N</b>	<b>E5101020</b>	R5/32	<b>5/16</b>	5/16	1/2	2	
<b>G9101909N</b>	<b>E5101909</b>	R5/32	<b>5/16</b>	5/16	1/2	2-1/2	
<b>G9101022N</b>	<b>E5101022</b>	R11/64	<b>11/32</b>	3/8	9/16	2-1/2	
<b>G9101910N</b>	<b>E5101910</b>	R3/16	<b>3/8</b>	3/8	9/16	2-1/2	
<b>G9101028N</b>	<b>E5101028</b>	R7/32	<b>7/16</b>	7/16	9/16	2-3/4	
<b>G9101911N</b>	<b>E5101911</b>	R7/32	<b>7/16</b>	7/16	5/8	2-1/2	
<b>G9101032N</b>	<b>E5101032</b>	R1/4	<b>1/2</b>	1/2	5/8	2-1/2	
<b>G9101912N</b>	<b>E5101912</b>	R1/4	<b>1/2</b>	1/2	5/8	3	
<b>G9101040N</b>	<b>E5101040</b>	R5/16	<b>5/8</b>	5/8	3/4	3	
<b>G9101048N</b>	<b>E5101048</b>	R3/8	<b>3/4</b>	3/4	1	3	

Mill Dia. Tolerance (inch)	
D1=D2	+0/-0.002
D1≠D2	+0/-0.012

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	29	32	38	35	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

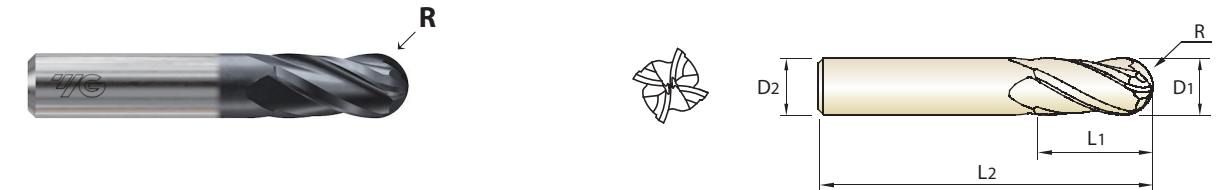
  

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE BALL NOSE REGULAR LENGTH

X-Coated **G9105** SERIES  
Uncoated **E5105** SERIES

- Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut		Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2	
<b>G9105001N</b>	<b>E5105001</b>	R.0078	<b>1/64</b>	1/8	3/64	1-1/2	
<b>G9105002N</b>	<b>E5105002</b>	R1/64	<b>1/32</b>	1/8	3/32	1-1/2	
<b>G9105901N</b>	<b>E5105901</b>	R1/64	<b>1/32</b>	1/8	1/8	1-1/2	
<b>G9105003N</b>	<b>E5105003</b>	R.0234	<b>3/64</b>	1/8	1/8	1-1/2	
<b>G9105004N</b>	<b>E5105004</b>	R1/32	<b>1/16</b>	1/8	1/4	1-1/2	
<b>G9105005N</b>	<b>E5105005</b>	R.0391	<b>5/64</b>	1/8	1/4	1-1/2	
<b>G9105006N</b>	<b>E5105006</b>	R3/64	<b>3/32</b>	1/8	3/8	1-1/2	
<b>G9105007N</b>	<b>E5105007</b>	R.0547	<b>7/64</b>	1/8	3/8	1-1/2	
<b>G9105008N</b>	<b>E5105008</b>	R1/16	<b>1/8</b>	1/8	1/2	1-1/2	
<b>G9105009N</b>	<b>E5105009</b>	R.0703	<b>9/64</b>	3/16	9/16	2	
<b>G9105010N</b>	<b>E5105010</b>	R5/64	<b>5/32</b>	3/16	9/16	2	
<b>G9105011N</b>	<b>E5105011</b>	R.0859	<b>11/64</b>	3/16	9/16	2	
<b>G9105902N</b>	<b>E5105902</b>	R.0859	<b>11/64</b>	3/16	5/8	2	
<b>G9105012N</b>	<b>E5105012</b>	R3/32	<b>3/16</b>	3/16	5/8	2	
<b>G9105013N</b>	<b>E5105013</b>	R.1016	<b>13/64</b>	1/4	5/8	2-1/2	
<b>G9105014N</b>	<b>E5105014</b>	R7/64	<b>7/32</b>	1/4	5/8	2-1/2	
<b>G9105015N</b>	<b>E5105015</b>	R.1172	<b>15/64</b>	1/4	3/4	2-1/2	
<b>G9105016N</b>	<b>E5105016</b>	R1/8	<b>1/4</b>	1/4	3/4	2-1/2	
<b>G9105017N</b>	<b>E5105017</b>	R.1328	<b>17/64</b>	5/16	3/4	2-1/2	
<b>G9105018N</b>	<b>E5105018</b>	R9/64	<b>9/32</b>	5/16	3/4	2-1/2	
<b>G9105019N</b>	<b>E5105019</b>	R.1484	<b>19/64</b>	5/16	13/16	2-1/2	
<b>G9105020N</b>	<b>E5105020</b>	R5/32	<b>5/16</b>	5/16	13/16	2-1/2	
<b>G9105021N</b>	<b>E5105021</b>	R.1641	<b>21/64</b>	3/8	1	2-1/2	
<b>G9105022N</b>	<b>E5105022</b>	R11/64	<b>11/32</b>	3/8	7/8	2-1/2	

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.012	+0/-0.005

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	29	32	38	35	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

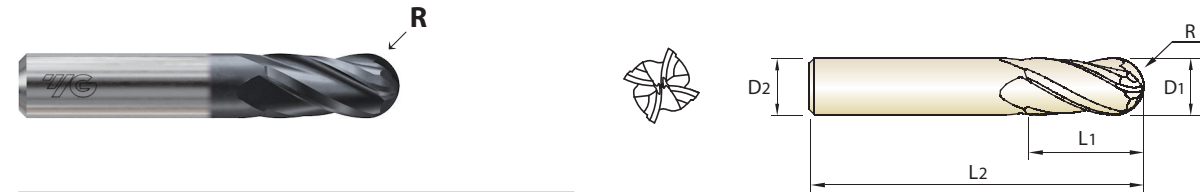
  

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE BALL NOSE REGULAR LENGTH

X-Coated **G9105** SERIES  
Uncoated **E5105** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9105903N	E5105903	R11/64	11/32	3/8	1	2-1/2
G9105023N	E5105023	R.1797	23/64	3/8	1	2-1/2
G9105024N	E5105024	R3/16	3/8	3/8	1	2-1/2
G9105025N	E5105025	R.1953	25/64	7/16	1	2-3/4
G9105026N	E5105026	R13/64	13/32	7/16	1	2-3/4
G9105027N	E5105027	R.2109	27/64	7/16	1	2-3/4
G9105028N	E5105028	R7/32	7/16	7/16	1	2-3/4
G9105029N	E5105029	R.2266	29/64	1/2	1	3
G9105030N	E5105030	R15/64	15/32	1/2	1	3
G9105031N	E5105031	R.2422	31/64	1/2	1	3
G9105032N	E5105032	R1/4	1/2	1/2	1	3
G9105036N	E5105036	R9/32	9/16	9/16	1-1/4	3-1/2
G9105040N	E5105040	R5/16	5/8	5/8	1-1/4	3-1/2
G9105044N	E5105044	R11/32	11/16	3/4	1-1/2	4
G9105048N	E5105048	R3/8	3/4	3/4	1-1/2	4
G9105056N	E5105056	R7/16	7/8	7/8	1-1/2	4
G9105064N	E5105064	R1/2	1	1	1-1/2	4

Unit : inch

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.012	+0/-0.005

◎ : Excellent ○ : Good

ISO Material Description	P										M			K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

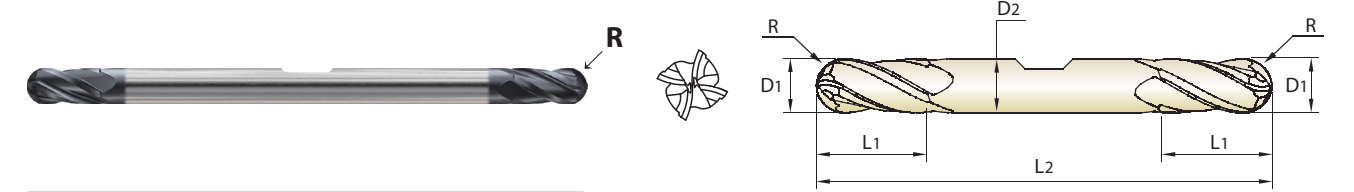
  

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE BALL NOSE REGULAR LENGTH DOUBLE

X-Coated **G9106** SERIES  
Uncoated **E5106** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.  
► Same construction features as single end mill in a more economical version



EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
G9106008N	E5106008	R1/16	1/8	3/8	3/8	3
G9106010N	E5106010	R5/64	5/32	3/8	7/16	3
G9106012N	E5106012	R3/32	3/16	3/8	1/2	3
G9106014N	E5106014	R7/64	7/32	3/8	9/16	3-1/2
G9106016N	E5106016	R1/8	1/4	3/8	5/8	3-1/2
G9106018N	E5106018	R9/64	9/32	3/8	11/16	3-1/2
G9106020N	E5106020	R5/32	5/16	3/8	3/4	3-1/2
G9106022N	E5106022	R11/64	11/32	3/8	3/4	3-1/2
G9106024N	E5106024	R3/16	3/8	3/8	3/4	3-1/2
G9106028N	E5106028	R7/32	7/16	1/2	7/8	4
G9106032N	E5106032	R1/4	1/2	1/2	1	4

Unit : inch

Mill Dia. Tolerance (inch)	
D1=D2	+0/-0.002
D1≠D2	+0/-0.012

◎ : Excellent ○ : Good

ISO Material Description	P										M			K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

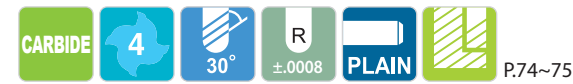
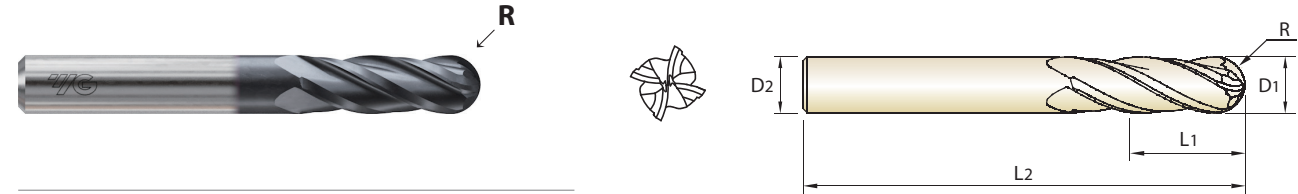
  

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE BALL NOSE LONG LENGTH

X-Coated **G9108** SERIES  
Uncoated **E5108** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

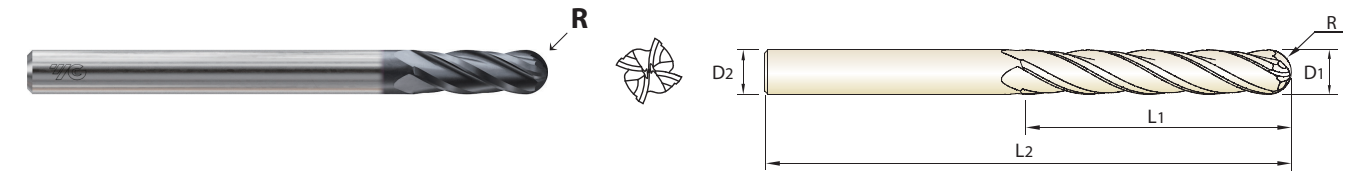
EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
<b>G9108008N</b>	<b>E5108008</b>	R1/16	1/8	1/8	3/4	2-1/4
<b>G9108010N</b>	<b>E5108010</b>	R5/64	5/32	3/16	3/4	2-1/2
<b>G9108012N</b>	<b>E5108012</b>	R3/32	3/16	3/16	3/4	2-1/2
<b>G9108016N</b>	<b>E5108016</b>	R1/8	1/4	1/4	1-1/8	3
<b>G9108020N</b>	<b>E5108020</b>	R5/32	5/16	5/16	1-1/8	3
<b>G9108024N</b>	<b>E5108024</b>	R3/16	3/8	3/8	1-1/8	3
<b>G9108028N</b>	<b>E5108028</b>	R7/32	7/16	7/16	2	4
<b>G9108032N</b>	<b>E5108032</b>	R1/4	1/2	1/2	1-1/2	4
<b>G9108901N</b>	<b>E5108901</b>	R1/4	1/2	1/2	2	4
<b>G9108040N</b>	<b>E5108040</b>	R5/16	5/8	5/8	2-1/4	5
<b>G9108048N</b>	<b>E5108048</b>	R3/8	3/4	3/4	2-1/4	5
<b>G9108064N</b>	<b>E5108064</b>	R1/2	1	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE BALL NOSE EXTRA LONG LENGTH

X-Coated **G9109** SERIES  
Uncoated **E5109** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
<b>G9109008N</b>	<b>E5109008</b>	R1/16	1/8	1/8	1	3
<b>G9109010N</b>	<b>E5109010</b>	R5/64	5/32	3/16	1-1/8	3
<b>G9109012N</b>	<b>E5109012</b>	R3/32	3/16	3/16	1-1/8	3
<b>G9109016N</b>	<b>E5109016</b>	R1/8	1/4	1/4	1	4
<b>G9109018N</b>	<b>E5109018</b>	R1/8	1/4	1/4	1-1/2	4
<b>G9109020N</b>	<b>E5109020</b>	R5/32	5/16	5/16	1-1/2	6
<b>G9109022N</b>	<b>E5109022</b>	R3/16	3/8	3/8	1-1/2	6
<b>G9109024N</b>	<b>E5109024</b>	R3/16	3/8	3/8	1-3/4	4
<b>G9109028N</b>	<b>E5109028</b>	R7/32	7/16	7/16	3	6
<b>G9109032N</b>	<b>E5109032</b>	R1/4	1/2	1/2	1-1/2	6
<b>G9109034N</b>	<b>E5109034</b>	R1/4	1/2	1/2	3	6
<b>G9109040N</b>	<b>E5109040</b>	R5/16	5/8	5/8	1-1/2	6
<b>G9109042N</b>	<b>E5109042</b>	R5/16	5/8	5/8	3	6
<b>G9109048N</b>	<b>E5109048</b>	R3/8	3/4	3/4	1-1/2	6
<b>G9109050N</b>	<b>E5109050</b>	R3/8	3/4	3/4	3	6
<b>G9109052N</b>	<b>E5109052</b>	R1/2	1	1	1-1/2	6
<b>G9109064N</b>	<b>E5109064</b>	R1/2	1	1	3	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0012	+0/-0.0005

◎ : Excellent ○ : Good

ISO Material Description	P										M			K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO Material Description	P										M			K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

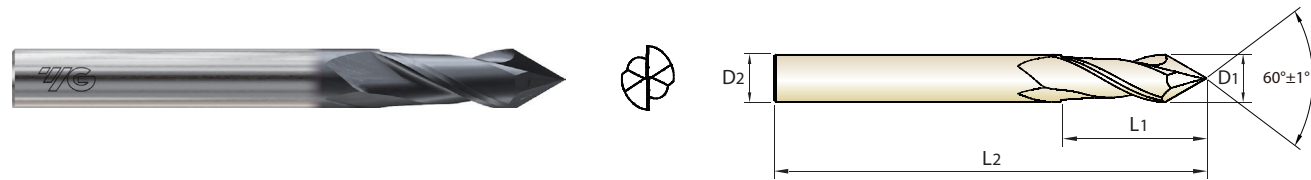
  

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



X-COATED & UNCOATED SOLID CARBIDE END MILLS  
2 FLUTE DRILL MILL(60°) REGULAR LENGTH

X-Coated **G9I31** SERIES  
Uncoated **E5I31** SERIES



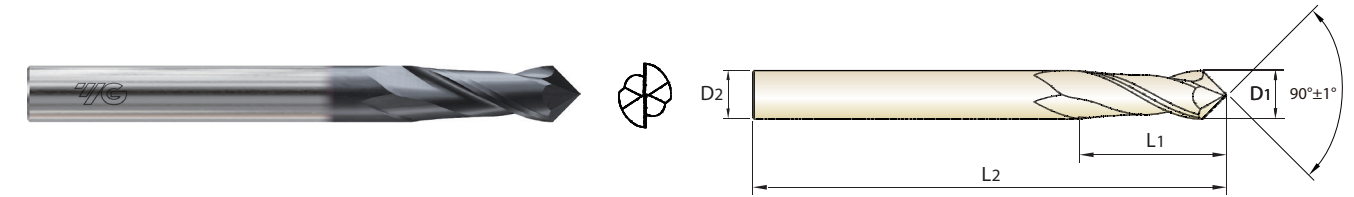
Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9I31008N</b>	<b>E5I31008</b>	1/8	1/8	1/2	1-1/2
<b>G9I31012N</b>	<b>E5I31012</b>	3/16	3/16	5/8	2
<b>G9I31016N</b>	<b>E5I31016</b>	1/4	1/4	3/4	2-1/2
<b>G9I31020N</b>	<b>E5I31020</b>	5/16	5/16	13/16	2-1/2
<b>G9I31024N</b>	<b>E5I31024</b>	3/8	3/8	1	2-1/2
<b>G9I31028N</b>	<b>E5I31028</b>	7/16	7/16	1	2-3/4
<b>G9I31032N</b>	<b>E5I31032</b>	1/2	1/2	1	3
<b>G9I31040N</b>	<b>E5I31040</b>	5/8	5/8	1-1/4	3-1/2
<b>G9I31048N</b>	<b>E5I31048</b>	3/4	3/4	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0020	+0/-0.0005

X-COATED & UNCOATED SOLID CARBIDE END MILLS  
2 FLUTE DRILL MILL(90°) REGULAR LENGTH

X-Coated **G9I33** SERIES  
Uncoated **E5I33** SERIES



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9I33008N</b>	<b>E5I33008</b>	1/8	1/8	1/2	1-1/2
<b>G9I33012N</b>	<b>E5I33012</b>	3/16	3/16	5/8	2
<b>G9I33016N</b>	<b>E5I33016</b>	1/4	1/4	3/4	2-1/2
<b>G9I33020N</b>	<b>E5I33020</b>	5/16	5/16	13/16	2-1/2
<b>G9I33024N</b>	<b>E5I33024</b>	3/8	3/8	1	2-1/2
<b>G9I33028N</b>	<b>E5I33028</b>	7/16	7/16	1	2-3/4
<b>G9I33032N</b>	<b>E5I33032</b>	1/2	1/2	1	3
<b>G9I33040N</b>	<b>E5I33040</b>	5/8	5/8	1-1/4	3-1/2
<b>G9I33048N</b>	<b>E5I33048</b>	3/4	3/4	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0020	+0/-0.0005

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

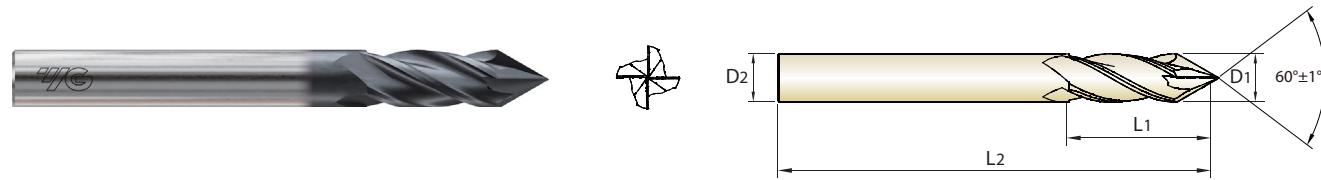
ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

X-COATED & UNCOATED SOLID CARBIDE END MILLS  
4 FLUTE DRILL MILL(60°) REGULAR LENGTH

X-Coated **G9I32** SERIES  
Uncoated **E5I32** SERIES



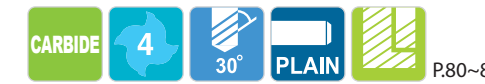
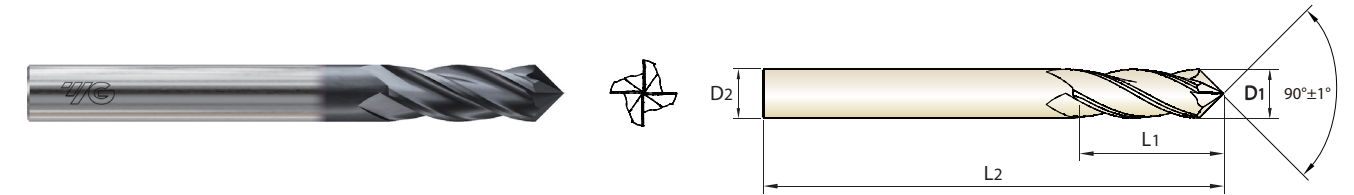
Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9I32008N</b>	<b>E5I32008</b>	1/8	1/8	1/2	1-1/2
<b>G9I32012N</b>	<b>E5I32012</b>	3/16	3/16	5/8	2
<b>G9I32016N</b>	<b>E5I32016</b>	1/4	1/4	3/4	2-1/2
<b>G9I32020N</b>	<b>E5I32020</b>	5/16	5/16	13/16	2-1/2
<b>G9I32024N</b>	<b>E5I32024</b>	3/8	3/8	1	2-1/2
<b>G9I32028N</b>	<b>E5I32028</b>	7/16	7/16	1	2-3/4
<b>G9I32032N</b>	<b>E5I32032</b>	1/2	1/2	1	3
<b>G9I32040N</b>	<b>E5I32040</b>	5/8	5/8	1-1/4	3-1/2
<b>G9I32048N</b>	<b>E5I32048</b>	3/4	3/4	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0020	+0/-0.0005

X-COATED & UNCOATED SOLID CARBIDE END MILLS  
4 FLUTE DRILL MILL(90°) REGULAR LENGTH

X-Coated **G9I34** SERIES  
Uncoated **E5I34** SERIES



Unit : inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9I34008N</b>	<b>E5I34008</b>	1/8	1/8	1/2	1-1/2
<b>G9I34012N</b>	<b>E5I34012</b>	3/16	3/16	5/8	2
<b>G9I34016N</b>	<b>E5I34016</b>	1/4	1/4	3/4	2-1/2
<b>G9I34020N</b>	<b>E5I34020</b>	5/16	5/16	13/16	2-1/2
<b>G9I34024N</b>	<b>E5I34024</b>	3/8	3/8	1	2-1/2
<b>G9I34028N</b>	<b>E5I34028</b>	7/16	7/16	1	2-3/4
<b>G9I34032N</b>	<b>E5I34032</b>	1/2	1/2	1	3
<b>G9I34040N</b>	<b>E5I34040</b>	5/8	5/8	1-1/4	3-1/2
<b>G9I34048N</b>	<b>E5I34048</b>	3/4	3/4	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
+0/-0.0020	+0/-0.0005

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○																

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○																

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE SQUARE REGULAR LENGTH - METRIC

X-Coated **G9H86** SERIES  
Uncoated **E5H86** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : metric

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H86010N	E5H86010	1	3	4	39
G9H86015N	E5H86015	1.5	3	5	39
G9H86020N	E5H86020	2	3	8	39
G9H86025N	E5H86025	2.5	3	9.5	39
G9H86030N	E5H86030	3	3	12	39
G9H86035N	E5H86035	3.5	4	12	51
G9H86040N	E5H86040	4	4	14	51
G9H86045N	E5H86045	4.5	5	16	51
G9H86050N	E5H86050	5	5	16	51
G9H86060N	E5H86060	6	6	19	63
G9H86070N	E5H86070	7	8	19	63
G9H86080N	E5H86080	8	8	20	63
G9H86090N	E5H86090	9	10	22	63
G9H86100N	E5H86100	10	10	22	76
G9H86110N	E5H86110	11	12	25	76
G9H86120N	E5H86120	12	12	25	76
G9H86140N	E5H86140	14	14	32	90
G9H86160N	E5H86160	16	16	32	102
G9H86180N	E5H86180	18	18	38	102
G9H86200N	E5H86200	20	20	38	102
G9H86250N	E5H86250	25	25	38	102

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
+0/-0.03	h6

\*Only Coated Tools in this series are recommended for stainless steel machining

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N				S										H							
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE SQUARE REGULAR LENGTH - METRIC

X-Coated **G9H89** SERIES  
Uncoated **E5H89** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit : metric

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
G9H89902N	E5H89902	1	3	3	1-1/2"
G9H89010N	E5H89010	1	3	4	1-1/2"
G9H89901N	E5H89901	1	3	4	39
G9H89015N	E5H89015	1.5	3	5	39
G9H89020N	E5H89020	2	3	8	39
G9H89025N	E5H89025	2.5	3	9.5	39
G9H89030N	E5H89030	3	3	12	1-1/2"
G9H89903N	E5H89903	3	3	12	39
G9H89035N	E5H89035	3.5	4	12	51
G9H89040N	E5H89040	4	4	14	51
G9H89045N	E5H89045	4.5	5	16	51
G9H89050N	E5H89050	5	5	16	51
G9H89060N	E5H89060	6	6	19	63
G9H89070N	E5H89070	7	8	19	63
G9H89080N	E5H89080	8	8	20	63
G9H89090N	E5H89090	9	10	22	63
G9H89100N	E5H89100	10	10	22	76
G9H89110N	E5H89110	11	12	25	76
G9H89120N	E5H89120	12	12	25	76
G9H89140N	E5H89140	14	14	32	90
G9H89160N	E5H89160	16	16	32	102
G9H89180N	E5H89180	18	18	38	102
G9H89200N	E5H89200	20	20	38	102
G9H89250N	E5H89250	25	25	38	102

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
+0/-0.03	h6

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

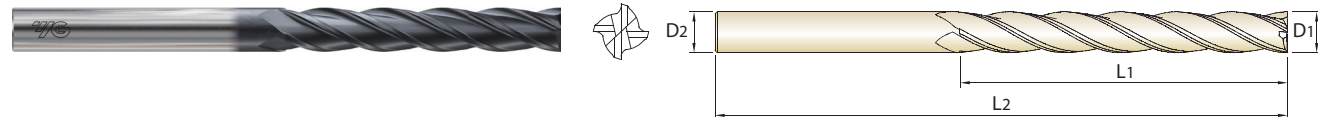
ISO Material Description	N				S										H							
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



### X-COATED & UNCOATED SOLID CARBIDE END MILLS 4 FLUTE SQUARE EXTRA LONG LENGTH - METRIC

X-Coated **G9H95** SERIES  
Uncoated **E5H95** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit: metric

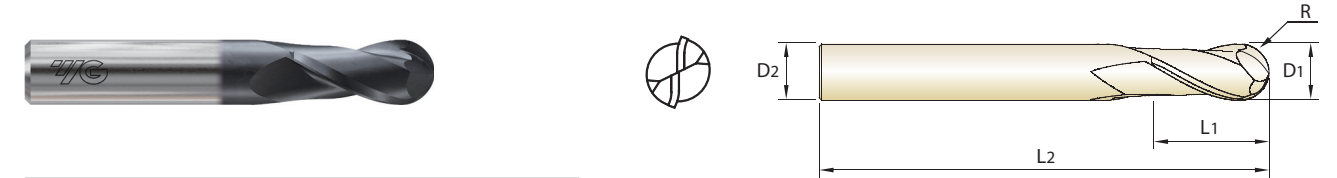
EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	D1	D2	L1	L2
<b>G9H95040N</b>	<b>E5H95040</b>	4	4	25	76
<b>G9H95050N</b>	<b>E5H95050</b>	5	5	25	76
<b>G9H95060N</b>	<b>E5H95060</b>	6	6	40	100
<b>G9H95070N</b>	<b>E5H95070</b>	7	8	40	100
<b>G9H95080N</b>	<b>E5H95080</b>	8	8	44	100
<b>G9H95090N</b>	<b>E5H95090</b>	9	10	50	100
<b>G9H95100N</b>	<b>E5H95100</b>	10	10	50	100
<b>G9H95110N</b>	<b>E5H95110</b>	11	12	76	152
<b>G9H95120N</b>	<b>E5H95120</b>	12	12	76	152
<b>G9H95140N</b>	<b>E5H95140</b>	14	14	76	152
<b>G9H95160N</b>	<b>E5H95160</b>	16	16	76	152
<b>G9H95200N</b>	<b>E5H95200</b>	20	20	76	152

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
+0/-0.03	h6

### X-COATED & UNCOATED SOLID CARBIDE END MILLS 2 FLUTE BALL NOSE REGULAR LENGTH - METRIC

X-Coated **G9I03** SERIES  
Uncoated **E5I03** SERIES

► Suitable for cutting high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



Unit: metric

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
X-Coated	Uncoated	R	D1	D2	L1	L2
<b>G9I03010N</b>	<b>E5I03010</b>	R0.5	1	3	4	39
<b>G9I03901N</b>	<b>E5I03901</b>	R0.5	1	3	5.5	39
<b>G9I03015N</b>	<b>E5I03015</b>	R0.75	1.5	3	5	39
<b>G9I03020N</b>	<b>E5I03020</b>	R1.0	2	3	8	39
<b>G9I03025N</b>	<b>E5I03025</b>	R1.25	2.5	3	9.5	39
<b>G9I03030N</b>	<b>E5I03030</b>	R1.5	3	3	12	39
<b>G9I03035N</b>	<b>E5I03035</b>	R1.75	3.5	4	12	51
<b>G9I03040N</b>	<b>E5I03040</b>	R2.0	4	4	14	51
<b>G9I03045N</b>	<b>E5I03045</b>	R2.25	4.5	5	16	51
<b>G9I03050N</b>	<b>E5I03050</b>	R2.5	5	5	16	51
<b>G9I03060N</b>	<b>E5I03060</b>	R3.0	6	6	19	63
<b>G9I03070N</b>	<b>E5I03070</b>	R3.5	7	8	19	63
<b>G9I03080N</b>	<b>E5I03080</b>	R4.0	8	8	20	63
<b>G9I03090N</b>	<b>E5I03090</b>	R4.5	9	10	22	63
<b>G9I03100N</b>	<b>E5I03100</b>	R5.0	10	10	22	76
<b>G9I03110N</b>	<b>E5I03110</b>	R5.5	11	12	25	76
<b>G9I03120N</b>	<b>E5I03120</b>	R6.0	12	12	25	76
<b>G9I03140N</b>	<b>E5I03140</b>	R7.0	14	14	32	90
<b>G9I03160N</b>	<b>E5I03160</b>	R8.0	16	16	32	102
<b>G9I03180N</b>	<b>E5I03180</b>	R9.0	18	18	38	102
<b>G9I03200N</b>	<b>E5I03200</b>	R10.0	20	20	38	102
<b>G9I03250N</b>	<b>E5I03250</b>	R12.5	25	25	38	102

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
+0/-0.03	h6

\*Only Uncoated Tools in this series are not recommended for stainless steel machining in slotting.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	29	32	38	35	20	325	200	240	180	260	160	250	130	230		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	260	160	250	130	230		
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	29	32	38	35	20	325	200	240	180	260	160	250	130	230		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	260	160	250	130	230		
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

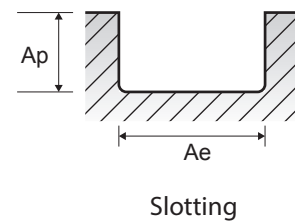
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**G9H80, G9H81, G9H85, G9H87, G9H91, G9H93, G9H96 X-Coated**

**SQUARE / CORNER RADIUS / 2 FLUTE - SLOTTING / INCH**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																																																													
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1																																																			
P	1-2	Non-alloy steel	1.0D	upto Ø1/2 : 0.5D over Ø1/2 : 0.3D	SFM	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650	IPT	.00045	.00059	.00075	.00089	.00119	.00153	.00165	.00178	.00254	.00293	.00370	IPM	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
	3-4				SFM	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	RPM	4430	3540	2950	2220	1770	1480	1270	1110	890	740	550	IPT	.00045	.00060	.00075	.00094	.00125	.00156	.00172	.00187	.00244	.00292	.00389	IPM	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	5				SFM	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460	IPT	.00042	.00055	.00071	.00084	.00110	.00143	.00154	.00166	.00271	.00318	.00411	IPM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	6	Low alloy steel	SFM	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650	IPT	.00045	.00059	.00075	.00089	.00119	.00153	.00165	.00178	.00254	.00293	.00370	IPM	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
	7		SFM	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	RPM	4430	3540	2950	2220	1770	1480	1270	1110	890	740	550	IPT	.00045	.00060	.00075	.00094	.00125	.00156	.00172	.00187	.00244	.00292	.00389	IPM	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	8-9		SFM	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460	IPT	.00042	.00055	.00071	.00084	.00110	.00143	.00154	.00166	.00271	.00318	.00411	IPM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	10	High alloyed steel, and tool steel	SFM	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650	IPT	.00045	.00059	.00075	.00089	.00119	.00153	.00165	.00178	.00254	.00293	.00370	IPM	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	11.1		SFM	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460	IPT	.00042	.00055	.00071	.00084	.00110	.00143	.00154	.00166	.00271	.00318	.00411	IPM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	M	14.1	Stainless steel	1.0D	upto Ø1/2 : 0.5D over Ø1/2 : 0.3D	SFM	120	120	120	120	120	120	120	120	120	120	120	120	120	120	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460	IPT	.00042	.00055	.00071	.00084	.00110	.00143	.00154	.00166	.00271	.00318	.00411	IPM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	upto Ø1/2 : 0.5D over Ø1/2 : 0.3D	SFM	195	195	195	195	195	195	195	195	195	195	195	195	195	195	RPM	5960	4770	3970	2980	2380	1990	1700	1490	1190	990	740	IPT	.00064	.00084	.00107	.00151	.00221	.00271	.00320	.00369	.00514	.00609	.00800	IPM	8	8	8	9	11	11	11	11	12	12	12											
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	1.0D	SFM	490	490	490	490	490	490	490	490	490	490	490	490	490	490	RPM	14970	11980	9980	7490	5990	4990	4280	3740	2990	2500	1870	IPT	.00053	.00075	.00090	.00113	.00150	.00186	.00208	.00229	.00300	.00360	.00480	IPM	16	18	18	17	18	18	18	18	18	18	18												
	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	1.0D	1.0D	SFM	370	370	370	370	370	370	370	370	370	370	370	370	370	370	RPM	11310	9050	7540	5650	4520	3770	3230	2830	2260	1880	1410	IPT	.00055	.00068	.00088	.00116	.00151	.00195	.00213	.00232	.00302	.00359	.00473	IPM	12	12	13	13	14	15	14	13	14	14	13												



**E5H80, E5H81, E5H85, E5H87, E5H91, E5H93, E5H96 Uncoated**

**SQUARE / CORNER RADIUS / 2 FLUTE - SLOTTING / INCH**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																																																														
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1																																																				
P	1-2	Non-alloy steel	1.0D	upto Ø1/2 : 0.5D over Ø1/2 : 0.3D	SFM	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420	IPT	.00043	.00056	.00072	.00088	.00113	.00143	.00159	.00175	.00251	.00296	.00387	IPM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	3-4				SFM	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	RPM	2900	2320	1940	1450	1160	970	830	730	580	480	360	IPT	.00045	.00060	.00076	.00090	.00120	.00152	.00166	.00180	.00255	.00298	.00383	IPM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	5				SFM	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	RPM	2440	1960	1630	1220	980	810	700	610	490	410	310	IPT	.00042	.00054	.00068	.00083	.00108	.00135	.00149	.00164	.00270	.00315	.00405	IPM	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	6	Low alloy steel	SFM	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420	IPT	.00043	.00056	.00072	.00088	.00113	.00143	.00159	.00175	.00251	.00296	.00387	IPM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	7		SFM	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	RPM	2900	2320	1940	1450	1160	970	830	730	580	480	360	IPT	.00045	.00060	.00076	.00090	.00120	.00152	.00166	.00180	.00255	.00298	.00383	IPM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	8-9		SFM	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	RPM	2440	1960	1630	1220	980	810	700	610	490	410	310	IPT	.00042	.00054	.00068	.00083	.00108	.00135	.00149	.00164	.00270	.00315	.00405	IPM	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	10	High alloyed steel, and tool steel	SFM	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420	IPT	.00043	.00056	.00072	.00088	.00113	.00143	.00159	.00175	.00251	.00296	.00387	IPM	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
	11.1		SFM	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	RPM	2440	1960	1630	1220	980	810	700	610	490	410	310	IPT	.00042	.00054	.00068	.00083	.00108	.00135	.00149	.00164	.00270	.00315	.00405	IPM	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	upto Ø1/2 : 0.5D over Ø1/2 : 0.3D	SFM	125	125	125	125	125	125	125	125	125	125	125	125	125	125	RPM	3820	3060	2550	1910	1530	1270	1090	950	760	640	480	IPT	.00063	.00083	.00106	.00152	.00211	.00273	.00323	.00374	.00501	.00612	.00835	IPM	5	5	5	6	6	7	7	7	8	8	8												
	N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	1.0D	SFM	315	315	315	315	315	315	315	315	315	315	315	315	315	315	RPM	9630	7700	6420	4810	3850	3210	2750	2410	1930	1600	1200	IPT																																			



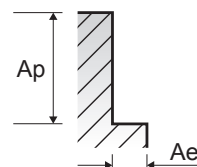


**G9H82, G9110 X-Coating**

**SQUARE / 3 FLUTE - SIDE CUTTING / INCH**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	
P	1-2	Non-alloy steel	0.1D	1.5D	SFM	170	170	170	170	170	170	170	170	170	170	170	170
					RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650	
					IPT	.00064	.00085	.00108	.00129	.00172	.00221	.00239	.00258	.00383	.00441	.00558	
	3-4		SFM	145	145	145	145	145	145	145	145	145	145	145	145		
			RPM	4430	3540	2950	2220	1770	1480	1270	1110	890	740	550			
			IPT	.00065	.00088	.00110	.00137	.00183	.00228	.00251	.00274	.00377	.00452	.00602			
	5		SFM	120	120	120	120	120	120	120	120	120	120	120	120		
			RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460			
IPT		.00060	.00079	.00102	.00120	.00157	.00204	.00221	.00238	.00395	.00463	.00599					
6	SFM	170	170	170	170	170	170	170	170	170	170	170	170				
	RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650					
	IPT	.00064	.00085	.00108	.00129	.00172	.00221	.00239	.00258	.00383	.00441	.00558					
7	SFM	145	145	145	145	145	145	145	145	145	145	145	145				
	RPM	4430	3540	2950	2220	1770	1480	1270	1110	890	740	550					
	IPT	.00065	.00088	.00110	.00137	.00183	.00228	.00251	.00274	.00377	.00452	.00602					
8-9	SFM	120	120	120	120	120	120	120	120	120	120	120	120				
	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460					
	IPT	.00060	.00079	.00102	.00120	.00157	.00204	.00221	.00238	.00395	.00463	.00599					
10	SFM	170	170	170	170	170	170	170	170	170	170	170	170				
	RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650					
	IPT	.00064	.00085	.00108	.00129	.00172	.00221	.00239	.00258	.00383	.00441	.00558					
11.1	SFM	120	120	120	120	120	120	120	120	120	120	120	120				
	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460					
	IPT	.00060	.00079	.00102	.00120	.00157	.00204	.00221	.00238	.00395	.00463	.00599					
M	14.1	Stainless steel	0.1D	1.5D	SFM	160	160	160	160	160	160	160	160	160	160		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	RPM	4890	3910	3260	2440	1960	1630	1400	1220	980	810	610	
					IPT	.00033	.00044	.00055	.00068	.00089	.00115	.00125	.00136	.00198	.00248	.00350	
					IPM	5	5	5	5	5	6	5	6	6	6	6	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.1D	1.5D	SFM	490	490	490	490	490	490	490	490	490	490	490	
					RPM	14970	11980	9980	7490	5990	4990	4280	3740	2990	2500	1870	
					IPT	.00076	.00106	.00128	.00167	.00221	.00274	.00306	.00339	.00443	.00531	.00708	
26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	0.1D	1.5D	SFM	370	370	370	370	370	370	370	370	370	370	370	370	
				RPM	11310	9050	7540	5650	4520	3770	3230	2830	2260	1880	1410		
				IPT	.00083	.00104	.00134	.00170	.00221	.00285	.00313	.00340	.00443	.00526	.00693		
IPM	28	28	30	29	30	32	30	29	30	30	29	29					



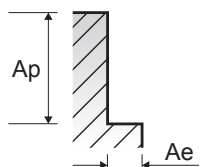
Side Cutting

**E5H82, E5I10 Uncoated**

**SQUARE / 3 FLUTE - SIDE CUTTING / INCH**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	
P	1-2	Non-alloy steel	0.1D	1.5D	SFM	110	110	110	110	110	110	110	110	110	110	110	110
					RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420	
					IPT	.00064	.00085	.00108	.00133	.00170	.00217	.00241	.00265	.00379	.00448	.00586	
	3-4		SFM	95	95	95	95	95	95	95	95	95	95	95	95		
			RPM	2900	2320	1940	1450	1160	970	830	730	580	480	360			
			IPT	.00067	.00089	.00113	.00134	.00178	.00225	.00246	.00267	.00383	.00446	.00574			
	5		SFM	80	80	80	80	80	80	80	80	80	80	80	80		
			RPM	2440	1960	1630	1220	980	810	700	610	490	410	310			
IPT		.00061	.00080	.00100	.00123	.00160	.00200	.00221	.00242	.00392	.00457	.00587					
6	SFM	110	110	110	110	110	110	110	110	110	110	110	110				
	RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420					
	IPT	.00064	.00085	.00108	.00133	.00170	.00217	.00241	.00265	.00379	.00448	.00586					
7	SFM	95	95	95	95	95	95	95	95	95	95	95	95				
	RPM	2900	2320	1940	1450	1160	970	830	730	580	480	360					
	IPT	.00067	.00089	.00113	.00134	.00178	.00225	.00246	.00267	.00383	.00446	.00574					
8-9	SFM	80	80	80	80	80	80	80	80	80	80	80	80				
	RPM	2440	1960	1630	1220	980	810	700	610	490	410	310					
	IPT	.00061	.00080	.00100	.00123	.00160	.00200	.00221	.00242	.00392	.00457	.00587					
10	SFM	110	110	110	110	110	110	110	110	110	110	110	110				
	RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420					
	IPT	.00064	.00085	.00108	.00133	.00170	.00217	.00241	.00265	.00379	.00448	.00586					
11.1	SFM	80	80	80	80	80	80	80	80	80	80	80	80				
	RPM	2440	1960	1630	1220	980	810	700	610	490	410	310					
	IPT	.00061	.00080	.00100	.00123	.00160	.00200	.00221	.00242	.00392	.00457	.00587					
M	14.1	Stainless steel	0.1D	1.5D	SFM	100	100	100	100	100	100	100	100	100	100		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	RPM	3060	2440	2040	1530	1220	1020	870	760	610	510	380	
					IPT	.00034	.00044	.00056	.00068	.00089	.00111	.00124	.00137	.00200	.00245	.00334	
					IPM	3	3	3	3	3	3	3	3	4	4	4	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.1D	1.5D	SFM	315	315	315	315	315	315	315	315	315	315	315	
					RPM	9630	7700	6420	4810	3850	3210	2750	2410	1930	1600	1200	
					IPT	.00077	.00106	.00133	.00171	.00226	.00283	.00315	.00348	.00452	.00528	.00678	
26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	0.1D	1.5D	SFM	235	235	235	235	235	235	235	235	235	235	235		
				RPM	7180	5740	4790	3590	2870	2390	2050	1800	1440	1200	900		
				IPT	.00071	.00095	.00119	.00173	.00230	.00288	.00317	.00345	.00461	.00537	.00691		
IPM	15	16	17	19	20	21	19	19	20	19	19						



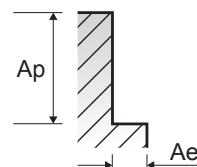
Side Cutting

**G9H83, G9H84, G9H88, G9H90, G9H92, G9H94, G9H97 X-Coating**

**SQUARE / CORNER RADIUS / 4 FLUTE - SIDE CUTTING / INCH**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																																																	
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1																																							
P	1-2	Non-alloy steel	0.1D	1.5D	SFM	170	170	170	170	170	170	170	170	170	170	170	170	170	RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650	IPT	.00064	.00085	.00108	.00129	.00172	.00221	.00239	.00258	.00383	.00441	.00558	IPM	13	14	15	13	14	15	14	13	16	15	14	
	3-4				SFM	145	145	145	145	145	145	145	145	145	145	145	145	145	145	RPM	4430	3540	2950	2220	1770	1480	1270	1110	890	740	550	IPT	.00065	.00088	.00110	.00137	.00183	.00228	.00251	.00274	.00377	.00452	.00602	IPM	12	13	13	12	13	13	13	12	13	13	13
	5				SFM	120	120	120	120	120	120	120	120	120	120	120	120	120	120	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460	IPT	.00060	.00079	.00102	.00120	.00157	.00204	.00221	.00238	.00395	.00463	.00599	IPM	9	9	10	9	9	10	9	9	12	11	11
	6	Low alloy steel	0.1D	1.5D	SFM	170	170	170	170	170	170	170	170	170	170	170	170	RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650	IPT	.00064	.00085	.00108	.00129	.00172	.00221	.00239	.00258	.00383	.00441	.00558	IPM	13	14	15	13	14	15	14	13	16	15	14		
	7				SFM	145	145	145	145	145	145	145	145	145	145	145	145	145	RPM	4430	3540	2950	2220	1770	1480	1270	1110	890	740	550	IPT	.00065	.00088	.00110	.00137	.00183	.00228	.00251	.00274	.00377	.00452	.00602	IPM	12	13	13	12	13	13	13	12	13	13	13	
	8-9				SFM	120	120	120	120	120	120	120	120	120	120	120	120	120	120	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460	IPT	.00060	.00079	.00102	.00120	.00157	.00204	.00221	.00238	.00395	.00463	.00599	IPM	9	9	10	9	9	10	9	9	12	11	11
	10	High alloyed steel, and tool steel	0.1D	1.5D	SFM	170	170	170	170	170	170	170	170	170	170	170	170	RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650	IPT	.00064	.00085	.00108	.00129	.00172	.00221	.00239	.00258	.00383	.00441	.00558	IPM	13	14	15	13	14	15	14	13	16	15	14		
	11.1				SFM	120	120	120	120	120	120	120	120	120	120	120	120	120	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460	IPT	.00060	.00079	.00102	.00120	.00157	.00204	.00221	.00238	.00395	.00463	.00599	IPM	9	9	10	9	9	10	9	9	12	11	11	
M	14.1	Stainless steel	0.1D	1.5D	SFM	160	160	160	160	160	160	160	160	160	160	160	RPM	4890	3910	3260	2440	1960	1630	1400	1220	980	810	610	IPT	.00033	.00044	.00055	.00068	.00089	.00115	.00125	.00136	.00198	.00248	.00350	IPM	7	7	7	7	7	8	7	7	8	8	9			
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	SFM	195	195	195	195	195	195	195	195	195	195	195	RPM	5960	4770	3970	2980	2380	1990	1700	1490	1190	990	740	IPT	.00093	.00122	.00156	.00230	.00328	.00407	.00483	.00560	.00780	.00813	.00880	IPM	22	23	25	27	31	32	33	33	37	32	26			
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.1D	1.5D	SFM	490	490	490	490	490	490	490	490	490	490	490	RPM	14970	11980	9980	7490	5990	4990	4280	3740	2990	2500	1870	IPT	.00076	.00106	.00128	.00167	.00221	.00274	.00306	.00339	.00443	.00531	.00708	IPM	45	51	51	50	53	55	52	51	53	53	53			
	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials			SFM	370	370	370	370	370	370	370	370	370	370	370	370	370	RPM	11310	9050	7540	5650	4520	3770	3230	2830	2260	1880	1410	IPT	.00083	.00104	.00134	.00170	.00221	.00285	.00313	.00340	.00443	.00526	.00693	IPM	38	38	40	38	40	43	40	38	40	40	39	



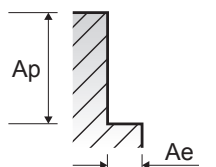
Side Cutting

**E5H83, E5H84, E5H88, E5H90, E5H92, E5H94, E5H97 Uncoated**

**SQUARE / CORNER RADIUS / 4 FLUTE - SIDE CUTTING / INCH**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																																																
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1																																						
P	1-2	Non-alloy steel	0.1D	1.5D	SFM	110	110	110	110	110	110	110	110	110	110	110	110	RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420	IPT	.00064	.00085	.00108	.00133	.00170	.00217	.00241	.00265	.00379	.00448	.00586	IPM	9	9	10	9	9	10	9	9	10	10	10	
	3-4				SFM	95	95	95	95	95	95	95	95	95	95	95	95	95	RPM	2900	2320	1940	1450	1160	970	830	730	580	480	360	IPT	.00067	.00089	.00113	.00134	.00178	.00225	.00246	.00267	.00383	.00446	.00574	IPM	8	8	9	8	8	9	8	8	9	9	9
	5				SFM	80	80	80	80	80	80	80	80	80	80	80	80	80	RPM	2440	1960	1630	1220	980	810	700	610	490	410	310	IPT	.00061	.00080	.00100	.00123	.00160	.00200	.00221	.00242	.00392	.00457	.00587	IPM	6	6	7	6	6	6	6	6	8	7	7
	6	Low alloy steel	0.1D	1.5D	SFM	110	110	110	110	110	110	110	110	110	110	110	RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420	IPT	.00064	.00085	.00108	.00133	.00170	.00217	.00241	.00265	.00379	.00448	.00586	IPM	9	9	10	9	9	10	9	9	10	10	10		
	7				SFM	95	95	95	95	95	95	95	95	95	95	95	95	RPM	2900	2320	1940	1450	1160	970	830	730	580	480	360	IPT	.00067	.00089	.00113	.00134	.00178	.00225	.00246	.00267	.00383	.00446	.00574	IPM	8	8	9	8	8	9	8	8	9	9	9	
	8-9				SFM	80	80	80	80	80	80	80	80	80	80	80	80	80	RPM	2440	1960	1630	1220	980	810	700	610	490	410	310	IPT	.00061	.00080	.00100	.00123	.00160	.00200	.00221	.00242	.00392	.00457	.00587	IPM	6	6	7	6	6	6	6	6	8	7	7
	10	High alloyed steel, and tool steel	0.1D	1.5D	SFM	110	110	110	110	110	110	110	110	110	110	110	RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420	IPT	.00064	.00085	.00108	.00133	.00170	.00217	.00241	.00265	.00379	.00448	.00586	IPM	9	9	10	9	9	10	9	9	10	10	10		
	11.1				SFM	80	80	80	80	80	80	80	80	80	80	80	80	RPM	2440	1960	1630	1220	980	810	700	610	490	410	310	IPT	.00061	.00080	.00100	.00123	.00160	.00200	.00221	.00242	.00392	.00457	.00587	IPM	6	6	7	6	6	6	6	6	8	7	7	
M	14.1	Stainless steel	0.1D	1.5D	SFM	100	100	100	100	100	100	100	100	100	100	100	RPM	3060	2440	2040	1530	1220	1020	870	760	610	510	380	IPT	.00034	.00044	.00056	.00068	.00089	.00111	.00124	.00137	.00200	.00245	.00334	IPM	4	4	5	4	4	5	4	4	5	5	5		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	SFM	125	125	125	125	125	125	125	125	125	125	125	RPM	3820	3060	2550	1910	1530	1270	1090	950	760	640	480	IPT	.00095	.00124	.00159	.00228	.00315	.00408	.00483	.00558	.00754	.00917	.01243	IPM	15	15	16	17	19	21	21	21	23	23	24		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.1D	1.5D	SFM	315	315	315	315	315	315	315	315	315	315	315	RPM	9630	7700	6420	4810	3850	3210	2750	2410	1930	1600	1200	IPT	.00077	.00106	.00133	.00171	.00226	.00283	.00315	.00348	.00452	.00528	.00678	IPM	30	33	34	33	35	36	35	34	35	34	33		
	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials			SFM	235	235	235	235	235	235	235	235	235	235	235	235	RPM	7180	5740	4790	3590	2870	2390	2050	1800	1440	1200	900	IPT	.00071	.00095	.00119	.00173	.00230	.00288	.00317	.00345	.00461	.00537	.00691	IPM	20	22	23	25	26	28	26	25	27	26	25	



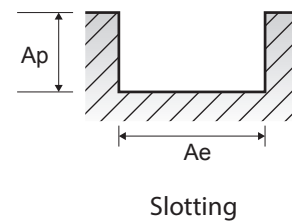
Side Cutting

**G9H83, G9H84, G9H88, G9H90, G9H92, G9H94, G9H97 X-Coating**

SQUARE / CORNER RADIUS / 4 FLUTE - **SLOTTING** / INCH

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1		
P	1-2	Non-alloy steel	1.0D	0.3D	SFM	170	170	170	170	170	170	170	170	170	170	170	170	170
					RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650		
					IPT	.00045	.00059	.00075	.00089	.00119	.00153	.00165	.00178	.00254	.00293	.00370		
	3-4		SFM	145	145	145	145	145	145	145	145	145	145	145	145			
			RPM	4430	3540	2950	2220	1770	1480	1270	1110	890	740	550				
			IPT	.00045	.00060	.00075	.00094	.00125	.00156	.00172	.00187	.00244	.00292	.00389				
	5		SFM	120	120	120	120	120	120	120	120	120	120	120	120			
			RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460				
			IPT	.00042	.00055	.00071	.00084	.00110	.00143	.00154	.00166	.00271	.00318	.00411				
	6		SFM	170	170	170	170	170	170	170	170	170	170	170	170			
RPM		5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650						
IPT		.00045	.00059	.00075	.00089	.00119	.00153	.00165	.00178	.00254	.00293	.00370						
7	SFM	145	145	145	145	145	145	145	145	145	145	145	145					
	RPM	4430	3540	2950	2220	1770	1480	1270	1110	890	740	550						
	IPT	.00045	.00060	.00075	.00094	.00125	.00156	.00172	.00187	.00244	.00292	.00389						
8-9	SFM	120	120	120	120	120	120	120	120	120	120	120	120					
	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460						
	IPT	.00042	.00055	.00071	.00084	.00110	.00143	.00154	.00166	.00271	.00318	.00411						
10	SFM	170	170	170	170	170	170	170	170	170	170	170	170					
	RPM	5190	4160	3460	2600	2080	1730	1480	1300	1040	870	650						
	IPT	.00045	.00059	.00075	.00089	.00119	.00153	.00165	.00178	.00254	.00293	.00370						
11.1	SFM	120	120	120	120	120	120	120	120	120	120	120	120					
	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460						
	IPT	.00042	.00055	.00071	.00084	.00110	.00143	.00154	.00166	.00271	.00318	.00411						
M	14.1	Stainless steel	1.0D	0.3D	SFM	120	120	120	120	120	120	120	120	120	120	120		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D	RPM	3670	2930	2440	1830	1470	1220	1050	920	730	610	460		
					IPT	.00042	.00055	.00071	.00084	.00110	.00143	.00154	.00166	.00271	.00318	.00411		
					IPM	6	6	7	6	6	7	6	6	8	8	8		
					SFM	195	195	195	195	195	195	195	195	195	195	195	195	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	RPM	5960	4770	3970	2980	2380	1990	1700	1490	1190	990	740		
					IPT	.00064	.00084	.00107	.00151	.00221	.00271	.00320	.00369	.00514	.00609	.00800		
					IPM	15	16	17	18	21	22	22	24	24	24	24		
					SFM	490	490	490	490	490	490	490	490	490	490	490	490	
N	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	1.0D	0.5D	RPM	14970	11980	9980	7490	5990	4990	4280	3740	2990	2500	1870		
					IPT	.00053	.00075	.00090	.00113	.00150	.00186	.00208	.00229	.00300	.00360	.00480		
					IPM	32	36	36	34	36	37	36	34	36	36	36		
					SFM	370	370	370	370	370	370	370	370	370	370	370	370	
N	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	1.0D	0.5D	RPM	11310	9050	7540	5650	4520	3770	3230	2830	2260	1880	1410		
					IPT	.00055	.00068	.00088	.00116	.00151	.00195	.00213	.00232	.00302	.00359	.00473		
					IPM	25	25	27	26	27	29	28	26	27	27	27		
					SFM	370	370	370	370	370	370	370	370	370	370	370	370	

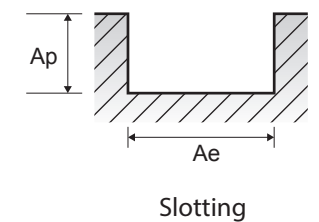


**E5H83, E5H84, E5H88, E5H90, E5H92, E5H94, E5H97 Uncoated**

SQUARE / CORNER RADIUS / 4 FLUTE - **SLOTTING** / INCH

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1		
P	1-2	Non-alloy steel	1.0D	0.3D	SFM	110	110	110	110	110	110	110	110	110	110	110	110	
					RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420		
					IPT	.00043	.00056	.00072	.00088	.00113	.00143	.00159	.00175	.00251	.00296	.00387		
	3-4		SFM	95	95	95	95	95	95	95	95	95	95	95	95			
			RPM	2900	2320	1940	1450	1160	970	830	730	580	480	360				
			IPT	.00045	.00060	.00076	.00090	.00120	.00152	.00166	.00180	.00255	.00298	.00383				
	5		SFM	80	80	80	80	80	80	80	80	80	80	80	80			
			RPM	2440	1960	1630	1220	980	810	700	610	490	410	310				
			IPT	.00042	.00054	.00068	.00083	.00108	.00135	.00149	.00164	.00270	.00315	.00405				
	6		SFM	110	110	110	110	110	110	110	110	110	110	110	110			
RPM		3360	2690	2240	1680	1340	1120	960	840	670	560	420						
IPT		.00043	.00056	.00072	.00088	.00113	.00143	.00159	.00175	.00251	.00296	.00387						
7	SFM	95	95	95	95	95	95	95	95	95	95	95	95					
	RPM	2900	2320	1940	1450	1160	970	830	730	580	480	360						
	IPT	.00045	.00060	.00076	.00090	.00120	.00152	.00166	.00180	.00255	.00298	.00383						
8-9	SFM	80	80	80	80	80	80	80	80	80	80	80	80					
	RPM	2440	1960	1630	1220	980	810	700	610	490	410	310						
	IPT	.00042	.00054	.00068	.00083	.00108	.00135	.00149	.00164	.00270	.00315	.00405						
10	SFM	110	110	110	110	110	110	110	110	110	110	110	110					
	RPM	3360	2690	2240	1680	1340	1120	960	840	670	560	420						
	IPT	.00043	.00056	.00072	.00088	.00113	.00143	.00159	.00175	.00251	.00296	.00387						
11.1	SFM	80	80	80	80	80	80	80	80	80	80	80	80					
	RPM	2440	1960	1630	1220	980	810	700	610	490	410	310						
	IPT	.00042	.00054	.00068	.00083	.00108	.00135	.00149	.00164	.00270	.00315	.00405						
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D	SFM	125	125	125	125	125	125	125	125	125	125	125		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	RPM	3820	3060	2550	1910	1530	1270	1090	950	760	640	480		
					IPT	.00063	.00083	.00106	.00152	.00211	.00273	.00323	.00374	.00501	.00612	.00835		
					IPM	10	10	11	12	13	14	14	14	15	16	16		
					SFM	315	315	315	315	315	315	315	315	315	315	315	315	
N	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	1.0D	0.5D	RPM	9630	7700	6420	4810	3850	3210	2750	2410	1930	1600	1200		
					IPT	.00052	.00071	.00089	.00114	.00151	.00188	.00210	.00232	.00302	.00352	.00452		
					IPM	20	22	23	22	23	24	23	22	23	23	22		
					SFM	235	235	235	235	235	235	235	235	235	235	235	235	
N	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	1.0D	0.5D	RPM	7180	5740	4790	3590	2870	2390	2050	1800	1440	1200	900		
					IPT	.00053	.00071	.00089	.00115	.00153	.00191	.00210	.00230	.00306	.00357	.00459		
					IPM	15	16	17	17	18	18	17	17	17	17	17		
					SFM	235	235	235	235	235	235	235	235	235	235	235	235	

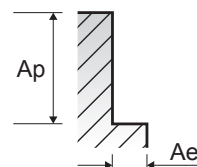


**G9H89, G9H95 X-Coating**

**SQUARE / 4 FLUTE - SIDE CUTTING / METRIC**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3	4	5	6	8	10	12	16	18	20	25		
P	1-2	Non-alloy steel	0.1D	1.5D	SFM	170	170	170	170	170	170	170	170	170	170	170	170	170
					RPM	5500	4120	3300	2750	2060	1650	1370	1030	920	820	660		
					IPT	.00061	.00086	.00114	.00122	.00173	.00232	.00244	.00386	.00417	.00456	.00549		
	3-4		0.1D	1.5D	SFM	145	145	145	145	145	145	145	145	145	145	145	145	
					RPM	4690	3520	2810	2340	1760	1410	1170	880	780	700	560		
					IPT	.00062	.00089	.00115	.00129	.00184	.00240	.00259	.00380	.00427	.00474	.00592		
	5		0.1D	1.5D	SFM	120	120	120	120	120	120	120	120	120	120	120	120	
					RPM	3880	2910	2330	1940	1460	1160	970	730	650	580	470		
					IPT	.00057	.00079	.00107	.00114	.00158	.00215	.00225	.00398	.00438	.00482	.00590		
	6		0.1D	1.5D	SFM	170	170	170	170	170	170	170	170	170	170	170	170	
					RPM	5500	4120	3300	2750	2060	1650	1370	1030	920	820	660		
IPT		.00061			.00086	.00114	.00122	.00173	.00232	.00244	.00386	.00417	.00456	.00549				
7	0.1D	1.5D	SFM	145	145	145	145	145	145	145	145	145	145	145	145			
			RPM	4690	3520	2810	2340	1760	1410	1170	880	780	700	560				
			IPT	.00062	.00089	.00115	.00129	.00184	.00240	.00259	.00380	.00427	.00474	.00592				
8-9	0.1D	1.5D	SFM	120	120	120	120	120	120	120	120	120	120	120	120			
			RPM	3880	2910	2330	1940	1460	1160	970	730	650	580	470				
			IPT	.00057	.00079	.00107	.00114	.00158	.00215	.00225	.00398	.00438	.00482	.00590				
10	0.1D	1.5D	SFM	170	170	170	170	170	170	170	170	170	170	170	170			
			RPM	5500	4120	3300	2750	2060	1650	1370	1030	920	820	660				
			IPT	.00061	.00086	.00114	.00122	.00173	.00232	.00244	.00386	.00417	.00456	.00549				
11.1	0.1D	1.5D	SFM	120	120	120	120	120	120	120	120	120	120	120	120			
			RPM	3880	2910	2330	1940	1460	1160	970	730	650	580	470				
			IPT	.00057	.00079	.00107	.00114	.00158	.00215	.00225	.00398	.00438	.00482	.00590				
M	14.1	Stainless steel	0.1D	1.5D	SFM	160	160	160	160	160	160	160	160	160	160	160		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	SFM	195	195	195	195	195	195	195	195	195	195	195		
					RPM	6310	4730	3780	3150	2360	1890	1580	1180	1050	950	760		
					IPT	.00088	.00123	.00163	.00217	.00331	.00427	.00529	.00786	.00769	.00805	.00867		
					IPM	22	23	25	27	31	32	33	37	32	30	26		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.1D	1.5D	SFM	490	490	490	490	490	490	490	490	490	490	490		
					RPM	15850	11890	9510	7920	5940	4750	3960	2970	2640	2380	1900		
	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	0.1D	1.5D	SFM	370	370	370	370	370	370	370	370	370	370	370		
					RPM	11970	8970	7180	5980	4490	3590	2990	2240	1990	1790	1440		



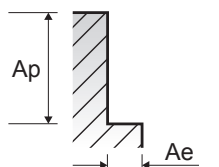
Side Cutting

**E5H89, E5H95 Uncoated**

**SQUARE / 4 FLUTE - SIDE CUTTING / METRIC**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						3	4	5	6	8	10	12	16	18	20	25	
P	1-2	Non-alloy steel	0.1D	1.5D	SFM	110	110	110	110	110	110	110	110	110	110	110	110
					RPM	3560	2670	2130	1780	1330	1070	890	670	590	530	430	
					IPT	.00061	.00086	.00114	.00125	.00172	.00228	.00250	.00382	.00424	.00468	.00577	
	3-4		0.1D	1.5D	SFM	95	95	95	95	95	95	95	95	95	95	95	95
					RPM	3070	2300	1840	1540	1150	920	770	580	510	460	370	
					IPT	.00063	.00090	.00118	.00126	.00180	.00236	.00252	.00386	.00422	.00463	.00565	
	5		0.1D	1.5D	SFM	80	80	80	80	80	80	80	80	80	80	80	80
					RPM	2590	1940	1550	1290	970	780	650	490	430	390	310	
					IPT	.00058	.00081	.00105	.00116	.00161	.00210	.00229	.00395	.00432	.00474	.00578	
	6		0.1D	1.5D	SFM	110	110	110	110	110	110	110	110	110	110	110	110
					RPM	3560	2670	2130	1780	1330	1070	890	670	590	530	430	
IPT		.00061			.00086	.00114	.00125	.00172	.00228	.00250	.00382	.00424	.00468	.00577			
7	0.1D	1.5D	SFM	95	95	95	95	95	95	95	95	95	95	95	95		
			RPM	3070	2300	1840	1540	1150	920	770	580	510	460	370			
			IPT	.00063	.00090	.00118	.00126	.00180	.00236	.00252	.00386	.00422	.00463	.00565			
8-9	0.1D	1.5D	SFM	80	80	80	80	80	80	80	80	80	80	80	80		
			RPM	2590	1940	1550	1290	970	780	650	490	430	390	310			
			IPT	.00058	.00081	.00105	.00116	.00161	.00210	.00229	.00395	.00432	.00474	.00578			
10	0.1D	1.5D	SFM	110	110	110	110	110	110	110	110	110	110	110	110		
			RPM	3560	2670	2130	1780	1330	1070	890	670	590	530	430			
			IPT	.00061	.00086	.00114	.00125	.00172	.00228	.00250	.00382	.00424	.00468	.00577			
11.1	0.1D	1.5D	SFM	80	80	80	80	80	80	80	80	80	80	80	80		
			RPM	2590	1940	1550	1290	970	780	650	490	430	390	310			
			IPT	.00058	.00081	.00105	.00116	.00161	.00210	.00229	.00395	.00432	.00474	.00578			
M	14.1	Stainless steel	0.1D	1.5D	SFM	100	100	100	100	100	100	100	100	100	100	100	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	SFM	125	125	125	125	125	125	125	125	125	125	125	
					RPM	4040	3030	2430	2020	1520	1210	1010	760	670	610	490	
					IPT	.00090	.00125	.00167	.00216	.00317	.00429	.00527	.00760	.00866	.00968	.01224	
					IPM	15	15	16	17	19	21	21	23	23	24	24	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.1D	1.5D	SFM	315	315	315	315	315	315	315	315	315	315	315	
					RPM	10190	7640	6110	5090	3820	3060	2550	1910	1700	1530	1220	
	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	0.1D	1.5D	SFM	235	235	235	235	235	235	235	235	235	235	235	
					RPM	7600	5700	4560	3800	2850	2280	1900	1420	1270	1140	910	



Side Cutting

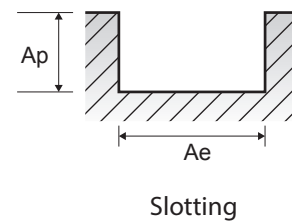


**G9H89, G9H95 X-Coating**

**SQUARE / 4 FLUTE - SLOTTING / METRIC**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3	4	5	6	8	10	12	16	18	20	25		
P	1-2	Non-alloy steel	1.0D	0.3D	SFM	170	170	170	170	170	170	170	170	170	170	170	170	170
					RPM	5500	4120	3300	2750	2060	1650	1370	1030	920	820	660		
					IPT	.00042	.00059	.00079	.00084	.00120	.00160	.00168	.00256	.00277	.00302	.00364		
	3-4		SFM	145	145	145	145	145	145	145	145	145	145	145	145			
			RPM	4690	3520	2810	2340	1760	1410	1170	880	780	700	560				
			IPT	.00042	.00061	.00079	.00089	.00126	.00164	.00177	.00246	.00276	.00306	.00383				
	5		SFM	120	120	120	120	120	120	120	120	120	120	120	120			
			RPM	3880	2910	2330	1940	1460	1160	970	730	650	580	470				
			IPT	.00040	.00055	.00075	.00079	.00110	.00150	.00157	.00273	.00300	.00331	.00405				
	6		SFM	170	170	170	170	170	170	170	170	170	170	170	170			
			RPM	5500	4120	3300	2750	2060	1650	1370	1030	920	820	660				
			IPT	.00042	.00059	.00079	.00084	.00120	.00160	.00168	.00256	.00277	.00302	.00364				
7	SFM	145	145	145	145	145	145	145	145	145	145	145	145					
	RPM	4690	3520	2810	2340	1760	1410	1170	880	780	700	560						
	IPT	.00042	.00061	.00079	.00089	.00126	.00164	.00177	.00246	.00276	.00306	.00383						
8-9	SFM	120	120	120	120	120	120	120	120	120	120	120	120					
	RPM	3880	2910	2330	1940	1460	1160	970	730	650	580	470						
	IPT	.00040	.00055	.00075	.00079	.00110	.00150	.00157	.00273	.00300	.00331	.00405						
10	SFM	170	170	170	170	170	170	170	170	170	170	170	170					
	RPM	5500	4120	3300	2750	2060	1650	1370	1030	920	820	660						
	IPT	.00042	.00059	.00079	.00084	.00120	.00160	.00168	.00256	.00277	.00302	.00364						
11.1	SFM	120	120	120	120	120	120	120	120	120	120	120	120					
	RPM	3880	2910	2330	1940	1460	1160	970	730	650	580	470						
	IPT	.00040	.00055	.00075	.00079	.00110	.00150	.00157	.00273	.00300	.00331	.00405						
M	14.1	Stainless steel	1.0D	0.3D	SFM	120	120	120	120	120	120	120	120	120	120	120		
					RPM	3880	2910	2330	1940	1460	1160	970	730	650	580	470		
					IPT	.00040	.00055	.00075	.00079	.00110	.00150	.00157	.00273	.00300	.00331	.00405		
					IPM	6	6	7	6	6	7	6	8	8	8	8		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D	SFM	195	195	195	195	195	195	195	195	195	195	195		
					RPM	6310	4730	3780	3150	2360	1890	1580	1180	1050	950	760		
					IPT	.00061	.00085	.00112	.00143	.00223	.00285	.00349	.00518	.00576	.00637	.00788		
					IPM	15	16	17	18	21	22	22	24	24	24	24		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM	490	490	490	490	490	490	490	490	490	490	490		
					RPM	15850	11890	9510	7920	5940	4750	3960	2970	2640	2380	1900		
					IPT	.00050	.00075	.00094	.00107	.00151	.00195	.00217	.00302	.00340	.00378	.00472		
					IPM	32	36	36	34	36	37	34	36	36	36	36		
	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	1.0D	0.5D	SFM	370	370	370	370	370	370	370	370	370	370	370		
					RPM	11970	8970	7180	5980	4490	3590	2990	2240	1990	1790	1440		
					IPT	.00052	.00069	.00093	.00110	.00152	.00204	.00219	.00304	.00339	.00375	.00466		
					IPM	25	25	27	26	27	29	26	27	27	27	27		

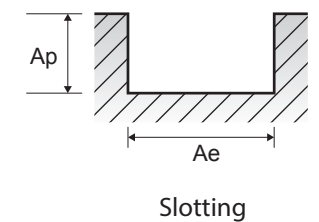


**E5H89, E5H95 Uncoated**

**SQUARE / 4 FLUTE - SLOTTING / METRIC**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						3	4	5	6	8	10	12	16	18	20	25	
P	1-2	Non-alloy steel	1.0D	0.3D	SFM	110	110	110	110	110	110	110	110	110	110	110	110
					RPM	3560	2670	2130	1780	1330	1070	890	670	590	530	430	
					IPT	.00040	.00057	.00075	.00083	.00113	.00150	.00165	.00253	.00280	.00309	.00381	
	3-4		SFM	95	95	95	95	95	95	95	95	95	95	95	95		
			RPM	3070	2300	1840	1540	1150	920	770	580	510	460	370			
			IPT	.00043	.00060	.00080	.00085	.00121	.00159	.00170	.00257	.00281	.00309	.00376			
	5		SFM	80	80	80	80	80	80	80	80	80	80	80	80		
			RPM	2590	1940	1550	1290	970	780	650	490	430	390	310			
			IPT	.00039	.00054	.00071	.00078	.00109	.00142	.00155	.00272	.00298	.00327	.00399			
	6		SFM	110	110	110	110	110	110	110	110	110	110	110	110		
			RPM	3560	2670	2130	1780	1330	1070	890	670	590	530	430			
			IPT	.00040	.00057	.00075	.00083	.00113	.00150	.00165	.00253	.00280	.00309	.00381			
7	SFM	95	95	95	95	95	95	95	95	95	95	95	95				
	RPM	3070	2300	1840	1540	1150	920	770	580	510	460	370					
	IPT	.00043	.00060	.00080	.00085	.00121	.00159	.00170	.00257	.00281	.00309	.00376					
8-9	SFM	80	80	80	80	80	80	80	80	80	80	80	80				
	RPM	2590	1940	1550	1290	970	780	650	490	430	390	310					
	IPT	.00039	.00054	.00071	.00078	.00109	.00142	.00155	.00272	.00298	.00327	.00399					
10	SFM	110	110	110	110	110	110	110	110	110	110	110	110				
	RPM	3560	2670	2130	1780	1330	1070	890	670	590	530	430					
	IPT	.00040	.00057	.00075	.00083	.00113	.00150	.00165	.00253	.00280	.00309	.00381					
11.1	SFM	80	80	80	80	80	80	80	80	80	80	80	80				
	RPM	2590	1940	1550	1290	970	780	650	490	430	390	310					
	IPT	.00039	.00054	.00071	.00078	.00109	.00142	.00155	.00272	.00298	.00327	.00399					
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D	SFM	125	125	125	125	125	125	125	125	125	125	125	
					RPM	4040	3030	2430	2020	1520	1210	1010	760	670	610	490	
					IPT	.00060	.00084	.00111	.00144	.00213	.00287	.00353	.00505	.00578	.00647	.00822	
					IPM	10	10	11	12	13	14	14	15	15	16	16	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM	315	315	315	315	315	315	315	315	315	315	315	
					RPM	10190	7640	6110	5090	3820	3060	2550	1910	1700	1530	1220	
					IPT	.00049	.00071	.00093	.00108	.00152	.00198	.00219	.00304	.00332	.00365	.00445	
					IPM	20	22	23	22	23	24	22	23	23	22	22	
	26-29.1	Copper and Copper Alloys (Bronze / Brass) Non Metallic Materials	1.0D	0.5D	SFM	235	235	235	235	235	235	235	235	235	235	235	
					RPM	7600	5700	4560	3800	2850	2280	1900	1420	1270	1140	910	
					IPT	.00050	.00072	.00094	.00108	.00154	.00201	.00217	.00308	.00337	.00371	.00452	
					IPM	15	16	17	16	18	18	16	17	17	17	16	

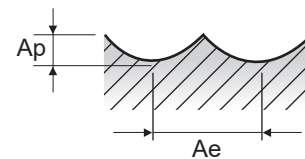


**G9H98, G9I02, G9I04, G9I07 X-Coating**

**2 FLUTE BALL NOSE - SIDE CUTTING / INCH**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1		
P	1-4	Non-alloy steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160	160	
					RPM	4890	3910	3260	2440	1960	1630	1400	1220	980	810	610		
	IPT				.00051	.00067	.00089	.00104	.00134	.00164	.00171	.00177	.00229	.00280	.00360			
	IPM				5	5	6	5	5	5	5	4	4	5	4			
	SFM				130	130	130	130	130	130	130	130	130	130	130	130		
	RPM				3970	3180	2650	1990	1590	1320	1140	990	790	660	500			
	IPT	.00028	.00039	.00048	.00056	.00075	.00095	.00103	.00111	.00150	.00179	.00215						
	IPM	2	2	3	2	2	3	2	2	2	2	2						
	Low alloy steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160			
				RPM	4890	3910	3260	2440	1960	1630	1400	1220	980	810	610			
				IPT	.00051	.00067	.00089	.00104	.00134	.00164	.00171	.00177	.00229	.00280	.00360			
				IPM	5	5	6	5	5	5	5	4	4	5	4			
SFM				130	130	130	130	130	130	130	130	130	130	130				
RPM				3970	3180	2650	1990	1590	1320	1140	990	790	660	500				
High alloyed steel, and tool steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160				
			RPM	4890	3910	3260	2440	1960	1630	1400	1220	980	810	610				
			IPT	.00051	.00067	.00089	.00104	.00134	.00164	.00171	.00177	.00229	.00280	.00360				
			IPM	5	5	6	5	5	5	5	4	4	5	4				
			SFM	130	130	130	130	130	130	130	130	130	130	130				
			RPM	3970	3180	2650	1990	1590	1320	1140	990	790	660	500				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.7D	0.3D	SFM	220	220	220	220	220	220	220	220	220	220	220		
					RPM	6720	5380	4480	3360	2690	2240	1920	1680	1340	1120	840		
					IPT	.00058	.00098	.00140	.00189	.00324	.00533	.00500	.00466	.00622	.00728	.00657		
					IPM	8	11	13	13	17	24	19	16	17	16	11		
					SFM	660	660	660	660	660	660	660	660	660	660	660		
					RPM	20170	16130	13450	10080	8070	6720	5760	5040	4030	3360	2520		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.7D	0.3D	SFM	660	660	660	660	660	660	660	660	660	660			
					RPM	20170	16130	13450	10080	8070	6720	5760	5040	4030	3360	2520		
					IPT	.00034	.00046	.00069	.00081	.00121	.00155	.00185	.00215	.00249	.00301	.00385		
					IPM	14	15	19	16	19	21	21	22	20	20	19		

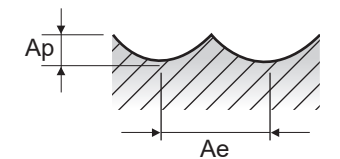


**E5H98, E5I02, E5I04, E5I07 Uncoated**

**2 FLUTE BALL NOSE - SIDE CUTTING / INCH**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1		
P	1-4	Non-alloy steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100	100		
					RPM	3060	2440	2040	1530	1220	1020	870	760	610	510	380		
	IPT				.00050	.00068	.00088	.00103	.00131	.00167	.00171	.00176	.00235	.00285	.00369			
	IPM				3	4	3	3	3	3	3	3	3	3	3			
	SFM				85	85	85	85	85	85	85	85	85	85	85			
	RPM				2600	2080	1730	1300	1040	870	740	650	520	430	320			
	IPT	.00028	.00039	.00048	.00057	.00074	.00093	.00102	.00111	.00150	.00179	.00218						
	IPM	1	2	2	1	2	2	2	1	2	2	1						
	Low alloy steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100				
				RPM	3060	2440	2040	1530	1220	1020	870	760	610	510	380			
				IPT	.00050	.00068	.00088	.00103	.00131	.00167	.00171	.00176	.00235	.00285	.00369			
				IPM	3	4	3	3	3	3	3	3	3	3	3			
SFM				85	85	85	85	85	85	85	85	85	85	85				
RPM				2600	2080	1730	1300	1040	870	740	650	520	430	320				
High alloyed steel, and tool steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100					
			RPM	3060	2440	2040	1530	1220	1020	870	760	610	510	380				
			IPT	.00050	.00068	.00088	.00103	.00131	.00167	.00171	.00176	.00235	.00285	.00369				
			IPM	3	4	3	3	3	3	3	3	3	3	3				
			SFM	85	85	85	85	85	85	85	85	85	85	85				
			RPM	2600	2080	1730	1300	1040	870	740	650	520	430	320				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.7D	0.3D	SFM	140	140	140	140	140	140	140	140	140	140			
					RPM	4280	3420	2850	2140	1710	1430	1220	1070	860	710	530		
					IPT	.00058	.00099	.00141	.00186	.00315	.00397	.00435	.00473	.00626	.00707	.00690		
					IPM	5	7	8	8	11	11	11	10	11	10	7		
					SFM	425	425	425	425	425	425	425	425	425	425	425		
					RPM	12990	10390	8660	6490	5190	4330	3710	3250	2600	2160	1620		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.7D	0.3D	SFM	425	425	425	425	425	425	425	425	425	425			
					RPM	12990	10390	8660	6490	5190	4330	3710	3250	2600	2160	1620		
					IPT	.00035	.00045	.00066	.00081	.00123	.00157	.00187	.00216	.00250	.00301	.00382		
					IPM	9	9	11	11	13	14	14	14	13	13	12		

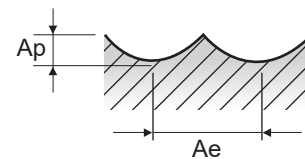


**G9103 X-Coating**

**2 FLUTE BALL NOSE - SIDE CUTTING / METRIC**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3	4	5	6	8	10	12	16	18	20	25		
P	1-4	Non-alloy steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160	160	160
					RPM	5170	3880	3100	2590	1940	1550	1290	970	860	780	620		
	IPT				.00048	.00068	.00093	.00098	.00135	.00173	.00168	.00231	.00268	.00291	.00354			
	IPM				5	5	6	5	5	5	4	4	5	5	4			
	SFM				130	130	130	130	130	130	130	130	130	130	130	130		
	RPM				4200	3150	2520	2100	1580	1260	1050	790	700	630	500			
	IPT	.00026	.00039	.00050	.00052	.00076	.00100	.00104	.00151	.00176	.00182	.00211						
	IPM	2	2	3	2	2	3	2	2	2	2	2						
	Low alloy steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160	160		
				RPM	5170	3880	3100	2590	1940	1550	1290	970	860	780	620			
				IPT	.00048	.00068	.00093	.00098	.00135	.00173	.00168	.00231	.00268	.00291	.00354			
				IPM	5	5	6	5	5	5	4	4	5	5	4			
SFM				130	130	130	130	130	130	130	130	130	130	130				
RPM				4200	3150	2520	2100	1580	1260	1050	790	700	630	500				
High alloyed steel, and tool steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160				
			RPM	5170	3880	3100	2590	1940	1550	1290	970	860	780	620				
			IPT	.00048	.00068	.00093	.00098	.00135	.00173	.00168	.00231	.00268	.00291	.00354				
			IPM	5	5	6	5	5	5	4	4	5	5	4				
			SFM	130	130	130	130	130	130	130	130	130	130	130				
			RPM	4200	3150	2520	2100	1580	1260	1050	790	700	630	500				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.7D	0.3D	SFM	220	220	220	220	220	220	220	220	220	220	220		
					RPM	7110	5340	4270	3560	2670	2130	1780	1330	1190	1070	850		
					IPT	.00055	.00099	.00147	.00178	.00327	.00560	.00441	.00627	.00769	.00689	.00647		
					IPM	8	11	13	13	17	24	16	17	18	15	11		
					SFM	660	660	660	660	660	660	660	660	660	660	660		
					RPM	21340	16010	12810	10670	8000	6400	5340	4000	3560	3200	2560		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.7D	0.3D	SFM	660	660	660	660	660	660	660	660	660	660			
					RPM	21340	16010	12810	10670	8000	6400	5340	4000	3560	3200	2560		
					IPT	.00032	.00046	.00073	.00077	.00122	.00163	.00203	.00251	.00289	.00312	.00379		
					IPM	14	15	19	16	19	21	22	20	21	20	19		

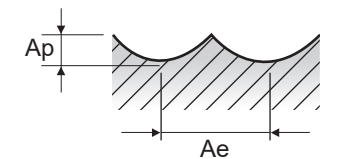


**E5103 Uncoated**

**2 FLUTE BALL NOSE - SIDE CUTTING / METRIC**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3	4	5	6	8	10	12	16	18	20	25		
P	1-4	Non-alloy steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100	100	100	
					RPM	3230	2430	1940	1620	1210	970	810	610	540	490	390		
	IPT				.00047	.00068	.00092	.00098	.00132	.00175	.00166	.00237	.00272	.00297	.00363			
	IPM				3	3	4	3	3	3	3	3	3	3	3			
	SFM				85	85	85	85	85	85	85	85	85	85	85			
	RPM				2750	2060	1650	1370	1030	820	690	520	460	410	330			
	Low alloy steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100	100			
				RPM	3230	2430	1940	1620	1210	970	810	610	540	490	390			
				IPT	.00047	.00068	.00092	.00098	.00132	.00175	.00166	.00237	.00272	.00297	.00363			
				IPM	3	3	4	3	3	3	3	3	3	3	3			
				SFM	85	85	85	85	85	85	85	85	85	85	85			
				RPM	2750	2060	1650	1370	1030	820	690	520	460	410	330			
High alloyed steel, and tool steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100	100				
			RPM	3230	2430	1940	1620	1210	970	810	610	540	490	390				
			IPT	.00047	.00068	.00092	.00098	.00132	.00175	.00166	.00237	.00272	.00297	.00363				
			IPM	3	3	4	3	3	3	3	3	3	3	3				
			SFM	85	85	85	85	85	85	85	85	85	85	85				
			RPM	2750	2060	1650	1370	1030	820	690	520	460	410	330				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.7D	0.3D	SFM	140	140	140	140	140	140	140	140	140	140	140		
					RPM	4530	3400	2720	2260	1700	1360	1130	850	750	680	540		
					IPT	.00055	.00100	.00148	.00175	.00317	.00416	.00446	.00631	.00733	.00681	.00679		
					IPM	5	7	8	8	11	11	10	11	11	9	7		
					SFM	425	425	425	425	425	425	425	425	425	425	425		
					RPM	13740	10310	8250	6870	5150	4120	3440	2580	2290	2060	1650		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.7D	0.3D	SFM	425	425	425	425	425	425	425	425	425	425			
					RPM	13740	10310	8250	6870	5150	4120	3440	2580	2290	2060	1650		
					IPT	.00033	.00046	.00070	.00076	.00124	.00165	.00204	.00252	.00290	.00311	.00376		
					IPM	9	9	12	10	13	14	13	13	13	13	12		

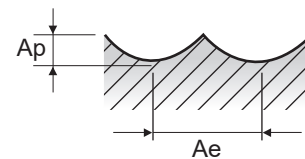


**G9H99, G9I01, G9I05, G9I06, G9I08, G9I09 X-Coating**

**4 FLUTE BALL NOSE - SIDE CUTTING / INCH**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1		
P	1-4	Non-alloy steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160	160	
					RPM	4890	3910	3260	2440	1960	1630	1400	1220	980	810	610		
	IPT				.00039	.00052	.00069	.00080	.00100	.00123	.00129	.00136	.00176	.00215	.00277			
	IPM				8	8	9	8	8	8	7	7	7	7	7			
	SFM				130	130	130	130	130	130	130	130	130	130	130	130		
	RPM				3970	3180	2650	1990	1590	1320	1140	990	790	660	500			
	IPT	.00021	.00030	.00037	.00043	.00058	.00073	.00079	.00085	.00115	.00138	.00165						
	IPM	3	4	4	3	4	4	4	3	4	4	3						
	6-7	Low alloy steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160		
					RPM	4890	3910	3260	2440	1960	1630	1400	1220	980	810	610		
	IPT				.00039	.00052	.00069	.00080	.00100	.00123	.00129	.00136	.00176	.00215	.00277			
	IPM				8	8	9	8	8	8	7	7	7	7	7			
SFM	130				130	130	130	130	130	130	130	130	130	130	130			
RPM	3970				3180	2650	1990	1590	1320	1140	990	790	660	500				
IPT	.00021	.00030	.00037	.00043	.00058	.00073	.00079	.00085	.00115	.00138	.00165							
IPM	3	4	4	3	4	4	4	3	4	4	3							
8-9	High alloyed steel, and tool steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160			
				RPM	4890	3910	3260	2440	1960	1630	1400	1220	980	810	610			
IPT				.00039	.00052	.00069	.00080	.00100	.00123	.00129	.00136	.00176	.00215	.00277				
IPM				8	8	9	8	8	8	7	7	7	7	7				
SFM				130	130	130	130	130	130	130	130	130	130	130	130			
RPM				3970	3180	2650	1990	1590	1320	1140	990	790	660	500				
IPT	.00021	.00030	.00037	.00043	.00058	.00073	.00079	.00085	.00115	.00138	.00165							
IPM	3	4	4	3	4	4	4	3	4	4	3							
10	High alloyed steel, and tool steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160			
				RPM	4890	3910	3260	2440	1960	1630	1400	1220	980	810	610			
IPT				.00039	.00052	.00069	.00080	.00100	.00123	.00129	.00136	.00176	.00215	.00277				
IPM				8	8	9	8	8	8	7	7	7	7	7				
SFM				130	130	130	130	130	130	130	130	130	130	130	130			
RPM				3970	3180	2650	1990	1590	1320	1140	990	790	660	500				
IPT	.00021	.00030	.00037	.00043	.00058	.00073	.00079	.00085	.00115	.00138	.00165							
IPM	3	4	4	3	4	4	4	3	4	4	3							
11.1	High alloyed steel, and tool steel	0.7D	0.3D	SFM	160	160	160	160	160	160	160	160	160	160	160			
				RPM	4890	3910	3260	2440	1960	1630	1400	1220	980	810	610			
IPT				.00039	.00052	.00069	.00080	.00100	.00123	.00129	.00136	.00176	.00215	.00277				
IPM				8	8	9	8	8	8	7	7	7	7	7				
SFM				130	130	130	130	130	130	130	130	130	130	130	130			
RPM				3970	3180	2650	1990	1590	1320	1140	990	790	660	500				
IPT	.00021	.00030	.00037	.00043	.00058	.00073	.00079	.00085	.00115	.00138	.00165							
IPM	3	4	4	3	4	4	4	3	4	4	3							
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.7D	0.3D	SFM	220	220	220	220	220	220	220	220	220	220	220		
					RPM	6720	5380	4480	3360	2690	2240	1920	1680	1340	1120	840		
IPT					.00043	.00073	.00105	.00140	.00239	.00290	.00317	.00343	.00472	.00549	.00478			
IPM					11	16	19	19	26	26	24	23	25	25	16			
SFM					660	660	660	660	660	660	660	660	660	660	660	660		
RPM					20170	16130	13450	10080	8070	6720	5760	5040	4030	3360	2520			
IPT	.00026	.00035	.00052	.00061	.00091	.00117	.00140	.00162	.00188	.00227	.00290							
IPM	21	22	28	25	29	32	33	30	31	31	29							
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.7D	0.3D	SFM	660	660	660	660	660	660	660	660	660	660	660		
					RPM	20170	16130	13450	10080	8070	6720	5760	5040	4030	3360	2520		
IPT					.00026	.00035	.00052	.00061	.00091	.00117	.00140	.00162	.00188	.00227	.00290			
IPM					21	22	28	25	29	32	33	30	31	31	29			



**E5H99, E5I01, E5I05, E5I06, E5I08, E5I09 Uncoated**

**4 FLUTE BALL NOSE - SIDE CUTTING / INCH**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1		
P	1-4	Non-alloy steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100	100		
					RPM	3060	2440	2040	1530	1220	1020	870	760	610	510	380		
	IPT				.00038	.00051	.000675	.00078	.00097	.00124	.00128	.00132	.00177	.00214	.00277			
	IPM				5	5	5	5	5	5	4	4	4	4	4			
	SFM				85	85	85	85	85	85	85	85	85	85	85	85		
	RPM				2600	2080	1730	1300	1040	870	740	650	520	430	320			
	IPT	.00022	.00030	.00037	.00044	.00057	.00072	.00079	.00086	.00117	.00139	.00169						
	IPM	2	2	3	2	2	3	2	2	2	2	2						
	6-7	Low alloy steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100	100		
					RPM	3060	2440	2040	1530	1220	1020	870	760	610	510	380		
	IPT				.00038	.00051	.000675	.00078	.00097	.00124	.00128	.00132	.00177	.00214	.00277			
	IPM				5	5	5	5	5	5	4	4	4	4	4			
SFM	85				85	85	85	85	85	85	85	85	85	85	85			
RPM	2600				2080	1730	1300	1040	870	740	650	520	430	320				
IPT	.00022	.00030	.00037	.00044	.00057	.00072	.00079	.00086	.00117	.00139	.00169							
IPM	2	2	3	2	2	3	2	2	2	2	2							
8-9	High alloyed steel, and tool steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100	100			
				RPM	3060	2440	2040	1530	1220	1020	870	760	610	510	380			
IPT				.00038	.00051	.000675	.00078	.00097	.00124	.00128	.00132	.00177	.00214	.00277				
IPM				5	5	5	5	5	5	4	4	4	4	4				
SFM				85	85	85	85	85	85	85	85	85	85	85	85			
RPM				2600	2080	1730	1300	1040	870	740	650	520	430	320				
IPT	.00022	.00030	.00037	.00044	.00057	.00072	.00079	.00086	.00117	.00139	.00169							
IPM	2	2	3	2	2	3	2	2	2	2	2							
10	High alloyed steel, and tool steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100	100			
				RPM	3060	2440	2040	1530	1220	1020	870	760	610	510	380			
IPT				.00038	.00051	.000675	.00078	.00097	.00124	.00128	.00132	.00177	.00214	.00277				
IPM				5	5	5	5	5	5	4	4	4	4	4				
SFM				85	85	85	85	85	85	85	85	85	85	85	85			
RPM				2600	2080	1730	1300	1040	870	740	650	520	430	320				
IPT	.00022	.00030	.00037	.00044	.00057	.00072	.00079	.00086	.00117	.00139	.00169							
IPM	2	2	3	2	2	3	2	2	2	2	2							
11.1	High alloyed steel, and tool steel	0.7D	0.3D	SFM	100	100	100	100	100	100	100	100	100	100	100			
				RPM	3060	2440	2040	1530	1220	1020	870	760	610	510	380			
IPT				.00038	.00051	.000675	.00078	.00097	.00124	.00128	.00132	.00177	.00214	.00277				
IPM				5	5	5	5	5	5	4	4	4	4	4				
SFM				85	85	85	85	85	85	85	85	85	85	85	85			
RPM				2600	2080	1730	1300	1040	870	740	650	520	430	320				
IPT	.00022	.00030	.00037	.00044	.00057	.00072	.00079	.00086	.00117	.00139	.00169							
IPM	2	2	3	2	2	3	2	2	2	2	2							
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.7D	0.3D	SFM	140	140	140	140	140	140	140	140	140	140	140		
					RPM	4280	3420	2850	2140	1710	1430	1220	1070	860	710	530		
IPT					.00044	.00074	.00107	.00141	.00236	.00297	.00326	.00354	.00472	.00535	.00529			
IPM					8	10	12	12	16	17	16	15	16	15	11			
SFM					425	425	425	425	425	425	425	425	425	425	425	425		
RPM					12990	10390	8660	6490	5190	4330	3710	3250	2600	2160	1620			
IPT	.00026	.00034	.00050															

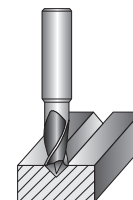


**G9131, G9133 X-Coating**

**2 FLUTE DRILL MILL - V-GROOVING**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)									
				1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	
P	1-2	Non-alloy steel	SFM	255	255	255	255	255	255	255	255	255	255
			RPM	7720	5150	3860	3090	2570	2210	1930	1540	1290	
			IPT	.00040	.00062	.00079	.00111	.00128	.00137	.00145	.00183	.00233	
	3-4		SFM	185	185	185	185	185	185	185	185	185	
			RPM	5610	3740	2810	2250	1870	1600	1400	1120	940	
			IPT	.00030	.00047	.00059	.00089	.00106	.00132	.00157	.00175	.00225	
	5		SFM	160	160	160	160	160	160	160	160	160	
			RPM	4910	3280	2460	1970	1640	1400	1230	980	820	
			IPT	.00030	.00045	.00066	.00106	.00115	.00126	.00138	.00179	.00230	
	6		SFM	255	255	255	255	255	255	255	255	255	
RPM		7720	5150	3860	3090	2570	2210	1930	1540	1290			
IPT		.00040	.00062	.00079	.00111	.00128	.00137	.00145	.00183	.00233			
7	SFM	185	185	185	185	185	185	185	185	185			
	RPM	5610	3740	2810	2250	1870	1600	1400	1120	940			
	IPT	.00030	.00047	.00059	.00089	.00106	.00132	.00157	.00175	.00225			
8-9	SFM	160	160	160	160	160	160	160	160	160			
	RPM	4910	3280	2460	1970	1640	1400	1230	980	820			
	IPT	.00030	.00045	.00066	.00106	.00115	.00126	.00138	.00179	.00230			
10	SFM	255	255	255	255	255	255	255	255	255			
	RPM	7720	5150	3860	3090	2570	2210	1930	1540	1290			
	IPT	.00040	.00062	.00079	.00111	.00128	.00137	.00145	.00183	.00233			
11.1	SFM	160	160	160	160	160	160	160	160	160			
	RPM	4910	3280	2460	1970	1640	1400	1230	980	820			
	IPT	.00030	.00045	.00066	.00106	.00115	.00126	.00138	.00179	.00230			
M	14.1	Stainless steel	SFM	140	140	140	140	140	140	140	140		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM	185	185	185	185	185	185	185	185		
			RPM	5610	3740	2810	2250	1870	1600	1400	1120	940	
			IPT	.00030	.00047	.00059	.00089	.00106	.00132	.00157	.00175	.00225	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM	690	690	690	690	690	690	690	690		
			RPM	21060	14040	10530	8420	7020	6020	5260	4210	3510	
			IPT	.00062	.00099	.00128	.00176	.00205	.00219	.00233	.00322	.00409	
IPM	26	28	27	30	29	26	24	27	29				

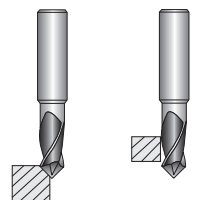


**G9131, G9133 X-Coating**

**2 FLUTE DRILL MILL - CHAMFERING & SIDE CUTTING**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)									
				1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	
P	1-2	Non-alloy steel	SFM	250	250	250	250	250	250	250	250	250	250
			RPM	7700	5130	3850	3080	2570	2200	1930	1540	1280	
			IPT	.00052	.00081	.00102	.00145	.00166	.00178	.00189	.00238	.00302	
	3-4		SFM	185	185	185	185	185	185	185	185	185	
			RPM	5600	3740	2800	2240	1870	1600	1400	1120	930	
			IPT	.00038	.00061	.00077	.00116	.00138	.00171	.00205	.00227	.00292	
	5		SFM	160	160	160	160	160	160	160	160	160	
			RPM	4920	3280	2460	1970	1640	1410	1230	980	820	
			IPT	.00039	.00058	.00085	.00138	.00149	.00164	.00179	.00233	.00299	
	6		SFM	250	250	250	250	250	250	250	250	250	
RPM		7700	5130	3850	3080	2570	2200	1930	1540	1280			
IPT		.00052	.00081	.00102	.00145	.00166	.00178	.00189	.00238	.00302			
7	SFM	185	185	185	185	185	185	185	185	185			
	RPM	5600	3740	2800	2240	1870	1600	1400	1120	930			
	IPT	.00038	.00061	.00077	.00116	.00138	.00171	.00205	.00227	.00292			
8-9	SFM	160	160	160	160	160	160	160	160	160			
	RPM	4920	3280	2460	1970	1640	1410	1230	980	820			
	IPT	.00039	.00058	.00085	.00138	.00149	.00164	.00179	.00233	.00299			
10	SFM	250	250	250	250	250	250	250	250	250			
	RPM	7700	5130	3850	3080	2570	2200	1930	1540	1280			
	IPT	.00052	.00081	.00102	.00145	.00166	.00178	.00189	.00238	.00302			
11.1	SFM	160	160	160	160	160	160	160	160	160			
	RPM	4920	3280	2460	1970	1640	1410	1230	980	820			
	IPT	.00039	.00058	.00085	.00138	.00149	.00164	.00179	.00233	.00299			
M	14.1	Stainless steel	SFM	135	135	135	135	135	135	135	135		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM	185	185	185	185	185	185	185	185		
			RPM	5600	3740	2800	2240	1870	1600	1400	1120	930	
			IPT	.00038	.00061	.00077	.00116	.00138	.00171	.00205	.00227	.00292	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM	690	690	690	690	690	690	690	690		
			RPM	21050	14030	10520	8420	7020	6010	5260	4210	3510	
			IPT	.00080	.00129	.00166	.00229	.00266	.00284	.00302	.00419	.00531	
IPM	34	36	35	39	37	34	32	35	37				

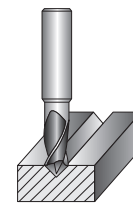


**E5131, E5133 Uncoated**

**2 FLUTE DRILL MILL - V-GROOVING**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)									
				1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	
P	1-2	Non-alloy steel	SFM	180	180	180	180	180	180	180	180	180	180
			RPM	5510	3680	2760	2210	1840	1580	1380	1100	920	
			IPT	.00040	.00062	.00079	.00111	.00128	.00137	.00145	.00183	.00233	
	3-4		SFM	130	130	130	130	130	130	130	130	130	
			RPM	4010	2670	2010	1600	1340	1150	1000	800	670	
			IPT	.00030	.00047	.00059	.00089	.00106	.00132	.00157	.00175	.00225	
	5		SFM	115	115	115	115	115	115	115	115	115	
			RPM	3510	2340	1750	1400	1170	1000	880	700	580	
			IPT	.00030	.00045	.00066	.00106	.00115	.00126	.00138	.00179	.00230	
	6		SFM	180	180	180	180	180	180	180	180	180	
			RPM	5510	3680	2760	2210	1840	1580	1380	1100	920	
			IPT	.00040	.00062	.00079	.00111	.00128	.00137	.00145	.00183	.00233	
7	SFM	130	130	130	130	130	130	130	130	130			
	RPM	4010	2670	2010	1600	1340	1150	1000	800	670			
	IPT	.00030	.00047	.00059	.00089	.00106	.00132	.00157	.00175	.00225			
8-9	SFM	115	115	115	115	115	115	115	115	115			
	RPM	3510	2340	1750	1400	1170	1000	880	700	580			
	IPT	.00030	.00045	.00066	.00106	.00115	.00126	.00138	.00179	.00230			
10	SFM	180	180	180	180	180	180	180	180	180			
	RPM	5510	3680	2760	2210	1840	1580	1380	1100	920			
	IPT	.00040	.00062	.00079	.00111	.00128	.00137	.00145	.00183	.00233			
11.1	SFM	115	115	115	115	115	115	115	115	115			
	RPM	3510	2340	1750	1400	1170	1000	880	700	580			
	IPT	.00030	.00045	.00066	.00106	.00115	.00126	.00138	.00179	.00230			
M	14.1	Stainless steel	SFM	100	100	100	100	100	100	100	100		
			RPM	3010	2010	1500	1200	1000	860	750	600	500	
			IPT	.00033	.00045	.00056	.00072	.00079	.00112	.00146	.00149	.00224	
			IPM	2	2	2	2	2	2	2	2	2	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM	130	130	130	130	130	130	130	130		
			RPM	4010	2670	2010	1600	1340	1150	1000	800	670	
			IPT	.00030	.00047	.00059	.00089	.00106	.00132	.00157	.00175	.00225	
			IPM	2	3	2	3	3	3	3	3	3	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM	490	490	490	490	490	490	490	490		
			RPM	15040	10030	7520	6020	5010	4300	3760	3010	2510	
			IPT	.00062	.00099	.00128	.00176	.00205	.00219	.00233	.00322	.00409	
			IPM	19	20	19	21	21	19	17	19	20	

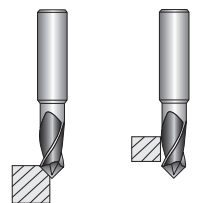


**E5131, E5133 Uncoated**

**2 FLUTE DRILL MILL - CHAMFERING & SIDE CUTTING**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)									
				1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	
P	1-2	Non-alloy steel	SFM	180	180	180	180	180	180	180	180	180	180
			RPM	5500	3670	2750	2200	1830	1570	1380	1100	920	
			IPT	.00052	.00081	.00102	.00145	.00166	.00178	.00189	.00238	.00302	
	3-4		SFM	130	130	130	130	130	130	130	130	130	
			RPM	4000	2670	2000	1600	1330	1140	1000	800	670	
			IPT	.00038	.00061	.00077	.00116	.00138	.00171	.00205	.00227	.00292	
	5		SFM	115	115	115	115	115	115	115	115	115	
			RPM	3510	2340	1760	1410	1170	1000	880	700	590	
			IPT	.00039	.00058	.00085	.00138	.00149	.00164	.00179	.00233	.00299	
	6		SFM	180	180	180	180	180	180	180	180	180	
			RPM	5500	3670	2750	2200	1830	1570	1380	1100	920	
			IPT	.00052	.00081	.00102	.00145	.00166	.00178	.00189	.00238	.00302	
7	SFM	130	130	130	130	130	130	130	130	130			
	RPM	4000	2670	2000	1600	1330	1140	1000	800	670			
	IPT	.00038	.00061	.00077	.00116	.00138	.00171	.00205	.00227	.00292			
8-9	SFM	115	115	115	115	115	115	115	115	115			
	RPM	3510	2340	1760	1410	1170	1000	880	700	590			
	IPT	.00039	.00058	.00085	.00138	.00149	.00164	.00179	.00233	.00299			
10	SFM	180	180	180	180	180	180	180	180	180			
	RPM	5500	3670	2750	2200	1830	1570	1380	1100	920			
	IPT	.00052	.00081	.00102	.00145	.00166	.00178	.00189	.00238	.00302			
11.1	SFM	115	115	115	115	115	115	115	115	115			
	RPM	3510	2340	1760	1410	1170	1000	880	700	590			
	IPT	.00039	.00058	.00085	.00138	.00149	.00164	.00179	.00233	.00299			
M	14.1	Stainless steel	SFM	100	100	100	100	100	100	100	100		
			RPM	2990	2000	1500	1200	1000	860	750	600	500	
			IPT	.00043	.00058	.00073	.00093	.00102	.00146	.00190	.00194	.00291	
			IPM	3	2	2	2	2	2	3	2	3	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM	130	130	130	130	130	130	130	130		
			RPM	4000	2670	2000	1600	1330	1140	1000	800	670	
			IPT	.00038	.00061	.00077	.00116	.00138	.00171	.00205	.00227	.00292	
			IPM	3	3	3	4	4	4	4	4	4	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM	490	490	490	490	490	490	490	490		
			RPM	15040	10020	7520	6010	5010	4300	3760	3010	2510	
			IPT	.00080	.00129	.00166	.00229	.00266	.00284	.00302	.00419	.00531	
			IPM	24	26	25	28	27	24	23	25	27	

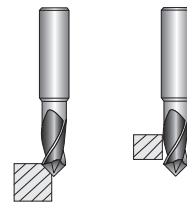


**G9132, G9134 X-Coating**

**4 FLUTE DRILL MILL - CHAMFERING & SIDE CUTTING**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)									
				1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	
P	1-2	Non-alloy steel	SFM	250	250	250	250	250	250	250	250	250	250
			RPM	7700	5130	3850	3080	2570	2200	1930	1540	1280	
			IPT	.00104	.00162	.00205	.00289	.00333	.00355	.00378	.00475	.00605	
	3-4		SFM	185	185	185	185	185	185	185	185	185	
			RPM	5600	3740	2800	2240	1870	1600	1400	1120	930	
			IPT	.00077	.00123	.00154	.00233	.00276	.00343	.00409	.00455	.00585	
	5		SFM	160	160	160	160	160	160	160	160	160	
			RPM	4920	3280	2460	1970	1640	1410	1230	980	820	
			IPT	.00078	.00116	.00171	.00276	.00299	.00328	.00358	.00465	.00597	
	6		SFM	250	250	250	250	250	250	250	250	250	
RPM		7700	5130	3850	3080	2570	2200	1930	1540	1280			
IPT		.00104	.00162	.00205	.00289	.00333	.00355	.00378	.00475	.00605			
7	SFM	185	185	185	185	185	185	185	185	185			
	RPM	5600	3740	2800	2240	1870	1600	1400	1120	930			
	IPT	.00077	.00123	.00154	.00233	.00276	.00343	.00409	.00455	.00585			
8-9	SFM	160	160	160	160	160	160	160	160	160			
	RPM	4920	3280	2460	1970	1640	1410	1230	980	820			
	IPT	.00078	.00116	.00171	.00276	.00299	.00328	.00358	.00465	.00597			
10	SFM	250	250	250	250	250	250	250	250	250			
	RPM	7700	5130	3850	3080	2570	2200	1930	1540	1280			
	IPT	.00104	.00162	.00205	.00289	.00333	.00355	.00378	.00475	.00605			
11.1	SFM	160	160	160	160	160	160	160	160	160			
	RPM	4920	3280	2460	1970	1640	1410	1230	980	820			
	IPT	.00078	.00116	.00171	.00276	.00299	.00328	.00358	.00465	.00597			
M	14.1	Stainless steel	SFM	135	135	135	135	135	135	135	135	135	
			RPM	4190	2800	2100	1680	1400	1200	1050	840	700	
			IPT	.00085	.00116	.00146	.00186	.00205	.00292	.00379	.00388	.00582	
			IPM	7	7	6	6	6	7	8	7	8	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM	185	185	185	185	185	185	185	185	185	
			RPM	5600	3740	2800	2240	1870	1600	1400	1120	930	
			IPT	.00077	.00123	.00154	.00233	.00276	.00343	.00409	.00455	.00585	
			IPM	9	9	9	10	10	11	11	10	11	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM	690	690	690	690	690	690	690	690	690	
			RPM	21050	14030	10520	8420	7020	6010	5260	4210	3510	
			IPT	.00161	.00259	.00332	.00459	.00532	.00569	.00605	.00838	.01063	
			IPM	68	73	70	77	75	68	64	71	75	

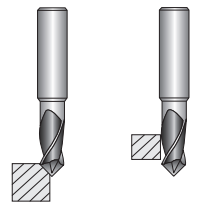


**E5132, E5134 Uncoated**

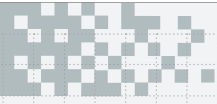
**4 FLUTE DRILL MILL - CHAMFERING & SIDE CUTTING**

SFM = ft./min. IPT = In./tooth  
RPM = rev./min. IPM = In./min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)									
				1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	
P	1-2	Non-alloy steel	SFM	180	180	180	180	180	180	180	180	180	180
			RPM	5500	3670	2750	2200	1830	1570	1380	1100	920	
			IPT	.00052	.00081	.00102	.00145	.00166	.00178	.00189	.00238	.00302	
	3-4		SFM	130	130	130	130	130	130	130	130	130	
			RPM	4000	2670	2000	1600	1330	1140	1000	800	670	
			IPT	.00038	.00061	.00077	.00116	.00138	.00171	.00205	.00227	.00292	
	5		SFM	115	115	115	115	115	115	115	115	115	
			RPM	3510	2340	1760	1410	1170	1000	880	700	590	
			IPT	.00039	.00058	.00085	.00138	.00149	.00164	.00179	.00233	.00299	
	6		SFM	180	180	180	180	180	180	180	180	180	
RPM		5500	3670	2750	2200	1830	1570	1380	1100	920			
IPT		.00052	.00081	.00102	.00145	.00166	.00178	.00189	.00238	.00302			
7	SFM	130	130	130	130	130	130	130	130	130			
	RPM	4000	2670	2000	1600	1330	1140	1000	800	670			
	IPT	.00038	.00061	.00077	.00116	.00138	.00171	.00205	.00227	.00292			
8-9	SFM	115	115	115	115	115	115	115	115	115			
	RPM	3510	2340	1760	1410	1170	1000	880	700	590			
	IPT	.00039	.00058	.00085	.00138	.00149	.00164	.00179	.00233	.00299			
10	SFM	180	180	180	180	180	180	180	180	180			
	RPM	5500	3670	2750	2200	1830	1570	1380	1100	920			
	IPT	.00052	.00081	.00102	.00145	.00166	.00178	.00189	.00238	.00302			
11.1	SFM	115	115	115	115	115	115	115	115	115			
	RPM	3510	2340	1760	1410	1170	1000	880	700	590			
	IPT	.00039	.00058	.00085	.00138	.00149	.00164	.00179	.00233	.00299			
M	14.1	Stainless steel	SFM	100	100	100	100	100	100	100	100	100	
			RPM	2990	2000	1500	1200	1000	860	750	600	500	
			IPT	.00043	.00058	.00073	.00093	.00102	.00146	.00190	.00194	.00291	
			IPM	5	5	4	4	4	5	6	5	6	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM	130	130	130	130	130	130	130	130	130	
			RPM	4000	2670	2000	1600	1330	1140	1000	800	670	
			IPT	.00038	.00061	.00077	.00116	.00138	.00171	.00205	.00227	.00292	
			IPM	6	7	6	7	7	8	8	7	8	
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	SFM	490	490	490	490	490	490	490	490	490	
			RPM	15040	10020	7520	6010	5010	4300	3760	3010	2510	
			IPT	.00080	.00129	.00166	.00229	.00266	.00284	.00302	.00419	.00531	
			IPM	48	52	50	55	53	49	45	50	53	



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