


E2163 SERIES

8% COBALT (M42)
FLAT SHANK

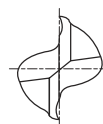
E1163 SERIES

HSS (M2)
FLAT SHANK

CARBIDE
HSS

HSSCo8 & HSS, 2 FLUTE 15° HELIX for KEYWAY CUTTING

► E2163(E1163) are keyway cutting end mills that have the same design as the general purpose two flute single end mill, but are held to a mill diameter tolerance of +.0000 -.0015. These close tolerance end mills are recommended for cutting keyway which must be held close to nominal size.



P.881,887, 891

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
14289	14039	1/8	3/8	3/8	2-5/16
14293	14043	3/16	3/8	7/16	2-5/16
14297	14047	1/4	3/8	1/2	2-5/16
14301	14051	5/16	3/8	9/16	2-5/16
14305	14055	3/8	3/8	9/16	2-5/16
14312	14062	7/16	3/8	13/16	2-1/2
14321	14071	1/2	1/2	1	3
14337	14087	5/8	5/8	1-5/16	3-7/16
14359	14109	3/4	3/4	1-5/16	3-9/16
14394	14144	7/8	7/8	1-1/2	3-3/4
14426	14176	1	1	1-5/8	4-1/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

Mill Dia.
Tolerance (inch)

0~-.0015

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CBN
END MILL

i-Xmill
END MILL

X5070
END MILLS

4G MILLS
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

V7 Mill STEEL
END MILLS

V7 Mill INOX
END MILLS

ALU-POWER
END MILLS

D-POWER
END MILLS

STANDARD
CARBIDE
END MILLS

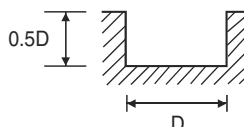
TANK-POWER
END MILLS

STANDARD
COBALT
& HSS
END MILLS

TECHNICAL
DATA

HSSCo8 & HSS, 2 FLUTE FINISH - SLOTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRC20		HRC20~HRC30		HRC30~HRC40			
STRENGTH	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	3500	2.2	3200	1.8	2500	1.6	1600	0.8	11000	9.8
1/4	1800	3.5	1600	3.1	1200	2.4	800	1.6	5600	12.2
3/8	1100	4.0	900	3.5	800	3.1	450	1.8	3100	15.8
1/2	900	4.3	800	4.0	630	3.1	400	2.0	2500	15.0
5/8	700	4.3	560	3.5	450	2.8	280	1.8	2000	13.8
3/4	630	4.0	500	3.5	400	2.8	250	1.8	1800	13.8
7/8	500	4.0	450	3.5	350	2.8	220	1.8	1400	11.8
1	450	3.5	400	3.1	310	2.4	180	1.4	1200	11.0
1-1/8	400	3.1	350	2.8	280	2.2	160	1.2	1100	10.5
1-3/8	310	2.4	250	2.0	200	1.6	120	1.0	900	8.7
1-1/2	310	2.4	250	2.0	200	1.6	120	1.0	900	8.7
1-3/4	280	2.4	220	2.0	180	1.6	110	1.0	800	7.8
2	250	2.0	190	1.8	110	1.0	80	0.8	630	6.3

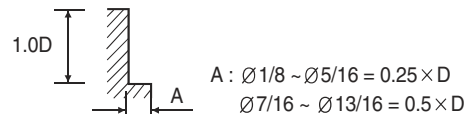
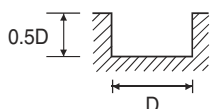


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSS, 2 FLUTE, 42° HELIX FINISH for ALUMINUM

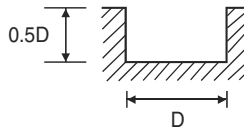
MATERIAL	ALUMINUM NONFERROUS METALS		NON-ALLOYED STEELS ALLOY STEELS CAST IRON	
DIAMETER	RPM	FEED	RPM	FEED
1/8	8000	22.5	8000	29.0
3/16	7400	25.0	7400	32.5
1/4	6800	28.5	6800	37.0
5/16	5200	43.5	5200	55.0
7/16	5000	47.0	5000	47.0
1/2	4500	47.0	4500	61.0
9/16	3500	49.0	3500	63.0
5/8	3500	49.0	3500	63.0
3/4	2300	51.0	2300	67.0
13/16	2000	51.0	2000	67.0



RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, 2 FLUTE FINISH TiN-COATED - SLOTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4200	2.6	3840	2.2	3000	1.9	1920	1.0	13200	11.8
1/4	2160	4.2	1920	3.7	1440	2.9	960	1.9	6720	14.6
3/8	1320	4.8	1080	4.2	960	3.7	540	2.2	3720	19.0
1/2	1090	5.2	960	4.8	756	3.7	480	2.4	3000	18.0
5/8	840	5.2	672	4.2	540	3.7	336	2.2	2400	16.6
3/4	756	4.8	600	4.2	480	3.4	300	2.2	2160	16.6
7/8	600	4.8	540	4.2	420	3.4	264	2.2	1680	14.2
1	540	4.2	480	3.7	372	2.9	260	2.2	1440	13.2
1-1/8	480	3.7	420	3.4	336	2.6	432	1.7	1320	12.6
1-3/8	372	2.9	300	2.4	240	1.9	144	1.2	1080	10.4
1-1/2	372	2.9	300	2.4	240	1.9	144	1.2	1080	10.4
1-3/4	336	2.9	264	2.4	216	1.9	132	1.2	960	9.5
2	300	2.4	228	2.2	132	1.2	96	1.0	756	7.6

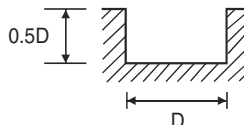


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, 3 FLUTE FINISH TiN-COATED - SLOTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	6720	2.8	5400	2.2	4800	2.2	2640	1.0	14400	11.3
1/5	4200	3.7	3840	3.1	3000	2.9	1920	1.4	13200	18.0
1/4	2160	6.4	1920	5.6	1440	4.2	960	2.9	6720	21.7
3/8	1320	7.2	1080	6.4	960	5.6	540	3.1	3720	28.3
1/2	1080	7.8	960	7.2	756	5.6	480	3.6	3000	26.9
5/8	840	7.8	672	6.4	540	4.9	336	3.1	2400	25.1
11/16	756	7.2	600	6.4	480	4.9	300	3.1	2160	25.1
7/8	600	7.2	540	6.4	420	4.9	264	3.1	1680	21.2
1	540	6.4	480	5.6	372	4.2	216	2.4	1440	19.8
1-1/8	430	5.6	420	4.9	336	3.7	192	2.2	1320	19.0
1-3/16	420	4.9	372	4.2	300	3.6	192	2.2	1320	19.0

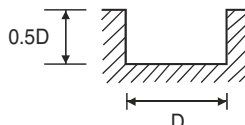


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, 2 FLUTE FINISH TiCN-COATED - SLOTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4550	2.9	3840	2.3	3250	2.1	2048	1.0	14300	12.7
1/4	2340	4.6	2080	4.0	1560	3.1	1040	3.2	7280	15.9
3/8	1430	5.2	1170	4.6	1040	4.0	585	3.2	4030	20.5
1/2	1170	5.6	1040	5.2	819	4.0	520	2.8	3250	19.5
5/8	910	5.6	728	4.6	585	3.6	364	2.3	2600	17.9
3/4	819	5.2	650	4.6	520	3.6	325	2.3	2340	17.9
7/8	650	5.2	585	4.6	455	3.6	286	2.3	1820	15.3
1	585	4.6	520	4.0	403	3.1	234	1.8	1560	14.3
1-1/8	520	4.0	455	3.6	364	2.9	208	1.6	1430	13.7
1-3/8	403	3.1	325	2.6	260	2.1	156	1.3	1170	11.3
1-1/2	403	3.1	325	2.6	260	2.1	156	1.3	1170	11.3
1-3/4	364	3.1	286	2.6	234	2.1	143	1.3	1040	10.3
2	325	2.6	228	2.3	143	1.3	104	1.0	819	8.2

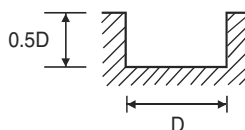


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, 3 FLUTE FINISH TiCN-COATED - SLOTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm ²		500~800N/mm ²		800~1000N/mm ²		1000~1300N/mm ²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	7280	3.1	5850	2.3	5200	2.3	2860	1.0	15600	12.2
1/8	4550	4.0	2340	3.4	3250	3.1	2080	1.6	14300	19.5
1/4	2340	6.9	2080	6.1	1560	4.6	1040	3.1	7280	23.5
3/8	1430	7.8	1170	6.9	1040	6.1	585	3.4	4030	30.7
1/2	1170	8.5	1040	7.8	819	6.1	520	3.8	3250	29.1
9/16	1040	8.5	910	6.9	728	6.1	455	3.8	2860	27.2
5/8	910	8.5	728	6.9	585	5.3	364	3.4	2600	27.2
7/8	650	7.8	585	6.9	455	5.3	286	3.4	1820	23.0
1	585	6.9	520	6.1	403	4.6	234	2.6	1560	21.5
1-1/8	520	6.9	455	5.3	364	4.3	208	2.3	1430	20.5



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.