

HIGH SPEED STEEL AND COBALT STEEL

3/16" SHANK (MINIATURE) DIAMETER DOUBLE END END MILLS

2 FLUTE STUB LENGTH

SERIES 577: HIGH SPEED
SERIES 593: COBALT



Mill Dia.	LOC	OAL	High Speed		Cobalt	
			Order No.	Price	Order No.	Price
1/32	3/64	2	5772020		5932020	
3/64	1/16	2	5772030		5932030	
1/16	3/32	2	5772040		5932040	
5/64	1/8	2	5772050		5932050	
3/32	9/64	2	5772060		5932060	
7/64	5/32	2	5772070		5932070	
1/8	3/16	2	5772080		5932080	
9/64	7/32	2	5772090		5932090	
5/32	15/64	2	5772100		5932100	
11/64	1/4	2	5772110		5932110	
3/16	9/32	2	5772120		5932120	

2 FLUTE REGULAR LENGTH

SERIES 89: HIGH SPEED
SERIES 594: COBALT



Mill Dia	LOC	OAL	High Speed		Cobalt	
			Order No.	Price	Order No.	Price
1/32	3/32	2-1/4	1280020		5942020	
3/64	9/64	2-1/4	1280030		5942030	
1/16	3/16	2-1/4	1280040		5942040	
5/64	15/64	2-1/4	1280050		5942050	
3/32	5/16	2-1/4	1280060		5942060	
7/64	5/16	2-1/4	1280070		5942070	
1/8	3/8	2-1/4	1280080		5942080	
9/64	3/8	2-1/4	1280090		5942090	
5/32	7/16	2-1/4	1280100		5942100	
11/64	7/16	2-1/4	1280110		5942110	
3/16	1/2	2-1/4	1280120		5942120	

2 FLUTE LONG LENGTH

SERIES 90: HIGH SPEED
SERIES 595: COBALT



Mill Dia.	LOC	OAL	High Speed		Cobalt	
			Order No.	Price	Order No.	Price
1/16	7/32	2-1/2	1285040		5952040	
5/64	1/4	2-1/2	1285050		5952050	
3/32	9/32	2-5/8	1285060		5952060	
7/64	9/32	2-5/8	1285070		5952070	
1/8	3/4	3-1/8	1285080		5952080	
9/64	3/4	3-1/8	1285090		5952090	
5/32	7/8	3-1/4	1285100		5952100	
11/64	7/8	3-1/4	1285110		5952110	
3/16	1	3-3/8	1285120		5952120	

4 FLUTE STUB LENGTH

SERIES 580: HIGH SPEED
SERIES 598: COBALT



Mill Dia.	LOC	OAL	High Speed		Cobalt	
			Order No.	Price	Order No.	Price
1/16	3/32	2	5804040		5982040	
5/64	1/8	2	5804050		5982050	
3/32	9/64	2	5804060		5982060	
7/64	5/32	2	5804070		5982070	
1/8	3/16	2	5804080		5982080	
9/64	7/32	2	5804090		5982090	
5/32	15/64	2	5804100		5982100	
11/64	1/4	2	5804110		5982110	
3/16	9/32	2	5804120		5982120	

4 FLUTE STANDARD LENGTH

SERIES 91: HIGH SPEED
SERIES 599: COBALT



Mill Dia.	LOC	OAL	High Speed		Cobalt	
			Order No.	Price	Order No.	Price
1/16	3/16	2-1/4	1290040		5994040	
5/64	5/16	2-1/4	1290050		5994050	
3/32	5/16	2-1/4	1290060		5994060	
7/64	5/16	2-1/4	1290070		5994070	
1/8	3/8	2-1/4	1290080		5994080	
9/64	3/8	2-1/4	1290090		5994090	
5/32	7/16	2-1/4	1290100		5994100	
11/64	7/16	2-1/4	1290110		5994110	
3/16	1/2	2-1/4	1290120		5994120	

4 FLUTE LONG LENGTH

SERIES 92: HIGH SPEED
SERIES 606: COBALT



Mill Dia.	LOC	OAL	High Speed		Cobalt	
			Order No.	Price	Order No.	Price
1/16	7/32	2-1/2	1295040		6064040	
5/64	1/4	2-1/2	1295050		6064050	
3/32	9/32	2-5/8	1295060		6064060	
7/64	9/32	2-5/8	1295070		6064070	
1/8	3/4	3-1/8	1295080		6064080	
9/64	3/4	3-1/8	1295090		6064090	
5/32	7/8	3-1/4	1295100		6064100	
11/64	7/8	3-1/4	1295110		6064110	
3/16	1	3-3/8	1295120		6064120	

HIGH SPEED STEEL AND COBALT STEEL

3/16" SHANK DIAMETER DOUBLE END END MILLS

**2 FLUTE
REGULAR LENGTH BALL**

SERIES 578: HIGH SPEED
SERIES 596: COBALT



Mill Dia.	LOC	OAL	HIGH SPEED		COBALT	
			Order No.	Price	Order No.	Price
1/16	7/32	2-1/4	5782040		5962040	
5/64	15/64	2-1/4	5782050		5962050	
3/32	5/16	2-1/4	5782060		5962060	
7/64	5/16	2-1/4	5782070		5962070	
1/8	3/8	2-1/4	5782080		5962080	
9/64	3/8	2-1/4	5782090		5962090	
5/32	7/16	2-1/4	5782100		5962100	
11/64	7/16	2-1/4	5782110		5962110	
3/16	1/2	2-1/4	5782120		5962120	

**2 FLUTE
LONG LENGTH BALL**

SERIES 579: HIGH SPEED
SERIES 597: COBALT



Mill Dia.	LOC	OAL	HIGH SPEED		COBALT	
			Order No.	Price	Order No.	Price
1/16	7/32	2-1/2	5792040		5972040	
5/64	1/4	2-1/2	5792050		5972050	
3/32	9/32	2-5/8	5792060		5972060	
7/64	9/32	2-5/8	5792070		5972070	
1/8	3/4	3-1/8	5792080		5972080	
9/64	3/4	3-1/8	5792090		5972090	
5/32	7/8	3-1/4	5792100		5972100	
11/64	7/8	3-1/4	5792110		5972110	
3/16	1	3-3/8	5792120		5972120	

CUTTING TOOLS - END MILLS

HIGH SPEED STEEL AND COBALT STEEL

2 FLUTE DOUBLE END CENTER-CUTTING MINIATURE END MILLS

Stub Length / Regular Length / Long Length
SERIES 734:



Mill Dia.	Shank Dia.	Flute Length	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
1/32	3/16	3/64	2	165020		265020	
1/32	3/16	3/32	2-1/4	165140		265140	
3/64	3/16	1/16	2	165030		265030	
3/64	3/16	9/64	2-1/4	165150		265150	
1/16	3/16	3/32	2	165040		265040	
1/16	3/16	3/16	2-1/4	165160		265160	
1/16	3/16	7/32	2-1/2	165280		265280	
5/64	3/16	1/8	2	165050		265050	
5/64	3/16	15/64	2-1/4	165170		265170	
3/32	3/16	9/64	2	165060		265060	
3/32	3/16	9/32	2-1/4	165180		265180	
7/64	3/16	5/32	2	165070		265070	
7/64	3/16	21/64	2-1/4	165190		265190	
1/8	3/16	3/16	2	165080		265080	
1/8	3/16	3/8	2-1/4	165200		265200	
1/8	3/16	3/4	3-1/8	165320		265320	
9/64	3/16	7/32	2	165090		265090	
9/64	3/16	13/32	2-1/4	165210		265210	
5/32	3/16	15/64	2	165100		265100	
5/32	3/16	7/16	2-1/4	165220		265220	
5/32	3/16	7/8	3-1/4	165340		265340	
11/64	3/16	1/4	2	165110		265110	
11/64	3/16	1/2	2-1/4	165230		265230	
3/16	3/16	9/32	2	165120		265120	
3/16	3/16	1/2	2-1/4	165240		265240	
3/16	3/16	1	3-3/8	165360		265360	



HIGH SPEED STEEL AND COBALT STEEL

4 FLUTE DOUBLE END MINIATURE END MILLS

Stub Length / Regular Length / Long Length
SERIES 741:



Mill Dia.	Shank Dia.	Flute Length	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
1/16	3/16	3/32	2	166240		266240	
1/16	3/16	3/16	2-1/4	166360		266360	
1/16	3/16	7/32	2-1/2	166480		266480	
5/64	3/16	1/8	2	166250		266250	
5/64	3/16	15/64	2-1/4	166370		266370	
3/32	3/16	9/64	2	166260		266260	
3/32	3/16	9/32	2-1/4	166380		266380	
7/64	3/16	5/32	2	166270		266270	
7/64	3/16	21/64	2-1/4	166390		266390	
1/8	3/16	3/16	2	166280		266280	
1/8	3/16	3/8	2-1/4	166400		266400	
1/8	3/16	3/4	3-1/8	166520		266520	
9/64	3/16	3/16	2	166290		266290	
9/64	3/16	27/64	2-1/4	166410		266410	
5/32	3/16	15/64	2	166300		266300	
5/32	3/16	7/16	2-1/4	166420		266420	
5/32	3/16	7/8	3-1/4	166540		266540	
11/64	3/16	1/4	2	166310		266310	
11/64	3/16	33/64	2-1/4	166430		266430	
3/16	3/16	9/32	2	166320		266320	
3/16	3/16	1/2	2-1/4	166440		266440	
3/16	3/16	1	3-3/8	166560		266560	

CUTTING TOOLS - END MILLS

HIGH SPEED STEEL AND COBALT STEEL

2 FLUTE DOUBLE END BALL END MINIATURE END MILLS

Stub Length / Regular Length / Long Length
SERIES 740:



Mill Dia.	Shank Dia.	Flute Length	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
1/32	3/16	3/64	2	-		11114	
1/32	3/16	3/32	2-1/4	165740		265740	
3/64	3/16	1/16	2	-		11116	
3/64	3/16	9/64	2-1/4	165750		265750	
1/16	3/16	3/32	2	165640		265640	
1/16	3/16	3/16	2-1/4	165760		265760	
1/16	3/16	7/32	2-1/2	165880		265880	
5/64	3/16	1/8	2	-		11120	
5/64	3/16	15/64	2-1/4	165770		265770	
3/32	3/16	9/64	2	165660		265660	
3/32	3/16	9/32	2-1/4	165780		265780	
3/32	3/16	1/2	2-5/8	-		911060	
7/64	3/16	5/32	2	-		11124	
7/64	3/16	21/64	2-1/4	165790		265790	
1/8	3/16	3/16	2	165680		265680	
1/8	3/16	3/8	2-1/4	165800		265800	
1/8	3/16	3/4	3-1/8	165920		265920	
9/64	3/16	7/32	2	-		11128	
9/64	3/16	13/32	2-1/4	165810		265810	
5/32	3/16	15/64	2	165700		265700	
5/32	3/16	7/16	2-1/4	165820		265820	
5/32	3/16	7/8	3-1/4	165940		265940	
11/64	3/16	1/4	2	-		911132	
11/64	3/16	1/2	2-1/4	165830		265830	
3/16	3/16	9/32	2	165720		265720	
3/16	3/16	1/2	2-1/4	165840		265840	
3/16	3/16	1	3-3/8	165960		265960	

HIGH SPEED STEEL AND COBALT STEEL

TWO FLUTE SINGLE END END MILLS

SERIES 95: HIGH SPEED
SERIES 82: COBALT STEEL



Mill Dia.	Shank Dia.	Length of Cut	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
1/8	3/8	3/8	2-5/16	2000071		1900081	
5/32	3/8	7/16	2-5/16	2000101		1900101	
3/16	3/8	7/16	2-5/16	2000133		1900121	
7/32	3/8	1/2	2-5/16	2000141		1900141	
1/4	3/8	1/2	2-5/16	2000161		1900161	
9/32	3/8	9/16	2-5/16	2000181		1900181	
5/16	3/8	9/16	2-5/16	2000201		1900201	
11/32	3/8	9/16	2-5/16	2000221		1900221	
3/8	3/8	9/16	2-5/16	2000241		1900241	
13/32	3/8	13/16	2-1/2	2000261		1900261	
7/16	3/8	13/16	2-1/2	2000281		1900281	
15/32	3/8	13/16	2-1/2	2000301		1900301	
1/2	3/8	13/16	2-1/2	2000321		1900321	
1/2	1/2	1	3	2000322		1900322	
9/16	1/2	1-1/8	3-1/8	2000362		1900362	
5/8	1/2	1-1/8	3-1/8	2000402		1900402	
5/8	5/8	1-5/16	3-7/16	2000403		1900403	
11/16	1/2	1-5/16	3-5/16	2000442		1900442	
11/16	5/8	1-5/16	3-7/16	2000443		1900443	
3/4	1/2	1-5/16	3-5/16	2000482		1900482	
3/4	5/8	1-5/16	3-7/16	2000481		1900483	
3/4	3/4	1-5/16	3-7/16	2000484		1900484	
13/16	1/2	1-1/2	3-5/8	2000522		-	
13/16	5/8	1-1/2	3-5/8	2000523		1900523	
13/16	3/4	1-1/2	3-3/4	2000524		1900524	
7/8	1/2	1-1/2	3-1/2	2000562		1900562	
7/8	5/8	1-1/2	3-5/8	2000563		1900563	
7/8	3/4	1-1/2	3-3/4	2000564		1900564	
7/8	7/8	1-1/2	3-3/4	2000565		1900565	
15/16	1/2	1-1/2	3-1/2	2000602		-	
15/16	5/8	1-1/2	3-5/8	2000603		-	
15/16	3/4	1-1/2	3-3/4	2000604		1900604	
15/16	7/8	1-1/2	3-3/4	2000605		-	
1	1/2	1-1/2	3-1/2	2000642		1900642	
1	5/8	1-1/2	3-5/8	2000643		1900643	
1	3/4	1-1/2	3-3/4	2000634		1900644	
1	7/8	1-1/2	3-3/4	2000645		-	
1	1	1-5/8	4-1/8	2000646		1900646	
1-1/16	5/8	1-5/8	3-7/8	2000683		-	
1-1/16	3/4	1-5/8	3-7/8	2000684		1900684	
1-1/16	7/8	1-5/8	3-7/8	2000685		-	
1-1/8	3/4	1-5/8	3-7/8	2000724		1900724	
1-1/8	7/8	1-5/8	3-7/8	2000725		-	
1-1/8	1	1-5/8	4-1/8	2000726		1900726	
1-3/16	3/4	1-5/8	3-7/8	2000764		1900764	
1-1/4	3/4	1-5/8	3-7/8	2000804		1900804	
1-1/4	7/8	1-5/8	3-7/8	2000809		-	
1-1/4	1	1-5/8	4-1/8	2000806		1900806	
1-1/4	1-1/4	1-5/8	4-1/8	2000807		1900807	
1-5/16	3/4	1-5/8	3-7/8	2000844		1900844	
1-3/8	3/4	1-5/8	3-7/8	2000884		1900884	
1-3/8	1	1-5/8	4-1/8	2000886		1900886	
1-7/16	3/4	1-5/8	3-7/8	2000924		1900924	
1-1/2	1/2	1-5/8	3-5/8	2000962		-	
1-1/2	3/4	1-5/8	3-7/8	2000964		1900964	
1-1/2	1	1-5/8	4-1/8	2000976		1900966	
1-1/2	1-1/4	1-5/8	4-1/8	2000967		1900967	
1-5/8	3/4	1-5/8	3-7/8	2001404		1901404	
1-5/8	1-1/4	1-5/8	4-1/8	2001407		1901407	
1-3/4	3/4	1-5/8	3-7/8	2001484		1901484	
1-3/4	1-1/4	1-5/8	4-1/8	2001487		1901487	
1-7/8	3/4	1-5/8	3-7/8	2001564		1901564	
1-7/8	1-1/4	1-5/8	4-1/8	2001567		1901567	
2	3/4	1-5/8	3-7/8	2002004		1902004	
2	1-1/4	1-5/8	4-1/8	2002007		1902007	
2	2	4	7-3/4	2002008		-	

HIGH SPEED STEEL

GOLD (TIN) COATED CENTER CUTTING SINGLE END END MILLS

SERIES 87:



2 Flute

Mill Dia.	Shank Dia.	Length of Cut	Overall Length	Order No.	Price
1/8	3/8	3/8	2-5/16	0872081	
3/16	3/8	7/16	2-5/16	0872121	
1/4	3/8	1/2	2-5/16	0872161	
5/16	3/8	9/16	2-5/16	0872201	
3/8	3/8	9/16	2-5/16	0872241	
7/16	3/8	13/16	2-1/2	0872281	
1/2	3/8	13/16	2-1/2	0872321	
1/2	1/2	1	3	0872322	
9/16	1/2	1-1/8	3-1/8	0872362	
5/8	5/8	1-5/16	3-7/16	0872403	
3/4	3/4	1-5/16	3-7/16	0872484	
1	3/4	1-1/2	3-3/4	0872644	
1	1	1-5/8	4-1/8	0872646	

HIGH SPEED STEEL

TWO FLUTE LONG FLUTE SINGLE END END MILLS

SERIES 96:



Mill Dia.	Shank Dia.	Length of Cut	OAL	Order No.	Price
1/4	3/8	1	3-1/16	2050161	
5/16	3/8	1-1/4	3-5/16	2050201	
3/8	3/8	1-1/2	3-1/4	2050241	
1/2	1/2	2	4	2050322	
5/8	5/8	2	4-1/8	2050403	
3/4	3/4	2-1/4	4-1/2	2050484	
7/8	7/8	2-1/2	4-3/4	2050565	
1	1	3	5-1/2	2050646	
1-1/8	1	3	5-1/2	2050726	
1-1/4	1	3	5-1/2	2050806	
1-1/4	1-1/4	3	5-1/2	2050807	
1-3/8	1	3	5-1/2	2050886	
1-1/2	1-1/4	3	5-1/2	2050967	
1-5/8	1-1/4	3	5-1/2	2051407	
1-3/4	1-1/4	3	5-1/2	2051487	
1-7/8	1-1/4	3	5-1/2	2051567	
2	1-1/4	3	5-1/2	2052007	

HIGH SPEED STEEL

TWO FLUTE EXTENDED LENGTH - SINGLE END END MILLS

SERIES 97:



Mill Dia.	Shank Dia.	Length of Cut	Lgth Below Shank	OAL	Order No.	Price
1/4	3/8	5/8	1-1/2	3-1/16	2100161	
5/16	3/8	3/4	1-3/4	3-5/16	2100201	
3/8	3/8	3/4	1-3/4	3-5/16	2100241	
1/2	1/2	1	2-1/4	4	2100322	
5/8	5/8	1-3/8	3-3/4	4-5/8	2100403	
3/4	3/4	1-5/8	3-3/8	5-3/8	2100484	
7/8	7/8	2	4	6	2100565	
1	1	2-1/2	5	7-1/4	2100646	
1-1/4	1-1/4	3	5	7-1/4	2100807	

CUTTING TOOLS - END MILLS



HIGH SPEED STEEL AND COBALT STEEL

TWO FLUTE SINGLE END CENTER-CUTTING END MILLS

Stub / Regular / Long / Extra-Long Length

SERIES 766: HIGH SPEED STEEL

SERIES 744: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Length	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
3/32	3/8	5/16	2-1/4	910026	-	-	-
1/8	3/8	3/16	2-1/8	910030	-	-	-
1/8	3/8	3/8	2-5/16	910028	-	101050	-
1/8	3/8	1/2	2-3/8	912802	-	-	-
1/8	3/8	3/4	2-5/8	12804	-	-	-
5/32	3/8	3/16	2-1/16	10034	-	-	-
5/32	3/8	7/16	2-5/16	810032	-	101070	-
5/32	3/8	5/8	2-3/8	912806	-	-	-
5/32	3/8	3/4	2-5/8	12808	-	-	-
3/16	3/8	3/16	2-1/16	910038	-	-	-
3/16	3/8	7/16	2-5/16	10036	-	101090	-
3/16	3/8	5/8	2-1/2	912810	-	-	-
3/16	3/8	3/4	2-5/8	10474	-	-	-
3/16	3/8	1-1/4	3-1/8	912812	-	-	-
7/32	3/8	1/4	2-1/8	10042	-	-	-
7/32	3/8	1/2	2-3/8	10040	-	45009	-
7/32	3/8	7/8	2-3/4	912814	-	-	-
7/32	3/8	1-1/4	3-1/8	10476	-	-	-
7/32	3/8	1-1/2	3-3/8	12816	-	-	-
1/4	3/8	1/4	2-1/16	10046	-	-	-
1/4	3/8	1/2	2-5/16	910044	-	101130	-
1/4	3/8	7/8	2-3/4	12818	-	-	-
1/4	3/8	1-1/4	3-1/16	10478	-	103350	-
1/4	3/8	1-3/4	3-9/16	912820	-	-	-
9/32	3/8	5/16	2-1/8	10050	-	-	-
9/32	3/8	9/16	2-3/8	10048	-	101150	-
9/32	3/8	1	2-3/4	12822	-	-	-
9/32	3/8	1-3/8	3-1/8	10480	-	-	-
9/32	3/8	1-3/4	3-5/8	12824	-	-	-
5/16	3/8	5/16	2-1/16	910054	-	-	-
5/16	3/8	9/16	2-5/16	910052	-	101170	-
5/16	3/8	1	2-3/4	12826	-	-	-
5/16	3/8	1-3/8	3-1/8	10482	-	103370	-
5/16	3/8	2	3-3/4	912828	-	-	-
11/32	3/8	3/8	2-3/16	910058	-	-	-
11/32	3/8	3/4	2-1/2	9010056	-	-	-
11/32	3/8	1	2-3/4	912830	-	-	-
11/32	3/8	1-1/2	3-1/4	10484	-	-	-
11/32	3/8	2	3-3/4	12832	-	-	-
3/8	3/8	3/8	2-1/8	10062	-	-	-
3/8	3/8	9/16	2-5/16	910060	-	101210	-
3/8	3/8	1	2-3/4	10486	-	-	-
3/8	3/8	1-1/2	3-1/4	10488	-	103390	-
3/8	3/8	2-1/2	4-1/4	10490	-	-	-
13/32	3/8	13/16	2-1/2	10064	-	9101230	-
7/16	3/8	7/16	2-1/8	12794	-	-	-
7/16	3/8	13/16	2-1/2	10066	-	101270	-
7/16	1/2	13/16	2-13/16	10070	-	-	-
7/16	3/8	1-1/4	3-1/4	12834	-	-	-
7/16	1/2	1-3/4	3-3/4	10492	-	-	-
7/16	3/8	2-3/4	4-3/4	12836	-	-	-
15/32	1/2	1	3	10072	-	101320	-
1/2	3/8	1/2	2-3/16	12796	-	-	-
1/2	3/8	13/16	2-1/2	10068	-	101350	-
1/2	1/2	1	3	0910074	-	101360	-
1/2	1/2	1-1/2	3-1/2	10494	-	-	-
1/2	1/2	2	4	10496	-	103470	-

Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
1/2	1/2	3	5	0498	-	-	-
17/32	1/2	1-1/8	3-1/8	910076	-	101380	-
9/16	1/2	1-1/8	3-1/8	10078	-	101400	-
19/32	1/2	1-1/8	3-1/8	10080	-	101430	-
5/8	1/2	5/8	2-3/4	12798	-	-	-
5/8	1/2	1-1/8	3-1/8	10082	-	101460	-
5/8	5/8	1-5/16	3-7/16	10108	-	101470	-
5/8	5/8	2	4-1/8	10500	-	103540	-
5/8	5/8	2-1/2	4-5/8	10502	-	8927421	-
5/8	5/8	4	6-1/8	12838	-	-	-
21/32	1/2	1-5/16	3-5/16	10084	-	101480	-
11/16	1/2	1-5/16	3-5/16	10086	-	101500	-
11/16	5/8	1-5/16	3-7/16	10110	-	101510	-
23/32	1/2	1-5/16	3-5/16	10088	-	101530	-
3/4	3/4	3/4	3	912800	-	-	-
3/4	1/2	1-5/16	3-5/16	10090	-	101540	-
3/4	5/8	1-5/16	3-7/16	910112	-	101550	-
3/4	3/4	1-5/16	3-9/16	910122	-	101560	-
3/4	3/4	3/4	2-1/4	10504	-	103620	-
3/4	3/4	3	5-1/4	10506	-	-	-
3/4	3/4	4	6-1/4	12840	-	-	-
25/32	1/2	1-1/2	3-1/2	10092	-	101570	-
13/16	1/2	1-1/2	3-1/2	910094	-	-	-
13/16	5/8	1-1/2	3-5/8	910114	-	101610	-
13/16	3/4	1-1/2	3-3/4	910124	-	101620	-
27/32	1/2	1-1/2	3-1/2	10096	-	101630	-
7/8	1/2	1-1/2	3-1/2	910098	-	101660	-
7/8	5/8	1-1/2	3-5/8	9910116	-	101670	-
7/8	3/4	1-1/2	3-3/4	910126	-	101680	-
7/8	7/8	1-1/2	3-3/4	910152	-	101690	-
7/8	7/8	2-1/2	4-3/4	10508	-	103760	-
7/8	7/8	3-1/2	5-3/4	10510	-	-	-
29/32	1/2	1-1/2	3-1/2	910100	-	101700	-
15/16	1/2	1-1/2	3-1/2	910102	-	899060	-
15/16	5/8	1-1/2	3-5/8	910118	-	-	-
15/16	3/4	1-1/2	3-3/4	910128	-	-	-
15/16	7/8	1-1/2	3-3/4	910154	-	101770	-
31/32	1/2	1-1/2	3-1/2	910104	-	101780	-
1	1/2	1-1/2	3-1/2	910106	-	101820	-
1	5/8	1-1/2	3-5/8	910120	-	101830	-
1	3/4	1-1/2	3-3/4	910130	-	101840	-
1	7/8	1-1/2	3-3/4	910156	-	101850	-
1	1	1-5/8	4-1/8	910162	-	101860	-
1	1	3	5-1/2	10512	-	9103930	-
1	1	4	6-1/2	10514	-	899230	-
1-1/16	3/4	1-1/2	3-3/4	910132	-	101870	-
1-1/16	1	1-5/8	4-1/8	10164	-	-	-
1-1/8	3/4	1-5/8	3-7/8	910134	-	101900	-
1-1/8	7/8	1-5/8	3-7/8	910158	-	101910	-
1-1/8	1	1-5/8	4-1/8	910166	-	101920	-
1-1/8	1	3	5-1/2	910516	-	103960	-
1-3/16	3/4	1-5/8	3-7/8	910136	-	101930	-
1-3/16	1	1-5/8	4-1/8	10168	-	-	-
1-1/4	3/4	1-5/8	3-7/8	910138	-	101960	-
1-1/4	7/8	1-5/8	3-7/8	910160	-	-	-
1-1/4	1	1-5/8	4-1/8	10170	-	101980	-
1-1/4	1-1/4	1-5/8	4-1/8	10180	-	101990	-
1-1/4	1	3	5-1/2	910518	-	-	-
1-1/4	1-1/4	3	5-1/2	910522	-	47582	-
1-1/4	1-1/4	4	6-1/2	10524	-	47570	-
1-5/16	1	1-5/8	4-1/8	910172	-	-	-
1-3/8	3/4	1-5/8	3-7/8	910140	-	102040	-

CUTTING TOOLS - END MILLS

(Continued)

HIGH SPEED STEEL AND COBALT STEEL

TWO FLUTE SINGLE END CENTER-CUTTING END MILLS

Stub / Regular / Long / Extra-Long Length
SERIES 744: COBALT
SERIES 766: HIGH SPEED



(Continued)

Dia.	Mill Dia.	Shank Lgth	Flute OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
1-3/8	1	1-5/8	4-1/8	-	-	102060	-
1-3/8	1	3	5-1/2	910520	-	104030	-
1-7/16	1	1-5/8	4-1/8	910176	-	-	-
1-1/2	3/4	1-5/8	3-7/8	15278	-	9102120	-
1-1/2	1	1-5/8	4-1/8	10178	-	102140	-
1-1/2	1-1/4	1-5/8	4-1/8	910792	-	102150	-
1-1/2	1-1/4	3	5-1/2	910526	-	-	-
1-1/2	1-1/4	4	6-1/2	10528	-	-	-
1-9/16	1-1/4	1-5/8	4-1/8	10186	-	-	-
1-5/8	3/4	1-5/8	3-7/8	910144	-	-	-
1-5/8	1-1/4	1-5/8	4-1/8	10188	-	102250	-
1-3/4	3/4	1-5/8	3-7/8	910146	-	102320	-
1-3/4	1-1/4	1-5/8	4-1/8	-	-	102350	-
1-3/4	1-1/4	3	5-1/2	10532	-	104100	-
1-7/8	3/4	1-5/8	3-7/8	9910148	-	-	-
1-7/8	1-1/4	1-5/8	4-1/8	10192	-	102450	-
1-7/8	1-1/4	3	5-1/2	-	-	104120	-
2	3/4	1-5/8	3-7/8	15286	-	102520	-
2	1-1/4	1-5/8	4-1/8	910796	-	102550	-
2	1-1/4	3	5-1/2	910538	-	104140	-
2-1/8	1-1/4	1-5/8	4-1/8	10198	-	-	-
2-1/4	1-1/4	1-5/8	4-1/8	10200	-	-	-
2-1/4	1-1/4	3	5-1/2	910542	-	-	-
2-1/2	1-1/4	1-5/8	4-1/8	10202	-	-	-
2-1/2	1-1/4	3	5-1/2	910544	-	-	-

HIGH SPEED STEEL AND COBALT STEEL

THREE FLUTE SINGLE END CENTER-CUTTING END MILLS

Regular / Medium / Long Length
SERIES 752: COBALT
SERIES 753: HIGH SPEED



Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
3/32	3/8	5/16	2-1/4	12022	-	-	-
1/8	3/8	3/8	2-5/16	12024	-	115620	-
5/32	3/8	7/16	2-5/16	12026	-	-	-
3/16	3/8	1/2	2-3/8	12028	-	115640	-
3/16	3/8	3/4	2-5/8	912266	-	-	-
7/32	3/8	1/2	2-3/8	12030	-	-	-
7/32	3/8	1-1/4	3-1/8	9912268	-	-	-
1/4	3/8	5/8	2-7/16	12032	-	115660	-
1/4	3/8	1-1/4	3-1/16	9912270	-	116630	-
9/32	3/8	11/16	2-1/2	12034	-	-	-
9/32	3/8	1-3/8	3-1/8	12272	-	-	-
5/16	3/8	3/4	2-1/2	12036	-	115680	-
5/16	3/8	1-3/8	3-1/8	12274	-	116640	-
11/32	3/8	3/4	2-1/2	12038	-	-	-
11/32	3/8	1-1/2	3-1/4	12276	-	-	-
3/8	3/8	3/4	2-1/2	12040	-	115700	-
3/8	3/8	1-1/2	3-1/4	12278	-	9116650	-
13/32	3/8	1	2-11/16	12042	-	-	-
7/16	3/8	1	2-11/16	12044	-	115720	-
7/16	1/2	1-3/4	3-3/4	12280	-	-	-
15/32	1/2	1-1/4	3-1/4	12048	-	-	-
1/2	3/8	1	2-11/16	12046	-	115740	-
1/2	1/2	1-1/4	3-1/4	12050	-	115750	-
1/2	1/2	2	4	12282	-	116690	-
17/32	1/2	1-3/8	3-3/8	12052	-	-	-
9/16	1/2	1-3/8	3-3/8	12054	-	115770	-
19/32	1/2	1-3/8	3-3/8	12056	-	-	-
5/8	1/2	1-3/8	3-3/8	12058	-	115810	-
5/8	5/8	1-5/8	3-3/4	12084	-	115820	-
5/8	5/8	2-1/2	4-5/8	12284	-	116730	-
21/32	1/2	1-5/8	3-5/8	12060	-	-	-
11/16	1/2	1-5/8	3-5/8	12062	-	115850	-
23/32	1/2	1-5/8	3-5/8	12064	-	-	-
3/4	1/2	1-5/8	3-5/8	12066	-	-	-
3/4	5/8	1-5/8	3-3/4	12086	-	115900	-
3/4	3/4	1-5/8	3-7/8	12096	-	115910	-
3/4	3/4	3	5-1/4	12286	-	116760	-
25/32	1/2	1-5/8	3-5/8	12068	-	-	-
13/16	1/2	1-5/8	3-5/8	12070	-	-	-
13/16	5/8	1-7/8	4	12088	-	-	-
13/16	3/4	1-7/8	4-1/8	12098	-	-	-
27/32	1/2	1-5/8	3-5/8	12072	-	-	-
7/8	1/2	1-5/8	3-5/8	12074	-	-	-
7/8	5/8	1-7/8	4	12090	-	-	-
7/8	3/4	1-7/8	4-1/8	12100	-	116030	-
7/8	7/8	1-7/8	4-1/8	12116	-	-	-
7/8	7/8	3-1/2	5-3/4	-	-	-	-
15/16	1/2	1-7/8	3-7/8	12078	-	-	-
15/16	5/8	1-7/8	4	12092	-	-	-
1	1/2	1-7/8	3-7/8	-	-	-	-
1	5/8	1-7/8	4	-	-	-	-
1	3/4	1-7/8	4-1/8	12104	-	116190	-
1	1	2	4-1/2	12122	-	116210	-
1	1	3	5-1/2	12292	-	-	-
1	1	4	6-1/2	12294	-	116860	-
1-1/16	3/4	2	4-1/4	12106	-	-	-

(Continued)

HIGH SPEED STEEL AND COBALT STEEL

TWO FLUTE SINGLE END LONG REACH CENTER-CUTTING END MILLS

SERIES 746: COBALT
SERIES 736: HIGH SPEED



Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
1/8	3/8	3/8	2-3/8	10734	-	103010	-
3/16	3/8	1/2	2-11/16	910736	-	103020	-
1/4	3/8	5/8	3-1/16	910738	-	103030	-
5/16	3/8	3/4	3-5/16	910740	-	103040	-
3/8	3/8	3/4	3-5/16	910742	-	103050	-
1/2	1/2	1	4	910744	-	103070	-
5/8	5/8	1-3/8	4-5/8	910746	-	103090	-
3/4	3/4	1-5/8	5-3/8	910748	-	103100	-
1	1	2-1/2	7-1/4	910752	-	103130	-

THREE FLUTE SINGLE END CENTER-CUTTING END MILLS



SERIES 752:

(Continued)

Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT	
				Order No.	Price
1-1/16	1	2	4-1/2	-	
1-1/8	3/4	2	4-1/4	12108	
1-1/8	7/8	2	4-1/4	-	
1-1/8	1	2	4-1/2	12126	
1-3/16	3/4	2	4-1/4	12110	
1-3/16	1	2	4-1/2	12128	
1-1/4	3/4	2	4-1/4	12112	
1-1/4	1	2	4-1/2	12130	
1-1/4	1-1/4	2	4-1/2	-	
1-1/4	1-1/4	4	6-1/2	12296	
1-5/16	1	2	4-1/2	9912132	
1-3/8	1	2	4-1/2	12134	
1-1/2	3/4	2	4-1/4	-	
1-1/2	1	2	4-1/2	-	
1-1/2	1-1/4	2	4-1/2	12144	
1-3/4	1-1/4	2	4-1/2	-	
2	1-1/4	2	4-1/2	12150	

COBALT STEEL

THREE FLUTE SINGLE END CENTER-CUTTING EXTENDED LENGTH END MILLS



SERIES 768:



Mill Dia.	Shank Dia.	Flute Lgth	OAL	Order No.	Price
1/8	3/8	3/8	2-9/16	12362	
3/16	3/8	1/2	2-7/8	12366	
1/4	3/8	5/8	3-1/16	12370	
5/16	3/8	3/4	3-5/16	12372	
3/8	3/8	3/4	3-5/16	12374	
1/2	1/2	1	4-1/16	12378	

HIGH SPEED STEEL

GOLD (TIN) COATED CENTER-CUTTING SINGLE END END MILLS



SERIES 87:

Many other sizes up to 1-1/2" diameter available. STAR USA also available. See our website or inquire.

4 Flute



Mill Dia.	Shank Dia.	Length of Cut	Overall Length	Order No.	Price
1/8	3/8	3/8	2-5/16	0874081	
3/16	3/8	1/2	2-3/8	0874121	
1/4	3/8	5/8	2-7/16	0874161	
5/16	3/8	3/4	2-1/2	0874201	
3/8	3/8	3/4	2-1/2	0874241	
7/16	3/8	1	2-11/16	0874281	
1/2	3/8	1	2-11/16	0874321	
1/2	1/2	1-1/4	3-1/4	0874322	
9/16	1/2	1-3/8	3-3/8	0874362	
5/8	5/8	1-5/8	3-3/4	0874403	
3/4	3/4	1-5/8	3-3/4	0874484	
1	3/4	1-7/8	4-1/8	0874644	
1	1	2	4-1/2	0874646	

HIGH SPEED STEEL

MULTIPLE FLUTE SINGLE END



NON CENTER-CUTTING END MILLS

SERIES 98:



Mill Dia.	Shank Dia.	Length of Cut	Overall Length	No. of Flutes	Order Number	Price
1/8	3/8	3/8	2-5/16	4	2150081	
5/32	3/8	3/8	2-5/16	4	2150101	
3/16	3/8	1/2	2-3/8	4	2150121	
7/32	3/8	5/8	2-7/16	4	2150141	
1/4	3/8	5/8	2-7/16	4	2150161	
9/32	3/8	3/4	2-1/2	4	2150181	
5/16	3/8	3/4	2-1/2	4	2150201	
11/32	3/8	3/4	2-1/2	4	2150221	
3/8	3/8	3/4	2-1/2	4	2150241	
13/32	3/8	1	2-11/16	4	2150261	
7/16	3/8	1	2-11/16	4	2150281	
15/32	3/8	1	2-11/16	4	2150301	
1/2	3/8	1	2-11/16	4	2150321	
1/2	1/2	1-1/4	3-1/4	4	2150322	
9/16	1/2	1-3/8	3-3/8	4	2150362	
5/8	1/2	1-3/8	3-3/8	4	2150402	
5/8	5/8	1-5/8	3-3/4	4	2150403	
11/16	1/2	1-5/8	3-5/8	4	2150442	
11/16	5/8	1-5/8	3-3/4	4	2150443	
3/4	1/2	1-5/8	3-5/8	4	2150482	
3/4	5/8	1-5/8	3-3/4	4	2150483	
3/4	3/4	1-5/8	3-3/4	4	2150484	
3/4	3/4	1-5/8	3 3/4	6	2150494	
13/16	1/2	1-7/8	4	4	2150522	
13/16	5/8	1-7/8	4	4	2150513	
13/16	5/8	1-7/8	4	6	2150523	
13/16	3/4	1-7/8	4-1/8	4	2150524	
7/8	1/2	1-7/8	3-5/8	4	2150562	
7/8	1/2	1-7/8	4	6	2150572	
7/8	5/8	1-7/8	4	6	2150563	
7/8	3/4	1-7/8	4-1/8	4	2150564	
7/8	3/4	1-7/8	4-1/8	6	2150574	
7/8	7/8	1-7/8	4-1/8	4	2150565	
15/16	1/2	1-7/8	4	4	2150602	
15/16	5/8	1-7/8	4	6	2150603	
15/16	3/4	1-7/8	4-1/8	4	2150604	
15/16	7/8	1-7/8	4-1/8	4	2150605	
1	1/2	1-7/8	4	4	2150642	
1	1/2	1-7/8	4	6	2150652	
1	5/8	1-7/8	4	4	2150643	
1	5/8	1-7/8	4	6	2150653	
1	3/4	1-7/8	4-1/8	4	2150644	
1	3/4	1-7/8	4-1/8	6	2150654	
1	7/8	1-7/8	4-1/8	4	2150645	
1	1	2	4-1/2	4	2150646	
1-1/16	3/4	2	4-1/4	6	2150684	
1-1/8	3/4	2	4-1/4	6	2150724	
1-1/8	7/8	2	4-1/4	6	2150725	
1-1/8	1	2	4-1/2	6	2150726	
1-3/16	3/4	2	4-1/2	6	2150764	
1-1/4	3/4	2	4-1/4	6	2150804	
1-1/4	7/8	2	4-1/4	4	2150805	
1-1/4	7/8	2	4-1/4	6	2150815	
1-1/4	1	2	4-1/2	6	2150806	
1-1/4	1-1/4	2	4-1/2	4	2150807	
1-1/4	1-1/4	2	4-1/2	6	2150817	
1-5/16	3/4	2	4-1/2	6	2150844	
1-3/8	3/4	2	4-1/4	6	2150884	
1-3/8	1	2	4-1/2	6	2150886	
1-3/8	1-1/4	2	4-1/2	6	2150887	
1-7/16	3/4	2	4-1/2	6	2150924	
1-1/2	3/4	2	4-1/4	6	2150964	

(Continued)

HIGH SPEED STEEL

MULTIPLE FLUTE SINGLE - END NON CENTER-CUTTING END MILLS

SERIES 98:



(Continued)

Mill Dia.	Shank Dia.	Length of Cut	Overall Length	No. Flutes	Order Number	Price
1-1/2	1	2	4-1/2	4	2150966	
1-1/2	1	2	4-1/2	6	2150976	
1-1/2	1-1/4	2	4-1/2	4	2150967	
1-1/2	1-1/4	2	4-1/2	6	2150977	
1-5/8	3/4	2	4-1/2	6	2151404	
1-5/8	1-1/4	2	4-1/2	4	2151407	
1-5/8	1-1/4	2	4-1/2	6	2151417	
1-3/4	3/4	2	4-1/2	6	2151484	
1-3/4	1-1/4	2	4-1/2	4	2151487	
1-3/4	1-1/4	2	4-1/2	6	2151497	
1-7/8	3/4	2	4-1/2	6	2151564	
1-7/8	1-1/4	2	4-1/2	6	2151567	
1-7/8	1-1/4	2	4-1/2	8	2151577	
2	3/4	2	4-1/2	8	2152004	
2	1-1/4	2	4-1/2	4	2152007	
2	1-1/4	2	4-1/2	6	2152017	
2	1-1/4	2	4-1/2	8	2152027	
2-1/4	1-1/4	2	4-1/2	6	2152167	

HIGH SPEED STEEL

EXTRA LONG MULTIPLE FLUTE SINGLE END NON CENTER-CUTTING END MILLS

SERIES 100:



Mill Dia.	Shank Dia.	Length of Cut	Overall Length	No. of Flutes	Order Number	Price
1/4	3/8	1-3/4	3-9/16	4	2250161	
5/16	3/8	2	3-3/4	4	2250201	
3/8	3/8	2-1/2	4-1/4	4	2250241	
1/2	1/2	3	5	4	2250322	
5/8	1/2	4	6-1/8	4	2250402	
5/8	5/8	4	6-1/8	4	2250403	
3/4	1/2	4	6-1/4	4	2250482	
3/4	3/4	4	6-1/4	4	2250484	
7/8	7/8	5	7-1/4	4	2250565	
1	1	6	8-1/2	4	2250646	
1-1/4	1-1/4	6	8-1/2	4	2250807	
1-1/4	1-1/4	6	8-1/2	6	2250817	
1-1/2	1-1/4	8	10-1/2	6	2250967	
2	2	8	11-3/4	6	2252008	

MULTIPLE FLUTE SINGLE-END CENTER-CUTTING END MILLS

SERIES 514: HIGH SPEED STEEL
SERIES 83: COBALT STEEL



Mill Dia.	Shank Dia.	Lgth. Cut	Overall Length	No. Fl.	HSS		COBALT	
					Order No.	Price	Order No.	Price
1/8	3/8	3/8	2-5/16	4	2151081		1950081	
5/32	3/8	3/8	2-5/16	4	2151101		1950101	
3/16	3/8	1/2	2-3/8	4	2151121		1950121	
7/32	3/8	5/8	2-7/16	4	2151141		1950141	
1/4	3/8	5/8	2-7/16	4	2151161		1950161	
9/32	3/8	3/4	2-1/2	4	2151181		1950181	
5/16	3/8	3/4	2-1/2	4	2151201		1950201	
11/32	3/8	3/4	2-1/2	4	2151221		1950221	
3/8	3/8	3/4	2-1/2	4	2151241		1950241	
13/32	3/8	1	2-11/16	4	2151261		1950261	
7/16	3/8	1	2-11/16	4	2151281		1950281	
15/32	3/8	1	2-11/16	4	2151301		1950301	
1/2	3/8	1	2-11/16	4	2151321		1950321	
1/2	1/2	1-1/4	3-1/4	4	2151322		1950322	
9/16	1/2	1-3/8	3-3/8	4	2151362		1950362	
5/8	1/2	1-3/8	3-3/8	4	2151402		1950402	
5/8	5/8	1-5/8	3-3/4	4	2151403		1950403	
11/16	1/2	1-5/8	3-5/8	4	2151442		1950442	
11/16	5/8	1-5/8	3-3/4	4	2151443		1950443	
3/4	1/2	1-5/8	3-5/8	4	2151482		1950482	
3/4	5/8	1-5/8	3-3/4	4	2151483		1950483	
3/4	3/4	1-5/8	3-3/4	4	2151494		1950484	
3/4	3/4	1-5/8	3 3/4	6	2151474		1950494	
13/16	1/2	1-7/8	4	4	2151522		1950522	
13/16	5/8	1-7/8	4	4	2151523		1950523	
13/16	5/8	1-7/8	4	6	2151533		1950533	
13/16	3/4	1-7/8	4-1/8	4	2151524		1950524	
7/8	1/2	1-7/8	4	4	2151562		1950562	
7/8	1/2	1-7/8	4	6	2151572		1950572	
7/8	5/8	1-7/8	4	6	2151563		1950563	
7/8	3/4	1-7/8	4-1/8	4	2151574		1950564	
7/8	3/4	1-7/8	4-1/8	6	-		1950574	

(Continued)

HIGH SPEED STEEL

LONG MULTIPLE FLUTE SINGLE END NON CENTER-CUTTING END MILLS

SERIES 99:



Mill Dia.	Shank Dia.	Length of Cut	Overall Length	No. of Flutes	Order No.	Price
1/4	3/8	1-1/4	3-1/8	4	2200161	
5/16	3/8	1-3/8	3-1/8	4	2200201	
3/8	3/8	1 1/2	3-1/4	4	2200241	
7/16	1/2	1-3/4	3-3/4	4	2200282	
1/2	1/2	2	4	4	2200322	
5/8	1/2	2-1/2	4-5/8	4	2200402	
5/8	5/8	2-1/2	4-5/8	4	2200403	
3/4	1/2	3	5-1/4	4	2200482	
3/4	3/4	3	5-1/4	4	2200484	
7/8	7/8	3-1/2	5-3/4	4	2200565	
1	3/4	4	6-1/2	4	2200644	
1	1	4	6-1/2	4	2200646	
1-1/8	3/4	4	6-1/2	6	2200724	
1-1/8	1	4	6-1/2	6	2200726	
1-1/4	3/4	4	6-1/2	6	2200804	
1-1/4	1	4	6-1/2	6	2200806	
1-1/4	1-1/4	4	6-1/2	4	2200807	
1-1/4	1-1/4	4	6-1/2	6	2200817	
1-3/8	1	4	6-1/2	6	2200886	
1-1/2	1	4	6-1/2	6	2200966	
1-1/2	1-1/4	4	6-1/2	6	2200967	
1-3/4	1-1/4	4	6-1/2	6	2201487	
2	1-1/4	4	6-1/2	4	2202007	
2	1-1/4	4	6-1/2	6	2202017	
2	1-1/4	4	6-1/2	8	2202027	

MULTIPLE FLUTE SINGLE END CENTER-CUTTING END MILLS



SERIES 514: HIGH SPEED STEEL
SERIES 83: COBALT STEEL

(Continued)

Mill Dia.	Shank Dia.	Lgth. Cut	Overall Length	No. Fl.	HIGH SPEED		COBALT	
					Order No.	Price	Order No.	Price
7/8	7/8	1-7/8	4-1/8	4	2151565		1950565	
15/16	1/2	1-7/8	4	6	2151602		1950602	
15/16	5/8	1-7/8	4	6	2151603		1950603	
15/16	3/4	1-7/8	4-1/8	4	2151604		1950604	
15/16	7/8	1-7/8	4-1/8	4	2151605		1950605	
1	1/2	1-7/8	4	4	2151642		1950642	
1	1/2	1-7/8	4	6	2151652		1950652	
1	5/8	1-7/8	4	4	2151643		1950643	
1	5/8	1-7/8	4	6	2151653		1950653	
1	3/4	1-7/8	4-1/8	4	2151644		1950644	
1	3/4	1-7/8	4-1/8	6	2151654		1950654	
1	7/8	1-7/8	4-1/8	4	2151645		1950645	
1	1	2	4-1/2	4	2151646		1950646	
1	1	2	4-1/2	6	2151656		1950657	
1-1/16	3/4	2	4-1/4	6	2151684		1950684	
1-1/8	3/4	2	4-1/4	6	2151724		1950724	
1-1/8	7/8	2	4-1/4	6	2151725		1950725	
1-1/8	1	2	4-1/2	6	2151726		1950726	
1-3/16	3/4	2	4-1/4	6	2151764		1950764	
1-1/4	3/4	2	4-1/4	6	2151804		1950804	
1-1/4	7/8	2	4-1/4	4	-		1950805	
1-1/4	7/8	2	4-1/4	6	2151805		1950815	
1-1/4	1	2	4-1/2	6	2151806		1950806	
1-1/4	1-1/4	2	4-1/2	4	189073		1950807	
1-1/4	1-1/4	2	4-1/2	6	189074		1950817	
1-5/16	3/4	2	4-1/2	6	2151844		1950844	
1-3/8	3/4	2	4-1/2	6	2151884		1950884	
1-3/8	1	2	4-1/2	6	2151886		1950886	
1-3/8	1-1/4	2	4-1/2	6	2151887		1950887	
1-7/16	3/4	2	4-1/2	6	2151924		1950924	
1-1/2	3/4	2	4-1/2	6	2151964		1950964	
1-1/2	1	2	4-1/2	4	-		1950976	
1-1/2	1	2	4-1/2	6	2151966		1950966	
1-1/2	1-1/4	2	4-1/2	4	189081		1950977	
1-1/2	1-1/4	2	4-1/2	6	189082		1950967	
1-5/8	3/4	2	4-1/2	6	2151414		1951404	
1-5/8	1-1/4	2	4-1/2	4	-		1951406	
1-5/8	1-1/4	2	4-1/2	6	2151417		1951407	
1-3/4	3/4	2	4-1/2	6	2151504		1951484	
1-3/4	1-1/4	2	4-1/2	4	-		1951497	
1-3/4	1-1/4	2	4-1/2	6	189091		1951487	
1-7/8	3/4	2	4-1/2	6	2151584		1951564	
1-7/8	1-1/4	2	4-1/2	6	-		1951567	
1-7/8	1-1/4	2	4-1/2	8	-		1951577	
2	3/4	2	4-1/2	8	2152014		1952004	
2	1-1/4	2	4-1/2	4	-		1952017	
2	1-1/4	2	4-1/2	6	-		1952007	
2	1-1/4	2	4-1/2	8	-		1952027	

LONG MULTIPLE FLUTE SINGLE END CENTER-CUTTING END MILLS

SERIES 515: HIGH SPEED STEEL
SERIES 84: COBALT STEEL



Mill Dia.	Shank Dia.	Lgth. Cut	Overall Length	No. Fl.	HIGH SPEED		COBALT	
					Order No.	Price	Order No.	Price
1/4	3/8	1-1/4	3-1/16	4	2201161		1255161	
5/16	3/8	1-3/8	3-1/8	4	2201201		1255201	
3/8	3/8	1 1/2	3-1/4	4	2201241		1255241	
7/16	1/2	1-3/4	3-3/4	4	2201282		1255282	
1/2	1/2	2	4	4	2201322		1255322	
5/8	5/8	2-1/2	4-5/8	4	2201403		1255403	
3/4	1/2	3	5-1/4	4	2201482		-	
3/4	3/4	3	5-1/4	4	2201484		1255484	
7/8	7/8	3-1/2	5-3/4	4	2201565		1255565	
1	3/4	4	6-1/2	4	2201644		-	
1	1	4	6-1/2	4	2201646		1255646	
1-1/4	1	4	6-1/2	6	2201806		-	
1-1/4	1-1/4	4	6-1/2	4	2201807		1255817	
1-1/4	1-1/4	4	6-1/2	6	2201817		1255807	
1-1/2	1	4	6-1/2	6	2201966		-	
1-1/2	1-1/4	4	6-1/2	6	2201967		1255967	

EXTRA LONG MULTIPLE FLUTE SINGLE END CENTER-CUTTING ENDMILLS

SERIES 516: HIGH SPEED STEEL
SERIES 85: COBALT STEEL



Mill Dia.	Shank Dia.	Lgth. Cut	Overall Length	No. Fl.	HIGH SPEED		COBALT	
					Order No.	Price	Order No.	Price
1/4	3/8	1-3/4	3-9/16	4	2251161		1260161	
5/16	3/8	2	3-3/4	4	2251201		1260201	
3/8	3/8	2-1/2	4-1/4	4	2251241		1260241	
1/2	1/2	3	5	4	2251322		1260322	
5/8	1/2	4	6-1/8	4	2251402		-	
5/8	5/8	4	6-1/8	4	2251403		1260403	
3/4	1/2	4	6-1/4	4	2251482		-	
3/4	3/4	4	6-1/4	4	2251484		1260484	
7/8	7/8	5	7-1/4	4	2251565		1260565	
1	1	6	8-1/2	4	2251646		1260646	
1-1/4	1-1/4	6	8-1/2	4	2251807		188373	
1-1/4	1-1/4	6	8-1/2	6	189474		1260807	
1-1/2	1-1/4	8	10-1/2	6	2251967		1260967	

HIGH SPEED STEEL

MULTIPLE FLUTE HEAVY DUTY SINGLE END END MILLS



SERIES 101:
Combination Shank



Mill Dia.	Shank Dia.	Length of Cut	Overall Length	No. of Flutes	Order No.	Price
2	2	3	6-3/4	2	175202	
2	2	4	7-3/4	3	2302230	
2	2	6	9-3/4	3	2302231	
2	2	8	11-3/4	3	2302232	
2	2	2	5-3/4	4	175401	
2	2	4	7-3/4	4	2302241	
2	2	6	9-3/4	4	2302242	
2	2	8	11-3/4	4	2302243	
2	2	2	5-3/4	6	175601	
2	2	4	7-3/4	6	2302260	
2	2	6	9-3/4	6	2302261	
2	2	8	11-3/4	6	2302262	
2	2	10	13-3/4	6	2302263	
2	2	12	15-3/4	6	2302264	

CUTTING TOOLS - END MILLS

HIGH SPEED STEEL AND COBALT STEEL

MULTIPLE FLUTE SINGLE END NON CENTER-CUTTING END MILLS



Regular / Medium / Long / Extra-Long Length

SERIES 748: HIGH SPEED STEEL

SERIES 747: COBALT STEEL



CUTTING TOOLS - END MILLS

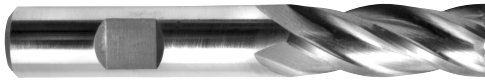
Mill Dia.	Shank Dia.	Flute Lgth	OAL	No. Fl.	COBALT		HSS	
					Order No.	Price	Order No.	Price
1/8	3/8	3/8	2-5/16	4	-	-	125350	-
5/32	3/8	7/16	2-5/16	4	-	-	125370	-
3/16	3/8	1/2	2-3/8	4	-	-	125390	-
7/32	3/8	9/16	2-7/16	4	-	-	125410	-
1/4	3/8	5/8	2-7/16	4	-	-	125430	-
9/32	3/8	11/16	2-1/2	4	-	-	125450	-
5/16	3/8	3/4	2-1/2	4	-	-	125470	-
11/32	3/8	3/4	2-1/2	4	-	-	125490	-
3/8	3/8	3/4	2-1/2	4	-	-	125510	-
13/32	3/8	1	2-11/16	4	-	-	125530	-
7/16	3/8	1	2-11/16	4	-	-	125570	-
15/32	1/2	1-1/4	3-1/4	4	-	-	125610	-
1/2	3/8	1	2-11/16	4	-	-	125650	-
1/2	1/2	1-1/4	3-1/4	4	-	-	125660	-
17/32	1/2	1-3/8	3-3/8	4	-	-	125680	-
9/16	1/2	1-3/8	3-3/8	4	-	-	125700	-
19/32	1/2	1-3/8	3-3/8	4	-	-	125730	-
5/8	1/2	1-3/8	3-3/8	4	-	-	125760	-
5/8	5/8	1-5/8	3-3/4	4	-	-	125770	-
21/32	1/2	1-5/8	3-5/8	4	11192	-	125780	-
11/16	1/2	1-5/8	3-5/8	4	11194	-	125800	-
11/16	5/8	1-5/8	3-3/4	4	911218	-	125810	-
23/32	1/2	1-5/8	3-5/8	4	11196	-	125820	-
3/4	1/2	1-5/8	3-5/8	4	11198	-	125850	-
3/4	5/8	1-5/8	3-3/4	4	11220	-	125860	-
3/4	3/4	1-5/8	3-7/8	4	11238	-	125870	-
3/4	3/4	3	5-1/4	4	11396	-	127290	-
3/4	3/4	4	6-1/4	4	11352	-	127990	-
3/4	3/4	6	8-1/4	4	11354	-	-	-
25/32	1/2	1-5/8	3-5/8	4	911200	-	125880	-
13/16	1/2	1-5/8	3-5/8	4	11202	-	125910	-
13/16	5/8	1-7/8	4	4	11222	-	-	-
13/16	5/8	1-7/8	4	6	11224	-	133590	-
13/16	3/4	1-7/8	4-1/8	4	11240	-	125930	-
27/32	1/2	1-5/8	3-5/8	4	911204	-	125940	-
7/8	1/2	1-5/8	3-5/8	4	911206	-	125980	-
7/8	5/8	1-7/8	4	4	11226	-	-	-
7/8	5/8	1-7/8	4	6	11228	-	133610	-
7/8	3/4	1-7/8	4-1/8	4	911242	-	126000	-
7/8	7/8	1-7/8	4-1/8	4	11268	-	126010	-
7/8	7/8	3-1/2	5-3/4	4	11398	-	127350	-
7/8	7/8	5	7-1/4	4	11356	-	128050	-
29/32	1/2	1-7/8	3-7/8	4	911208	-	126020	-
15/16	1/2	1-7/8	3-7/8	4	911210	-	899560	-
15/16	5/8	1-7/8	4	6	11232	-	133640	-
15/16	3/4	1-7/8	4-1/8	4	11244	-	126080	-
15/16	7/8	1-7/8	4-1/8	4	-	-	126090	-
31/32	1/2	1-7/8	3-7/8	4	911212	-	126100	-
1	1/2	1-7/8	3-7/8	4	911214	-	899564	-
1	5/8	1-7/8	4	4	11234	-	-	-
1	5/8	1-7/8	4	6	11236	-	133670	-
1	3/4	1-7/8	4-1/8	4	11246	-	126170	-

Mill Dia.	Shank Dia.	Flute Lgth	OAL	Fl.	COBALT		HSS	
					Order No.	Price	Order No.	Price
1	7/8	1-7/8	4-1/8	4	11272	-	126180	-
1	1	2	4-1/2	4	11278	-	126190	-
1	1	3	5-1/2	4	11400	-	-	-
1	1	4	6-1/2	4	911402	-	127430	-
1	1	6	8-1/2	4	11358	-	128130	-
1	1	8	10-1/2	4	11360	-	-	-
1-1/16	3/4	2	4-1/4	6	11248	-	133710	-
1-1/16	1	2	4-1/2	6	11280	-	-	-
1-1/8	3/4	2	4-1/4	6	911250	-	133740	-
1-1/8	7/8	2	4-1/4	6	11274	-	133750	-
1-1/8	1	2	4-1/2	6	11282	-	133760	-
1-1/8	1	4	6-1/2	6	911404	-	134580	-
1-3/16	3/4	2	4-1/4	6	911252	-	133770	-
1-3/16	1	2	4-1/2	6	11284	-	-	-
1-1/4	3/4	2	4-1/4	6	911254	-	133800	-
1-1/4	1	2	4-1/2	6	11286	-	133820	-
1-1/4	1-1/4	2	4-1/2	6	11296	-	133830	-
1-1/4	1-1/4	3	5-1/2	4	11412	-	-	-
1-1/4	1	4	6-1/2	6	11406	-	-	-
1-1/4	1-1/4	4	6-1/2	6	11414	-	134600	-
1-1/4	1-1/4	6	8-1/2	6	11362	-	135200	-
1-5/16	1	2	4-1/2	6	911288	-	899582	-
1-3/8	3/4	2	4-1/4	6	11256	-	133880	-
1-3/8	1	2	4-1/2	6	11290	-	133900	-
1-3/8	1-1/4	2	4-1/2	6	11298	-	-	-
1-3/8	1	4	6-1/2	6	11408	-	134610	-
1-7/16	1	2	4-1/2	6	11292	-	-	-
1-1/2	3/4	2	4-1/4	6	911258	-	133940	-
1-1/2	1	2	4-1/2	6	11294	-	133950	-
1-1/2	1-1/4	2	4-1/2	6	-	-	133960	-
1-1/2	1-1/4	3	5-1/2	4	-	-	-	-
1-1/2	1	4	6-1/2	6	-	-	134630	-
1-1/2	1-1/4	4	6-1/2	6	11418	-	134640	-
1-1/2	1-1/4	8	10-1/2	6	11364	-	135240	-
1-9/16	1-1/4	2	4-1/2	6	11302	-	899588	-
1-5/8	3/4	2	4-1/4	6	911260	-	899589	-
1-5/8	1-1/4	2	4-1/2	6	911304	-	134000	-
1-3/4	3/4	2	4-1/4	6	911262	-	134030	-
1-3/4	1-1/4	2	4-1/2	6	-	-	134060	-
1-3/4	1-1/4	4	6-1/2	6	11420	-	134660	-
1-3/4	1-1/4	8	10-1/2	8	-	-	-	-
1-7/8	3/4	2	4-1/4	6	911264	-	-	-
1-7/8	1-1/4	4	6-1/2	6	-	-	-	-
2	3/4	2	4-1/4	6	911266	-	134150	-
2	1-1/4	2	4-1/2	6	11312	-	134160	-
2	1-1/4	2	4-1/2	8	-	-	138250	-
2	1-1/4	3	5-1/2	6	-	-	-	-
2	2	4	7-3/4	4	-	-	-	-
2	2	4	7-3/4	6	-	-	134690	-
2	1-1/4	4	6-1/2	8	-	-	138610	-
2	1-1/4	4	6-1/2	6	-	-	134680	-
2	2	6	9-3/4	6	11430	-	32520	-
2	2	8	11-3/4	6	-	-	135290	-
2	2	10	13-3/4	6	11372	-	-	-
2-1/8	1-1/4	2	4-1/2	4	11316	-	-	-
2-1/4	1-1/4	2	4-1/2	4	11318	-	-	-
2-1/2	1-1/4	2	4-1/2	4	-	-	-	-
2-1/2	1-1/4	2	4-1/2	6	11322	-	-	-
2-1/2	1-1/4	2	4-1/2	8	911324	-	-	-

HIGH SPEED STEEL AND COBALT

MULTIPLE FLUTE SINGLE END CENTER-CUTTING END MILLS

Stub / Regular / Long / Extra-Long Length
SERIES 767: HIGH SPEED STEEL
SERIES 751: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Lgth	OAL	No. Fl.	COBALT		HSS	
					Order No.	Price	Order No.	Price
1/8	3/8	3/16	2-1/8	4	11434	-	-	-
1/8	3/8	3/8	2-5/16	4	911432	-	9940350	-
1/8	3/8	1/2	2-3/8	4	12972	-	-	-
1/8	3/8	3/4	2-5/8	4	12974	-	-	-
5/32	3/8	3/16	2-1/8	4	11438	-	-	-
5/32	3/8	7/16	2-5/16	4	11436	-	9140370	-
5/32	3/8	5/8	2-1/2	4	12976	-	-	-
5/32	3/8	3/4	2-5/8	4	12978	-	-	-
3/16	3/8	3/16	2-1/16	4	11442	-	-	-
3/16	3/8	1/2	2-3/8	4	11440	-	9140390	-
3/16	3/8	5/8	2-1/2	4	12980	-	-	-
3/16	3/8	1-1/4	3-1/8	4	12962	-	-	-
7/32	3/8	1/4	2-3/16	4	11446	-	-	-
7/32	3/8	1/2	2-3/8	4	11444	-	-	-
7/32	3/8	1-1/4	3-1/8	4	11584	-	-	-
1/4	3/8	1/4	2-1/8	4	11450	-	-	-
1/4	3/8	5/8	2-7/16	4	11448	-	9140430	-
1/4	3/8	7/8	2-11/16	4	11588	-	-	-
1/4	3/8	1-1/4	3-1/16	4	11586	-	9142050	-
1/4	3/8	1-3/4	3-9/16	4	11536	-	142750	-
1/4	3/8	2-1/4	4-1/8	4	11538	-	-	-
9/32	3/8	5/16	2-1/8	4	911454	-	-	-
9/32	3/8	11/16	2-1/2	4	11452	-	-	-
9/32	3/8	1	2-3/4	4	912984	-	-	-
9/32	3/8	1-3/8	3-1/8	4	11590	-	-	-
5/16	3/8	5/16	2-1/16	4	11458	-	-	-
5/16	3/8	3/4	2-1/2	4	11456	-	9140470	-
5/16	3/8	1	2-3/4	4	12986	-	-	-
5/16	3/8	1-3/8	3-1/8	4	11592	-	142070	-
11/32	3/8	3/8	2-1/8	4	11462	-	-	-
11/32	3/8	3/4	2-1/2	4	11460	-	9140490	-
11/32	3/8	1	2-3/4	4	12988	-	-	-
11/32	3/8	1-1/2	3-1/4	4	11594	-	-	-
3/8	3/8	3/8	2-1/8	4	11466	-	-	-
3/8	3/8	3/4	2-1/2	4	11464	-	140510	-
3/8	3/8	1	2-3/4	4	12990	-	-	-
3/8	3/8	1-1/2	3-1/4	4	11596	-	142090	-
3/8	3/8	2-1/2	4-1/4	4	11542	-	142790	-
13/32	3/8	1	2-11/16	4	11174	-	-	-
7/16	3/8	7/16	2-7/16	4	12956	-	-	-
7/16	3/8	1	2-11/16	4	11468	-	9940570	-
7/16	1/2	1-1/4	3-1/4	4	12992	-	-	-
7/16	1/2	1-3/4	3-3/4	4	12994	-	-	-
7/16	1/2	2-3/4	4-3/4	4	12970	-	-	-
15/32	1/2	1-1/4	3-1/4	4	11180	-	-	-
1/2	1/2	1/2	2-1/2	4	12957	-	-	-
1/2	3/8	1	2-11/16	4	911470	-	-	-
1/2	1/2	1-1/4	3-1/4	4	11472	-	9140660	-
1/2	1/2	1-1/4	3-1/4	6	915050	-	-	-
1/2	1/2	1-5/8	3-5/8	4	12996	-	-	-
1/2	1/2	2	4	4	11598	-	142170	-
1/2	1/2	3	5	4	11544	-	142870	-
1/2	1/2	4	6	4	11344	-	-	-
17/32	1/2	1-3/8	3-3/8	4	11184	-	9140680	-

Mill Dia.	Shank Dia.	Flute Lgth	OAL	No. Fl.	COBALT		HSS	
					Order No.	Price	Order No.	Price
9/16	1/2	1-3/8	3-3/8	4	11474	-	8140700	-
9/16	1/2	2-1/2	4-1/2	4	11392	-	-	-
9/16	1/2	3-1/2	5-1/2	4	11346	-	-	-
19/32	1/2	1-3/8	3-3/8	4	11188	-	-	-
5/8	5/8	1-5/8	2-3/4	4	12958	-	-	-
5/8	1/2	1-3/8	3-3/8	4	11190	-	-	-
5/8	5/8	1-5/8	3-3/4	4	11476	-	9140770	-
5/8	5/8	1-5/8	3-3/4	6	15054	-	-	-
5/8	5/8	2	4-1/8	4	12998	-	-	-
5/8	5/8	2-1/2	4-5/8	4	11600	-	142240	-
5/8	5/8	4	6-1/8	4	11546	-	142940	-
5/8	5/8	5	7-1/8	4	11548	-	-	-
11/16	5/8	1-5/8	3-3/4	4	11478	-	9140810	-
3/4	3/4	3/4	3	4	12960	-	-	-
3/4	5/8	1-5/8	3-3/4	4	15058	-	-	-
3/4	3/4	1-5/8	3-7/8	4	11480	-	9140870	-
3/4	3/4	1-5/8	3-7/8	6	15062	-	-	-
3/4	3/4	2-1/4	4-1/2	4	13000	-	-	-
3/4	3/4	3	5-1/4	4	911602	-	142290	-
3/4	3/4	4	6-1/4	4	11550	-	142990	-
3/4	3/4	6	8-1/4	4	911552	-	-	-
13/16	3/4	1-7/8	4-1/8	4	11482	-	9140930	-
7/8	1/2	1-5/8	3-5/8	4	915854	-	-	-
7/8	3/4	1-7/8	4-1/8	4	15066	-	-	-
7/8	7/8	1-7/8	4-1/8	4	911484	-	8141010	-
7/8	7/8	1-7/8	4-1/8	6	15096	-	-	-
7/8	7/8	3-1/2	5-3/4	4	11604	-	9142350	-
7/8	7/8	5	7-1/4	4	11554	-	143050	-
15/16	3/4	1-7/8	4-1/8	4	15068	-	-	-
15/16	7/8	1-7/8	4-1/8	4	11486	-	8141090	-
1	5/8	1-7/8	4	4	15060	-	-	-
1	3/4	1-7/8	4-1/8	4	15070	-	-	-
1	1/2	1-7/8	3-7/8	4	915856	-	-	-
1	1	2	4-1/2	4	11488	-	8141190	-
1	1	2	4-1/2	6	15098	-	-	-
1	1	3	5-1/2	4	11608	-	-	-
1	1	4	6-1/2	4	11606	-	142430	-
1	1	6	8-1/2	4	11556	-	143130	-
1	1	8	10-1/2	4	11558	-	-	-
1-1/16	3/4	1-5/8	3-7/8	6	15072	-	-	-
1-1/8	3/4	1-5/8	3-7/8	6	15074	-	-	-
1-1/8	1	2	4-1/2	4	11490	-	9141250	-
1-3/16	3/4	1-5/8	3-7/8	6	15076	-	-	-
1-1/4	3/4	1-5/8	3-7/8	6	15078	-	-	-
1-1/4	1	2	4-1/2	6	915102	-	-	-
1-1/4	1-1/4	2	4-1/2	4	11492	-	141320	-
1-1/4	1-1/4	2	4-1/2	6	11662	-	-	-
1-1/4	1-1/4	4	6-1/2	4	11610	-	142460	-
1-1/4	1-1/4	6	8-1/2	4	911560	-	143160	-
1-5/16	3/4	2	4-1/4	6	15080	-	-	-
1-3/8	3/4	2	4-1/4	6	15082	-	-	-
1-7/16	3/4	2	4-1/4	6	15084	-	-	-
1-1/2	3/4	2	4-1/4	6	15086	-	-	-
1-1/2	1	2	4-1/2	6	915106	-	148950	-
1-1/2	1-1/4	2	4-1/2	4	11494	-	9141450	-
1-1/2	1-1/4	2	4-1/2	6	11666	-	148960	-
1-1/2	1-1/4	4	6-1/2	4	11612	-	9142500	-
1-1/2	1-1/4	8	10-1/2	4	11698	-	-	-
1-5/8	3/4	2	4-1/4	6	15088	-	-	-
1-3/4	3/4	2	4-1/4	6	15090	-	-	-
1-3/4	1-1/4	2	4-1/2	6	915108	-	-	-
1-7/8	3/4	2	4-1/4	6	915092	-	-	-
2	3/4	2	4-1/4	6	15094	-	-	-
2	1-1/4	2	4-1/2	4	11668	-	9141650	-
2	1-1/4	2	4-1/2	6	11670	-	149160	-
2	1-1/4	4	6-1/2	4	11712	-	-	-

CUTTING TOOLS - END MILLS

HIGH SPEED STEEL AND COBALT STEEL
TWO FLUTE DOUBLE END CENTER-CUTTING END MILLS
SERIES 93: HIGH SPEED
SERIES 80: COBALT



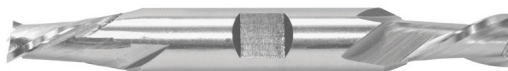
Mill Dia.	Shank Dia.	Lgth of Cut	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
1/8	3/8	3/8	3-1/16	1300081		1245081	
9/64	3/8	7/16	3-1/8	1300091		-	
5/32	3/8	7/16	3-1/8	1300100		1245101	
11/64	3/8	7/16	3-1/8	1300111		-	
3/16	3/8	7/16	3-1/8	1300121		1245121	
13/64	3/8	1/2	3-1/8	1300131		-	
7/32	3/8	1/2	3-1/8	1300141		1245141	
15/64	3/8	1/2	3-1/8	1300151		-	
1/4	3/8	1/2	3-1/8	1300161		1245161	
17/64	3/8	9/16	3-1/8	1300171		-	
9/32	3/8	9/16	3-1/8	1300181		1245181	
19/64	3/8	9/16	3-1/8	1300191		-	
5/16	3/8	9/16	3-1/8	1300201		1245201	
21/64	3/8	9/16	3-1/8	1300211		-	
11/32	3/8	9/16	3-1/8	1300221		1245221	
23/64	3/8	9/16	3-1/8	1300231		-	
3/8	3/8	9/16	3-1/8	1300241		1245241	
25/64	1/2	13/16	3-3/4	1300252		-	
13/32	1/2	13/16	3-3/4	1300262		1245262	
7/16	1/2	13/16	3-3/4	1300282		1245282	
15/32	1/2	13/16	3-3/4	1300302		1245302	
1/2	1/2	13/16	3-3/4	1300322		1245322	
9/16	5/8	1-1/8	4-1/2	1300363		1245363	
5/8	5/8	1-1/8	4-1/2	1300403		1245403	
11/16	3/4	1-5/16	5	1300444		1245444	
3/4	3/4	1-5/16	5	1300484		1245484	
13/16	7/8	1-9/16	5-1/2	1300522		-	
7/8	7/8	1-9/16	5-1/2	1300565		1245565	
15/16	1	1-5/8	5-7/8	1300616		-	
1	1	1-5/8	5-7/8	1300646		1245646	

HIGH SPEED STEEL AND COBALT STEEL
TWO FLUTE DOUBLE END CENTER-CUTTING END MILLS
Stub / Regular Length
SERIES 764: HIGH SPEED STEEL
SERIES 742: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
5/64	3/8	5/16	3-1/16	10894		-	
3/32	3/8	5/16	3-1/16	10896		-	
7/64	3/8	3/8	3-1/16	10898		899307	
1/8	3/8	3/16	2-3/4	11104		-	
1/8	3/8	3/8	3-1/16	910900		108050	
9/64	3/8	7/16	3-1/8	910902		899309	
5/32	3/8	15/64	2-3/4	11106		-	
5/32	3/8	7/16	3-1/8	910904		108070	
11/64	3/8	7/16	3-1/8	910906		899311	
3/16	3/8	9/32	2-3/4	11108		-	
3/16	3/8	7/16	3-1/8	910908		108090	
13/64	3/8	1/2	3-1/8	810910		899313	
7/32	3/8	21/64	2-3/4	911110		-	
7/32	3/8	1/2	3-1/8	910912		108110	
15/64	3/8	1/2	3-1/8	910914		899315	
1/4	3/8	3/8	2-3/4	11112		-	
1/4	3/8	1/2	3-1/8	910916		108130	
17/64	3/8	9/16	3-1/8	910918		899317	
9/32	3/8	9/16	3-1/8	910920		108150	
19/64	3/8	9/16	3-1/8	910922		899319	
5/16	3/8	9/16	3-1/8	910924		108170	
21/64	3/8	9/16	3-1/8	10926		899321	
11/32	3/8	9/16	3-1/8	10928		108190	
23/64	3/8	9/16	3-1/8	910930		899323	
3/8	3/8	9/16	3-1/8	910932		108210	
25/64	1/2	13/16	3-3/4	10934		899325	
13/32	1/2	13/16	3-3/4	910936		108230	
27/64	1/2	13/16	3-3/4	910938		108240	
7/16	1/2	13/16	3-3/4	910940		108250	
29/64	1/2	13/16	3-3/4	10942		108260	
15/32	1/2	13/16	3-3/4	10944		892852	
31/64	1/2	13/16	3-3/4	910946		108280	
1/2	1/2	13/16	3-3/4	910948		108290	
17/32	5/8	1-1/8	4-1/2	910950		108310	
9/16	5/8	1-1/8	4-1/2	910952		108330	
19/32	5/8	1-1/8	4-1/2	910954		108350	
5/8	5/8	1-1/8	4-1/2	910956		108370	
21/32	3/4	1-5/16	5	910958		108380	
11/16	3/4	1-5/16	5	910960		892856	
23/32	3/4	1-5/16	5	910962		108400	
3/4	3/4	1-5/16	5	910964		108410	
25/32	7/8	1-9/16	5-1/2	910966		-	
13/16	7/8	1-9/16	5-1/2	910968		899352	
7/8	7/8	1-9/16	5-1/2	910972		108450	
15/16	1	1-5/8	5-7/8	910976		108470	
1	1	1-5/8	5-7/8	910980		108490	

COBALT STEEL
TWO FLUTE DOUBLE END CENTER-CUTTING LEFT HAND SPIRAL & CUT END MILLS
SERIES 630:



Mill Dia.	Shank Dia.	Flute Lgth	OAL	Order No.	Price
3/16	3/8	7/16	3-1/8	12750	
1/4	3/8	1/2	3-1/8	12752	
5/16	3/8	9/16	3-1/8	912754	
3/8	3/8	9/16	3-1/8	12756	
7/16	1/2	13/16	3-3/4	12758	
1/2	1/2	13/16	3-3/4	12760	
5/8	5/8	1-1/8	4-1/2	-	
3/4	3/4	1-5/16	5	-	



**FOR END MILL SETS
SEE PAGE 120.**

HIGH SPEED STEEL AND COBALT STEEL

THREE FLUTE DOUBLE END CENTER-CUTTING END MILLS

SERIES 368: HIGH SPEED STEEL
SERIES 769: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
5/64	3/8	5/16	3-1/16	12436	-	-	-
3/32	3/8	5/16	3-1/16	12438	899406*	-	-
7/64	3/8	3/8	3-1/16	12440	-	-	-
1/8	3/8	3/8	3-1/16	12442	9119040*	-	-
9/64	3/8	7/16	3-1/8	12444	-	-	-
5/32	3/8	7/16	3-1/8	12446	899410*	-	-
11/64	3/8	1/2	3-1/8	12448	-	-	-
3/16	3/8	1/2	3-1/4	12450	119080*	-	-
13/64	3/8	9/16	3-1/4	12452	-	-	-
7/32	3/8	9/16	3-1/4	12454	899414*	-	-
15/64	3/8	5/8	3-3/8	12456	-	-	-
1/4	3/8	5/8	3-3/8	12458	119120*	-	-
17/64	3/8	11/16	3-3/8	912460	-	-	-
9/32	3/8	11/16	3-3/8	12462	899418*	-	-
19/64	3/8	3/4	3-1/2	12464	-	-	-
5/16	3/8	3/4	3-1/2	12466	119160*	-	-
21/64	3/8	3/4	3-1/2	12468	-	-	-
11/32	3/8	3/4	3-1/2	12470	899422*	-	-
23/64	3/8	3/4	3-1/2	12472	-	-	-
3/8	3/8	3/4	3-1/2	12474	119200*	-	-
25/64	1/2	1	4-1/8	12476	-	-	-
13/32	1/2	1	4-1/8	12478	899426*	-	-
27/64	1/2	1	4-1/8	12480	-	-	-
7/16	1/2	1	4-1/8	12482	9119220*	-	-
29/64	1/2	1	4-1/8	12484	-	-	-
15/32	1/2	1	4-1/8	12486	899430*	-	-
1/2	1/2	1	4-1/8	12490	119240*	-	-
17/32	5/8	1-3/8	5	12492	899434*	-	-
9/16	5/8	1-3/8	5	12494	119260*	-	-
19/32	5/8	1-3/8	5	-	899438*	-	-
5/8	5/8	1-3/8	5	12498	119280*	-	-
11/16	3/4	1-5/8	5-5/8	-	899444*	-	-
3/4	3/4	1-5/8	5-5/8	12506	119320*	-	-
13/16	7/8	1-3/4	6-1/8	-	899452*	-	-
7/8	7/8	1-7/8	6-1/8	-	119360*	-	-
1	1	1-7/8	6-3/8	-	119400*	-	-

* LIMITED QUANTITY

HIGH SPEED STEEL

FOUR FLUTE CENTER-CUTTING DOUBLE END END MILLS

SERIES 513:



Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
1/8	3/8	3/8	3-1/16	1306081	-
3/16	3/8	1/2	3-1/4	1306121	-
1/4	3/8	5/8	3-3/8	1306161	-
5/16	3/8	3/4	3-1/2	1306201	-
3/8	3/8	3/4	3-1/2	1306241	-
1/2	1/2	1	4-1/8	1306322	-
5/8	5/8	1-3/8	5	1306403	-
3/4	3/4	1-5/8	5-5/8	1306484	-
7/8	7/8	1-7/8	6-1/8	1306565	-
1	1	1-7/8	6-3/8	1306646	-

HIGH SPEED STEEL AND COBALT STEEL

FOUR FLUTE DOUBLE END END MILLS

SERIES 94: HIGH SPEED - NON CENTER-CUTTING
SERIES 81: COBALT - CENTER - CUTTING



Mill Dia.	Shank Dia.	Lgth of Cut	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
1/8	3/8	3/8	3-1/16	1305081	-	1250081	-
9/64	3/8	7/16	3-1/8	1305091	-	-	-
5/32	3/8	7/16	3-1/8	1305101	-	1250111	-
11/64	3/8	1/2	3-1/8	1305111	-	-	-
3/16	3/8	1/2	3-1/4	1305121	-	1250121	-
13/64	3/8	9/16	3-1/4	1305131	-	187513	-
7/32	3/8	9/16	3-1/4	1305141	-	1250141	-
15/64	3/8	5/8	3-3/8	1305151	-	187515	-
1/4	3/8	5/8	3-3/8	1305161	-	1250161	-
17/64	3/8	11/16	3-3/8	1305171	-	-	-
9/32	3/8	11/16	3-3/8	1305181	-	1250181	-
19/64	3/8	3/4	3-1/2	1305191	-	-	-
5/16	3/8	3/4	3-1/2	1305201	-	1250211	-
21/64	3/8	3/4	3-1/2	1305211	-	-	-
11/32	3/8	3/4	3-1/2	1305221	-	1250221	-
23/64	3/8	3/4	3-1/2	1305231	-	-	-
3/8	3/8	3/4	3-1/2	1305241	-	1250241	-
25/64	1/2	1	4-1/8	1305252	-	-	-
13/32	1/2	1	4-1/8	1305262	-	1250262	-
7/16	1/2	1	4-1/8	1305282	-	1250282	-
15/32	1/2	1	4-1/8	1305302	-	1250302	-
1/2	1/2	1	4-1/8	1305322	-	1250322	-
9/16	5/8	1-3/8	5	1305363	-	1250363	-
5/8	5/8	1-3/8	5	1305403	-	1250403	-
11/16	3/4	1-5/8	5-5/8	1305444	-	187544	-
3/4	3/4	1-5/8	5-5/8	1305484	-	1250484	-
13/16	7/8	1-7/8	6-1/8	1305525	-	187552	-
7/8	7/8	1-7/8	6-1/8	1305565	-	1250565	-
15/16	1	1-7/8	6-3/8	1305606	-	187560	-
1	1	1-7/8	6-3/8	1305646	-	1250646	-

COBALT STEEL

FOUR FLUTE DOUBLE END LEFT HAND SPIRAL & LEFT HAND CUT END MILLS

SERIES 630:



Mill Dia.	Shank Dia.	Flute Lgth	OAL	Order No.	Price
3/16	3/8	1/2	3-1/4	12772	-
1/4	3/8	5/8	3-3/8	12774	-
5/16	3/8	3/4	3-1/2	12776	-
3/8	3/8	3/4	3-1/2	12778	-
7/16	1/2	1	4-1/8	12780	-
1/2	1/2	1	4-1/8	12782	-
5/8	5/8	1-3/8	5	12786	-
3/4	3/4	1-5/8	5-5/8	12790	-

HIGH SPEED STEEL AND COBALT STEEL

**FOUR FLUTE DOUBLE END
NON CENTER-CUTTING END MILLS**

SERIES 762: HIGH SPEED STEEL
SERIES 743: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Lgth	Order OAL	HIGH SPEED	
				Order No.	Price
7/64	3/8	3/8	3-1/16	8131040	
1/8	3/8	3/8	3-1/16	131050	
5/32	3/8	7/16	3-1/8	131070	
3/16	3/8	1/2	3-1/4	131090	
7/32	3/8	9/16	3-1/4	9131110	
1/4	3/8	5/8	3-3/8	8131130	
9/32	3/8	11/16	3-3/8	131150	
5/16	3/8	3/4	3-1/2	131170	
11/32	3/8	3/4	3-1/2	131190	
23/64	3/8	3/4	3-1/2	9131200	
3/8	3/8	3/4	3-1/2	131210	
13/32	1/2	1	4-1/8	131230	
27/64	1/2	1	4-1/8	131240	
7/16	1/2	1	4-1/8	131250	
29/64	1/2	1	4-1/8	131260	
15/32	1/2	1	4-1/8	892536	
31/64	1/2	1	4-1/8	131280	
1/2	1/2	1	4-1/8	131290	
9/16	5/8	1-3/8	5	131330	
19/32	5/8	1-3/8	5	131350	
5/8	5/8	1-3/8	5	131370	
21/32	3/4	1-5/8	5-5/8	131380	
11/16	3/4	1-5/8	5-5/8	892540	
23/32	3/4	1-5/8	5-5/8	131400	
3/4	3/4	1-5/8	5-5/8	131410	
25/32	7/8	1-7/8	6-1/8	131420	
13/16	7/8	1-7/8	6-1/8	892542	
27/32	7/8	1-7/8	6-1/8	9131440	
7/8	7/8	1-7/8	6-1/8	131450	
15/16	1	1-7/8	6-3/8	9131470	
31/32	1	1-7/8	6-3/8	131480	
1	1	1-7/8	6-3/8	131490	

HIGH SPEED STEEL

DOUBLE END MILL SETS

SERIES 828:



**6 PIECE SETS CONSISTING OF 1 EACH:
1/8, 5/32, 3/16, 1/4, 5/16, 3/8 all with 3/8" shanks**

Description	Order No.	Price
2F MEDA Superior Import	0930824	
2F STAR USA	8280001	
4F MEDA Superior Import Non Center Cutting	8280010	
4F MEDA Superior Import Center Cutting	0940824	
4F STAR USA Non Center Cutting	8280002	
4F STAR USA Center Cutting	8280003	

For more
End Mill
Sets see
page 120.

HIGH SPEED STEEL AND COBALT STEEL

**FOUR FLUTE DOUBLE END
CENTER-CUTTING END MILLS**

Stub / Regular / Long Length
SERIES 765: HIGS SPEED STEEL
SERIES 750: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
7/64	3/8	3/8	3-1/16	11818		-	
1/8	3/8	3/16	2-3/4	912010		-	
1/8	3/8	3/8	3-1/16	11820		146050	
1/8	3/8	1/2	3-1/4	911912		-	
1/8	3/8	5/8	3-9/16	11914		-	
9/64	3/8	7/16	3-1/8	11822		-	
5/32	3/8	15/64	2-3/4	12012		-	
5/32	3/8	7/16	3-1/8	911824		9146070	
11/64	3/8	1/2	3-1/8	11826		-	
3/16	3/8	9/32	2-3/4	12014		-	
3/16	3/8	1/2	3-1/4	11828		146090	
3/16	3/8	7/8	4-1/8	11916		-	
13/64	3/8	9/16	3-1/4	11830		-	
7/32	3/8	21/64	2-3/4	12016		-	
7/32	3/8	9/16	3-1/4	11832		146110	
15/64	3/8	5/8	3-3/8	11834		-	
1/4	3/8	3/8	2-3/4	12018		-	
1/4	3/8	5/8	3-3/8	11836		146130	
17/64	3/8	11/16	3-3/8	11838		-	
9/32	3/8	11/16	3-3/8	11840		146150	
19/64	3/8	3/4	3-1/2	11842		-	
5/16	3/8	3/4	3-1/2	11844		146170	
21/64	3/8	3/4	3-1/2	11846		-	
11/32	3/8	3/4	3-1/2	11848		146180	
23/64	3/8	3/4	3-1/2	11850		-	
3/8	3/8	3/4	3-1/2	911852		146210	
25/64	1/2	1	4-1/8	11854		-	
13/32	1/2	1	4-1/8	11856		146230	
27/64	1/2	1	4-1/8	911858		-	
7/16	1/2	1	4-1/8	11860		146250	
29/64	1/2	1	4-1/8	11862		-	
15/32	1/2	1	4-1/8	11864		146270	
31/64	1/2	1	4-1/8	11866		-	
1/2	1/2	1	4-1/8	11868		146290	
17/32	5/8	1-3/8	5	11870		-	
9/16	5/8	1-3/8	5	11872		146330	
19/32	5/8	1-3/8	5	11874		-	
5/8	5/8	1-3/8	5	11876		146370	
3/4	3/4	1-5/8	5-5/8	11944		146410	
7/8	7/8	1-7/8	6-1/8	11946		146450	
1	1	1-7/8	6-3/8	11948		925060	

HIGH SPEED STEEL AND COBALT STEEL

DOUBLE END END MILL SETS

SERIES 828:



**6 PIECE SETS CONSISTING OF 1 EACH:
1/8, 3/16, 1/4, 5/16, 3/8 all with 3/8" shanks;
1/2 with 1/2" shank**

Description	Steel	Order No.	Price
2F MEDA Superior Import	HSS	8280004	
4F MEDA Superior Import*	HSS	8280005	
2F MEDA Superior Import	COBALT	8280006	
4F MEDA Superior Import**	COBALT	8280007	
2F STAR USA	COBALT	8280008	
4F STAR USA**	COBALT	8280009	



*Non center-cutting **Center cutting

CUTTING TOOLS - END MILLS

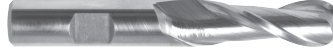
HIGH SPEED STEEL AND COBALT STEEL

TWO FLUTE SINGLE END BALL

END MILLS

SERIES 103: HIGH SPEED STEEL

SERIES 609: COBALT STEEL



Mill Dia.	Shank Dia.	Lgth of Cut	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
1/8	3/8	3/8	2-5/16	1315081		6090081	
3/16	3/8	1/2	2-3/8	1315121		6090121	
1/4	3/8	5/8	2-7/16	1315161		6090161	
5/16	3/8	3/4	2-1/2	1315201		6090201	
3/8	3/8	3/4	2-1/2	1315241		6090241	
7/16	1/2	1	3	1315282		6090282	
1/2	1/2	1	3	1315322		6090322	
9/16	1/2	1	3	1315362		6090362	
5/8	1/2	1-3/8	3-3/8	1315402		6090402	
5/8	5/8	1-3/8	3-1/2	1315403		6090403	
3/4	1/2	1-3/8	3-3/8	1315482		6090482	
3/4	3/4	1-5/8	3-7/8	1315484		6090484	

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
13/16	3/4	2	4-1/4	1315524		-	
7/8	3/4	2	4-1/4	1315564		-	
7/8	7/8	2	4-1/4	1315565		188456	
15/16	3/4	2-1/4	4-1/2	1315604		-	
1	3/4	2-1/4	4-1/2	1315644		6090644	
1	1	2-1/4	4-3/4	1315646		6090646	
1-1/8	1	2-1/4	4-3/4	1315726		6090726	
1-1/4	3/4	2-1/2	4-13/16	-		188473	
1-1/4	1-1/4	2-1/2	5	1315807		6090807	
1-3/8	1-1/4	2-1/2	5	1315887		-	
1-1/2	1-1/4	2-1/2	5	1315967		6090967	
2	1-1/4	2-1/2	5	1312007		-	

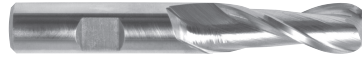
HIGH SPEED STEEL AND COBALT

TWO FLUTE SINGLE END BALL END MILLS

Regular / Medium / Long Length

SERIES 771: HIGH SPEED STEEL

SERIES 755: COBALT STEEL



Diameters over 1-1/4 made of M7 steel except where marked with an *.

Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
3/32	3/8	5/16	2-1/4	910350		-	
1/8	3/8	3/8	2-5/16	910352		110410	
5/32	3/8	7/16	2-5/16	10354		110420	
3/16	3/8	1/2	2-3/8	10356		110430	
3/16	3/8	3/4	2-5/8	910546		-	
7/32	3/8	9/16	2-3/8	910358		9110440	
7/32	3/8	1-1/4	3-1/8	910548		-	
1/4	3/8	5/8	2-7/16	910360		110450	
1/4	3/8	1-1/4	3-1/16	910550		-	
9/32	3/8	9/16	2-3/8	10362		110460	
9/32	3/8	1-3/8	3-1/8	910552		-	
5/16	3/8	3/4	2-1/2	10364		110470	
5/16	3/8	1-3/8	3-1/8	910554		-	
11/32	3/8	1-1/2	3-1/4	10556		-	
3/8	3/8	3/4	2-1/2	10368		110490	
3/8	3/8	1	2-3/4	910558		-	
3/8	3/8	1-1/2	3-1/4	910560		-	
13/32	3/8	13/16	2-1/2	10370		110500	
7/16	3/8	13/16	2-1/2	10372		-	
7/16	1/2	1	3	10376		110530	
7/16	1/2	1-3/4	3-3/4	910562		-	
15/32	1/2	1	3	10378		-	
1/2	3/8	13/16	2-1/2	10374		-	
1/2	1/2	1	3	10380		110570	
1/2	1/2	1-1/2	3-1/2	10564		-	
1/2	1/2	2	4	910566		-	
17/32	1/2	1-1/8	3-1/8	10382		-	
9/16	1/2	1-1/8	3-1/8	10384		110580	
19/32	1/2	1-1/8	3-1/8	10386		899138*	
5/8	1/2	1-1/8	3-1/8	10388		110600	
5/8	5/8	1-3/8	3-1/2	10414		9110610	
5/8	5/8	2	4-1/8	10568		-	
5/8	5/8	2-1/2	4-5/8	10570		-	
21/32	1/2	1-5/16	3-5/16	10390		899142*	
11/16	1/2	1-5/16	3-5/16	10392		899144*	
11/16	5/8	1-5/16	3-7/16	10416		-	
23/32	1/2	1-5/16	3-5/16	10394		899146*	
3/4	1/2	1-5/16	3-5/16	10396		9110640	
3/4	5/8	1-5/16	3-7/16	10418		-	

Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
3/4	3/4	1-5/8	3-7/8	10428		110660	
3/4	3/4	2-1/4	4-1/2	10572		-	
3/4	3/4	3	5-1/4	10574		-	
25/32	1/2	1-1/2	3-1/2	10398		899150*	
13/16	1/2	1-1/2	3-1/2	10400		899152*	
13/16	5/8	1-1/2	3-5/8	10420		-	
27/32	1/2	1-1/2	3-1/2	910402		899154*	
7/8	1/2	1-1/2	3-1/2	10404		-	
7/8	5/8	1-1/2	3-5/8	-		-	
7/8	3/4	2	4-1/4	10430		110700	
7/8	7/8	2	4-1/4	10434		9110710	
29/32	1/2	1-1/2	3-1/2	10406		899158*	
15/16	1/2	1-1/2	3-1/2	10408		899160*	
15/16	5/8	1-1/2	3-5/8	10424		-	
15/16	7/8	1-1/2	3-3/4	10436		-	
31/32	1/2	1-1/2	3-1/2	10410		-	
1	1/2	1-1/2	3-1/2	10412		-	
1	5/8	1-1/2	3-5/8	10426		-	
1	3/4	2-1/4	4-1/2	10432		110760	
1	1	2-1/4	4-3/4	10444		110780	
1	1	3	5-1/2	10580		-	
1	1	4	6-1/2	10582		-	
1-1/16	1	1-5/8	4-1/8	10446		-	
1-1/8	7/8	1-5/8	3-7/8	-		-	
1-3/16	1	1-5/8	4-1/8	10450		-	
1-1/4	7/8	1-5/8	3-7/8	10442		-	
1-1/4	1	1-5/8	4-1/8	10452		-	
1-1/4	1-1/4	2-1/2	5	10462		110830	
1-5/16	1	1-5/8	4-1/8	10454		-	
1-3/8	1	1-5/8	4-1/8	10456		-	
1-7/16	1	1-5/8	4-1/8	10458		-	
1-1/2	1	1-5/8	4-1/8	10460		-	
1-1/2	1-1/4	2-1/2	5	10464		110870	
1-1/2	1-1/4	2-1/2	5	-		-	
1-5/8	1-1/4	1-5/8	4-1/8	10466		-	
1-3/4	1-1/4	1-5/8	4-1/8	10468		-	
1-7/8	1-1/4	1-5/8	4-1/8	10470		-	
2	1-1/4	1-5/8	4-1/8	-		-	
2	1-1/4	4	6-1/2	-		-	

*LIMITED QUANTITY

CUTTING TOOLS - END MILLS

HIGH SPEED STEEL

**TWO FLUTE
EXTENDED LENGTH
SINGLE END BALL END MILLS**

SERIES 583:



Mill Dia.	Shank Dia.	Lgth of Cut	Lgth Below Shank	OAL	Order No.	Price
1/8	3/8	3/8	13/16	2-3/8	5832081	
3/16	3/8	1/2	1-1/8	2-11/16	5832121	
1/4	3/8	5/8	1-1/2	3-1/16	5832161	
5/16	3/8	3/4	1-3/4	3-5/16	5832201	
3/8	3/8	3/4	1-3/4	3-5/16	5832241	
1/2	1/2	1	2-1/4	4	5832322	
5/8	5/8	1-3/8	3-3/4	4-5/8	5832403	
3/4	3/4	1-5/8	3-7/8	5-3/8	5832484	
7/8	7/8	2	4	6	5832565	
1	1	2-1/2	5	7-1/4	5832646	
1-1/4	1-1/4	3	5	7-1/4	5832807	

COBALT STEEL

**THREE FLUTE SINGLE END
BALL END MILLS**

Regular Length / Long Length
SERIES 758:



Mill Dia.	Shank Dia.	Flute Lgth	OAL	Order No.	Price
1/8	3/8	3/8	2-5/16	12156	
3/16	3/8	1/2	2-3/8	12160	
3/16	3/8	3/4	2-5/8	12306	
1/4	3/8	5/8	2-1/2	12164	
1/4	3/8	1-1/4	3-1/16	12310	
5/16	3/8	3/4	2-1/2	12168	
5/16	3/8	1-3/8	3-1/8	912314	
3/8	3/8	3/4	2-1/2	12172	
3/8	3/8	1-1/2	3-1/4	12318	
7/16	1/2	1-3/4	3-3/4	12320	
1/2	1/2	1-1/4	3-1/4	12182	
1/2	1/2	2	4	912322	
17/32	1/2	1-3/8	3-3/8	-	
9/16	1/2	1-3/8	3-3/8	12186	
5/8	5/8	1-5/8	3-3/4	912216	
11/16	1/2	1-5/8	3-5/8	-	
23/32	1/2	1-5/8	3-5/8	-	
3/4	1/2	1-5/8	3-5/8	12198	
3/4	3/4	3	5-1/4	912326	
13/16	5/8	1-7/8	4	912220	
7/8	3/4	1-7/8	4-1/8	-	
1	3/4	1-7/8	4-1/8	812232	
1-3/4	1-1/4	2	4-1/2	-	
2	1-1/4	2	4-1/2	-	



offers all of its end mills with the following coatings:
Titanium Nitride (TiN), Titanium Carbonitride (TiCN),
Titanium Aluminum Nitride (TiAlN), and Aluminum Titanium
Nitride (AlTiN). See our website or inquire.

HIGH SPEED STEEL AND COBALT STEEL

**TWO FLUTE SINGLE END
EXTENDED LENGTH BALL
END MILLS**

SERIES 736: HIGH SPEED STEEL
SERIES 756: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
1/8	3/8	3/8	2-3/8	10756		111227	
3/16	3/8	1/2	2-11/16	910758		111229	
1/4	3/8	5/8	3-1/16	10760		9111230	
5/16	3/8	3/4	3-5/16	10762		111240	
3/8	3/8	3/4	3-5/16	910764		111250	
1/2	1/2	1	4	910766		111270	
5/8	5/8	1-3/8	4-5/8	-		111290	
3/4	3/4	1-5/8	5-3/8	10770		111300	
1	1	2-1/2	7-1/4	910774		111320	

HIGH SPEED STEEL AND COBALT STEEL

**FOUR FLUTE SINGLE END
BALL END MILLS**

SERIES 582: HIGH SPEED STEEL
SERIES 610: COBALT STEEL



Mill Dia.	Shank Dia.	Lgth of Cut	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
1/8	3/8	3/8	2-5/16	5824081		6100081	
3/16	3/8	1/2	2-3/8	5824121		6100121	
1/4	3/8	5/8	2-7/16	5824161		6100161	
5/16	3/8	3/4	2-1/2	5824201		6100201	
3/8	3/8	3/4	2-1/2	5824241		6100241	
1/2	1/2	1-1/4	3-1/4	5824322		6100322	
5/8	5/8	1-5/8	3-3/4	5824403		6100403	
3/4	3/4	1-5/8	3-7/8	5824484		6100484	
7/8	7/8	1-7/8	4-1/8	5824565		6100565	
1	1	2	4-1/2	5824646		6100646	
1-1/4	1-1/4	2	4-1/2	189574		6100807	

HIGH SPEED STEEL

**FOUR FLUTE LONG SINGLE
END BALL END MILLS**

SERIES 584:



Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
1/4	3/8	1-1/4	3-1/8	5844161	
5/16	3/8	1-3/8	3-1/8	5844201	
3/8	3/8	1-1/2	3-1/4	5844241	
1/2	1/2	2	4	5844322	
5/8	5/8	2-1/2	4-5/8	5844403	
3/4	3/4	3	5-1/4	5844484	
1	1	4	6-1/2	5844646	

HIGH SPEED STEEL AND COBALT STEEL
FOUR FLUTE SINGLE END BALL END MILLS



Regular Length / Long Length / Extra-Long Length
SERIES 772: HIGH SPEED STEEL
SERIES 757: COBALT STEEL

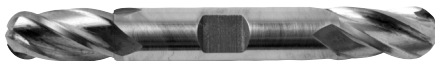


Mill Dia.	Shank Dia.	Flute Lgth	OAL	No. Fl.	COBALT		HIGH SPEED	
					Order No.	Price	Order No.	Price
1/8	3/8	3/8	2-5/16	4	11496	-	-	-
5/32	3/8	7/16	2-5/16	4	11498	-	-	-
3/16	3/8	1/2	2-3/8	4	11500	-	-	-
3/16	3/8	3/4	2-5/8	4	11614	-	-	-
7/32	3/8	1/2	2-3/8	4	9911502	-	-	-
1/4	3/8	3/4	2-9/16	4	11504	-	155350	-
1/4	3/8	1-1/4	3-1/16	4	11618	-	156020	-
1/4	3/8	1-3/4	3-9/16	4	11564	-	-	-
9/32	3/8	11/16	2-1/2	4	11506	-	-	-
9/32	3/8	1-3/8	3-1/8	4	11620	-	-	-
5/16	3/8	1	2-3/4	4	11508	-	155370	-
5/16	3/8	1-3/8	3-1/8	4	11622	-	156030	-
5/16	3/8	2	3-3/4	4	9911566	-	-	-
11/32	3/8	3/4	2-1/2	4	9911510	-	-	-
11/32	3/8	1-1/2	3-1/4	4	11624	-	-	-
3/8	3/8	1	2-3/4	4	11512	-	155390	-
3/8	3/8	1-1/2	3-1/4	4	11626	-	156040	-
3/8	3/8	2-1/2	4-1/4	4	11568	-	892376	-
7/16	3/8	1	2-11/16	4	11514	-	-	-
1/2	3/8	1	2-11/16	4	9911516	-	-	-
1/2	1/2	1-1/4	3-1/4	4	11518	-	155440	-
1/2	1/2	2	4	4	11628	-	156060	-
1/2	1/2	3	5	4	11570	-	892378	-
5/8	5/8	1-5/8	3-3/4	4	9911520	-	155470	-
5/8	5/8	2-1/2	4-5/8	4	11630	-	156080	-
5/8	5/8	4	6-1/8	4	11572	-	892380	-
11/16	5/8	1-5/8	3-3/4	4	11522	-	-	-
3/4	3/4	1-5/8	3-7/8	4	11524	-	155510	-
3/4	3/4	3	5-1/4	4	11632	-	156090	-
3/4	3/4	4	6-1/4	4	11574	-	892382	-
7/8	7/8	1-7/8	4-1/8	4	9911526	-	155540	-
7/8	7/8	3-1/2	5-3/4	4	11634	-	-	-
7/8	7/8	5	7-1/4	4	-	-	-	-
1	1	2	4-1/2	4	11528	-	155590	-
1	1	4	6-1/2	4	9911636	-	156110	-
1	1	6	8-1/2	4	9911578	-	892384	-
1-1/8	1	2	4-1/2	4	9911530	-	-	-
1-1/4	1-1/4	2	4-1/2	4	11532	-	155640	-
1-1/4	1-1/4	4	6-1/2	4	11638	-	-	-
1-1/4	1-1/4	6	8-1/2	4	11580	-	-	-
1-1/2	1-1/4	2	4-1/2	4	11534	-	155700	-

COBALT STEEL
FOUR FLUTE DOUBLE END BALL END MILLS



SERIES 754:

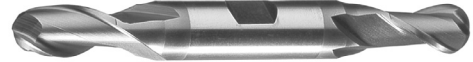


Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
1/8	3/8	3/8	3-1/8	11950	-
5/32	3/8	7/16	3-1/8	11952	-
3/16	3/8	1/2	3-1/4	11954	-
7/32	3/8	9/16	3-1/4	11956	-
1/4	3/8	5/8	3-3/8	11958	-
9/32	3/8	11/16	3-3/8	9911960	-

HIGH SPEED STEEL AND COBALT STEEL
TWO FLUTE DOUBLE END BALL END MILLS



SERIES 581: HIGH SPEED STEEL
SERIES 604: COBALT STEEL



Mill Dia.	Shank Dia.	Lgth of Cut	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
1/8	3/8	3/8	3-1/16	5812081	-	6040081	-
3/16	3/8	7/16	3-1/8	5812121	-	6040121	-
1/4	3/8	1/2	3-1/8	5812161	-	6040161	-
5/16	3/8	9/16	3-1/8	5812201	-	6040201	-
3/8	3/8	9/16	3-1/8	5812241	-	6040241	-
7/16	1/2	13/16	3-3/4	5812282	-	6040281	-
1/2	1/2	13/16	3-3/4	5812322	-	6040322	-
5/8	5/8	1-1/8	4-1/2	5812403	-	6040403	-
3/4	3/4	1-5/16	5	5812484	-	6040484	-
7/8	7/8	1-9/16	5-1/2	5812565	-	6040565	-
1	1	1-5/8	5-7/8	5812646	-	6040646	-

HIGH SPEED STEEL AND COBALT STEEL
TWO FLUTE DOUBLE END BALL END MILLS



SERIES 745: HIGH SPEED STEEL
SERIES 754: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
3/32	3/8	5/16	3-1/16	11004	-	-	-
1/8	3/8	3/8	3-1/16	9911006	-	113810	-
5/32	3/8	7/16	3-1/8	11008	-	113820	-
3/16	3/8	7/16	3-1/8	11010	-	113830	-
7/32	3/8	1/2	3-1/8	11012	-	113840	-
1/4	3/8	1/2	3-1/8	11014	-	113850	-
9/32	3/8	9/16	3-1/8	9911016	-	113860	-
5/16	3/8	9/16	3-1/8	11018	-	113870	-
11/32	3/8	9/16	3-1/8	9911020	-	113880	-
3/8	3/8	9/16	3-1/8	11022	-	113890	-
13/32	1/2	13/16	3-3/4	9911024	-	113900	-
7/16	1/2	13/16	3-3/4	11026	-	113910	-
15/32	1/2	13/16	3-3/4	9911028	-	-	-
1/2	1/2	13/16	3-3/4	11030	-	113930	-
9/16	5/8	1-1/8	4-1/2	9911032	-	-	-
5/8	5/8	1-1/8	4-1/2	11034	-	113970	-
11/16	3/4	1-5/16	5	9911036	-	-	-
3/4	3/4	1-5/16	5	9911038	-	114010	-
13/16	7/8	1-9/16	5-1/2	-	-	-	-
7/8	7/8	1-9/16	5-1/2	-	-	114050	-
1	1	1-5/8	5-7/8	-	-	114090	-

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
5/16	3/8	3/4	3-1/2	11962	-
11/32	3/8	3/4	3-1/2	11964	-
3/8	3/8	3/4	3-1/2	11966	-
1/2	1/2	1	4-1/8	11968	-
5/8	5/8	1-3/8	5	9911970	-
3/4	3/4	1-5/8	5-5/8	11972	-
7/8	7/8	1-7/8	6-1/8	-	-
1	1	1-7/8	6-3/8	11976	-



HIGH SPEED STEEL

METRIC TWO FLUTE SINGLE END END MILLS

SERIES 777:



Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
2.0	3/8	1/4	2-5/16	7772020	
2.5	3/8	9/32	2-5/16	7772025	
3.0	3/8	3/8	2-5/16	7772030	
3.5	3/8	3/8	2-5/16	7772035	
4.0	3/8	7/16	2-5/16	7772040	
4.5	3/8	7/16	2-5/16	7772045	
5.0	3/8	1/2	2-5/16	7772050	
5.5	3/8	1/2	2-5/16	7772055	
6.0	3/8	1/2	2-5/16	7772060	
7.0	3/8	9/16	2-5/16	7772070	
8.0	3/8	9/16	2-5/16	7772080	
9.0	3/8	9/16	2-5/16	7772090	

★
See page 119
for Metric
Cobalt Steel
End Mills.

See page 120
for Metric
End Mill
Sets

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
10.0	3/8	13/16	2-1/2	7772100	
11.0	3/8	13/16	2-1/2	7772110	
12.0	3/8	13/16	2-1/2	7772120	
12.5	1/2	1	3	7772125	
13.0	1/2	1	3	7772130	
14.0	1/2	1-1/8	3-1/8	7772140	
16.0*	1/2, 5/8	1-5/16	3-5/16	7772160	
18.0*	1/2, 5/8	1-5/16	3-5/16	7772180	
20.0*	5/8, 3/4	1-1/2	3-3/4	7772200	
22.0*	3/4, 7/8	1-1/2	3-3/4	7772220	
24.0*	1/2, 3/4	1-1/2	3-3/4	7772240	
25.0*	3/4, 1	1-5/8	3-7/8	7772250	
26.0*	3/4, 1	1-5/8	3-7/8	7772260	
30.0	1	1-5/8	4-1/8	7772300	
32.0	1	1-5/8	4-1/8	7772320	
36.0	1	1-5/8	4-1/8	7772360	

* Specify shank size when ordering.

CUTTING TOOLS - END MILLS

HIGH SPEED STEEL AND COBALT STEEL

TWO FLUTE SINGLE END CENTER-CUTTING END MILLS -

METRIC MILL SIZES

SERIES 778: HIGH SPEED STEEL

SERIES 738: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED STEEL	
				Order No.	Price	Order No.	Price
3.0	3/8	3/8	2-5/16	910812		172030	
3.5	3/8	7/16	2-5/16	910813		-	
4.0	3/8	7/16	2-5/16	910814		172050	
4.5	3/8	7/16	2-5/16	910815		-	
5.0	3/8	1/2	2-5/16	910816		172070	
5.5	3/8	1/2	2-3/8	910817		-	
6.0	3/8	1/2	2-5/16	910818		172090	
6.5	3/8	9/16	2-3/8	910819		-	
7.0	3/8	9/16	2-5/16	10820		172110	
7.5	3/8	9/16	2-5/16	910821		-	
8.0	3/8	9/16	2-5/16	910822		172130	
8.5	3/8	9/16	2-5/16	910823		-	
9.0	3/8	9/16	2-5/16	910824		172150	
9.5	3/8	9/16	2-5/16	910825		-	
10.0	3/8	13/16	2-1/2	10826		172170	
10.5	3/8	13/16	2-1/2	10827		-	
11.0	3/8	13/16	2-1/2	10828		172190	
11.5	3/8	13/16	2-1/2	10829		-	
12.0	3/8	13/16	2-1/2	9910830		172220	
12.5	1/2	1	3	9910831		-	
13.0	1/2	1-1/8	3-1/8	9910832		172240	
13.5	1/2	1-1/8	3-1/8	9910833		-	
14.0	1/2	1-1/8	3-1/8	9910834		172260	
14.5	1/2	1-1/8	3-1/8	9910835		-	
15.0	1/2	1-1/8	3-1/8	9010836		172280	
16.0	5/8	1-5/16	3-7/16	10838		172310	
17.0	5/8	1-5/16	3-7/16	10840		172320	
18.0	5/8	1-5/16	3-7/16	10842		172330	
19.0	3/4	1-5/8	3-7/8	910844		-	
20.0	3/4	1-1/2	3-3/4	10846		172360	
21.0	3/4	1-1/2	3-3/4	10848		-	
22.0	3/4	1-1/2	3-3/4	910850		-	
23.0	7/8	1-7/8	4-1/8	9010852		-	
24.0	1	2	4-1/2	910854		-	
25.0	1	2	4-1/2	10856		-	
28.0	1	2	4-1/2	10858		-	
32.0	1	2	4-1/2	910860		-	
35.0	1	2	4-1/2	910862		-	
36.0	1	2	4-1/2	910864		-	
40.0	1-1/4	2	4-1/2	910866		-	
45.0	1-1/4	2	4-1/2	910868		-	
50.0	1-1/4	2	4-1/2	910870		-	

QUALITY END MILLS



The Choice Is Yours!!!

HIGH SPEED STEEL

**METRIC FOUR FLUTE
SINGLE END
END MILLS**
SERIES 779:



See page 120 for
Metric
Cobalt Steel
End Mills.

See page 120
for Metric
End Mill
Sets

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
10.0	3/8	1	2-11/16	7793100	
11.0	3/8	1	2-11/16	7793110	
12.0	3/8	1	2-11/16	7793120	
12.5	1/2	1-1/4	3-1/4	7793125	
13.0	1/2	1-1/4	3-1/4	7793130	
14.0	1/2	1-3/8	3-3/8	7793140	
16.0	5/8	1-5/8	3-5/8	7793160	
18.0**	5/8, 3/4	1-5/8	3-3/4	7793180	
20.0**	5/8, 3/4	1-7/8	4-1/8	7793200	
22.0**	3/4, 7/8	1-7/8	4-1/8	7793220	
24.0**	3/4, 7/8	1-7/8	4-1/8	7793240	
25.0	3/4, 1	1-7/8	4-1/8	7793250	
26.0	1	2	4-1/4	7793260	
30.0	1	2	4-1/2	7793300	
32.0	1	2	4-1/2	7793320	
36.0	1	2	4-1/2	7793360	
40.0*	1-1/4	2	4-1/2	7793400	
45.0*	1-1/4	2	4-1/2	7793450	
50.0*	1-1/4	2	4-1/2	7793500	

*6 Flute

** Specify shank size when ordering.

HIGH SPEED STEEL: NON-CENTER CUTTING
COBALT: CENTER-CUTTING

FOUR FLUTE SINGLE END CENTER - CUTTING END MILLS -

METRIC MILL SIZES

SERIES 763: HIGH SPEED STEEL
SERIES 780: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT	
				Order No.	Price
3.0	3/8	3/8	2-5/16	911740	
3.5	3/8	7/16	2-5/16	11741	
4.0	3/8	7/16	2-5/16	11742	
4.5	3/8	7/16	2-5/16	11743	
5.0	3/8	9/16	2-1/2	11744	
5.5	3/8	5/8	2-1/2	11745	
6.0	3/8	5/8	2-1/2	11746	
6.5	3/8	11/16	2-1/2	911747	
7.0	3/8	11/16	2-1/2	11748	
7.5	3/8	3/4	2-1/2	11749	
8.0	3/8	3/4	2-1/2	11750	
8.5	3/8	3/4	2-1/2	911751	
9.0	3/8	3/4	2-1/2	11752	
9.5	3/8	3/4	2-1/2	911753	
10.0	3/8	1	2-11/16	911754	
10.5	3/8	1	2-11/16	911755	
11.0	3/8	1	2-11/16	11756	
11.5	3/8	1	2-11/16	11757	
12.0	3/8	1	2-11/16	11758	
12.5	1/2	1-1/4	3-1/4	11759	
13.0	1/2	1-1/4	3-1/4	11760	
13.5	1/2	1-3/8	3-3/8	11761	
14.0	1/2	1-3/8	3-3/8	11762	
14.5	1/2	1-3/8	3-3/8	11763	
15.0	1/2	1-3/8	3-3/8	11764	
16.0	5/8	1-5/8	3-3/4	11766	
17.0	5/8	1-5/8	3-3/4	911768	
18.0	5/8	1-5/8	3-3/4	11770	
19.0	3/4	1-5/8	3-7/8	911772	
20.0	3/4	1-7/8	4-1/8	11774	
21.0	3/4	1-7/8	4-1/8	11776	
22.0	3/4	1-7/8	4-1/8	11778	
23.0	7/8	1-7/8	4-1/8	11780	
24.0	1	2	4-1/2	11782	
25.0	1	2	4-1/2	11784	
28.0	1	2	4-1/2	11786	
32.0	1	2	4-1/2	11788	
35.0	1	2	4-1/2	11790	
36.0	1	2	4-1/2	11792	
40.0	1-1/4	2	4-1/2	11794	
45.0	1-1/4	2	4-1/2	911796	
50.0	1-1/4	2	4-1/2	11798	

CUTTING TOOLS - END MILLS

COBALT STEEL

TWO FLUTE DOUBLE END CENTER-CUTTING END MILLS - METRIC MILL SIZES

SERIES 863:



Mill Dia.	Shank Dia.	Flute Lgth	OAL	Order No.	Price
3.0	3/8	3/8	3-1/16	12922	
4.0	3/8	7/16	3-1/8	12924	
5.0	3/8	1/2	3-1/8	12926	
6.0	3/8	1/2	3-1/8	12928	
7.0	3/8	9/16	3-1/8	12930	
8.0	3/8	9/16	3-1/8	12932	
9.0	3/8	9/16	3-1/8	12934	
10.0	1/2	13/16	3-3/4	12936	
11.0	1/2	13/16	3-3/4	12938	
12.0	1/2	13/16	3-3/4	12940	
13.0	5/8	1-1/8	4-1/2	12942	
14.0	5/8	1-1/8	4-1/2	912944	
15.0	5/8	1-1/8	4-1/2	12946	
16.0	3/4	1-5/16	5	12948	
18.0	3/4	1-5/16	5	12950	
20.0	7/8	1-9/16	5-1/2	12952	
22.0	7/8	1-9/16	5-1/2	12954	

HIGH SPEED STEEL

METRIC FOUR FLUTE DOUBLE END END MILLS

SERIES 776:



Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
2.0	3/8	1/4	3	7760102	
3.0	3/8	7/16	3-1/16	7760103	
4.0	3/8	7/16	3-1/8	7760104	
5.0	3/8	1/2	3-1/4	7760105	
6.0	3/8	5/8	3-1/4	7760106	
7.0	3/8	11/16	3-3/8	7760107	
8.0	3/8	3/4	3-1/2	7760108	
10.0	1/2	1	4-1/8	7760110	
12.0	1/2	1	4-1/8	7760112	
14.0	5/8	1-3/8	5	7760114	
16.0	3/4	1-5/8	5-5/8	7760116	
18.0	3/4	1-5/8	5-5/8	7760118	
20.0	7/8	1-7/8	6-1/8	7760120	
22.0	1	1-7/8	6-3/8	7760122	
24.0	1	1-7/8	6-3/8	7760124	

CUTTING TOOLS - END MILLS

COBALT STEEL

FOUR FLUTE DOUBLE END CENTER - CUTTING END MILLS - METRIC MILL SIZES

SERIES 863:

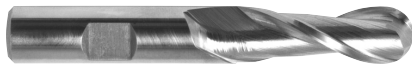


Mill Dia.	Shank Dia.	Flute Lgth	OAL	Order No.	Price
3.0	3/8	3/8	3-1/16	13026	
4.0	3/8	7/16	3-1/8	913028	
5.0	3/8	9/16	3-1/4	913030	
6.0	3/8	5/8	3-3/8	913032	
7.0	3/8	11/16	3-3/8	13034	
8.0	3/8	3/4	3-1/2	13036	
9.0	3/8	3/4	3-1/2	13038	
10.0	1/2	1	4-1/8	913040	
11.0	1/2	1	4-1/8	13042	
12.0	1/2	1	4-1/8	13044	
13.0	5/8	1-3/8	5	13046	
14.0	5/8	1-3/8	5	13048	
15.0	5/8	1-3/8	5	913050	
16.0	3/4	1-5/8	5-5/8	13052	
18.0	3/4	1-5/8	5-5/8	13054	
20.0	7/8	1-7/8	6-1/8	13056	
22.0	7/8	1-7/8	6-1/8	13058	

COBALT STEEL

TWO FLUTE SINGLE END BALL END END MILLS - METRIC MILL SIZES

SERIES 864:



Mill Dia.	Shank Dia.	Flute Lgth	OAL	Order No.	Price
3.0	3/8	5/16	2-5/16	912898	
4.0	3/8	7/16	2-5/16	912900	
5.0	3/8	1/2	2-5/16	12902	
6.0	3/8	1/2	2-5/16	912904	
7.0	3/8	9/16	2-3/8	912906	
8.0	3/8	9/16	2-5/16	12908	
9.0	3/8	9/16	2-5/16	912910	
10.0	3/8	13/16	2-1/2	912912	
11.0	3/8	13/16	2-1/2	912914	
12.0	3/8	13/16	2-1/2	12916	
13.0	1/2	1-1/8	3-1/8	912918	
14.0	1/2	1-1/8	3-1/8	12920	

HIGH SPEED STEEL

METRIC TWO FLUTE DOUBLE END END MILLS

SERIES 770:

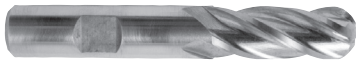


Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
2.0	3/8	1/4	3	7700002	
3.0	3/8	3/8	3-1/16	7700003	
4.0	3/8	7/16	3-1/8	7700004	
5.0	3/8	1/2	3-1/8	7700055	
6.0	3/8	1/2	3-1/8	7700006	
7.0	3/8	9/16	3-1/8	7700007	

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
8.0	3/8	9/16	3-1/2	7700008	
10.0	1/2	13/16	3-3/4	7700009	
12.0	1/2	13/16	3-3/4	7700013	
14.0	5/8	1-1/8	4-1/2	7700014	
16.0	3/4	1-5/16	5	7700016	
18.0	3/4	1-5/16	5	7700018	
20.0	7/8	1-9/16	5-1/2	7700019	
22.0	1	1-5/8	5-7/8	7700021	
24.0	1	1-5/8	5-7/8	7700024	

COBALT

**FOUR FLUTE SINGLE END BALL-END
END MILLS - METRIC MILL SIZES**
SERIES 864:



Mill Dia.	Shank Dia.	Flute Lgth	OAL	Order No.	Price
3.0	3/8	3/8	2-5/16	13002	
4.0	3/8	7/16	2-5/16	13004	
5.0	3/8	9/16	2-1/2	913006	
6.0	3/8	5/8	2-1/2	13008	
7.0	3/8	11/16	2-1/2	913010	
8.0	3/8	3/4	2-1/2	13012	
9.0	3/8	3/4	2-1/2	13014	
10.0	3/8	1	2-11/16	13016	
11.0	3/8	1	2-11/16	13018	
12.0	3/8	1	2-11/16	913020	
13.0	1/2	1-1/4	3-1/4	13022	
14.0	1/2	1-3/8	3-3/8	13024	

HIGH SPEED STEEL

**TWO FLUTE SINGLE END END
MILLS FOR ALUMINUM (HI-HELIX)**



Regular / Long / Extra-Long Length
SERIES 517:

REGULAR LENGTH

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
1/4	3/8	5/8	2-1/2	2001161	
5/16	3/8	3/4	2-1/2	2001201	
3/8	3/8	3/4	2-1/2	2001241	
7/16	3/8	1	2-11/16	2001281	
1/2	1/2	1-1/4	3-1/4	2001322	
5/8	5/8	1-5/8	3-3/4	2001403	
3/4	3/4	1-5/8	3-7/8	2001482	
7/8	7/8	1-7/8	4-1/8	2001565	
1	1	2	4-1/2	2001646	



LONG LENGTH

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
1/4	3/8	1-1/4	3-1/8	2060161	
5/16	3/8	1-3/8	3-1/8	2060201	
3/8	3/8	1-1/2	3-1/4	2060241	
7/16	1/2	1-3/4	3-3/4	2060281	
1/2	1/2	2	4	2060322	
5/8	5/8	2-1/2	4-5/8	2060403	
3/4	3/4	3	5-1/4	2060484	
7/8	7/8	3-1/2	5-3/4	2060565	
1	1	4	6-1/2	2060646	



EXTRA LONG LENGTH

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
1/4	3/8	1-3/4	3-1/2	2070161	
5/16	3/8	2	3-3/4	2070201	
3/8	3/8	2-1/2	4-1/4	2070241	
7/16	1/2	2-3/4	4-3/4	2070281	
1/2	1/2	3	5	2070322	
5/8	5/8	4	6-1/8	2070403	
3/4	3/4	4	6-1/4	2070484	
7/8	7/8	5	7-1/4	2070565	
1	1	6	8-1/2	2070646	
1-1/4	1-1/4	6	8-1/2	190274	

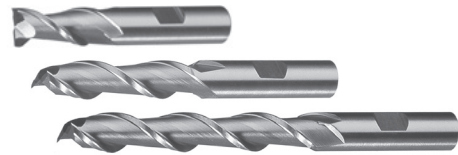


HIGH SPEED STEEL AND COBALT STEEL

**TWO FLUTE SINGLE END
CENTER - CUTTING HI-HELIX
END MILLS FOR ALUMINUM**



Regular / Long / Extra-Long Length
SERIES 905: HIGH SPEED STEEL
SERIES 761: COBALT STEEL



Mill Dia.	Shank Dia.	Flute Lgth	OAL	COBALT		HIGH SPEED	
				Order No.	Price	Order No.	Price
3/16	3/8	7/16	2-5/16	910614		-	
3/16	3/8	3/4	2-5/8	910646		-	
3/16	3/8	1-1/4	3-1/8	910698		-	
1/4	3/8	1/2	2-5/16	910616		-	
1/4	3/8	5/8	2-7/16	10648		169030	
1/4	3/8	3/4	2-5/8	910650		-	
1/4	3/8	1	2-7/8	910652		-	
1/4	3/8	1-1/4	3-1/16	910654		169330	
1/4	3/8	1-1/2	3-3/8	910656		-	
1/4	3/8	1-3/4	3-9/16	910700		169530	
5/16	3/8	9/16	2-5/16	10618		-	
5/16	3/8	3/4	2-1/2	910658		169040	
5/16	3/8	1	2-3/4	910660		-	
5/16	3/8	1-3/8	3-1/8	910662		169340	
5/16	3/8	2	3-3/4	910702		169540	
3/8	3/8	9/16	2-5/16	10620		-	
3/8	3/8	3/4	2-1/2	910664		169050	
3/8	3/8	1	2-3/4	910666		-	
3/8	3/8	1-1/2	3-1/4	910668		169350	
3/8	3/8	2	3-3/4	10670		-	
3/8	3/8	2-1/2	4-1/4	9990704		169550	
7/16	3/8	1	2-11/16	10622		169060	
7/16	1/2	1-3/4	3-3/4	910672		-	
1/2	1/2	1	3	10624		-	
1/2	1/2	1-1/4	3-1/4	910674		169070	
1/2	1/2	1-3/4	3-3/4	910676		-	
1/2	1/2	2	4	10678		169370	
1/2	1/2	2-1/2	4-1/2	910680		-	
1/2	1/2	3	5	910708		169570	
5/8	5/8	1-3/8	3-1/2	10628		-	
5/8	5/8	1-5/8	3-3/4	10626		169090	
5/8	5/8	2-1/2	4-5/8	910682		169390	
5/8	5/8	4	6-1/8	910710		169590	
3/4	3/4	1-5/8	3-7/8	10630		169110	
3/4	3/4	2	4-1/4	910684		-	
3/4	3/4	3	5-1/4	910686		169400	
3/4	3/4	4	6-1/4	910712		169600	
7/8	7/8	1-7/8	4-1/8	10634		169140	
7/8	7/8	5	7-1/4	-		-	
1	3/4	1-7/8	4-1/8	910632		169150	
1	1	2	4-1/2	10636		169160	
1	1	4	6-1/2	910690		169420	
1	1	6	8-1/2	910716		169620	
1-1/4	1-1/4	2	4-1/2	10638		169170	
1-1/4	1-1/4	4	6-1/2	-		169430	
1-1/4	1-1/4	6	8-1/2	-		169630	
1-1/2	1-1/4	2	4-1/2	-		169190	
1-1/2	1-1/4	4	6-1/2	-		169440	

STAR USA offers all of its end mills with the following coatings: Titanium Nitride (TiN), Titanium Carbonitride (TiCN), Titanium Aluminum Nitride (TiAlN), & Aluminum Titanium Nitride (AlTiN). See our website or inquire.

COBALT STEEL

TWO-FLUTE SINGLE END BALL-END HI-HELIX END MILLS FOR ALUMINUM

Regular / Long / Extra-Long Length

SERIES 761:



Dia.	Mill Dia.	Shank Lgth	Flute OAL	Order No.	Price
1/4	3/8	1/2	2-5/16	12842	
1/4	3/8	1-1/4	3-1/16	12844	
1/4	3/8	1-3/4	3-9/16	12846	
5/16	3/8	9/16	2-5/16	12848	
5/16	3/8	1-3/8	3-1/8	12850	
3/8	3/8	9/16	2-5/16	12854	
3/8	3/8	1-1/2	3-1/4	12856	
3/8	3/8	2-1/2	4-1/4	12858	
1/2	1/2	1	3	12866	
1/2	1/2	2	4	12868	
1/2	1/2	3	5	12870	
5/8	5/8	1-5/8	3-3/4	12872	
5/8	5/8	2-1/2	4-5/8	12874	
3/4	3/4	1-5/8	3-7/8	12878	
3/4	3/4	3	5-1/4	12880	
3/4	3/4	4	6-1/4	12882	
1	3/4	1-7/8	4-1/8	912884	
1	1	2	4-1/2	12892	
1	1	4	6-1/2	912894	
1	1	6	8-1/2	12896	

COBALT STEEL

TWO FLUTE SINGLE END 90° DEGREE* DRILL POINT END MILLS

SERIES 589:



Mill Dia.	Shank Dia.	Flute Lgth	OAL	Order No.	Price
1/4	3/8	5/8	2-7/16	9915434	
5/16	3/8	23/32	2-15/32	9915436	
3/8	3/8	3/4	2-1/2	9915438	
7/16	3/8	1-1/32	2-23/32	9915440	
1/2	1/2	1-1/4	3-1/4	9915442	
9/16	1/2	1-13/32	3-13/32	9915444	
5/8	5/8	1-5/8	3-3/4	9915446	
11/16	5/8	1-21/32	3-25/32	9915448	
3/4	3/4	1-11/16	3-15/16	9915450	
13/16	3/4	1-29/32	4-5/32	9915452	
7/8	3/4	1-15/16	4-3/16	9915454	
15/16	3/4	1-31/32	4-7/32	9915456	
1	3/4	2	4-1/4	9915458	

* 60° & 82° also available. See our website or inquire.

COBALT STEEL

THREE FLUTE SINGLE END CENTER CUTTING 60 DEGREE END MILLS

SERIES 749:



Mill Dia.	Shank Dia.	Flute Lgth	OAL	Order No.	Price
1/4	3/8	5/8	2-7/16	15460	
5/16	3/8	3/4	2-1/2	15462	
3/8	3/8	3/4	2-1/2	15464	
3/8	3/8	1-1/2	3-1/4	15466	
1/2	1/2	1-1/4	3-1/4	15468	
1/2	1/2	2	4	15470	
1/2	1/2	3	5	15472	
5/8	5/8	1-5/8	3-3/4	15474	
5/8	5/8	2-1/2	4-5/8	15476	
3/4	3/4	1-5/8	3-7/8	15478	
3/4	3/4	3	5-1/4	15480	
7/8	7/8	1-7/8	4-1/8	11279	
1	1	2	4-1/2	15486	
1	1	4	6-1/2	15488	

HIGH SPEED STEEL

TWO FLUTE SINGLE END BALL-END MILLS FOR ALUMINUM

SERIES 588:



REGULAR LENGTH

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
1/4	3/8	5/8	2-1/2	5882161	
5/16	3/8	3/4	2-1/2	5882201	
3/8	3/8	3/4	2-1/2	5882241	
7/16	3/8	1	2-11/16	5882281	
1/2	1/2	1-1/4	3-1/4	5882322	
5/8	5/8	1-5/8	3-3/4	5882403	
3/4	3/4	1-5/8	3-7/8	5882484	
7/8	7/8	1-7/8	4-1/8	5882565	
1	1	2	4-1/2	5882646	

LONG LENGTH

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
1/4	3/8	1-1/4	3-1/8	5892161	
5/16	3/8	1-3/8	3-1/8	5892201	
3/8	3/8	1-1/2	3-1/4	5892241	
7/16	1/2	1-3/4	3-3/4	5892282	
1/2	1/2	2	4	5892322	
5/8	5/8	2-1/2	4-5/8	5892403	
3/4	3/4	3	5-1/4	5892484	
7/8	7/8	3-1/2	5-3/4	5892565	
1	1	4	6-1/2	5892646	

EXTRA LONG LENGTH

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	Order No.	Price
1/4	3/8	1-3/4	3-1/2	5902161	
5/16	3/8	2	3-3/4	5902201	
3/8	3/8	2-1/2	4-1/4	5902241	
7/16	1/2	2-3/4	4-3/4	5902282	
1/2	1/2	3	5	5902322	
5/8	5/8	4	6-1/8	5902403	
3/4	3/4	4	6-1/4	5902484	
7/8	7/8	5	7-1/4	5902565	
1	1	6	8-1/2	5902646	

COBALT STEEL

GOLD (TIN) COATED ROUGHING END MILLS - CENTER CUTTING

SERIES 727:



Many more sizes available. See our website or inquire.



Mill Dia.	Shank Dia.	Lengt of Cut	Overall Length	COARSE TOOTH		FINE TOOTH	
				Order No.	Price	Order No.	Price
3/8	3/8	3/4	2-1/2	7270241		7273241	
1/2	1/2	1-1/4	3-1/4	7270322		7273322	
5/8	5/8	1-5/8	3-3/4	7270403		7273403	
3/4	3/4	1-5/8	3-7/8	7270484		7273484	
1	3/4	2	4-1/4	7270644		7273644	
1	1	2	4-1/2	7270646		7273646	

COBALT STEEL

COARSE PITCH NON CENTER-CUTTING ROUGHING END MILLS

Stub / Regular / Medium / Long Length
SERIES 867:



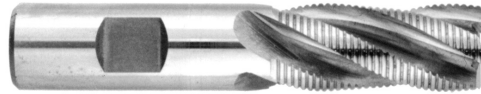
COBALT STEEL

ROUGHING END MILLS

SERIES 76: REGULAR LENGTH
SERIES 77: MEDIUM LENGTH
SERIES 78: LONG AND EXTRA LONG LENGTHS



Coarse



Fine

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	No. Fl.	Order No.	Price
3/16	3/8	1/2	2-3/8	4	-	
1/4	3/8	5/8	2-7/16	4	-	
1/4	3/8	1-1/8	2-15/16	4	-	
1/4	3/8	1-1/4	3-1/16	4	15766	
5/16	3/8	3/4	2-1/2	4	-	
5/16	3/8	1-3/8	3-1/8	4	-	
3/8	3/8	3/4	2-1/2	4	-	
7/16	3/8	1	2-11/16	4	-	
1/2	1/2	1	3	4	-	
1/2	1/2	1-1/4	3-1/4	4	-	
1/2	1/2	1-5/8	3-5/8	4	-	
1/2	1/2	2	4	4	-	
9/16	1/2	1-3/8	3-3/8	4	-	
5/8	5/8	3/4	2-7/8	4	15586	
5/8	5/8	1-5/8	3-3/4	4	-	
5/8	5/8	2-1/2	4-5/8	4	-	
11/16	5/8	1-5/8	3-3/4	4	15588	
3/4	3/4	3/4	3	4	12588	
3/4	5/8	1-5/8	3-7/8	4	12584	
3/4	3/4	1-5/8	3-7/8	4	12586	
3/4	3/4	2-1/2	4-3/4	4	15590	
3/4	3/4	3	5-1/4	4	12624	
13/16	3/4	1-7/8	4-1/8	4	15592	
7/8	3/4	1-7/8	4-1/8	5	12590	
7/8	7/8	1-7/8	4-1/8	5	12606	
7/8	3/4	3-1/2	5-3/4	5	912626	
7/8	7/8	3-1/2	5-3/4	5	-	
1	3/4	3/4	3	5	912594	
1	3/4	1-1/2	3-3/4	5	912592	
1	1	1-5/8	4-1/8	5	15598	
1	3/4	2	4-1/4	5	15594	
1	1	2	4-1/2	5	12608	
1	1	3	5-1/2	5	12630	
1	1	4	6-1/2	5	912632	
1-1/8	1	2	4-1/2	6	12610	
1-1/4	3/4	1-1/2	3-3/4	6	912596	
1-1/4	3/4	2	4-1/2	6	15596	
1-1/4	1-1/4	2	4-1/2	6	12612	
1-1/4	1-1/4	3	5-1/2	6	12636	
1-1/4	1-1/4	4	6-1/2	6	12638	
1-1/4	1-1/4	6	8-1/2	6	12640	
1-1/2	3/4	3/4	3	6	912602	
1-1/2	3/4	1-1/2	3-3/4	6	912600	
1-1/2	1-1/4	2	4-1/2	6	12614	
1-1/2	1-1/4	3	5-1/2	6	12642	
1-1/2	1-1/4	4	6-1/2	6	12644	
1-1/2	1-1/4	5	7-1/2	6	12646	
1-1/2	1-1/4	8	10-1/2	6	12648	
1-3/4	1-1/4	2-1/2	5-1/4	6	12616	
1-3/4	1-1/4	4-1/2	7-1/4	6	12650	
2	3/4	3/4	3	8	12604	
2	1-1/4	2	4-1/2	8	12618	
2	2	4	7-3/4	8	15882	
2	2	6	9-3/4	8	12658	

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	COARSE		FINE	
				Order No.	Price	Order No.	Price
REGULAR LENGTH							
1/4	3/8	5/8	2-7/16	1750161		1753161	
5/16	3/8	3/4	2-1/2	1750201		1753201	
3/8	3/8	3/4	2-1/2	1750241		1753241	
7/16	3/8	1	2-11/16	1750281		1753281	
1/2	1/2	1-1/4	3-1/4	1750322		1753322	
5/8	5/8	1-5/8	3-3/4	1750403		1753403	
3/4	5/8	1-5/8	3-7/8	1750483		1753483	
3/4	3/4	1-5/8	3-7/8	1750484		1753484	
7/8	3/4	1-7/8	4-1/8	1750564		1753564	
7/8	7/8	1-7/8	4-1/8	1750565		1753565	
1	3/4	2	4-1/4	1750644		1753644	
1	1	2	4-1/2	1750646		1753646	
1-1/8	3/4	2	4-1/4	1750724		1753724	
1-1/8	1	2	4-1/2	1750726		1753726	
1-1/4	3/4	2	4-1/4	1750804		1753804	
1-1/4	1-1/4	2	4-1/2	1750807		1753807	
1-3/8	3/4	2	4-1/4	1750884		1753884	
1-1/2	3/4	2	4-1/4	1750964		1753964	
1-1/2	1-1/4	2	4-1/2	1750967		1753967	
1-3/4	3/4	2	4-1/4	1751484		-	
1-3/4	1-1/4	2	4-1/2	1751487		7531487	
2	3/4	2	4-1/2	1752004		-	
2	1-1/4	2	4-1/2	1752007		7532007	
2	2*	2	5-3/4	1752008		-	
2	2*	3	4-3/4	1752010		-	
2	2*	4	7-3/4	1752009		7532009	
MEDIUM LENGTH							
1	1	3	5-1/2	1800646		1754646	
1-1/4	1-1/4	3	5-1/2	1800807		1754807	
1-1/2	1-1/4	3	5-1/2	1800967		1754967	
2	2*	5	8-3/4	1802009		-	
2	2*	6	9-3/4	1802008		-	
LONG LENGTH							
1/2	1/2	2	4	1850322		1755322	
5/8	5/8	2-1/2	4-5/8	1850503		1755403	
3/4	5/8	3	5-1/4	188747		-	
3/4	3/4	3	5-1/4	1850486		1755484	
7/8	3/4	3-1/2	5-5/8	1850564		1755564	
1	1	4	6-1/2	1850646		1755646	
1-1/4	1-1/4	4	6-1/2	1850807		1755807	
1-1/2	1-1/4	4	6-1/2	1850967		1755967	
1-3/4	1-1/4	4	6-1/2	1851487		7551487	
2	2*	8	11-3/4	1852008		-	
2	2*	10	13-3/4	1852018		-	
2	2*	12	15-3/4	1852028		-	
EXTRA LONG LENGTH							
1	1	6	8-1/2	1851646		-	
1-1/4	1-1/4	6	8-1/2	1851807		-	

*Combination Shank

CUTTING TOOLS - END MILLS

COBALT STEEL

ROUGHING END MILLS - METRIC SIZES

SERIES 76:



Order No.	Mill Dia.	Shank Dia.	Length of cut	Overall Length	Price
1750600	6.0	6.0	13.0	57.0	
1750810	8.0	10.0	19.0	69.0	
1751010	10.0	10.0	22.0	72.0	
1751212	12.0	12.0	26.0	83.0	
1751412	14.0	12.0	26.0	83.0	
1751616	16.0	16.0	32.0	92.0	
1751816	18.0	16.0	32.0	92.0	
1752020	20.0	20.0	38.0	104.0	
1752425	25.0	25.0	45.0	121.0	

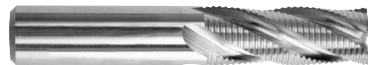
COBALT STEEL

ROUGHING CENTER-CUTTING END MILLS

SERIES 457:



Coarse



Fine

STUB LENGTH

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	No. Fl.	Coarse		Fine	
					Order No.	Price	Order No.	Price
1/4	3/8	1/4	2-1/16	3	2545116		2545016	
3/8	3/8	3/8	2-1/4	3	2545124		2545024	
1/2	1/2	1/2	2-1/2	3	2545132		2545032	
5/8	5/8	5/8	2-3/4	3	2545140		2545040	
3/4	3/4	3/4	2-7/8	3	2545148		2545048	
7/8	3/4	7/8	3-1/8	3	2545156		2545056	
1	1	1	3-3/4	3	2545164		2545064	
1-1/4	1-1/4	1-1/4	3-3/4	4	2545180		2545080	
1-1/2	1-1/4	1-1/4	3-3/4	6	2545196		2545096	

REGULAR LENGTH

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	No. Fl.	Coarse		Fine	
					Order No.	Price	Order No.	Price
1/2	1/2	1-1/4	3-1/4	4	5914322		5912243	
5/8	5/8	1-5/8	3-3/4	4	5914403		5910344	
3/4	3/4	1-5/8	3-7/8	4	5914484		5918444	
1	1	2	4-1/2	5	5915646		5914656	
1-1/4	1-1/4	2	4-1/2	6	5916807		5910768	
1-1/2	1-1/4	2	4-1/2	6	5916967		5916769	

LONG LENGTH

Mill Dia.	Shank Dia.	Lgth of Cut	OAL	No. Fl.	Coarse		Fine	
					Order No.	Price	Order No.	Price
1/2	1/2	2	4	4	5924322		5922243	
5/8	5/8	2-1/2	4-5/8	4	5924403		5920344	
3/4	3/4	3	5-1/4	4	5924484		5928444	
1	1	4	6-1/2	5	5925646		5924656	
1-1/4	1-1/4	4	6-1/2	6	5926807		5920768	
1-1/2	1-1/4	4	6-1/2	6	5926967		5926769	

COBALT STEEL

COARSE PITCH CENTER - CUTTING ROUGHING END MILLS



Stub / Regular / Medium / Long Length
SERIES 868:

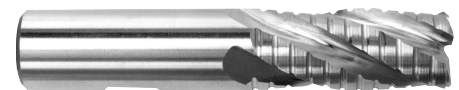


Mill Dia.	Shank Dia.	Flute Lgth	OAL	No. Fl.	Order No.	Price
3/16	3/8	1/2	2-3/8	4	15600	
1/4	3/8	5/8	2-7/16	4	915602	
1/4	3/8	1-1/8	2-15/16	4	915604	
5/16	3/8	3/4	2-1/2	4	915606	
5/16	3/8	1-3/8	3-1/8	4	915608	
3/8	3/8	3/4	2-1/2	4	915610	
3/8	3/8	1-1/2	3-1/4	4	915612	
7/16	3/8	1	2-11/16	4	15614	
1/2	1/2	5/8	2-5/8	4	915796	
1/2	1/2	1	3	4	915616	
1/2	1/2	1-1/4	3-1/4	4	12664	
1/2	1/2	1-5/8	3-5/8	4	15618	
1/2	1/2	2	4	4	12678	
5/8	5/8	1-5/8	3-3/4	4	12666	
5/8	5/8	2-1/2	4-5/8	4	12680	
3/4	5/8	1-5/8	3-3/4	4	915620	
3/4	3/4	1-5/8	3-7/8	4	912668	
3/4	3/4	2-1/4	4-5/8	4	15622	
3/4	3/4	3	5-1/4	4	12682	
1	3/4	2	4-1/4	4	915624	
1	1	2	4-1/2	5	12670	
1	1	3	5-1/2	4	15626	
1	1	4	6-1/2	5	12684	
1-1/4	1-1/4	2	4-1/2	6	12672	
1-1/4	1-1/4	4	6-1/2	6	12686	
1-1/2	1-1/4	2	4-1/2	6	12674	
1-1/2	1-1/4	4	6-1/2	6	12688	

COBALT STEEL

ROUGHER - FINISHER END MILLS

Regular / Medium / Long Length
SERIES 869:



These end mills are capable of removing material at high roughing speeds while producing finishes close to conventional endmills, due to the chip-breaker form.

Mill Dia.	Shank Dia.	Flute Lgth	OAL	No. Fl.	Order No.	Price
3/16	3/8	1/2	2-3/8	4	-	
1/4	3/8	5/8	2-7/16	4	-	
5/16	3/8	3/4	2-1/2	4	-	
3/8	3/8	3/4	2-1/2	4	-	
7/16	3/8	1	2-11/16	4	-	
1/2	1/2	1	3	4	915510	
1/2	1/2	1-1/4	3-1/4	4	-	
1/2	1/2	1-5/8	3-5/8	4	915512	
5/8	5/8	1-5/8	3-3/4	4	-	
3/4	3/4	1-5/8	3-7/8	4	15514	
3/4	3/4	2-1/2	4-5/8	4	915516	
3/4	3/4	3	5-1/4	4	15518	
1	1	2	4-1/2	5	915520	
1	1	3	5-1/2	5	15522	

COBALT STEEL

ROUGHING END MILLS

(Continued)

FINE PITCH NON CENTER - CUTTING

Stub / Regular / Medium / Long Length
SERIES 870:



Mill Dia.	Shank Dia.	Flute Length	OAL	No. Fl.	Order No.	Price
3/16	3/8	1/2	2-3/8	4	-	
1/4	3/8	5/8	2-7/16	4	-	
5/16	3/8	3/4	2-1/2	4	-	
5/16	3/8	1-3/8	3-1/8	4	-	
3/8	3/8	3/4	2-1/2	4	-	
7/16	3/8	1	2-11/16	4	-	
1/2	1/2	5/8	2-5/8	4	-	
1/2	1/2	1	3	4	15536	
1/2	1/2	1-1/4	3-1/4	4	-	
1/2	1/2	1-5/8	3-5/8	4	-	
1/2	1/2	2	4	4	-	
1/2	1/2	2-1/2	4-1/2	4	15682	
1/2	1/2	3	5	4	915684	
9/16	1/2	1-3/8	3-3/8	4	15540	
5/8	5/8	3/4	2-7/8	4	15544	
5/8	5/8	1-1/4	3-3/4	4	15686	
5/8	5/8	1-5/8	3-3/4	4	-	
5/8	5/8	2-1/8	4-1/4	4	915688	
5/8	5/8	2-1/2	4-5/8	4	-	
5/8	5/8	3-1/8	5-1/4	4	915692	
11/16	5/8	1-5/8	3-3/4	4	15694	
3/4	3/4	3/4	3	4	15548	
3/4	3/4	1-1/4	3-1/2	4	15698	
3/4	5/8	1-5/8	3-7/8	4	915696	
3/4	3/4	1-5/8	3-7/8	4	15546	
3/4	3/4	2-1/2	4-5/8	4	15550	
3/4	3/4	3	5-1/4	4	15552	
3/4	3/4	4-1/8	6-3/8	4	915700	
13/16	3/4	1-7/8	4-1/8	5	15702	
7/8	3/4	1-1/8	3-3/8	5	915706	
7/8	3/4	1-7/8	4-1/8	5	915704	
7/8	7/8	1-7/8	4-1/8	5	15738	
7/8	3/4	3-1/2	5-3/4	5	815708	
7/8	7/8	3-1/2	5-3/4	5	15740	
1	3/4	1-1/8	3-3/8	5	15554	
1	1	1-1/8	3-5/8	5	15742	
1	3/4	1-1/2	3-3/4	5	15794	
1	1	1-5/8	4-1/8	5	915560	
1	3/4	2	4-1/4	5	915556	
1	1	2	4-1/2	5	915558	
1	1	3	5-1/2	5	915562	
1	3/4	4	6-1/4	5	815710	
1	1	4	6-1/2	5	15744	
1	1	6	8-1/2	5	15746	
1-1/8	3/4	1-1/8	3-3/8	6	-	
1-1/8	3/4	2	4-1/4	6	15712	
1-1/8	1	2	4-1/2	6	15748	
1-1/8	1	3-1/2	6	6	15750	
1-1/4	3/4	1-1/8	3-3/8	6	815716	
1-1/4	3/4	2	4-1/2	6	15718	
1-1/4	1-1/4	2	4-1/2	6	915564	
1-1/4	1-1/4	3	5-1/2	6	15566	
1-1/4	1-1/4	4	6-1/2	6	915568	
1-1/4	1-1/4	6	8-1/2	6	915570	
1-3/8	3/4	1-1/8	3-3/8	6	9915722	
1-3/8	3/4	2	4-1/4	6	15720	
1-1/2	3/4	1-1/8	3-3/8	6	15728	
1-1/2	3/4	1-1/2	3-3/4	6	9915724	
1-1/2	3/4	2	4-1/4	6	15726	

(Continued)

Mill Dia.	Shank Dia.	Flute Length	OAL	No. Fl.	Order No.	Price
1-1/2	1-1/4	2	4-1/2	6	15752	
1-1/2	1-1/4	3	5-1/2	6	15754	
1-1/2	1-1/4	4	6-1/2	6	15756	
1-1/2	1-1/4	6	8-1/2	6	15758	
1-3/4	3/4	1-1/8	3-3/8	6	15732	
1-3/4	3/4	2	4-1/4	6	15730	
2	3/4	1-1/8	3-3/8	8	-	
2	3/4	2	4-1/2	8	15734	
2	1-1/4	2	4-1/2	8	15760	
2	2	2	5-3/4	8	-	
2	2	4	7-3/4	8	15764	

BALL END - COARSE PITCH

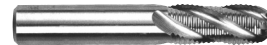
SERIES 439:



Mill Dia.	Shank Dia.	Flute Length	OAL	No. Fl.	Order No.	Price
1/4	3/8	5/8	2-7/16	3	4390161	
5/16	3/8	3/4	2-1/2	3	4390201	
3/8	3/8	3/4	2-1/2	4	4390241	
1/2	1/2	1-1/4	3-1/4	4	4390322	
1/2	1/2	2	4	4	4391322	
5/8	5/8	1-5/8	3-3/4	4	4390403	
5/8	5/8	2-1/2	4-5/8	4	4391403	
3/4	3/4	1-3/4	3-7/8	4	4390484	
3/4	3/4	3	5-1/4	4	4391484	
1	1	2	4-1/2	5	4390646	
1	1	4	6-1/2	5	4391647	
1-1/4	1-1/4	2	4-1/2	6	4390807	
1-1/4	1-1/4	4	6-1/2	6	4391807	
1-1/2	1-1/4	2	4-1/2	6	4390967	
1-1/2	1-1/4	4	6-1/2	6	4391967	

BALL END - FINE PITCH

SERIES 984:



Mill Dia.	Shank Dia.	Flute Length	OAL	No. Fl.	Order No.	Price
1/4	3/8	5/8	2-7/16	4	915840	
3/8	3/8	3/4	2-1/2	4	915842	
1/2	1/2	1-1/4	3-1/4	4	915844	
5/8	5/8	1-5/8	3-3/4	4	915846	
3/4	3/4	1-5/8	3-7/8	4	915848	
1	1	2	4-1/2	5	915850	

FOR ALUMINUM

SERIES 525:

CENTER CUTTING - 3 FLUTE



Mill Dia.	Shank Dia.	Length of Cut	Overall Length	Order No.	Price
Regular Length					
1/2	1/2	1-1/4	3-1/4	5250322	
5/8	5/8	1-5/8	3-3/4	5250403	
3/4	3/4	1-5/8	3-7/8	5250484	
1	1	2	4-1/2	5250646	
1-1/4	1-1/4	2	4-1/2	5250807	
1-1/2	1-1/4	2	4-1/2	5250968	
Medium Length					
1	1	3	5-1/2	5863646	
1-1/4	1-1/4	3	5-1/2	5863807	
Long Length					
1/2	1/2	2	4	5873322	
5/8	5/8	2-1/2	4-5/8	5873403	
3/4	3/4	3	5-1/4	5873484	
1	1	4	6-1/2	5873646	
1-1/4	1-1/4	4	6-1/2	5873807	
1-1/2	1-1/4	4	6-1/2	5873967	



CUTTING TOOLS - END MILLS

COBALT STEEL

HIGH HELIX ROUGHING END MILLS FOR ALUMINUM - THREE FLUTE

Stub / Regular / Medium / Long Length
SERIES 998:



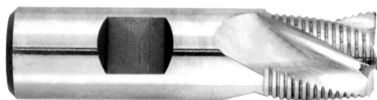
Mill Dia	Shank Dia.	Flute Lgth	OAL	COBALT	
				Order No.	Price
3/16	3/8	1/2	2-3/8	915628	
1/4	3/8	5/8	2-7/16	15630	
1/4	3/8	1-1/8	2-15/16	15632	
5/16	3/8	3/4	2-1/2	915634	
5/16	3/8	1-3/8	3-1/8	15636	
3/8	3/8	3/4	2-1/2	915638	
3/8	3/8	1-5/8	3-3/16	15640	
7/16	3/8	1	2-11/16	15642	
1/2	1/2	1/2	2-9/16	915780	
1/2	1/2	1	3	15646	
1/2	1/2	1-1/4	3-1/4	915644	
1/2	1/2	1-5/8	3-5/8	915648	
1/2	1/2	2	4	915650	
5/8	5/8	3/4	2-7/8	915654	
5/8	5/8	1-5/8	3-3/4	15652	
5/8	5/8	2-1/2	4-5/8	15656	
3/4	3/4	3/4	3	915660	
3/4	3/4	1-5/8	3-7/8	915658	
3/4	3/4	2	4-1/4	915798	
3/4	3/4	2-1/2	4-3/4	15662	
3/4	3/4	3	5-1/4	915664	
1	3/4	1-1/8	3-3/8	15782	
1	3/4	1-1/2	3-3/4	15778	
1	1	2	4-1/2	15666	
1	1	3	5-1/2	915668	

For more END MILL SETS see page 120.

COBALT STEEL

FINE PITCH HIGH HELIX ROUGHING END MILLS FOR ALUMINUM - THREE FLUTE

Stub / Regular / Long Length
SERIES 998 :



Mill Dia.	Shank Dia.	Flute Length	OAL	Order No.	Price
1/4	3/8	1/4	2-1/8	15784	
1/4	3/8	5/8	2-1/2	15786	
3/8	3/8	3/8	2-1/4	915788	
3/8	3/8	3/4	2-1/2	915884	
1/2	1/2	1/2	2-9/16	915790	
1/2	1/2	1-1/4	3-1/4	915886	
5/8	5/8	1-5/8	3-3/4	915888	
3/4	3/4	3/4	3	915792	
3/4	3/4	1-5/8	3-7/8	15890	
1	3/4	1-1/8	3-3/8	915800	
1	1	2	4-1/2	15892	

M2 - AL STEEL

ROUGHING END MILLS

SERIES 724:



M2 - AL (Specially formulated High Speed Steel which in many applications rivals the performance of Cobalt Steel tools, at a lower price) Multiple Flute; Single End

Mill Dia.	Shank Dia.	Length of Cut	OAL	Order No.	Price
REGULAR LENGTH					
1/4	3/8	5/8	2-7/16	7240161	
5/16	3/8	3/4	2-1/2	7240201	
3/8	3/8	3/4	2-1/2	7240241	
1/2	1/2	1-1/4	3-1/4	7240322	
5/8	5/8	1-5/8	3-3/4	7240403	
3/4	5/8	1-5/8	3-7/8	7240483	
3/4	3/4	1-5/8	3-3/4	7240484	
7/8	3/4	1-7/8	4-1/8	7240564	
7/8	7/8	1-7/8	4-1/8	7240565	
1	3/4	2	4-1/4	7240644	
1	1	2	4-1/2	7240646	
1-1/8	3/4	2	4-1/4	7240724	
1-1/8	1	2	4-1/2	7240726	
1-1/4	3/4	2	4-1/4	7240804	
1-1/4	1-1/4	2	4-1/2	7240807	
1-1/2	3/4	2	4-1/4	7240964	
1-1/2	1-1/4	2	4-1/2	7240967	
1-3/4	1-1/4	2	4-1/2	7241487	
2	1-1/4	2	4-1/2	7242007	
2	2*	4	7-3/4	7242204	
MEDIUM LENGTH					
1	1	3	5-1/2	7241646	
1-1/4	1-1/4	3	5-1/2	7241807	
1-1/2	1-1/4	3	5-1/2	7241967	
2	2*	6	9-3/4	7242220	
LONG LENGTH					
1/2	1/2	2	4	7242322	
5/8	5/8	2-1/2	4-5/8	7242403	
3/4	3/4	3	5-1/4	7242484	
7/8	3/4	3-1/2	5-5/8	7242564	
1	1	4	6-1/2	7242646	
1-1/4	1-1/4	4	6-1/2	7242807	
1-1/2	1-1/4	4	6-1/2	7242967	
1-3/4	1-1/4	4	6-1/2	7243487	
2	2*	8	11-3/4	7242208	
2	2*	10	13-3/4	7242210	
2	2*	12	15-3/4	7242212	

*Combination Shank

COBALT STEEL

ROUGHING END MILL SETS

SERIES 828 :



SUPPLIED IN WOOD BLOCK	
SET NO. CRS - 1	SET NO. CRS - 2
4 Piece Mini Set Contains 1 piece of each: 1/4, 5/16, 3/8, 1/2	4 Piece Bridgeport Set Contains 1 piece of each: 1/2, 5/8, 3/4 x 3/4, 1 x 3/4
Order No. 1750002	Order No. 1750010
PRICE <input type="text"/>	PRICE <input type="text"/>

HIGH SPEED STEEL AND COBALT STEEL

CORNER ROUNDING END MILLS

SERIES 102: HIGH SPEED STEEL
SERIES 760: COBALT STEEL



4 FLUTE

Radius	Shank Dia.	Cutter Dia.	OAL	HIGH SPEED		COBALT	
				Order No.	Price	Order No.	Price
1/32	3/8	3/8	2-1/2	1310021		182902	
1/16	3/8	7/16	2-1/2	1310041		760041	
3/32	3/8	1/2	2-1/2	1310061		760061	
1/8	1/2	5/8	3	1310082		760082	
5/32	1/2	3/4	3	1310102		760102	
3/16	1/2	7/8	3	1310122		760122	
3/16	3/4	7/8	3-1/8	1310124		760124	
1/4	1/2	1	3	1310162		760162	
1/4	3/4	1	3-1/4	1310164		760164	
9/32	5/8	1	3	1310183		182918	
5/16	1/2	1-1/8	3-1/4	1310202		760202	
5/16	5/8	1-1/8	3-1/2	1310203		-	
5/16	3/4	1-1/8	3-1/4	1310204		760204	
5/16	7/8	1-1/8	3-1/2	1310205		760205	
3/8	1/2	1-1/4	3-1/2	1310242		760242	
3/8	3/4	1-1/4	3-1/2	1310244		760244	
3/8	7/8	1-1/4	3-3/4	1310245		760245	
7/16	3/4	1-3/8	3-3/4	1310284		760284	
7/16	1	1-3/8	4	1310286		182928	
1/2	3/4	1-1/2	3-7/8	1310324		760324	
1/2	1	1-1/2	4-1/8	1310326		760326	
5/8	3/4	1-5/8	4	1310404		760404	
5/8	1	1-5/8	4	1310406		-	
3/4	3/4	1-7/8	4	1310484		760484	
3/4	1	1-7/8	4	1310486		-	

SETS



SET NO. 282A

8 Piece Set
Contains 1 piece of each:
1/16, 3/32 (x 3/8 Shk);
1/8, 5/32, 3/16,
1/4, 5/16, 3/8 (x 1/2 Shk)
Supplied in wood block.

	Order No.	Price
HSS	1310000	
Cobalt	1020000	

COBALT STEEL*

THREE FLUTE CORNER ROUNDING END MILLS

SERIES 759:



HIGH SPEED STEEL AND COBALT STEEL

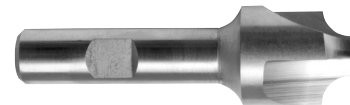
FOUR FLUTE CORNER ROUNDING END MILLS

SERIES 286: HIGH SPEED STEEL
SERIES 759: COBALT STEEL*



Radius	Shank Dia.	Flute Lgth	OAL	Order No.	Price
1/32	3/8	3/8	2-1/2	12694	
1/32	1/2	1/2	2-5/8	12700	
1/16	3/8	7/16	2-1/2	12696	
1/16	1/2	1/2	2-5/8	12702	
3/32	3/8	1/2	2-1/2	12698	
3/32	1/2	1/2	2-5/8	12704	
1/8	1/2	5/8	2-7/8	12706	
5/32	1/2	5/8	2-7/8	12708	
3/16	1/2	3/4	3	12710	
3/16	3/4	3/4	3-1/8	12732	
7/32	1/2	7/8	3	12712	
1/4	1/2	7/8	3	912714	
1/4	3/4	7/8	3-1/4	12734	
9/32	1/2	1	3	12716	
5/16	1/2	1	3	12718	
5/16	3/4	1	3-1/4	12736	
11/32	1/2	1-1/8	3-1/4	12720	
3/8	1/2	1-1/8	3-1/4	12722	
3/8	3/4	1-1/8	3-1/2	12738	
13/32	1/2	1-1/4	3-1/2	12724	
7/16	1/2	1-1/4	3-1/2	12726	
15/32	1/2	1-3/8	3-1/2	912728	
1/2	1/2	1-3/8	3-1/2	12730	
1/2	3/4	1-3/8	3-3/4	12740	
9/16	3/4	1-1/2	3-3/4	12742	
5/8	3/4	1-5/8	3-3/4	12744	
3/4	3/4	1-7/8	3-3/4	12746	
1	3/4	2-3/4	4-1/2	12748	

*Radius 15/32" & larger are M7 steel.



Radius	Shank Dia.	Flute Lgth	OAL	COBALT*		HIGH SPEED	
				Order No.	Price	Order No.	Price
1/32	3/8	7/16	2-1/2	13060		8650002	
1/16	3/8	7/16	2-1/2	913062		8650006	
3/32	3/8	1/2	2-1/2	913064		8650010	
1/8	1/2	5/8	3	13066		8650014	
5/32	1/2	3/4	3	13068		8650018	
3/16	1/2	7/8	2-15/16	13070		8650026	
3/16	3/4	7/8	3-1/8	13078		8650022	
1/4	1/2	1	3	13072		8650034	
1/4	3/4	1	3-1/4	913080		8650030	
5/16	1/2	1-1/8	3-1/2	13074		8650042	
5/16	7/8	1-1/8	3-1/2	13092		8650038	
3/8	1/2	1-1/4	3-3/4	13076		8650050	
3/8	7/8	1-1/4	3-3/4	13094		8650046	
7/16	3/4	1-3/8	3-3/4	13082		8650058	
7/16	1	1-3/8	4	13096		8650054	
1/2	3/4	1-1/2	3-7/8	13084		8650066	
1/2	1	1-1/2	4-1/8	13098		8650062	
5/8	3/4	1-15/16	4	13086		8650074	
5/8	1	1-15/16	4-1/4	13100		8650070	
3/4	3/4	2-1/4	4-1/8	913088		8650082	
3/4	1	2-1/4	4-5/16	13102		8650078	
1	3/4	2-3/4	4-1/2	913090		8650090	
1	1	2-3/4	4-3/4	13104		8650086	

*Radius 7/16" & larger are M7 steel.




TiN Coated
End Mills available;
please inquire

CNC 3 FLUTE TAPERED END MILLS

SERIES 862
(Continued)

Ball End
End Mills available;
please inquire



Seven Degrees Per Side						Ten Degrees Per Side						Fifteen Degrees Per Side					
Tip	Flute Lgth.	Shank	Overall Lgth.	Order No.	Price	Tip	Flute Lgth.	Shank	Overall Lgth.	Order No.	Price	Tip	Flute Lgth.	Shank	Overall Lgth.	Order No.	Price
.062	1	3/8	2-7/8	6207002		3/32	1/2	3/8	2-1/2	6210006		3/32	3/4	1/2	2-3/4	6215008	
3/32	1	3/8	2-7/8	6207010		3/32	1-1/2	1/2	3-3/8	6210014		3/32	1	1/2	2-7/8	6215010	
3/32	1-1/4	1/2	3-1/8	6207012		1/8	3/4	3/8	2-1/2	6210030		3/32	1-1/2	1/2	3-7/16	6215014	
3/32	1-1/2	1/2	3-1/4	6207014		1/8	1-1/4	1/2	3-1/8	6210034		1/8	1/2	3/8	2-1/2	6215025	
1/8	3/4	3/8	2-1/2	6207030		3/16	1-1/4	1/2	3-1/8	6210044		1/8	3/4	1/2	2-1/2	6215030	
1/8	1	3/8	2-7/8	6207032		1/4	3/4	1/2	2-1/2	6210050		1/8	1	1/2	3	6215032	
1/8	1-1/2	1/2	3-1/4	6207036		1/4	1-1/4	1/2	3-1/8	6210052		1/8	1-1/4	1/2	3-1/2	6215034	
1/8	2	5/8	4-1/8	6207038		1/4	2-1/4	3/4	4-1/4	6210054		3/16	1	1/2	3	9215040	
1/8	3	3/4	5-1/4	6207040		3/8	1-1/4	5/8	3-1/4	6210058		3/16	1-1/4	3/4	3-1/2	6215044	
3/16	1-1/4	1/2	3-1/8	6207044		3/8	2-1/4	1	4-5/8	6210060		3/16	1-1/4	1/2	3-1/4	6215045	
3/16	3	3/4	5-1/4	6207048		3/8	3-1/4	1-1/4	4-3/4	6210062		1/4	1	1/2	3	6215050	
1/4	3/4	1/2	2-1/2	6207050		1/2	1-1/4	3/4	3-3/8	6210064		1/4	1 1/4	3/4	3-1/2	6215051	
1/4	1-1/4	1/2	3-1/8	6207052		1/2	2-1/4	1	4-5/8	6210070		1/4	1-1/4	1/2	3-1/4	6215052	
1/4	2-1/4	3/4	4-1/2	6207054		1/2	3-1/4	1-1/4	4 3/4	6210073		1/4	1-1/2	3/4	3-3/4	6215053	
1/4	3-1/4	1	5-3/4	6207056		<p>COBALT TAPERED END MILLS</p>  <p>Full range available. See our website or inquire.</p>						1/4	2-1/4	1	4-3/4	6215056	
1/4	4	1	6-1/2	6207058								5/16	1	3/4	3-1/4	6215057	
5/16	3-1/4	1	5-3/4	6207059								3/8	1-1/4	3/4	3-1/2	6215058	
3/8	2-1/4	3/4	4-1/4	6207060								3/8	2-1/4	1-1/4	4-3/4	6215060	
3/8	3-1/4	1	5-3/4	6207061								1/2	1	3/4	3-1/4	6215062	
3/8	4	1-1/4	6-1/2	6207062								1/2	1-1/4	3/4	3-1/2	6215064	
1/2	1-1/4	5/8	3-1/4	6207064								1/2	1-3/4	1	4-1/4	6215066	
1/2	2-1/4	1	4-3/4	6207066								1/2	2-1/4	1-1/4	4-3/4	6215068	
1/2	3-1/4	1-1/4	5-3/4	6207068													
1/2	4	1-1/4	6-1/2	6207070													
5/8	4	1-1/4	6-1/2	6207080													
3/4	3-1/4	1-1/4	5-3/4	6207090													
3/4	4	1-1/4	6-1/2	6207092													

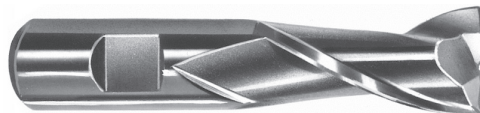
CUTTING TOOLS - END MILLS

Twenty Degrees Per Side						Twenty-Five Degrees Per Side						Thirty Degrees Per Side					
Tip	Flute Lgth.	Shank	Overall Lgth.	Order No.	Price	Tip	Flute Lgth.	Shank	Overall Lgth.	Order No.	Price	Tip	Flute Lgth.	Shank	Overall Lgth.	Order No.	Price
1/8	1/2	3/8	2-1/2	6220202		1/8	1/2	1/2	2-1/2	6225202		1/8	1/2	1/2	2-1/2	6230202	
1/8	1	1/2	3	6220204		1/8	1	1/2	3	6225204		1/8	1	1/2	3	6230204	
3/16	1	1/2	3	6220304		1/4	1	5/8	3-1/4	6225404		1/4	1	3/4	3-1/4	6230404	
1/4	1	1/2	3	6220404		1/4	1-1/2	3/4	3-3/4	6225406		1/4	1-1/2	1	4	6230406	
1/4	1-1/2	3/4	3-3/4	6220406		5/16	3/4	5/8	3	6225503		3/8	1-1/4	1	3-3/4	6230605	
5/16	1	3/4	3-1/4	6220504		5/16	1	3/4	3-1/4	6225504		3/8	1-1/2	1	4	6230606	
5/16	1-1/2	3/4	3-3/4	6220506		5/16	1-1/2	1	4	6225506		1/2	1-1/4	1	3-3/4	6230805	
3/8	1-1/2	3/4	3-3/4	6220606		3/8	3/4	5/8	3	6225603							
3/8	2	1	4-1/2	6220608		3/8	1	3/4	3-1/4	6225604							
						3/8	1-1/2	1	4	6225606							
						1/2	1-1/4	1	3-3/4	6225805							

COBALT STEEL
METRIC TWO FLUTE SINGLE END END MILLS
SERIES 299:



See page 120
for Metric
End Mill
Sets



Mill Dia.	Shank Dia.	Lgth. of Cut	OAL	Order No.	Price
2.0	3/8	5/16	2-5/16	2992020	
2.5	3/8	5/16	2-5/16	2992025	
3.0	3/8	5/16	2-5/16	2992030	
3.5	3/8	7/16	2-5/16	2992035	
4.0	3/8	7/16	2-5/16	2992040	
4.5	3/8	1/2	2-5/16	2992045	
5.0	3/8	1/2	2-5/16	2992050	
5.5	3/8	1/2	2-5/16	2992055	
6.0	3/8	1/2	2-5/16	2992060	
7.0	3/8	9/16	2-5/16	2992070	
8.0	3/8	9/16	2-5/16	2992080	
9.0	3/8	9/16	2-5/16	2992090	

Mill Dia.	Shank Dia.	Lgth. of Cut	OAL	Order No.	Price
10.0	3/8	13/16	2-1/2	2992100	
11.0	3/8	13/16	2-1/2	2992110	
12.0	3/8	13/16	2-1/2	2992120	
12.5	1/2	1-1/8	3-1/8	2992125	
13.0	1/2	1-1/8	3-1/8	2992130	
14.0	1/2	1-1/8	3-1/8	2992140	
15.0	1/2	1-1/8	3-1/8	2992150	
16.0	5/8	1-5/16	3-7/16	2992160	
18.0	5/8	1-5/16	3-7/16	2992180	
20.0	5/8	1-1/2	3-3/4	2992200	
22.0	3/4	1-1/2	3-1/2	2992220	
24.0	3/4	2	4-1/2	2992240	
25.0	1	2	4-1/2	2992250	

COBALT STEEL

METRIC FOUR FLUTE CENTER-CUTTING SINGLE END END MILLS

SERIES 299:



Mill Dia.	Shank Dia.	Lgth. of Cut	OAL	Order No.	Price
10.0	3/8	1	2-11/16	2993100	
11.0	3/8	1	2-11/16	2993110	
12.0	3/8	1	2-11/16	2993120	
12.5	1/2	1-1/4	3-1/4	2993125	
13.0	1/2	1-1/4	3-1/4	2993130	
14.0	1/2	1-3/8	3-1/8	2993140	
15.0	1/2	1-3/8	3-3/8	2993150	
16.0	5/8	1-5/8	3-3/4	2993160	
17.0	5/8	1-5/8	3-3/4	2993170	
18.0	5/8	1-5/8	3-3/4	2993180	
20.0	3/4	1-7/8	4-1/8	2993200	
22.0	5/8	1-7/8	4-1/8	2993220	
24.0	3/4	2	4-1/2	2993240	
25.0	1	2	4-1/2	2993250	
32.0	1	2	4-1/2	2993320	

Mill Dia.	Shank Dia.	Lgth. of Cut	OAL	Order No.	Price
2.0	3/8	3/8	2-5/16	2993020	
2.5	3/8	3/8	2-5/16	2993025	
3.0	3/8	3/8	2-5/16	2993030	
3.5	3/8	1/2	2-3/8	2993035	
4.0	3/8	9/16	2-3/8	2993040	
4.5	3/8	9/16	2-1/2	2993045	
5.0	3/8	5/8	2-1/2	2993050	
5.5	3/8	5/8	2-1/2	2993055	
6.0	3/8	5/8	2-1/2	2993060	
7.0	3/8	11/16	2-1/2	2993070	
8.0	3/8	3/4	2-1/2	2993080	
9.0	3/8	3/4	2-1/2	2993090	

CUTTING TOOLS - END MILLS



USA sets available. See our website or inquire.

END MILL SETS
SERIES 828:

See pages 104 & 116 for additional sets.



(ALL END MILLS ARE CENTER-CUTTING UNLESS OTHERWISE NOTED.)



Set Description	Pieces per Set	H.S.S.	Price	H.S.S. Gold (TIN) Ctd.	Price	COBALT Steel	Price
SINGLE END END MILLS - PLASTIC CASE							
3/16 - 3/4" x 16th 2F + 4F***	20	1248204		6001000			
3/16 - 3/4" x 16ths 2F***	10	0951248		7951248			
3/16 - 3/4" x 16th 4F***	10	0981248		7981248			
1/4, 3/8, 1/2, 5/8, 3/4" 2F + 4F	10	1648204		7164824			
3, 4, 5, 6, 8, 10, 12, 14, 18, 20mm 2F+ 4F•	20	9320204		7320204			
3, 4, 5, 6, 8, 10, 12, 14, 18, 20mm 2F•	10	7770320		7777320			
3, 4, 5, 6, 8, 10, 12, 14, 18, 20mm 4F•	10	7790320		7779320			
SINGLE END END MILLS - WOODEN STAND							
1/8, 3/16, 1/4, 5/16, 3/8, 1/2 x 3/8" Shank - 2F + 4F	12	0832204		7832204			
1/8, 3/16, 1/4, 5/16, 3/8, 1/2 x 3/8" Shank 2F	6	0950832		7950832		0820832	
1/8, 3/16, 1/4, 5/16, 3/8, 1/2 x 3/8" Shank 4F	6	0980832		7980832		0830832	
3/4, 7/8, 1, 1-1/8, 1-1/4, 1-1/2 x 3/4" Shank 2F	6	2000000		9200000			
3/4, 7/8, 1, 1-1/8, 1-1/4, 1-1/2 x 3/4" Sk MF****	6	2155000		7215500			
3, 5, 6, 8, 10, 12mm x 3/8" shank 2F	6	7770312		7777312		0820312	
3, 5, 6, 8, 10, 12mm x 3/8" shank 4F	6	7790312		7779312		0830312	
BALL END MILLS							
1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4"	9	1030848					
CORNER ROUNDING END MILLS							
1/16, 3/32" x 3/8 Shank	8	1310000				1020000	
1/8, 5/32, 3/16, 1/4, 5/16, 3/8 x 1/2 Shank							
ROUGHING END MILLS							
1/2 x 1/2, 5/8 x 5/8, 3/4 x 3/4, 1 x 3/4 Coarse	4	7243264**		7270000*		1750010	
DOUBLE END END MILLS - WOODEN STAND (See more sets on page 104)							
1/16, 3/32, 1/8, 5/32, 3/16" x 3/16" Shank- 2F + 4F	10	0212204					
1/16, 3/32, 1/8, 5/32, 3/16" x 3/16" Shank 2F	5	0890212				5940212	
1/16, 3/32, 1/8, 5/32, 3/16" x 3/16" Shank 4F	5	0910212				5990212	
1/8, 5/32, 3/16, 1/4, 5/16, 3/8" x 3/8" Shank- 2F + 4F	12	0824204					
1/8, 5/32, 3/16, 1/4, 5/16, 3/8" x 3/8" Shank 2F	6	0930824				0800824	
1/8, 5/32, 3/16, 1/4, 5/16, 3/8" x 3/8" Shank 4F	6	0940824				0810824	

*COBALT STEEL, GOLD (TN) COATED

**** NON-CENTER CUTTING, MULTI-FLUTE

**M2 - AL

*** 3/16, 1/4, 5/16, 3/8, 7/16 x 3/8" Shank ; 1/2, 9/16 x 1/2" Shank; 5/8, 11/16 x 5/8" Shank; 3/4 x 3/4" Shank

• 3-12mm x 3/8" shank; 14mm x 1/2" shank, 18mm x 5/8" shank, 20mm x 3/4" shank

SOLID CARBIDE

**2 FLUTE, SINGLE END
STANDARD LENGTH END MILLS**

SERIES 495:



Mill Dia.	Shank Dia.	Flute Length	Order O.A.L.	Uncoated		Coated	
				Order No.	Price	No.	Price
1/32	1/8	3/32	1-1/2	2625002		2625302	
3/64	1/8	1/8	1-1/2	914002		514002	
1/16	1/8	3/16	1-1/2	2625004		2625304	
5/64	1/8	3/16	1-1/2	14006		514006	
3/32	1/8	3/8	1-1/2	2625006		2625306	
7/64	1/8	3/8	1-1/2	14009		514009	
1/8	1/8	1/2	1-1/2	2625008		2625308	
9/64	3/16	9/16	2	15893		515893	
5/32	3/16	9/16	2	2625010		2625310	
11/64	3/16	9/16	2	15894		515894	
3/16	3/16	5/8	2	2625012		2625312	
13/64	1/4	5/8	2-1/2	15895		515895	
7/32	1/4	5/8	2-1/2	2625014		2625314	
15/64	1/4	3/4	2-1/2	15896		515896	
1/4	1/4	3/4	2-1/2	2625016		2625316	
17/64	5/16	3/4	2-1/2	15897		515897	
9/32	5/16	3/4	2-1/2	2625018		2625318	
19/64	5/16	13/16	2-1/2	15899		515899	
5/16	5/16	13/16	2-1/2	2625020		2625320	
21/64	3/8	7/8	2-1/2	16119		516119	
11/32	3/8	7/8	2-1/2	2625022		2625322	
23/64	3/8	7/8	2-1/2	16120		516120	
3/8	3/8	1	2-1/2	2625024		2625324	
25/64	7/16	1	2-3/4	16121		516121	
13/32	7/16	1	2-3/4	915901		515901	
27/64	7/16	1	2-3/4	16122		516122	
7/16	7/16	1	2-3/4	2625028		2625328	
29/64	1/2	1	3	16123		516123	
15/32	1/2	1	3	915902		515902	
31/64	1/2	1	3	16124		516124	
1/2	1/2	1	3	2625032		2625332	
9/16	9/16	1-1/4	3-1/2	2625036		2625336	
5/8	5/8	1-1/4	3-1/2	2625040		2625340	
3/4	3/4	1-1/2	4	2625048		2625348	
7/8	7/8	1-1/2	4	2625056		2625356	
1	1	1-1/2	4	2625064		2625364	

- General purpose application - square end.
 - For applications in steel and non-ferrous materials.
- Tolerance +.000/-0.002



***Coating:**
AlTiN-Aluminum/ Titanium Nitride

Ideal for high temperature cutting operations in many materials such as titanium and nickel alloys, Co-Cr-Mo, stainless steels, alloy steels and cast irons. When exposed to high temperature it forms a hard aluminum oxide layer.

As temperatures increase, the coating insulates the tool and rejects heat into chips.

- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.

CUTTING TOOLS - END MILLS

SOLID CARBIDE

2 FLUTE & 4 FLUTE, SINGLE END NC TOLERANCE END MILLS

SERIES 110:



- Special OD tolerance.
- Tolerance +.001/-0.000



Mill Dia.	Shank Dia.	Flute Lgth	Order O.A.L.	2 FI Uncoated		2 FI Coated*		4 FI Uncoated		4 FI Coated*	
				Order No.	Order Price	Order No.	Price	No.	Price	No.	Price
1/16	1/8	3/16	1-1/2	916968		516968		916983		516983	
3/32	1/8	3/8	1-1/2	916969		516969		16984		516984	
1/8	1/8	1/2	1-1/2	916970		516970		916985		516985	
5/32	3/16	9/16	2	916971		516971		16986		516986	
3/16	3/16	5/8	2	916972		516972		16987		516987	
7/32	1/4	5/8	2-1/2	916973		516973		916988		516988	
1/4	1/4	3/4	2-1/2	916974		516974		916989		516989	
9/32	5/16	3/4	2-1/2	916975		516975		16990		9516990	
5/16	5/16	13/16	2-1/2	916976		516976		916991		516991	
3/8	3/8	1	2-1/2	916977		516977		916992		516992	
7/16	7/16	1	2-1/2	916978		516978		16993		516993	
1/2	1/2	1	3	916979		516979		916994		516994	
5/8	5/8	1-1/4	3-1/2	916980		516980		916995		516995	
3/4	3/4	1-1/2	4	916981		516981		916996		516996	
1	1	1-1/2	4	916982		516982		916997		516997	

***Coating:**
AlTiN-Aluminum/ Titanium Nitride

Ideal for high temperature cutting operations in many materials such as titanium and nickel alloys, Co-Cr-Mo, stainless steels, alloy steels and cast irons. When exposed to high temperature it forms a hard aluminum oxide layer.

As temperatures increase, the coating insulates the tool and rejects heat into chips.

- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.

SOLID CARBIDE

4 FLUTE, SINGLE END STANDARD LENGTH END MILLS

SERIES 496:



CUTTING TOOLS - END MILLS

Mill Dia.	Shank Dia.	Flute Length	O.A.L.	Uncoated		Coated	
				Order No.	Price	Order No.	Price
1/32	1/8	3/32	1-1/2	2630002		2630302	
3/64	1/8	1/8	1-1/2	14122		514122	
1/16	1/8	3/16	1-1/2	2630004		2630304	
5/64	1/8	3/16	1-1/2	14126		514126	
3/32	1/8	3/8	1-1/2	2630006		2630306	
7/64	1/8	3/8	1-1/2	14130		514130	
1/8	1/8	1/2	1-1/2	2630008		2630308	
9/64	3/16	9/16	2	14134		514134	
5/32	3/16	9/16	2	2630010		2630310	
11/64	3/16	9/16	2	915919		-	
3/16	3/16	5/8	2	2630012		2630312	
13/64	1/4	5/8	2-1/2	915920		515920	
7/32	1/4	5/8	2-1/2	2630014		2630314	
15/64	1/4	3/4	2-1/2	15921		515921	
1/4	1/4	3/4	2-1/2	2630016		2630316	
17/64	5/16	3/4	2-1/2	15922		515922	
9/32	5/16	3/4	2-1/2	2630018		2630318	
19/64	5/16	13/16	2-1/2	15923		515923	
5/16	5/16	13/16	2-1/2	2630020		2630320	
21/64	3/8	7/8	2-1/2	16197		516197	
11/32	3/8	7/8	2-1/2	2630022		2630322	
23/64	3/8	7/8	2-1/2	16198		516198	
3/8	3/8	1	2-1/2	2630024		2630324	
25/64	7/16	1	2-3/4	16199		516199	
13/32	7/16	1	2-3/4	915925		515925	
27/64	7/16	1	2-3/4	916200		9516200	
7/16	7/16	1	2-3/4	2630028		2630328	
29/64	1/2	1	3	916201		9516201	
15/32	1/2	1	3	15926		515926	
31/64	1/2	1	3	916202		9516202	
1/2	1/2	1	3	2630032		2630332	
17/32	9/16	1-1/4	3-1/2	16785		516785	
9/16	9/16	1-1/4	3-1/2	2630036		2630336	
5/8	5/8	1-1/4	3-1/2	2630040		2630340	
3/4	3/4	1-1/2	4	2630048		2630348	
7/8	7/8	1-1/2	4	2630056		2630356	
1	1	1-1/2	4	2630064		2630364	

- General purpose application - square end.
- For applications in steel and non-ferrous materials.
Tolerance +.000/- .002



***Coating:**
AlTiN-Aluminum/Titanium Nitride

Ideal for high temperature cutting operations in many materials such as titanium and nickel alloys, Co-Cr-Mo, stainless steels, alloy steels and cast irons. When exposed to high temperature it forms a hard aluminum oxide layer.

As temperatures increase, the coating insulates the tool and rejects heat into chips.

- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.

SOLID CARBIDE

2 FLUTE & 4 FLUTE, BALL END NC TOLERANCE END MILLS

SERIES 110:



- Special OD tolerance.
Tolerance +.001/- .000



Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 FI Uncoated		2 FI Coated*		4 FI Uncoated		4 FI Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/16	1/8	3/16	1-1/2	16938		516938		16953		516953	
3/32	1/8	3/8	1-1/2	16939		9516939		16954		9516954	
1/8	1/8	1/2	1-1/2	16940		516940		16955		516955	
5/32	3/16	9/16	2	16941		516941		16956		516956	
3/16	3/16	5/8	2	16942		516942		16957		516957	
7/32	1/4	5/8	2-1/2	16943		516943		16958		9516958	
1/4	1/4	3/4	2-1/2	16944		516944		16959		516959	
9/32	5/16	3/4	2-1/2	16945		516945		916960		516960	
5/16	5/16	13/16	2-1/2	16946		9516946		16961		516961	
3/8	3/8	1	2-1/2	916947		516947		16962		516962	
7/16	7/16	1	2-1/2	16948		516948		916963		516963	
1/2	1/2	1	3	16949		516949		9916964		516964	
5/8	5/8	1-1/4	3-1/2	16950		516950		916965		516965	
3/4	3/4	1-1/2	4	16951		516951		916966		516966	
1	1	1-1/2	4	16952		516952		16967		516967	

***Coating:**
AlTiN-Aluminum/Titanium Nitride

Ideal for high temperature cutting operations in many materials such as titanium and nickel alloys, Co-Cr-Mo, stainless steels, alloy steels and cast irons. When exposed to high temperature it forms a hard aluminum oxide layer.

As temperatures increase, the coating insulates the tool and rejects heat into chips.

- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.



SOLID CARBIDE

**2 & 4 FLUTE, SINGLE END
STUB LENGTH END MILLS**

SERIES 110:

*For coating information
see page 122.

- General purpose application - square end.
 - Short flute length. High rigidity and minimal tool deflection.
- Tolerance +.000/-0.002



Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 FI Uncoated		2 FI Coated*		4 FI Uncoated		4 FI Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/32	1/8	1/16	1-1/2	16146		516146		16224		516224	
3/64	1/8	3/32	1-1/2	16147		516147		16225		516225	
1/16	1/8	1/8	1-1/2	16148		516148		9916226		516226	
3/32	1/8	3/16	1-1/2	16149		516149		16227		516227	
1/8	1/8	1/4	1-1/2	16150		516150		9916228		516228	
5/32	3/16	5/16	1-1/2	16151		516151		16229		516229	
3/16	3/16	5/16	1-1/2	16152		516152		16230		516230	
7/32	1/4	1/2	2	16153		516153		9916231		516231	
1/4	1/4	1/2	2	16154		516154		16232		516232	
5/16	5/16	1/2	2	16155		516155		16233		516233	
3/8	3/8	5/8	2	16156		516156		16234		516234	
7/16	7/16	5/8	2-1/2	16157		516157		16235		516235	
1/2	1/2	5/8	2-1/2	16158		516158		16236		516236	
5/8	5/8	3/4	3	16159		516159		16237		516237	
3/4	3/4	1	3	916160		516160		16238		516238	

SOLID CARBIDE

**2 & 4 FLUTE, SINGLE END MEDIUM, LONG, & EXTRA
LONG LENGTH END MILLS**

SERIES 110:



- Longer flute lengths for deep pocket milling and longer reach.
 - Square end.
- Tolerance +.000/-0.00

*For coating information
see page 122.



Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 FI Uncoated		2 FI Coated*		4 FI Uncoated		4 FI Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/16	1/8	3/8	1-1/2	11521		511521		17860		517860	
3/32	1/8	9/16	3	16060		516060		16186		516186	
1/8	1/8	3/4	3	16061		516061		16071		516071	
1/8	1/8	1	3	16062		516062		16072		516072	
5/32	3/16	3/4	3	16063		516063		16187		516187	
3/16	3/16	3/4	3	16064		516064		16073		516073	
3/16	3/16	1-1/8	3	16065		516065		16074		516074	
1/4	1/4	1-1/8	3	2625116		514028		2630116		514144	
1/4	1/4	1-3/4	4	2625216		514030		2630216		514146	
5/16	5/16	1-1/8	3	2625120		616066		2630120		516075	
5/16	5/16	1-3/4	4	2625220		516027		2630220		516076	
3/8	3/8	1-1/8	3	2625124		-		2630124		-	
3/8	3/8	1-3/4	4	2625224		514038		2630224		514156	
3/8	3/8	3	6	-		-		17735		517735	
7/16	7/16	2	4	16029		516029		16077		516077	
7/16	7/16	3	6	16028		516028		16078		516078	
1/2	1/2	1-1/4	3	11529		511529		16466		516466	
1/2	1/2	2	4	2625132		514044		2630132		514162	
1/2	1/2	3	6	2625232		514046		2630232		514164	
5/8	5/8	2-1/4	5	2625140		516067		2630140		516079	
5/8	5/8	3	6	2625240		516068		2630240		516080	
3/4	3/4	2-1/4	5	2625148		516069		2630148		516081	
3/4	3/4	3	6	2625248		514052		2630248		514170	
3/4	3/4	4	7	2625249		-		2630249		517736	
1	1	2-1/4	5	2625164		-		2630164		-	
1	1	3	6	2625264		514056		2630264		514174	
1	1	4	7	-		-		16315		516315	

SOLID CARBIDE

2 FLUTE & 4 FLUTE, BALL END STANDARD LENGTH END MILLS

SERIES 110:



*See page 125 for coating details.

CUTTING TOOLS - END MILLS

Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 Flute Uncoated		2 Fl Coated*		4 Fl Uncoated		4 Fl Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/32	1/8	3/32	1-1/2	915904		515904		15928		515928	
3/64	1/8	1/8	1-1/2	915905		515905		15929		515929	
1/16	1/8	3/16	1-1/2	15906		515906		915930		515930	
5/64	1/8	3/16	1-1/2	915907		515907		15931		515931	
3/32	1/8	3/8	1-1/2	915908		515908		15932		515932	
7/64	1/8	3/8	1-1/2	915909		515909		15933		515933	
1/8	1/8	1/2	1-1/2	14058		514058		14176		514176	
9/64	3/16	9/16	2	916126		9516126		916204		516204	
5/32	3/16	9/16	2	915910		515910		915852		515852	
11/64	3/16	9/16	2	16127		516127		916205		516205	
3/16	3/16	5/8	2	14060		514060		14178		514178	
13/64	1/4	5/8	2-1/2	916128		516128		16206		516206	
7/32	1/4	5/8	2-1/2	915911		515911		15934		515934	
15/64	1/4	3/4	2-1/2	16129		516129		16207		516207	
1/4	1/4	3/4	2-1/2	14062		514062		14180		514180	
17/64	5/16	3/4	2-1/2	16130		516130		16208		516208	
9/32	5/16	3/4	2-1/2	915912		515912		15935		515935	
19/64	5/16	13/16	2-1/2	16131		516131		16209		516209	
5/16	5/16	13/16	2-1/2	14064		514064		14182		514182	
21/64	3/8	7/8	2-1/2	16132		516132		16210		9516210	
11/32	3/8	7/8	2-1/2	16133		516133		16211		516211	
23/64	3/8	7/8	2-1/2	16134		516134		916212		516212	
3/8	3/8	1	2-1/2	14066		514066		14184		514184	
25/64	7/16	1	2-3/4	16135		9516135		16213		516213	
13/32	7/16	1	2-3/4	16136		516136		16214		516214	
27/64	7/16	1	2-3/4	16137		516137		16215		516215	
7/16	7/16	1	2-3/4	915913		515913		15936		515936	
29/64	1/2	1	3	16138		516138		16216		516216	
15/32	1/2	1	3	16139		516139		16217		516217	
31/64	1/2	1	3	16140		516140		16218		516218	
1/2	1/2	1	3	14068		514068		14186		514186	
9/16	9/16	1-1/4	3-1/2	16141		516141		16219		516219	
5/8	5/8	1-1/4	3-1/2	16142		516142		16220		516220	
3/4	3/4	1-1/2	4	16143		516143		16221		516221	
7/8	7/8	1-1/2	4	16144		516144		16222		516222	
1	1	1-1/2	4	16145		516145		16223		516223	

- Use for radius and contouring part surfaces.
- Designed to cut materials ranging from nickel base alloy, stainless, tough alloys, abrasives and non-ferrous.
- Made from premium submicron grain carbide. Tolerance + .000/- .002

SOLID CARBIDE

2 FLUTE & 4 FLUTE, BALL END STUB LENGTH END MILLS

SERIES 110:



*See page 125 for coating details.

Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 Fl Uncoated		2 Fl Coated*		4 Fl Uncoated		4 Fl Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/32	1/8	1/16	1-1/2	16161		516161		16239		516239	
3/64	1/8	3/32	1-1/2	16162		516162		16240		516240	
1/16	1/8	1/8	1-1/2	16163		516163		16241		516241	
3/32	1/8	3/16	1-1/2	16164		516164		16242		516242	
1/8	1/8	1/4	1-1/2	16165		516165		16243		516243	
5/32	3/16	5/16	1-1/2	16166		516166		16244		516244	
3/16	3/16	5/16	1-1/2	16167		516167		16245		516245	
7/32	1/4	1/2	2	916168		516168		16246		516246	
1/4	1/4	1/2	2	916169		516169		16247		516247	
5/16	5/16	1/2	2	916170		516170		16248		516248	
3/8	3/8	5/8	2	916171		516171		16249		516249	
7/16	7/16	5/8	2-1/2	916172		516172		916250		516250	
1/2	1/2	5/8	2-1/2	916173		516173		16251		516251	
5/8	5/8	3/4	3	916174		516174		16252		516252	
3/4	3/4	1	3	916175		516175		16253		516253	

- Use for radius and contouring part surfaces.
- Designed to cut materials ranging from nickel base alloy, stainless, tough alloys, abrasives and non-ferrous.
- Made from premium submicron grain carbide.

SOLID CARBIDE

2 FLUTE & 4 FLUTE, BALL END LONG & EXTRA LONG LENGTH END MILLS

SERIES 110:



- Longer flute lengths for deep pocket milling and longer reach. Tolerance +.000/- .002



Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 Flute Uncoated		2 Fl Coated*		4 Fl Uncoated		4 Fl Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/8	1/8	3/4	3	16110		516110		16188		516188	
1/8	1/8	1	3	916176		516176		16254		516254	
3/16	3/16	3/4	3	16111		516111		16189		516189	
3/16	3/16	1-1/8	3	916177		516177		16255		516255	
1/4	1/4	1-1/8	3	2635116		516112		2640116		516190	
1/4	1/4	1-3/4	4	2635216		516178		2640216		516256	
5/16	5/16	1-1/8	3	2635120		516113		2640120		516191	
5/16	5/16	1-3/4	4	2635220		516179		2640220		516257	
3/8	3/8	1-1/8	3	2635124		516114		2640124		516192	
3/8	3/8	1-3/4	4	2635224		516180		2640224		516258	
7/16	7/16	2	4	16115		516115		16193		516193	
7/16	7/16	3	6	16181		516181		16259		516259	
1/2	1/2	2	4	2635132		516116		2640132		516194	
1/2	1/2	3	6	2635232		516182		2640232		516260	
5/8	5/8	2-1/4	5	2635140		516117		2640140		516195	
5/8	5/8	3	6	2635240		516183		2640240		516261	
3/4	3/4	2-1/4	5	2635148		516118		2640148		516196	
3/4	3/4	3	6	2635248		516184		2640248		516262	
1	1	2-1/4	5	2635164		-		2640164		-	
1	1	3	6	2635264		516185		2640264		516263	

***Coating: AlTiN-Aluminum/ Titanium Nitride**

Ideal for high temperature cutting operations in many materials such as titanium and nickel alloys, Co-Cr-Mo, stainless steels, alloy steels and cast irons. When exposed to high temperature it forms a hard aluminum oxide layer. As temperatures increase, the coating insulates the tool and rejects heat into chips.

- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.

CUTTING TOOLS - END MILLS

SOLID CARBIDE

2 FLUTE & 4 FLUTE, SINGLE END METRIC END MILLS

SERIES 110:



- General purpose - square end.
- Metric diameters with standard fractional shanks. Tolerance +.000/- .050mm



Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 Fl Uncoated		2 Flute Coated*		4 Fl Uncoated		4 Flute Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1	3	3	38	16935		9516935		16933		516933	
1.5	3	6	38	16936		516936		16934		9516934	
2	3	9	38	15987		515987		916000		516000	
2.5	3	12	38	915988		515988		916001		516001	
3	3	12	38	15989		515989		916002		516002	
3.5	4	12	51	15990		515990		916003		516003	
4	4	14	51	15991		515991		916004		516004	
4.5	5	14	51	15992		515992		916005		516005	
5	5	20	51	15993		515993		16006		516006	
6	6	20	63	15994		515994		16007		516007	
7	8	20	63	15995		515995		16008		516008	
8	8	20	63	15996		515996		16009		516009	
9	10	22	70	15997		515997		9916010		516010	
10	10	25	70	15998		515998		16011		516011	
12	12	25	76	15999		515999		16012		516012	
14	14	32	89	916926		9516926		16795		516795	
16	16	32	89	16927		9516927		16796		516796	
18	18	38	100	16928		516928		16797		516797	
20	20	38	100	16929		516929		16798		516798	
22	22	38	100	916930		9516930		16799		516799	
25	25	38	100	16931		9516931		16800		516800	

***Coating: AlTiN-Aluminum/ Titanium Nitride**

Ideal for high temperature cutting operations in many materials such as titanium and nickel alloys, Co-Cr-Mo, stainless steels, alloy steels and cast irons. When exposed to high temperature it forms a hard aluminum oxide layer. As temperatures increase, the coating insulates the tool and rejects heat into chips.

- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.

All dimensions listed are in millimeters (mm).



SOLID CARBIDE

2 FLUTE & 4 FLUTE, BALL END METRIC END MILLS

SERIES 110:

- For applications in steel and non-ferrous materials.
Tolerance +.000/-0.050mm



Mills Dia.	Shank Dia.	Flute Length	O.A.L.	2 FI Uncoated		2 FI Coated*		4 FI Uncoated		4 FI Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1	3	3	38	16805		516805		16801		516801	
1.5	3	6	38	16806		516806		16802		516802	
2	3	9	38	16555		516555		916572		516572	
2.5	3	12	38	16556		516556		16573		516573	
3	3	12	38	16557		516557		16574		516574	
3.5	4	12	51	16558		516558		16575		516575	
4	4	14	51	16559		516559		16576		516576	
4.5	5	14	51	16560		516560		16577		516577	
5	5	20	51	916561		9516561		16578		516578	
6	6	20	63	16562		516562		16579		516579	
7	8	20	63	16563		516563		16580		516580	
8	8	20	63	916564		9516564		916581		516581	
9	10	22	70	16565		516565		16582		516582	
10	10	25	70	16566		516566		16583		516583	
12	12	25	76	16567		516567		16584		516584	
14	14	32	89	16568		516568		16585		516585	
16	16	32	89	16569		516569		16586		516586	
18	18	38	100	16570		516570		16587		516587	
20	20	38	100	16571		516571		16588		516588	
22	22	38	100	16807		516807		16803		516803	
25	25	38	100	16808		516808		16804		516804	

***Coating: AlTiN-Aluminum/Titanium Nitride**

Ideal for high temperature cutting operations in many materials such as titanium and nickel alloys, Co-Cr-Mo, stainless steels, alloy steels and cast irons. When exposed to high temperature it forms a hard aluminum oxide layer. As temperatures increase, the coating insulates the tool and rejects heat into chips.

- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.

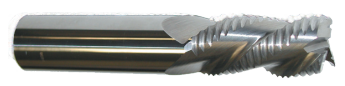
CUTTING TOOLS - END MILLS

SOLID CARBIDE

MULTIPLE FLUTE CENTER CUTTING ROUGHING END MILLS

Regular / Long / Extra Long
SERIES 825:

- Form relieved on high strength carbide for excellent profile milling.
Tolerance +.000/-0.004



Cutting & Shank Dia.	Flute Length	O.A.L.	Uncoated		TiAlN Coated	
			Order No.	Price	Order No.	Price
1/8	3/8	1-1/2	3004125		3104125	
3/16	5/8	2	3004187		3104187	
1/4	3/4	2-1/2	3004250		3104250	
1/4	1-1/8	3	3004253		3104253	
1/4	1-1/2	4	3004254		3104254	
5/16	3/4	2-1/2	3004312		3104312	
5/16	1-1/4	3	3004313		3104313	
5/16	1-5/8	4	3004314		3104314	
3/8	1	2-1/2	3004375		3104375	
3/8	1-1/4	3	3004373		3104373	
3/8	1-3/4	4	3004374		3104374	
7/16	1	3	3004437		3104437	
7/16	2	4	3004434		3104434	
1/2	1-1/4	3	3004500		3104500	
1/2	2	4	3004504		3104504	
1/2	3	6	3004506		3104506	
5/8	1-1/4	3-1/2	3004625		3104625	
5/8	2-1/4	5	3004655		3104655	
5/8	3	6	3004626		3104626	
3/4	1-1/2	4	3004750		3104750	
3/4	2-1/4	5	3004755		3104755	
3/4	3	6	3004756		3104756	
1	1-1/2	4	3004100		3104100	
1	2-1/4	5	3004105		3104105	
1	3	6	3004106		3104106	

SOLID CARBIDE
3 FLUTE 45° HIGH HELIX FOR ALUMINUM, ROUGHING END MILLS

Cutting Dia.	Shank Dia.	Flute Length	O.A.L.	Order No.	Price
3/16	3/16	5/8	2	8303187	
1/4	1/4	3/4	2-1/2	8303250	
5/16	5/16	3/4	2-1/2	8303312	
3/8	3/8	7/8	2-1/2	8303375	
7/16	7/16	1	3	8303437	
1/2	1/2	1	3	8303500	
5/8	5/8	1-1/4	3-1/2	8303625	
3/4	3/4	1-1/2	4	8303750	
1	1	1-1/2	4	8303100	

Many other sizes available. See our website or inquire.

SOLID CARBIDE

3 FLUTE, SINGLE END VARIOUS LENGTHS END MILLS

SERIES 110:



- 3 Flute design will usually allow feed rates 50% faster than 2 flute tools.
- Made from premium submicron grain carbide.
- Used for general purpose milling in most materials of medium hardness such as steel, brass, iron, and non-ferrous materials.
Tolerance +.000/-0.002



INCHES

Mill Dia.	Shank Dia.	Flute Length	O.A.L.	SQUARE Uncoated		SQUARE Coated*		BALL Uncoated		BALL Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/32	1/8	1/16	1-1/2	17791		517791		17814		517814	
1/32	1/8	3/16	1-1/2	17792		517792		17815		517815	
3/64	1/8	3/32	1-1/2	17793		517793		17817		517817	
1/16	1/8	1/8	1-1/2	17795		517795		17818		517818	
1/16	1/8	3/16	1-1/2	17638		517638		17819		517819	
5/64	1/8	9/32	1-1/2	17796		517796		17820		517820	
3/32	1/8	3/16	1-1/2	17797		517797		17821		517821	
3/32	1/8	9/32	1-1/2	17639		517639		17822		517822	
7/64	1/8	3/8	1-1/2	17798		517798		17823		517823	
1/8	1/8	1/4	1-1/2	17799		517799		17824		517824	
1/8	1/8	3/8	1-1/2	17640		517640		17825		517825	
1/8	1/8	3/4	3	17800		517800		17826		517826	
5/32	3/16	9/16	2	17641		517641		17827		517827	
3/16	3/16	5/16	1-1/2	17801		517801		17828		517828	
3/16	3/16	5/8	2	17642		517642		17829		517829	
3/16	3/16	3/4	3	17802		9517802		17830		517830	
1/4	1/4	1/2	2	17803		517803		17831		517831	
1/4	1/4	3/4	2-1/2	17644		517644		17832		517832	
1/4	1/4	1-1/8	3	17804		517804		17833		517833	
5/16	5/16	1/2	2	17805		9517805		17834		517834	
5/16	5/16	13/16	2-1/2	17646		517646		17835		517835	
5/16	5/16	1-1/8	3	17806		517806		17836		517836	
3/8	3/8	5/8	2	17807		517807		17837		517837	
3/8	3/8	1	2-1/2	17648		517648		917838		517838	
3/8	3/8	1-1/8	3	917808		517808		17839		517839	
7/16	7/16	1	2-3/4	17650		517650		17840		9517840	
1/2	1/2	5/8	2-1/2	17809		517809		17841		517841	
1/2	1/2	1	3	17652		517652		17842		517842	
1/2	1/2	2	4	917810		517810		17843		517843	
5/8	5/8	3/4	3	17811		517811		17844		517844	
5/8	5/8	1-1/4	3-1/2	17654		517654		17845		517845	
5/8	5/8	2-1/4	5	17812		517812		17846		517846	
3/4	3/4	1-1/2	4	17655		517655		17847		517847	

METRIC SIZES All dimensions listed are in millimeters (mm).

Mill Dia.	Shank Dia.	Flute Length	O.A.L.	Uncoated		Coated*	
				Order No.	Price	OrderNo.	Price
1	3	3	38	16809		516809	
1.5	3	6	38	16810		516810	
2	3	9	38	16811		516811	
2.5	3	12	38	16812		516812	
3	3	12	38	16813		9516813	
3.5	4	12	51	16814		516814	
4	4	14	51	16815		516815	
4.5	5	14	51	16816		516816	
5	5	20	51	16817		516817	
6	6	20	63	16818		516818	
7	8	20	63	16819		516819	
8	8	20	63	16820		516820	
9	10	22	70	916821		516821	
10	10	25	70	16822		516822	
12	12	25	76	16823		516823	
14	14	32	89	16824		516824	
16	16	32	89	16825		516825	
18	18	38	100	16826		9516826	
20	20	38	100	16827		516827	
22	22	38	100	16828		516828	
25	25	38	100	16829		516829	



***Coating: AlTiN-Aluminum/Titanium Nitride**

Ideal for high temperature cutting operations in many materials such as titanium and nickel alloys, Co-Cr-Mo, stainless steels, alloy steels and cast irons. When exposed to high temperature it forms a hard aluminum oxide layer. As temperatures increase, the coating insulates the tool and rejects heat into chips.

- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.



SOLID CARBIDE

2 FLUTE & 4 FLUTE, DOUBLE END STANDARD LENGTH END MILLS WITH FLAT

SERIES 110:

- General purpose-square end.
Tolerance +.000/- .002



Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 Fl Uncoated		2 Fl Coated*		4 Fl Uncoated		4 Fl Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/8	3/8	3/8	3-1/16	14082		514082		14200		514200	
3/16	3/8	1/2	3-1/4	14090		514090		14206		514206	
1/4	3/8	5/8	3-1/2	14096		514096		14212		514212	
5/16	3/8	3/4	3-1/2	14100		514100		14216		514216	
3/8	3/8	3/4	3-1/2	14104		514104		14220		514220	
1/2	1/2	1	4	14108		514108		14224		514224	

SOLID CARBIDE

2 FLUTE & 4 FLUTE, DOUBLE END STUB LENGTH END MILLS

SERIES 499: 2F
SERIES 500: 4F

- General purpose - square end.
- Short flute length.
High rigidity and minimal tool deflection.
Tolerance +.000/- .002



Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 Fl Uncoated		2 Fl Coated*		4 Fl Uncoated		4 Fl Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/32	1/8	1/16	1-1/2	14070		514070		14188		514188	
3/64	1/8	3/32	1-1/2	14072		514072		14190		514190	
1/16	1/8	1/8	1-1/2	2645004		514074		2650004		514192	
5/64	1/8	1/8	1-1/2	14076		514076		14194		514194	
3/32	1/8	3/16	1-1/2	2645006		514078		2650006		514196	
7/64	1/8	1/4	1-1/2	17848		517848		17853		517853	
1/8	1/8	1/4	1-1/2	2645008		514080		2650008		514198	
9/64	3/16	5/16	2	17849		517849		17854		517854	
5/32	3/16	5/16	2	2645010		514084		2650010		514202	
11/64	3/16	3/8	2	16319		516319		17855		517855	
3/16	3/16	3/8	2	2645012		514086		2650012		514204	
13/64	1/4	1/2	2-1/2	17850		517850		17856		517856	
7/32	1/4	1/2	2-1/2	2645014		514092		2650014		514208	
15/64	1/4	1/2	2-1/2	16320		516320		17857		517857	
1/4	1/4	1/2	2-1/2	2645016		514094		2650016		514210	
5/16	5/16	1/2	2-1/2	2645020		514098		2650020		514214	
3/8	3/8	9/16	2-1/2	2645024		514102		2650024		514218	
7/16	7/16	5/8	3	2645028		515915		2650028		515938	
1/2	1/2	5/8	3	2645032		514106		2650032		514222	
5/8	5/8	3/4	4	2645040		517851		2650040		517858	
3/4	3/4	1	4	2645048		517852		2650048		517859	

***Coating: AlTiN-Aluminum/ Titanium Nitride**

Ideal for high temperature cutting operations in many materials such as titanium and nickel alloys, Co-Cr-Mo, stainless steels, alloy steels and cast irons. When exposed to high temperature it forms a hard aluminum oxide layer.

As temperatures increase, the coating insulates the tool and rejects heat into chips.

- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.

SOLID CARBIDE

2 FLUTE & 4 FLUTE, DOUBLE END STANDARD LENGTH BALL END END MILLS WITH FLAT
SERIES 110:



- Used for radius and contouring part surfaces
- General purpose - square end.
Tolerance +.000/-0.002



Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 FI Uncoated		2 FI Coated*		4 FI Uncoated		4 FI Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/8	3/8	3/8	3-1/16	16271		516271		16264		516264	
3/16	3/8	1/2	3-1/4	16272		516272		16265		516265	
7/32	3/8	5/8	3-1/2	16317		516317		16318		516318	
1/4	3/8	5/8	3-1/2	16273		516273		16266		516266	
9/32	3/8	11/16	3-1/2	16274		-		16267		516267	
5/16	3/8	3/4	3-1/2	16275		516275		16268		516268	
3/8	3/8	3/4	3-1/2	16276		516276		16269		516269	
1/2	1/2	1	4	16277		516277		16270		516270	

SOLID CARBIDE

2 FLUTE & 4 FLUTE, DOUBLE END STUB LENGTH BALL END END MILLS
SERIES 110:



- Used for radius and contouring part surfaces.
- Short flute length. High rigidity and minimal tool deflection.
Tolerance +.000/-0.002



Mill Dia.	Shank Dia.	Flute Length	O.A.L.	2 FI Uncoated		2 FI Coated*		4 FI Uncoated		4 FI Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/8	1/8	1/4	1-1/2	14110		514110		14226		514226	
5/32	3/16	5/16	2	915916		515916		15939		515939	
3/16	3/16	3/8	2	14112		514112		914228		514228	
7/32	1/4	1/2	2-1/2	915917		-		15940		515940	
1/4	1/4	1/2	2-1/2	14114		514114		14230		514230	
5/16	5/16	1/2	2-1/2	14116		514116		14232		514232	
3/8	3/8	9/16	2-1/2	14118		-		14234		514234	
7/16	7/16	5/8	3	915918		515918		15941		515941	
1/2	1/2	5/8	3	14120		514120		14236		514236	

SOLID CARBIDE

3 FLUTE, 60 DEGREE HELIX STANDARD LENGTH END MILLS
SERIES 110:



- Used for stainless and high temperature alloy materials.
- High helix provides excellent shearing action.
- Made from premium submicron grain carbide.
Tolerance +.000/-0.002



Mill Dia.	Shank Dia.	Flute Length	O.A.L.	Uncoated		Coated*	
				Order No.	Price	Order No.	Price
3/16	13/16	5/8	2	910797		510797	
1/4	1/4	3/4	2-1/2	14238		514238	
5/16	5/16	13/16	2-1/2	14240		514240	
3/8	3/8	1	2-1/2	914242		514242	
7/16	7/16	1	3	14246		514246	
1/2	1/2	1	3	914248		514248	
9/16	9/16	1-1/4	3-1/2	14250		514250	
5/8	5/8	1-1/4	3-1/2	14252		514252	
3/4	3/4	1-1/2	4	14254		514254	
1	1	1-1/2	4	914256		514256	

***Coating: AlTiN-Aluminum/Titanium Nitride**

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- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.



SOLID CARBIDE

CNC 3 FLUTE TAPERED END MILLS



SERIES 862:

Ball End End Mills available. See our website or inquire.



TiAlN Coated End Mills available. See our website or inquire.

CUTTING TOOLS - END MILLS

1/2° Per Side					
Tip	Flute Length	Shank	Overall Length	Order No.	Price
1/32	1/4	1/8	2-1/2	8620050	
1/32	1/2	1/8	2-1/2	9620051	
3/64	1/4	1/8	2-1/2	8620052	
3/64	1/2	1/8	2-1/2	8620053	
1/16	1/2	1/8	2-1/2	8620054	
1/16	3/4	1/8	2-1/2	8620055	
1/16	1	1/8	3	9620056	
5/64	1/2	1/8	2-1/2	8620057	
5/64	3/4	1/8	2-1/2	8620058	
5/64	1	1/8	3	8621050	
3/32	3/4	1/8	2-1/2	8621150	
1/8	3/4	1/4	2-1/2	8621250	
1/8	1	1/4	3	8621350	
3/16	3/4	1/4	2-1/2	8621450	
3/16	1-1/4	1/4	3	8621550	
1/4	3/4	3/8	2-1/2	8621650	
1/4	1-1/4	3/8	3	8621750	

1° Per Side					
Tip	Flute Length	Shank	Overall Length	Order No.	Price
1/32	1/4	1/8	2-1/2	8620100	
1/32	1/2	1/8	2-1/2	0620101	
3/64	1/4	1/8	2-1/2	8620102	
3/64	1/2	1/8	2-1/2	8620103	
1/16	1/2	1/8	2-1/2	8620104	
1/16	3/4	1/8	2-1/2	8620105	
1/16	1	1/8	3	8620106	
5/64	1/2	1/8	2-1/2	8620107	
5/64	3/4	1/8	2-1/2	8620108	
5/64	1	1/8	3	8620109	
3/32	1/2	1/8	2-1/2	8620110	
3/32	1	1/4	3	8620111	
1/8	3/4	1/4	2-1/2	8620112	
1/8	1	1/4	3	8620113	
1/8	1-1/2	1/4	3	8620114	
3/16	3/4	1/4	2-1/2	8620115	
3/16	1-1/4	1/4	3	8620116	
3/16	1-3/4	1/4	3-1/2	8620117	
1/4	3/4	3/8	2-1/2	8620118	
1/4	1-1/4	3/8	3	8620119	
1/4	2	3/8	4	8620120	

1-1/2° Per Side					
Tip	Flute Length	Shank	Overall Length	Order No.	Price
1/32	1/4	1/8	2-1/2	8620150	
1/32	1/2	1/8	2-1/2	9620151	
3/64	1/4	1/8	2-1/2	8620152	
3/64	1/2	1/8	2-1/2	8620153	
1/16	1/2	1/8	2-1/2	8620154	
1/16	3/4	1/8	2-1/2	8620155	
1/16	1	3/16	3	8620156	
5/64	1/2	1/8	2-1/2	8620157	
5/64	3/4	1/8	2-1/2	8620158	
5/64	1	3/16	3	8620159	
3/32	1	1/4	3	9621150	
1/8	3/4	1/4	2-1/2	9921250	
1/8	1-1/2	1/4	3	9621350	
3/16	1-1/4	3/8	3	9621450	
3/16	1-3/4	3/8	3-1/2	9621550	
1/4	3/4	3/8	2-1/2	9621650	
1/4	1-1/4	3/8	3	9621750	

2° Per Side					
Tip	Flute Length	Shank	Overall Lgth	Order No.	Price
1/32	1/4	1/8	2-1/2	9620201	
1/32	1/2	1/8	2-1/2	8620202	
3/64	1/4	1/8	2-1/2	8620203	
3/64	1/2	1/8	2-1/2	8620204	
1/16	1/2	1/8	2-1/2	8620205	
1/16	3/4	1/8	2-1/2	8620206	
1/16	1	3/16	3	8620207	
5/64	1/2	1/8	2-1/2	8620208	
5/64	3/4	3/16	2-1/2	8620209	
5/64	1	3/16	3	8620210	
3/32	3/4	1/4	2-1/2	8620211	
3/32	1	1/4	3	8620212	
1/8	3/4	1/4	2-1/2	8620213	
1/8	1-1/4	1/4	3	8620214	
3/16	3/4	1/4	2-1/2	8620215	
3/16	1-1/4	3/8	3	9620216	
3/16	1-3/4	3/8	3-1/2	8620217	
1/4	3/4	3/8	2-1/2	8620218	
1/4	1-1/4	3/8	3	8620219	
1/4	2	1/2	4	8620220	

3° Per Side					
Tip	Flute Length	Shank	Overall Length	Order No.	Price
1/32	1/4	1/8	2-1/2	9620300	
1/32	1/2	1/8	2-1/2	9620301	
3/64	1/4	1/8	2-1/2	8620302	
3/64	1/2	1/8	2-1/2	8620303	
1/16	1/2	1/8	2-1/2	8620304	
1/16	3/4	3/16	2-1/2	8620305	
1/16	1	3/16	3	8620306	
5/64	1/2	3/16	2-1/2	8620307	
5/64	3/4	3/16	2-1/2	8620308	
5/64	1	3/16	3	8620309	
3/32	1	1/4	3	8620310	
3/32	1-1/2	1/4	3	8620311	
1/8	3/4	1/4	2-1/2	8620312	
1/8	1	1/4	3	8620313	
1/8	1-1/2	3/8	3-1/2	8620314	
1/8	2	3/8	3-1/2	8620315	
5/32	1-1/4	3/8	3	8620316	
5/32	1-3/4	3/8	3-1/2	8620317	
3/16	3/4	3/8	2-1/2	8620318	
3/16	1-1/4	3/8	3	8620319	
1/4	3/4	3/8	2-1/2	8620320	
1/4	1-1/4	3/8	3	9620321	
1/4	2	1/2	4	9620322	

4° Per Side					
Tip	Flute Length	Shank	Overall Length	Order No.	Price
3/32	1	1/4	3	9620401	
1/8	3/4	1/4	2-1/2	8620402	
1/8	1	3/8	3	8620403	
3/16	3/4	3/8	2-1/2	8620404	
3/16	1-1/4	3/8	3	8620405	
1/4	3/4	3/8	2-1/2	8620406	
1/4	1-1/4	1/2	3-1/2	8620407	

7° Per Side					
Tip	Flute Length	Shank	Overall Length	Order No.	Price
3/32	1	3/8	3	9620701	
1/8	1/2	3/8	2-1/2	8620702	
1/8	3/4	3/8	2-1/2	8620703	
1/8	1	3/8	3	8620704	
1/8	1-1/2	1/2	3-1/2	8620705	
5/32	3/4	3/8	2-1/2	8620706	
3/16	1-1/4	1/2	3-1/2	8620707	
1/4	3/4	1/2	2-1/2	8620708	
1/4	1-1/4	5/8	3-1/2	8620709	

10° Per Side					
Tip	Flute Length	Shank	Overall Length	Order No.	Price
3/32	1/2	3/8	2-1/2	8621001	
3/32	1-1/2	5/8	3-1/2	8621002	
1/8	3/4	3/8	2-1/2	8621003	
1/8	1	1/2	3	8621004	
1/8	1-1/4	5/8	3-1/2	8621005	
3/16	1-1/4	5/8	3-1/2	8621006	
1/4	3/4	5/8	3	8621007	
1/4	1	5/8	3	8621008	

5° Per Side					
Tip	Flute Length	Shank	Overall Length	Order No.	Price
1/32	1/4	1/8	2-1/2	9620501	
1/32	1/2	3/16	2-1/2	8620502	
3/64	1/4	1/8	2-1/2	8620503	
3/64	1/2	3/16	2-1/2	8620504	
1/16	1/2	1/4	2-1/2	8620505	
1/16	3/4	1/4	2-1/2	8620506	
1/16	1	1/4	3	8620507	
5/64	1/2	3/16	2-1/2	8620508	
5/64	3/4	1/4	2-1/2	8620509	
5/64	1	3/8	3	8620510	
3/32	3/4	1/4	2-1/2	8620511	
3/32	1	3/8	3	8620512	
3/32	1-1/2	3/8	3-1/2	8620513	
1/8	3/4	1/4	2-1/2	8620514	
1/8	1	3/8	3	8620515	
1/8	1-1/2	3/8	3-1/2	8620516	
3/16	3/4	3/8	2-1/2	8620517	
3/16	1-1/4	1/2	3	8620518	
1/4	3/4	1/2	2-1/2	8620519	
1/4	1	1/2	3	8620520	
1/4	1-1/4	1/2	3-1/2	9620521	
1/4	2	5/8	4	8620522	

15° Per Side					
Tip	Flute Length	Shank	Overall Length	Order No.	Price
1/8	1	3/4	3	8621501	
3/16	1	3/4	3	8621502	
1/4	1	3/4	3	8621503	

SOLID CARBIDE

**3 FLUTE & 4 FLUTE, SINGLE END
CORNER ROUNDING END MILLS**

SERIES 110:

- Can provide uniform finish on corners.
- Radius is form relieved



Radius	Minor Dia.	Shank Dia.	Order O.A.L.	3 FI Uncoated		3 FI Coated*		4 FI Uncoated		4 FI Coated*	
				Order No.	Price	Order No.	Price	Order No.	Price	Order No.	Price
1/32	1/8	3/16	2	16092		516092		16099		516099	
1/16	1/8	1/4	2-1/2	16093		516093		16100		516100	
3/32	3/16	3/8	2-1/2	16094		516094		16101		516101	
1/8	1/4	1/2	3	16095		516095		16102		4516102	
5/32	5/16	5/8	3-1/2	16096		516096		16103		516103	
3/16	3/8	3/4	4	16097		516097		16104		516104	
1/4	1/2	1	4	16098		516098		16105		516105	

SOLID CARBIDE

**2 FLUTE, SINGLE END
DRILL POINT END MILLS**

SERIES 110:



- Drill / Mills can be used for drilling, slotting, chamfering, and profile milling.
- Also available in 60° degree points; please inquire. Tolerance +.000/- .002



Angle Degree	Mill Dia.	Shank Dia.	Flute Length	O.A.L.	Uncoated		Coated*	
					Order No.	Price	Order No.	Price
82	1/4	1/4	3/4	2-1/2	16590		516590	
82	3/8	3/8	1	2-1/2	16591		516591	
82	1/2	1/2	1	3	16592		516592	
82	5/8	5/8	1-1/4	3-1/2	16593		516593	
82	3/4	3/4	1-1/2	4	16594		516594	

Angle Degree	Mill Dia.	Shank Dia.	Flute Length	O.A.L.	Uncoated		Coated*	
					Order No.	Price	Order No.	Price
90	1/8	1/8	1/2	1-1/2	16083		516083	
90	1/8	1/8	1/2	1-1/2	16703*		516703	
90	3/16	3/16	5/8	2	16084		516084	
90	3/16	3/16	5/8	2	16704*		516704	
90	1/4	1/4	3/4	2-1/2	16085		516085	
90	1/4	1/4	3/4	2-1/2	16712*		9516712	
90	5/16	5/16	13/16	2-1/2	16086		516086	
90	5/16	5/16	13/16	2-1/2	16705*		516705	
90	3/8	3/8	1	2-1/2	16087		516087	
90	3/8	3/8	1	2-1/2	16462*		516462	
90	7/16	7/16	1	2-3/4	16088		516088	
90	1/2	1/2	1	3	16089		516089	
90	1/2	1/2	1	3	16707*		516707	
90	5/8	5/8	1-1/4	3-1/2	16090		516090	
90	5/8	5/8	1-1/4	3-1/2	16706*		516706	
90	3/4	3/4	1-1/2	4	16091		516091	

- Has a sharp point for groove milling

***Coating: AlTiN-Aluminum/ Titanium Nitride**

Ideal for high temperature cutting operations in many materials such as titanium and nickel alloys, Co-Cr-Mo, stainless steels, alloy steels and cast irons. When exposed to high temperature it forms a hard aluminum oxide layer. As temperatures increase, the coating insulates the tool and rejects heat into chips.

- Very tough coating that will hold up in heavy and interrupted cuts.
- Ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.



DRILLING



SPOTTING



COUNTERSINK



CHAMFERING



SIDE MILLING

SOLID CARBIDE

SINGLE END - 2 & 4 FLUTE
SQUARE END END MILLS - DECIMAL SIZES
SERIES 293:



2 FLUTE



4 FLUTE

STAR USA Solid Carbide end mills are made from the highest quality Micrograin Carbide, Center Cutting and ground to precision tolerance for cleaner cut, better work piece finishes.

Tolerance: +.0005"/ -.0005"

Shank Dia. 1/8", Overall Length: 1-1/2"

Cutting Dia.	Flute Length	2 Flute Order No.	4 Flute Order No.	Price
0.0050	0.015	2520100	2525100	
0.0060	0.018	2520110	2525110	
0.0070	0.021	2520120	2525120	
0.0080	0.024	2520130	2525130	
0.0090	0.027	2520140	2525140	
0.0100	0.030	2520150	2525150	
0.0110	0.033	2520160	2525160	
0.0120	0.036	2520170	2525170	
0.0130	0.039	2520180	2525180	
0.0140	0.042	2520190	2525190	
0.0150	0.045	2520200	2525200	
0.0160	0.048	2520210	2525210	
0.0170	0.051	2520220	2525220	
0.0180	0.054	2520230	2525230	
0.0190	0.057	2520240	2525240	
0.0200	0.060	2520250	2525250	
0.0210	0.063	2520260	2525260	
0.0220	0.066	2520270	2525270	
0.0230	0.069	2520280	2525280	
0.0240	0.072	2520290	2525290	
0.0250	0.075	2520300	2525300	
0.0260	0.078	2520310	2525310	
0.0270	0.081	2520320	2525320	
0.0280	0.084	2520330	2525330	
0.0290	0.087	2520340	2525340	
0.0300	0.090	2520350	2525350	
0.0310	0.093	2520360	2525360	
0.0320	0.096	2520370	2525370	
0.0330	0.099	2520380	2525380	
0.0340	0.102	2520390	2525390	
0.0350	0.105	2520400	2525400	
0.0360	0.108	2520410	2525410	
0.0370	0.111	2520420	2525420	
0.0380	0.114	2520430	2525430	
0.0390	0.117	2520440	2525440	
0.0400	0.120	2520450	2525450	

Shank Dia. 1/8", Overall Length: 1-1/2"

Cutting Dia.	Flute Length	2 Flute Order No.	4 Flute Order No.	Price
0.0410	0.123	2520460	2525460	
0.0420	0.126	2520470	2525470	
0.0430	0.129	2520480	2525480	
0.0440	0.132	2520490	2525490	
0.0450	0.135	2520500	2525500	
0.0460	0.138	2520510	2525510	
0.0470	0.141	2520520	2525520	
0.0480	0.144	2520530	2525530	
0.0490	0.147	2520540	2525540	
0.0500	0.150	2520550	2525550	
0.0510	0.153	2520560	2525560	
0.0520	0.156	2520570	2525570	
0.0530	0.159	2520580	2525580	
0.0540	0.162	2520590	2525590	
0.0550	0.165	2520600	2525600	
0.0560	0.168	2520610	2525610	
0.0570	0.171	2520620	2525620	
0.0580	0.174	2520630	2525630	
0.0590	0.177	2520640	2525640	
0.0600	0.180	2520650	2525650	
0.0610	0.183	2520660	2525660	
0.0620	0.186	2520670	2525670	
0.0630	0.189	2520680	2525680	
0.0640	0.192	2520690	2525690	
0.0650	0.195	2501250	2501650	
0.0700	0.210	2501270	2501670	
0.0750	0.225	2501290	2501690	
0.0800	0.240	2501310	2501710	
0.0850	0.255	2501330	2501730	
0.0900	0.270	2501350	2501750	
0.0950	0.285	2501370	2501770	
0.1000	0.300	2501390	2501790	
0.1050	0.315	2501401	2501810	
0.1100	0.330	2501403	2501830	
0.1150	0.345	2501406	2501850	
0.1200	0.360	2501408	2501870	

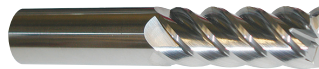
SOLID CARBIDE

HIGH PERFORMANCE FINISHING END MILLS

Regular / Long / Extra Long
SERIES 294:

5 OR 6 FLUTE, 45° HELIX

TIALN COATED



Cutting Diameter	Flute Length	OAL	5 FLUTE Order No.	6 FLUTE Order No.	Price
1/4	3/4	2-1/2	3805250	3806250	
1/4	1-1/8	3	3805253	3806253	
1/4	1-1/2	4	3805254	3806254	
5/16	3/4	2-1/2	3805312	3806312	
5/16	1-1/8	3	3805323	3806323	
5/16	1-5/8	4	3805324	3806324	
3/8	1	2-1/2	3805375	3806375	
3/8	1-1/8	3	3805373	3806373	
3/8	1-3/4	4	3805374	3806374	
7/16	1-3/16	2-3/4	3805437	3806437	
1/2	1-1/4	3	3805500	3806500	

Cutting Diameter	Flute Length	OAL	5 FLUTE Order No.	6 FLUTE Order No.	Price
1/2	2	4	3805504	3806504	
1/2	3	6	3805506	3806506	
5/8	1-5/8	3-1/2	3805625	3806625	
5/8	2-1/4	5	3805655	3806655	
5/8	3	6	3805626	3806626	
3/4	1-5/8	4	3805750	3806750	
3/4	2-1/4	5	3805755	3806755	
3/4	3	6	3805756	3806756	
1	2	4	3805100	3806100	
1	2-1/2	5	3805105	3806105	
1	3-1/4	6	3805106	3806106	
1	4	7	3805107	3806107	

The calculated geometry of our 5 Flute and 6 Flute, medium helix end mills have a stronger core for heavier cuts that run incredibly smooth. Designed to run specifically in exotic materials, stainless steel, carbon steel, titanium, inconel, etc. where you will achieve **Improved Finishes at Higher Speeds.** Standard with high heat resistance AlTiN coating.