

2-Flute Single End Mills

High Speed Steel & M42 8% Cobalt
Bright Finish & TiN Coated
Center Cutting

2-Flute end mills provide increased chip capacity and are recommended for milling slots, keyways and pockets. **Center Cutting** end allows for plunge cutting like a drill into solid material.

M42 8% Cobalt offers increased wear and heat resistance for abrasive and difficult materials, higher speeds and feeds and long life in production applications.

Titanium Nitride (TiN) Coating is an excellent coating for machining a wide variety of materials at greatly increased speeds and feeds. TiN coating increases tool surface hardness, lubricity, and heat resistance and resists chip welding.

Fraise à queue à rainurer simple

cortador vertical sencillloe



- List No. 1898 High Speed Steel
- List No. 1898G High Speed Steel TiN Coated
- List No. 4580 M42 8% Cobalt

STANDARD PACKAGE All sizes — 1 each

**Tool Coatings
Also Available**

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	1898	1898G	4580
					High Speed Steel EDP NO.	High Speed Steel TIN COATED EDP NO.	COBALT EDP NO.
1/8	.1250	3/8	3/8	2 5/16	43651	96150	44376
9/64	.1406	3/8	7/16	2 5/16	43704	—	—
5/32	.1562	3/8	7/16	2 5/16	43691	96152	44387
11/64	.1719	3/8	7/16	2 5/16	43705	—	—
3/16	.1875	3/8	7/16	2 5/16	43652	96154	44377
13/64	.2031	3/8	1/2	2 5/16	43706	—	—
7/32	.2187	3/8	1/2	2 3/8	43692	96156	44388
15/64	.2344	3/8	1/2	2 5/16	43707	—	—
1/4	.2500	3/8	1/2	2 5/16	43653	96158	44378
17/64	.2656	3/8	9/16	2 5/16	43708	—	—
9/32	.2812	3/8	9/16	2 3/8	43693	96160	44389
19/64	.2969	3/8	9/16	2 5/16	43709	—	—
5/16	.3125	3/8	9/16	2 5/16	43654	96162	44379
21/64	.3281	3/8	9/16	2 5/16	43710	—	—
11/32	.3437	3/8	9/16	2 5/16	43694	96164	44390
23/64	.3594	3/8	9/16	2 5/16	43711	—	—
3/8	.3750	3/8	9/16	2 5/16	43655	96166	44380
25/64	.3906	3/8	13/16	2 1/2	43712	—	—
13/32	.4062	3/8	13/16	2 1/2	43695	96168	44391
27/64	.4219	3/8	13/16	2 1/2	43713	—	—
7/16	.4375	3/8	13/16	2 1/2	43656	96170	44392
29/64	.4531	1/2	13/16	3	43714	—	—
15/32	.4687	1/2	13/16	3	43696	96172	44393
31/64	.4844	1/2	13/16	3	43715	—	—
1/2	.5000	3/8	13/16	2 1/2	43657	96183	—
1/2	.5000	1/2	1	3	43658	96174	44381
39/64	.5156	1/2	1	3	43716	—	—
17/32	.5312	1/2	1 1/8	3 1/8	43697	96184	—
39/64	.5469	1/2	1 1/8	3 1/8	43717	—	—
9/16	.5625	1/2	1 1/8	3 1/8	43659	96185	44394

(continued)

2-Flute Single End Mills (continued)

Fraise à queue à rainurer simple

cortador vertical sencilloe

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	1898	1898G	4580
					High Speed Steel EDP NO.	High Speed Steel TIN COATED EDP NO.	COBALT EDP NO.
37/64	.5781	1/2	1 1/8	3 1/8	43718	—	—
19/32	.5937	1/2	1 1/8	3 1/8	43698	—	—
39/64	.6094	1/2	1 1/8	3 1/8	43719	—	—
5/8	.6250	1/2	1 1/8	3 1/8	43660	96186	—
5/8	.6250	5/8	1 5/16	3 7/16	43661	96176	44382
1 1/16	.6875	1/2	1 5/16	3 9/16	43662	—	—
1 1/16	.6875	5/8	1 5/16	3 7/16	43663	96187	—
3/4	.7500	1/2	1 5/16	3 7/16	43664	—	—
3/4	.7500	5/8	1 5/16	3 7/16	43665	96188	—
3/4	.7500	3/4	1 5/16	3 9/16	43666	96178	44383
13/16	.8125	5/8	1 1/2	3 9/8	43667	—	—
13/16	.8125	3/4	1 1/2	3 3/4	43668	96189	—
7/8	.8750	5/8	1 1/2	3 3/4	43669	—	—
7/8	.8750	3/4	1 1/2	3 3/4	43670	96190	44395
7/8	.8750	7/8	1 1/2	3 3/4	43671	96191	—
15/16	.9375	5/8	1 1/2	3 3/4	43672	—	—
15/16	.9375	3/4	1 1/2	3 3/4	43673	—	—
15/16	.9375	7/8	1 1/2	3 3/4	43674	—	—
1	1.0000	5/8	1 1/2	3 3/4	43675	—	—
1	1.0000	3/4	1 1/2	3 3/4	43676	96192	44396
1	1.0000	7/8	1 1/2	3 3/4	43677	—	—
1	1.0000	1	1 5/8	4 1/8	43678	96182	44384
1 1/8	1.1250	3/4	1 5/8	3 7/8	43720	—	—
1 1/8	1.1250	7/8	1 5/8	3 7/8	43679	—	—
1 1/8	1.1250	1	1 5/8	4 1/8	43680	96193	—
1 1/4	1.2500	3/4	1 5/8	3 7/8	43721	—	—
1 1/4	1.2500	7/8	1 5/8	3 7/8	43681	—	—
1 1/4	1.2500	1	1 5/8	4 1/8	43682	96194	—
1 1/4	1.2500	1 1/4	1 5/8	4 1/8	43683	—	44385
1 3/8	1.3750	3/4	1 5/8	3 7/8	43722	—	—
1 3/8	1.3750	1	1 5/8	4 1/8	43684	96195	—
1 1/2	1.5000	3/4	1 5/8	3 7/8	43723	—	—
1 1/2	1.5000	1	1 5/8	4 1/8	43685	—	—
1 1/2	1.5000	1 1/4	1 5/8	4 1/8	43686	96196	44386
1 5/8	1.6250	1 1/4	1 5/8	4 1/8	43687	—	—
1 3/4	1.7500	3/4	1 5/8	3 7/8	43724	—	—
1 3/4	1.7500	1 1/4	1 5/8	4 1/8	43688	—	—
1 7/8	1.8750	1 1/4	1 5/8	4 1/8	43689	—	—
2	2.0000	3/4	1 5/8	3 7/8	43725	—	—
2	2.0000	1 1/4	1 5/8	4 1/8	43690	—	44397

TOOL COATING SERVICE

Tool Coatings enhance cutting tool performance for increased productivity and lower overall tooling cost. Benefits include increased surface hardness, lubricity & heat resistance and decreased chemical reactivity. Results include reduced friction & torque, higher speeds & feeds, increased tool life, decreased galling & chip welding and improved surface finish. **PLEASE INQUIRE.**

TiN — Titanium Nitride

TiCN — Titanium Carbonitride

TiAlN — Titanium Aluminum Nitride

AlTiN — Aluminum Titanium Nitride

CrN — Chromium Nitride

CrC — Chromium Carbide

DLC — Diamond Like Carbon

2-Flute Long Length Single End Mills

High Speed Steel & M42 8% Cobalt
Bright Finish & TiN Coated
Center Cutting

2-Flute end mills provide increased chip capacity and are recommended for milling slots, keyways and pockets. **Center Cutting** end allows for plunge cutting like a drill into solid material.

Long Length end mills provide a longer length of cut for deeper milling applications

M42 8% Cobalt offers increased wear and heat resistance for abrasive and difficult materials, higher speeds and feeds and long life in production applications.

Titanium Nitride (TiN) Coating is an excellent coating for machining a wide variety of materials at greatly increased speeds and feeds. TiN coating increases tool surface hardness, lubricity, and heat resistance and resists chip welding.

Fraise à queue à rainurer longue

cortador vertical largo



List No. 4599 High Speed Steel
List No. 4599G High Speed Steel TiN Coated
List No. 4584 M42 8% Cobalt

STANDARD PACKAGE All sizes — 1 each

Tool Coatings
Also Available

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	4599	4599G	4584
					High Speed Steel EDP NO.	High Speed Steel TIN COATED EDP NO.	COBALT EDP NO.
3/16	.1875	3/8	1 1/4	3 1/16	43001	96200	—
7/32	.2188	3/8	1 1/4	3 1/16	43002	—	—
1/4	.2500	3/8	1 1/4	3 1/16	43003	96201	—
9/32	.2812	3/8	1 3/8	3 1/8	43005	—	—
5/16	.3125	3/8	1 3/8	3 1/8	43006	96202	—
1 1/32	.3438	3/8	1 1/2	3 1/4	43007	—	—
3/8	.3750	3/8	1 1/2	3 1/4	44601	96203	45370
13/32	.4062	1/2	1 3/4	3 3/4	43008	—	—
7/16	.4375	1/2	1 3/4	3 3/4	43009	96204	—
15/32	.4688	1/2	2	4	43010	—	—
1/2	.5000	1/2	2	4	44602	96205	45371
9/16	.5625	5/8	2	4 1/8	43011	—	—
5/8	.6250	5/8	2	4 1/8	44603	96206	45372
1 1/16	.6875	3/4	2 1/4	4 1/2	43012	—	—
3/4	.7500	3/4	2 1/4	4 1/2	44604	96207	45373
13/16	.8125	7/8	2 1/2	4 3/4	43013	—	—
7/8	.8750	7/8	2 1/2	4 3/4	44605	96208	—
15/16	.9375	1	3	5 1/2	43014	—	—
1	1.0000	1	3	5 1/2	44606	96209	45374
1 1/8	1.1250	1	3	5 1/2	44607	—	—
1 1/4	1.2500	1	3	5 1/2	44608	—	—
1 1/4	1.2500	1 1/4	3	5 1/2	44609	—	—
1 3/8	1.3750	1	3	5 1/2	44610	—	—
1 1/2	1.5000	1 1/4	3	5 1/2	44611	—	—
1 3/4	1.7500	1 1/4	3	5 1/2	44613*	—	—
2	2.0000	1 1/4	3	5 1/2	44615*	—	—

* Available While Supplies Last

2-Flute Extended Length Single End Mills

High Speed Steel & M42 8% Cobalt
Bright Finish & TiN Coated
Center Cutting

2-Flute end mills provide increased chip capacity and are recommended for milling slots, keyways and pockets. **Center Cutting** end allows for plunge cutting like a drill into solid material.

Extended Length end mills are recommended for applications that require a longer reach but not a longer length of cut. The increased rigidity of the unfluted extended shank reduces deflection.

Fraise à queue à rainurer longue
cortador vertical largo



List No. 1899 High Speed Steel
List No. 1899G High Speed Steel TiN Coated
List No. 4585 M42 8% Cobalt

STANDARD PACKAGE All sizes — 1 each

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	LENGTH BELOW SHANK	OAL	1899 High Speed Steel EDP NO.	1899G High Speed Steel TIN COATED EDP NO.	4585 COBALT EDP NO.
1/8	.1250	3/8	3/8	13/16	29/16	43749	96215	45380
3/16	.1875	3/8	1/2	1 1/8	2 1/16	43750	96216	45381
1/4	.2500	3/8	5/8	1 1/2	3 1/16	43751	96217	45382
5/16	.3125	3/8	3/4	1 3/4	3 5/16	43752	96218	45383
3/8	.3750	3/8	3/4	1 3/4	3 5/16	43753	96219	45384
7/16	.4375	1/2	1	1 7/8	3 3/4	43747	96220	—
1/2	.5000	1/2	1	2 1/4	4	43754	96221	45385
5/8	.6250	5/8	1 3/8	2 3/4	4 5/8	43755	96222	—
3/4	.7500	3/4	1 5/8	3 3/8	5 3/8	43756	96223	45386
7/8	.8750	7/8	2	4	5 3/4	43748	96224	—
1	1.0000	1	2 1/2	5	7 1/4	43757	96225	45387

Metric 2-Flute Single End Mills

High Speed Steel
Center Cutting

2-Flute end mills provide increased chip capacity and are recommended for milling slots, keyways and pockets. **Center Cutting** end allows for plunge cutting like a drill into solid material.

Fraise à queue à rainurer simple cortador vertical sencillor



List No. 1898M

STANDARD PACKAGE All sizes — 1 each

DIA. MM	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	EDP NO.	DIA. MM	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	EDP NO.
3.0	.1181	3/8	3/8	2 5/16	43339	14.0	.5512	1/2	1 1/8	3 1/8	43319
4.0	.1575	3/8	7/16	2 5/16	43340	15.0	.5906	1/2	1 1/8	3 1/8	43321
5.0	.1968	3/8	1/2	2 5/16	43333	16.0	.6299	5/8	1 5/16	3 7/16	43322
6.0	.2362	3/8	1/2	2 5/16	43335	17.0	.6693	5/8	1 5/16	3 7/16	43323
7.0	.2756	3/8	9/16	2 5/16	43337	18.0	.7087	5/8	1 5/16	3 7/16	43324
8.0	.3150	3/8	9/16	2 5/16	43307	19.0	.7480	3/4	1 5/8	3 7/8	43325
9.0	.3543	3/8	9/16	2 5/16	43309	20.0	.7874	3/4	1 1/2	3 3/4	43326
10.0	.3937	3/8	1 3/16	2 1/2	43311	22.0	.8661	3/4	1 1/2	3 3/4	43328
11.0	.4331	3/8	1 3/16	2 1/2	43313	23.0	.9055	7/8	1 7/8	4 1/8	43329
12.0	.4724	3/8	1 3/16	2 1/2	43315	24.0	.9449	1	2	4 1/2	43330
13.0	.5118	1/2	1 1/8	3 1/8	43317	25.0	.9843	1	2	4 1/2	43331

**MORSE®
Modifications
& Specials**

Complete Tool Design
And Manufacturing Services
From Blueprint Specials to
Modified Regulars

DRILL-MILL™

M42 8% Cobalt

Specially designed to perform both drilling and milling operations with the same tool in vertical milling machine applications. Increased productivity with fewer tool changes.

DRILL-MILL performs: drilling, spotting countersinking, chamfering, slotting, side milling, profile milling and other drilling & milling operations

M42 8% Cobalt offers increased wear and heat resistance for abrasive and difficult materials, higher speeds and feeds and long life in production applications.

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH* OF CUT	OAL*	EDP NO.
1/8	.1250	3/8	3/8	2 5/16	44619
3/16	.1875	3/8	7/16	2 5/16	44620
1/4	.2500	3/8	5/8	2 7/16	44621
5/16	.3125	3/8	23/32	2 15/32	44622
3/8	.3750	3/8	3/4	2 1/2	44623
7/16	.4375	3/8	1 1/32	2 23/32	44624
1/2	.5000	1/2	1 1/4	3 1/4	44625

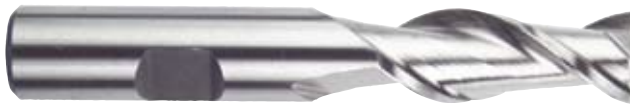
* Lengths include the 90° conical cutting point.

High Helix 2-Flute Single End Mills

High Speed Steel — Center Cutting 37° Helix Angle

2-Flute end mills provide increased chip capacity and are recommended for milling slots, keyways and pockets. **Center Cutting** end allows for plunge cutting like a drill into solid material.

High Helix end mills are recommended for aluminum, magnesium, zinc alloys and other soft non-ferrous materials. The higher helix angle provides a positive smoother cutting shearing action and enhanced chip evacuation.



List No. 1920 Regular Length

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	EDP NO.
1/4	.2500	3/8	5/8	2 7/16	44021
5/16	.3125	3/8	3/4	2 1/2	44022
3/8	.3750	3/8	3/4	2 1/2	44023
7/16	.4375	3/8	1	2 11/16	44024
1/2	.5000	1/2	1 1/4	3 1/4	44025
5/8	.6250	5/8	1 5/8	3 3/4	44026
3/4	.7500	3/4	1 5/8	3 7/8	44027
7/8	.8750	7/8	1 7/8	4 1/8	44028
1	1.0000	1	2	4 1/2	44029
1 1/4	1.2500	1 1/4	2	4 1/2	44030
1 1/2	1.5000	1 1/4	2	4 1/2	44031*

* Available While Supplies Last

Fraise de forage

Broca de fresado



List No. 1980

**90° Point Angle
2-Flute
30° Right Hand Helix**

**Tool Coatings
Also Available**

STANDARD PACKAGE All sizes — 1 each

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH* OF CUT	OAL*	EDP NO.
9/16	.5625	1/2	1 13/32	3 13/32	44626
5/8	.6250	5/8	1 5/8	3 3/4	44627
1 1/16	.6875	5/8	1 21/32	3 25/32	44628
3/4	.7500	3/4	1 11/16	3 15/16	44629
13/16	.8125	3/4	1 29/32	4 5/32	44630
7/8	.8750	3/4	1 15/16	4 3/16	44631
15/16	.9375	3/4	1 31/32	4 7/32	44632
1	1.0000	3/4	2	4 1/4	44633

Fraise à queue à rainurer à hélice serrée

cortador vertical con hélice alta



List No. 1921 Long Length

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	EDP NO.
1/4	.2500	3/8	1 1/4	3 1/16	44051
5/16	.3125	3/8	1 3/8	3 1/8	44052
3/8	.3750	3/8	1 1/2	3 1/4	44053
7/16	.4375	1/2	1 3/4	3 3/4	44054
1/2	.5000	1/2	2	4	44055
5/8	.6250	5/8	2 1/2	4 5/8	44056
3/4	.7500	3/4	3	5 1/4	44057
7/8	.8750	7/8	3 1/2	5 3/4	44058
1	1.0000	1	4	6 1/2	44059
1 1/4	1.2500	1 1/4	4	6 1/2	44060
1 1/2	1.5000	1 1/4	4	6 1/2	44061
2	2.0000	1 1/4	4	6 1/2	44062



List No. 1922 Extra Long Length

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	EDP NO.
1/4	.2500	3/8	1 3/4	3 3/16	44076
5/16	.3125	3/8	2	3 3/4	44077
3/8	.3750	3/8	2 1/2	4 1/4	44078
1/2	.5000	1/2	3	5	44079
5/8	.6250	5/8	4	6 1/8	44080
3/4	.7500	3/4	4	6 1/4	44081
1	1.0000	1	6	8 1/2	44082