

2-Flute Ball Nose Single End Mills

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

Ball Nose end mills are designed for milling die cavities, fillets, round bottomed holes and radius bottom slots. **2-Flute** end mills provide increased chip capacity. **Center Cutting** end allows for plunge cutting like a drill into solid material.

Fraise cylindrique deux tailles à bout hémisphérique
cortador vertical con punta esférica



List No. 1887 High Speed Steel
List No. 1887G High Speed Steel TiN Coated
List No. 4583 M42 8% Cobalt

STANDARD All sizes — 1 each
PACKAGE

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	1887	1887G	4583
					High Speed Steel	High Speed Steel	COBALT
					EDP NO.	TIN COATED EDP NO.	EDP NO.
1/8	.1250	3/8	3/8	2 5/16	43111	96460	44401
3/16	.1875	3/8	1/2	2 3/8	43112	96461	44402
1/4	.2500	3/8	5/8	2 7/16	43113	96462	44403
5/16	.3125	3/8	3/4	2 1/2	43114	96463	44404
3/8	.3750	3/8	3/4	2 1/2	43115	96464	44405
7/16	.4375	1/2	1	3	43116	96465	—
1/2	.5000	1/2	1	3	43117	96466	44406
9/16	.5625	1/2	1 1/8	3 1/8	43118	—	—
5/8	.6250	5/8	1 3/8	3 1/2	43120	96467	44407
3/4	.7500	3/4	1 5/8	3 3/8	43122	96468	44408
13/16	.8125	3/4	2	4 1/4	43128	—	—
7/8	.8750	7/8	2	4 1/4	43123	96469	44412
15/16	.9375	3/4	2 1/4	4 1/2	43129	—	—
1	1.0000	1	2 1/4	4 3/4	43124	96470	44409
1 1/8	1.1250	1	2 1/4	4 3/4	43125	—	—
1 1/4	1.2500	1 1/4	2 1/2	5	43126	—	44410
1 1/2	1.5000	1 1/4	2 1/2	5	43127	—	44411

2-Flute Ball Nose Extended Length Single End Mills

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

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

Fraise cylindrique deux tailles à bout hémisphérique
cortador vertical con punta esférica



List No. 1888 High Speed Steel
List No. 1888G High Speed Steel TiN Coated
List No. 4590 M42 8% Cobalt

STANDARD All sizes — 1 each
PACKAGE

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	LENGTH BELOW SHANK	OAL	1888	1888G	4590
						High Speed Steel	High Speed Steel	COBALT
						EDP NO.	TIN COATED EDP NO.	EDP NO.
1/8	.1250	3/8	3/8	1 3/16	2 9/16	43136	96480	45405
3/16	.1875	3/8	1/2	1 1/8	2 1 1/16	43137	96481	45406
1/4	.2500	3/8	5/8	1 1/2	3 1/16	43138	96482	45407
5/16	.3125	3/8	3/4	1 3/4	3 5/16	43139	96483	45408
3/8	.3750	3/8	3/4	1 3/4	3 5/16	43140	96484	45409
7/16	.4375	1/2	1	1 7/8	3 3/4	43141	96485	—
1/2	.5000	1/2	1	2 1/4	4	43142	96486	45410
5/8	.6250	5/8	1 3/8	2 3/4	4 5/8	43143	—	—
3/4	.7500	3/4	1 5/8	3 3/8	5 3/8	43144	96487	45411
7/8	.8750	7/8	2	4	6	43148	—	—
1	1.0000	1	2 1/2	5	7 1/4	43146	96488	45412
1 1/4	1.2500	1 1/4	3	5	7 1/4	43147	—	—

2-Flute Ball Nose Double End Mills

High Speed Steel
Bright Finish & TiN Coated
Center Cutting

Ball Nose end mills are designed for milling die cavities, fillets, round bottom holes and radius bottom slots. **2-Flute** end mills provide increased chip capacity. **Center Cutting** end allows for plunge cutting like a drill into solid material.

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List No. 1889 High Speed Steel
List No. 1889G High Speed Steel TiN Coated

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.

STANDARD PACKAGE All sizes — 1 each

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	1889	1889G
					High Speed Steel EDP NO.	High Speed Steel TIN COATED EDP NO.
1/8	.1250	3/8	3/8	3 1/16	43161	96495
5/32	.1562	3/8	7/16	3 1/8	43172	—
3/16	.1875	3/8	7/16	3 1/8	43162	96496
7/32	.2188	3/8	1/2	3 1/8	43173	—
1/4	.2500	3/8	1/2	3 1/8	43163	96497
9/32	.2812	3/8	9/16	3 1/8	43174	—
5/16	.3125	3/8	9/16	3 1/8	43164	96498
11/32	.3438	3/8	9/16	3 1/8	43175	—
3/8	.3750	3/8	9/16	3 1/8	43165	96499
13/32	.4062	1/2	13/16	3 3/4	43176	—
7/16	.4375	1/2	13/16	3 3/4	43166	—
1/2	.5000	1/2	13/16	3 3/4	43167	96500
5/8	.6250	5/8	1 1/8	5	43168	—
3/4	.7500	3/4	1 5/16	5	43169	—
7/8	.8750	7/8	1 9/16	6 1/8	43170	—
1	1.0000	1	1 5/8	6 3/8	43171	—

Tool Coatings
Also Available

MACHINING APPLICATION SOLUTIONS

High Performance Tools

Premium grade cutting tools specially designed for tougher machining and production applications where optimal tool performance and longer tool life is a requirement.

- High Performance Tools
- Production Tools
- Special Application Tools

Production Tools

A full range of high speed steel, cobalt, carbide tipped and solid carbide cutting tools designed for consistent performance in production applications.

Special Application Tools

When your application requires special custom designed cutting tools.

Engineered cutting tools optimized for lower overall machining costs.

2-Flute Miniature Ball Nose Stub Length Double End Mills

$\frac{3}{16}$ " Dia. Shank — Center Cutting
High Speed Steel & M42 8% Cobalt

Miniature $\frac{3}{16}$ " Shank ball nose end mills are designed for small diameter milling of die cavities, fillets, round bottom holes and radius bottom slots. **Center Cutting** end allows for plunge cutting like a drill into solid material. For maximum rigidity, select the shortest possible length of cut for your application.

DIA.	DEC. EQUIV.	LENGTH OF CUT	OAL	4570	4570C
				High Speed Steel EDP NO.	COBALT EDP NO.
$\frac{1}{16}$	.0625	$\frac{3}{32}$	2	44340	43210
$\frac{3}{32}$	.0938	$\frac{9}{64}$	2	44341	43212
$\frac{1}{8}$	.1250	$\frac{3}{16}$	2	44342	43214
$\frac{5}{32}$	.1562	$\frac{15}{64}$	2	44343	43216
$\frac{3}{16}$	.1875	$\frac{9}{32}$	2	44344	43218

Tool Coatings
Also Available

Fraise cylindrique deux tailles à bout hémisphérique
cortador vertical con punta esférica



List No. 4570 High Speed Steel
List No. 4570C M42 8% Cobalt

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

STANDARD PACKAGE All sizes — 1 each

2-Flute Miniature Ball Nose Regular Length Double End Mills

$\frac{3}{16}$ " Dia. Shank — Center Cutting
High Speed Steel & M42 8% Cobalt

Miniature $\frac{3}{16}$ " Shank ball nose end mills are designed for small diameter milling of die cavities, fillets, round bottom holes and radius bottom slots. **Center Cutting** end allows for plunge cutting like a drill into solid material. For maximum rigidity, select the shortest possible length of cut for your application.

DIA.	DEC. EQUIV.	LENGTH OF CUT	OAL	1890	1890C
				High Speed Steel EDP NO.	COBALT EDP NO.
$\frac{1}{32}$	.0312	$\frac{3}{32}$	$2\frac{1}{4}$	43186	—
$\frac{1}{16}$	.0625	$\frac{3}{16}$	$2\frac{1}{4}$	43188	43200
$\frac{3}{32}$	.0938	$\frac{9}{32}$	$2\frac{1}{4}$	43190	43202
$\frac{1}{8}$	.1250	$\frac{3}{8}$	$2\frac{1}{4}$	43192	43204
$\frac{5}{32}$	.1562	$\frac{7}{16}$	$2\frac{1}{4}$	43194	43206
$\frac{3}{16}$	.1875	$\frac{1}{2}$	$2\frac{1}{4}$	43196	43208

Fraise cylindrique deux tailles à bout hémisphérique
cortador vertical con punta esférica



List No. 1890 High Speed Steel
List No. 1890C M42 8% Cobalt

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

STANDARD PACKAGE All sizes — 1 each

**MORSE®
Modifications
& Specials**

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

Multi-Flute Ball Nose Single End Mills

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

Ball Nose end mills are designed for milling die cavities, fillets, round bottom holes and radius bottom slots.

Multi-Flute end mills offer improved surface finish and feature greater core strength for reduced tool deflection.

Center Cutting end allows for plunge cutting like a drill into solid material.

Fraise cylindrique deux tailles à bout hémisphérique
cortador vertical con punta esférica



List No. 4554 High Speed Steel
List No. 4554G High Speed Steel TiN Coated
List No. 4589 M42 8% Cobalt

STANDARD PACKAGE All sizes — 1 each

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	NO. OF FLUTES	4554	4554G	4589
						High Speed Steel	High Speed Steel	COBALT
						EDP NO.	TIN COATED EDP NO.	EDP NO.
1/8	.1250	3/8	3/8	2 5/16	4	—	—	44451
3/16	.1875	3/8	1/2	2 3/8	4	—	—	44452
1/4	.2500	3/8	3/4	2 9/16	4	44274	96512	44453
5/16	.3125	3/8	1	2 3/4	4	44275	96513	44454
3/8	.3750	3/8	1	2 3/4	4	44276	96514	44455
1/2	.5000	1/2	1 1/4	3 1/4	4	44277	96515	44456
5/8	.6250	5/8	1 5/8	3 3/4	4	44278	96516	44457
3/4	.7500	3/4	1 5/8	3 7/8	4	44279	96517	44458
7/8	.8750	7/8	1 7/8	4 1/8	4	44280	96518	—
1	1.0000	1	2	4 1/2	4	44281	96519	44460
1	1.0000	1	2	4 1/2	6	—	—	44461

Multi-Flute Long Length Ball Nose Single End Mills

High Speed Steel
Bright Finish & TiN Coated
Center Cutting

Fraise cylindrique deux tailles à bout hémisphérique
cortador vertical con punta esférica



List No. 4555 High Speed Steel
List No. 4555G High Speed Steel TiN Coated

STANDARD PACKAGE All sizes — 1 each

DIA.	DEC. EQUIV.	SHANK DIA.	LENGTH OF CUT	OAL	NO. OF FLUTES	4555	4555G
						High Speed Steel	High Speed Steel
						EDP NO.	TIN COATED EDP NO.
1/4	.2500	3/8	1 1/4	3 1/16	4	44298	96525
5/16	.3125	3/8	1 3/8	3 1/8	4	44299	96526
3/8	.3750	3/8	1 1/2	3 1/4	4	44300	96527
1/2	.5000	1/2	2	4	4	44301	96528
5/8	.6250	5/8	2 1/2	4 5/8	4	44302	96529
3/4	.7500	3/4	3	5 1/4	4	44303	96530
1	1.0000	1	4	6 1/2	4	44304	—
1 1/4	1.2500	1 1/4	4	6 1/2	4	44305	—
1 1/2	1.5000	1 1/4	4	6 1/2	4	44306	—