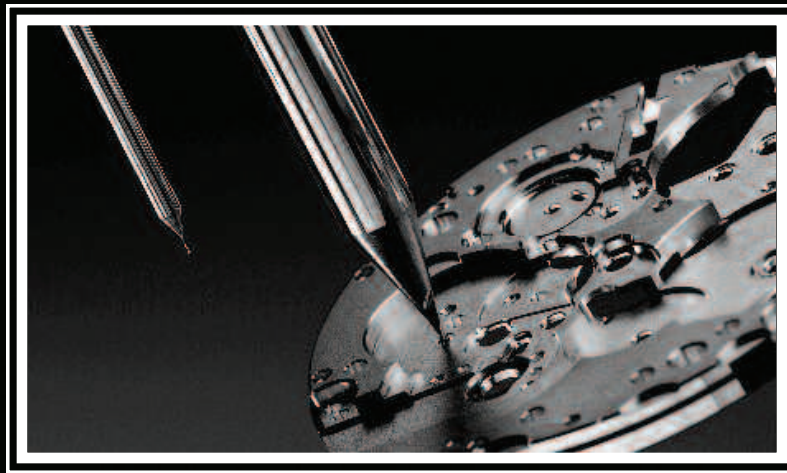


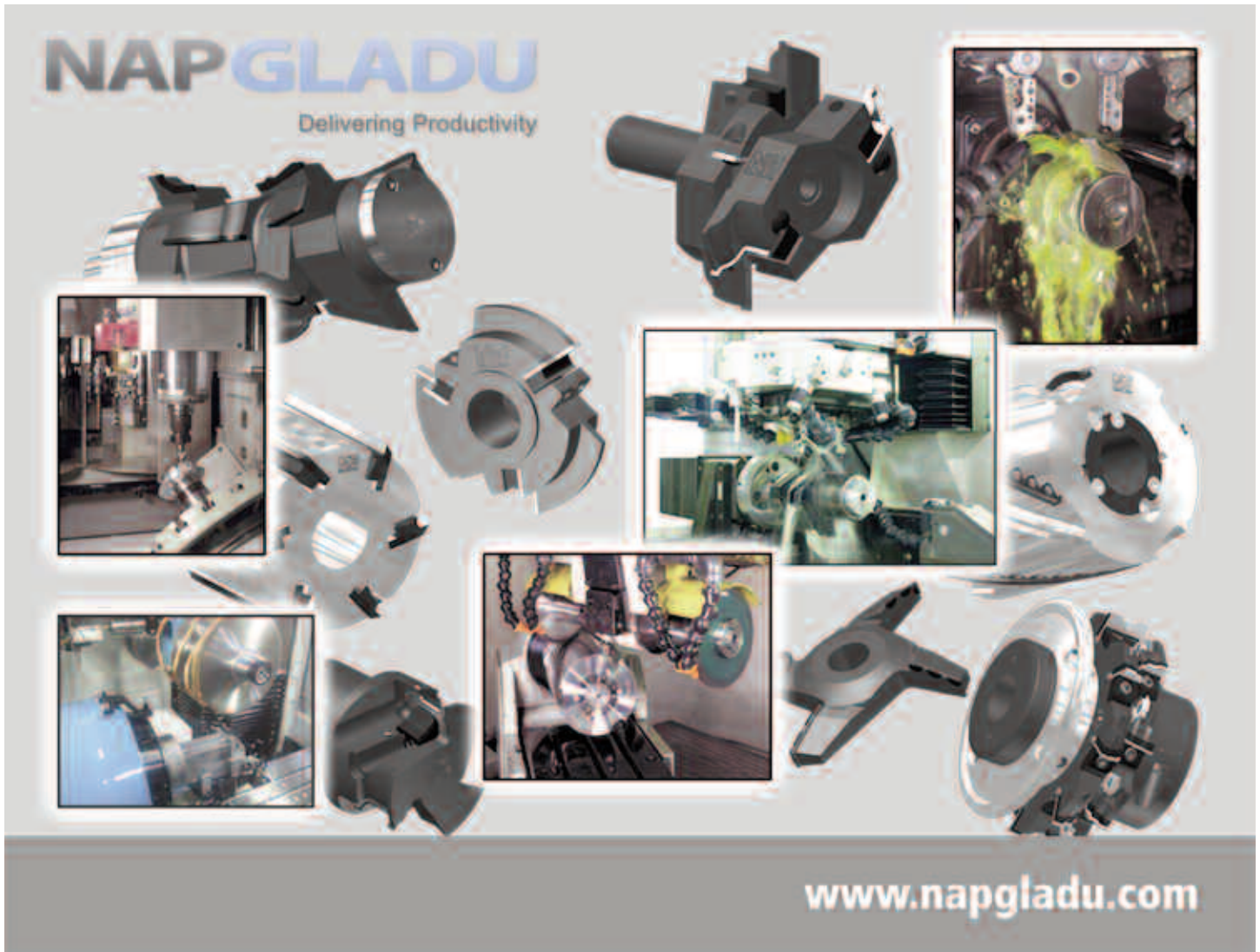
# NAPGLADU

Delivering Productivity

# Micro Tools



# Customer Focused & Technology Driven



With a base of solid experience, the latest in technological advancements and a focus on the needs of the customer, NAP Gladu surpasses its goal of providing more than just a cutting tool. We are your application engineers, engineering department, problem solvers and partners in the drive to success.

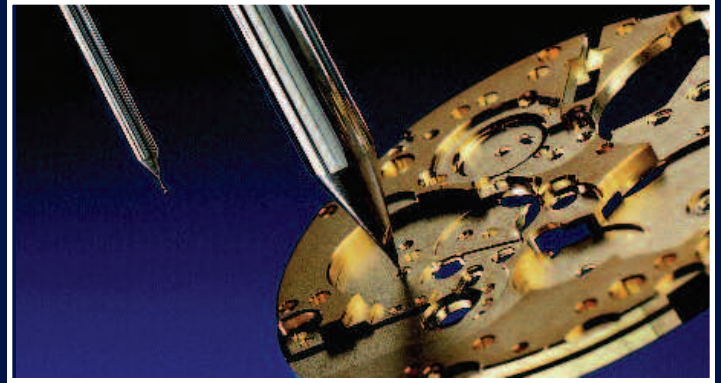
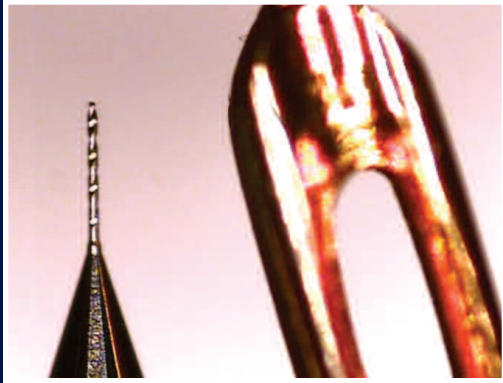
## Technology: The Competitive Edge

Interactive design...application engineering...problem solving: NAP Gladu dramatically expands your capabilities. With one of the most sophisticated engineering departments in the industry, NAP Gladu is able to provide solutions to your most challenging tooling needs. Our network of computer-controlled systems is capable of direct electronic feeds from off-site locations ... including yours. This enables us to measure tool patterns with precision for exact pattern duplication every time. When it comes to designing and manufacturing tooling for your specific application, NAP Gladu uses its experience, knowledge and technical expertise to ensure that you get tooling that meets or exceeds your expectations -- guaranteed.

## Service: Speed & Precision

NAP Gladu offers unmatched reliability in the delivery of new and serviced tools. Customers depend on us for fast turnaround times. What's more, they can count on NAP Gladu to do the job right the first time, every time.

# CUSTOM TOOLING ALSO AVAILABLE



## NAPGLADU

Delivering Productivity

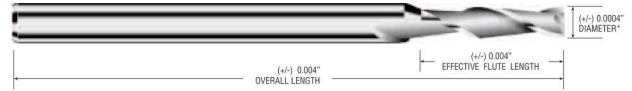
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### STANDARD LENGTH / STUB LENGTH

#### Center Cutting End Mills

- Submicron grade solid carbide.
- 30° helix for general purpose applications.
- Coatings available upon request.



### STANDARD - FRACTIONS

PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0001	1/64	.047	1-1/2	1/8
ESM-0002	1/32	.094	1-1/2	1/8
ESM-0003	3/64	.141	1-1/2	1/8
ESM-0004	1/16	.188	1-1/2	1/8
ESM-0005	5/64	.234	1-1/2	1/8
ESM-0006	3/32	.281	1-1/2	1/8
ESM-0007	7/64	.328	1-1/2	1/8
ESM-0008	1/8	.375	1-1/2	1/8
ESM-0009	9/64	.500	2	3/16
ESM-0010	5/32	.500	2	3/16
ESM-0011	11/64	.563	2	3/16
ESM-0012	3/16	.563	2	3/16
ESM-0013	13/64	.625	2-1/2	1/4
ESM-0014	7/32	.625	2-1/2	1/4
ESM-0015	15/64	.750	2-1/2	1/4
ESM-0016	1/4	.750	2-1/2	1/4

### STUB - FRACTIONS

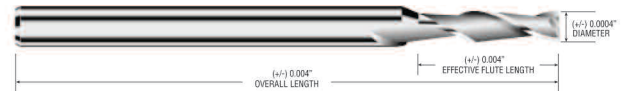
PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0051	1/64	.023	1-1/2	1/8
ESM-0052	1/32	.047	1-1/2	1/8
ESM-0053	3/64	.070	1-1/2	1/8
ESM-0054	1/16	.094	1-1/2	1/8
ESM-0055	5/64	.117	1-1/2	1/8
ESM-0056	3/32	.141	1-1/2	1/8
ESM-0057	7/64	.164	1-1/2	1/8
ESM-0058	1/8	.188	1-1/2	1/8
ESM-0059	9/64	.313	2	3/16
ESM-0060	5/32	.313	2	3/16
ESM-0061	11/64	.375	2	3/16
ESM-0062	3/16	.375	2	3/16
ESM-0063	13/64	.438	2	1/4
ESM-0064	7/32	.438	2	1/4
ESM-0065	15/64	.500	2	1/4
ESM-0066	1/4	.500	2	1/4

\* 9/64 or larger is + .000" / - .002"

### STANDARD LENGTH

#### Center Cutting End Mills

- Submicron grade solid carbide.
- 30° helix for general purpose applications.
- Coatings available upon request.



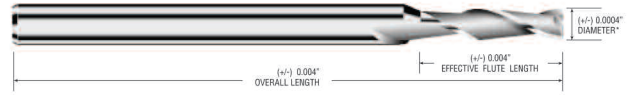
### DECIMALS

PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0101	.005	.015	1-1/2	1/8
ESM-0102	.006	.018	1-1/2	1/8
ESM-0103	.007	.021	1-1/2	1/8
ESM-0104	.008	.024	1-1/2	1/8
ESM-0105	.009	.027	1-1/2	1/8
ESM-0106	.010	.030	1-1/2	1/8
ESM-0107	.011	.033	1-1/2	1/8
ESM-0108	.012	.036	1-1/2	1/8
ESM-0109	.013	.039	1-1/2	1/8
ESM-0110	.014	.042	1-1/2	1/8
ESM-0111	.015	.045	1-1/2	1/8
ESM-0112	.016	.048	1-1/2	1/8
ESM-0113	.017	.051	1-1/2	1/8
ESM-0114	.018	.054	1-1/2	1/8
ESM-0115	.019	.057	1-1/2	1/8
ESM-0116	.020	.060	1-1/2	1/8
ESM-0117	.021	.063	1-1/2	1/8
ESM-0118	.022	.066	1-1/2	1/8
ESM-0119	.023	.069	1-1/2	1/8
ESM-0120	.024	.072	1-1/2	1/8
ESM-0121	.025	.075	1-1/2	1/8
ESM-0122	.026	.078	1-1/2	1/8
ESM-0123	.027	.081	1-1/2	1/8
ESM-0124	.028	.084	1-1/2	1/8
ESM-0125	.029	.087	1-1/2	1/8
ESM-0126	.030	.090	1-1/2	1/8
ESM-0127	.035	.105	1-1/2	1/8
ESM-0128	.040	.120	1-1/2	1/8
ESM-0129	.045	.135	1-1/2	1/8
ESM-0130	.050	.150	1-1/2	1/8
ESM-0131	.055	.165	1-1/2	1/8
ESM-0132	.060	.180	1-1/2	1/8
ESM-0133	.065	.195	1-1/2	1/8
ESM-0134	.070	.210	1-1/2	1/8
ESM-0135	.075	.225	1-1/2	1/8
ESM-0136	.080	.240	1-1/2	1/8
ESM-0137	.085	.255	1-1/2	1/8
ESM-0138	.090	.270	1-1/2	1/8
ESM-0139	.095	.285	1-1/2	1/8
ESM-0140	.100	.300	1-1/2	1/8

### STUB LENGTH

#### Center Cutting End Mills

- Submicron grade solid carbide.
- 30° helix for general purpose applications.
- Coatings available upon request.



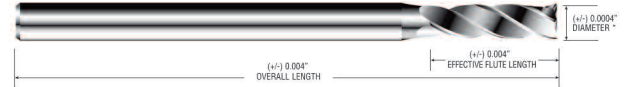
### DECIMALS

PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0151	.005	.008	1-1/2	1/8
ESM-0152	.006	.009	1-1/2	1/8
ESM-0153	.007	.011	1-1/2	1/8
ESM-0154	.008	.012	1-1/2	1/8
ESM-0155	.009	.014	1-1/2	1/8
ESM-0156	.010	.015	1-1/2	1/8
ESM-0157	.011	.017	1-1/2	1/8
ESM-0158	.012	.018	1-1/2	1/8
ESM-0159	.013	.020	1-1/2	1/8
ESM-0160	.014	.021	1-1/2	1/8
ESM-0161	.015	.023	1-1/2	1/8
ESM-0162	.016	.024	1-1/2	1/8
ESM-0163	.017	.026	1-1/2	1/8
ESM-0164	.018	.027	1-1/2	1/8
ESM-0165	.019	.029	1-1/2	1/8
ESM-0166	.020	.030	1-1/2	1/8
ESM-0167	.021	.032	1-1/2	1/8
ESM-0168	.022	.033	1-1/2	1/8
ESM-0169	.023	.035	1-1/2	1/8
ESM-0170	.024	.036	1-1/2	1/8
ESM-0171	.025	.038	1-1/2	1/8
ESM-0172	.026	.039	1-1/2	1/8
ESM-0173	.027	.041	1-1/2	1/8
ESM-0174	.028	.042	1-1/2	1/8
ESM-0175	.029	.044	1-1/2	1/8
ESM-0176	.030	.045	1-1/2	1/8
ESM-0177	.035	.053	1-1/2	1/8
ESM-0178	.040	.060	1-1/2	1/8
ESM-0179	.045	.068	1-1/2	1/8
ESM-0180	.050	.075	1-1/2	1/8
ESM-0181	.055	.083	1-1/2	1/8
ESM-0182	.060	.090	1-1/2	1/8
ESM-0183	.065	.098	1-1/2	1/8
ESM-0184	.070	.105	1-1/2	1/8
ESM-0185	.075	.113	1-1/2	1/8
ESM-0186	.080	.120	1-1/2	1/8
ESM-0187	.085	.128	1-1/2	1/8
ESM-0188	.090	.135	1-1/2	1/8
ESM-0189	.095	.143	1-1/2	1/8
ESM-0190	.100	.150	1-1/2	1/8

### STANDARD LENGTH

#### Center Cutting End Mills

- Submicron grade solid carbide.
- 30° helix for general purpose applications.
- Coatings available upon request.



### FRACTIONS

PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0201	1/32	.094	1-1/2	1/8
ESM-0202	3/64	.141	1-1/2	1/8
ESM-0203	1/16	.188	1-1/2	1/8
ESM-0204	5/64	.234	1-1/2	1/8
ESM-0205	3/32	.281	1-1/2	1/8
ESM-0206	7/64	.328	1-1/2	1/8
ESM-0207	1/8	.375	1-1/2	1/8
ESM-0208	9/64	.500	2	3/16
ESM-0209	5/32	.500	2	3/16
ESM-0210	11/64	.563	2	3/16
ESM-0211	3/16	.563	2	3/16
ESM-0212	13/64	.625	2-1/2	1/4
ESM-0213	7/32	.625	2-1/2	1/4
ESM-0214	15/64	.750	2-1/2	1/4
ESM-0215	1/4	.750	2-1/2	1/4

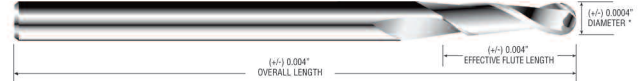
### DECIMALS

PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0251	.010	.030	1-1/2	1/8
ESM-0252	.015	.045	1-1/2	1/8
ESM-0253	.020	.060	1-1/2	1/8
ESM-0254	.025	.075	1-1/2	1/8
ESM-0255	.030	.090	1-1/2	1/8
ESM-0256	.035	.105	1-1/2	1/8
ESM-0257	.040	.120	1-1/2	1/8
ESM-0258	.045	.135	1-1/2	1/8
ESM-0259	.050	.150	1-1/2	1/8
ESM-0260	.055	.165	1-1/2	1/8
ESM-0261	.060	.180	1-1/2	1/8
ESM-0262	.065	.195	1-1/2	1/8
ESM-0263	.070	.210	1-1/2	1/8
ESM-0264	.075	.225	1-1/2	1/8
ESM-0265	.080	.240	1-1/2	1/8
ESM-0266	.085	.255	1-1/2	1/8
ESM-0267	.090	.270	1-1/2	1/8
ESM-0268	.095	.285	1-1/2	1/8
ESM-0269	.100	.300	1-1/2	1/8

\* 9/64 or larger is + .000" / - .002"

### STANDARD LENGTH Center Cutting End Mills

- Submicron grade solid carbide.
- 30° helix for general purpose applications.
- Coatings available upon request.



### FRACTIONS

PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0301	1/64	.047	1-1/2	1/8
ESM-0302	1/32	.094	1-1/2	1/8
ESM-0303	3/64	.141	1-1/2	1/8
ESM-0304	1/16	.188	1-1/2	1/8
ESM-0305	5/64	.234	1-1/2	1/8
ESM-0306	3/32	.281	1-1/2	1/8
ESM-0307	7/64	.328	1-1/2	1/8
ESM-0308	1/8	.375	1-1/2	1/8
ESM-0309	9/64	.500	2	3/16
ESM-0310	5/32	.500	2	3/16
ESM-0311	11/64	.563	2	3/16
ESM-0312	3/16	.563	2	3/16
ESM-0313	13/64	.625	2-1/2	1/4
ESM-0314	7/32	.625	2-1/2	1/4
ESM-0315	15/64	.750	2-1/2	1/4
ESM-0316	1/4	.750	2-1/2	1/4

### DECIMALS

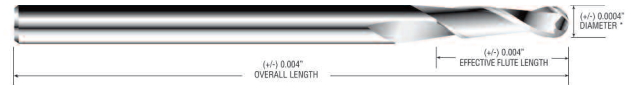
PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0351	.010	.030	1-1/2	1/8
ESM-0352	.015	.045	1-1/2	1/8
ESM-0353	.020	.060	1-1/2	1/8
ESM-0354	.025	.075	1-1/2	1/8
ESM-0355	.030	.090	1-1/2	1/8
ESM-0356	.035	.105	1-1/2	1/8
ESM-0357	.040	.120	1-1/2	1/8
ESM-0358	.045	.135	1-1/2	1/8
ESM-0359	.050	.150	1-1/2	1/8
ESM-0360	.055	.165	1-1/2	1/8
ESM-0361	.060	.180	1-1/2	1/8
ESM-0362	.065	.195	1-1/2	1/8
ESM-0363	.070	.210	1-1/2	1/8
ESM-0364	.075	.225	1-1/2	1/8
ESM-0365	.080	.240	1-1/2	1/8
ESM-0366	.085	.255	1-1/2	1/8
ESM-0367	.090	.270	1-1/2	1/8
ESM-0368	.095	.285	1-1/2	1/8
ESM-0369	.100	.300	1-1/2	1/8



## STUB LENGTH

### Center Cutting End Mills

- Submicron grade solid carbide.
- 30° helix for general purpose applications.
- Coatings available upon request.



## FRACTIONS

PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0401	1/64	.023	1-1/2	1/8
ESM-0402	1/32	.047	1-1/2	1/8
ESM-0403	3/64	.070	1-1/2	1/8
ESM-0404	1/16	.094	1-1/2	1/8
ESM-0405	5/64	.117	1-1/2	1/8
ESM-0406	3/32	.141	1-1/2	1/8
ESM-0407	7/64	.164	1-1/2	1/8
ESM-0408	1/8	.188	1-1/2	1/8
ESM-0409	9/64	.313	2	3/16
ESM-0410	5/32	.313	2	3/16
ESM-0411	11/64	.375	2	3/16
ESM-0412	3/16	.375	2	3/16
ESM-0413	13/64	.438	2	1/4
ESM-0414	7/32	.438	2	1/4
ESM-0415	15/64	.500	2	1/4
ESM-0416	1/4	.500	2	1/4

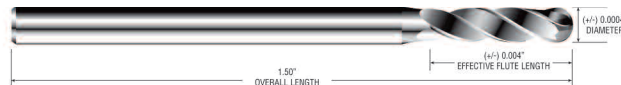
## DECIMALS

PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0451	.010	.015	1-1/2	1/8
ESM-0452	.015	.025	1-1/2	1/8
ESM-0453	.020	.030	1-1/2	1/8
ESM-0454	.025	.038	1-1/2	1/8
ESM-0455	.030	.045	1-1/2	1/8
ESM-0456	.035	.053	1-1/2	1/8
ESM-0457	.040	.060	1-1/2	1/8
ESM-0458	.045	.068	1-1/2	1/8
ESM-0459	.050	.075	1-1/2	1/8
ESM-0460	.055	.083	1-1/2	1/8
ESM-0461	.060	.090	1-1/2	1/8
ESM-0462	.065	.098	1-1/2	1/8
ESM-0463	.070	.105	1-1/2	1/8
ESM-0464	.075	.113	1-1/2	1/8
ESM-0465	.080	.120	1-1/2	1/8
ESM-0466	.085	.128	1-1/2	1/8
ESM-0467	.090	.135	1-1/2	1/8
ESM-0468	.095	.143	1-1/2	1/8
ESM-0469	.100	.150	1-1/2	1/8

### STANDARD LENGTH

#### Center Cutting End Mills

- Submicron grade solid carbide.
- 30° helix for general purpose applications.
- Coatings available upon request.



### FRACTIONS

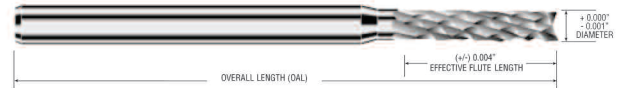
PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-0501	1/32	.094	1-1/2	1/8
ESM-0502	3/64	.141	1-1/2	1/8
ESM-0503	1/16	.188	1-1/2	1/8
ESM-0504	5/64	.234	1-1/2	1/8
ESM-0505	3/32	.281	1-1/2	1/8
ESM-0506	7/64	.328	1-1/2	1/8
ESM-0507	1/8	.375	1-1/2	1/8
ESM-0508	9/64	.500	2	3/16
ESM-0509	5/32	.500	2	3/16
ESM-0510	11/64	.563	2	3/16
ESM-0511	3/16	.563	2	3/16
ESM-0512	13/64	.625	2-1/2	1/4
ESM-0513	7/32	.625	2-1/2	1/4
ESM-0514	15/64	.750	2-1/2	1/4
ESM-0515	1/4	.750	2-1/2	1/4

\* 9/64 or larger is + .000" / - .002"

## STANDARD LENGTH

### Routers

- Submicron grade solid carbide.
- Diameter tolerance + 0.000" / - 0.001"
- Fish Tail and Drill Point End Styles



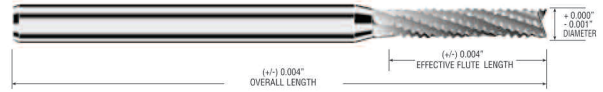
## FRACTIONS

PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER	END STYLE
ESM-0551F	1/32	.255	1-1/2	1/8	Fish Tail
ESM-0551D	1/32	.255	1-1/2	1/8	Drill Point
ESM-0552F	3/64	.255	1-1/2	1/8	Fish Tail
ESM-0552D	3/64	.255	1-1/2	1/8	Drill Point
ESM-0553F	1/16	.255	1-1/2	1/8	Fish Tail
ESM-0553D	1/16	.255	1-1/2	1/8	Drill Point
ESM-0554F	3/32	.395	1-1/2	1/8	Fish Tail
ESM-0554D	3/32	.395	1-1/2	1/8	Drill Point
ESM-0555F	1/8	.500	1-1/2	1/8	Fish Tail
ESM-0555D	1/8	.500	1-1/2	1/8	Drill Point
ESM-0556F	3/16	.625	2	3/16	Fish Tail
ESM-0556D	3/16	.625	2	3/16	Drill Point
ESM-0557F	1/4	.750	2	1/4	Fish Tail
ESM-0557D	1/4	.750	2	1/4	Drill Point
ESM-0558F	1/4	.750	2-1/2	1/4	Fish Tail
ESM-0558D	1/4	.750	2-1/2	1/4	Drill Point
ESM-0559F	1/4	1	3	1/4	Fish Tail
ESM-0559D	1/4	1	3	1/4	Drill Point

## STANDARD LENGTH

### Routers

- Submicron grade solid carbide.
- Diameter tolerance + 0.000" / - 0.001"
- Fish Tail and Drill Point End Styles

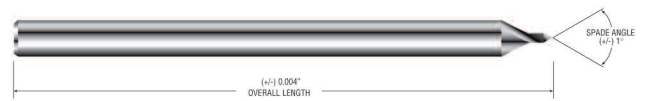


## FRACTIONS

PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER	END STYLE
ESM-0601F	1/32	.255	1-1/2	1/8	Fish Tail
ESM-0601D	1/32	.255	1-1/2	1/8	Drill Point
ESM-0602F	3/64	.255	1-1/2	1/8	Fish Tail
ESM-0602D	3/64	.255	1-1/2	1/8	Drill Point
ESM-0603F	1/16	.255	1-1/2	1/8	Fish Tail
ESM-0603D	1/16	.255	1-1/2	1/8	Drill Point
ESM-0604F	3/32	.395	1-1/2	1/8	Fish Tail
ESM-0604D	3/32	.395	1-1/2	1/8	Drill Point
ESM-0605F	1/8	.500	1-1/2	1/8	Fish Tail
ESM-0605D	1/8	.500	1-1/2	1/8	Drill Point

## ENGRAVING TOOLS

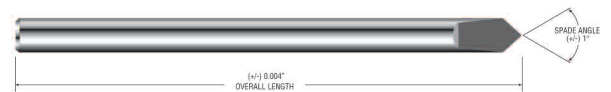
### 2 Flute



PART NUMBER	SHANK DIAMETER	SPADE ANGLE	OVERALL LENGTH
ESM-0651	1/8	30°	1-1/2
ESM-0652	1/8	60°	1-1/2
ESM-0653	1/8	90°	1-1/2

## SPADE TOOLS

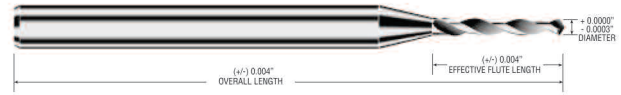
- Submicron grade solid carbide.
- 1/8" Shank



PART NUMBER	SHANK DIAMETER	SPADE ANGLE	OVERALL LENGTH
ESM-0701	1/8	30°	1-1/2
ESM-0702	1/8	45°	1-1/2
ESM-0703	1/8	60°	1-1/2
ESM-0704	1/8	90°	1-1/2
ESM-0705	1/8	118°	1-1/2

## .0020" - .0260"

- Submicron grade solid carbide.



### STANDARD FLUTE

PART NUMBER	DRILL DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER	POINT ANGLE
ESM-0751	.10 mm	.040	1-1/2	1/8	118°
ESM-0752	.13 mm	.040	1-1/2	1/8	118°
ESM-0753	#97	.080	1-1/2	1/8	118°
ESM-0754	#96	.080	1-1/2	1/8	118°
ESM-0755	#95	.080	1-1/2	1/8	118°
ESM-0756	#94	.100	1-1/2	1/8	118°
ESM-0757	#93	.100	1-1/2	1/8	118°
ESM-0758	#92	.100	1-1/2	1/8	118°
ESM-0759	#91	.100	1-1/2	1/8	118°
ESM-0760	#90	.100	1-1/2	1/8	118°
ESM-0761	#89	.150	1-1/2	1/8	118°
ESM-0762	#88	.150	1-1/2	1/8	118°
ESM-0763	.25 mm	.150	1-1/2	1/8	118°
ESM-0764	#87	.150	1-1/2	1/8	118°
ESM-0765	#86	.150	1-1/2	1/8	118°
ESM-0766	#85	.150	1-1/2	1/8	118°
ESM-0767	#84	.150	1-1/2	1/8	118°
ESM-0768	.30 mm	.225	1-1/2	1/8	118°
ESM-0769	#83	.225	1-1/2	1/8	118°
ESM-0770	#82	.225	1-1/2	1/8	118°
ESM-0771	#81	.225	1-1/2	1/8	130°
ESM-0772	#80	.225	1-1/2	1/8	130°
ESM-0773	.35 mm	.225	1-1/2	1/8	130°
ESM-0774	#79	.225	1-1/2	1/8	130°
ESM-0775	1/64	.250	1-1/2	1/8	130°
ESM-0776	.40 mm	.250	1-1/2	1/8	130°
ESM-0777	#78	.250	1-1/2	1/8	130°
ESM-0778	.45 mm	.250	1-1/2	1/8	130°
ESM-0779	#77	.250	1-1/2	1/8	130°
ESM-0780	.50 mm	.260	1-1/2	1/8	130°
ESM-0781	#76	.260	1-1/2	1/8	130°

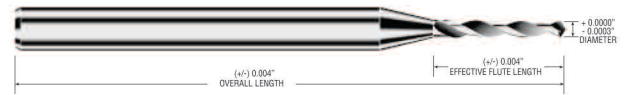
### ULTRA PRECISION MICRO DRILLS

PART NUMBER	DRILL DIAMETER	EFFECTIVE FLUTE LENGTH
ESM-0800	.0020 - .0079	CALL

Diameter Tolerance = +/- 50 Millionths

## .0020" - .0260"

- Submicron grade solid carbide.

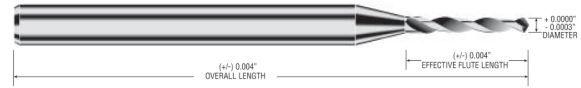


### EXTENDED FLUTE

PART NUMBER	DRILL DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER	POINT ANGLE
ESM-0801	.10 mm	.070	1-1/2	1/8	118°
ESM-0802	.13 mm	.070	1-1/2	1/8	118°
ESM-0803	#97	.120	1-1/2	1/8	118°
ESM-0804	#96	.120	1-1/2	1/8	118°
ESM-0805	#95	.120	1-1/2	1/8	118°
ESM-0806	#94	.150	1-1/2	1/8	118°
ESM-0807	#93	.150	1-1/2	1/8	118°
ESM-0808	#92	.150	1-1/2	1/8	118°
ESM-0809	#91	.150	1-1/2	1/8	118°
ESM-0810	#90	.150	1-1/2	1/8	118°
ESM-0811	#89	.220	1-1/2	1/8	118°
ESM-0812	#88	.220	1-1/2	1/8	118°
ESM-0813	.25 mm	.220	1-1/2	1/8	118°
ESM-0814	#87	.220	1-1/2	1/8	118°
ESM-0815	#86	.220	1-1/2	1/8	118°
ESM-0816	#85	.220	1-1/2	1/8	118°
ESM-0817	#84	.220	1-1/2	1/8	118°
ESM-0818	.30 mm	.280	1-1/2	1/8	118°
ESM-0819	#83	.280	1-1/2	1/8	118°
ESM-0820	#82	.280	1-1/2	1/8	118°
ESM-0821	#81	.280	1-1/2	1/8	130°
ESM-0822	#80	.280	1-1/2	1/8	130°
ESM-0823	.35 mm	.280	1-1/2	1/8	130°
ESM-0824	#79	.280	1-1/2	1/8	130°
ESM-0825	1/64	.295	1-1/2	1/8	130°
ESM-0826	.40 mm	.295	1-1/2	1/8	130°
ESM-0827	#78	.295	1-1/2	1/8	130°
ESM-0828	.45 mm	.295	1-1/2	1/8	130°
ESM-0829	#77	.295	1-1/2	1/8	130°
ESM-0830	.50 mm	.310	1-1/2	1/8	130°
ESM-0831	#76	.310	1-1/2	1/8	130°
ESM-0832	#75	.310	1-1/2	1/8	130°
ESM-0833	.55 mm	.340	1-1/2	1/8	130°
ESM-0834	#74	.340	1-1/2	1/8	130°
ESM-0835	.60 mm	.340	1-1/2	1/8	130°
ESM-0836	#73	.340	1-1/2	1/8	130°
ESM-0837	#72	.340	1-1/2	1/8	130°
ESM-0838	.65 mm	.340	1-1/2	1/8	130°
ESM-0839	#71	.340	1-1/2	1/8	130°

## .0276" - .1250"

- Submicron grade solid carbide.
- 1/8" Shank
- 1-1/2" Overall Length
- 130° Point Angle



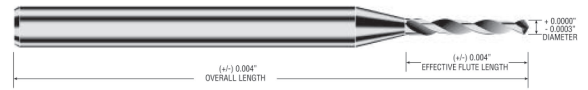
PART NUMBER	DRILL DIAMETER
ESM-0851	.70 mm
ESM-0852	#70
ESM-0853	#69
ESM-0854	.75 mm
ESM-0855	#68
ESM-0856	1/32
ESM-0857	.80 mm
ESM-0858	#67
ESM-0859	#66
ESM-0860	.85 mm
ESM-0861	#65
ESM-0862	.90 mm
ESM-0863	#64
ESM-0864	#63
ESM-0865	.95 mm
ESM-0866	#62
ESM-0867	#61
ESM-0868	1.00 mm
ESM-0869	#60
ESM-0870	#59
ESM-0871	1.05 mm
ESM-0872	#58
ESM-0873	#57
ESM-0874	1.10 mm
ESM-0875	1.12 mm
ESM-0876	1.15 mm
ESM-0877	#56
ESM-0878	3/64
ESM-0879	1.20 mm
ESM-0880	1.25 mm
ESM-0881	1.30 mm
ESM-0882	#55
ESM-0883	1.35 mm
ESM-0884	#54
ESM-0885	1.40 mm
ESM-0886	1.45 mm
ESM-0887	1.50 mm
ESM-0888	#53

PART NUMBER	DRILL DIAMETER
ESM-0889	1.55 mm
ESM-0890	1/16
ESM-0891	1.60 mm
ESM-0892	#52
ESM-0893	1.65 mm
ESM-0894	1.70mm
ESM-0895	#51
ESM-0896	1.75 mm
ESM-0897	#50
ESM-0898	1.80 mm
ESM-0899	1.85 mm
ESM-0900	#49
ESM-0901	1.90 mm
ESM-0902	#48
ESM-0903	1.95 mm
ESM-0904	5/64
ESM-0905	#47
ESM-0906	2.00 mm
ESM-0907	2.05 mm
ESM-0908	#46
ESM-0909	#45
ESM-0910	2.10 mm
ESM-0911	2.15 mm
ESM-0912	#44
ESM-0913	2.20 mm
ESM-0914	2.25 mm
ESM-0915	#43
ESM-0916	2.30 mm
ESM-0917	2.35 mm
ESM-0918	#42
ESM-0919	3/32
ESM-0920	2.40 mm
ESM-0921	#41
ESM-0922	2.45 mm
ESM-0923	#40
ESM-0924	2.50 mm
ESM-0925	#39
ESM-0926	2.55 mm



## .0276" - .1250"

- Submicron grade solid carbide.
- 1/8" Shank
- 1-1/2" Overall Length
- 130° Point Angle

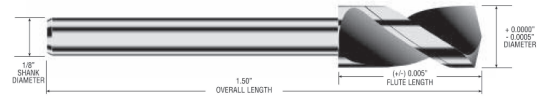


PART NUMBER	DRILL DIAMETER
ESM-0927	#38
ESM-0928	2.60 mm
ESM-0929	#37
ESM-0930	2.65 mm
ESM-0931	2.70 mm
ESM-0932	#36
ESM-0933	2.75 mm
ESM-0934	7/64
ESM-0935	#35
ESM-0936	2.80 mm
ESM-0937	2.85 mm

PART NUMBER	DRILL DIAMETER
ESM-0938	#33
ESM-0939	2.90 mm
ESM-0940	#32
ESM-0941	2.95 mm
ESM-0942	3.00 mm
ESM-0943	#31
ESM-0944	3.05 mm
ESM-0945	3.10 mm
ESM-0946	3.15 mm
ESM-0947	1/8

## .1260" - .2638"

- Submicron grade solid carbide.
- 1/8" Shank
- 1-1/2" Overall Length
- 130° Point Angle



PART NUMBER	DRILL DIAMETER
ESM-1001	3.20 mm
ESM-1002	3.25 mm
ESM-1003	#30
ESM-1004	3.30 mm
ESM-1005	3.35 mm
ESM-1006	3.40 mm
ESM-1007	3.45 mm
ESM-1008	#29
ESM-1009	3.50 mm
ESM-1010	3.55 mm
ESM-1011	#28
ESM-1012	9/64"
ESM-1013	3.60 mm
ESM-1014	3.65 mm
ESM-1015	#27
ESM-1016	3.70 mm
ESM-1017	#26
ESM-1018	3.75 mm
ESM-1019	#25
ESM-1020	3.80 mm
ESM-1021	3.85 mm
ESM-1022	#24
ESM-1023	3.90 mm
ESM-1024	#23
ESM-1025	3.95 mm
ESM-1026	5/32"
ESM-1027	#22
ESM-1028	4.00 mm
ESM-1029	#21
ESM-1030	4.05 mm
ESM-1031	#20
ESM-1032	4.10 mm
ESM-1033	4.15 mm
ESM-1034	4.20 mm
ESM-1035	#19
ESM-1036	4.25 mm
ESM-1037	4.30 mm
ESM-1038	#18

PART NUMBER	DRILL DIAMETER
ESM-1039	4.35 mm
ESM-1040	11/64"
ESM-1041	#17
ESM-1042	4.40 mm
ESM-1043	4.45 mm
ESM-1044	#16
ESM-1045	4.50 mm
ESM-1046	4.55 mm
ESM-1047	#15
ESM-1048	4.60 mm
ESM-1049	#14
ESM-1050	4.65 mm
ESM-1051	#13
ESM-1052	4.75 mm
ESM-1053	3/16"
ESM-1054	#12
ESM-1055	4.85 mm
ESM-1056	#11
ESM-1057	4.90 mm
ESM-1058	#10
ESM-1059	4.95 mm
ESM-1060	#9
ESM-1061	5.00 mm
ESM-1062	5.05 mm
ESM-1063	#8
ESM-1064	5.10 mm
ESM-1065	#7
ESM-1066	5.15 mm
ESM-1067	13/64"
ESM-1068	#6
ESM-1069	5.20 mm
ESM-1070	#5
ESM-1071	5.25 mm
ESM-1072	5.30 mm
ESM-1073	#4
ESM-1074	5.35 mm
ESM-1075	5.40 mm
ESM-1076	#3

## .1260" - .2638"

- Submicron grade solid carbide.
- 1/8" Shank
- 1-1/2" Overall Length
- 130° Point Angle

PART NUMBER	DRILL DIAMETER
ESM-1077	5.45 mm
ESM-1078	5.50 mm
ESM-1079	5.55 mm
ESM-1080	7/32"
ESM-1081	5.60 mm
ESM-1082	#2
ESM-1083	5.65 mm
ESM-1084	5.70 mm
ESM-1085	5.75 mm
ESM-1086	#1
ESM-1087	5.80 mm
ESM-1088	5.85 mm
ESM-1089	5.90 mm
ESM-1090	A
ESM-1091	5.95 mm
ESM-1092	15/64"
ESM-1093	6.00 mm

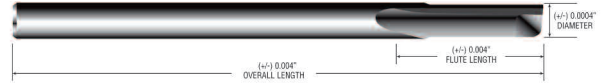
PART NUMBER	DRILL DIAMETER
ESM-1094	B
ESM-1095	6.05 mm
ESM-1096	6.10 mm
ESM-1097	C
ESM-1098	6.15 mm
ESM-1099	6.20 mm
ESM-1100	D
ESM-1101	6.25 mm
ESM-1102	6.30 mm
ESM-1103	1/4"
ESM-1104	6.40 mm
ESM-1105	6.50 mm
ESM-1106	F
ESM-1107	6.60 mm
ESM-1108	G
ESM-1109	6.70 mm

# NAPGLADU Composites Fiberglass Routers

Delivering Productivity

## SINGLE FLUTE / STANDARD LENGTH

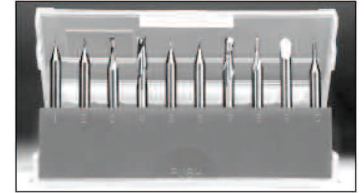
- 1/4" Shank



PART NUMBER	CUTTING DIAMETER	EFFECTIVE FLUTE LENGTH	OVERALL LENGTH	SHANK DIAMETER
ESM-1151	1/4	.750	3	1/4

## 10 PIECE MICRO TOOL KIT

- .010", .030", 1/16" & 1/8" 2 Flute Square End Mills
- .030", 1/16" & 1/8" 2 Flute Ball Nose End Mills
- 1/32" 4 Flute Ball Nose End Mill
- 90 Degree Spade Tool
- .005" Micro Drill



PART NUMBER	SHANK DIAMETER	NUMBER OF TOOLS	OVERALL LENGTH
ESM-1152	1/8	10	1-1/2

# NAPGLADU Solid Carbide Micro Boring Bars

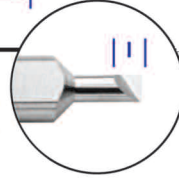
Delivering Productivity



## FEATURES



## MATERIALS



D (in)	l (in)	PART NUMBER	d (in)	L (in)
0.015	0.030	ESM-1201	1/8	1-1/2
0.020	0.030	ESM-1202	1/8	1-1/2
0.025	0.050	ESM-1203	1/8	1-1/2
0.030	0.050	ESM-1204	1/8	1-1/2
0.035	0.050	ESM-1205	1/8	1-1/2
0.040	0.050	ESM-1206	1/8	1-1/2
0.045	0.100	ESM-1207	1/8	1-1/2
0.050	0.100	ESM-1208	1/8	1-1/2
0.055	0.100	ESM-1209	1/8	1-1/2
0.060	0.100	ESM-1210	1/8	1-1/2

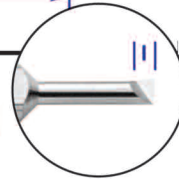
Other diameters available upon request.



## FEATURES



## MATERIALS



D (in)	l (in)	PART NUMBER	d (in)	L (in)
0.015	0.075	ESM-1251	1/8	1-1/2
0.020	0.075	ESM-1252	1/8	1-1/2
0.025	0.125	ESM-1253	1/8	1-1/2
0.030	0.125	ESM-1254	1/8	1-1/2
0.035	0.125	ESM-1255	1/8	1-1/2
0.040	0.125	ESM-1256	1/8	1-1/2
0.045	0.250	ESM-1257	1/8	1-1/2
0.050	0.250	ESM-1258	1/8	1-1/2
0.055	0.250	ESM-1259	1/8	1-1/2
0.060	0.250	ESM-1260	1/8	1-1/2

Other diameters available upon request.

Date: \_\_\_ / \_\_\_ / \_\_\_ No. Pages \_\_\_\_\_ NAP Gladu AE / SR \_\_\_\_\_

Company Name: \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone Number \_\_\_\_\_ Contact: \_\_\_\_\_

NAP Gladu Account # \_\_\_\_\_

## Type of Tool

### Endmills

Page No. \_\_\_ Tool No. \_\_\_\_\_

- Double End
- Ball Nose
- Square End
- Weldon Flat
- Corner Radius \_\_\_\_\_
- Eccentric Relief
- Straight Flute
- Other \_\_\_\_\_

### Drills

Page No. \_\_\_ Tool No. \_\_\_\_\_

- Degree of Point \_\_\_\_\_
- Type of Point \_\_\_\_\_

### Additional Information:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### Reamers

Page No. \_\_\_ Tool No. \_\_\_\_\_

- Spiral or Straight \_\_\_\_\_
- Chamfer Angle \_\_\_\_\_

### Dimensions Diagram # \_\_\_\_\_

- Cut Diameter D<sub>1</sub> \_\_\_\_\_
- Cutting Edge Length L<sub>1</sub> \_\_\_\_\_
- Shank Diameter D<sub>2</sub> \_\_\_\_\_
- Overall Length L<sub>2</sub> \_\_\_\_\_

## Tool Coating

- None
- TiN
- TiCN
- AlTiN
- TiAlN
- DLC
- PCD
- Other: \_\_\_\_\_

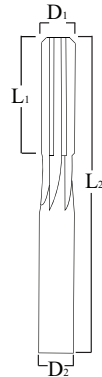
**#1 Endmill Diagram**

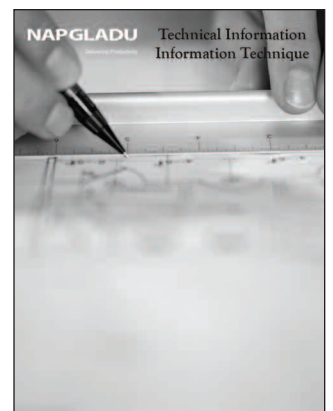
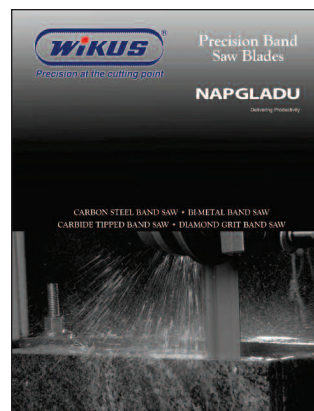
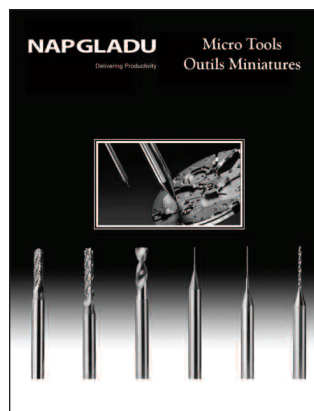
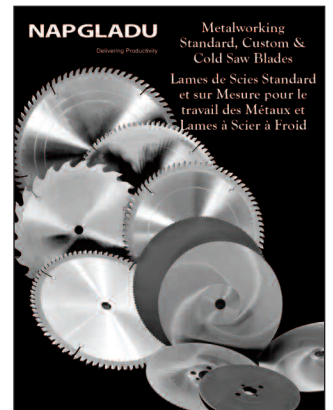
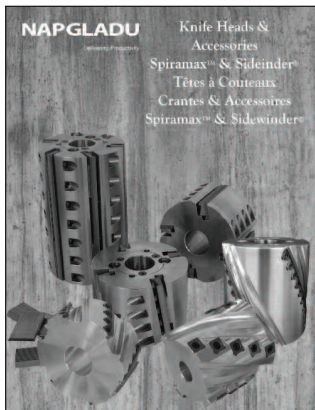
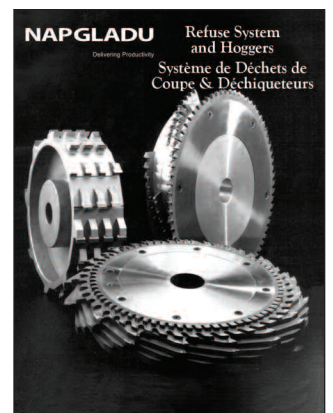
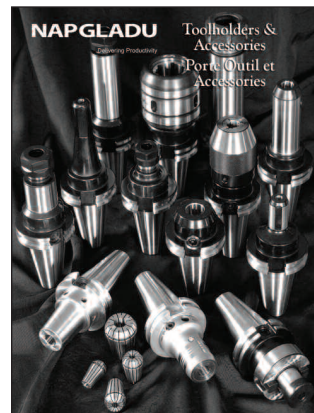
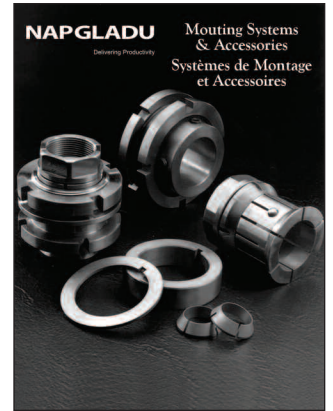
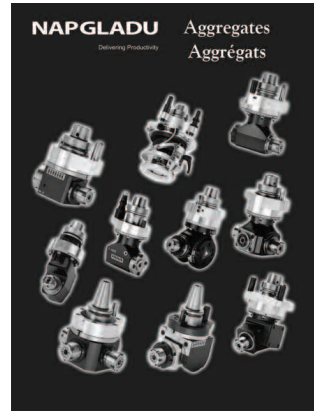
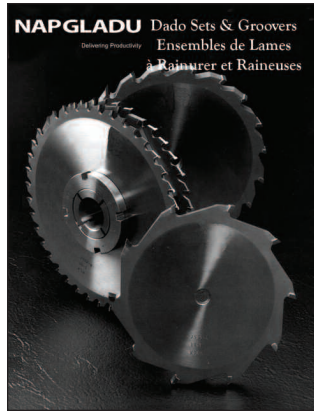


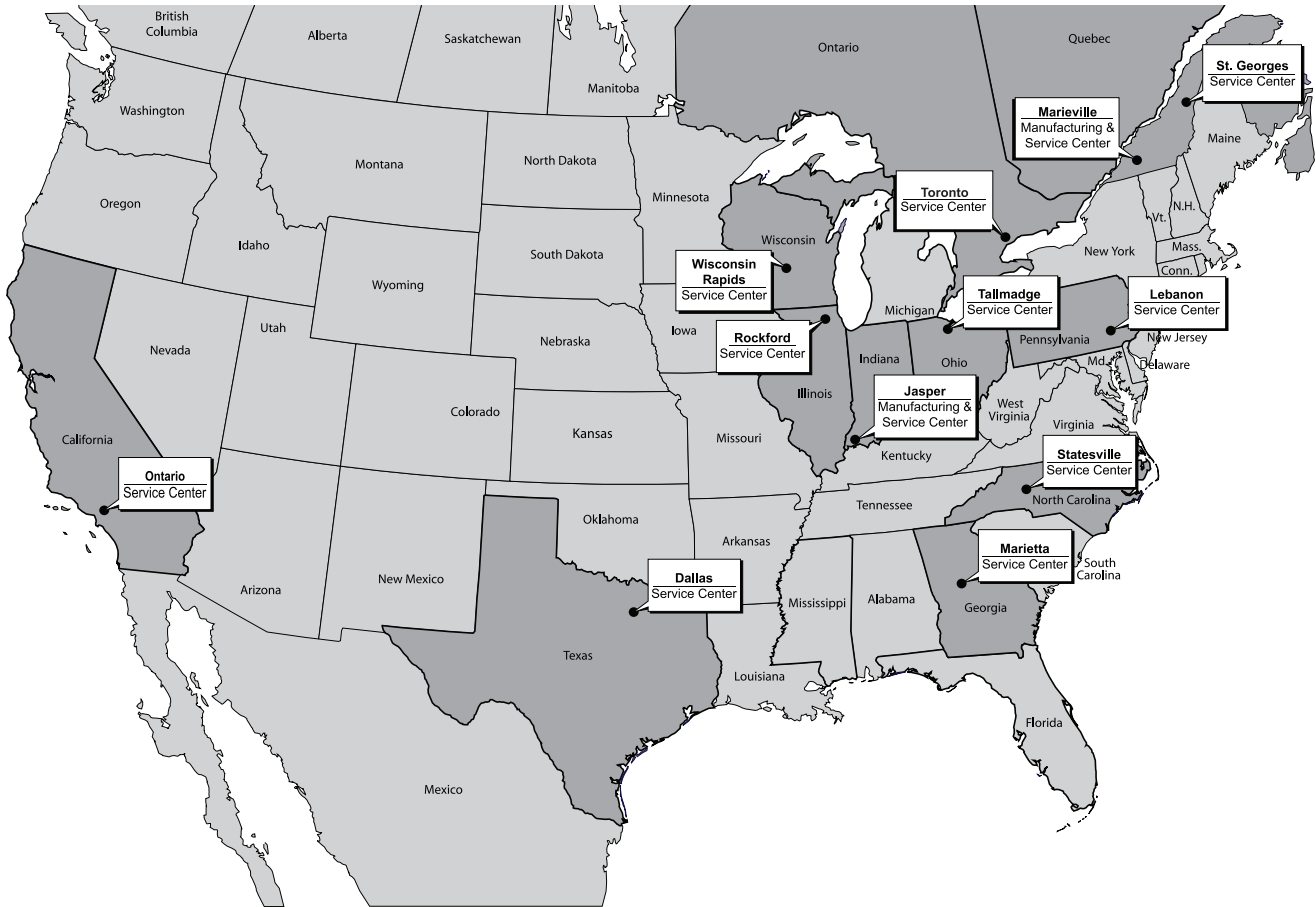
**#2 Drill Diagram**



**#3 Reamer Diagram**







## US OPERATIONS

### CORPORATE HEADQUARTERS INDIANA MANUFACTURING & SERVICE CENTER

1180 Wernsing Road  
Jasper, IN 47546  
Phone: 812-482-2000 / 800-457-7468  
Fax: 800-457-7458

### CALIFORNIA SERVICE CENTER

1941 S. Baker Avenue  
Ontario, CA 91761  
Phone: 909-930-5990  
Fax: 909-930-5996

### GEORGIA SERVICE CENTER

1257 D. Kennestone Circle N.E.  
Marietta, GA 30066  
Phone: 770-426-1100  
Fax: 770-426-1994

### ILLINOIS SERVICE CENTER

7955 Burden Rd.  
Machesney Park, IL 61115  
Phone: 815-877-7011  
Fax: 815-877-7013

### NORTH CAROLINA SERVICE CENTER

169 Crawford Road  
Statesville, NC 28625  
Phone: 704-872-9571  
Fax: 704-872-9575

### OHIO SERVICE CENTER

411 Geneva Avenue  
Tallmadge, OH 44278  
Phone: 330-633-0599  
Fax: 330-633-0791

### PENNSYLVANIA SERVICE CENTER

11 Keystone Drive  
LV Business Park  
Lebanon, PA 17042  
Phone: 717-273-9301  
Fax: 717-274-3764

### TEXAS SERVICE CENTER

4647 Leston Avenue #603  
Dallas, TX 75247  
Phone: 214-637-4849  
Fax: 214-637-5012

### WISCONSIN SERVICE CENTER

3211 Industrial Street  
Wisconsin Rapids, WI 54495  
Phone: 888-221-8665  
Fax: 715-424-1920

## CANADIAN OPERATIONS

### MARIEVILLE MANUFACTURING & SERVICE CENTER

2115 Saint-Cesaire Street  
Marieville, Quebec J3M 1E5 CANADA  
Phone: 800-363-9117  
Fax: 450-460-2655

### TORONTO SERVICE CENTER

222 Evans Ave.  
Toronto, Ontario M8Z 1J8 CANADA  
Phone: 416-251-2236 / 888-251-2236  
Fax: 416-251-7268

### SAINT - GEORGES SERVICE CENTER

3020 95th Street  
Saint - Georges, Quebec G6A 1E2 CANADA  
Phone: 888-270-2248  
Fax: 418-228-7503

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Issue Date: 10/01/14**