



New Product Releases

March 2025

www.onsrud.com

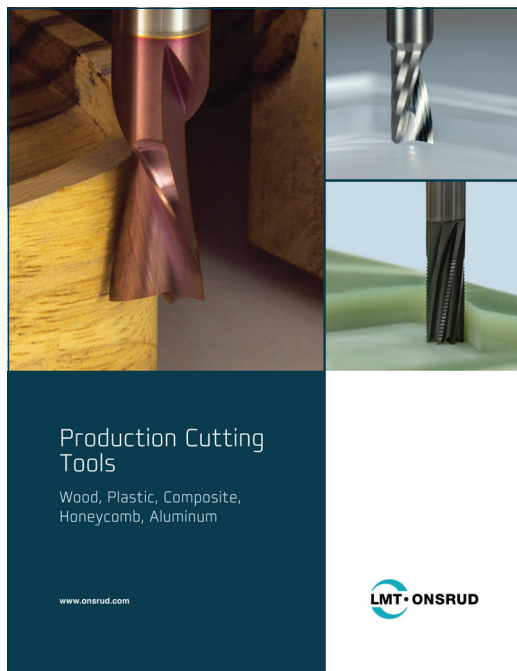


Since our beginning over 75 years ago, LMT Onsrud has endeavored to innovate and to develop the best cutting tool solutions in the market. LMT Onsrud is recognized as a leading manufacturer of solid round tooling for a wide range of materials from plastics to composites to exotic metals.

Today our promise remains the same - to consistently provide premium cutting tool solutions to meet your needs and to provide exceptional support throughout all phases of planning, development and production.

Materials Cut:

- Composites
- Exotic Metals
- Honeycomb
- Non-Ferrous Metals
- Plastics and Acrylics
- Solid Surface
- Stainless Steels
- Wood and Composite Woods



LMT Onsrud
Production Cutting Tools



LMT Onsrud
High Performance Milling

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End Mills

4	Max Velocity (MXV) End Mills
	MXV 4 Flute End Mills
	MXV 5 Flute End Mills

Production Cutting Tools

18	Endurance Compression Series
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Max Velocity (MXV) Series

The Max Velocity (MXV) Series takes milling to the next level as LMT Onsrud's next generation universal endmill. The MXV covers the largest range of milling applications from slotting to heavy profiling to finishing in a broad range of workpiece materials.

Features and Benefits

- Unique NanoMax coating for maximum heat resistance and longer tool life
- Optimized geometry for maximum material removal rates in a broad range of applications
- 4 & 5 flute offering to be utilized in a large range of workpiece materials
- Chipbreakers as standard in long lengths of cut
- Large selection of corner radii

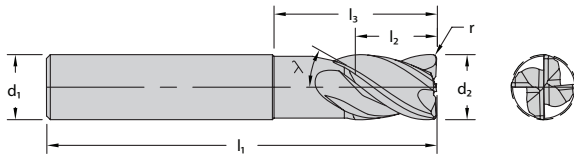
Applications

- Slotting
- Heavy Profiling
- HEM Profiling
- Semi-Finishing
- Finishing

Usage

- Steel
- Stainless Steel
- High-temp Alloys
- Cast Iron

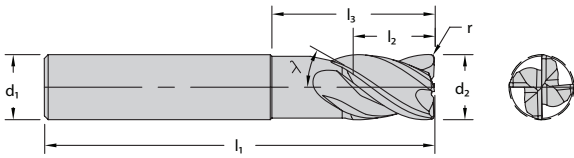




								4-Flute		4-Flute Weldon		4-Flute Chipbreaker	
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K								■		■		■	
N													
S								□		□		□	
H													
Series	Cutting Dia. d ₁	LOC l ₂	OAL l ₁	Neck Length l ₃	Shank Dia. d ₂	Flutes z	Corner Radius r	Ident No.	SAP No.	Weldon Ident No.	Weldon SAP No.	Chipbreaker Ident No.	Chpbkr SAP No.
MXVS-4	1/8	1/4	2	-	1/8	4	Square	MXV2650000	2660755	MXV2650000W	2660993	-	-
MXVS-4	1/8	1/4	2	-	1/8	4	0.015	MXV2650001	2660756	MXV2650001W	2660994	-	-
MXVM-4	1/8	1/2	2	-	1/8	4	Square	MXV2650002	2660757	MXV2650002W	2660995	-	-
MXVM-4	1/8	1/2	2	-	1/8	4	0.015	MXV2650003	2660758	MXV2650003W	2660996	-	-
MXVS-4	3/16	5/16	2	-	3/16	4	Square	MXV2650004	2660759	MXV2650004W	2660997	-	-
MXVS-4	3/16	5/16	2	-	3/16	4	0.015	MXV2650005	2660760	MXV2650005W	2660998	-	-
MXVM-4	3/16	9/16	2 1/2	-	3/16	4	Square	MXV2650006	2660761	MXV2650006W	2660999	-	-
MXVM-4	3/16	9/16	2 1/2	-	3/16	4	0.015	MXV2650007	2660762	MXV2650007W	2661000	-	-
MXVS-4	1/4	3/8	2 1/2	-	1/4	4	Square	MXV2650008	2660763	MXV2650008W	2661001	-	-
MXVS-4	1/4	3/8	2 1/2	-	1/4	4	0.015	MXV2650009	2660764	MXV2650009W	2661002	-	-
MXVS-4	1/4	3/8	2 1/2	-	1/4	4	0.030	MXV2650010	2660765	MXV2650010W	2661003	-	-
MXVM-4	1/4	3/4	2 1/2	-	1/4	4	Square	MXV2650011	2660766	MXV2650011W	2661004	MXV2650710	2661231
MXVM-4	1/4	3/4	2 1/2	-	1/4	4	0.015	MXV2650012	2660767	MXV2650012W	2661005	MXV2650711	2661232
MXVM-4	1/4	3/4	2 1/2	-	1/4	4	0.030	MXV2650013	2660768	MXV2650013W	2661006	-	-
MXVNS-4	1/4	3/8	3	1 1/8	1/4	4	0.015	MXV2650014	2660769	MXV2650014W	2661007	-	-
MXVNS-4	1/4	3/8	3	1 1/8	1/4	4	0.030	MXV2650015	2660770	MXV2650015W	2661008	-	-
MXVS-4	5/16	7/16	2	-	5/16	4	Square	MXV2650016	2660771	MXV2650016W	2661009	-	-
MXVS-4	5/16	7/16	2	-	5/16	4	0.015	MXV2650017	2660772	MXV2650017W	2661010	-	-
MXVM-4	5/16	1	3	-	5/16	4	Square	MXV2650018	2660773	MXV2650018W	2661011	MXV2650712	2661233
MXVM-4	5/16	1	3	-	5/16	4	0.015	MXV2650019	2660774	MXV2650019W	2661012	MXV2650713	2661234
MXVS-4	3/8	1/2	2 1/2	-	3/8	4	Square	MXV2650020	2660775	MXV2650020W	2661013	-	-
MXVS-4	3/8	1/2	2 1/2	-	3/8	4	0.015	MXV2650021	2660776	MXV2650021W	2661014	-	-
MXVS-4	3/8	1/2	2 1/2	-	3/8	4	0.030	MXV2650022	2660777	MXV2650022W	2661015	-	-
MXVS-4	3/8	1/2	2 1/2	-	3/8	4	0.060	MXV2650104	2660778	MXV2650104W	2661016	-	-
MXVS-4	3/8	1/2	2 1/2	-	3/8	4	0.090	MXV2650105	2660779	MXV2650105W	2661017	-	-
MXVS-4	3/8	1/2	2 1/2	-	3/8	4	0.120	MXV2650106	2660780	MXV2650106W	2661018	-	-
MXVM-4	3/8	1 1/8	3	-	3/8	4	Square	MXV2650023	2660781	MXV2650023W	2661019	MXV2650714	2661235
MXVM-4	3/8	1 1/8	3	-	3/8	4	0.015	MXV2650024	2660782	MXV2650024W	2661020	MXV2650715	2661236
MXVM-4	3/8	1 1/8	3	-	3/8	4	0.030	MXV2650025	2660783	MXV2650025W	2661021	-	-
MXVM-4	3/8	1 1/8	3	-	3/8	4	0.060	MXV2650107	2660784	MXV2650107W	2661022	-	-
MXVM-4	3/8	1 1/8	3	-	3/8	4	0.090	MXV2650108	2660785	MXV2650108W	2661023	-	-

Cutting data recommendations on page 14-15

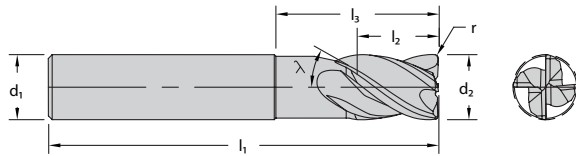
■ = First Choice □ = Second Choice



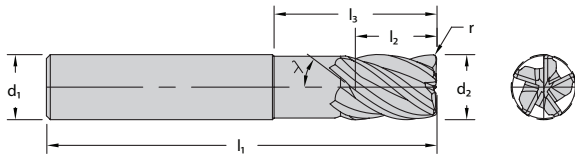
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Series	Cutting Dia. d ₁	LOC l ₂	OAL l ₁	Neck Length l ₃	Shank Dia. d ₂	Flutes z	Corner Radius r	Ident No.	SAP No.	Weldon Ident No.	Weldon SAP No.	Chipbreaker Ident No.	Chpbkr SAP No.
MXVM-4	3/8	1 1/8	3	-	3/8	4	0.120	MXV2650109	2660786	MXV2650109W	2661024	-	-
MXVNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	Square	MXV2650110	2660787	MXV2650110W	2661025	-	-
MXVNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	0.015	MXV2650026	2660788	MXV2650026W	2661026	-	-
MXVNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	0.030	MXV2650027	2660789	MXV2650027W	2661027	-	-
MXVNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	0.060	MXV2650111	2660790	MXV2650111W	2661028	-	-
MXVNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	0.090	MXV2650112	2660791	MXV2650112W	2661029	-	-
MXVNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	0.120	MXV2650113	2660792	MXV2650113W	2661030	-	-
MXVS-4	1/2	5/8	2 1/2	-	1/2	4	Square	MXV2650028	2660793	MXV2650028W	2661031	-	-
MXVS-4	1/2	5/8	2 1/2	-	1/2	4	0.015	MXV2650029	2660794	MXV2650029W	2661032	-	-
MXVS-4	1/2	5/8	2 1/2	-	1/2	4	0.030	MXV2650030	2660795	MXV2650030W	2661033	-	-
MXVS-4	1/2	5/8	2 1/2	-	1/2	4	0.060	MXV2650114	2660796	MXV2650114W	2661034	-	-
MXVS-4	1/2	5/8	2 1/2	-	1/2	4	0.120	MXV2650116	2660797	MXV2650116W	2661035	-	-
MXVM-4	1/2	1 1/4	3	-	1/2	4	Square	MXV2650034	2660798	MXV2650034W	2661036	MXV2650716	2661237
MXVM-4	1/2	1 1/4	3	-	1/2	4	0.015	MXV2650035	2660799	MXV2650035W	2661037	MXV2650717	2661238
MXVM-4	1/2	1 1/4	3	-	1/2	4	0.030	MXV2650036	2660800	MXV2650036W	2661038	MXV2650718	2661239
MXVM-4	1/2	1 1/4	3	-	1/2	4	0.060	MXV2650122	2660801	MXV2650122W	2661039	-	-
MXVM-4	1/2	1 1/4	3	-	1/2	4	0.120	MXV2650124	2660802	MXV2650124W	2661040	-	-
MXVL-4	1/2	1 5/8	4	-	1/2	4	Square	MXV2650627	2660803	MXV2650627W	2661041	MXV2650719	2661240
MXVL-4	1/2	1 5/8	4	-	1/2	4	0.015	MXV2650628	2660804	MXV2650628W	2661042	MXV2650720	2661241
MXVL-4	1/2	1 5/8	4	-	1/2	4	0.030	MXV2650629	2660805	MXV2650629W	2661043	MXV2650721	2661242
MXVL-4	1/2	1 5/8	4	-	1/2	4	0.060	MXV2650630	2660806	MXV2650630W	2661044	MXV2650722	2661243
MXVNS-4	1/2	5/8	4	1 3/4	1/2	4	Square	MXV2650040	2660807	MXV2650040W	2661045	-	-
MXVNS-4	1/2	5/8	4	1 3/4	1/2	4	0.030	MXV2650041	2660808	MXV2650041W	2661046	-	-
MXVNS-4	1/2	5/8	4	1 3/4	1/2	4	0.060	MXV2650042	2660809	MXV2650042W	2661047	-	-
MXVNS-4	1/2	5/8	4	1 3/4	1/2	4	0.120	MXV2650131	2660810	MXV2650131W	2661048	-	-
MXVS-4	5/8	3/4	3	-	5/8	4	Square	MXV2650046	2660811	MXV2650046W	2661049	-	-
MXVS-4	5/8	3/4	3	-	5/8	4	0.030	MXV2650047	2660812	MXV2650047W	2661050	-	-
MXVS-4	5/8	3/4	3	-	5/8	4	0.060	MXV2650136	2660813	MXV2650136W	2661051	-	-
MXVS-4	5/8	3/4	3	-	5/8	4	0.120	MXV2650137	2660814	MXV2650137W	2661052	-	-
MXVS-4	5/8	3/4	3	-	5/8	4	0.190	MXV2650138	2660815	MXV2650138W	2661053	-	-
MXVM-4	5/8	1 3/8	3 1/2	-	5/8	4	Square	MXV2650048	2660816	MXV2650048W	2661054	MXV2650723	2661244

Cutting data recommendations on page 14-15

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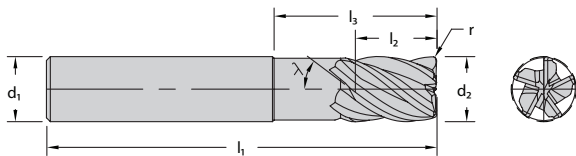
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Series	Cutting Dia. d ₁	LOC l ₂	OAL l ₁	Neck Length l ₃	Shank Dia. d ₂	Flutes z	Corner Radius r	Ident No.	SAP No.	Weldon Ident No.	Weldon SAP No.	Chipbreaker Ident No.	Chpbkr SAP No.
MXVM-4	5/8	1 3/8	3 1/2	-	5/8	4	0.030	MXV2650049	2660817	MXV2650049W	2661055	MXV2650724	2661245
MXVM-4	5/8	1 3/8	3 1/2	-	5/8	4	0.060	MXV2650140	2660818	MXV2650140W	2661056	-	-
MXVM-4	5/8	1 3/8	3 1/2	-	5/8	4	0.120	MXV2650141	2660819	MXV2650141W	2661057	-	-
MXVM-4	5/8	1 3/8	3 1/2	-	5/8	4	0.190	MXV2650142	2660820	MXV2650142W	2661058	-	-
MXVS-4	3/4	1 1/8	3	-	3/4	4	Square	MXV2650050	2660821	MXV2650050W	2661059	-	-
MXVS-4	3/4	1 1/8	3	-	3/4	4	0.030	MXV2650051	2660822	MXV2650051W	2661060	-	-
MXVS-4	3/4	1 1/8	3	-	3/4	4	0.060	MXV2650052	2660823	MXV2650052W	2661061	-	-
MXVS-4	3/4	1 1/8	3	-	3/4	4	0.120	MXV2650053	2660824	MXV2650053W	2661062	-	-
MXVM-4	3/4	1 5/8	4	-	3/4	4	Square	MXV2650059	2660825	MXV2650059W	2661063	MXV2650725	2661246
MXVM-4	3/4	1 5/8	4	-	3/4	4	0.030	MXV2650060	2660826	MXV2650060W	2661064	MXV2650726	2661247
MXVM-4	3/4	1 5/8	4	-	3/4	4	0.060	MXV2650061	2660827	MXV2650061W	2661065	-	-
MXVM-4	3/4	1 5/8	4	-	3/4	4	0.120	MXV2650062	2660828	MXV2650062W	2661066	-	-
MXVL-4	3/4	2 1/4	5	-	3/4	4	Square	MXV2650100	2660829	MXV2650100W	2661067	MXV2650727	2661248
MXVL-4	3/4	2 1/4	5	-	3/4	4	0.030	MXV2650101	2660830	MXV2650101W	2661068	MXV2650728	2661249
MXVL-4	3/4	2 1/4	5	-	3/4	4	0.060	MXV2650162	2660831	MXV2650162W	2661069	-	-
MXVL-4	3/4	2 1/4	5	-	3/4	4	0.120	MXV2650164	2660832	MXV2650164W	2661070	-	-
MXVNS-4	3/4	1 1/8	5	2 3/8	3/4	4	Square	MXV2650172	2660833	MXV2650172W	2661071	-	-
MXVNS-4	3/4	1 1/8	5	2 3/8	3/4	4	0.030	MXV2650067	2660834	MXV2650067W	2661072	-	-
MXVNS-4	3/4	1 1/8	5	2 3/8	3/4	4	0.060	MXV2650068	2660835	MXV2650068W	2661073	-	-
MXVNS-4	3/4	1 1/8	5	2 3/8	3/4	4	0.120	MXV2650069	2660836	MXV2650069W	2661074	-	-
MXVNM-4	3/4	1 1/8	6	3 1/8	3/4	4	Square	MXV2650180	2660837	MXV2650180W	2661075	-	-
MXVNM-4	3/4	1 1/8	6	3 1/8	3/4	4	0.030	MXV2650073	2660838	MXV2650073W	2661076	-	-
MXVNM-4	3/4	1 1/8	6	3 1/8	3/4	4	0.060	MXV2650074	2660839	MXV2650074W	2661077	-	-
MXVNM-4	3/4	1 1/8	6	3 1/8	3/4	4	0.120	MXV2650075	2660840	MXV2650075W	2661078	-	-
MXVS-4	1	1 1/4	4	-	1	4	0.030	MXV2650079	2660841	MXV2650079W	2661079	-	-
MXVS-4	1	1 1/4	4	-	1	4	0.060	MXV2650189	2660842	MXV2650189W	2661080	-	-
MXVM-4	1	2	5	-	1	4	0.030	MXV2650086	2660843	MXV2650086W	2661081	MXV2650729	2661250
MXVM-4	1	2	5	-	1	4	0.060	MXV2650203	2660844	MXV2650203W	2661082	MXV2650730	2661251



								5-Flute		5-Flute Weldon		5-Flute Chipbreaker	
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Series	Cutting Dia. d ₁	LOC l ₂	OAL l ₁	Neck Length l ₃	Shank Dia. d ₂	Flutes z	Corner Radius r	Ident No.	SAP No.	Weldon Ident No.	Weldon SAP No.	Chipbreaker Ident No.	Chpbkr SAP No.
MXVS-5	1/4	3/8	2 1/2	-	1/4	5	Square	MXV2650700	2660845	MXV2650700W	2661083	-	-
MXVS-5	1/4	3/8	2 1/2	-	1/4	5	0.015	MXV2650701	2660846	MXV2650701W	2661084	-	-
MXVS-5	1/4	3/8	2 1/2	-	1/4	5	0.030	MXV2650702	2660847	MXV2650702W	2661085	-	-
MXVM-5	1/4	3/4	2 1/2	-	1/4	5	Square	MXV2650703	2660848	MXV2650703W	2661086	MXV2650731	2661252
MXVM-5	1/4	3/4	2 1/2	-	1/4	5	0.015	MXV2650704	2660849	MXV2650704W	2661087	MXV2650732	2661253
MXVM-5	1/4	3/4	2 1/2	-	1/4	5	0.030	MXV2650705	2660850	MXV2650705W	2661088	-	-
MXVNS-5	1/4	3/8	3	1 1/8	1/4	5	0.015	MXV2650706	2660851	MXV2650706W	2661089	-	-
MXVNS-5	1/4	3/8	3	1 1/8	1/4	5	0.030	MXV2650707	2660852	MXV2650707W	2661090	-	-
MXVM-5	3/8	7/8	2 1/2	-	3/8	5	Square	MXV2650573	2660853	MXV2650573W	2661091	MXV2650733	2661254
MXVM-5	3/8	7/8	2 1/2	-	3/8	5	0.015	MXV2650574	2660854	MXV2650574W	2661092	MXV2650734	2661255
MXVM-5	3/8	7/8	2 1/2	-	3/8	5	0.030	MXV2650575	2660855	MXV2650575W	2661093	-	-
MXVM-5	3/8	7/8	2 1/2	-	3/8	5	0.060	MXV2650576	2660856	MXV2650576W	2661094	-	-
MXVM-5	3/8	7/8	2 1/2	-	3/8	5	0.090	MXV2650577	2660857	MXV2650577W	2661095	-	-
MXVM-5	3/8	7/8	2 1/2	-	3/8	5	0.120	MXV2650578	2660858	MXV2650578W	2661096	-	-
MXVL-5	3/8	1 1/4	3	-	3/8	5	Square	MXV2650579	2660859	MXV2650579W	2661097	MXV2650735	2661256
MXVL-5	3/8	1 1/4	3	-	3/8	5	0.015	MXV2650580	2660860	MXV2650580W	2661098	MXV2650736	2661257
MXVL-5	3/8	1 1/4	3	-	3/8	5	0.030	MXV2650581	2660861	MXV2650581W	2661099	-	-
MXVL-5	3/8	1 1/4	3	-	3/8	5	0.060	MXV2650582	2660862	MXV2650582W	2661100	-	-
MXVL-5	3/8	1 1/4	3	-	3/8	5	0.090	MXV2650583	2660863	MXV2650583W	2661101	-	-
MXVL-5	3/8	1 1/4	3	-	3/8	5	0.120	MXV2650584	2660864	MXV2650584W	2661102	-	-
MXVNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	Square	MXV2650585	2660865	MXV2650585W	2661103	-	-
MXVNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	0.015	MXV2650586	2660866	MXV2650586W	2661104	-	-
MXVNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	0.030	MXV2650587	2660867	MXV2650587W	2661105	-	-
MXVNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	0.060	MXV2650588	2660868	MXV2650588W	2661106	-	-
MXVNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	0.090	MXV2650589	2660869	MXV2650589W	2661107	-	-
MXVNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	0.120	MXV2650590	2660870	MXV2650590W	2661108	-	-
MXVS-5	1/2	5/8	2 1/2	-	1/2	5	Square	MXV2650031	2660871	MXV2650031W	2661109	-	-
MXVS-5	1/2	5/8	2 1/2	-	1/2	5	0.015	MXV2650032	2660872	MXV2650032W	2661110	-	-
MXVS-5	1/2	5/8	2 1/2	-	1/2	5	0.030	MXV2650033	2660873	MXV2650033W	2661111	-	-
MXVS-5	1/2	5/8	2 1/2	-	1/2	5	0.060	MXV2650118	2660874	MXV2650118W	2661112	-	-
MXVS-5	1/2	5/8	2 1/2	-	1/2	5	0.090	MXV2650119	2660875	MXV2650119W	2661113	-	-

Cutting data recommendations on page 16-17

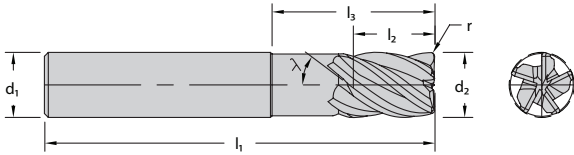
■ = First Choice □ = Second Choice



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Series	Cutting Dia. d ₁	LOC l ₂	OAL l ₁	Neck Length l ₃	Shank Dia. d ₂	Flutes z	Corner Radius r	Ident No.	SAP No.	Weldon Ident No.	Weldon SAP No.	Chipbreaker Ident No.	Chpbkr SAP No.
MXVS-5	1/2	5/8	2 1/2	-	1/2	5	0.120	MXV2650120	2660876	MXV2650120W	2661114	-	-
MXVS-5	1/2	5/8	2 1/2	-	1/2	5	0.190	MXV2650121	2660877	MXV2650121W	2661115	-	-
MXVM-5	1/2	1 1/4	3	-	1/2	5	Square	MXV2650037	2660878	MXV2650037W	2661116	MXV2650737	2661258
MXVM-5	1/2	1 1/4	3	-	1/2	5	0.015	MXV2650038	2660879	MXV2650038W	2661117	MXV2650738	2661259
MXVM-5	1/2	1 1/4	3	-	1/2	5	0.030	MXV2650039	2660880	MXV2650039W	2661118	MXV2650739	2661260
MXVM-5	1/2	1 1/4	3	-	1/2	5	0.060	MXV2650126	2660881	MXV2650126W	2661119	-	-
MXVM-5	1/2	1 1/4	3	-	1/2	5	0.090	MXV2650127	2660882	MXV2650127W	2661120	-	-
MXVM-5	1/2	1 1/4	3	-	1/2	5	0.120	MXV2650128	2660883	MXV2650128W	2661121	-	-
MXVM-5	1/2	1 1/4	3	-	1/2	5	0.190	MXV2650129	2660884	MXV2650129W	2661122	-	-
MXVL-5	1/2	1 5/8	4	-	1/2	5	Square	MXV2650591	2660885	MXV2650591W	2661123	MXV2650740	2661261
MXVL-5	1/2	1 5/8	4	-	1/2	5	0.015	MXV2650592	2660886	MXV2650592W	2661124	MXV2650741	2661262
MXVL-5	1/2	1 5/8	4	-	1/2	5	0.030	MXV2650593	2660887	MXV2650593W	2661125	-	-
MXVL-5	1/2	1 5/8	4	-	1/2	5	0.060	MXV2650594	2660888	MXV2650594W	2661126	-	-
MXVXL-5	1/2	2 1/8	4	-	1/2	5	Square	MXV2650596	2660889	MXV2650596W	2661127	MXV2650742	2661263
MXVXL-5	1/2	2 1/8	4	-	1/2	5	0.015	MXV2650597	2660890	MXV2650597W	2661128	MXV2650743	2661264
MXVXL-5	1/2	2 1/8	4	-	1/2	5	0.030	MXV2650598	2660891	MXV2650598W	2661129	-	-
MXVXL-5	1/2	2 1/8	4	-	1/2	5	0.060	MXV2650599	2660892	MXV2650599W	2661130	-	-
MXVNS-5	1/2	5/8	4	1 3/4	1/2	5	Square	MXV2650043	2660893	MXV2650043W	2661131	-	-
MXVNS-5	1/2	5/8	4	1 3/4	1/2	5	0.030	MXV2650044	2660894	MXV2650044W	2661132	-	-
MXVNS-5	1/2	5/8	4	1 3/4	1/2	5	0.060	MXV2650045	2660895	MXV2650045W	2661133	-	-
MXVNS-5	1/2	5/8	4	1 3/4	1/2	5	0.090	MXV2650133	2660896	MXV2650133W	2661134	-	-
MXVNS-5	1/2	5/8	4	1 3/4	1/2	5	0.120	MXV2650134	2660897	MXV2650134W	2661135	-	-
MXVNS-5	1/2	5/8	4	1 3/4	1/2	5	0.190	MXV2650135	2660898	MXV2650135W	2661136	-	-
MXVS-5	5/8	3/4	3	-	5/8	5	Square	MXV2650601	2660899	MXV2650601W	2661137	-	-
MXVS-5	5/8	3/4	3	-	5/8	5	0.030	MXV2650602	2660900	MXV2650602W	2661138	-	-
MXVS-5	5/8	3/4	3	-	5/8	5	0.060	MXV2650603	2660901	MXV2650603W	2661139	-	-
MXVS-5	5/8	3/4	3	-	5/8	5	0.090	MXV2650604	2660902	MXV2650604W	2661140	-	-
MXVS-5	5/8	3/4	3	-	5/8	5	0.120	MXV2650605	2660903	MXV2650605W	2661141	-	-
MXVM-5	5/8	1 3/8	3 1/2	-	5/8	5	Square	MXV2650607	2660904	MXV2650607W	2661142	MXV2650744	2661265
MXVM-5	5/8	1 3/8	3 1/2	-	5/8	5	0.030	MXV2650608	2660905	MXV2650608W	2661143	MXV2650745	2661266
MXVM-5	5/8	1 3/8	3 1/2	-	5/8	5	0.060	MXV2650609	2660906	MXV2650609W	2661144	-	-

Cutting data recommendations on page 16-17

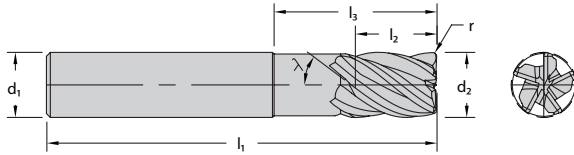
■ = First Choice □ = Second Choice



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Series	Cutting Dia. d ₁	LOC l ₂	OAL l ₁	Neck Length l ₃	Shank Dia. d ₂	Flutes z	Corner Radius r	Ident No.	SAP No.	Weldon Ident No.	Weldon SAP No.	Chipbreaker Ident No.	Chpbkr SAP No.
MXVM-5	5/8	1 3/8	3 1/2	-	5/8	5	0.090	MXV2650610	2660907	MXV2650610W	2661145	-	-
MXVM-5	5/8	1 3/8	3 1/2	-	5/8	5	0.120	MXV2650611	2660908	MXV2650611W	2661146	-	-
MXVL-5	5/8	1 5/8	3 1/2	-	5/8	5	Square	MXV2650613	2660909	MXV2650613W	2661147	MXV2650746	2661267
MXVL-5	5/8	1 5/8	3 1/2	-	5/8	5	0.030	MXV2650614	2660910	MXV2650614W	2661148	MXV2650747	2661268
MXVL-5	5/8	1 5/8	3 1/2	-	5/8	5	0.060	MXV2650615	2660911	MXV2650615W	2661149	-	-
MXVL-5	5/8	2 1/4	4	-	5/8	5	Square	MXV2650616	2660912	MXV2650616W	2661150	MXV2650748	2661269
MXVL-5	5/8	2 1/4	4	-	5/8	5	0.030	MXV2650617	2660913	MXV2650617W	2661151	MXV2650749	2661270
MXVL-5	5/8	2 1/4	4	-	5/8	5	0.060	MXV2650618	2660914	MXV2650618W	2661152	-	-
MXVS-5	3/4	1 1/8	3	-	3/4	5	Square	MXV2650054	2660915	MXV2650054W	2661153	-	-
MXVS-5	3/4	1 1/8	3	-	3/4	5	0.030	MXV2650055	2660916	MXV2650055W	2661154	-	-
MXVS-5	3/4	1 1/8	3	-	3/4	5	0.060	MXV2650056	2660917	MXV2650056W	2661155	-	-
MXVS-5	3/4	1 1/8	3	-	3/4	5	0.090	MXV2650147	2660918	MXV2650147W	2661156	-	-
MXVS-5	3/4	1 1/8	3	-	3/4	5	0.120	MXV2650057	2660919	MXV2650057W	2661157	-	-
MXVS-5	3/4	1 1/8	3	-	3/4	5	0.190	MXV2650148	2660920	MXV2650148W	2661158	-	-
MXVS-5	3/4	1 1/8	3	-	3/4	5	0.250	MXV2650149	2660921	MXV2650149W	2661159	-	-
MXVM-5	3/4	1 1/2	4	-	3/4	5	Square	MXV2650150	2660922	MXV2650150W	2661160	MXV2650750	2661271
MXVM-5	3/4	1 1/2	4	-	3/4	5	0.030	MXV2650151	2660923	MXV2650151W	2661161	MXV2650751	2661272
MXVM-5	3/4	1 1/2	4	-	3/4	5	0.060	MXV2650152	2660924	MXV2650152W	2661162	-	-
MXVM-5	3/4	1 1/2	4	-	3/4	5	0.090	MXV2650153	2660925	MXV2650153W	2661163	-	-
MXVM-5	3/4	1 1/2	4	-	3/4	5	0.120	MXV2650058	2660926	MXV2650058W	2661164	-	-
MXVM-5	3/4	1 1/2	4	-	3/4	5	0.190	MXV2650154	2660927	MXV2650154W	2661165	-	-
MXVM-5	3/4	1 1/2	4	-	3/4	5	0.250	MXV2650155	2660928	MXV2650155W	2661166	-	-
MXVM-5	3/4	1 5/8	4	-	3/4	5	Square	MXV2650063	2660929	MXV2650063W	2661167	MXV2650752	2661273
MXVM-5	3/4	1 5/8	4	-	3/4	5	0.030	MXV2650064	2660930	MXV2650064W	2661168	MXV2650753	2661274
MXVM-5	3/4	1 5/8	4	-	3/4	5	0.060	MXV2650065	2660931	MXV2650065W	2661169	-	-
MXVM-5	3/4	1 5/8	4	-	3/4	5	0.090	MXV2650159	2660932	MXV2650159W	2661170	-	-
MXVM-5	3/4	1 5/8	4	-	3/4	5	0.120	MXV2650066	2660933	MXV2650066W	2661171	-	-
MXVM-5	3/4	1 5/8	4	-	3/4	5	0.190	MXV2650160	2660934	MXV2650160W	2661172	-	-
MXVM-5	3/4	1 5/8	4	-	3/4	5	0.250	MXV2650161	2660935	MXV2650161W	2661173	-	-
MXVM-5	3/4	2 1/4	5	-	3/4	5	Square	MXV2650102	2660936	MXV2650102W	2661174	MXV2650754	2661275
MXVL-5	3/4	2 1/4	5	-	3/4	5	0.030	MXV2650103	2660937	MXV2650103W	2661175	MXV2650755	2661276

Cutting data recommendations on page 16-17

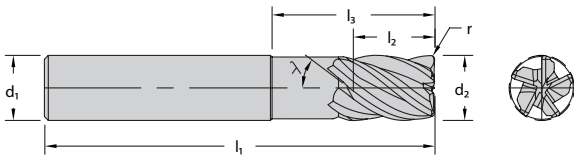
■ = First Choice □ = Second Choice



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Series	Cutting Dia. d ₁	LOC l ₂	OAL l ₁	Neck Length l ₃	Shank Dia. d ₂	Flutes z	Corner Radius r	Ident No.	SAP No.	Weldon Ident No.	Weldon SAP No.	Chipbreaker Ident No.	Chpbkr SAP No.
MXVL-5	3/4	2 1/4	5	-	3/4	5	0.060	MXV2650167	2660938	MXV2650167W	2661176	-	-
MXVL-5	3/4	2 1/4	5	-	3/4	5	0.090	MXV2650168	2660939	MXV2650168W	2661177	-	-
MXVL-5	3/4	2 1/4	5	-	3/4	5	0.120	MXV2650169	2660940	MXV2650169W	2661178	-	-
MXVL-5	3/4	2 1/4	5	-	3/4	5	0.190	MXV2650170	2660941	MXV2650170W	2661179	-	-
MXVL-5	3/4	2 1/4	5	-	3/4	5	0.250	MXV2650171	2660942	MXV2650171W	2661180	-	-
MXVXL-5	3/4	3 1/8	5	-	3/4	5	Square	MXV2650619	2660943	MXV2650619W	2661181	MXV2650756	2661277
MXVXL-5	3/4	3 1/8	5	-	3/4	5	0.030	MXV2650620	2660944	MXV2650620W	2661182	MXV2650757	2661278
MXVXL-5	3/4	3 1/8	5	-	3/4	5	0.060	MXV2650621	2660945	MXV2650621W	2661183	-	-
MXVNS-5	3/4	1 1/8	5	2 3/8	3/4	5	Square	MXV2650176	2660946	MXV2650176W	2661184	-	-
MXVNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.030	MXV2650070	2660947	MXV2650070W	2661185	-	-
MXVNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.060	MXV2650071	2660948	MXV2650071W	2661186	-	-
MXVNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.090	MXV2650177	2660949	MXV2650177W	2661187	-	-
MXVNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.120	MXV2650072	2660950	MXV2650072W	2661188	-	-
MXVNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.190	MXV2650178	2660951	MXV2650178W	2661189	-	-
MXVNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.250	MXV2650179	2660952	MXV2650179W	2661190	-	-
MXVNM-5	3/4	1 1/8	6	3 1/8	3/4	5	Square	MXV2650184	2660953	MXV2650184W	2661191	-	-
MXVNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.030	MXV2650076	2660954	MXV2650076W	2661192	-	-
MXVNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.060	MXV2650077	2660955	MXV2650077W	2661193	-	-
MXVNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.090	MXV2650185	2660956	MXV2650185W	2661194	-	-
MXVNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.120	MXV2650078	2660957	MXV2650078W	2661195	-	-
MXVNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.190	MXV2650186	2660958	MXV2650186W	2661196	-	-
MXVNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.250	MXV2650187	2660959	MXV2650187W	2661197	-	-
MXVS-5	1	1 1/4	4	-	1	5	Square	MXV2650193	2660960	MXV2650193W	2661198	-	-
MXVS-5	1	1 1/4	4	-	1	5	0.030	MXV2650081	2660961	MXV2650081W	2661199	-	-
MXVS-5	1	1 1/4	4	-	1	5	0.060	MXV2650194	2660962	MXV2650194W	2661200	-	-
MXVS-5	1	1 1/4	4	-	1	5	0.120	MXV2650082	2660963	MXV2650082W	2661201	-	-
MXVS-5	1	1 1/4	4	-	1	5	0.190	MXV2650083	2660964	MXV2650083W	2661202	-	-
MXVS-5	1	1 1/4	4	-	1	5	0.250	MXV2650084	2660965	MXV2650084W	2661203	-	-
MXVS-5	1	1 1/2	4	-	1	5	Square	MXV2650196	2660966	MXV2650196W	2661204	-	-
MXVS-5	1	1 1/2	4	-	1	5	0.030	MXV2650197	2660967	MXV2650197W	2661205	-	-
MXVS-5	1	1 1/2	4	-	1	5	0.060	MXV2650198	2660968	MXV2650198W	2661206	-	-

Cutting data recommendations on page 16-17

■ = First Choice □ = Second Choice



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Series	Cutting Dia. d ₁	LOC l ₂	OAL l ₁	Neck Length l ₃	Shank Dia. d ₂	Flutes z	Corner Radius r	Ident No.	SAP No.	Weldon Ident No.	Weldon SAP No.	Chipbreaker Ident No.	Chpbkr SAP No.
MXVS-5	1	1 1/2	4	-	1	5	0.120	MXV2650085	2660969	MXV2650085W	2661207	-	-
MXVS-5	1	1 1/2	4	-	1	5	0.190	MXV2650200	2660970	MXV2650200W	2661208	-	-
MXVS-5	1	1 1/2	4	-	1	5	0.250	MXV2650201	2660971	MXV2650201W	2661209	-	-
MXVM-5	1	2	5	-	1	5	Square	MXV2650205	2660972	MXV2650205W	2661210	MXV2650758	2661279
MXVM-5	1	2	5	-	1	5	0.030	MXV2650090	2660973	MXV2650090W	2661211	MXV2650759	2661280
MXVM-5	1	2	5	-	1	5	0.060	MXV2650206	2660974	MXV2650206W	2661212	-	-
MXVM-5	1	2	5	-	1	5	0.120	MXV2650091	2660975	MXV2650091W	2661213	-	-
MXVM-5	1	2	5	-	1	5	0.190	MXV2650092	2660976	MXV2650092W	2661214	-	-
MXVM-5	1	2	5	-	1	5	0.250	MXV2650093	2660977	MXV2650093W	2661215	-	-
MXVXL-5	1	3 1/8	6	-	1	5	Square	MXV2650623	2660978	MXV2650623W	2661216	MXV2650760	2661281
MXVXL-5	1	3 1/8	6	-	1	5	0.030	MXV2650624	2660979	MXV2650624W	2661217	MXV2650761	2661282
MXVXL-5	1	3 1/8	6	-	1	5	0.060	MXV2650625	2660980	MXV2650625W	2661218	-	-
MXVNM-5	1	1 1/4	6	3 1/8	1	5	Square	MXV2650208	2660981	MXV2650208W	2661219	-	-
MXVNM-5	1	1 1/4	6	3 1/8	1	5	0.030	MXV2650209	2660982	MXV2650209W	2661220	-	-
MXVNM-5	1	1 1/4	6	3 1/8	1	5	0.060	MXV2650094	2660983	MXV2650094W	2661221	-	-
MXVNM-5	1	1 1/4	6	3 1/8	1	5	0.120	MXV2650095	2660984	MXV2650095W	2661222	-	-
MXVNM-5	1	1 1/4	6	3 1/8	1	5	0.190	MXV2650211	2660985	MXV2650211W	2661223	-	-
MXVNM-5	1	1 1/4	6	3 1/8	1	5	0.250	MXV2650096	2660986	MXV2650096W	2661224	-	-
MXVNL-5	1	1 1/4	7	4 1/8	1	5	Square	MXV2650212	2660987	MXV2650212W	2661225	-	-
MXVNL-5	1	1 1/4	7	4 1/8	1	5	0.030	MXV2650213	2660988	MXV2650213W	2661226	-	-
MXVNL-5	1	1 1/4	7	4 1/8	1	5	0.060	MXV2650097	2660989	MXV2650097W	2661227	-	-
MXVNL-5	1	1 1/4	7	4 1/8	1	5	0.120	MXV2650098	2660990	MXV2650098W	2661228	-	-
MXVNL-5	1	1 1/4	7	4 1/8	1	5	0.190	MXV2650215	2660991	MXV2650215W	2661229	-	-
MXVNL-5	1	1 1/4	7	4 1/8	1	5	0.250	MXV2650099	2660992	MXV2650099W	2661230	-	-

Machining Formulas

RPM
$(3.82 \times \text{SFM}) / \text{tool diameter}$

SFM
$\text{RPM} \times .262 \times \text{tool diameter}$

FEED RATE (in / min)
$\text{chipload} \times \# \text{ flutes} \times \text{RPM}$

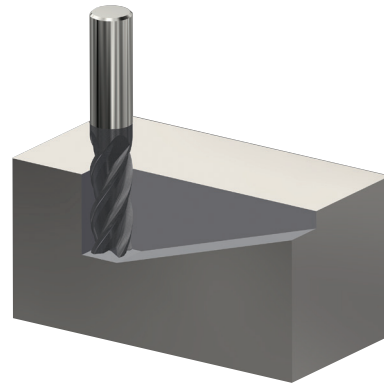
Material Removal Rate (in ³ / min)
$\text{Feed Rate} \times \text{ADoC} \times \text{RDoC}$

Feed / Tooth (in)
$\text{Feed Rate} / (\text{RPM} \times \# \text{ Flutes})$

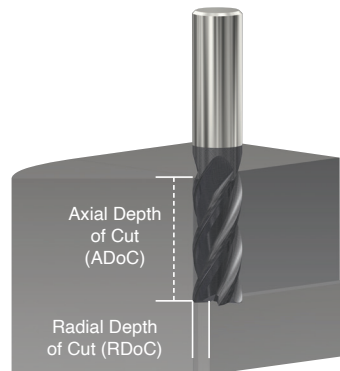
Required Motor Horsepower
$\text{Feed rate} \times \text{axial doc} \times \text{radial doc} \times \text{unit power} \times \text{machine efficiency} \%$

Radial Chip Thinning
$\frac{\text{Chipload} \times (\text{dia}/2)}{\sqrt{(\text{dia} \times \text{RDoC}) - \text{RDoC}^2}}$

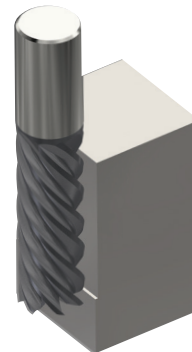
Reduce SFM When End Mill is Projecting From the Tool Holder	
PROJECTION LENGTH < 2.5 X Ø	REDUCE SPEEDS & FEEDS 0%
2.5 X Ø	15%
3 X Ø	20%
4 X Ø	55%
5 X Ø	65%
6 X Ø	75%



Ramp Angle = 1° - 3°
Reduce chipload by
20% of slotting rates.



Apply radial chip
thinning formula when
 $\text{RDoC} < 0.5 \times \text{tool dia.}$



See chart for SFM
reductions for projection
length > 2.5 x tool dia.

Max Velocity (MXV) 4 Flute Cutting Data Recommendations



ISO Grade	Material / Grade	SFM Hardness		Application	Rad DOC	Axial DOC	SFM
		< 32Rc	> 32Rc		% of DIA	x DIA	Starting (<32Rc)
P	Carbon Steel 10XX, 11XX 12XX, 15XX	400 - 600	150 - 250	Full Slotting	100%	.5x	425
		350 - 650	150 - 250	Heavy Profile	33%	1.25x	500
		500 - 850	225 - 325	HEM* Profile	15%	2x	525
		350 - 450	200 - 300	Finishing	3-5%	2x	500
	Alloy Steel 13XX, 40XX, 41XX, 43XX 44XX, 46XX, 47XX, 48XX	275 - 400	100 - 200	Full Slotting	100%	.5x	400
		300 - 450	150 - 225	Heavy Profile	33%	1.25x	475
		450 - 750	175 - 300	HEM* Profile	15%	2x	525
		375 - 450	200 - 250	Finishing	3-5%	2x	450
	Mold & Die Steel 300M, 4340, 52100, M50, A2, D2, H13, L2, M2, P20, S7, T15, W2	225 - 325	70 - 150	Full Slotting	100%	.5x	275
		225 - 375	70 - 150	Heavy Profile	33%	1.25x	275
		350 - 500	150 - 275	HEM* Profile	10%	2x	400
		300 - 400	125 - 225	Finishing	3-5%	2x	350
	Tool Steel PM STEELS	125 - 275	-	Full Slotting	100%	.5x	200
		175 - 325	-	Heavy Profile	25%	1.25x	250
		275 - 475	-	HEM* Profile	10%	2x	350
		250 - 350	-	Finishing	3-5%	2x	350
M	Austenitic Stainless 301, 302, 303, 304/304L/304H, 316/316L, 317L, 321/321H, 347/347H, Nitronic, 309/309S, 310/310S/310H, 330	200 - 325	80 - 200	Full Slotting	100%	.5x	275
		250 - 350	80 - 200	Heavy Profile	33%	1.25x	325
		300 - 500	150 - 275	HEM* Profile	15%	2x	400
		250 - 350	175 - 275	Finishing	3-5%	2x	350
	Martensitic Stainless 403, 405, 409, 410/410S/410HT, 416/416HT, 420, 422, 430, 440C	200 - 325	100 - 250	Full Slotting	100%	.5x	275
		225 - 350	100 - 250	Heavy Profile	25%	1.25x	300
		275 - 450	125 - 250	HEM* Profile	10%	2x	400
		250 - 350	150 - 275	Finishing	3-5%	2x	350
	Precipitation Stainless 13-8 PH, 15-5 PH, 15-7 PH 17-4 PH, 17-7 PH, S143	160 - 225	90 - 180	Full Slotting	100%	.5x	200
		180 - 250	90 - 125	Heavy Profile	25%	1.25x	225
		225 - 450	125 - 250	HEM* Profile	10%	2x	400
		225 - 325	150 - 275	Finishing	3-5%	2x	325
K	Cast Iron Grey 20A, 25A, 30A, 35A, 40A, 45A, 50A	250 - 400	130 - 300	Full Slotting	100%	.5x	375
		250 - 450	170 - 300	Heavy Profile	33%	1.25x	425
		300 - 550	350 - 500	HEM* Profile	10%	2x	500
		300 - 400	300 - 400	Finishing	3-5%	2x	400
	Cast Ductile / Nodular 40010, 60-40-18, 65-45-12 32510, 32518	120 - 300	80 - 140	Full Slotting	100%	.5x	275
		220 - 350	100 - 150	Heavy Profile	33%	1.25x	325
		300 - 500	170 - 270	HEM* Profile	10%	2x	450
		275 - 400	140 - 200	Finishing	3-5%	2x	400
S	Cobalt Base Haynes 21, 25, L-605, Mar-M302, NASA Co-W-Re, Stellite, Ultimet	70 - 120	40 - 90	Full Slotting	100%	.33x	100
		70 - 120	40 - 90	Heavy Profile	20%	.75x	100
		150 - 210	80 - 100	HEM* Profile	8%	1.25x	170
		80-120	80 - 100	Finishing	3-5%	1.5x	100
	Iron Base A-286, Discaloy Incoloy 800-802, Multimet, 16-25-6	60 - 90	40 - 70	Full Slotting	100%	.33x	70
		80 - 140	40 - 70	Heavy Profile	20%	.75x	120
		150 - 200	60 - 80	HEM* Profile	8%	1.25x	170
		80-120	60 - 80	Finishing	3-5%	1.5x	120
	Nickel Base Hastelloy, Haynes 242, Inconel 600, 625, 718, Invar, Kovar, Monel, Nimonic, Rene 41, 77, 95, Udimet, Waspaloy	70 - 100	40 - 80	Full Slotting	100%	.33x	70
		70 - 120	40 - 90	Heavy Profile	20%	.75x	90
		100 - 150	70 - 120	HEM* Profile	8%	1.25x	125
		90 - 125	70 - 100	Finishing	3-5%	1.5x	125
	Titanium 6Al-4V, Commercially Pure, Titanium Aluminide	120 - 180	80 - 120	Full Slotting	100%	1x	180
		120 - 200	90 - 130	Heavy Profile	30%	1x	225
		200 - 450	100 - 140	HEM* Profile	10%	1.5x	350
		200 - 400	100 - 140	Finishing	3-5%	1.5x	300
	Titanium Ti 10-2-3, Beta 21S, Ti 5553	80 - 120	60 - 100	Full Slotting	100%	1x	100
		90 - 140	80 - 120	Heavy Profile	20%	1x	120
		100 - 150	80 - 120	HEM* Profile	8%	1.5x	140
		100 - 160	100 - 120	Finishing	3-5%	1.5x	160

HEM* = High Efficiency Machining

Chip Load Per Tooth (Inches)						
1/8	1/4	3/8	1/2	5/8	3/4	1
.0008	.0016	.0024	.0028	.0036	.0044	.0050
.0009	.0017	.0026	.0030	.0038	.0047	.0053
.0011	.0022	.0034	.0039	.0050	.0062	.0070
.0020	.0041	.0061	.0071	.0092	.0112	.0128
.0008	.0016	.0024	.0028	.0036	.0044	.0050
.0009	.0017	.0026	.0030	.0038	.0047	.0053
.0011	.0022	.0034	.0039	.0050	.0062	.0070
.0020	.0041	.0061	.0071	.0092	.0112	.0128
.0004	.0012	.0019	.0024	.0028	.0033	.0038
.0004	.0013	.0020	.0026	.0030	.0035	.0040
.0007	.0020	.0032	.0040	.0047	.0055	.0063
.0010	.0031	.0048	.0061	.0071	.0084	.0097
.0005	.0010	.0020	.0025	.0030	.0035	.0040
.0006	.0012	.0023	.0029	.0035	.0040	.0046
.0008	.0017	.0033	.0042	.0050	.0058	.0067
.0013	.0026	.0051	.0064	.0077	.0089	.0102
.0006	.0013	.0022	.0026	.0032	.0039	.0045
.0006	.0014	.0023	.0028	.0034	.0041	.0048
.0008	.0018	.0031	.0036	.0045	.0055	.0063
.0015	.0033	.0056	.0066	.0082	.0100	.0115
.0004	.0010	.0020	.0023	.0030	.0035	.0040
.0005	.0012	.0023	.0027	.0035	.0040	.0046
.0007	.0017	.0033	.0038	.0050	.0058	.0067
.0010	.0026	.0051	.0059	.0077	.0089	.0102
.0004	.0010	.0020	.0025	.0030	.0035	.0040
.0005	.0012	.0023	.0029	.0035	.0040	.0046
.0007	.0017	.0033	.0042	.0050	.0058	.0067
.0010	.0026	.0051	.0064	.0077	.0089	.0102
.0005	.0015	.0025	.0030	.0035	.0040	.0046
.0005	.0016	.0027	.0032	.0037	.0043	.0049
.0008	.0025	.0042	.0050	.0058	.0067	.0077
.0013	.0038	.0064	.0077	.0089	.0102	.0117
.0005	.0011	.0020	.0025	.0030	.0035	.0040
.0005	.0012	.0021	.0027	.0032	.0037	.0043
.0008	.0018	.0033	.0042	.0050	.0058	.0067
.0013	.0028	.0051	.0064	.0077	.0089	.0102
.0003	.0008	.0015	.0020	.0024	.0027	.0030
.0004	.0010	.0019	.0025	.0030	.0034	.0038
.0006	.0015	.0028	.0037	.0044	.0050	.0055
.0008	.0020	.0038	.0051	.0061	.0069	.0077
.0004	.0010	.0020	.0025	.0030	.0035	.0040
.0005	.0013	.0025	.0031	.0038	.0044	.0050
.0007	.0018	.0037	.0046	.0055	.0065	.0074
.0010	.0026	.0051	.0064	.0077	.0089	.0102
.0003	.0008	.0016	.0020	.0023	.0027	.0030
.0004	.0010	.0020	.0025	.0029	.0034	.0038
.0006	.0015	.0029	.0037	.0042	.0050	.0055
.0008	.0020	.0041	.0051	.0059	.0069	.0077
.0004	.0010	.0020	.0025	.0030	.0036	.0041
.0004	.0011	.0022	.0027	.0033	.0039	.0045
.0007	.0017	.0033	.0042	.0050	.0060	.0068
.0010	.0026	.0051	.0064	.0077	.0092	.0105
.0003	.0007	.0015	.0020	.0023	.0027	.0030
.0004	.0009	.0019	.0025	.0029	.0034	.0038
.0006	.0013	.0028	.0037	.0042	.0050	.0055
.0008	.0018	.0038	.0051	.0059	.0069	.0077

Max Velocity (MXV) Series 5 Flute Cutting Data Recommendations



ISO Grade	Material / Grade	SFM Hardness		Application	Rad DOC	Axial DOC	SFM
		< 32Rc	> 32Rc		% of DIA	x DIA	Starting (<32Rc)
P	Carbon Steel 10XX, 11XX 12XX, 15XX	400 - 600	150 - 250	Full Slotting	100%	.5x	350
		350 - 650	150 - 250	Heavy Profile	33%	1.25x	400
		500 - 850	225 - 325	HEM* Profile	15%	2x	550
		350 - 450	200 - 300	Finishing	3-5%	2x	450
	Alloy Steel 13XX, 40XX, 41XX, 43XX 44XX, 46XX, 47XX, 48XX	275 - 400	100 - 200	Full Slotting	100%	.5x	325
		300 - 450	150 - 225	Heavy Profile	33%	1.25x	350
		450 - 750	175 - 300	HEM* Profile	15%	2x	500
		375 - 450	200 - 250	Finishing	3-5%	2x	450
	Mold & Die Steel 300M, 4340, 52100, M50, A2, D2, H13, L2, M2, P20, S7, T15, W2	225 - 325	70 - 150	Full Slotting	100%	.5x	275
		225 - 375	70 - 150	Heavy Profile	33%	1.25x	275
		350 - 500	150 - 275	HEM* Profile	10%	2x	400
		300 - 400	125 - 225	Finishing	3-5%	2x	350
	Tool Steel PM STEELS	125 - 275	—	Full Slotting	100%	.5x	200
		175 - 325	—	Heavy Profile	25%	1.25x	250
		275 - 475	—	HEM* Profile	10%	2x	350
		250 - 350	—	Finishing	3-5%	2x	350
M	Austenitic Stainless 301, 302, 303, 304/304L/304H, 316/316L, 317L, 321/321H, 347/347H, Nitronic, 309/309S, 310/310S/310H, 330	200 - 325	80 - 200	Full Slotting	100%	.5x	275
		250 - 350	80 - 200	Heavy Profile	33%	1.25x	325
		300 - 500	150 - 275	HEM* Profile	15%	2x	400
		250 - 350	175 - 275	Finishing	3-5%	2x	350
	Martensitic Stainless 403, 405, 409, 410/410S/410HT, 416/416HT, 420, 422, 430, 440C	200 - 325	100 - 250	Full Slotting	100%	.5x	275
		225 - 350	100 - 250	Heavy Profile	25%	1.25x	300
		275 - 450	125 - 250	HEM* Profile	10%	2x	400
		250 - 350	150 - 275	Finishing	3-5%	2x	350
	Precipitation Stainless 13-8 PH, 15-5 PH, 15-7 PH 17-4 PH, 17-7 PH, S143	160 - 225	90 - 180	Full Slotting	100%	.5x	200
		180 - 250	90 - 125	Heavy Profile	25%	1.25x	225
		225 - 450	125 - 250	HEM* Profile	10%	2x	400
		225 - 325	150 - 275	Finishing	3-5%	2x	325
K	Cast Iron Grey 20A, 25A, 30A, 35A, 40A, 45A, 50A	250 - 400	130 - 300	Full Slotting	100%	.5x	375
		250 - 450	170 - 300	Heavy Profile	33%	1.25x	425
		300 - 550	350 - 500	HEM* Profile	10%	2x	500
		300 - 400	300 - 400	Finishing	3-5%	2x	400
	Cast Ductile / Nodular 40010, 60-40-18, 65-45-12 32510, 32518	120 - 300	80 - 140	Full Slotting	100%	.5x	275
		220 - 350	100 - 150	Heavy Profile	33%	1.25x	325
		300 - 500	170 - 270	HEM* Profile	10%	2x	450
		275 - 400	140 - 200	Finishing	3-5%	2x	400
S	Cobalt Base Haynes 21, 25, L-605, Mar-M302, NASA Co-W-Re, Stellite, Ultimet	70 - 120	40 - 90	Full Slotting	100%	.33x	100
		70 - 120	40 - 90	Heavy Profile	20%	.75x	100
		150 - 210	80 - 100	HEM* Profile	8%	1.25x	170
		80-120	80 - 100	Finishing	3-5%	1.5x	100
	Iron Base A-286, Discaloy Incoloy 800-802, Multimet, 16-25-6	60 - 90	40 - 70	Full Slotting	100%	.25x	70
		80 - 140	40 - 70	Heavy Profile	20%	.75x	120
		150 - 200	60 - 80	HEM* Profile	8%	1.25x	170
		80-120	60 - 80	Finishing	3-5%	1.5x	120
	Nickel Base Hastelloy, Haynes 242, Inconel 600, 625, 718, Invar, Kovar, Monel, Nimonic, Rene 41, 77, 95, Udimet, Waspaloy	70 - 100	40 - 80	Full Slotting	100%	.25x	70
		70 - 120	40 - 90	Heavy Profile	20%	.75x	90
		100 - 150	70 - 120	HEM* Profile	8%	1.5x	125
		90 - 125	70 - 100	Finishing	3-5%	1.5x	125
	Titanium 6Al-4V, Commercially Pure, Titanium Aluminide	120 - 180	80 - 120	Full Slotting	100%	.5x	140
		120 - 200	90 - 130	Heavy Profile	30%	1x	160
		200 - 450	100 - 140	HEM* Profile	10%	1.5x	350
		200 - 400	100 - 140	Finishing	3-5%	1.5x	300
	Titanium Ti 10-2-3, Beta 21S, Ti 5553	80 - 120	60 - 100	Full Slotting	100%	.25x	100
		90 - 140	80 - 120	Heavy Profile	20%	1x	120
		100 - 150	80 - 120	HEM* Profile	8%	1.5x	140
		100 - 160	100 - 120	Finishing	3-5%	1.5x	160

HEM* = High Efficiency Machining

Chip Load Per Tooth (Inches)						
1/8	1/4	3/8	1/2	5/8	3/4	1
.0005	.0012	.0020	.0024	.0031	.0037	.0043
.0005	.0013	.0021	.0026	.0033	.0039	.0046
.0007	.0017	.0028	.0034	.0043	.0052	.0060
.0013	.0031	.0051	.0061	.0079	.0094	.0110
.0005	.0012	.0020	.0024	.0030	.0037	.0043
.0005	.0014	.0021	.0026	.0032	.0039	.0046
.0007	.0016	.0028	.0034	.0042	.0052	.0060
.0013	.0027	.0051	.0061	.0077	.0094	.0110
.0003	.0010	.0150	.0020	.0024	.0029	.0033
.0003	.0011	.0160	.0021	.0026	.0031	.0035
.0005	.0017	.0250	.0033	.0040	.0048	.0055
.0008	.0026	.0383	.0051	.0061	.0074	.0084
.0003	.0008	.0015	.0020	.0025	.0030	.0035
.0003	.0009	.0017	.0023	.0029	.0035	.0040
.0005	.0013	.0025	.0033	.0042	.0050	.0058
.0008	.0020	.0038	.0051	.0064	.0077	.0089
.0004	.0010	.0018	.0022	.0027	.0033	.0040
.0004	.0011	.0019	.0023	.0029	.0035	.0043
.0006	.0014	.0025	.0031	.0038	.0046	.0056
.0010	.0026	.0046	.0056	.0069	.0084	.0102
.0003	.0008	.0015	.0017	.0023	.0026	.0030
.0003	.0009	.0018	.0020	.0026	.0030	.0035
.0005	.0013	.0026	.0029	.0038	.0044	.0050
.0008	.0020	.0039	.0044	.0057	.0067	.0077
.0003	.0008	.0160	.0021	.0025	.0030	.0035
.0003	.0009	.0185	.0024	.0029	.0035	.0040
.0005	.0013	.0267	.0035	.0042	.0050	.0058
.0008	.0019	.0408	.0054	.0064	.0077	.0089
.0003	.0011	.0020	.0025	.0030	.0035	.0040
.0003	.0012	.0021	.0027	.0032	.0037	.0043
.0005	.0018	.0033	.0042	.0050	.0058	.0067
.0008	.0028	.0051	.0064	.0077	.0089	.0102
.0003	.0008	.0015	.0020	.0025	.0030	.0035
.0003	.0009	.0016	.0021	.0027	.0032	.0037
.0005	.0013	.0025	.0033	.0042	.0050	.0058
.0008	.0020	.0038	.0051	.0064	.0077	.0089
.0002	.0005	.0011	.0014	.0018	.0023	.0027
.0003	.0006	.0014	.0018	.0023	.0029	.0034
.0004	.0009	.0020	.0026	.0033	.0042	.0050
.0005	.0013	.0028	.0036	.0046	.0059	.0069
.0003	.0008	.0015	.0019	.0025	.0030	.0035
.0004	.0010	.0019	.0023	.0031	.0038	.0044
.0006	.0015	.0028	.0034	.0046	.0055	.0065
.0008	.0020	.0038	.0047	.0064	.0077	.0089
.0002	.0005	.0011	.0015	.0019	.0022	.0026
.0003	.0006	.0014	.0019	.0024	.0028	.0033
.0004	.0009	.0020	.0028	.0035	.0041	.0048
.0005	.0013	.0028	.0038	.0048	.0056	.0066
.0003	.0008	.0015	.0020	.0025	.0030	.0034
.0003	.0008	.0016	.0021	.0027	.0033	.0037
.0005	.0013	.0025	.0033	.0042	.0050	.0057
.0008	.0019	.0038	.0050	.0064	.0077	.0087
.0002	.0005	.0011	.0015	.0018	.0022	.0026
.0003	.0006	.0014	.0019	.0023	.0028	.0033
.0004	.0009	.0020	.0028	.0033	.0041	.0048
.0005	.0013	.0028	.0038	.0046	.0056	.0066

Endurance Compression Series

The newly released Endurance Compression Series is the latest to join LMT Onsrud's lineup of compression spiral tooling. The unique coating extends tool life, and the optimized geometry aids in achieving maximum productivity when routing laminate wood, composite wood, soft wood, and hard wood.

Features and Benefits

- Optimized flute geometry for improved chip evacuation
- Improved cutting edge quality for a more stable edge
- Proprietary top coating for unparalleled surface smoothness

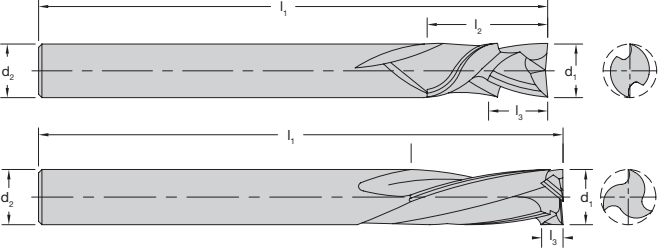
First Choice Usage

- High Pressure Laminate (HPL) Panels

Second Choice Usage

- Laminate Panels
- Composite Wood
- Soft Wood
- Hard Wood



SC  E CW SW HW LW  							
Part Number	SAP Number	Cutting Diameter d_1	LOC l_2	Upcut LOC l_3	Shank Diameter d_2	Overall Length l_1	Flutes z
60-113EC	2660543	1/4	7/8	0.188	1/4	2 1/2	2
60-123EC	2660544	3/8	7/8	0.200	3/8	3	2
60-124EC	2660545	3/8	1 1/8	0.406	3/8	3	2
60-127EC	2660546	3/8	1 1/8	0.200	3/8	3	2
60-163EC	2660547	1/2	7/8	0.200	1/2	3	2
60-169EC	2660548	1/2	1 1/8	0.562	1/2	3	2
60-173EC	2660549	1/2	1 3/8	0.200	1/2	3 1/2	2
60-171EC	2660550	1/2	1 3/8	0.625	1/2	3 1/2	2
60-126EC	2661363	3/8	7/8	0.200	3/8	3	3
60-176EC	2661364	1/2	7/8	0.200	1/2	3	3
60-177EC	2661365	1/2	1 3/8	0.200	1/2	3 1/2	3

Endurance Compression Series Metric

Part Number	SAP Number	Cutting Diameter d_1	LOC l_2	Upcut LOC l_3	Shank Diameter d_2	Overall Length l_1	Flutes z
60-153EC	2660554	8	22	4	8	64	2
60-155EC	2660555	10	22	4	10	76	2
60-156EC	2660556	12	28	6	12	76	2

Cutting Data Recommendations Endurance Solid Carbide Compression

Recommend Chip Load per Tooth by Diameter (in)			
Series	Depth of Cut	3/8	1/2
60-100EC	1 x dia.	.021-.023	.023-.025

DEPTH OF CUT:

1 x D Use recommended chip load
 2 x D Reduce chip load by 25%
 3 x D Reduce chip load by 50%

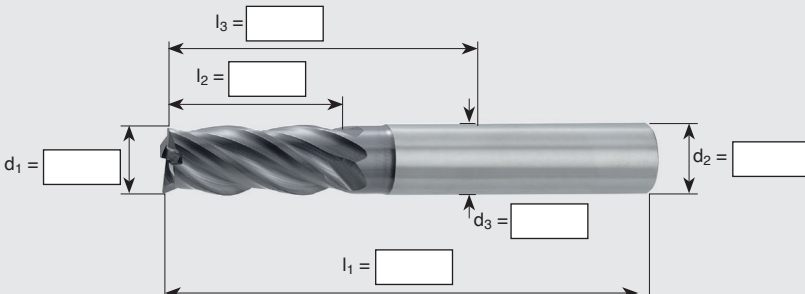
Customer Information			
Company		Contact	
Address		Phone	
		E-Mail	
		Date	

Application	
☐ Roughing	
☐ Finishing	
☐ Corner Milling	
☐ Slotting	
☐ Circular Milling	
☐ Pocket Milling	
☐ Dynamic Milling	
☐ Other _____	

Workpiece Data	
Material	
Material Grade	
Hardness	
Depth of Cut	
Width of Cut	

Tool Data	
Tool similar to	
Number of Flutes	
Center Cutting	☐ Yes ☐ No
Coating	☐ ESG ☐ ESR ☐ ZRN ☐ TiN ☐ X ☐ N/A ☐ Other _____
Shank Type	☐ Weldon ☐ Straight ☐ Other _____
Coolant Through	☐ Axial ☐ Radial ☐ None

Machine Information	
Machine Type	
Tool Clamping	
Spindle Position	☐ Horizontal ☐ Vertical ☐ 5-Axis
Lubrication	☐ Oil ☐ Dry ☐ Emulsion _____ % ☐ MQL ☐ Air Pressure ☐ Dust Collection

Dimensions	
	
Corner Radius	 _____
Edge Protection	 x 45°
Roughing Profile	☐ Yes ☐ No 
Chipbreaker	☐ Yes ☐ No 

Quantity & Pricing	
Quantity Needed (Minimum of 6 pieces)	
Target Pricing?	☐ Distributor ☐ End User

Notes

Customer Information			
Company		Street	
End User		City / Zip Code	
Name		Date	
E-Mail		Contact	

Tool Material	
☐ HSS	☐ PCD Full Face
☐ Solid Carbide	☐ PCD
☐ Carbide Tip	☐ Powder Material
☐ Other _____	

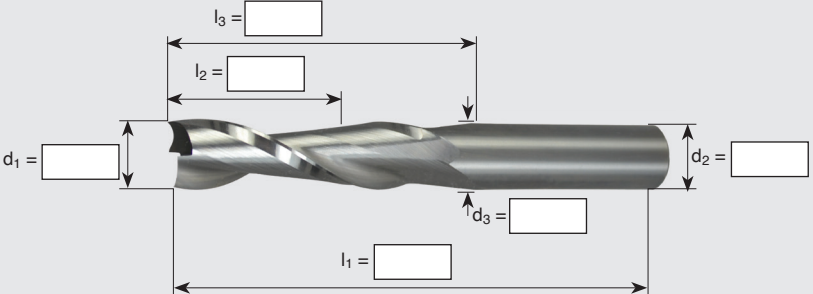
Flute Style	
☐ Up	☐ Straight
☐ Down	☐ Compression

Flute Form	
☐ Rougher	☐ Finisher
☐ Chipbrk/Finisher	☐ Burr
☐ Other _____	

Point Geometry	
☐ Square	☐ Non-Center Cutting
☐ Center Cutting	☐ Ball Nose
☐ Other _____	

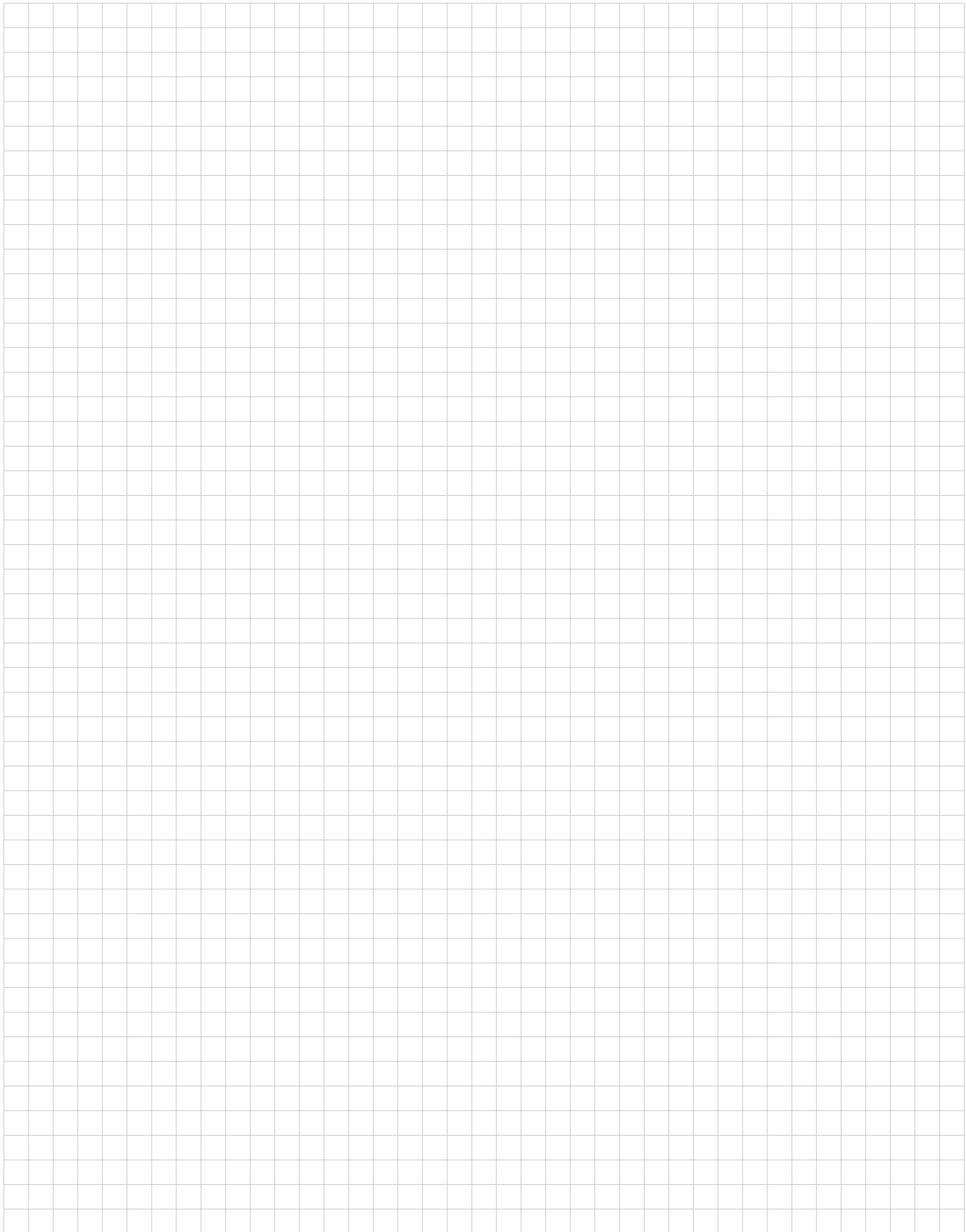
Tool Data	
Tool similar to	
Number of Flutes	
Coating	☐ ESG ☐ ESR ☐ ZRN ☐ TiN ☐ MAR ☐ PLR ☐ Uncoated ☐ Other _____
Flat	☐ Weldon ☐ Whistle Notch ☐ Other _____

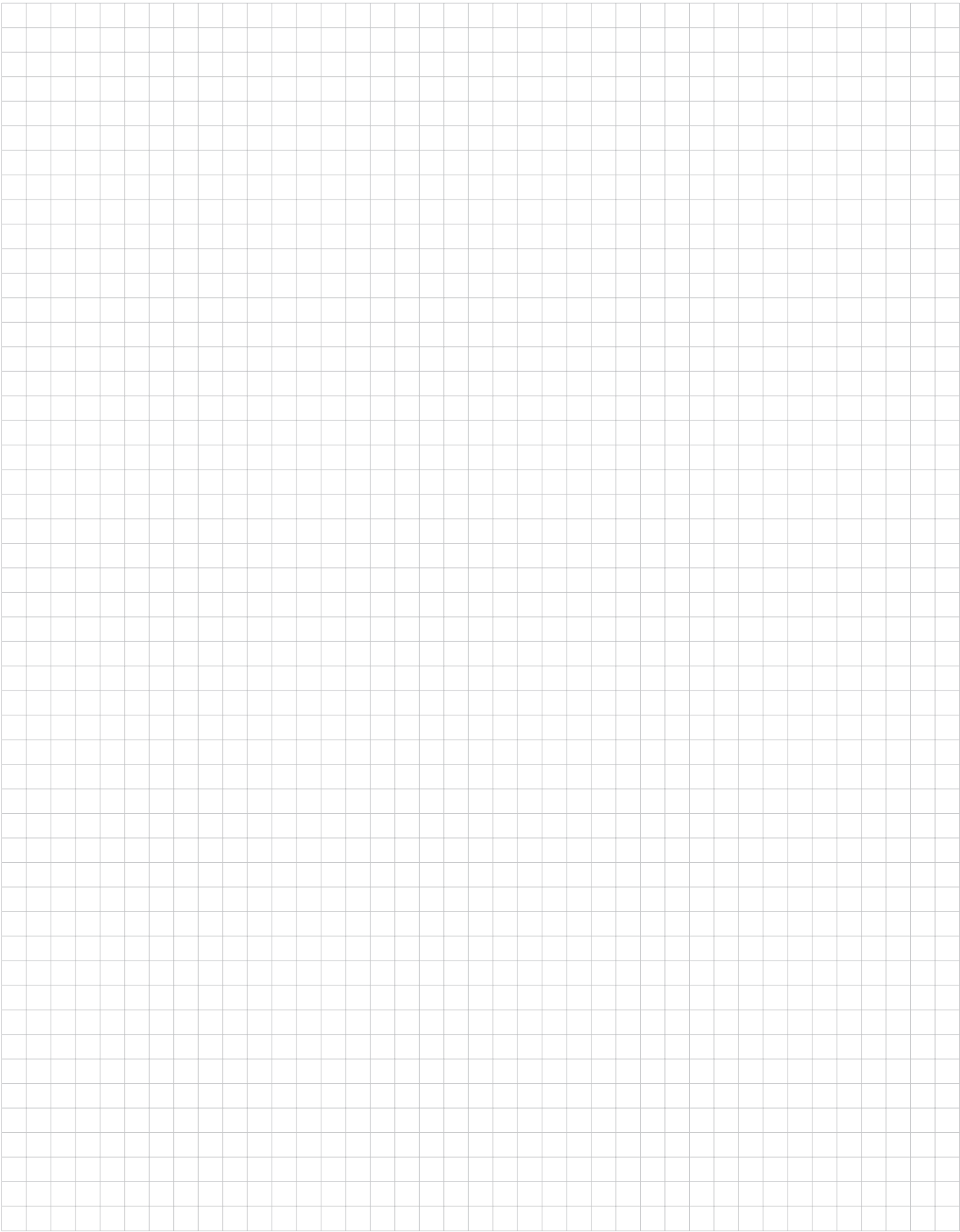
Machine & Material Information	
Machine Type	☐ CNC Router ☐ Air Router ☐ Hand Router
Material Being Machined	

Dimensions	
	
Corner Radius	

Quantity & Pricing		
Quantity Needed (Minimum of 6 pieces)		
Target Pricing?		☐ Distributor ☐ End User

Notes





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www.onsrud.com

