LMT • ONSRUD

High Performance Milling

Solid Carbide Metalworking Solutions

www.onsrud.com

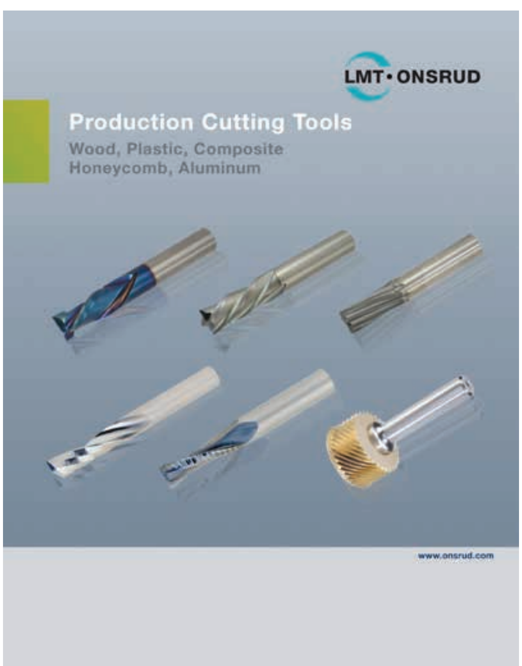
exactly yours

Since our beginning over 70 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



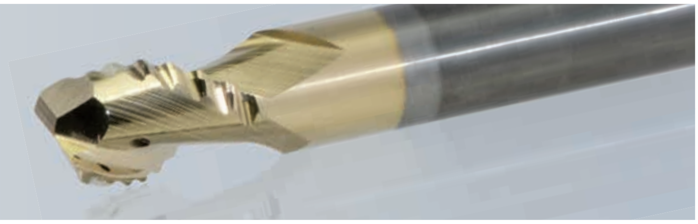
LMT Onsrud
Production Cutting Tools

LMT Onsrud
High Performance Milling

Contents

High Performance Milling Tools

Icon Selection



Point Geometry

- Square Corner
- Corner Radius
- Ballnose
- Corner Chamfer

Helix Angle

- 36-38 degree dual helix angle
- 40 degree helix angle
- 38 degree helix angle
- 36 degree helix angle
- 35-38 degree dual helix angle
- 30 degree helix angle
- 38-39 degree dual helix angle
- 35-36 degree dual helix angle

Shank Tolerance

- h6 — h6 Shank Tolerance

Application

- Trochoidal milling
- Slotting
- Copying

Tool Material

- SC — Solid Carbide

Coating

- ZRN — ZRN
- ESG — ESG
- ESR — ESR
- X — X

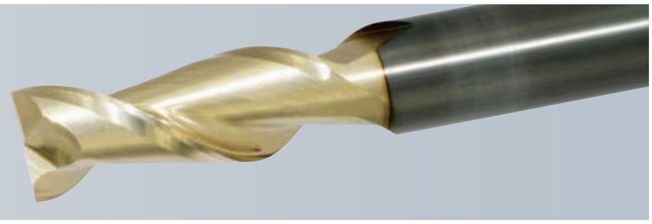
Flutes

- Z=2 — 2 flute
- Z=3 — 3 flute
- Z=4 — 4 flute
- Z=5 — 5 flute
- Z=7 — 7 flute
- Z=9 — 9 flute
- Z=11 — 11 flute

Coolant

- Coolant Through

Aluminum Finisher (AF) Series End Mills



The LMT Onsrud AF Series of end mills are optimized for slotting and finishing non-ferrous materials.

Features and Benefits

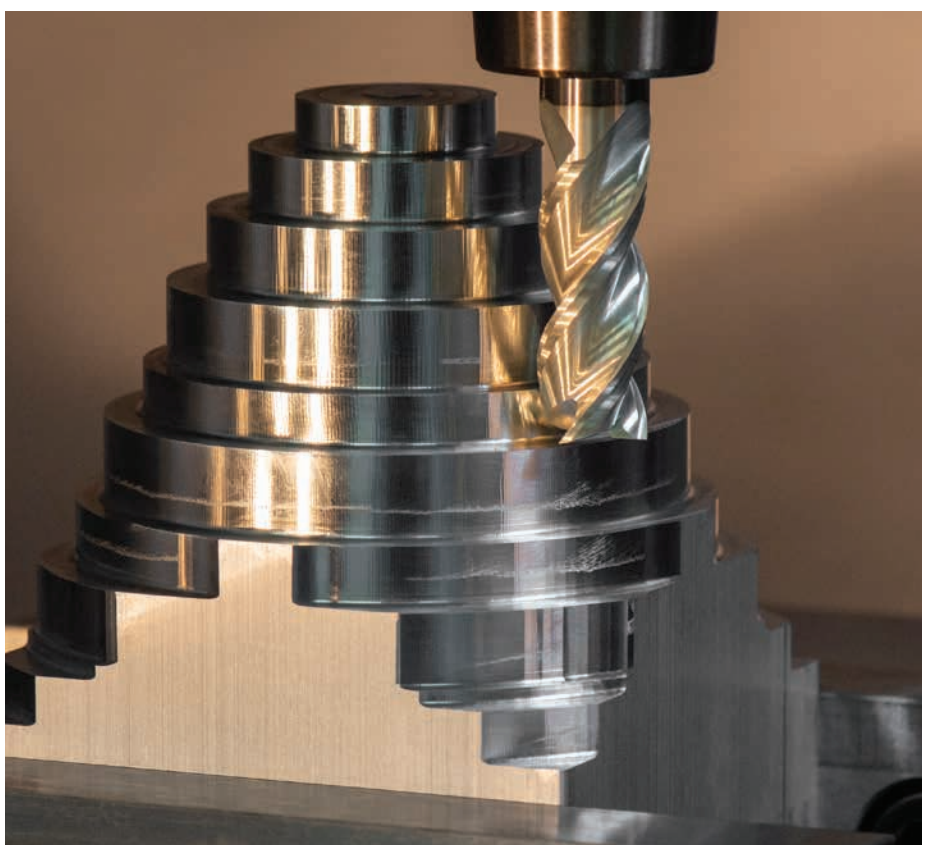
- 2 flute tools with open flute geometry optimized for slotting applications.
- 3 flute tools with large "sweet spot" for chatter free machining at high RPM and heavy cuts.
- Chip former on flute face for optimal chip removal. Heat and chips on deep pocket applications.
- Reduced chatter will increase tool life, produce a higher quality part and optimize cutting efficiencies.
- Polished flutes for better chip removal and low HP requirements.
- Industry's largest selection of corner radii and neck and flute lengths in a standard program.
- Available uncoated with high polished flutes & specialty ZRN coatings for Aluminum.

Applications

- Slotting
- Pocketing
- Profiling
- High Material Removal

Usage

- ISO N Non-Ferrous
- Aluminum
- Brass
- Bronze
- Copper



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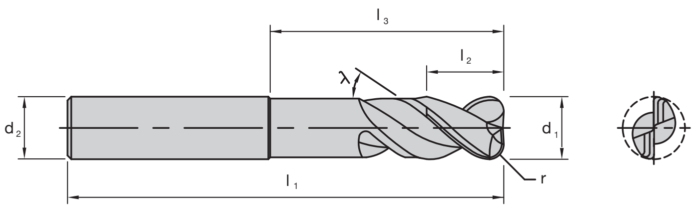

	Uncoated	ZRN
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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFS-2	1/8	1/4	2	–	1/8	2	Square	• AMC400002	AMC400003
AFS-2	1/8	1/4	2	–	1/8	2	0.010	AMC400004	AMC400005
AFS-2	1/8	1/4	2	–	1/8	2	Ball	• AMC400006	AMC400007
AFM-2	1/8	1/2	2	–	1/8	2	Square	• AMC400020	AMC400021
AFM-2	1/8	1/2	2	–	1/8	2	0.010	AMC400022	AMC400023
AFM-2	1/8	1/2	2	–	1/8	2	Ball	• AMC400024	AMC400025
AFS-2	3/16	5/16	2	–	3/16	2	Square	• AMC400008	AMC400009
AFS-2	3/16	5/16	2	–	3/16	2	0.010	AMC400010	AMC400011
AFS-2	3/16	5/16	2	–	3/16	2	Ball	• AMC400012	AMC400013
AFM-2	3/16	9/16	2 1/2	–	3/16	2	Square	• AMC400026	AMC400027
AFM-2	3/16	9/16	2 1/2	–	3/16	2	0.010	AMC400028	AMC400029
AFM-2	3/16	9/16	2 1/2	–	3/16	2	Ball	• AMC400030	AMC400031
AFS-2	1/4	3/8	2	–	1/4	2	Square	• AMC700102	AMC700103
AFS-2	1/4	3/8	2	–	1/4	2	0.015	• AMC700106	AMC700107
AFS-2	1/4	3/8	2	–	1/4	2	0.030	• AMC700110	AMC700111
AFS-2	1/4	3/8	2	–	1/4	2	0.060	AMC700114	AMC700115
AFS-2	1/4	3/8	2	–	1/4	2	0.090	AMC700118	AMC700119
AFS-2	1/4	3/8	2	–	1/4	2	Ball	• AMC700138	AMC700139
AFM-2	1/4	3/4	2	–	1/4	2	Square	• AMC700752	• AMC700753
AFM-2	1/4	3/4	2	–	1/4	2	0.015	• AMC700756	AMC700757
AFM-2	1/4	3/4	2	–	1/4	2	0.030	• AMC700760	• AMC700761
AFM-2	1/4	3/4	2	–	1/4	2	0.060	AMC700764	• AMC700765
AFM-2	1/4	3/4	2	–	1/4	2	0.090	AMC700768	AMC700769
AFM-2	1/4	3/4	2	–	1/4	2	Ball	• AMC700788	• AMC700789
AFL-2	1/4	1 1/4	2 1/2	–	1/4	2	Square	• AMC701402	AMC701403
AFL-2	1/4	1 1/4	2 1/2	–	1/4	2	0.015	• AMC701406	• AMC701407
AFL-2	1/4	1 1/4	2 1/2	–	1/4	2	0.030	AMC701410	AMC701411
AFL-2	1/4	1 1/4	2 1/2	–	1/4	2	0.060	AMC701414	AMC701415

Cutting data recommendations on page 94

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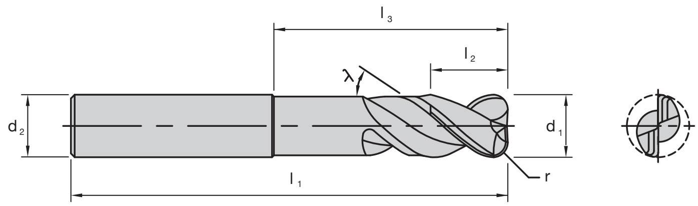

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFL-2	1/4	1 1/4	2 1/2	–	1/4	2	0.090	AMC701418	AMC701419
AFL-2	1/4	1 1/4	2 1/2	–	1/4	2	Ball	AMC701438	AMC701439
AFNS-2	1/4	3/8	4	1 1/2	1/4	2	Square	• AMC706102	AMC706103
AFNS-2	1/4	3/8	4	1 1/2	1/4	2	0.015	• AMC706106	AMC706107
AFNS-2	1/4	3/8	4	1 1/2	1/4	2	0.030	• AMC706110	AMC706111
AFNS-2	1/4	3/8	4	1 1/2	1/4	2	0.060	• AMC706114	AMC706115
AFNS-2	1/4	3/8	4	1 1/2	1/4	2	Ball	• AMC706138	AMC706139
AFNM-2	1/4	3/8	4	1 3/4	1/4	2	Square	• AMC706752	• AMC706753
AFNM-2	1/4	3/8	4	1 3/4	1/4	2	0.015	• AMC706756	AMC706757
AFNM-2	1/4	3/8	4	1 3/4	1/4	2	0.030	AMC706760	AMC706761
AFNM-2	1/4	3/8	4	1 3/4	1/4	2	0.060	AMC706764	AMC706765
AFNM-2	1/4	3/8	4	1 3/4	1/4	2	Ball	• AMC706788	AMC706789
AFNL-2	1/4	3/8	4	2 1/8	1/4	2	Square	• AMC707402	AMC707403
AFNL-2	1/4	3/8	4	2 1/8	1/4	2	0.015	AMC707406	AMC707407
AFNL-2	1/4	3/8	4	2 1/8	1/4	2	0.030	AMC707410	AMC707411
AFNL-2	1/4	3/8	4	2 1/8	1/4	2	0.060	AMC707414	AMC707415
AFNL-2	1/4	3/8	4	2 1/8	1/4	2	Ball	• AMC707438	AMC707439
AFS-2	5/16	9/16	2 1/2	–	5/16	2	Square	• AMC400014	AMC400015
AFS-2	5/16	9/16	2 1/2	–	5/16	2	0.015	AMC400016	AMC400017
AFS-2	5/16	9/16	2 1/2	–	5/16	2	Ball	• AMC400018	AMC400019
AFM-2	5/16	13/16	2 1/2	–	5/16	2	Square	• AMC400032	AMC400033
AFM-2	5/16	13/16	2 1/2	–	5/16	2	0.015	AMC400034	AMC400035
AFM-2	5/16	13/16	2 1/2	–	5/16	2	Ball	• AMC400036	AMC400037
AFS-2	3/8	1/2	2 1/2	–	3/8	2	Square	• AMC700202	AMC700203
AFS-2	3/8	1/2	2 1/2	–	3/8	2	0.015	• AMC700206	AMC700207
AFS-2	3/8	1/2	2 1/2	–	3/8	2	0.030	AMC700210	AMC700211
AFS-2	3/8	1/2	2 1/2	–	3/8	2	0.060	AMC700214	AMC700215
AFS-2	3/8	1/2	2 1/2	–	3/8	2	0.090	• AMC700218	AMC700219

Cutting data recommendations on page 94

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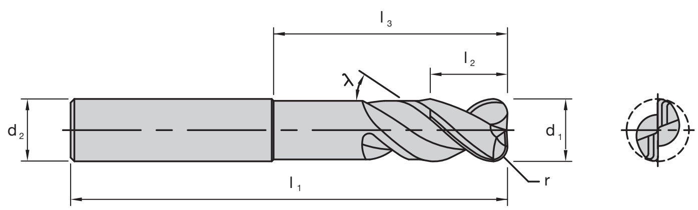

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFS-2	3/8	1/2	2 1/2	–	3/8	2	0.120	• AMC700222	AMC700223
AFS-2	3/8	1/2	2 1/2	–	3/8	2	Ball	AMC700238	AMC700239
AFM-2	3/8	1	2 1/2	–	3/8	2	Square	• AMC700852	AMC700853
AFM-2	3/8	1	2 1/2	–	3/8	2	0.015	• AMC700856	AMC700857
AFM-2	3/8	1	2 1/2	–	3/8	2	0.030	• AMC700860	AMC700861
AFM-2	3/8	1	2 1/2	–	3/8	2	0.060	• AMC700864	AMC700865
AFM-2	3/8	1	2 1/2	–	3/8	2	0.090	• AMC700868	AMC700869
AFM-2	3/8	1	2 1/2	–	3/8	2	0.120	• AMC700872	AMC700873
AFM-2	3/8	1	2 1/2	–	3/8	2	Ball	• AMC700888	AMC700889
AFL-2	3/8	1 1/2	4	–	3/8	2	Square	• AMC701502	• AMC701503
AFL-2	3/8	1 1/2	4	–	3/8	2	0.015	• AMC701506	AMC701507
AFL-2	3/8	1 1/2	4	–	3/8	2	0.030	AMC701510	AMC701511
AFL-2	3/8	1 1/2	4	–	3/8	2	0.060	AMC701514	AMC701515
AFL-2	3/8	1 1/2	4	–	3/8	2	0.090	AMC701518	AMC701519
AFL-2	3/8	1 1/2	4	–	3/8	2	0.120	AMC701522	AMC701523
AFL-2	3/8	1 1/2	4	–	3/8	2	Ball	AMC701538	AMC701539
AFNS-2	3/8	1/2	4	1 3/4	3/8	2	Square	• AMC706202	AMC706203
AFNS-2	3/8	1/2	4	1 3/4	3/8	2	0.015	• AMC706206	AMC706207
AFNS-2	3/8	1/2	4	1 3/4	3/8	2	0.030	AMC706210	AMC706211
AFNS-2	3/8	1/2	4	1 3/4	3/8	2	0.060	AMC706214	AMC706215
AFNS-2	3/8	1/2	4	1 3/4	3/8	2	0.090	• AMC706218	AMC706219
AFNS-2	3/8	1/2	4	1 3/4	3/8	2	0.120	• AMC706222	AMC706223
AFNS-2	3/8	1/2	4	1 3/4	3/8	2	Ball	• AMC706238	AMC706239
AFNM-2	3/8	1/2	4	2 1/4	3/8	2	Square	• AMC706852	AMC706853
AFNM-2	3/8	1/2	4	2 1/4	3/8	2	0.015	AMC706856	AMC706857
AFNM-2	3/8	1/2	4	2 1/4	3/8	2	0.030	• AMC706860	AMC706861
AFNM-2	3/8	1/2	4	2 1/4	3/8	2	0.060	• AMC706864	AMC706865
AFNM-2	3/8	1/2	4	2 1/4	3/8	2	0.090	AMC706868	AMC706869

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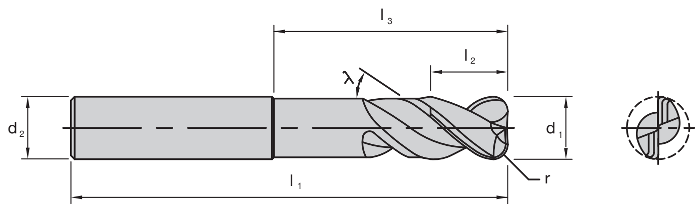

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFNM-2	3/8	1/2	4	2 1/4	3/8	2	0.120	• AMC706872	AMC706873
AFNM-2	3/8	1/2	4	2 1/4	3/8	2	Ball	• AMC706888	AMC706889
AFNL-2	3/8	1/2	5	2 3/4	3/8	2	Square	• AMC707502	AMC707503
AFNL-2	3/8	1/2	5	2 3/4	3/8	2	0.015	AMC707506	AMC707507
AFNL-2	3/8	1/2	5	2 3/4	3/8	2	0.030	• AMC707510	AMC707511
AFNL-2	3/8	1/2	5	2 3/4	3/8	2	0.060	AMC707514	AMC707515
AFNL-2	3/8	1/2	5	2 3/4	3/8	2	0.090	AMC707518	AMC707519
AFNL-2	3/8	1/2	5	2 3/4	3/8	2	0.120	• AMC707522	AMC707523
AFNL-2	3/8	1/2	5	2 3/4	3/8	2	Ball	• AMC707538	AMC707539
AFS-2	1/2	5/8	3	–	1/2	2	Square	• AMC700302	AMC700303
AFS-2	1/2	5/8	3	–	1/2	2	0.015	• AMC700306	AMC700307
AFS-2	1/2	5/8	3	–	1/2	2	0.030	• AMC700310	AMC700311
AFS-2	1/2	5/8	3	–	1/2	2	0.060	• AMC700314	• AMC700315
AFS-2	1/2	5/8	3	–	1/2	2	0.090	• AMC700318	AMC700319
AFS-2	1/2	5/8	3	–	1/2	2	0.120	• AMC700322	AMC700323
AFS-2	1/2	5/8	3	–	1/2	2	0.190	AMC700330	AMC700331
AFS-2	1/2	5/8	3	–	1/2	2	Ball	• AMC700338	AMC700339
AFM-2	1/2	1 1/4	3	–	1/2	2	Square	• AMC700952	• AMC700953
AFM-2	1/2	1 1/4	3	–	1/2	2	0.015	• AMC700956	AMC700957
AFM-2	1/2	1 1/4	3	–	1/2	2	0.030	• AMC700960	• AMC700961
AFM-2	1/2	1 1/4	3	–	1/2	2	0.060	• AMC700964	• AMC700965
AFM-2	1/2	1 1/4	3	–	1/2	2	0.090	• AMC700968	• AMC700969
AFM-2	1/2	1 1/4	3	–	1/2	2	0.120	• AMC700972	• AMC700973
AFM-2	1/2	1 1/4	3	–	1/2	2	0.190	• AMC700980	AMC700981
AFM-2	1/2	1 1/4	3	–	1/2	2	Ball	• AMC700988	• AMC700989
AFL-2	1/2	2	4	–	1/2	2	Square	• AMC701602	AMC701603
AFL-2	1/2	2	4	–	1/2	2	0.015	AMC701606	AMC701607
AFL-2	1/2	2	4	–	1/2	2	0.030	AMC701610	AMC701611

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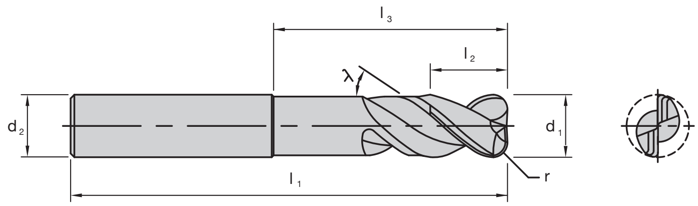

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFL-2	1/2	2	4	–	1/2	2	0.060	AMC701614	AMC701615
AFL-2	1/2	2	4	–	1/2	2	0.090	AMC701618	AMC701619
AFL-2	1/2	2	4	–	1/2	2	0.120	AMC701622	AMC701623
AFL-2	1/2	2	4	–	1/2	2	0.190	AMC701630	AMC701631
AFL-2	1/2	2	4	–	1/2	2	Ball	AMC701638	AMC701639
AFNS-2	1/2	5/8	4	2 1/8	1/2	2	Square	• AMC706302	AMC706303
AFNS-2	1/2	5/8	4	2 1/8	1/2	2	0.015	• AMC706306	AMC706307
AFNS-2	1/2	5/8	4	2 1/8	1/2	2	0.030	• AMC706310	AMC706311
AFNS-2	1/2	5/8	4	2 1/8	1/2	2	0.060	• AMC706314	AMC706315
AFNS-2	1/2	5/8	4	2 1/8	1/2	2	0.090	• AMC706318	AMC706319
AFNS-2	1/2	5/8	4	2 1/8	1/2	2	0.120	• AMC706322	AMC706323
AFNS-2	1/2	5/8	4	2 1/8	1/2	2	0.190	• AMC706330	AMC706331
AFNS-2	1/2	5/8	4	2 1/8	1/2	2	Ball	• AMC706338	AMC706339
AFNM-2	1/2	5/8	5	3 1/8	1/2	2	Square	• AMC706952	AMC706953
AFNM-2	1/2	5/8	5	3 1/8	1/2	2	0.015	• AMC706956	AMC706957
AFNM-2	1/2	5/8	5	3 1/8	1/2	2	0.030	• AMC706960	AMC706961
AFNM-2	1/2	5/8	5	3 1/8	1/2	2	0.060	• AMC706964	AMC706965
AFNM-2	1/2	5/8	5	3 1/8	1/2	2	0.090	• AMC706968	AMC706969
AFNM-2	1/2	5/8	5	3 1/8	1/2	2	0.120	• AMC706972	AMC706973
AFNM-2	1/2	5/8	5	3 1/8	1/2	2	0.190	• AMC706980	AMC706981
AFNM-2	1/2	5/8	5	3 1/8	1/2	2	Ball	• AMC706988	AMC706989
AFNL-2	1/2	5/8	6	4 1/8	1/2	2	Square	• AMC707602	AMC707603
AFNL-2	1/2	5/8	6	4 1/8	1/2	2	0.015	• AMC707606	AMC707607
AFNL-2	1/2	5/8	6	4 1/8	1/2	2	0.030	• AMC707610	AMC707611
AFNL-2	1/2	5/8	6	4 1/8	1/2	2	0.060	AMC707614	AMC707615
AFNL-2	1/2	5/8	6	4 1/8	1/2	2	0.090	AMC707618	AMC707619
AFNL-2	1/2	5/8	6	4 1/8	1/2	2	0.120	• AMC707622	AMC707623
AFNL-2	1/2	5/8	6	4 1/8	1/2	2	0.190	AMC707630	AMC707631

Cutting data recommendations on page 94

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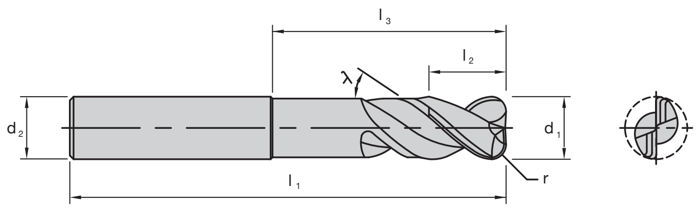

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFNL-2	1/2	5/8	6	4 1/8	1/2	2	Ball	• AMC707638	AMC707639
AFS-2	5/8	3/4	3	–	5/8	2	Square	• AMC700402	AMC700403
AFS-2	5/8	3/4	3	–	5/8	2	0.030	AMC700410	AMC700411
AFS-2	5/8	3/4	3	–	5/8	2	0.060	AMC700414	AMC700415
AFS-2	5/8	3/4	3	–	5/8	2	0.120	AMC700422	AMC700423
AFS-2	5/8	3/4	3	–	5/8	2	0.250	AMC700434	AMC700435
AFS-2	5/8	3/4	3	–	5/8	2	Ball	AMC700438	AMC700439
AFM-2	5/8	1 5/8	4	–	5/8	2	Square	• AMC701052	AMC701053
AFM-2	5/8	1 5/8	4	–	5/8	2	0.030	AMC701060	AMC701061
AFM-2	5/8	1 5/8	4	–	5/8	2	0.060	AMC701064	AMC701065
AFM-2	5/8	1 5/8	4	–	5/8	2	0.120	AMC701072	AMC701073
AFM-2	5/8	1 5/8	4	–	5/8	2	0.250	AMC701084	AMC701085
AFM-2	5/8	1 5/8	4	–	5/8	2	Ball	AMC701088	AMC701089
AFL-2	5/8	2 1/4	5	–	5/8	2	Square	• AMC701702	AMC701703
AFL-2	5/8	2 1/4	5	–	5/8	2	0.030	AMC701710	AMC701711
AFL-2	5/8	2 1/4	5	–	5/8	2	0.060	AMC701714	AMC701715
AFL-2	5/8	2 1/4	5	–	5/8	2	0.120	AMC701722	AMC701723
AFL-2	5/8	2 1/4	5	–	5/8	2	0.250	AMC701734	AMC701735
AFL-2	5/8	2 1/4	5	–	5/8	2	Ball	AMC701738	AMC701739
AFNS-2	5/8	3/4	4	2 1/8	5/8	2	Square	• AMC706402	AMC706403
AFNS-2	5/8	3/4	4	2 1/8	5/8	2	0.030	• AMC706410	AMC706411
AFNS-2	5/8	3/4	4	2 1/8	5/8	2	0.060	• AMC706414	AMC706415
AFNS-2	5/8	3/4	4	2 1/8	5/8	2	0.120	AMC706422	AMC706423
AFNS-2	5/8	3/4	4	2 1/8	5/8	2	0.250	AMC706434	AMC706435
AFNS-2	5/8	3/4	4	2 1/8	5/8	2	Ball	• AMC706438	AMC706439
AFNM-2	5/8	3/4	5	3 1/8	5/8	2	Square	• AMC707052	AMC707053
AFNM-2	5/8	3/4	5	3 1/8	5/8	2	0.030	AMC707060	AMC707061
AFNM-2	5/8	3/4	5	3 1/8	5/8	2	0.060	AMC707064	AMC707065

Cutting data recommendations on page 94

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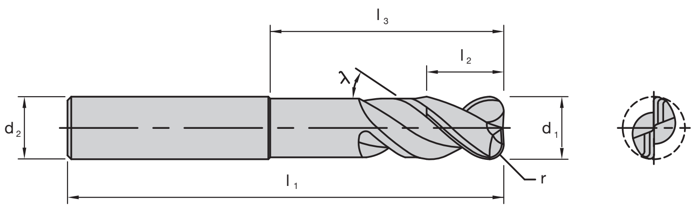

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFNM-2	5/8	3/4	5	3 1/8	5/8	2	0.120	• AMC707072	AMC707073
AFNM-2	5/8	3/4	5	3 1/8	5/8	2	0.250	AMC707084	AMC707085
AFNM-2	5/8	3/4	5	3 1/8	5/8	2	Ball	AMC707088	AMC707089
AFNL-2	5/8	3/4	6	4 1/8	5/8	2	Square	AMC707702	AMC707703
AFNL-2	5/8	3/4	6	4 1/8	5/8	2	0.030	• AMC707710	AMC707711
AFNL-2	5/8	3/4	6	4 1/8	5/8	2	0.060	AMC707714	AMC707715
AFNL-2	5/8	3/4	6	4 1/8	5/8	2	0.120	AMC707722	AMC707723
AFNL-2	5/8	3/4	6	4 1/8	5/8	2	0.250	AMC707734	AMC707735
AFNL-2	5/8	3/4	6	4 1/8	5/8	2	Ball	• AMC707738	AMC707739
AFS-2	3/4	1	3	–	3/4	2	Square	• AMC700502	AMC700503
AFS-2	3/4	1	3	–	3/4	2	0.030	• AMC700510	AMC700511
AFS-2	3/4	1	3	–	3/4	2	0.060	AMC700514	AMC700515
AFS-2	3/4	1	3	–	3/4	2	0.090	AMC700518	AMC700519
AFS-2	3/4	1	3	–	3/4	2	0.120	AMC700522	AMC700523
AFS-2	3/4	1	3	–	3/4	2	0.190	AMC700530	AMC700531
AFS-2	3/4	1	3	–	3/4	2	0.250	• AMC700534	AMC700535
AFS-2	3/4	1	3	–	3/4	2	Ball	• AMC700538	AMC700539
AFM-2	3/4	1 5/8	4	–	3/4	2	Square	• AMC701152	AMC701153
AFM-2	3/4	1 5/8	4	–	3/4	2	0.030	• AMC701160	AMC701161
AFM-2	3/4	1 5/8	4	–	3/4	2	0.060	AMC701164	AMC701165
AFM-2	3/4	1 5/8	4	–	3/4	2	0.090	AMC701168	AMC701169
AFM-2	3/4	1 5/8	4	–	3/4	2	0.120	AMC701172	AMC701173
AFM-2	3/4	1 5/8	4	–	3/4	2	0.190	• AMC701180	AMC701181
AFM-2	3/4	1 5/8	4	–	3/4	2	0.250	• AMC701184	AMC701185
AFM-2	3/4	1 5/8	4	–	3/4	2	Ball	• AMC701188	AMC701189
AFL-2	3/4	2 1/2	5	–	3/4	2	Square	• AMC701802	AMC701803
AFL-2	3/4	2 1/2	5	–	3/4	2	0.030	• AMC701810	AMC701811
AFL-2	3/4	2 1/2	5	–	3/4	2	0.060	• AMC701814	AMC701815

Cutting data recommendations on page 94

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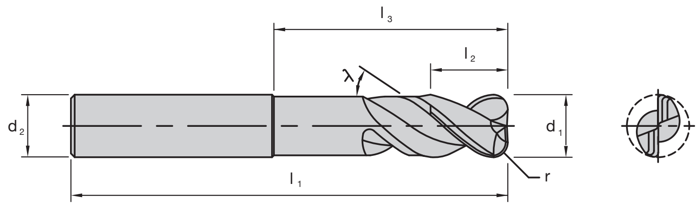

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFL-2	3/4	2 1/2	5	–	3/4	2	0.090	AMC701818	AMC701819
AFL-2	3/4	2 1/2	5	–	3/4	2	0.120	AMC701822	AMC701823
AFL-2	3/4	2 1/2	5	–	3/4	2	0.190	AMC701830	AMC701831
AFL-2	3/4	2 1/2	5	–	3/4	2	0.250	AMC701834	AMC701835
AFL-2	3/4	2 1/2	5	–	3/4	2	Ball	AMC701838	AMC701839
AFNS-2	3/4	1	4	2 1/8	3/4	2	Square	• AMC706502	AMC706503
AFNS-2	3/4	1	4	2 1/8	3/4	2	0.030	• AMC706510	AMC706511
AFNS-2	3/4	1	4	2 1/8	3/4	2	0.060	• AMC706514	AMC706515
AFNS-2	3/4	1	4	2 1/8	3/4	2	0.090	AMC706518	AMC706519
AFNS-2	3/4	1	4	2 1/8	3/4	2	0.120	• AMC706522	AMC706523
AFNS-2	3/4	1	4	2 1/8	3/4	2	0.190	• AMC706530	AMC706531
AFNS-2	3/4	1	4	2 1/8	3/4	2	0.250	• AMC706534	AMC706535
AFNS-2	3/4	1	4	2 1/8	3/4	2	Ball	• AMC706538	AMC706539
AFNM-2	3/4	1	5	3 1/8	3/4	2	Square	• AMC707152	AMC707153
AFNM-2	3/4	1	5	3 1/8	3/4	2	0.030	• AMC707160	AMC707161
AFNM-2	3/4	1	5	3 1/8	3/4	2	0.060	• AMC707164	AMC707165
AFNM-2	3/4	1	5	3 1/8	3/4	2	0.090	• AMC707168	AMC707169
AFNM-2	3/4	1	5	3 1/8	3/4	2	0.120	• AMC707172	AMC707173
AFNM-2	3/4	1	5	3 1/8	3/4	2	0.190	AMC707180	AMC707181
AFNM-2	3/4	1	5	3 1/8	3/4	2	0.250	• AMC707184	AMC707185
AFNM-2	3/4	1	5	3 1/8	3/4	2	Ball	• AMC707188	AMC707189
AFNL-2	3/4	1	6	4 1/8	3/4	2	Square	• AMC707802	AMC707803
AFNL-2	3/4	1	6	4 1/8	3/4	2	0.030	• AMC707810	AMC707811
AFNL-2	3/4	1	6	4 1/8	3/4	2	0.060	• AMC707814	AMC707815
AFNL-2	3/4	1	6	4 1/8	3/4	2	0.090	AMC707818	AMC707819
AFNL-2	3/4	1	6	4 1/8	3/4	2	0.120	• AMC707822	AMC707823
AFNL-2	3/4	1	6	4 1/8	3/4	2	0.190	AMC707830	AMC707831
AFNL-2	3/4	1	6	4 1/8	3/4	2	0.250	• AMC707834	AMC707835

Cutting data recommendations on page 94

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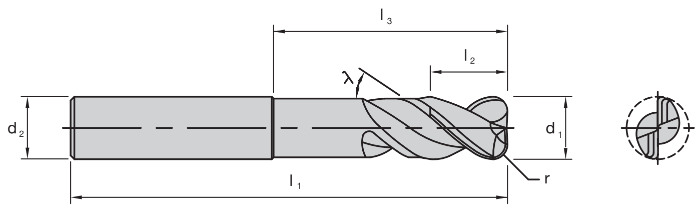

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFNL-2	3/4	1	6	4 1/8	3/4	2	Ball	• AMC707838	AMC707839
AFS-2	1	1 1/4	4	–	1	2	Square	• AMC700602	AMC700603
AFS-2	1	1 1/4	4	–	1	2	0.030	AMC700610	AMC700611
AFS-2	1	1 1/4	4	–	1	2	0.060	AMC700614	AMC700615
AFS-2	1	1 1/4	4	–	1	2	0.120	AMC700622	AMC700623
AFS-2	1	1 1/4	4	–	1	2	0.190	AMC700630	AMC700631
AFS-2	1	1 1/4	4	–	1	2	0.250	AMC700634	AMC700635
AFS-2	1	1 1/4	4	–	1	2	Ball	• AMC700638	AMC700639
AFM-2	1	2 1/2	5	–	1	2	Square	• AMC701252	AMC701253
AFM-2	1	2 1/2	5	–	1	2	0.030	• AMC701260	AMC701261
AFM-2	1	2 1/2	5	–	1	2	0.060	AMC701264	AMC701265
AFM-2	1	2 1/2	5	–	1	2	0.120	AMC701272	AMC701273
AFM-2	1	2 1/2	5	–	1	2	0.190	AMC701280	AMC701281
AFM-2	1	2 1/2	5	–	1	2	0.250	AMC701284	AMC701285
AFM-2	1	2 1/2	5	–	1	2	Ball	AMC701288	AMC701289
AFL-2	1	3 1/4	6	–	1	2	Square	AMC701902	AMC701903
AFL-2	1	3 1/4	6	–	1	2	0.030	AMC701910	AMC701911
AFL-2	1	3 1/4	6	–	1	2	0.060	AMC701914	AMC701915
AFL-2	1	3 1/4	6	–	1	2	0.120	AMC701922	AMC701923
AFL-2	1	3 1/4	6	–	1	2	0.190	AMC701930	AMC701931
AFL-2	1	3 1/4	6	–	1	2	0.250	AMC701934	AMC701935
AFL-2	1	3 1/4	6	–	1	2	Ball	AMC701938	AMC701939
AFNS-2	1	1 1/4	5	2 1/8	1	2	Square	• AMC706602	AMC706603
AFNS-2	1	1 1/4	5	2 1/8	1	2	0.030	• AMC706610	AMC706611
AFNS-2	1	1 1/4	5	2 1/8	1	2	0.060	• AMC706614	AMC706615
AFNS-2	1	1 1/4	5	2 1/8	1	2	0.120	• AMC706622	AMC706623
AFNS-2	1	1 1/4	5	2 1/8	1	2	0.190	AMC706630	AMC706631
AFNS-2	1	1 1/4	5	2 1/8	1	2	0.250	AMC706634	AMC706635

Cutting data recommendations on page 94

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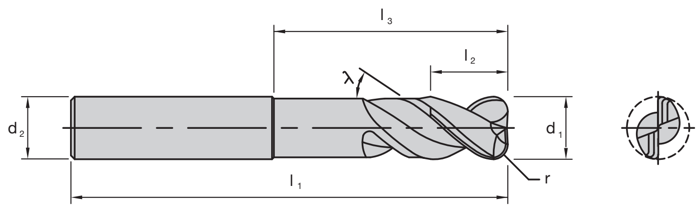

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFNS-2	1	1 1/4	5	2 1/8	1	2	Ball	• AMC706638	AMC706639
AFNM-2	1	1 1/4	6	3 1/8	1	2	Square	• AMC707252	AMC707253
AFNM-2	1	1 1/4	6	3 1/8	1	2	0.030	• AMC707260	AMC707261
AFNM-2	1	1 1/4	6	3 1/8	1	2	0.060	• AMC707264	AMC707265
AFNM-2	1	1 1/4	6	3 1/8	1	2	0.120	• AMC707272	AMC707273
AFNM-2	1	1 1/4	6	3 1/8	1	2	0.190	AMC707280	AMC707281
AFNM-2	1	1 1/4	6	3 1/8	1	2	0.250	• AMC707284	AMC707285
AFNM-2	1	1 1/4	6	3 1/8	1	2	Ball	AMC707288	AMC707289
AFNL-2	1	1 1/4	7	4 1/8	1	2	Square	• AMC707902	AMC707903
AFNL-2	1	1 1/4	7	4 1/8	1	2	0.030	• AMC707910	AMC707911
AFNL-2	1	1 1/4	7	4 1/8	1	2	0.060	• AMC707914	AMC707915
AFNL-2	1	1 1/4	7	4 1/8	1	2	0.120	• AMC707922	AMC707923
AFNL-2	1	1 1/4	7	4 1/8	1	2	0.190	AMC707930	AMC707931
AFNL-2	1	1 1/4	7	4 1/8	1	2	0.250	• AMC707934	AMC707935
AFNL-2	1	1 1/4	7	4 1/8	1	2	Ball	• AMC707938	AMC707939

Cutting data recommendations on page 94

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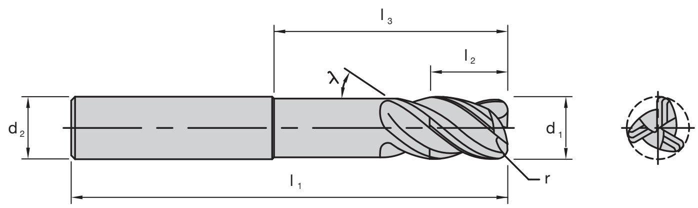

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFS-3	1/8	1/4	2	–	1/8	3	Square	• AMC400038	AMC400039
AFS-3	1/8	1/4	2	–	1/8	3	0.010	AMC400040	AMC400041
AFS-3	1/8	1/4	2	–	1/8	3	Ball	• AMC400042	AMC400043
AFM-3	1/8	1/2	2	–	1/8	3	Square	• AMC400056	AMC400057
AFM-3	1/8	1/2	2	–	1/8	3	0.010	AMC400058	AMC400059
AFM-3	1/8	1/2	2	–	1/8	3	Ball	• AMC400060	AMC400061
AFS-3	3/16	5/16	2	–	3/16	3	Square	• AMC400044	AMC400045
AFS-3	3/16	5/16	2	–	3/16	3	0.010	AMC400046	AMC400047
AFS-3	3/16	5/16	2	–	3/16	3	Ball	• AMC400048	AMC400049
AFM-3	3/16	9/16	2 1/2	–	3/16	3	Square	• AMC400062	AMC400063
AFM-3	3/16	9/16	2 1/2	–	3/16	3	0.010	AMC400064	AMC400065
AFM-3	3/16	9/16	2 1/2	–	3/16	3	Ball	• AMC400066	AMC400067
AFL-3	3/16	7/8	2 1/2	–	3/16	3	Square	• AMC400078	AMC400079
AFS-3	1/4	3/8	2	–	1/4	3	Square	• AMC703102	AMC703103
AFS-3	1/4	3/8	2	–	1/4	3	0.015	• AMC703106	AMC703107
AFS-3	1/4	3/8	2	–	1/4	3	0.030	• AMC703110	AMC703111
AFS-3	1/4	3/8	2	–	1/4	3	0.060	AMC703114	AMC703115
AFS-3	1/4	3/8	2	–	1/4	3	0.090	AMC703118	AMC703119
AFS-3	1/4	3/8	2	–	1/4	3	Ball	• AMC703138	AMC703139
AFM-3	1/4	3/4	2	–	1/4	3	Square	• AMC703752	• AMC703753
AFM-3	1/4	3/4	2	–	1/4	3	0.015	• AMC703756	AMC703757
AFM-3	1/4	3/4	2	–	1/4	3	0.030	• AMC703760	AMC703761
AFM-3	1/4	3/4	2	–	1/4	3	0.060	AMC703764	AMC703765
AFM-3	1/4	3/4	2	–	1/4	3	0.090	AMC703768	AMC703769
AFM-3	1/4	3/4	2	–	1/4	3	Ball	• AMC703788	AMC703789
AFL-3	1/4	1 1/4	2 1/2	–	1/4	3	Square	• AMC704402	AMC704403
AFL-3	1/4	1 1/4	2 1/2	–	1/4	3	0.015	• AMC704406	AMC704407

Cutting data recommendations on page 94

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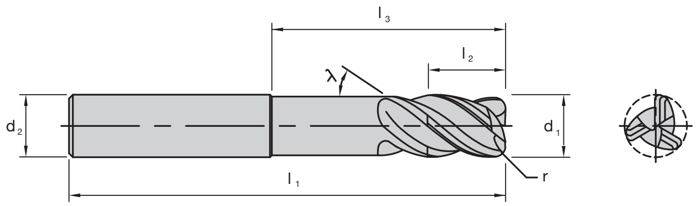

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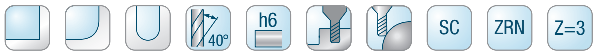
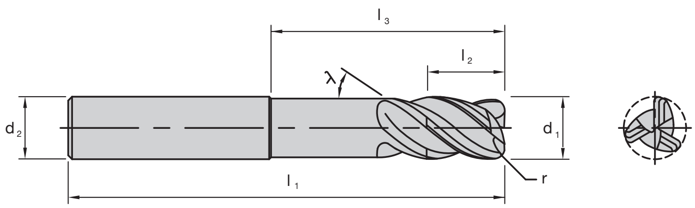
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFL-3	1/4	1 1/4	2 1/2	–	1/4	3	0.030	AMC704410	AMC704411
AFL-3	1/4	1 1/4	2 1/2	–	1/4	3	0.060	AMC704414	AMC704415
AFL-3	1/4	1 1/4	2 1/2	–	1/4	3	0.090	AMC704418	AMC704419
AFL-3	1/4	1 1/4	2 1/2	–	1/4	3	Ball	• AMC704438	AMC704439
AFNS-3	1/4	3/8	4	1 1/2	1/4	3	Square	• AMC709102	• AMC709103
AFNS-3	1/4	3/8	4	1 1/2	1/4	3	0.015	• AMC709106	AMC709107
AFNS-3	1/4	3/8	4	1 1/2	1/4	3	0.030	• AMC709110	AMC709111
AFNS-3	1/4	3/8	4	1 1/2	1/4	3	0.060	AMC709114	AMC709115
AFNS-3	1/4	3/8	4	1 1/2	1/4	3	0.090	AMC709118	AMC709119
AFNS-3	1/4	3/8	4	1 1/2	1/4	3	Ball	• AMC709138	AMC709139
AFNM-3	1/4	3/8	4	1 3/4	1/4	3	Square	• AMC709752	AMC709753
AFNM-3	1/4	3/8	4	1 3/4	1/4	3	0.015	• AMC709756	AMC709757
AFNM-3	1/4	3/8	4	1 3/4	1/4	3	0.030	• AMC709760	AMC709761
AFNM-3	1/4	3/8	4	1 3/4	1/4	3	0.060	AMC709764	AMC709765
AFNM-3	1/4	3/8	4	1 3/4	1/4	3	0.090	AMC709768	AMC709769
AFNM-3	1/4	3/8	4	1 3/4	1/4	3	Ball	• AMC709788	AMC709789
AFNL-3	1/4	3/8	4	2 1/8	1/4	3	Square	• AMC710402	AMC710403
AFNL-3	1/4	3/8	4	2 1/8	1/4	3	0.015	• AMC710406	AMC710407
AFNL-3	1/4	3/8	4	2 1/8	1/4	3	0.030	• AMC710410	• AMC710411
AFNL-3	1/4	3/8	4	2 1/8	1/4	3	0.060	AMC710414	AMC710415
AFNL-3	1/4	3/8	4	2 1/8	1/4	3	0.090	AMC710418	AMC710419
AFNL-3	1/4	3/8	4	2 1/8	1/4	3	Ball	• AMC710438	AMC710439
AFS-3	5/16	9/16	2 1/2	–	5/16	3	Square	• AMC400050	AMC400051
AFS-3	5/16	9/16	2 1/2	–	5/16	3	0.015	AMC400052	AMC400053
AFS-3	5/16	9/16	2 1/2	–	5/16	3	Ball	• AMC400054	AMC400055
AFM-3	5/16	13/16	2 1/2	–	5/16	3	Square	• AMC400068	AMC400069
AFM-3	5/16	13/16	2 1/2	–	5/16	3	0.015	AMC400070	AMC400071

Cutting data recommendations on page 94

■ = First Choice ☐ = Second Choice • = In Stock

Aluminum Finisher 3 Flute End Mills - Continued





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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFM-3	5/16	13/16	2 1/2	–	5/16	3	Ball	• AMC400074	AMC400075
AFL-3	5/16	1 1/4	3	–	5/16	3	Square	• AMC400080	AMC400081
AFS-3	3/8	1/2	2 1/2	–	3/8	3	Square	• AMC703202	• AMC703203
AFS-3	3/8	1/2	2 1/2	–	3/8	3	0.015	• AMC703206	AMC703207
AFS-3	3/8	1/2	2 1/2	–	3/8	3	0.030	• AMC703210	AMC703211
AFS-3	3/8	1/2	2 1/2	–	3/8	3	0.060	• AMC703214	AMC703215
AFS-3	3/8	1/2	2 1/2	–	3/8	3	0.090	• AMC703218	AMC703219
AFS-3	3/8	1/2	2 1/2	–	3/8	3	0.120	• AMC703222	AMC703223
AFS-3	3/8	1/2	2 1/2	–	3/8	3	Ball	AMC703238	AMC703239
AFM-3	3/8	1	2 1/2	–	3/8	3	Square	• AMC703852	• AMC703853
AFM-3	3/8	1	2 1/2	–	3/8	3	0.015	• AMC703856	AMC703857
AFM-3	3/8	1	2 1/2	–	3/8	3	0.030	• AMC703860	AMC703861
AFM-3	3/8	1	2 1/2	–	3/8	3	0.060	• AMC703864	AMC703865
AFM-3	3/8	1	2 1/2	–	3/8	3	0.090	• AMC703868	AMC703869
AFM-3	3/8	1	2 1/2	–	3/8	3	0.120	• AMC703872	AMC703873
AFM-3	3/8	1	2 1/2	–	3/8	3	Ball	• AMC703888	AMC703889
AFL-3	3/8	1 1/2	4	–	3/8	3	Square	• AMC704502	• AMC704503
AFL-3	3/8	1 1/2	4	–	3/8	3	0.015	• AMC704506	AMC704507
AFL-3	3/8	1 1/2	4	–	3/8	3	0.030	AMC704510	AMC704511
AFL-3	3/8	1 1/2	4	–	3/8	3	0.060	AMC704514	AMC704515
AFL-3	3/8	1 1/2	4	–	3/8	3	0.090	• AMC704518	AMC704519
AFL-3	3/8	1 1/2	4	–	3/8	3	0.120	• AMC704522	AMC704523
AFL-3	3/8	1 1/2	4	–	3/8	3	Ball	• AMC704538	AMC704539
AFNS-3	3/8	1/2	4	1 3/4	3/8	3	Square	• AMC709202	AMC709203
AFNS-3	3/8	1/2	4	1 3/4	3/8	3	0.015	• AMC709206	AMC709207
AFNS-3	3/8	1/2	4	1 3/4	3/8	3	0.030	• AMC709210	AMC709211
AFNS-3	3/8	1/2	4	1 3/4	3/8	3	0.060	• AMC709214	AMC709215

Cutting data recommendations on page 94

■ = First Choice ☐ = Second Choice ● = In Stock

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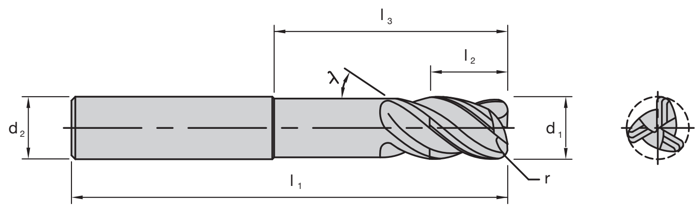

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFNS-3	3/8	1/2	4	1 3/4	3/8	3	0.090	• AMC709218	AMC709219
AFNS-3	3/8	1/2	4	1 3/4	3/8	3	0.120	• AMC709222	AMC709223
AFNS-3	3/8	1/2	4	1 3/4	3/8	3	Ball	• AMC709238	AMC709239
AFNM-3	3/8	1/2	4	2 1/4	3/8	3	Square	• AMC709852	AMC709853
AFNM-3	3/8	1/2	4	2 1/4	3/8	3	0.015	• AMC709856	AMC709857
AFNM-3	3/8	1/2	4	2 1/4	3/8	3	0.030	• AMC709860	• AMC709861
AFNM-3	3/8	1/2	4	2 1/4	3/8	3	0.060	• AMC709864	AMC709865
AFNM-3	3/8	1/2	4	2 1/4	3/8	3	0.090	AMC709868	AMC709869
AFNM-3	3/8	1/2	4	2 1/4	3/8	3	0.120	• AMC709872	AMC709873
AFNM-3	3/8	1/2	4	2 1/4	3/8	3	Ball	• AMC709888	AMC709889
AFNL-3	3/8	1/2	5	2 3/4	3/8	3	Square	• AMC710502	• AMC710503
AFNL-3	3/8	1/2	5	2 3/4	3/8	3	0.015	• AMC710506	AMC710507
AFNL-3	3/8	1/2	5	2 3/4	3/8	3	0.030	• AMC710510	AMC710511
AFNL-3	3/8	1/2	5	2 3/4	3/8	3	0.060	• AMC710514	AMC710515
AFNL-3	3/8	1/2	5	2 3/4	3/8	3	0.090	AMC710518	AMC710519
AFNL-3	3/8	1/2	5	2 3/4	3/8	3	0.120	• AMC710522	AMC710523
AFNL-3	3/8	1/2	5	2 3/4	3/8	3	Ball	• AMC710538	AMC710539
AFS-3	1/2	5/8	3	–	1/2	3	Square	• AMC703302	AMC703303
AFS-3	1/2	5/8	3	–	1/2	3	0.015	• AMC703306	AMC703307
AFS-3	1/2	5/8	3	–	1/2	3	0.030	• AMC703310	AMC703311
AFS-3	1/2	5/8	3	–	1/2	3	0.060	• AMC703314	AMC703315
AFS-3	1/2	5/8	3	–	1/2	3	0.090	• AMC703318	AMC703319
AFS-3	1/2	5/8	3	–	1/2	3	0.120	• AMC703322	AMC703323
AFS-3	1/2	5/8	3	–	1/2	3	0.190	AMC703330	AMC703331
AFS-3	1/2	5/8	3	–	1/2	3	Ball	• AMC703338	AMC703339
AFM-3	1/2	1 1/4	3	–	1/2	3	Square	• AMC703952	• AMC703953
AFM-3	1/2	1 1/4	3	–	1/2	3	0.015	• AMC703956	AMC703957

Cutting data recommendations on page 94

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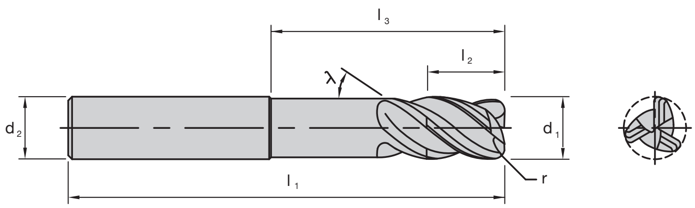
Aluminum Finisher 3 Flute End Mills - Continued



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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFM-3	1/2	1 1/4	3	–	1/2	3	0.030	• AMC703960	AMC703961
AFM-3	1/2	1 1/4	3	–	1/2	3	0.060	• AMC703964	AMC703965
AFM-3	1/2	1 1/4	3	–	1/2	3	0.090	• AMC703968	AMC703969
AFM-3	1/2	1 1/4	3	–	1/2	3	0.120	• AMC703972	AMC703973
AFM-3	1/2	1 1/4	3	–	1/2	3	0.190	• AMC703980	AMC703981
AFM-3	1/2	1 1/4	3	–	1/2	3	Ball	• AMC703988	AMC703989
AFL-3	1/2	2	4	–	1/2	3	Square	• AMC704602	• AMC704603
AFL-3	1/2	2	4	–	1/2	3	0.015	• AMC704606	AMC704607
AFL-3	1/2	2	4	–	1/2	3	0.030	• AMC704610	AMC704611
AFL-3	1/2	2	4	–	1/2	3	0.060	• AMC704614	AMC704615
AFL-3	1/2	2	4	–	1/2	3	0.090	AMC704618	AMC704619
AFL-3	1/2	2	4	–	1/2	3	0.120	• AMC704622	• AMC704623
AFL-3	1/2	2	4	–	1/2	3	0.190	AMC704630	AMC704631
AFL-3	1/2	2	4	–	1/2	3	Ball	AMC704638	AMC704639
AFX-3	1/2	3 1/8	6	–	1/2	3	Square	• AMC705252	AMC705253
AFX-3	1/2	3 1/8	6	–	1/2	3	0.015	AMC705256	AMC705257
AFX-3	1/2	3 1/8	6	–	1/2	3	0.030	AMC705260	AMC705261
AFX-3	1/2	3 1/8	6	–	1/2	3	0.060	AMC705264	AMC705265
AFX-3	1/2	3 1/8	6	–	1/2	3	0.090	AMC705268	AMC705269
AFX-3	1/2	3 1/8	6	–	1/2	3	0.120	AMC705272	AMC705273
AFX-3	1/2	3 1/8	6	–	1/2	3	0.190	AMC705280	AMC705281
AFX-3	1/2	3 1/8	6	–	1/2	3	Ball	AMC705288	AMC705289
AFNS-3	1/2	5/8	4	2 1/8	1/2	3	Square	• AMC709302	• AMC709303
AFNS-3	1/2	5/8	4	2 1/8	1/2	3	0.015	• AMC709306	AMC709307
AFNS-3	1/2	5/8	4	2 1/8	1/2	3	0.030	• AMC709310	AMC709311
AFNS-3	1/2	5/8	4	2 1/8	1/2	3	0.060	• AMC709314	AMC709315
AFNS-3	1/2	5/8	4	2 1/8	1/2	3	0.090	• AMC709318	AMC709319

Cutting data recommendations on page 94

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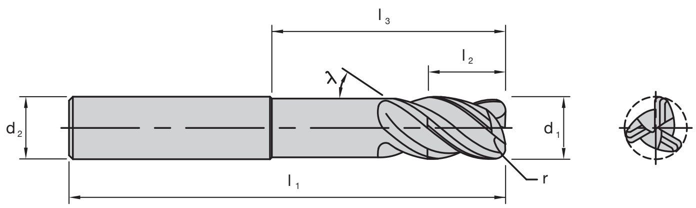

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFNS-3	1/2	5/8	4	2 1/8	1/2	3	0.120	• AMC709322	AMC709323
AFNS-3	1/2	5/8	4	2 1/8	1/2	3	0.190	• AMC709330	AMC709331
AFNS-3	1/2	5/8	4	2 1/8	1/2	3	Ball	• AMC709338	AMC709339
AFNM-3	1/2	5/8	5	3 1/8	1/2	3	Square	• AMC709952	• AMC709953
AFNM-3	1/2	5/8	5	3 1/8	1/2	3	0.015	• AMC709956	AMC709957
AFNM-3	1/2	5/8	5	3 1/8	1/2	3	0.030	• AMC709960	AMC709961
AFNM-3	1/2	5/8	5	3 1/8	1/2	3	0.060	• AMC709964	• AMC709965
AFNM-3	1/2	5/8	5	3 1/8	1/2	3	0.090	• AMC709968	AMC709969
AFNM-3	1/2	5/8	5	3 1/8	1/2	3	0.120	• AMC709972	AMC709973
AFNM-3	1/2	5/8	5	3 1/8	1/2	3	0.190	• AMC709980	AMC709981
AFNM-3	1/2	5/8	5	3 1/8	1/2	3	Ball	• AMC709988	AMC709989
AFNL-3	1/2	5/8	6	4 1/8	1/2	3	Square	• AMC710602	AMC710603
AFNL-3	1/2	5/8	6	4 1/8	1/2	3	0.015	• AMC710606	AMC710607
AFNL-3	1/2	5/8	6	4 1/8	1/2	3	0.030	• AMC710610	AMC710611
AFNL-3	1/2	5/8	6	4 1/8	1/2	3	0.060	• AMC710614	AMC710615
AFNL-3	1/2	5/8	6	4 1/8	1/2	3	0.090	AMC710618	AMC710619
AFNL-3	1/2	5/8	6	4 1/8	1/2	3	0.120	• AMC710622	AMC710623
AFNL-3	1/2	5/8	6	4 1/8	1/2	3	0.190	• AMC710630	AMC710631
AFNL-3	1/2	5/8	6	4 1/8	1/2	3	Ball	• AMC710638	AMC710639
AFS-3	5/8	3/4	3	–	5/8	3	Square	• AMC703402	AMC703403
AFS-3	5/8	3/4	3	–	5/8	3	0.030	AMC703410	AMC703411
AFS-3	5/8	3/4	3	–	5/8	3	0.060	AMC703414	AMC703415
AFS-3	5/8	3/4	3	–	5/8	3	0.090	AMC703418	AMC703419
AFS-3	5/8	3/4	3	–	5/8	3	0.120	AMC703422	AMC703423
AFS-3	5/8	3/4	3	–	5/8	3	0.190	AMC703430	AMC703431
AFS-3	5/8	3/4	3	–	5/8	3	0.250	AMC703434	AMC703435
AFS-3	5/8	3/4	3	–	5/8	3	Ball	• AMC703438	AMC703439

Cutting data recommendations on page 94

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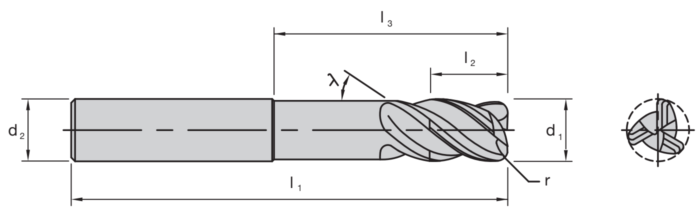

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFM-3	5/8	1 5/8	4	–	5/8	3	Square	• AMC704052	AMC704053
AFM-3	5/8	1 5/8	4	–	5/8	3	0.030	• AMC704060	AMC704061
AFM-3	5/8	1 5/8	4	–	5/8	3	0.060	AMC704064	AMC704065
AFM-3	5/8	1 5/8	4	–	5/8	3	0.090	AMC704068	AMC704069
AFM-3	5/8	1 5/8	4	–	5/8	3	0.120	AMC704072	AMC704073
AFM-3	5/8	1 5/8	4	–	5/8	3	0.190	AMC704080	AMC704081
AFM-3	5/8	1 5/8	4	–	5/8	3	0.250	AMC704084	AMC704085
AFM-3	5/8	1 5/8	4	–	5/8	3	Ball	• AMC704088	AMC704089
AFL-3	5/8	2 1/4	5	–	5/8	3	Square	• AMC704702	AMC704703
AFL-3	5/8	2 1/4	5	–	5/8	3	0.030	• AMC704710	AMC704711
AFL-3	5/8	2 1/4	5	–	5/8	3	0.060	AMC704714	AMC704715
AFL-3	5/8	2 1/4	5	–	5/8	3	0.090	AMC704718	AMC704719
AFL-3	5/8	2 1/4	5	–	5/8	3	0.120	AMC704722	AMC704723
AFL-3	5/8	2 1/4	5	–	5/8	3	0.190	AMC704730	AMC704731
AFL-3	5/8	2 1/4	5	–	5/8	3	0.250	AMC704734	AMC704735
AFL-3	5/8	2 1/4	5	–	5/8	3	Ball	AMC704738	AMC704739
AFX-3	5/8	3 1/4	6	–	5/8	3	Square	AMC705352	AMC705353
AFX-3	5/8	3 1/4	6	–	5/8	3	0.030	AMC705360	AMC705361
AFNS-3	5/8	3/4	4	2 1/8	5/8	3	Square	AMC709402	AMC709403
AFNS-3	5/8	3/4	4	2 1/8	5/8	3	0.030	AMC709410	AMC709411
AFNS-3	5/8	3/4	4	2 1/8	5/8	3	0.060	AMC709414	AMC709415
AFNS-3	5/8	3/4	4	2 1/8	5/8	3	0.090	• AMC709418	AMC709419
AFNS-3	5/8	3/4	4	2 1/8	5/8	3	0.120	• AMC709422	AMC709423
AFNS-3	5/8	3/4	4	2 1/8	5/8	3	0.190	AMC709430	AMC709431
AFNS-3	5/8	3/4	4	2 1/8	5/8	3	0.250	AMC709434	AMC709435
AFNS-3	5/8	3/4	4	2 1/8	5/8	3	Ball	• AMC709438	AMC709439
AFNM-3	5/8	3/4	5	3 1/8	5/8	3	Square	• AMC710052	AMC710053

Cutting data recommendations on page 94

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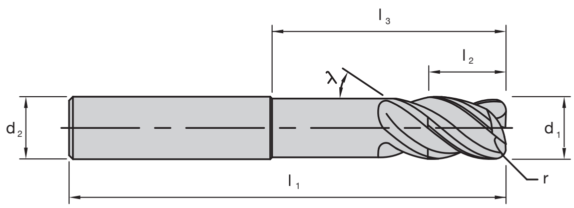

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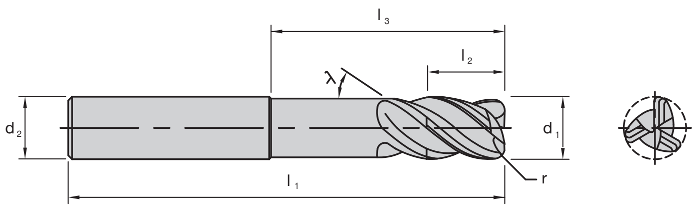
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFNM-3	5/8	3/4	5	3 1/8	5/8	3	0.030	AMC710060	AMC710061
AFNM-3	5/8	3/4	5	3 1/8	5/8	3	0.060	AMC710064	AMC710065
AFNM-3	5/8	3/4	5	3 1/8	5/8	3	0.090	AMC710068	AMC710069
AFNM-3	5/8	3/4	5	3 1/8	5/8	3	0.120	AMC710072	AMC710073
AFNM-3	5/8	3/4	5	3 1/8	5/8	3	0.190	• AMC710080	AMC710081
AFNM-3	5/8	3/4	5	3 1/8	5/8	3	0.250	AMC710084	AMC710085
AFNM-3	5/8	3/4	5	3 1/8	5/8	3	Ball	AMC710088	AMC710089
AFNL-3	5/8	3/4	6	4 1/8	5/8	3	Square	• AMC710702	AMC710703
AFNL-3	5/8	3/4	6	4 1/8	5/8	3	0.030	AMC710710	AMC710711
AFNL-3	5/8	3/4	6	4 1/8	5/8	3	0.060	• AMC710714	AMC710715
AFNL-3	5/8	3/4	6	4 1/8	5/8	3	0.090	AMC710718	AMC710719
AFNL-3	5/8	3/4	6	4 1/8	5/8	3	0.120	• AMC710722	AMC710723
AFNL-3	5/8	3/4	6	4 1/8	5/8	3	0.190	• AMC710730	AMC710731
AFNL-3	5/8	3/4	6	4 1/8	5/8	3	0.250	AMC710734	AMC710735
AFNL-3	5/8	3/4	6	4 1/8	5/8	3	Ball	AMC710738	AMC710739
AFS-3	3/4	1	3	–	3/4	3	Square	• AMC703502	AMC703503
AFS-3	3/4	1	3	–	3/4	3	0.030	• AMC703510	AMC703511
AFS-3	3/4	1	3	–	3/4	3	0.060	• AMC703514	AMC703515
AFS-3	3/4	1	3	–	3/4	3	0.090	AMC703518	AMC703519
AFS-3	3/4	1	3	–	3/4	3	0.120	• AMC703522	AMC703523
AFS-3	3/4	1	3	–	3/4	3	0.190	• AMC703530	AMC703531
AFS-3	3/4	1	3	–	3/4	3	0.250	• AMC703534	AMC703535
AFS-3	3/4	1	3	–	3/4	3	Ball	• AMC703538	AMC703539
AFM-3	3/4	1 5/8	4	–	3/4	3	Square	• AMC704152	AMC704153
AFM-3	3/4	1 5/8	4	–	3/4	3	0.030	• AMC704160	AMC704161
AFM-3	3/4	1 5/8	4	–	3/4	3	0.060	• AMC704164	AMC704165
AFM-3	3/4	1 5/8	4	–	3/4	3	0.090	• AMC704168	AMC704169

Cutting data recommendations on page 94

■ = First Choice ☐ = Second Choice ● = In Stock



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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFM-3	3/4	1 5/8	4	–	3/4	3	0.120	• AMC704172	AMC704173
AFM-3	3/4	1 5/8	4	–	3/4	3	0.190	AMC704180	AMC704181
AFM-3	3/4	1 5/8	4	–	3/4	3	0.250	• AMC704184	AMC704185
AFM-3	3/4	1 5/8	4	–	3/4	3	Ball	• AMC704188	AMC704189
AFL-3	3/4	2 1/2	5	–	3/4	3	Square	• AMC704802	• AMC704803
AFL-3	3/4	2 1/2	5	–	3/4	3	0.030	• AMC704810	AMC704811
AFL-3	3/4	2 1/2	5	–	3/4	3	0.060	• AMC704814	AMC704815
AFL-3	3/4	2 1/2	5	–	3/4	3	0.090	• AMC704818	AMC704819
AFL-3	3/4	2 1/2	5	–	3/4	3	0.120	AMC704822	AMC704823
AFL-3	3/4	2 1/2	5	–	3/4	3	0.190	AMC704830	AMC704831
AFL-3	3/4	2 1/2	5	–	3/4	3	0.250	AMC704834	AMC704835
AFL-3	3/4	2 1/2	5	–	3/4	3	Ball	AMC704838	AMC704839
AFX-3	3/4	3 1/4	6	–	3/4	3	Square	• AMC705452	• AMC705453
AFX-3	3/4	3 1/4	6	–	3/4	3	0.030	AMC705460	AMC705461
AFX-3	3/4	3 1/4	6	–	3/4	3	0.060	AMC705464	AMC705465
AFX-3	3/4	3 1/4	6	–	3/4	3	0.090	AMC705468	AMC705469
AFX-3	3/4	3 1/4	6	–	3/4	3	0.120	AMC705472	AMC705473
AFX-3	3/4	3 1/4	6	–	3/4	3	0.190	AMC705480	AMC705481
AFX-3	3/4	3 1/4	6	–	3/4	3	0.250	AMC705484	AMC705485
AFX-3	3/4	3 1/4	6	–	3/4	3	Ball	AMC705488	AMC705489
AFNS-3	3/4	1	4	2 1/8	3/4	3	Square	• AMC709502	AMC709503
AFNS-3	3/4	1	4	2 1/8	3/4	3	0.030	• AMC709510	AMC709511
AFNS-3	3/4	1	4	2 1/8	3/4	3	0.060	• AMC709514	AMC709515
AFNS-3	3/4	1	4	2 1/8	3/4	3	0.090	AMC709518	AMC709519
AFNS-3	3/4	1	4	2 1/8	3/4	3	0.120	• AMC709522	AMC709523
AFNS-3	3/4	1	4	2 1/8	3/4	3	0.190	• AMC709530	AMC709531
AFNS-3	3/4	1	4	2 1/8	3/4	3	0.250	AMC709534	AMC709535

Cutting data recommendations on page 94

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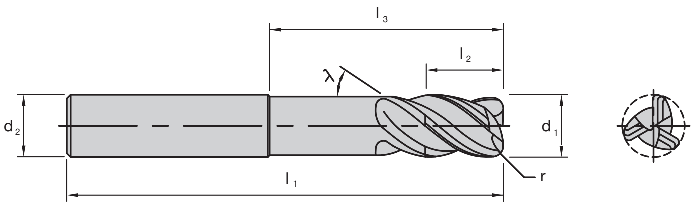

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFNS-3	3/4	1	4	2 1/8	3/4	3	Ball	AMC709538	AMC709539
AFNM-3	3/4	1	5	3 1/8	3/4	3	Square	• AMC710152	• AMC710153
AFNM-3	3/4	1	5	3 1/8	3/4	3	0.030	• AMC710160	AMC710161
AFNM-3	3/4	1	5	3 1/8	3/4	3	0.060	• AMC710164	AMC710165
AFNM-3	3/4	1	5	3 1/8	3/4	3	0.090	• AMC710168	AMC710169
AFNM-3	3/4	1	5	3 1/8	3/4	3	0.120	• AMC710172	AMC710173
AFNM-3	3/4	1	5	3 1/8	3/4	3	0.190	• AMC710180	AMC710181
AFNM-3	3/4	1	5	3 1/8	3/4	3	0.250	• AMC710184	AMC710185
AFNM-3	3/4	1	5	3 1/8	3/4	3	Ball	AMC710188	AMC710189
AFNL-3	3/4	1	6	4 1/8	3/4	3	Square	• AMC710802	AMC710803
AFNL-3	3/4	1	6	4 1/8	3/4	3	0.030	• AMC710810	AMC710811
AFNL-3	3/4	1	6	4 1/8	3/4	3	0.060	• AMC710814	AMC710815
AFNL-3	3/4	1	6	4 1/8	3/4	3	0.090	• AMC710818	AMC710819
AFNL-3	3/4	1	6	4 1/8	3/4	3	0.120	• AMC710822	AMC710823
AFNL-3	3/4	1	6	4 1/8	3/4	3	0.190	• AMC710830	AMC710831
AFNL-3	3/4	1	6	4 1/8	3/4	3	0.250	• AMC710834	AMC710835
AFNL-3	3/4	1	6	4 1/8	3/4	3	Ball	• AMC710838	AMC710839
AFS-3	1	1 1/4	4	–	1	3	Square	• AMC703602	AMC703603
AFS-3	1	1 1/4	4	–	1	3	0.030	AMC703610	AMC703611
AFS-3	1	1 1/4	4	–	1	3	0.060	• AMC703614	AMC703615
AFS-3	1	1 1/4	4	–	1	3	0.120	AMC703622	AMC703623
AFS-3	1	1 1/4	4	–	1	3	0.190	• AMC703630	AMC703631
AFS-3	1	1 1/4	4	–	1	3	0.250	AMC703634	AMC703635
AFS-3	1	1 1/4	4	–	1	3	Ball	AMC703638	AMC703639
AFM-3	1	2 1/2	5	–	1	3	Square	• AMC704252	• AMC704253
AFM-3	1	2 1/2	5	–	1	3	0.030	• AMC704260	AMC704261
AFM-3	1	2 1/2	5	–	1	3	0.060	• AMC704264	AMC704265

Cutting data recommendations on page 94

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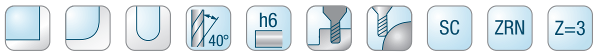

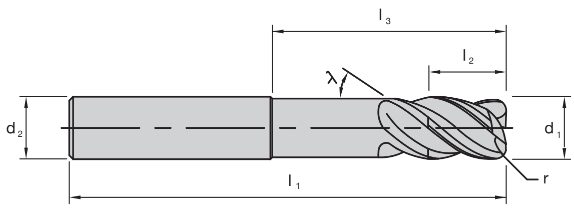

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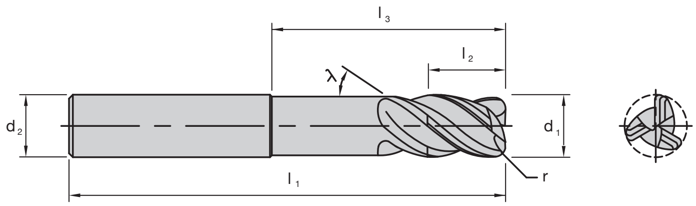
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFM-3	1	2 1/2	5	–	1	3	0.120	• AMC704272	AMC704273
AFM-3	1	2 1/2	5	–	1	3	0.190	• AMC704280	AMC704281
AFM-3	1	2 1/2	5	–	1	3	0.250	• AMC704284	AMC704285
AFM-3	1	2 1/2	5	–	1	3	Ball	• AMC704288	AMC704289
AFL-3	1	3 1/4	6	–	1	3	Square	• AMC704902	AMC704903
AFL-3	1	3 1/4	6	–	1	3	0.030	• AMC704910	AMC704911
AFL-3	1	3 1/4	6	–	1	3	0.060	• AMC704914	AMC704915
AFL-3	1	3 1/4	6	–	1	3	0.120	AMC704922	AMC704923
AFL-3	1	3 1/4	6	–	1	3	0.190	AMC704930	AMC704931
AFL-3	1	3 1/4	6	–	1	3	0.250	AMC704934	AMC704935
AFL-3	1	3 1/4	6	–	1	3	Ball	AMC704938	AMC704939
AFX-3	1	4 1/8	7	–	1	3	Square	• AMC705552	AMC705553
AFX-3	1	4 1/8	7	–	1	3	0.030	AMC705560	AMC705561
AFX-3	1	4 1/8	7	–	1	3	0.060	AMC705564	AMC705565
AFX-3	1	4 1/8	7	–	1	3	0.120	AMC705572	AMC705573
AFX-3	1	4 1/8	7	–	1	3	0.190	AMC705580	AMC705581
AFX-3	1	4 1/8	7	–	1	3	0.250	AMC705584	AMC705585
AFX-3	1	4 1/8	7	–	1	3	Ball	AMC705588	AMC705589
AFNS-3	1	1 1/4	5	2 1/8	1	3	Square	• AMC709602	AMC709603
AFNS-3	1	1 1/4	5	2 1/8	1	3	0.030	• AMC709610	AMC709611
AFNS-3	1	1 1/4	5	2 1/8	1	3	0.060	AMC709614	AMC709615
AFNS-3	1	1 1/4	5	2 1/8	1	3	0.120	AMC709622	AMC709623
AFNS-3	1	1 1/4	5	2 1/8	1	3	0.190	AMC709630	AMC709631
AFNS-3	1	1 1/4	5	2 1/8	1	3	0.250	AMC709634	AMC709635
AFNS-3	1	1 1/4	5	2 1/8	1	3	Ball	• AMC709638	AMC709639
AFNM-3	1	1 1/4	6	3 1/8	1	3	Square	• AMC710252	AMC710253
AFNM-3	1	1 1/4	6	3 1/8	1	3	0.030	• AMC710260	AMC710261

Cutting data recommendations on page 94

■ = First Choice ☐ = Second Choice ● = In Stock

LMT•ONSRUD



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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFNM-3	1	1 1/4	6	3 1/8	1	3	0.060	• AMC710264	AMC710265
AFNM-3	1	1 1/4	6	3 1/8	1	3	0.120	• AMC710272	AMC710273
AFNM-3	1	1 1/4	6	3 1/8	1	3	0.190	• AMC710280	AMC710281
AFNM-3	1	1 1/4	6	3 1/8	1	3	0.250	AMC710284	AMC710285
AFNM-3	1	1 1/4	6	3 1/8	1	3	Ball	AMC710288	AMC710289
AFNL-3	1	1 1/4	7	4 1/8	1	3	Square	• AMC710902	AMC710903
AFNL-3	1	1 1/4	7	4 1/8	1	3	0.030	• AMC710910	AMC710911
AFNL-3	1	1 1/4	7	4 1/8	1	3	0.060	• AMC710914	AMC710915
AFNL-3	1	1 1/4	7	4 1/8	1	3	0.120	• AMC710922	AMC710923
AFNL-3	1	1 1/4	7	4 1/8	1	3	0.190	AMC710930	AMC710931
AFNL-3	1	1 1/4	7	4 1/8	1	3	0.250	• AMC710934	AMC710935
AFNL-3	1	1 1/4	7	4 1/8	1	3	Ball	• AMC710938	AMC710939
AFNX-3	1	1 1/4	7	4 5/8	1	3	Square	AMC710952	AMC710953
AFNX-3	1	1 1/4	7	4 5/8	1	3	0.030	AMC710960	AMC710961

Cutting data recommendations on page 94

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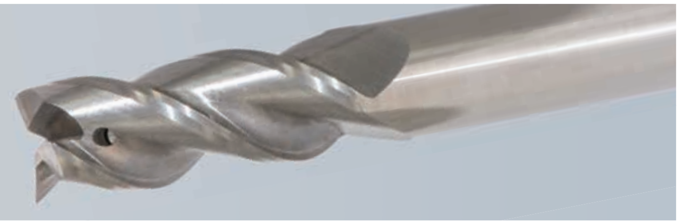
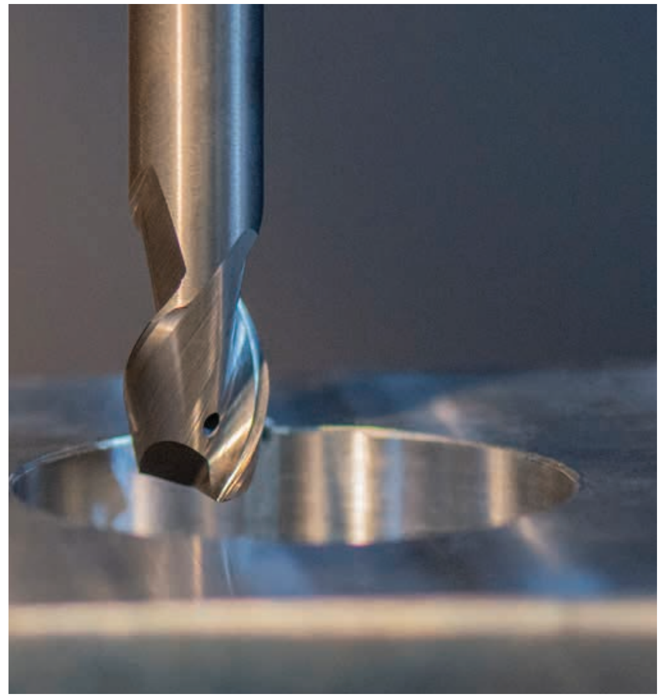
Aluminum Finisher Coolant Through (AFC) Series End Mills



LMT Onsrud's AFC 2 and 3 flute series endmills, coolant through designs dissipates heat and clears chips effectively.



Features and Benefits

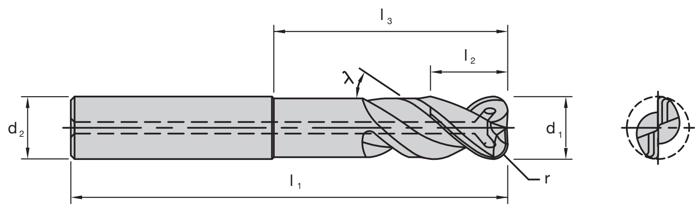
- Slot over 15% faster with AFC Series.
- 2 flute tools with open flute geometry.
- Available uncoated with high polished flutes and specialty coatings for Aluminum.
- Industry's largest selection of corner radii and neck and flute lengths in a standard program.
- Coolant at the cutting edge also contributes to superior finishes and prevents chips from adhering between the flutes.

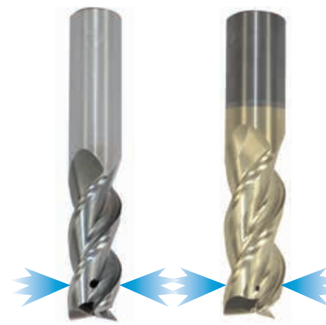
Applications

- Slotting
- Pocketing
- Profiling
- High Material Removal

Usage

- ISO N Non-Ferrous
- Aluminum
- Brass
- Bronze
- Copper





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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFCNS-2	1/4	3/8	4	1 1/2	1/4	2	Square	• AMC712102	AMC712103
AFCNS-2	1/4	3/8	4	1 1/2	1/4	2	0.015	• AMC712106	AMC712107
AFCNS-2	1/4	3/8	4	1 1/2	1/4	2	0.030	AMC712110	AMC712111
AFCNS-2	1/4	3/8	4	1 1/2	1/4	2	0.060	AMC712114	AMC712115
AFCNS-2	1/4	3/8	4	1 1/2	1/4	2	Ball	• AMC712138	AMC712139
AFCNM-2	1/4	3/8	4	1 3/4	1/4	2	Square	AMC712752	AMC712753
AFCNM-2	1/4	3/8	4	1 3/4	1/4	2	0.015	• AMC712756	AMC712757
AFCNM-2	1/4	3/8	4	1 3/4	1/4	2	0.030	AMC712760	AMC712761
AFCNM-2	1/4	3/8	4	1 3/4	1/4	2	0.060	AMC712764	AMC712765
AFCNM-2	1/4	3/8	4	1 3/4	1/4	2	Ball	• AMC712788	AMC712789
AFCNL-2	1/4	3/8	4	2 1/8	1/4	2	Square	• AMC713402	AMC713403
AFCNL-2	1/4	3/8	4	2 1/8	1/4	2	0.015	• AMC713406	AMC713407
AFCNL-2	1/4	3/8	4	2 1/8	1/4	2	0.030	AMC713410	AMC713411
AFCNL-2	1/4	3/8	4	2 1/8	1/4	2	0.060	AMC713414	AMC713415
AFCNL-2	1/4	3/8	4	2 1/8	1/4	2	Ball	AMC713438	AMC713439
AFCM-2	3/8	1	3	–	3/8	2	Square	• AMC717002	AMC717003
AFCM-2	3/8	1	3	–	3/8	2	0.015	AMC717004	AMC717005
AFCNS-2	3/8	1/2	4	1 3/4	3/8	2	Square	• AMC712202	AMC712203
AFCNS-2	3/8	1/2	4	1 3/4	3/8	2	0.015	• AMC712206	AMC712207
AFCNS-2	3/8	1/2	4	1 3/4	3/8	2	0.030	AMC712210	AMC712211
AFCNS-2	3/8	1/2	4	1 3/4	3/8	2	0.060	AMC712214	AMC712215
AFCNS-2	3/8	1/2	4	1 3/4	3/8	2	0.090	AMC712218	AMC712219
AFCNS-2	3/8	1/2	4	1 3/4	3/8	2	0.120	AMC712222	AMC712223
AFCNS-2	3/8	1/2	4	1 3/4	3/8	2	Ball	• AMC712238	AMC712239
AFCNM-2	3/8	1/2	4	2 1/4	3/8	2	Square	• AMC712852	AMC712853
AFCNM-2	3/8	1/2	4	2 1/4	3/8	2	0.015	AMC712856	AMC712857
AFCNM-2	3/8	1/2	4	2 1/4	3/8	2	0.030	AMC712860	AMC712861

Cutting data recommendations on page 94

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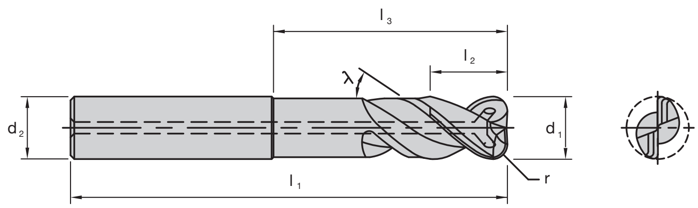

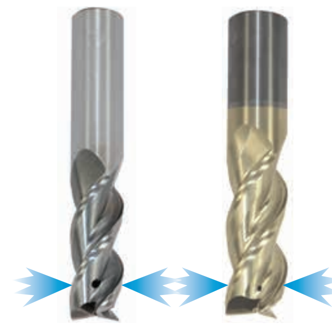

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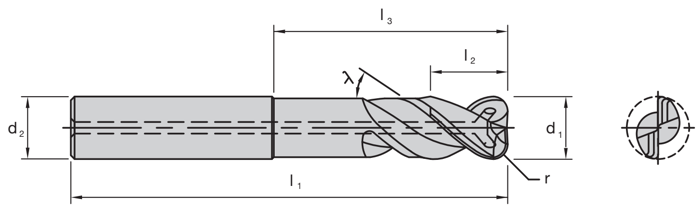
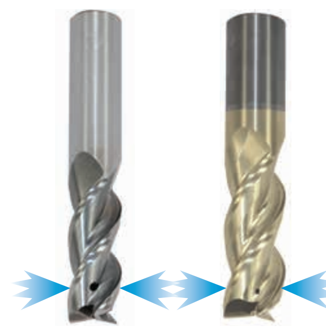
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFCNM-2	3/8	1/2	4	2 1/4	3/8	2	0.060	AMC712864	AMC712865
AFCNM-2	3/8	1/2	4	2 1/4	3/8	2	0.090	AMC712868	AMC712869
AFCNM-2	3/8	1/2	4	2 1/4	3/8	2	0.120	AMC712872	AMC712873
AFCNM-2	3/8	1/2	4	2 1/4	3/8	2	Ball	AMC712888	AMC712889
AFCNL-2	3/8	1/2	5	2 3/4	3/8	2	Square	• AMC713502	AMC713503
AFCNL-2	3/8	1/2	5	2 3/4	3/8	2	0.015	AMC713506	AMC713507
AFCNL-2	3/8	1/2	5	2 3/4	3/8	2	0.030	AMC713510	AMC713511
AFCNL-2	3/8	1/2	5	2 3/4	3/8	2	0.060	AMC713514	AMC713515
AFCNL-2	3/8	1/2	5	2 3/4	3/8	2	0.090	AMC713518	AMC713519
AFCNL-2	3/8	1/2	5	2 3/4	3/8	2	0.120	AMC713522	AMC713523
AFCNL-2	3/8	1/2	5	2 3/4	3/8	2	Ball	AMC713538	AMC713539
AFCM-2	1/2	1 1/4	3	–	1/2	2	Square	AMC717006	AMC717007
AFCM-2	1/2	1 1/4	3	–	1/2	2	0.015	AMC717008	AMC717009
AFCNS-2	1/2	5/8	4	2 1/8	1/2	2	Square	• AMC712302	AMC712303
AFCNS-2	1/2	5/8	4	2 1/8	1/2	2	0.015	• AMC712306	AMC712307
AFCNS-2	1/2	5/8	4	2 1/8	1/2	2	0.030	• AMC712310	AMC712311
AFCNS-2	1/2	5/8	4	2 1/8	1/2	2	0.060	AMC712314	AMC712315
AFCNS-2	1/2	5/8	4	2 1/8	1/2	2	0.090	AMC712318	AMC712319
AFCNS-2	1/2	5/8	4	2 1/8	1/2	2	0.120	• AMC712322	AMC712323
AFCNS-2	1/2	5/8	4	2 1/8	1/2	2	0.190	AMC712330	AMC712331
AFCNS-2	1/2	5/8	4	2 1/8	1/2	2	Ball	• AMC712338	AMC712339
AFCNM-2	1/2	5/8	5	3 1/8	1/2	2	Square	• AMC712952	AMC712953
AFCNM-2	1/2	5/8	5	3 1/8	1/2	2	0.015	• AMC712956	AMC712957
AFCNM-2	1/2	5/8	5	3 1/8	1/2	2	0.030	• AMC712960	AMC712961
AFCNM-2	1/2	5/8	5	3 1/8	1/2	2	0.060	AMC712964	AMC712965
AFCNM-2	1/2	5/8	5	3 1/8	1/2	2	0.090	AMC712968	AMC712969
AFCNM-2	1/2	5/8	5	3 1/8	1/2	2	0.120	AMC712972	AMC712973

Cutting data recommendations on page 94

■ = First Choice ☐ = Second Choice ● = In Stock





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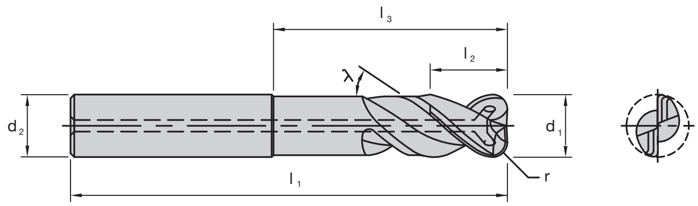
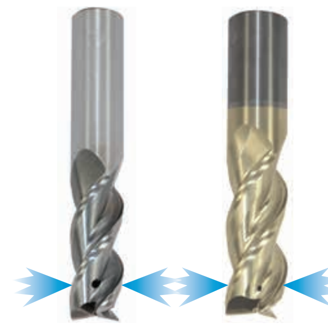
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFCNM-2	1/2	5/8	5	3 1/8	1/2	2	0.190	• AMC712980	AMC712981
AFCNM-2	1/2	5/8	5	3 1/8	1/2	2	Ball	• AMC712988	AMC712989
AFCNL-2	1/2	5/8	6	4 1/8	1/2	2	Square	• AMC713602	AMC713603
AFCNL-2	1/2	5/8	6	4 1/8	1/2	2	0.015	AMC713606	AMC713607
AFCNL-2	1/2	5/8	6	4 1/8	1/2	2	0.030	AMC713610	AMC713611
AFCNL-2	1/2	5/8	6	4 1/8	1/2	2	0.060	AMC713614	AMC713615
AFCNL-2	1/2	5/8	6	4 1/8	1/2	2	0.090	AMC713618	AMC713619
AFCNL-2	1/2	5/8	6	4 1/8	1/2	2	0.120	AMC713622	AMC713623
AFCNL-2	1/2	5/8	6	4 1/8	1/2	2	0.190	AMC713630	AMC713631
AFCNL-2	1/2	5/8	6	4 1/8	1/2	2	Ball	AMC713638	AMC713639
AFCNS-2	5/8	3/4	4	2 1/8	5/8	2	Square	• AMC712402	AMC712403
AFCNS-2	5/8	3/4	4	2 1/8	5/8	2	0.030	• AMC712410	AMC712411
AFCNM-2	5/8	3/4	6	3 1/8	5/8	2	Square	AMC713052	AMC713053
AFCNM-2	5/8	3/4	6	3 1/8	5/8	2	0.030	AMC713060	AMC713061
AFCNL-2	5/8	3/4	6	4 1/8	5/8	2	Square	AMC713702	AMC713703
AFCNL-2	5/8	3/4	6	4 1/8	5/8	2	0.030	AMC713710	AMC713711
AFCM-2	3/4	1 5/8	4	–	3/4	2	Square	• AMC717010	AMC717011
AFCM-2	3/4	1 5/8	4	–	3/4	2	0.030	• AMC717012	AMC717013
AFCNS-2	3/4	1	4	2 1/8	3/4	2	Square	AMC712502	AMC712503
AFCNS-2	3/4	1	4	2 1/8	3/4	2	0.030	• AMC712510	AMC712511
AFCNS-2	3/4	1	4	2 1/8	3/4	2	0.060	AMC712514	AMC712515
AFCNS-2	3/4	1	4	2 1/8	3/4	2	0.090	AMC712518	AMC712519
AFCNS-2	3/4	1	4	2 1/8	3/4	2	0.120	AMC712522	AMC712523
AFCNS-2	3/4	1	4	2 1/8	3/4	2	0.190	AMC712530	AMC712531
AFCNS-2	3/4	1	4	2 1/8	3/4	2	0.250	AMC712534	AMC712535
AFCNS-2	3/4	1	4	2 1/8	3/4	2	Ball	• AMC712538	AMC712539
AFCNM-2	3/4	1	6	3 1/8	3/4	2	Square	• AMC713152	AMC713153

Cutting data recommendations on page 94

■ = First Choice □ = Second Choice • = In Stock





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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFCNM-2	3/4	1	6	3 1/8	3/4	2	0.030	• AMC713160	AMC713161
AFCNM-2	3/4	1	6	3 1/8	3/4	2	0.060	AMC713164	AMC713165
AFCNM-2	3/4	1	6	3 1/8	3/4	2	0.090	AMC713168	AMC713169
AFCNM-2	3/4	1	6	3 1/8	3/4	2	0.120	AMC713172	AMC713173
AFCNM-2	3/4	1	6	3 1/8	3/4	2	0.190	AMC713180	AMC713181
AFCNM-2	3/4	1	6	3 1/8	3/4	2	0.250	AMC713184	AMC713185
AFCNM-2	3/4	1	6	3 1/8	3/4	2	Ball	AMC713188	AMC713189
AFCNL-2	3/4	1	6	4 1/8	3/4	2	Square	• AMC713802	AMC713803
AFCNL-2	3/4	1	6	4 1/8	3/4	2	0.030	AMC713810	AMC713811
AFCNL-2	3/4	1	6	4 1/8	3/4	2	0.060	AMC713814	AMC713815
AFCNL-2	3/4	1	6	4 1/8	3/4	2	0.090	AMC713818	AMC713819
AFCNL-2	3/4	1	6	4 1/8	3/4	2	0.120	AMC713822	AMC713823
AFCNL-2	3/4	1	6	4 1/8	3/4	2	0.190	AMC713830	AMC713831
AFCNL-2	3/4	1	6	4 1/8	3/4	2	0.250	AMC713834	AMC713835
AFCNL-2	3/4	1	6	4 1/8	3/4	2	Ball	AMC713838	AMC713839
AFCM-2	1	2 1/2	5	–	1	2	Square	AMC717014	AMC717015
AFCM-2	1	2 1/2	5	–	1	2	0.030	• AMC717016	AMC717017
AFCNS-2	1	1 1/4	5	2 1/8	1	2	Square	AMC712602	AMC712603
AFCNS-2	1	1 1/4	5	2 1/8	1	2	0.030	• AMC712610	AMC712611
AFCNS-2	1	1 1/4	5	2 1/8	1	2	0.060	AMC712614	AMC712615
AFCNS-2	1	1 1/4	5	2 1/8	1	2	0.120	AMC712622	AMC712623
AFCNS-2	1	1 1/4	5	2 1/8	1	2	0.190	AMC712630	AMC712631
AFCNS-2	1	1 1/4	5	2 1/8	1	2	0.250	AMC712634	AMC712635
AFCNS-2	1	1 1/4	5	2 1/8	1	2	Ball	AMC712638	AMC712639
AFCNM-2	1	1 1/4	6	3 1/8	1	2	Square	AMC713252	AMC713253
AFCNM-2	1	1 1/4	6	3 1/8	1	2	0.030	• AMC713260	AMC713261
AFCNM-2	1	1 1/4	6	3 1/8	1	2	0.060	AMC713264	AMC713265

Cutting data recommendations on page 94

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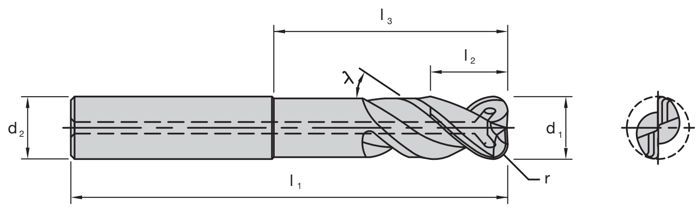

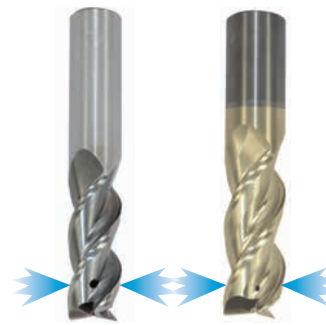

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFCNM-2	1	1 1/4	6	3 1/8	1	2	0.120	AMC713272	AMC713273
AFCNM-2	1	1 1/4	6	3 1/8	1	2	0.190	AMC713280	AMC713281
AFCNM-2	1	1 1/4	6	3 1/8	1	2	0.250	AMC713284	AMC713285
AFCNM-2	1	1 1/4	6	3 1/8	1	2	Ball	AMC713288	AMC713289
AFCNL-2	1	1 1/4	7	4 1/8	1	2	Square	• AMC713902	AMC713903
AFCNL-2	1	1 1/4	7	4 1/8	1	2	0.030	• AMC713910	AMC713911
AFCNL-2	1	1 1/4	7	4 1/8	1	2	0.060	AMC713914	AMC713915
AFCNL-2	1	1 1/4	7	4 1/8	1	2	0.120	• AMC713922	AMC713923
AFCNL-2	1	1 1/4	7	4 1/8	1	2	0.190	AMC713930	AMC713931
AFCNL-2	1	1 1/4	7	4 1/8	1	2	0.250	AMC713934	AMC713935
AFCNL-2	1	1 1/4	7	4 1/8	1	2	Ball	AMC713938	AMC713939

Cutting data recommendations on page 94

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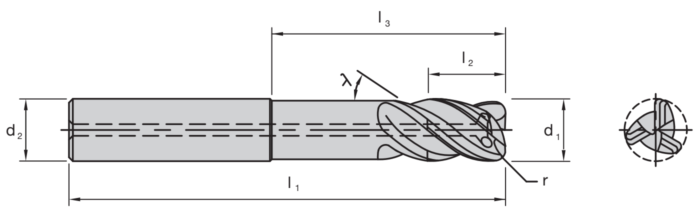

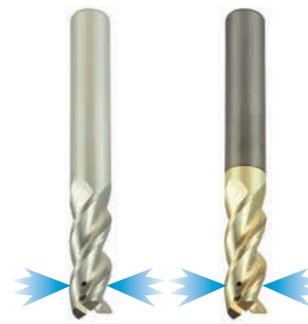

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFCNS-3	1/4	3/8	4	1 1/2	1/4	3	Square	• AMC715102	AMC715103
AFCNS-3	1/4	3/8	4	1 1/2	1/4	3	0.015	• AMC715106	AMC715107
AFCNS-3	1/4	3/8	4	1 1/2	1/4	3	0.030	AMC715110	AMC715111
AFCNS-3	1/4	3/8	4	1 1/2	1/4	3	0.060	AMC715114	AMC715115
AFCNS-3	1/4	3/8	4	1 1/2	1/4	3	Ball	• AMC715138	AMC715139
AFCNM-3	1/4	3/8	4	1 3/4	1/4	3	Square	• AMC715752	AMC715753
AFCNM-3	1/4	3/8	4	1 3/4	1/4	3	0.015	AMC715756	AMC715757
AFCNM-3	1/4	3/8	4	1 3/4	1/4	3	0.030	AMC715760	AMC715761
AFCNM-3	1/4	3/8	4	1 3/4	1/4	3	0.060	AMC715764	AMC715765
AFCNM-3	1/4	3/8	4	1 3/4	1/4	3	Ball	• AMC715788	AMC715789
AFCNL-3	1/4	3/8	4	2 1/8	1/4	3	Square	• AMC716402	AMC716403
AFCNL-3	1/4	3/8	4	2 1/8	1/4	3	0.015	• AMC716406	• AMC716407
AFCNL-3	1/4	3/8	4	2 1/8	1/4	3	0.030	AMC716410	AMC716411
AFCNL-3	1/4	3/8	4	2 1/8	1/4	3	0.060	AMC716414	AMC716415
AFCNL-3	1/4	3/8	4	2 1/8	1/4	3	Ball	• AMC716438	AMC716439
AFCM-3	3/8	1	3	–	3/8	3	Square	• AMC717018	AMC717019
AFCM-3	3/8	1	3	–	3/8	3	0.015	• AMC717020	AMC717021
AFCNS-3	3/8	1/2	4	1 3/4	3/8	3	Square	• AMC715202	AMC715203
AFCNS-3	3/8	1/2	4	1 3/4	3/8	3	0.015	• AMC715206	AMC715207
AFCNS-3	3/8	1/2	4	1 3/4	3/8	3	0.030	AMC715210	AMC715211
AFCNS-3	3/8	1/2	4	1 3/4	3/8	3	0.060	AMC715214	AMC715215
AFCNS-3	3/8	1/2	4	1 3/4	3/8	3	0.090	AMC715218	AMC715219
AFCNS-3	3/8	1/2	4	1 3/4	3/8	3	0.120	AMC715222	AMC715223
AFCNS-3	3/8	1/2	4	1 3/4	3/8	3	Ball	• AMC715238	AMC715239
AFCNM-3	3/8	1/2	4	2 1/4	3/8	3	Square	AMC715852	AMC715853
AFCNM-3	3/8	1/2	4	2 1/4	3/8	3	0.015	• AMC715856	AMC715857
AFCNM-3	3/8	1/2	4	2 1/4	3/8	3	0.030	AMC715860	AMC715861

Cutting data recommendations on page 94

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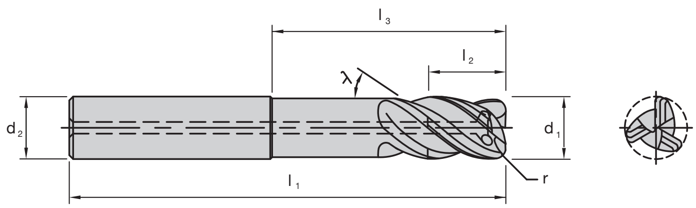

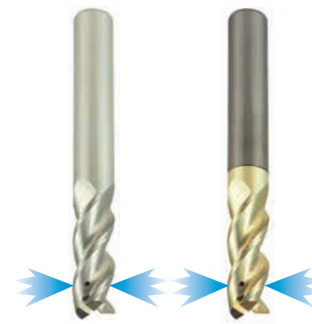

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFCNM-3	3/8	1/2	4	2 1/4	3/8	3	0.060	AMC715864	AMC715865
AFCNM-3	3/8	1/2	4	2 1/4	3/8	3	0.090	AMC715868	AMC715869
AFCNM-3	3/8	1/2	4	2 1/4	3/8	3	0.120	AMC715872	AMC715873
AFCNM-3	3/8	1/2	4	2 1/4	3/8	3	Ball	AMC715888	AMC715889
AFCNL-3	3/8	1/2	5	2 3/4	3/8	3	Square	• AMC716502	AMC716503
AFCNL-3	3/8	1/2	5	2 3/4	3/8	3	0.015	• AMC716506	AMC716507
AFCNL-3	3/8	1/2	5	2 3/4	3/8	3	0.030	AMC716510	AMC716511
AFCNL-3	3/8	1/2	5	2 3/4	3/8	3	0.060	AMC716514	AMC716515
AFCNL-3	3/8	1/2	5	2 3/4	3/8	3	0.090	AMC716518	AMC716519
AFCNL-3	3/8	1/2	5	2 3/4	3/8	3	0.120	AMC716522	AMC716523
AFCNL-3	3/8	1/2	5	2 3/4	3/8	3	Ball	• AMC716538	AMC716539
AFCM-3	1/2	1 1/4	3	–	1/2	3	Square	• AMC717022	AMC717023
AFCM-3	1/2	1 1/4	3	–	1/2	3	0.015	• AMC717024	AMC717025
AFCNS-3	1/2	5/8	4	2 1/8	1/2	3	Square	• AMC715302	• AMC715303
AFCNS-3	1/2	5/8	4	2 1/8	1/2	3	0.015	• AMC715306	AMC715307
AFCNS-3	1/2	5/8	4	2 1/8	1/2	3	0.030	• AMC715310	AMC715311
AFCNS-3	1/2	5/8	4	2 1/8	1/2	3	0.060	• AMC715314	AMC715315
AFCNS-3	1/2	5/8	4	2 1/8	1/2	3	0.090	AMC715318	AMC715319
AFCNS-3	1/2	5/8	4	2 1/8	1/2	3	0.120	AMC715322	AMC715323
AFCNS-3	1/2	5/8	4	2 1/8	1/2	3	0.190	• AMC715330	AMC715331
AFCNS-3	1/2	5/8	4	2 1/8	1/2	3	Ball	AMC715338	AMC715339
AFCNM-3	1/2	5/8	5	3 1/8	1/2	3	Square	• AMC715952	AMC715953
AFCNM-3	1/2	5/8	5	3 1/8	1/2	3	0.015	• AMC715956	AMC715957
AFCNM-3	1/2	5/8	5	3 1/8	1/2	3	0.030	AMC715960	AMC715961
AFCNM-3	1/2	5/8	5	3 1/8	1/2	3	0.060	AMC715964	AMC715965
AFCNM-3	1/2	5/8	5	3 1/8	1/2	3	0.090	AMC715968	AMC715969
AFCNM-3	1/2	5/8	5	3 1/8	1/2	3	0.120	AMC715972	AMC715973

Cutting data recommendations on page 94

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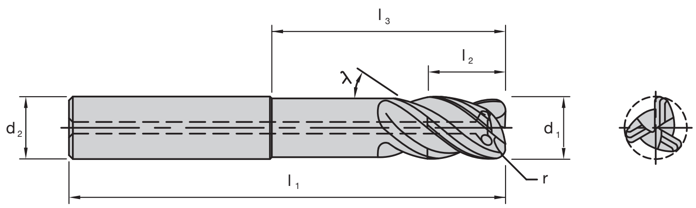

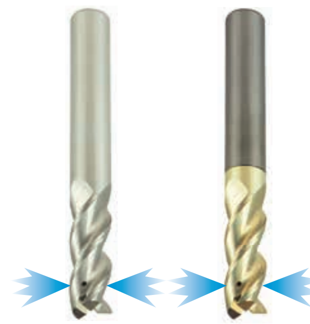

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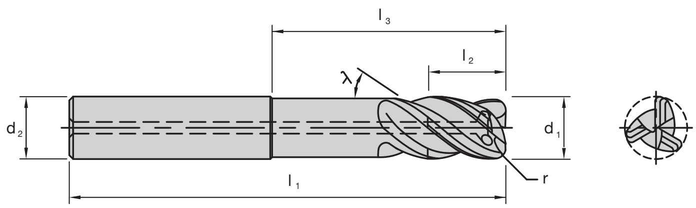
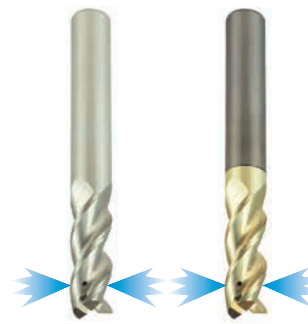
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFCNM-3	1/2	5/8	5	3 1/8	1/2	3	0.190	AMC715980	AMC715981
AFCNM-3	1/2	5/8	5	3 1/8	1/2	3	Ball	• AMC715988	AMC715989
AFCNL-3	1/2	5/8	6	4 1/8	1/2	3	Square	• AMC716602	AMC716603
AFCNL-3	1/2	5/8	6	4 1/8	1/2	3	0.015	• AMC716606	AMC716607
AFCNL-3	1/2	5/8	6	4 1/8	1/2	3	0.030	AMC716610	AMC716611
AFCNL-3	1/2	5/8	6	4 1/8	1/2	3	0.060	AMC716614	AMC716615
AFCNL-3	1/2	5/8	6	4 1/8	1/2	3	0.090	AMC716618	AMC716619
AFCNL-3	1/2	5/8	6	4 1/8	1/2	3	0.120	AMC716622	AMC716623
AFCNL-3	1/2	5/8	6	4 1/8	1/2	3	0.190	AMC716630	AMC716631
AFCNL-3	1/2	5/8	6	4 1/8	1/2	3	Ball	• AMC716638	AMC716639
AFCNS-3	5/8	3/4	4	2 1/8	5/8	3	Square	• AMC715402	AMC715403
AFCNS-3	5/8	3/4	4	2 1/8	5/8	3	0.030	AMC715410	AMC715411
AFCNM-3	5/8	3/4	6	3 1/8	5/8	3	Square	AMC716052	AMC716053
AFCNM-3	5/8	3/4	6	3 1/8	5/8	3	0.030	• AMC716060	AMC716061
AFCNL-3	5/8	3/4	6	4 /18	5/8	3	Square	• AMC713702	AMC716703
AFCNL-3	5/8	3/4	6	4 /18	5/8	3	0.030	• AMC716710	AMC716711
AFCM-3	3/4	1 5/8	4	–	3/4	3	Square	• AMC717026	AMC717027
AFCM-3	3/4	1 5/8	4	–	3/4	3	0.030	• AMC717028	AMC717029
AFCNS-3	3/4	1	4	2 1/8	3/4	3	Square	• AMC715502	AMC715503
AFCNS-3	3/4	1	4	2 1/8	3/4	3	0.030	• AMC715510	AMC715511
AFCNS-3	3/4	1	4	2 1/8	3/4	3	0.060	• AMC715514	AMC715515
AFCNS-3	3/4	1	4	2 1/8	3/4	3	0.090	AMC715518	AMC715519
AFCNS-3	3/4	1	4	2 1/8	3/4	3	0.120	AMC715522	AMC715523
AFCNS-3	3/4	1	4	2 1/8	3/4	3	0.190	AMC715530	AMC715531
AFCNS-3	3/4	1	4	2 1/8	3/4	3	0.250	AMC715534	AMC715535
AFCNS-3	3/4	1	4	2 1/8	3/4	3	Ball	AMC715538	AMC715539
AFCNM-3	3/4	1	6	3 1/8	3/4	3	Square	• AMC716152	AMC716153

Cutting data recommendations on page 94

■ = First Choice ☐ = Second Choice ● = In Stock





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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFCNM-3	3/4	1	6	3 1/8	3/4	3	0.030	• AMC716160	AMC716161
AFCNM-3	3/4	1	6	3 1/8	3/4	3	0.060	• AMC716164	AMC716165
AFCNM-3	3/4	1	6	3 1/8	3/4	3	0.090	AMC716168	AMC716169
AFCNM-3	3/4	1	6	3 1/8	3/4	3	0.120	• AMC716172	AMC716173
AFCNM-3	3/4	1	6	3 1/8	3/4	3	0.190	AMC716180	AMC716181
AFCNM-3	3/4	1	6	3 1/8	3/4	3	0.250	AMC716184	AMC716185
AFCNM-3	3/4	1	6	3 1/8	3/4	3	Ball	AMC716188	AMC716189
AFCNL-3	3/4	1	6	4 1/8	3/4	3	Square	• AMC716802	AMC716803
AFCNL-3	3/4	1	6	4 1/8	3/4	3	0.030	• AMC716810	AMC716811
AFCNL-3	3/4	1	6	4 1/8	3/4	3	0.060	AMC716814	AMC716815
AFCNL-3	3/4	1	6	4 1/8	3/4	3	0.090	AMC716818	AMC716819
AFCNL-3	3/4	1	6	4 1/8	3/4	3	0.120	• AMC716822	AMC716823
AFCNL-3	3/4	1	6	4 1/8	3/4	3	0.190	AMC716830	AMC716831
AFCNL-3	3/4	1	6	4 1/8	3/4	3	0.250	AMC716834	AMC716835
AFCNL-3	3/4	1	6	4 1/8	3/4	3	Ball	• AMC716838	AMC716839
AFCM-3	1	2 1/2	5	–	1	3	Square	• AMC717030	AMC717031
AFCM-3	1	2 1/2	5	–	1	3	0.030	• AMC717032	AMC717033
AFCNS-3	1	1 1/4	5	2 1/8	1	3	Square	AMC715602	AMC715603
AFCNS-3	1	1 1/4	5	2 1/8	1	3	0.030	• AMC715610	• AMC715611
AFCNS-3	1	1 1/4	5	2 1/8	1	3	0.060	AMC715614	AMC715615
AFCNS-3	1	1 1/4	5	2 1/8	1	3	0.120	AMC715622	AMC715623
AFCNS-3	1	1 1/4	5	2 1/8	1	3	0.190	AMC715630	AMC715631
AFCNS-3	1	1 1/4	5	2 1/8	1	3	0.250	AMC715634	AMC715635
AFCNS-3	1	1 1/4	5	2 1/8	1	3	Ball	AMC715638	AMC715639
AFCNM-3	1	1 1/4	6	3 1/8	1	3	Square	• AMC716252	AMC716253
AFCNM-3	1	1 1/4	6	3 1/8	1	3	0.030	• AMC716260	AMC716261
AFCNM-3	1	1 1/4	6	3 1/8	1	3	0.060	AMC716264	AMC716265

Cutting data recommendations on page 94

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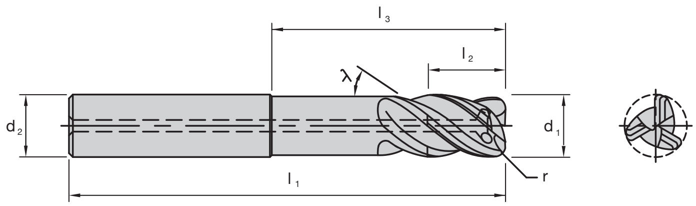

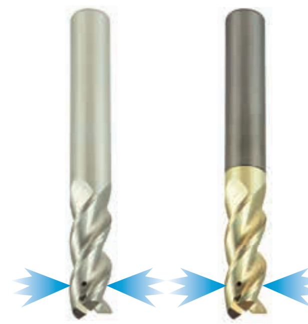

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Uncoated Ident No.	ZRN Ident No.
AFCNM-3	1	1 1/4	6	3 1/8	1	3	0.120	• AMC716272	AMC716273
AFCNM-3	1	1 1/4	6	3 1/8	1	3	0.190	AMC716280	AMC716281
AFCNM-3	1	1 1/4	6	3 1/8	1	3	0.250	AMC716284	AMC716285
AFCNM-3	1	1 1/4	6	3 1/8	1	3	Ball	AMC716288	AMC716289
AFCNL-3	1	1 1/4	7	4 1/8	1	3	Square	• AMC716902	AMC716903
AFCNL-3	1	1 1/4	7	4 1/8	1	3	0.030	• AMC716910	• AMC716911
AFCNL-3	1	1 1/4	7	4 1/8	1	3	0.060	• AMC716914	AMC716915
AFCNL-3	1	1 1/4	7	4 1/8	1	3	0.120	AMC716922	AMC716923
AFCNL-3	1	1 1/4	7	4 1/8	1	3	0.190	AMC716930	AMC716931
AFCNL-3	1	1 1/4	7	4 1/8	1	3	0.250	AMC716934	AMC716935
AFCNL-3	1	1 1/4	7	4 1/8	1	3	Ball	AMC716938	AMC716939

Cutting data recommendations on page 94

■ = First Choice ☐ = Second Choice ● = In Stock

Aluminum Rougher (AR) Series End Mills

LMT Onsrud has developed a complete line of AR end mills designed to provide exceptional performance and tool life within non-ferrous roughing applications. Available in 2 and 3 flute configurations, coolant or non-coolant through, these tools provide high material removal rates and are optimized to slot 30% faster than our standard AF Series tooling. The coolant through design directs coolant at the cutting edge, removing chips and heat, even during the deepest pocketing applications.

Features and Benefits

- 2 and 3 flute, coolant or non-coolant through designs.
- Achieve high material removal rates.
- Sinusoidal chipbreaker pattern with open flute design.
- Slot 30% faster than standard AF Series tooling.
- Radial coolant holes directs coolant to cutting edge removing heat and chips on deep pocket applications.
- Stocked standard common aircraft corner radii.
- ZRN coated for increased tool life.

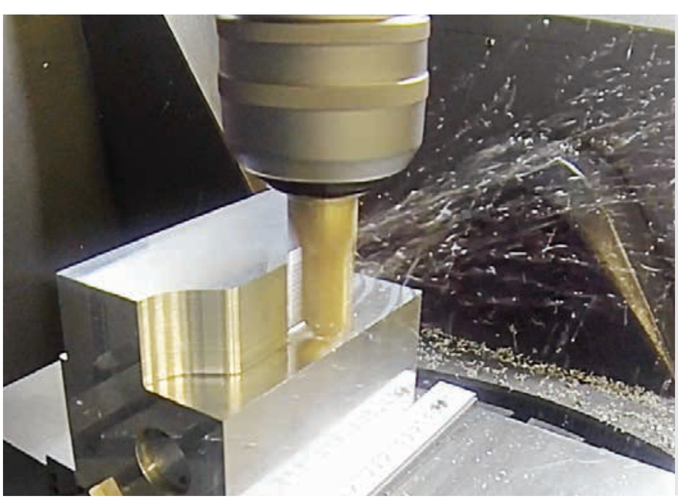
Applications

- Slotting
- Pocketing
- Profiling
- High material removal

Usage

- ISN Non-ferrous
- Aluminum
- Non-ferrous materials

ZRN coating enhances tool life and chip evacuation.



Aluminum Milling: Aluminum Roughing

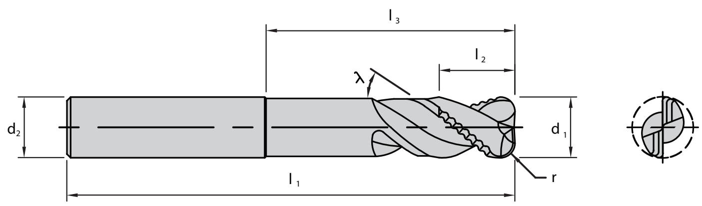
Tool:
Aluminum Roughing Tool (Ident No. AMC800129)
Cutting Diameter (d_1 = 3/4” No. of Flutes (z) = 3

Cutting Material: Solid Carbide

Material: 6061-T6 Aluminum

Cutting Data:

SFM (v_c) = 884	Chipload (f_z) = .004 - .007 in
RPM (n) = 4,500	RDoC (a_e) = .016 - .213 in
Feed (v_f) = 60 - 100 in/min	ADoC (a_p) = 1.2 - 1.3 in



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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
ARS-2	3/8	1/2	3	–	3/8	2	0.030	• AMC800003
ARM-2	3/8	7/8	2 1/2	–	3/8	2	0.030	• AMC800251
ARNS-2	3/8	1/2	4	1 5/8	3/8	2	0.030	AMC800011
ARS-2	1/2	5/8	3	–	1/2	2	0.030	• AMC800005
ARS-2	1/2	5/8	3	–	1/2	2	0.060	AMC800255
ARM-2	1/2	1 1/4	3	–	1/2	2	0.030	• AMC800257
ARM-2	1/2	1 1/4	3	–	1/2	2	0.060	AMC800259
ARNS-2	1/2	5/8	4	2 1/8	1/2	2	0.030	• AMC800013
ARNS-2	1/2	5/8	4	2 1/8	1/2	2	0.060	AMC800015
ARNM-2	1/2	5/8	5	3 1/8	1/2	2	0.030	• AMC800025
ARNM-2	1/2	5/8	5	3 1/8	1/2	2	0.060	AMC800027
ARNL-2	1/2	5/8	6	4 1/8	1/2	2	0.030	AMC800035
ARNL-2	1/2	5/8	6	4 1/8	1/2	2	0.060	AMC800037
ARS-2	5/8	3/4	3	–	5/8	2	0.030	• AMC800265
ARS-2	5/8	3/4	3	–	5/8	2	0.060	AMC800267
ARM-2	5/8	1 3/8	3 1/2	–	5/8	2	0.030	• AMC800269
ARM-2	5/8	1 3/8	3 1/2	–	5/8	2	0.060	AMC800271
ARNS-2	5/8	3/4	4	2 1/8	5/8	2	0.030	• AMC800277
ARNS-2	5/8	3/4	4	2 1/8	5/8	2	0.060	AMC800279
ARNM-2	5/8	3/4	5	3 1/8	5/8	2	0.030	AMC800281
ARNM-2	5/8	3/4	5	3 1/8	5/8	2	0.060	AMC800283
ARNL-2	5/8	3/4	6	4 1/8	5/8	2	0.030	AMC800285
ARNL-2	5/8	3/4	6	4 1/8	5/8	2	0.060	AMC800287
ARS-2	3/4	1	4	–	3/4	2	0.030	AMC800185
ARS-2	3/4	1	4	–	3/4	2	0.060	• AMC800007
ARS-2	3/4	1	4	–	3/4	2	0.120	AMC800289
ARM-2	3/4	1 3/4	4	–	3/4	2	0.030	• AMC800291

Cutting data recommendations on page 95

■ = First Choice ☐ = Second Choice ● = In Stock

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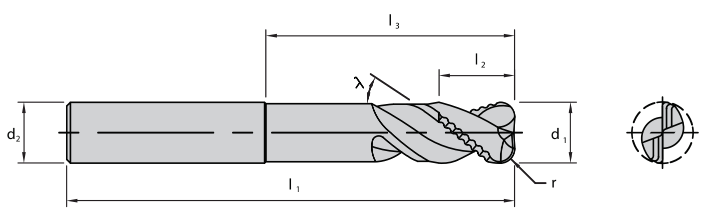

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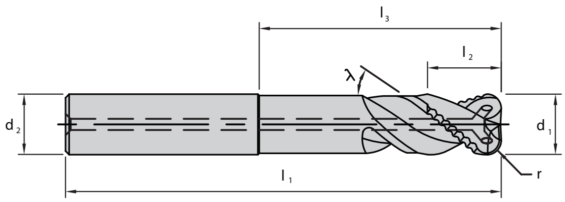
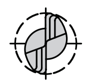
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
ARM-2	3/4	1 3/4	4	–	3/4	2	0.060	AMC800293
ARM-2	3/4	1 3/4	4	–	3/4	2	0.120	AMC800295
ARNS-2	3/4	1	4	2 1/8	3/4	2	0.030	AMC800187
ARNS-2	3/4	1	4	2 1/8	3/4	2	0.060	• AMC800017
ARNS-2	3/4	1	4	2 1/8	3/4	2	0.120	AMC800019
ARNM-2	3/4	1	6	3 1/8	3/4	2	0.030	AMC800189
ARNM-2	3/4	1	6	3 1/8	3/4	2	0.060	• AMC800029
ARNM-2	3/4	1	6	3 1/8	3/4	2	0.120	AMC800031
ARNL-2	3/4	1	6	4 1/8	3/4	2	0.030	AMC800191
ARNL-2	3/4	1	6	4 1/8	3/4	2	0.060	AMC800039
ARNL-2	3/4	1	6	4 1/8	3/4	2	0.120	AMC800041
ARS-2	1	1 1/4	4	–	1	2	0.030	AMC800193
ARS-2	1	1 1/4	4	–	1	2	0.060	• AMC800009
ARS-2	1	1 1/4	4	–	1	2	0.120	AMC800303
ARM-2	1	2 3/8	5	–	1	2	0.030	• AMC800305
ARM-2	1	2 3/8	5	–	1	2	0.060	AMC800307
ARM-2	1	2 3/8	5	–	1	2	0.120	AMC800309
ARNS-2	1	1 1/4	5	2 1/8	1	2	0.030	AMC800195
ARNS-2	1	1 1/4	5	2 1/8	1	2	0.060	AMC800021
ARNS-2	1	1 1/4	5	2 1/8	1	2	0.120	AMC800023
ARNM-2	1	1 1/4	6	3 1/8	1	2	0.030	AMC800197
ARNM-2	1	1 1/4	6	3 1/8	1	2	0.060	AMC800317
ARNM-2	1	1 1/4	6	3 1/8	1	2	0.120	AMC800033
ARNL-2	1	1 1/4	7	4 1/8	1	2	0.030	AMC800199
ARNL-2	1	1 1/4	7	4 1/8	1	2	0.060	AMC800319
ARNL-2	1	1 1/4	7	4 1/8	1	2	0.120	AMC800043

Cutting data recommendations on page 95

■ = First Choice ☐ = Second Choice ● = In Stock

Aluminum Rougher 2 Flute Coolant Through





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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
ARCS-2	3/8	1/2	3	–	3/8	2	0.030	• AMC800045
ARCM-2	3/8	7/8	2 1/2	–	3/8	2	0.030	• AMC800321
ARCNS-2	3/8	1/2	4	1 5/8	3/8	2	0.030	• AMC800325
ARCS-2	1/2	5/8	3	–	1/2	2	0.030	• AMC800047
ARCS-2	1/2	5/8	3	–	1/2	2	0.060	AMC800327
ARCM-2	1/2	1 1/4	3	–	1/2	2	0.030	• AMC800329
ARCM-2	1/2	1 1/4	3	–	1/2	2	0.060	AMC800331
ARCNS-2	1/2	5/8	4	2 1/8	1/2	2	0.030	AMC800053
ARCNS-2	1/2	5/8	4	2 1/8	1/2	2	0.060	AMC800055
ARCNM-2	1/2	5/8	5	3 1/8	1/2	2	0.030	• AMC800065
ARCNM-2	1/2	5/8	5	3 1/8	1/2	2	0.060	AMC800067
ARCNL-2	1/2	5/8	6	4 1/8	1/2	2	0.030	AMC800075
ARCNL-2	1/2	5/8	6	4 1/8	1/2	2	0.060	AMC800077
ARCS-2	5/8	3/4	3	–	5/8	2	0.030	• AMC800337
ARCS-2	5/8	3/4	3	–	5/8	2	0.060	AMC800339
ARCM-2	5/8	1 3/8	3 1/2	–	5/8	2	0.030	• AMC800341
ARCM-2	5/8	1 3/8	3 1/2	–	5/8	2	0.060	AMC800343
ARCNS-2	5/8	3/4	4	2 1/8	5/8	2	0.030	• AMC800349
ARCNS-2	5/8	3/4	4	2 1/8	5/8	2	0.060	AMC800351
ARCNM-2	5/8	3/4	5	3 1/8	5/8	2	0.030	AMC800353
ARCNM-2	5/8	3/4	5	3 1/8	5/8	2	0.060	AMC800355
ARCNL-2	5/8	3/4	6	4 1/8	5/8	2	0.030	AMC800357
ARCNL-2	5/8	3/4	6	4 1/8	5/8	2	0.060	AMC800359
ARCS-2	3/4	1	4	–	3/4	2	0.030	AMC800201
ARCS-2	3/4	1	4	–	3/4	2	0.060	AMC800049
ARCS-2	3/4	1	4	–	3/4	2	0.120	AMC800361
ARCM-2	3/4	1 3/4	4	–	3/4	2	0.030	• AMC800363

Cutting data recommendations on page 95

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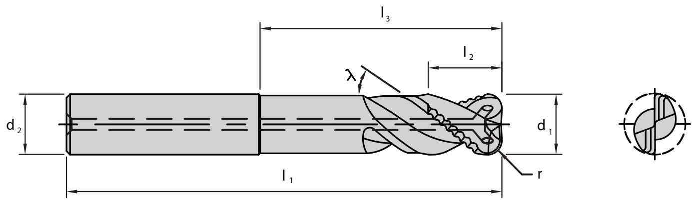

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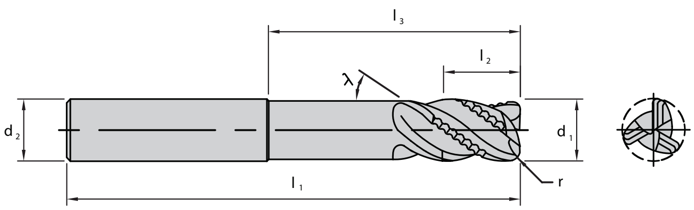
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
ARCM-2	3/4	1 3/4	4	–	3/4	2	0.060	AMC800365
ARCM-2	3/4	1 3/4	4	–	3/4	2	0.120	AMC800367
ARCNS-2	3/4	1	4	2 1/8	3/4	2	0.030	AMC800203
ARCNS-2	3/4	1	4	2 1/8	3/4	2	0.060	• AMC800057
ARCNS-2	3/4	1	4	2 1/8	3/4	2	0.120	AMC800059
ARCNM-2	3/4	1	6	3 1/8	3/4	2	0.030	AMC800205
ARCNM-2	3/4	1	6	3 1/8	3/4	2	0.060	• AMC800069
ARCNM-2	3/4	1	6	3 1/8	3/4	2	0.120	AMC800071
ARCNL-2	3/4	1	6	4 1/8	3/4	2	0.030	AMC800207
ARCNL-2	3/4	1	6	4 1/8	3/4	2	0.060	AMC800079
ARCNL-2	3/4	1	6	4 1/8	3/4	2	0.120	AMC800081
ARCS-2	1	1 1/4	4	–	1	2	0.030	AMC800209
ARCS-2	1	1 1/4	4	–	1	2	0.060	AMC800051
ARCS-2	1	1 1/4	4	–	1	2	0.120	AMC800375
ARCM-2	1	2 3/8	5	–	1	2	0.030	• AMC800377
ARCM-2	1	2 3/8	5	–	1	2	0.060	AMC800379
ARCM-2	1	2 3/8	5	–	1	2	0.120	AMC800381
ARCNS-2	1	1 1/4	5	2 1/8	1	2	0.030	AMC800211
ARCNS-2	1	1 1/4	5	2 1/8	1	2	0.060	• AMC800061
ARCNS-2	1	1 1/4	5	2 1/8	1	2	0.120	AMC800063
ARCNM-2	1	1 1/4	6	3 1/8	1	2	0.030	AMC800213
ARCNM-2	1	1 1/4	6	3 1/8	1	2	0.060	AMC800389
ARCNM-2	1	1 1/4	6	3 1/8	1	2	0.120	AMC800073
ARCNL-2	1	1 1/4	7	4 1/8	1	2	0.030	AMC800215
ARCNL-2	1	1 1/4	7	4 1/8	1	2	0.060	AMC800391
ARCNL-2	1	1 1/4	7	4 1/8	1	2	0.120	AMC800083

Cutting data recommendations on page 95

■ = First Choice ☐ = Second Choice ● = In Stock



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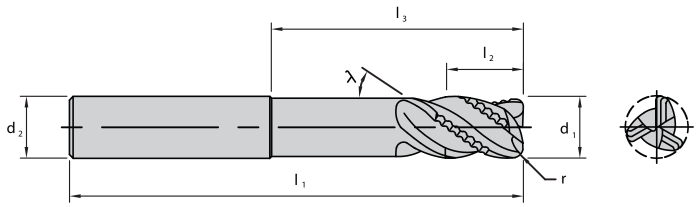
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
ARS-3	3/8	1/2	3	–	3/8	3	0.030	• AMC800103
ARM-3	3/8	7/8	2 1/2	–	3/8	3	0.030	• AMC800393
ARNS-3	3/8	1/2	4	1 5/8	3/8	3	0.030	• AMC800111
ARS-3	1/2	5/8	3	–	1/2	3	0.030	• AMC800105
ARS-3	1/2	5/8	3	–	1/2	3	0.060	• AMC800397
ARM-3	1/2	1 1/4	3	–	1/2	3	0.030	• AMC800399
ARM-3	1/2	1 1/4	3	–	1/2	3	0.060	• AMC800401
ARNS-3	1/2	5/8	4	2 1/8	1/2	3	0.030	• AMC800113
ARNS-3	1/2	5/8	4	2 1/8	1/2	3	0.060	AMC800115
ARNM-3	1/2	5/8	5	3 1/8	1/2	3	0.030	• AMC800125
ARNM-3	1/2	5/8	5	3 1/8	1/2	3	0.060	AMC800127
ARNL-3	1/2	5/8	6	4 1/8	1/2	3	0.030	AMC800135
ARNL-3	1/2	5/8	6	4 1/8	1/2	3	0.060	AMC800137
ARS-3	5/8	3/4	3	–	5/8	3	0.030	• AMC800407
ARS-3	5/8	3/4	3	–	5/8	3	0.060	• AMC800409
ARM-3	5/8	1 3/8	3 1/2	–	5/8	3	0.030	• AMC800411
ARM-3	5/8	1 3/8	3 1/2	–	5/8	3	0.060	• AMC800413
ARNS-3	5/8	3/4	4	2 1/8	5/8	3	0.030	• AMC800419
ARNS-3	5/8	3/4	4	2 1/8	5/8	3	0.060	• AMC800421
ARNM-3	5/8	3/4	5	3 1/8	5/8	3	0.030	• AMC800423
ARNM-3	5/8	3/4	5	3 1/8	5/8	3	0.060	AMC800425
ARNL-3	5/8	3/4	6	4 1/8	5/8	3	0.030	AMC800427
ARNL-3	5/8	3/4	6	4 1/8	5/8	3	0.060	AMC800429
ARS-3	3/4	1	4	–	3/4	3	0.030	• AMC800217
ARS-3	3/4	1	4	–	3/4	3	0.060	• AMC800107
ARS-3	3/4	1	4	–	3/4	3	0.120	• AMC800431
ARM-3	3/4	1 3/4	4	–	3/4	3	0.030	• AMC800433

Cutting data recommendations on page 95

■ = First Choice ☐ = Second Choice ● = In Stock



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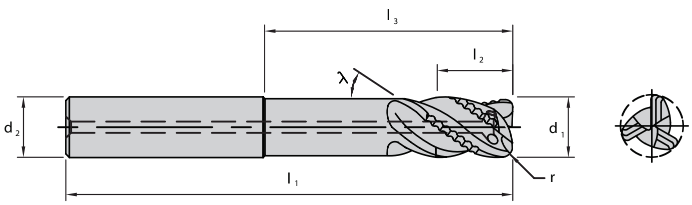
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
ARM-3	3/4	1 3/4	4	–	3/4	3	0.060	• AMC800435
ARM-3	3/4	1 3/4	4	–	3/4	3	0.120	• AMC800437
ARNS-3	3/4	1	4	2 1/8	3/4	3	0.030	• AMC800219
ARNS-3	3/4	1	4	2 1/8	3/4	3	0.060	• AMC800117
ARNS-3	3/4	1	4	2 1/8	3/4	3	0.120	• AMC800119
ARNM-3	3/4	1	6	3 1/8	3/4	3	0.030	• AMC800221
ARNM-3	3/4	1	6	3 1/8	3/4	3	0.060	• AMC800129
ARNM-3	3/4	1	6	3 1/8	3/4	3	0.120	AMC800131
ARNL-3	3/4	1	6	4 1/8	3/4	3	0.030	• AMC800223
ARNL-3	3/4	1	6	4 1/8	3/4	3	0.060	• AMC800139
ARNL-3	3/4	1	6	4 1/8	3/4	3	0.120	AMC800141
ARS-3	1	1 1/4	4	–	1	3	0.030	• AMC800225
ARS-3	1	1 1/4	4	–	1	3	0.060	• AMC800109
ARS-3	1	1 1/4	4	–	1	3	0.120	AMC800445
ARM-3	1	2 3/8	5	–	1	3	0.030	• AMC800447
ARM-3	1	2 3/8	5	–	1	3	0.060	• AMC800449
ARM-3	1	2 3/8	5	–	1	3	0.120	• AMC800451
ARNS-3	1	1 1/4	5	2 1/8	1	3	0.030	• AMC800227
ARNS-3	1	1 1/4	5	2 1/8	1	3	0.060	• AMC800121
ARNS-3	1	1 1/4	5	2 1/8	1	3	0.120	AMC800123
ARNM-3	1	1 1/4	6	3 1/8	1	3	0.030	AMC800229
ARNM-3	1	1 1/4	6	3 1/8	1	3	0.060	• AMC800459
ARNM-3	1	1 1/4	6	3 1/8	1	3	0.120	• AMC800133
ARNL-3	1	1 1/4	7	4 1/8	1	3	0.030	AMC800231
ARNL-3	1	1 1/4	7	4 1/8	1	3	0.060	• AMC800461
ARNL-3	1	1 1/4	7	4 1/8	1	3	0.120	AMC800143

Cutting data recommendations on page 95

■ = First Choice   □ = Second Choice   • = In Stock



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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
ARCS-3	3/8	1/2	3	–	3/8	3	0.030	• AMC800145
ARCM-3	3/8	7/8	2 1/2	–	3/8	3	0.030	• AMC800463
ARCNS-3	3/8	1/2	4	1 5/8	3/8	3	0.030	• AMC800467
ARCS-3	1/2	5/8	3	–	1/2	3	0.030	• AMC800147
ARCS-3	1/2	5/8	3	–	1/2	3	0.060	• AMC800469
ARCM-3	1/2	1 1/4	3	–	1/2	3	0.030	• AMC800471
ARCM-3	1/2	1 1/4	3	–	1/2	3	0.060	• AMC800473
ARCNS-3	1/2	5/8	4	2 1/8	1/2	3	0.030	• AMC800153
ARCNS-3	1/2	5/8	4	2 1/8	1/2	3	0.060	AMC800155
ARCNM-3	1/2	5/8	5	3 1/8	1/2	3	0.030	• AMC800165
ARCNM-3	1/2	5/8	5	3 1/8	1/2	3	0.060	AMC800167
ARCNL-3	1/2	5/8	6	4 1/8	1/2	3	0.030	AMC800175
ARCNL-3	1/2	5/8	6	4 1/8	1/2	3	0.060	AMC800177
ARCS-3	5/8	3/4	3	–	5/8	3	0.030	• AMC800479
ARCS-3	5/8	3/4	3	–	5/8	3	0.060	• AMC800481
ARCM-3	5/8	1 3/8	3 1/2	–	5/8	3	0.030	• AMC800483
ARCM-3	5/8	1 3/8	3 1/2	–	5/8	3	0.060	AMC800485
ARCNS-3	5/8	3/4	4	2 1/8	5/8	3	0.030	• AMC800491
ARCNS-3	5/8	3/4	4	2 1/8	5/8	3	0.060	AMC800493
ARCNM-3	5/8	3/4	5	3 1/8	5/8	3	0.030	• AMC800495
ARCNM-3	5/8	3/4	5	3 1/8	5/8	3	0.060	AMC800497
ARCNL-3	5/8	3/4	6	4 1/8	5/8	3	0.030	AMC800499
ARCNL-3	5/8	3/4	6	4 1/8	5/8	3	0.060	AMC800501
ARCS-3	3/4	1	4	–	3/4	3	0.030	AMC800233
ARCS-3	3/4	1	4	–	3/4	3	0.060	• AMC800149
ARCS-3	3/4	1	4	–	3/4	3	0.120	AMC800503
ARCM-3	3/4	1 3/4	4	–	3/4	3	0.030	• AMC800505

Cutting data recommendations on page 95

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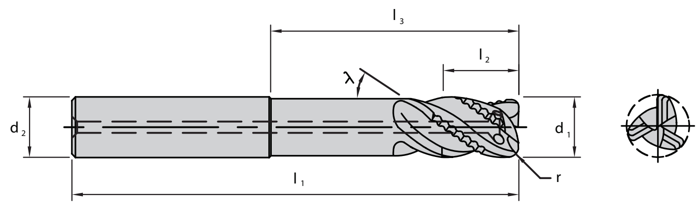

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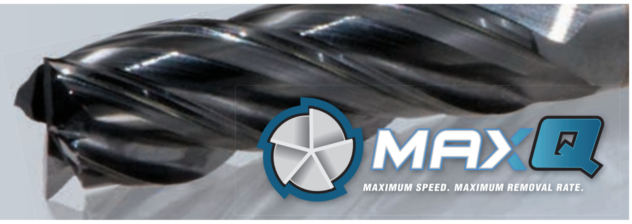
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
ARCM-3	3/4	1 3/4	4	–	3/4	3	0.060	AMC800507
ARCM-3	3/4	1 3/4	4	–	3/4	3	0.120	AMC800509
ARCNS-3	3/4	1	4	2 1/8	3/4	3	0.030	AMC800235
ARCNS-3	3/4	1	4	2 1/8	3/4	3	0.060	• AMC800157
ARCNS-3	3/4	1	4	2 1/8	3/4	3	0.120	AMC800159
ARCNM-3	3/4	1	6	3 1/8	3/4	3	0.030	AMC800237
ARCNM-3	3/4	1	6	3 1/8	3/4	3	0.060	• AMC800169
ARCNM-3	3/4	1	6	3 1/8	3/4	3	0.120	AMC800171
ARCNL-3	3/4	1	6	4 1/8	3/4	3	0.030	AMC800239
ARCNL-3	3/4	1	6	4 1/8	3/4	3	0.060	AMC800179
ARCNL-3	3/4	1	6	4 1/8	3/4	3	0.120	AMC800181
ARCS-3	1	1 1/4	4	–	1	3	0.030	AMC800241
ARCS-3	1	1 1/4	4	–	1	3	0.060	AMC800151
ARCS-3	1	1 1/4	4	–	1	3	0.120	AMC800517
ARCM-3	1	2 3/8	5	–	1	3	0.030	• AMC800519
ARCM-3	1	2 3/8	5	–	1	3	0.060	AMC800521
ARCM-3	1	2 3/8	5	–	1	3	0.120	AMC800523
ARCNS-3	1	1 1/4	5	2 1/8	1	3	0.030	AMC800243
ARCNS-3	1	1 1/4	5	2 1/8	1	3	0.060	• AMC800161
ARCNS-3	1	1 1/4	5	2 1/8	1	3	0.120	AMC800163
ARCNM-3	1	1 1/4	6	3 1/8	1	3	0.030	AMC800245
ARCNM-3	1	1 1/4	6	3 1/8	1	3	0.060	AMC800531
ARCNM-3	1	1 1/4	6	3 1/8	1	3	0.120	• AMC800173
ARCNL-3	1	1 1/4	7	4 1/8	1	3	0.030	AMC800247
ARCNL-3	1	1 1/4	7	4 1/8	1	3	0.060	AMC800533
ARCNL-3	1	1 1/4	7	4 1/8	1	3	0.120	• AMC800183

Cutting data recommendations on page 95

■ = First Choice ☐ = Second Choice ● = In Stock

MaxQ End Mills



MaxQ End Mills from LMT Onsrud allow you to maximize your classic milling techniques in demanding applications across a broad range of materials. Providing the versatility for slot milling to high speed machining, MaxQ can achieve unmatched material removal rates. From pocketing to profiling, MaxQ delivers the maximum in productivity.

Features and Benefits

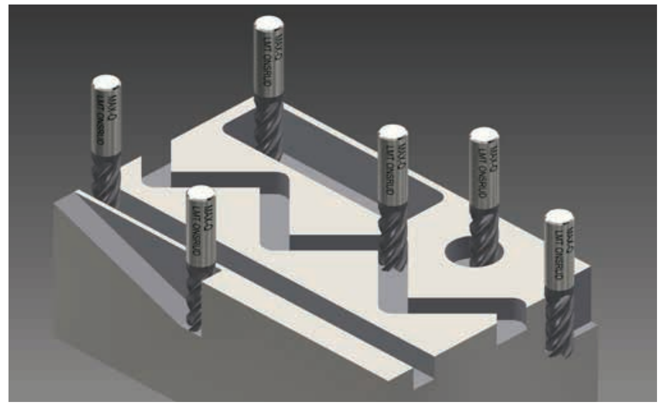
- Proprietary design and tool composition allows for machining high-strength alloys as easily as it machines steel.
- Optimized 4 & 5 Flute geometry for maximum feed rates and a broad technique range from slotting to profiling.
- Full radial engagement up to 1 times diameter deep.
- Optimized exit geometry for unmatched material removal rates.
- ENDURASpeed coating for maximum heat resistance, longer tool life and fewer tool changes.

Applications

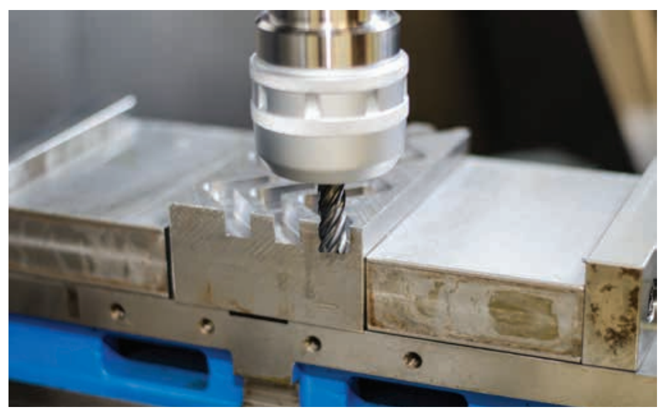
- Slotting
- Pocketing
- Profiling
- Specially designed for maximum speeds and feed rates.

Usage

- High-temp alloys
- Steel
- Stainless Steel
- Cast Iron



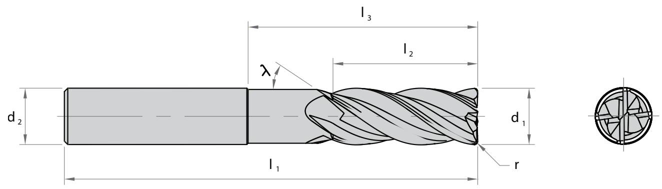
Versatility from slotting to profiling to pocketing.



Unmatched material removal rates.

ENDURASpeed Coating provides maximum heat resistance.

LMT • ONSRUD



	4-Flute	4-Flute Weldon
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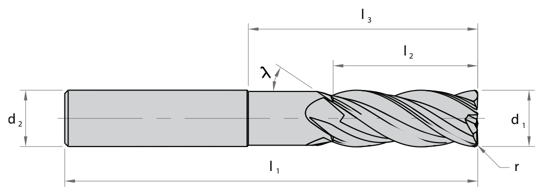
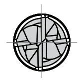
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
MXQS-4	1/8	1/4	2	–	1/8	4	Square	• MXQ2650000	MXQ2650000W
MXQS-4	1/8	1/4	2	–	1/8	4	0.015	• MXQ2650001	MXQ2650001W
MXQM-4	1/8	1/2	2	–	1/8	4	Square	• MXQ2650002	MXQ2650002W
MXQM-4	1/8	1/2	2	–	1/8	4	0.015	• MXQ2650003	MXQ2650003W
MXQS-4	3/16	5/16	2	–	3/16	4	Square	• MXQ2650004	MXQ2650004W
MXQS-4	3/16	5/16	2	–	3/16	4	0.015	• MXQ2650005	MXQ2650005W
MXQM-4	3/16	9/16	2 1/2	–	3/16	4	Square	• MXQ2650006	MXQ2650006W
MXQM-4	3/16	9/16	2 1/2	–	3/16	4	0.015	• MXQ2650007	MXQ2650007W
MXQS-4	1/4	3/8	2 1/2	–	1/4	4	Square	• MXQ2650008	MXQ2650008W
MXQS-4	1/4	3/8	2 1/2	–	1/4	4	0.015	• MXQ2650009	MXQ2650009W
MXQS-4	1/4	3/8	2 1/2	–	1/4	4	0.030	• MXQ2650010	MXQ2650010W
MXQM-4	1/4	3/4	2 1/2	–	1/4	4	Square	• MXQ2650011	MXQ2650011W
MXQM-4	1/4	3/4	2 1/2	–	1/4	4	0.015	• MXQ2650012	MXQ2650012W
MXQM-4	1/4	3/4	2 1/2	–	1/4	4	0.030	• MXQ2650013	MXQ2650013W
MXQNS-4	1/4	3/8	3	1 1/8	1/4	4	0.015	• MXQ2650014	• MXQ2650014W
MXQNS-4	1/4	3/8	3	1 1/8	1/4	4	0.030	• MXQ2650015	MXQ2650015W
MXQS-4	5/16	7/16	2	–	5/16	4	Square	• MXQ2650016	MXQ2650016W
MXQS-4	5/16	7/16	2	–	5/16	4	0.015	• MXQ2650017	MXQ2650017W
MXQM-4	5/16	1	3	–	5/16	4	Square	• MXQ2650018	MXQ2650018W
MXQM-4	5/16	1	3	–	5/16	4	0.015	• MXQ2650019	MXQ2650019W
MXQS-4	3/8	1/2	2 1/2	–	3/8	4	Square	• MXQ2650020	MXQ2650020W
MXQS-4	3/8	1/2	2 1/2	–	3/8	4	0.015	• MXQ2650021	MXQ2650021W
MXQS-4	3/8	1/2	2 1/2	–	3/8	4	0.030	• MXQ2650022	MXQ2650022W
MXQS-4	3/8	1/2	2 1/2	–	3/8	4	0.060	MXQ2650104	MXQ2650104W
MXQS-4	3/8	1/2	2 1/2	–	3/8	4	0.090	• MXQ2650105	MXQ2650105W
MXQS-4	3/8	1/2	2 1/2	–	3/8	4	0.120	MXQ2650106	MXQ2650106W
MXQM-4	3/8	1 1/8	3	–	3/8	4	Square	• MXQ2650023	• MXQ2650023W
MXQM-4	3/8	1 1/8	3	–	3/8	4	0.015	• MXQ2650024	MXQ2650024W
MXQM-4	3/8	1 1/8	3	–	3/8	4	0.030	• MXQ2650025	• MXQ2650025W

Cutting data recommendations on pages 96-97

■ = First Choice ☐ = Second Choice • = In Stock





	4-Flute	4-Flute Weldon
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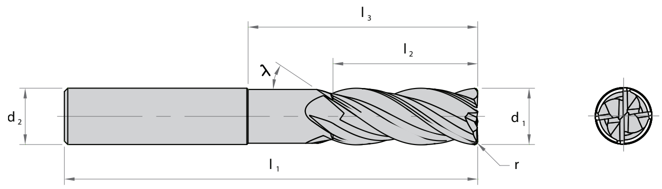
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
MXQM-4	3/8	1 1/8	3	–	3/8	4	0.060	• MXQ2650107	MXQ2650107W
MXQM-4	3/8	1 1/8	3	–	3/8	4	0.090	MXQ2650108	MXQ2650108W
MXQM-4	3/8	1 1/8	3	–	3/8	4	0.120	MXQ2650109	MXQ2650109W
MXQNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	Square	MXQ2650110	MXQ2650110W
MXQNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	0.015	• MXQ2650026	• MXQ2650026W
MXQNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	0.030	• MXQ2650027	MXQ2650027W
MXQNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	0.060	MXQ2650111	MXQ2650111W
MXQNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	0.090	MXQ2650112	MXQ2650112W
MXQNS-4	3/8	1/2	3 1/2	1 5/8	3/8	4	0.120	MXQ2650113	MXQ2650113W
MXQS-4	1/2	5/8	2 1/2	–	1/2	4	Square	• MXQ2650028	MXQ2650028W
MXQS-4	1/2	5/8	2 1/2	–	1/2	4	0.015	• MXQ2650029	MXQ2650029W
MXQS-4	1/2	5/8	2 1/2	–	1/2	4	0.030	• MXQ2650030	MXQ2650030W
MXQS-4	1/2	5/8	2 1/2	–	1/2	4	0.060	• MXQ2650114	MXQ2650114W
MXQS-4	1/2	5/8	2 1/2	–	1/2	4	0.090	MXQ2650115	MXQ2650115W
MXQS-4	1/2	5/8	2 1/2	–	1/2	4	0.120	• MXQ2650116	MXQ2650116W
MXQS-4	1/2	5/8	2 1/2	–	1/2	4	0.190	MXQ2650117	MXQ2650117W
MXQM-4	1/2	1 1/4	3	–	1/2	4	Square	• MXQ2650034	• MXQ2650034W
MXQM-4	1/2	1 1/4	3	–	1/2	4	0.015	• MXQ2650035	MXQ2650035W
MXQM-4	1/2	1 1/4	3	–	1/2	4	0.030	• MXQ2650036	MXQ2650036W
MXQM-4	1/2	1 1/4	3	–	1/2	4	0.060	• MXQ2650122	MXQ2650122W
MXQM-4	1/2	1 1/4	3	–	1/2	4	0.090	MXQ2650123	MXQ2650123W
MXQM-4	1/2	1 1/4	3	–	1/2	4	0.120	MXQ2650124	MXQ2650124W
MXQM-4	1/2	1 1/4	3	–	1/2	4	0.190	MXQ2650125	MXQ2650125W
MXQNS-4	1/2	5/8	4	1 3/4	1/2	4	Square	• MXQ2650040	MXQ2650040W
MXQNS-4	1/2	5/8	4	1 3/4	1/2	4	0.030	• MXQ2650041	MXQ2650041W
MXQNS-4	1/2	5/8	4	1 3/4	1/2	4	0.060	MXQ2650042	MXQ2650042W
MXQNS-4	1/2	5/8	4	1 3/4	1/2	4	0.090	MXQ2650130	MXQ2650130W
MXQNS-4	1/2	5/8	4	1 3/4	1/2	4	0.120	MXQ2650131	MXQ2650131W
MXQNS-4	1/2	5/8	4	1 3/4	1/2	4	0.190	MXQ2650132	MXQ2650132W
MXQS-4	5/8	3/4	3	–	5/8	4	Square	• MXQ2650046	MXQ2650046W

Cutting data recommendations on pages 96-97

■ = First Choice □ = Second Choice ● = In Stock



Weldon


	4-Flute	4-Flute Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
MXQS-4	5/8	3/4	3	–	5/8	4	0.030	• MXQ2650047	MXQ2650047W
MXQS-4	5/8	3/4	3	–	5/8	4	0.060	MXQ2650136	MXQ2650136W
MXQS-4	5/8	3/4	3	–	5/8	4	0.120	MXQ2650137	MXQ2650137W
MXQS-4	5/8	3/4	3	–	5/8	4	0.190	MXQ2650138	MXQ2650138W
MXQS-4	5/8	3/4	3	–	5/8	4	0.250	MXQ2650139	MXQ2650139W
MXQM-4	5/8	1 3/8	3 1/2	–	5/8	4	Square	• MXQ2650048	• MXQ2650048W
MXQM-4	5/8	1 3/8	3 1/2	–	5/8	4	0.030	• MXQ2650049	MXQ2650049W
MXQM-4	5/8	1 3/8	3 1/2	–	5/8	4	0.060	MXQ2650140	MXQ2650140W
MXQM-4	5/8	1 3/8	3 1/2	–	5/8	4	0.120	MXQ2650141	MXQ2650141W
MXQM-4	5/8	1 3/8	3 1/2	–	5/8	4	0.190	• MXQ2650142	MXQ2650142W
MXQM-4	5/8	1 3/8	3 1/2	–	5/8	4	0.250	MXQ2650143	MXQ2650143W
MXQS-4	3/4	1 1/8	3	–	3/4	4	Square	• MXQ2650050	MXQ2650050W
MXQS-4	3/4	1 1/8	3	–	3/4	4	0.030	• MXQ2650051	MXQ2650051W
MXQS-4	3/4	1 1/8	3	–	3/4	4	0.060	• MXQ2650052	MXQ2650052W
MXQS-4	3/4	1 1/8	3	–	3/4	4	0.090	MXQ2650144	MXQ2650144W
MXQS-4	3/4	1 1/8	3	–	3/4	4	0.120	MXQ2650053	MXQ2650053W
MXQS-4	3/4	1 1/8	3	–	3/4	4	0.190	MXQ2650145	MXQ2650145W
MXQS-4	3/4	1 1/8	3	–	3/4	4	0.250	MXQ2650146	MXQ2650146W
MXQM-4	3/4	1 5/8	4	–	3/4	4	Square	• MXQ2650059	• MXQ2650059W
MXQM-4	3/4	1 5/8	4	–	3/4	4	0.030	• MXQ2650060	MXQ2650060W
MXQM-4	3/4	1 5/8	4	–	3/4	4	0.060	• MXQ2650061	MXQ2650061W
MXQM-4	3/4	1 5/8	4	–	3/4	4	0.090	MXQ2650156	MXQ2650156W
MXQM-4	3/4	1 5/8	4	–	3/4	4	0.120	• MXQ2650062	MXQ2650062W
MXQM-4	3/4	1 5/8	4	–	3/4	4	0.190	MXQ2650157	MXQ2650157W
MXQM-4	3/4	1 5/8	4	–	3/4	4	0.250	MXQ2650158	MXQ2650158W
MXQL-4	3/4	2 1/4	5	–	3/4	4	Square	• MXQ2650100	MXQ2650100W
MXQL-4	3/4	2 1/4	5	–	3/4	4	0.030	• MXQ2650101	• MXQ2650101W
MXQL-4	3/4	2 1/4	5	–	3/4	4	0.060	MXQ2650162	MXQ2650162W
MXQL-4	3/4	2 1/4	5	–	3/4	4	0.090	MXQ2650163	MXQ2650163W
MXQL-4	3/4	2 1/4	5	–	3/4	4	0.120	MXQ2650164	MXQ2650164W

Cutting data recommendations on pages 96-97

■ = First Choice ☐ = Second Choice • = In Stock

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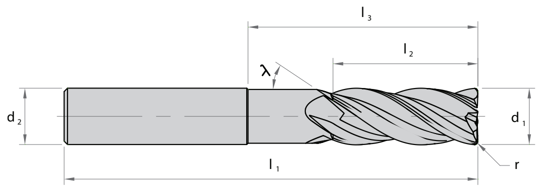

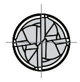

Weldon

	4-Flute	4-Flute Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
MXQL-4	3/4	2 1/4	5	–	3/4	4	0.190	MXQ2650165	MXQ2650165W
MXQL-4	3/4	2 1/4	5	–	3/4	4	0.250	MXQ2650166	MXQ2650166W
MXQNS-4	3/4	1 1/8	5	2 3/8	3/4	4	Square	MXQ2650172	MXQ2650172W
MXQNS-4	3/4	1 1/8	5	2 3/8	3/4	4	0.030	• MXQ2650067	MXQ2650067W
MXQNS-4	3/4	1 1/8	5	2 3/8	3/4	4	0.060	• MXQ2650068	MXQ2650068W
MXQNS-4	3/4	1 1/8	5	2 3/8	3/4	4	0.090	MXQ2650173	MXQ2650173W
MXQNS-4	3/4	1 1/8	5	2 3/8	3/4	4	0.120	MXQ2650069	MXQ2650069W
MXQNS-4	3/4	1 1/8	5	2 3/8	3/4	4	0.190	MXQ2650174	MXQ2650174W
MXQNS-4	3/4	1 1/8	5	2 3/8	3/4	4	0.250	MXQ2650175	MXQ2650175W
MXQNM-4	3/4	1 1/8	6	3 1/8	3/4	4	Square	• MXQ2650180	MXQ2650180W
MXQNM-4	3/4	1 1/8	6	3 1/8	3/4	4	0.030	• MXQ2650073	MXQ2650073W
MXQNM-4	3/4	1 1/8	6	3 1/8	3/4	4	0.060	MXQ2650074	MXQ2650074W
MXQNM-4	3/4	1 1/8	6	3 1/8	3/4	4	0.090	MXQ2650181	MXQ2650181W
MXQNM-4	3/4	1 1/8	6	3 1/8	3/4	4	0.120	• MXQ2650075	MXQ2650075W
MXQNM-4	3/4	1 1/8	6	3 1/8	3/4	4	0.190	MXQ2650182	MXQ2650182W
MXQNM-4	3/4	1 1/8	6	3 1/8	3/4	4	0.250	MXQ2650183	MXQ2650183W
MXQS-4	1	1 1/4	4	–	1	4	Square	• MXQ2650188	MXQ2650188W
MXQS-4	1	1 1/4	4	–	1	4	0.030	MXQ2650079	MXQ2650079W
MXQS-4	1	1 1/4	4	–	1	4	0.060	MXQ2650189	MXQ2650189W
MXQS-4	1	1 1/4	4	–	1	4	0.090	MXQ2650190	MXQ2650190W
MXQS-4	1	1 1/4	4	–	1	4	0.120	MXQ2650080	MXQ2650080W
MXQS-4	1	1 1/4	4	–	1	4	0.190	MXQ2650191	MXQ2650191W
MXQS-4	1	1 1/4	4	–	1	4	0.250	MXQ2650192	MXQ2650192W
MXQM-4	1	2	5	–	1	4	Square	MXQ2650202	MXQ2650202W
MXQM-4	1	2	5	–	1	4	0.030	• MXQ2650086	MXQ2650086W
MXQM-4	1	2	5	–	1	4	0.060	• MXQ2650203	MXQ2650203W
MXQM-4	1	2	5	–	1	4	0.090	MXQ2650204	MXQ2650204W
MXQM-4	1	2	5	–	1	4	0.120	• MXQ2650087	MXQ2650087W
MXQM-4	1	2	5	–	1	4	0.190	MXQ2650088	MXQ2650088W
MXQM-4	1	2	5	–	1	4	0.250	• MXQ2650089	MXQ2650089W

Cutting data recommendations on pages 96-97

■ = First Choice □ = Second Choice ● = In Stock

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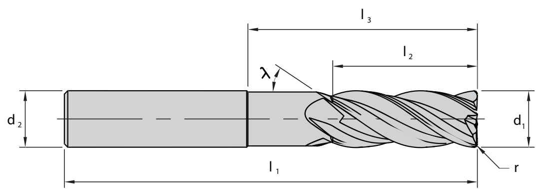
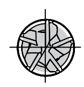




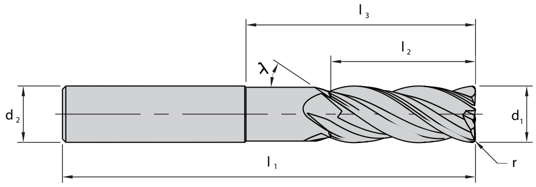
Weldon

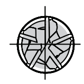
	5-Flute	5-Flute Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
MXQS-5	3/8	1/2	2 1/2	–	3/8	5	Square	• MXQ2650567	MXQ2650567W
MXQS-5	3/8	1/2	2 1/2	–	3/8	5	0.015	• MXQ2650568	MXQ2650568W
MXQS-5	3/8	1/2	2 1/2	–	3/8	5	0.030	• MXQ2650569	MXQ2650569W
MXQS-5	3/8	1/2	2 1/2	–	3/8	5	0.060	• MXQ2650570	MXQ2650570W
MXQS-5	3/8	1/2	2 1/2	–	3/8	5	0.090	• MXQ2650571	MXQ2650571W
MXQS-5	3/8	1/2	2 1/2	–	3/8	5	0.120	• MXQ2650572	MXQ2650572W
MXQM-5	3/8	7/8	2 1/2	–	3/8	5	Square	• MXQ2650573	MXQ2650573W
MXQM-5	3/8	7/8	2 1/2	–	3/8	5	0.015	• MXQ2650574	MXQ2650574W
MXQM-5	3/8	7/8	2 1/2	–	3/8	5	0.030	• MXQ2650575	MXQ2650575W
MXQM-5	3/8	7/8	2 1/2	–	3/8	5	0.060	• MXQ2650576	MXQ2650576W
MXQM-5	3/8	7/8	2 1/2	–	3/8	5	0.090	• MXQ2650577	MXQ2650577W
MXQM-5	3/8	7/8	2 1/2	–	3/8	5	0.120	• MXQ2650578	MXQ2650578W
MXQL-5	3/8	1 1/4	3	–	3/8	5	Square	• MXQ2650579	MXQ2650579W
MXQL-5	3/8	1 1/4	3	–	3/8	5	0.015	• MXQ2650580	MXQ2650580W
MXQL-5	3/8	1 1/4	3	–	3/8	5	0.030	• MXQ2650581	MXQ2650581W
MXQL-5	3/8	1 1/4	3	–	3/8	5	0.060	• MXQ2650582	MXQ2650582W
MXQL-5	3/8	1 1/4	3	–	3/8	5	0.090	• MXQ2650583	MXQ2650583W
MXQL-5	3/8	1 1/4	3	–	3/8	5	0.120	• MXQ2650584	MXQ2650584W
MXQNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	Square	• MXQ2650585	MXQ2650585W
MXQNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	0.015	• MXQ2650586	MXQ2650586W
MXQNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	0.030	• MXQ2650587	MXQ2650587W
MXQNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	0.060	• MXQ2650588	MXQ2650588W
MXQNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	0.090	• MXQ2650589	MXQ2650589W
MXQNS-5	3/8	1/2	3 1/2	1 5/8	3/8	5	0.120	• MXQ2650590	MXQ2650590W
MXQS-5	1/2	5/8	2 1/2	–	1/2	5	Square	• MXQ2650031	MXQ2650031W
MXQS-5	1/2	5/8	2 1/2	–	1/2	5	0.015	• MXQ2650032	MXQ2650032W
MXQS-5	1/2	5/8	2 1/2	–	1/2	5	0.030	• MXQ2650033	• MXQ2650033W

Cutting data recommendations on pages 98-99

■ = First Choice ☐ = Second Choice ● = In Stock



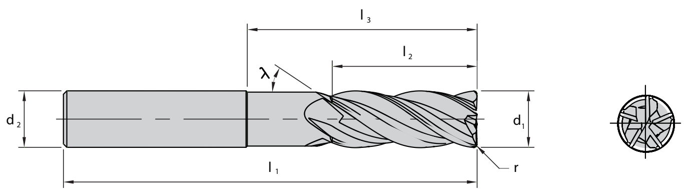


	5-Flute	5-Flute Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
MXQS-5	1/2	5/8	2 1/2	–	1/2	5	0.060	• MXQ2650118	MXQ2650118W
MXQS-5	1/2	5/8	2 1/2	–	1/2	5	0.090	• MXQ2650119	MXQ2650119W
MXQS-5	1/2	5/8	2 1/2	–	1/2	5	0.120	• MXQ2650120	MXQ2650120W
MXQS-5	1/2	5/8	2 1/2	–	1/2	5	0.190	• MXQ2650121	MXQ2650121W
MXQM-5	1/2	1 1/4	3	–	1/2	5	Square	• MXQ2650037	MXQ2650037W
MXQM-5	1/2	1 1/4	3	–	1/2	5	0.015	• MXQ2650038	MXQ2650038W
MXQM-5	1/2	1 1/4	3	–	1/2	5	0.030	• MXQ2650039	• MXQ2650039W
MXQM-5	1/2	1 1/4	3	–	1/2	5	0.060	• MXQ2650126	MXQ2650126W
MXQM-5	1/2	1 1/4	3	–	1/2	5	0.090	• MXQ2650127	MXQ2650127W
MXQM-5	1/2	1 1/4	3	–	1/2	5	0.120	• MXQ2650128	MXQ2650128W
MXQM-5	1/2	1 1/4	3	–	1/2	5	0.190	• MXQ2650129	MXQ2650129W
MXQL-5	1/2	1 5/8	4	–	1/2	5	Square	• MXQ2650591	MXQ2650591W
MXQL-5	1/2	1 5/8	4	–	1/2	5	0.015	• MXQ2650592	MXQ2650592W
MXQL-5	1/2	1 5/8	4	–	1/2	5	0.030	• MXQ2650593	MXQ2650593W
MXQL-5	1/2	1 5/8	4	–	1/2	5	0.060	• MXQ2650594	MXQ2650594W
MXQXL-5	1/2	2 1/8	4	–	1/2	5	Square	• MXQ2650596	MXQ2650596W
MXQXL-5	1/2	2 1/8	4	–	1/2	5	0.015	• MXQ2650597	MXQ2650597W
MXQXL-5	1/2	2 1/8	4	–	1/2	5	0.030	• MXQ2650598	MXQ2650598W
MXQXL-5	1/2	2 1/8	4	–	1/2	5	0.060	• MXQ2650599	MXQ2650599W
MXQNS-5	1/2	5/8	4	1 3/4	1/2	5	Square	• MXQ2650043	MXQ2650043W
MXQNS-5	1/2	5/8	4	1 3/4	1/2	5	0.030	• MXQ2650044	MXQ2650044W
MXQNS-5	1/2	5/8	4	1 3/4	1/2	5	0.060	MXQ2650045	MXQ2650045W
MXQNS-5	1/2	5/8	4	1 3/4	1/2	5	0.090	• MXQ2650133	MXQ2650133W
MXQNS-5	1/2	5/8	4	1 3/4	1/2	5	0.120	• MXQ2650134	MXQ2650134W
MXQNS-5	1/2	5/8	4	1 3/4	1/2	5	0.190	• MXQ2650135	MXQ2650135W
MXQS-5	5/8	3/4	3	–	5/8	5	Square	• MXQ2650601	MXQ2650601W
MXQS-5	5/8	3/4	3	–	5/8	5	0.030	• MXQ2650602	MXQ2650602W

Cutting data recommendations on pages 98-99

■ = First Choice □ = Second Choice ● = In Stock



	5-Flute	5-Flute Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
MXQS-5	5/8	3/4	3	–	5/8	5	0.060	• MXQ2650603	MXQ2650603W
MXQS-5	5/8	3/4	3	–	5/8	5	0.090	• MXQ2650604	MXQ2650604W
MXQS-5	5/8	3/4	3	–	5/8	5	0.120	• MXQ2650605	MXQ2650605W
MXQS-5	5/8	3/4	3	–	5/8	5	0.190	• MXQ2650606	MXQ2650606W
MXQM-5	5/8	1 3/8	3 1/2	–	5/8	5	Square	• MXQ2650607	MXQ2650607W
MXQM-5	5/8	1 3/8	3 1/2	–	5/8	5	0.030	• MXQ2650608	MXQ2650608W
MXQM-5	5/8	1 3/8	3 1/2	–	5/8	5	0.060	• MXQ2650609	MXQ2650609W
MXQM-5	5/8	1 3/8	3 1/2	–	5/8	5	0.090	MXQ2650610	MXQ2650610W
MXQM-5	5/8	1 3/8	3 1/2	–	5/8	5	0.120	MXQ2650611	MXQ2650611W
MXQM-5	5/8	1 3/8	3 1/2	–	5/8	5	0.190	• MXQ2650612	MXQ2650612W
MXQL-5	5/8	1 5/8	3 1/2	–	5/8	5	Square	• MXQ2650613	MXQ2650613W
MXQL-5	5/8	1 5/8	3 1/2	–	5/8	5	0.030	• MXQ2650614	MXQ2650614W
MXQL-5	5/8	1 5/8	3 1/2	–	5/8	5	0.060	MXQ2650615	MXQ2650615W
MXQXL-5	5/8	2 1/4	4	–	5/8	5	Square	• MXQ2650616	MXQ2650616W
MXQXL-5	5/8	2 1/4	4	–	5/8	5	0.030	• MXQ2650617	MXQ2650617W
MXQXL-5	5/8	2 1/4	4	–	5/8	5	0.060	• MXQ2650618	MXQ2650618W
MXQS-5	3/4	1 1/8	3	–	3/4	5	Square	• MXQ2650054	MXQ2650054W
MXQS-5	3/4	1 1/8	3	–	3/4	5	0.030	• MXQ2650055	MXQ2650055W
MXQS-5	3/4	1 1/8	3	–	3/4	5	0.060	• MXQ2650056	MXQ2650056W
MXQS-5	3/4	1 1/8	3	–	3/4	5	0.090	• MXQ2650147	MXQ2650147W
MXQS-5	3/4	1 1/8	3	–	3/4	5	0.120	• MXQ2650057	MXQ2650057W
MXQS-5	3/4	1 1/8	3	–	3/4	5	0.190	• MXQ2650148	MXQ2650148W
MXQS-5	3/4	1 1/8	3	–	3/4	5	0.250	• MXQ2650149	MXQ2650149W
MXQM-5	3/4	1 1/2	4	–	3/4	5	Square	• MXQ2650150	MXQ2650150W
MXQM-5	3/4	1 1/2	4	–	3/4	5	0.030	• MXQ2650151	MXQ2650151W
MXQM-5	3/4	1 1/2	4	–	3/4	5	0.060	• MXQ2650152	MXQ2650152W
MXQM-5	3/4	1 1/2	4	–	3/4	5	0.090	MXQ2650153	MXQ2650153W

Cutting data recommendations on pages 98-99

■ = First Choice ☐ = Second Choice • = In Stock

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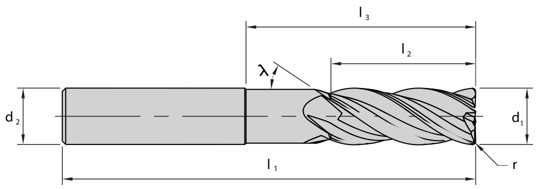
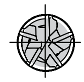


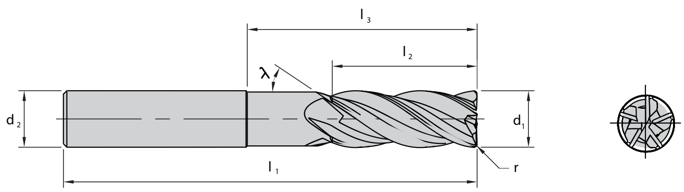


	5-Flute	5-Flute Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
MXQM-5	3/4	1 1/2	4	–	3/4	5	0.120	• MXQ2650058	MXQ2650058W
MXQM-5	3/4	1 1/2	4	–	3/4	5	0.190	MXQ2650154	MXQ2650154W
MXQM-5	3/4	1 1/2	4	–	3/4	5	0.250	MXQ2650155	MXQ2650155W
MXQM-5	3/4	1 5/8	4	–	3/4	5	Square	• MXQ2650063	• MXQ2650063W
MXQM-5	3/4	1 5/8	4	–	3/4	5	0.030	• MXQ2650064	MXQ2650064W
MXQM-5	3/4	1 5/8	4	–	3/4	5	0.060	• MXQ2650065	MXQ2650065W
MXQM-5	3/4	1 5/8	4	–	3/4	5	0.090	• MXQ2650159	MXQ2650159W
MXQM-5	3/4	1 5/8	4	–	3/4	5	0.120	• MXQ2650066	MXQ2650066W
MXQM-5	3/4	1 5/8	4	–	3/4	5	0.190	• MXQ2650160	MXQ2650160W
MXQM-5	3/4	1 5/8	4	–	3/4	5	0.250	• MXQ2650161	MXQ2650161W
MXQL-5	3/4	2 1/4	5	–	3/4	5	Square	• MXQ2650102	MXQ2650102W
MXQL-5	3/4	2 1/4	5	–	3/4	5	0.030	• MXQ2650103	MXQ2650103W
MXQL-5	3/4	2 1/4	5	–	3/4	5	0.060	• MXQ2650167	MXQ2650167W
MXQL-5	3/4	2 1/4	5	–	3/4	5	0.090	MXQ2650168	MXQ2650168W
MXQL-5	3/4	2 1/4	5	–	3/4	5	0.120	MXQ2650169	MXQ2650169W
MXQL-5	3/4	2 1/4	5	–	3/4	5	0.190	MXQ2650170	MXQ2650170W
MXQL-5	3/4	2 1/4	5	–	3/4	5	0.250	MXQ2650171	MXQ2650171W
MXQXL-5	3/4	3 1/8	5	–	3/4	5	Square	• MXQ2650619	MXQ2650619W
MXQXL-5	3/4	3 1/8	5	–	3/4	5	0.030	• MXQ2650620	MXQ2650620W
MXQXL-5	3/4	3 1/8	5	–	3/4	5	0.060	MXQ2650621	MXQ2650621W
MXQNS-5	3/4	1 1/8	5	2 3/8	3/4	5	Square	MXQ2650176	MXQ2650176W
MXQNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.030	• MXQ2650070	• MXQ2650070W
MXQNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.060	• MXQ2650071	MXQ2650071W
MXQNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.090	• MXQ2650177	MXQ2650177W
MXQNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.120	• MXQ2650072	MXQ2650072W
MXQNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.190	MXQ2650178	MXQ2650178W
MXQNS-5	3/4	1 1/8	5	2 3/8	3/4	5	0.250	• MXQ2650179	MXQ2650179W

Cutting data recommendations on pages 98-99

■ = First Choice ☐ = Second Choice ● = In Stock



	5-Flute	5-Flute Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
MXQNM-5	3/4	1 1/8	6	3 1/8	3/4	5	Square	• MXQ2650184	MXQ2650184W
MXQNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.030	• MXQ2650076	• MXQ2650076W
MXQNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.060	MXQ2650077	MXQ2650077W
MXQNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.090	• MXQ2650185	MXQ2650185W
MXQNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.120	MXQ2650078	MXQ2650078W
MXQNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.190	• MXQ2650186	MXQ2650186W
MXQNM-5	3/4	1 1/8	6	3 1/8	3/4	5	0.250	MXQ2650187	MXQ2650187W
MXQS-5	1	1 1/4	4	–	1	5	Square	MXQ2650193	MXQ2650193W
MXQS-5	1	1 1/4	4	–	1	5	0.030	• MXQ2650081	MXQ2650081W
MXQS-5	1	1 1/4	4	–	1	5	0.060	• MXQ2650194	MXQ2650194W
MXQS-5	1	1 1/4	4	–	1	5	0.090	• MXQ2650195	MXQ2650195W
MXQS-5	1	1 1/4	4	–	1	5	0.120	MXQ2650082	MXQ2650082W
MXQS-5	1	1 1/4	4	–	1	5	0.190	• MXQ2650083	MXQ2650083W
MXQS-5	1	1 1/4	4	–	1	5	0.250	• MXQ2650084	MXQ2650084W
MXQS-5	1	1 1/2	4	–	1	5	Square	MXQ2650196	MXQ2650196W
MXQS-5	1	1 1/2	4	–	1	5	0.030	• MXQ2650197	MXQ2650197W
MXQS-5	1	1 1/2	4	–	1	5	0.060	• MXQ2650198	MXQ2650198W
MXQS-5	1	1 1/2	4	–	1	5	0.090	• MXQ2650199	MXQ2650199W
MXQS-5	1	1 1/2	4	–	1	5	0.120	MXQ2650085	MXQ2650085W
MXQS-5	1	1 1/2	4	–	1	5	0.190	MXQ2650200	MXQ2650200W
MXQS-5	1	1 1/2	4	–	1	5	0.250	MXQ2650201	MXQ2650201W
MXQM-5	1	2	5	–	1	5	Square	MXQ2650205	MXQ2650205W
MXQM-5	1	2	5	–	1	5	0.030	• MXQ2650090	MXQ2650090W
MXQM-5	1	2	5	–	1	5	0.060	• MXQ2650206	MXQ2650206W
MXQM-5	1	2	5	–	1	5	0.090	• MXQ2650207	MXQ2650207W
MXQM-5	1	2	5	–	1	5	0.120	• MXQ2650091	MXQ2650091W
MXQM-5	1	2	5	–	1	5	0.190	MXQ2650092	MXQ2650092W
MXQM-5	1	2	5	–	1	5	0.250	• MXQ2650093	MXQ2650093W

Cutting data recommendations on pages 98-99

■ = First Choice ☐ = Second Choice • = In Stock

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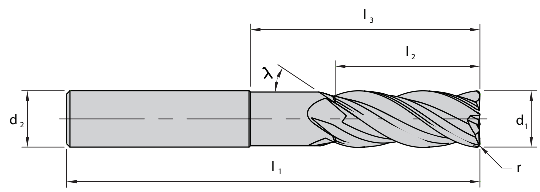

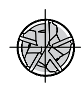

	5-Flute	5-Flute Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
MXQXL-5	1	3 1/8	6	–	1	5	Square	• MXQ2650623	MXQ2650623W
MXQXL-5	1	3 1/8	6	–	1	5	0.030	• MXQ2650624	MXQ2650624W
MXQXL-5	1	3 1/8	6	–	1	5	0.060	MXQ2650625	MXQ2650625W
MXQNM-5	1	1 1/4	6	3 1/8	1	5	Square	MXQ2650208	MXQ2650208W
MXQNM-5	1	1 1/4	6	3 1/8	1	5	0.030	• MXQ2650209	MXQ2650209W
MXQNM-5	1	1 1/4	6	3 1/8	1	5	0.060	• MXQ2650094	• MXQ2650094W
MXQNM-5	1	1 1/4	6	3 1/8	1	5	0.090	MXQ2650210	MXQ2650210W
MXQNM-5	1	1 1/4	6	3 1/8	1	5	0.120	• MXQ2650095	MXQ2650095W
MXQNM-5	1	1 1/4	6	3 1/8	1	5	0.190	• MXQ2650211	MXQ2650211W
MXQNM-5	1	1 1/4	6	3 1/8	1	5	0.250	• MXQ2650096	MXQ2650096W
MXQNL-5	1	1 1/4	7	4 1/8	1	5	Square	• MXQ2650212	MXQ2650212W
MXQNL-5	1	1 1/4	7	4 1/8	1	5	0.030	• MXQ2650213	MXQ2650213W
MXQNL-5	1	1 1/4	7	4 1/8	1	5	0.060	MXQ2650097	MXQ2650097W
MXQNL-5	1	1 1/4	7	4 1/8	1	5	0.090	• MXQ2650214	MXQ2650214W
MXQNL-5	1	1 1/4	7	4 1/8	1	5	0.120	• MXQ2650098	MXQ2650098W
MXQNL-5	1	1 1/4	7	4 1/8	1	5	0.190	MXQ2650215	MXQ2650215W
MXQNL-5	1	1 1/4	7	4 1/8	1	5	0.250	• MXQ2650099	MXQ2650099W

Cutting data recommendations on pages 98-99

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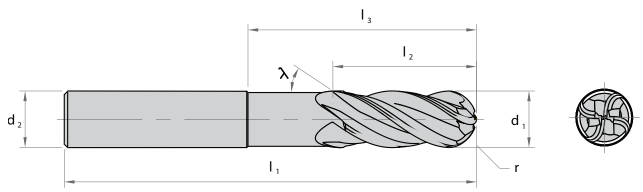


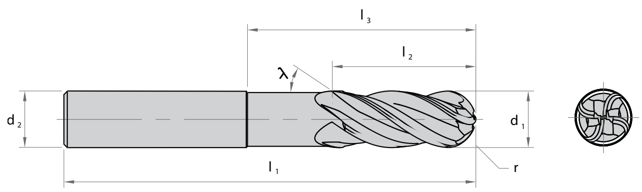
	4-Flute Ballnose	4-Flute Ballnose Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ballnose Ident No.	Ballnose Weldon Ident No.
MXBS-4	1/8	1/4	2	–	1/8	4	Ball	• MXB2650500	MXB2650500W
MXBM-4	1/8	1/2	2 1/2	–	1/8	4	Ball	• MXB2650501	MXB2650501W
MXBL-4	1/8	3/4	2 1/2	–	1/8	4	Ball	• MXB2650502	MXB2650502W
MXBNS-4	1/8	3/16	3	1/2	1/8	4	Ball	• MXB2650503	MXB2650503W
MXBS-4	3/16	5/16	2	–	3/16	4	Ball	• MXB2650504	MXB2650504W
MXBM-4	3/16	5/8	2 1/2	–	3/16	4	Ball	• MXB2650505	MXB2650505W
MXBL-4	3/16	3/4	2 1/2	–	3/16	4	Ball	• MXB2650506	MXB2650506W
MXBNS-4	3/16	1/4	3	3/4	3/16	4	Ball	• MXB2650507	MXB2650507W
MXBS-4	1/4	3/8	2	–	1/4	4	Ball	• MXB2650508	MXB2650508W
MXBM-4	1/4	3/4	2 1/2	–	1/4	4	Ball	• MXB2650509	MXB2650509W
MXBL-4	1/4	1 1/8	3	–	1/4	4	Ball	• MXB2650510	MXB2650510W
MXBNS-4	1/4	3/8	3	5/8	1/4	4	Ball	• MXB2650511	MXB2650511W
MXBNM-4	1/4	3/8	4	1 1/8	1/4	4	Ball	• MXB2650512	MXB2650512W
MXBNL-4	1/4	3/8	4	1 5/8	1/4	4	Ball	• MXB2650513	MXB2650513W
MXBS-4	5/16	1/2	2 1/2	–	5/16	4	Ball	• MXB2650514	MXB2650514W
MXBM-4	5/16	3/4	2 1/2	–	5/16	4	Ball	• MXB2650515	MXB2650515W
MXBL-4	5/16	1 1/4	3	–	5/16	4	Ball	• MXB2650516	MXB2650516W
MXBNS-4	5/16	1/2	4	1 1/8	5/16	4	Ball	• MXB2650517	MXB2650517W
MXBS-4	3/8	1/2	2	–	3/8	4	Ball	• MXB2650518	MXB2650518W
MXBM-4	3/8	7/8	3	–	3/8	4	Ball	• MXB2650519	MXB2650519W
MXBL-4	3/8	1 1/4	3	–	3/8	4	Ball	• MXB2650520	MXB2650520W
MXBNS-4	3/8	1/2	4	1 1/8	3/8	4	Ball	• MXB2650521	MXB2650521W
MXBNM-4	3/8	1/2	4	2 1/8	3/8	4	Ball	• MXB2650522	MXB2650522W
MXBNL-4	3/8	1/2	6	3 1/8	3/8	4	Ball	• MXB2650523	MXB2650523W

Cutting data recommendations on pages 96-97

■ = First Choice □ = Second Choice • = In Stock

SC ESG Z=4 h6 Weldon



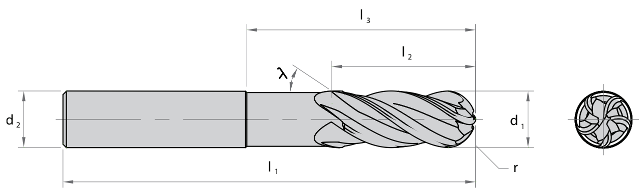
	4-Flute Ballnose	4-Flute Ballnose Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ballnose Ident No.	Ballnose Weldon Ident No.
MXBS-4	1/2	5/8	2 1/2	–	1/2	4	Ball	• MXB2650524	MXB2650524W
MXBM-4	1/2	1 1/8	3	–	1/2	4	Ball	• MXB2650525	MXB2650525W
MXBL-4	1/2	1 5/8	4	–	1/2	4	Ball	• MXB2650526	MXB2650526W
MXBNS-4	1/2	5/8	4	2 1/8	1/2	4	Ball	• MXB2650527	MXB2650527W
MXBNM-4	1/2	5/8	6	3 1/8	1/2	4	Ball	• MXB2650528	MXB2650528W
MXBNL-4	1/2	5/8	6	4 1/8	1/2	4	Ball	• MXB2650529	MXB2650529W
MXBS-4	5/8	3/4	3	–	5/8	4	Ball	• MXB2650530	MXB2650530W
MXBM-4	5/8	1 5/8	3 1/2	–	5/8	4	Ball	• MXB2650531	MXB2650531W
MXBL-4	5/8	2 1/8	4	–	5/8	4	Ball	• MXB2650532	MXB2650532W
MXBNS-4	5/8	3/4	4	2 3/8	5/8	4	Ball	• MXB2650533	MXB2650533W
MXBNM-4	5/8	3/4	6	3 3/8	5/8	4	Ball	• MXB2650534	MXB2650534W
MXBNL-4	5/8	3/4	6	4 1/8	5/8	4	Ball	MXB2650535	MXB2650535W
MXBS-4	3/4	1 1/8	4	–	3/4	4	Ball	• MXB2650536	MXB2650536W
MXBM-4	3/4	1 5/8	4	–	3/4	4	Ball	• MXB2650537	MXB2650537W
MXBL-4	3/4	2 1/4	5	–	3/4	4	Ball	• MXB2650538	MXB2650538W
MXBNS-4	3/4	1 1/8	4	2 1/2	3/4	4	Ball	• MXB2650539	MXB2650539W
MXBNM-4	3/4	1 1/8	6	3 1/2	3/4	4	Ball	• MXB2650540	MXB2650540W
MXBNL-4	3/4	1 1/8	6	4 1/8	3/4	4	Ball	MXB2650541	MXB2650541W
MXBS-4	1	1 1/4	4	–	1	4	Ball	• MXB2650542	MXB2650542W
MXBM-4	1	2 1/4	5	–	1	4	Ball	• MXB2650543	MXB2650543W
MXBL-4	1	3 1/4	6	–	1	4	Ball	• MXB2650544	MXB2650544W
MXBNS-4	1	1 1/4	5	2 1/2	1	4	Ball	• MXB2650545	MXB2650545W
MXBNM-4	1	1 1/4	7	3 5/8	1	4	Ball	• MXB2650546	MXB2650546W

Cutting data recommendations on pages 96-97

■ = First Choice □ = Second Choice ● = In Stock

SC ESG Z=5 h6 38° Weldon



	5-Flute Ballnose	5-Flute Ballnose Weldon
P	■	■
M	■	■
K	■	■
N		
S	■	■
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ballnose Ident No.	Ballnose Weldon Ident No.
MXBS-5	3/8	7/8	3	–	3/8	5	Ball	• MXB2650548	MXB2650548W
MXBM-5	3/8	1 1/4	3	–	3/8	5	Ball	• MXB2650549	MXB2650549W
MXBNM-5	3/8	1/2	4	2 1/8	3/8	5	Ball	• MXB2650550	MXB2650550W
MXBNL-5	3/8	1/2	6	3 1/8	3/8	5	Ball	• MXB2650551	MXB2650551W
MXBS-5	1/2	1 1/8	3	–	1/2	5	Ball	• MXB2650552	MXB2650552W
MXBM-5	1/2	1 5/8	4	–	1/2	5	Ball	• MXB2650553	MXB2650553W
MXBXL-5	1/2	2 1/8	4	–	1/2	5	Ball	• MXB2650600	MXB2650600W
MXBNM-5	1/2	5/8	6	3 1/8	1/2	5	Ball	• MXB2650554	MXB2650554W
MXBNL-5	1/2	5/8	6	4 1/8	1/2	5	Ball	MXB2650555	MXB2650555W
MXBS-5	5/8	1 5/8	3 1/2	–	5/8	5	Ball	MXB2650556	MXB2650556W
MXBM-5	5/8	2 1/8	4	–	5/8	5	Ball	MXB2650557	MXB2650557W
MXBNM-5	5/8	3/4	6	3 3/8	5/8	5	Ball	• MXB2650558	MXB2650558W
MXBNL-5	5/8	3/4	6	4 1/8	5/8	5	Ball	• MXB2650559	MXB2650559W
MXBS-5	3/4	1 5/8	4	–	3/4	5	Ball	• MXB2650560	MXB2650560W
MXBM-5	3/4	2 1/4	5	–	3/4	5	Ball	• MXB2650561	MXB2650561W
MXBXL-5	3/4	3 1/8	5	–	3/4	5	Ball	MXB2650622	MXB2650622W
MXBNM-5	3/4	1 1/8	6	3 1/2	3/4	5	Ball	• MXB2650562	MXB2650562W
MXBNL-5	3/4	1 1/8	6	4 1/8	3/4	5	Ball	MXB2650563	MXB2650563W
MXBS-5	1	2 1/4	5	–	1	5	Ball	• MXB2650564	MXB2650564W
MXBM-5	1	3 1/4	6	–	1	5	Ball	MXB2650565	MXB2650565W
MXBNM-5	1	3 1/4	7	3 5/8	1	5	Ball	• MXB2650566	MXB2650566W

Cutting data recommendations on pages 98-99

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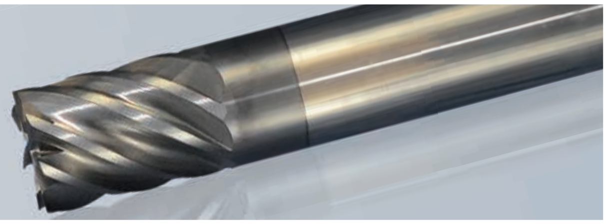
TV-7 End Mills



LMT Onsrud TV-7 Series 7 flute endmills for high efficiency machining in exotic metals and stainless steel.

Finishing operation in titanium

Features and Benefits

- Optimized for high speed machining techniques with low radial engagement.
- Produce accurate and superior workpiece finishes.
- The unique geometry and large core diameter prevents deflections.
- Industry's largest selection of corner radii and neck and flute lengths in a standard program.
- ENDURASpeed coating features high heat resistance which leads to increased wear resistance and tool life.

Applications

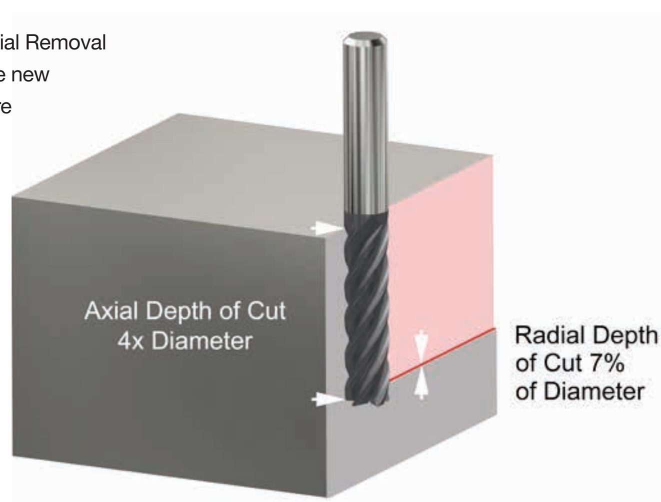
- High Efficiency Machining (HEM) profile (7%-10%)
- Finishing

Usage

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

High Efficiency Machining (HEM) Tech Tips

HEM tool path strategies offer dramatic improvements in the Material Removal Rate (MRR) and reduced roughing cycle time. Correctly used, these new roughing tool path strategies will reduce overall cycle time anywhere from 20 to 60% on the average.



Below are some elements of what the HEM tool path looks like.

1) Deep Axial Depths. Axial cut depths increase up to 4 times the tool diameter. This distributes the tool wear over the length of the tool.
2) Light Radial Engagement. Using light radial engagements reduces the cutting pressure on the end mill.
3) Increased Flute Count. The light radial engagement allows for a higher flute count on the end mill. This will increase MRR while utilizing a higher core strength to minimize end mill deflection.
4) Higher Spindle Speeds. With only a small percentage that the end mill is engaged in the material, the spindle rpm is increased. This will maintain the necessary heat for proper chip plasticization and preventing built up edge.
5) Higher Feed Rates. The light radial engagement allows the use of chip thinning calculations to help maintain the correct chip load. A 7% radial engagement, typically allows a doubling of the normal feed rate used in slotting.

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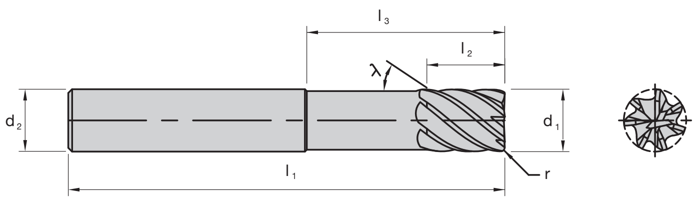

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
TVS-7	1/2	5/8	2 1/2	–	1/2	7	Square	• EMC700051
TVS-7	1/2	5/8	2 1/2	–	1/2	7	0.015	• EMC700053
TVS-7	1/2	5/8	2 1/2	–	1/2	7	0.030	• EMC700055
TVS-7	1/2	5/8	2 1/2	–	1/2	7	0.060	EMC700057
TVS-7	1/2	5/8	2 1/2	–	1/2	7	0.090	EMC700059
TVS-7	1/2	5/8	2 1/2	–	1/2	7	0.120	EMC700061
TVM-7	1/2	1 1/4	3	–	1/2	7	Square	• EMC700107
TVM-7	1/2	1 1/4	3	–	1/2	7	0.015	• EMC700109
TVM-7	1/2	1 1/4	3	–	1/2	7	0.030	• EMC700111
TVM-7	1/2	1 1/4	3	–	1/2	7	0.060	EMC700113
TVM-7	1/2	1 1/4	3	–	1/2	7	0.090	• EMC700115
TVM-7	1/2	1 1/4	3	–	1/2	7	0.120	• EMC700117
TVL-7	1/2	2	4	–	1/2	7	Square	• EMC700163
TVL-7	1/2	2	4	–	1/2	7	0.015	• EMC700165
TVL-7	1/2	2	4	–	1/2	7	0.030	• EMC700167
TVL-7	1/2	2	4	–	1/2	7	0.060	• EMC700169
TVL-7	1/2	2	4	–	1/2	7	0.090	EMC700171
TVL-7	1/2	2	4	–	1/2	7	0.120	• EMC700173
TVNS-7	1/2	5/8	5	2 1/8	1/2	7	Square	EMC700219
TVNS-7	1/2	5/8	5	2 1/8	1/2	7	0.015	EMC700221
TVNS-7	1/2	5/8	5	2 1/8	1/2	7	0.030	• EMC700223
TVNS-7	1/2	5/8	5	2 1/8	1/2	7	0.060	• EMC700225
TVNS-7	1/2	5/8	5	2 1/8	1/2	7	0.090	EMC700227
TVNS-7	1/2	5/8	5	2 1/8	1/2	7	0.120	EMC700229
TVNM-7	1/2	5/8	5	3 1/8	1/2	7	Square	EMC700275
TVNM-7	1/2	5/8	5	3 1/8	1/2	7	0.015	EMC700277
TVNM-7	1/2	5/8	5	3 1/8	1/2	7	0.030	• EMC700279
TVNM-7	1/2	5/8	5	3 1/8	1/2	7	0.060	EMC700281

Cutting data recommendations on page 100

■ = First Choice □ = Second Choice • = In Stock

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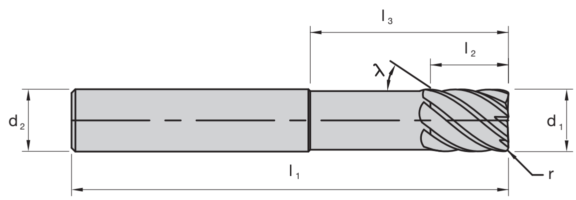

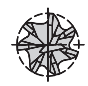

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
TVNM-7	1/2	5/8	5	3 1/8	1/2	7	0.120	EMC700285
TVNL-7	1/2	5/8	6	4 1/8	1/2	7	Square	EMC700331
TVNL-7	1/2	5/8	6	4 1/8	1/2	7	0.015	EMC700333
TVNL-7	1/2	5/8	6	4 1/8	1/2	7	0.030	• EMC700335
TVNL-7	1/2	5/8	6	4 1/8	1/2	7	0.060	EMC700337
TVNL-7	1/2	5/8	6	4 1/8	1/2	7	0.090	EMC700339
TVNL-7	1/2	5/8	6	4 1/8	1/2	7	0.120	EMC700341
TVS-7	5/8	3/4	3	–	5/8	7	Square	EMC700065
TVS-7	5/8	3/4	3	–	5/8	7	0.030	• EMC700067
TVS-7	5/8	3/4	3	–	5/8	7	0.060	• EMC700069
TVS-7	5/8	3/4	3	–	5/8	7	0.120	EMC700073
TVS-7	5/8	3/4	3	–	5/8	7	0.190	EMC700075
TVM-7	5/8	1 5/8	3 1/2	–	5/8	7	Square	EMC700121
TVM-7	5/8	1 5/8	3 1/2	–	5/8	7	0.030	• EMC700123
TVM-7	5/8	1 5/8	3 1/2	–	5/8	7	0.060	• EMC700125
TVM-7	5/8	1 5/8	3 1/2	–	5/8	7	0.120	EMC700129
TVM-7	5/8	1 5/8	3 1/2	–	5/8	7	0.190	• EMC700131
TVL-7	5/8	2 1/8	4	–	5/8	7	Square	• EMC700177
TVL-7	5/8	2 1/8	4	–	5/8	7	0.030	• EMC700179
TVL-7	5/8	2 1/8	4	–	5/8	7	0.060	EMC700181
TVL-7	5/8	2 1/8	4	–	5/8	7	0.120	EMC700185
TVL-7	5/8	2 1/8	4	–	5/8	7	0.190	EMC700187
TVNS-7	5/8	3/4	5	2 3/8	5/8	7	Square	EMC700233
TVNS-7	5/8	3/4	5	2 3/8	5/8	7	0.030	EMC700235
TVNS-7	5/8	3/4	5	2 3/8	5/8	7	0.060	EMC700237
TVNS-7	5/8	3/4	5	2 3/8	5/8	7	0.120	EMC700241
TVNS-7	5/8	3/4	5	2 3/8	5/8	7	0.190	• EMC700243
TVNM-7	5/8	3/4	5	3 1/8	5/8	7	Square	EMC700289

Cutting data recommendations on page 100

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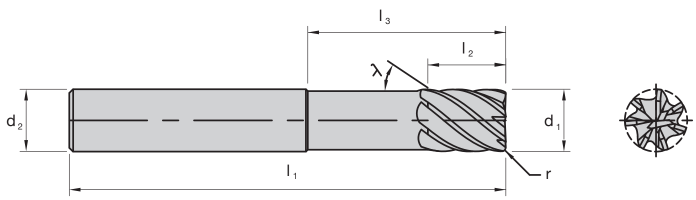

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
TVNM-7	5/8	3/4	5	3 1/8	5/8	7	0.030	EMC700291
TVNM-7	5/8	3/4	5	3 1/8	5/8	7	0.060	EMC700293
TVNM-7	5/8	3/4	5	3 1/8	5/8	7	0.090	EMC700295
TVNM-7	5/8	3/4	5	3 1/8	5/8	7	0.120	EMC700297
TVNM-7	5/8	3/4	5	3 1/8	5/8	7	0.190	EMC700299
TVS-7	3/4	1 1/8	3	–	3/4	7	Square	EMC700079
TVS-7	3/4	1 1/8	3	–	3/4	7	0.030	• EMC700081
TVS-7	3/4	1 1/8	3	–	3/4	7	0.060	EMC700083
TVS-7	3/4	1 1/8	3	–	3/4	7	0.090	• EMC700085
TVS-7	3/4	1 1/8	3	–	3/4	7	0.120	• EMC700087
TVS-7	3/4	1 1/8	3	–	3/4	7	0.190	EMC700089
TVS-7	3/4	1 1/8	3	–	3/4	7	0.250	EMC700091
TVM-7	3/4	1 5/8	4	–	3/4	7	Square	• EMC700135
TVM-7	3/4	1 5/8	4	–	3/4	7	.030	• EMC700137
TVM-7	3/4	1 5/8	4	–	3/4	7	0.060	• EMC700139
TVM-7	3/4	1 5/8	4	–	3/4	7	0.090	• EMC700141
TVM-7	3/4	1 5/8	4	–	3/4	7	0.120	• EMC700143
TVM-7	3/4	1 5/8	4	–	3/4	7	0.190	• EMC700145
TVM-7	3/4	1 5/8	4	–	3/4	7	0.250	• EMC700147
TVL-7	3/4	2 5/8	5	–	3/4	7	Square	EMC700191
TVL-7	3/4	2 5/8	5	–	3/4	7	.030	• EMC700193
TVL-7	3/4	2 5/8	5	–	3/4	7	0.060	• EMC700195
TVL-7	3/4	2 5/8	5	–	3/4	7	0.090	EMC700197
TVL-7	3/4	2 5/8	5	–	3/4	7	0.120	• EMC700199
TVL-7	3/4	2 5/8	5	–	3/4	7	0.190	• EMC700201
TVL-7	3/4	2 5/8	5	–	3/4	7	0.250	• EMC700203
TVNS-7	3/4	1 1/8	5	2 5/8	3/4	7	Square	EMC700247
TVNS-7	3/4	1 1/8	5	2 5/8	3/4	7	.030	• EMC700249

Cutting data recommendations on page 100

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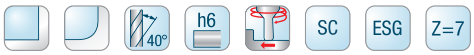

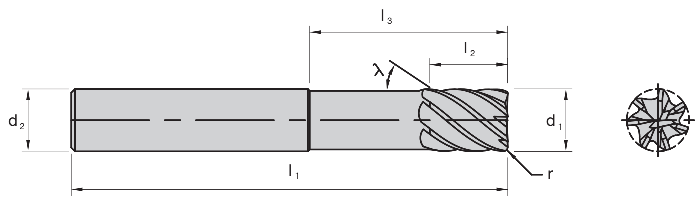

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
TVNS-7	3/4	1 1/8	5	2 5/8	3/4	7	0.060	• EMC700251
TVNS-7	3/4	1 1/8	5	2 5/8	3/4	7	0.090	EMC700253
TVNS-7	3/4	1 1/8	5	2 5/8	3/4	7	0.120	• EMC700255
TVNS-7	3/4	1 1/8	5	2 5/8	3/4	7	0.190	• EMC700257
TVNS-7	3/4	1 1/8	5	2 5/8	3/4	7	0.250	• EMC700259
TVNM-7	3/4	1 1/8	5	3 1/8	3/4	7	Square	EMC700303
TVNM-7	3/4	1 1/8	5	3 1/8	3/4	7	0.030	• EMC700305
TVNM-7	3/4	1 1/8	5	3 1/8	3/4	7	0.060	• EMC700307
TVNM-7	3/4	1 1/8	5	3 1/8	3/4	7	0.090	EMC700309
TVNM-7	3/4	1 1/8	5	3 1/8	3/4	7	0.120	• EMC700311
TVNM-7	3/4	1 1/8	5	3 1/8	3/4	7	0.190	EMC700313
TVNM-7	3/4	1 1/8	5	3 1/8	3/4	7	0.250	• EMC700315
TVNL-7	3/4	1 1/8	6	4 1/8	3/4	7	Square	EMC700359
TVNL-7	3/4	1 1/8	6	4 1/8	3/4	7	0.030	EMC700361
TVNL-7	3/4	1 1/8	6	4 1/8	3/4	7	0.060	EMC700363
TVNL-7	3/4	1 1/8	6	4 1/8	3/4	7	0.090	• EMC700365
TVNL-7	3/4	1 1/8	6	4 1/8	3/4	7	0.120	• EMC700367
TVNL-7	3/4	1 1/8	6	4 1/8	3/4	7	0.190	EMC700369
TVNL-7	3/4	1 1/8	6	4 1/8	3/4	7	0.250	• EMC700371
TVS-7	1	1 1/4	4	–	1	7	Square	• EMC700093
TVS-7	1	1 1/4	4	–	1	7	0.030	• EMC700095
TVS-7	1	1 1/4	4	–	1	7	0.060	• EMC700097
TVS-7	1	1 1/4	4	–	1	7	0.120	• EMC700101
TVS-7	1	1 1/4	4	–	1	7	0.190	EMC700103
TVS-7	1	1 1/4	4	–	1	7	0.250	EMC700105
TVM-7	1	2	5	–	1	7	Square	• EMC700149
TVM-7	1	2	5	–	1	7	0.030	• EMC700151
TVM-7	1	2	5	–	1	7	0.060	• EMC700153

Cutting data recommendations on page 100

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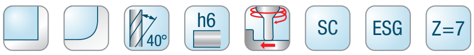

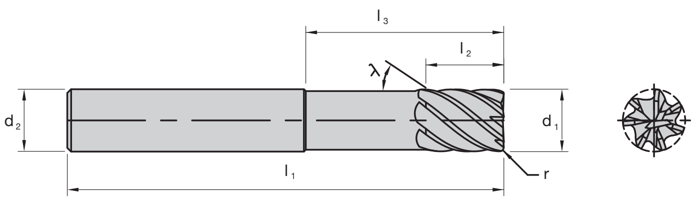

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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
TVM-7	1	2	5	–	1	7	0.120	• EMC700157
TVM-7	1	2	5	–	1	7	0.190	EMC700159
TVM-7	1	2	5	–	1	7	0.250	EMC700161
TVL-7	1	3	6	–	1	7	Square	EMC700205
TVL-7	1	3	6	–	1	7	0.030	EMC700207
TVL-7	1	3	6	–	1	7	0.060	EMC700209
TVL-7	1	3	6	–	1	7	0.120	EMC700213
TVL-7	1	3	6	–	1	7	0.190	EMC700215
TVL-7	1	3	6	–	1	7	0.250	EMC700217
TVNS-7	1	1 1/4	5	2 5/8	1	7	Square	EMC700261
TVNS-7	1	1 1/4	5	2 5/8	1	7	0.030	• EMC700263
TVNS-7	1	1 1/4	5	2 5/8	1	7	0.060	EMC700265
TVNS-7	1	1 1/4	5	2 5/8	1	7	0.120	EMC700269
TVNS-7	1	1 1/4	5	2 5/8	1	7	0.190	EMC700271
TVNS-7	1	1 1/4	5	2 5/8	1	7	0.250	EMC700273
TVNM-7	1	1 1/4	5	3 1/8	1	7	Square	EMC700317
TVNM-7	1	1 1/4	5	3 1/8	1	7	0.030	• EMC700319
TVNM-7	1	1 1/4	5	3 1/8	1	7	0.060	• EMC700321
TVNM-7	1	1 1/4	5	3 1/8	1	7	0.120	• EMC700325
TVNM-7	1	1 1/4	5	3 1/8	1	7	0.190	EMC700327
TVNM-7	1	1 1/4	5	3 1/8	1	7	0.250	• EMC700329
TVNL-7	1	1 1/4	7	4 1/8	1	7	Square	EMC700373
TVNL-7	1	1 1/4	7	4 1/8	1	7	0.030	• EMC700375
TVNL-7	1	1 1/4	7	4 1/8	1	7	0.060	EMC700377
TVNL-7	1	1 1/4	7	4 1/8	1	7	0.120	EMC700381
TVNL-7	1	1 1/4	7	4 1/8	1	7	0.190	EMC700383
TVNL-7	1	1 1/4	7	4 1/8	1	7	0.250	EMC700385

Cutting data recommendations on page 100

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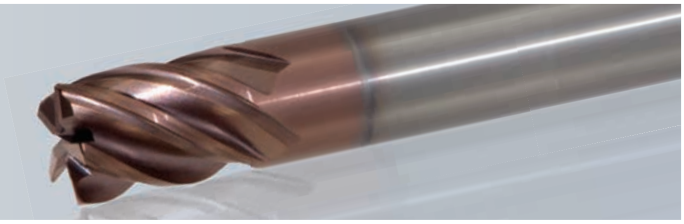
MXR End Mills



Superalloy materials possess high mechanical strength, while resisting material deformation under higher heat applications. These materials have proven valuable and highly versatile within the aerospace and energy industries due to their resistance to corrosion under extreme conditions.

Machining superalloys presents many challenges, the reduction of tool life being the most challenging to overcome. LMT Onsrud has developed a line of cutting tools, specifically for nickel-based alloys, that have been proven to increase tool life up to 20% over other tooling options. This allows for longer run times and fewer tool changes, increasing both your in-cut time and productivity.

Features and Benefits

- 4 or 5 flute design.
- ENDURASpeed Red Coating formulated for longer tool life in nickel based alloys.
- Square, Corner Radii, Ballnose available.
- Optimized variable helix geometry for unmatched Material Removal Rate (MRR) and work piece finish.
- 4 flute ballnose for optimal contouring.
- Edge conditioning specific for nickel based alloys.

Applications

- High Efficiency Machining (HEM) heavy profiling – 15% radial engagement
- High Efficiency Machining (HEM) profile - 8-10%
- Contouring

Usage

- Nickel based Alloys
- High-temp Alloys

ENDURASpeed Red coated 4 or 5 flute design for High Efficiency Machining (HEM) heavy profiling.

Inconel Milling: High Efficiency Machining (*HEM)

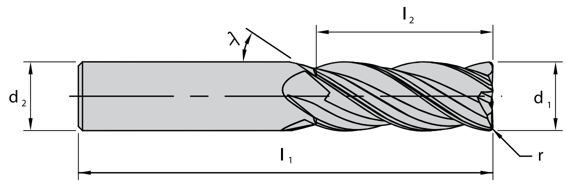
Tool:
MXR Series Tool (Ident No. MXR2650167)
Cutting Diameter (d_1) = 3/4” No. of Flutes (z) = 5

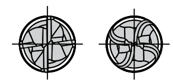
Cutting Material: Solid Carbide

Material: 718 Inconel

Cutting Data:

SFM (v_c) = 63.8	Chipload (f_z) = .002 in
RPM (n) = 4325	RDoC (a_e) = .060 in
Feed (v_f) = 3.25 in/min	ADoC (a_p) = 1.125 in





	4-Flute	4-Flute Ballnose
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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Coating	Ident No.	Ballnose Ident. No.
MXRS-4	1/4	3/8	2 1/2	–	1/4	4	Square	ESR	• MXR2650008	–
MXRS-4	1/4	3/8	2 1/2	–	1/4	4	0.015	ESR	• MXR2650009	–
MXRS-4	1/4	3/8	2	–	1/4	4	Ball	ESR	–	• MXR2650500
MXRM-4	1/4	3/4	2 1/2	–	1/4	4	Square	ESR	• MXR2650011	–
MXRM-4	1/4	3/4	2 1/2	–	1/4	4	0.015	ESR	• MXR2650012	–
MXRM-4	1/4	3/4	2 1/2	–	1/4	4	Ball	ESR	–	• MXR2650501
MXRS-4	3/8	1/2	2	–	3/8	4	Ball	ESR	–	• MXR2650518
MXRM-4	3/8	7/8	3	–	3/8	4	Ball	ESR	–	• MXR2650519
MXRS-4	1/2	5/8	2 1/2	–	1/2	4	Ball	ESR	–	• MXR2650524
MXRM-4	1/2	1 1/8	3	–	1/2	4	Ball	ESR	–	• MXR2650525
MXRS-4	5/8	3/4	3	–	5/8	4	Ball	ESR	–	• MXR2650530
MXRM-4	5/8	1 5/8	3 1/2	–	5/8	4	Ball	ESR	–	• MXR2650531
MXRS-4	3/4	1 1/8	4	–	3/4	4	Ball	ESR	–	• MXR2650536
MXRM-4	3/4	1 5/8	4	–	3/4	4	Ball	ESR	–	• MXR2650537

Cutting data recommendations on page 101

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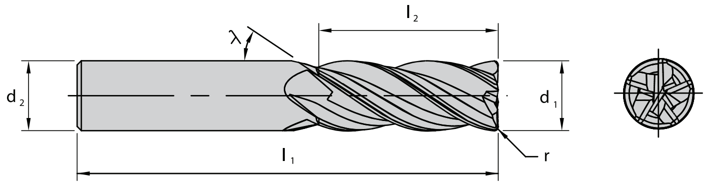

	5-Flute
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Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Coating	Ident No.
MXRS-5	3/8	1/2	2-1/2	–	3/8	5	Square	ESR	• MXR2650567
MXRS-5	3/8	1/2	2-1/2	–	3/8	5	0.015	ESR	• MXR2650568
MXRS-5	3/8	1/2	2-1/2	–	3/8	5	0.030	ESR	• MXR2650569
MXRM-5	3/8	7/8	2-1/2	–	3/8	5	Square	ESR	• MXR2650573
MXRM-5	3/8	7/8	2-1/2	–	3/8	5	0.015	ESR	• MXR2650574
MXRM-5	3/8	7/8	2-1/2	–	3/8	5	0.030	ESR	• MXR2650575
MXRS-5	1/2	5/8	2-1/2	–	1/2	5	Square	ESR	• MXR2650031
MXRS-5	1/2	5/8	2-1/2	–	1/2	5	0.015	ESR	• MXR2650032
MXRS-5	1/2	5/8	2-1/2	–	1/2	5	0.030	ESR	• MXR2650033
MXRM-5	1/2	1-1/4	3	–	1/2	5	Square	ESR	• MXR2650037
MXRM-5	1/2	1-1/4	3	–	1/2	5	0.015	ESR	• MXR2650038
MXRM-5	1/2	1-1/4	3	–	1/2	5	0.030	ESR	• MXR2650039
MXRS-5	5/8	3/4	3	–	5/8	5	Square	ESR	MXR2650601
MXRS-5	5/8	3/4	3	–	5/8	5	0.030	ESR	• MXR2650602
MXRS-5	5/8	3/4	3	–	5/8	5	0.060	ESR	MXR2650603
MXRM-5	5/8	1-3/8	3-1/2	–	5/8	5	Square	ESR	MXR2650607
MXRM-5	5/8	1-3/8	3-1/2	–	5/8	5	0.030	ESR	• MXR2650608
MXRM-5	5/8	1-3/8	3-1/2	–	5/8	5	0.060	ESR	MXR2650609
MXRS-5	3/4	1-1/8	3	–	3/4	5	Square	ESR	MXR2650054
MXRS-5	3/4	1-1/8	3	–	3/4	5	0.030	ESR	• MXR2650055
MXRS-5	3/4	1-1/8	3	–	3/4	5	0.060	ESR	• MXR2650056
MXRM-5	3/4	1-1/2	4	–	3/4	5	Square	ESR	• MXR2650150
MXRM-5	3/4	1-1/2	4	–	3/4	5	0.030	ESR	• MXR2650151
MXRM-5	3/4	1-1/2	4	–	3/4	5	0.060	ESR	• MXR2650152
MXRL-5	3/4	2-1/4	5	–	3/4	5	Square	ESR	• MXR2650102
MXRL-5	3/4	2-1/4	5	–	3/4	5	0.030	ESR	• MXR2650103
MXRL-5	3/4	2-1/4	5	–	3/4	5	0.060	ESR	MXR2650167

Cutting data recommendations on page 101

■ = First Choice ☐ = Second Choice ● = In Stock

HXR End Mills

In nickel-based alloys, maximizing a tools capability by using the entire cut length is important to increasing tool life and reducing production costs. In high efficiency machining (HEM), focus is made on maintaining the proper chip load throughout the cut. This is achieved through the variation of feed rate and tool engagement.

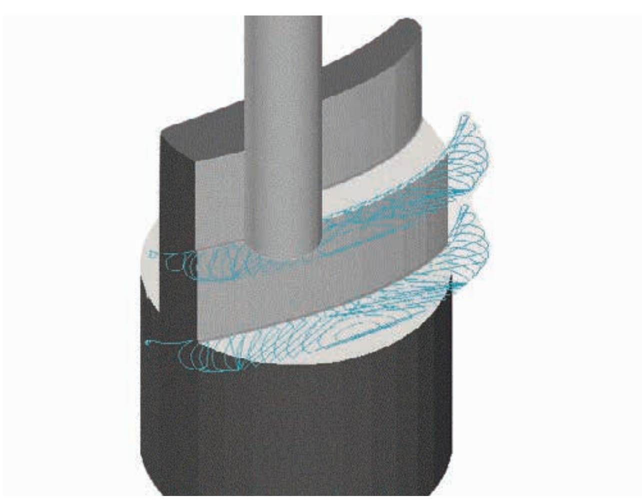
HXR end mills have been engineered for high efficiency machining (HEM) of superalloy materials. Configured in 7, 9, or 11 flute designs, these tools allow for lower radial engagement and faster machining, leading to higher material removal rates and optimal part finish.

Features and Benefits
- 7, 9, or 11 flute cutting options.
- Enhanced part finish.
- Faster material removal.
- Chipbreaker design enhances chip removal in longer lengths.
- ENDURASpeed Red Coating formulated for longer tool life in nickel based alloys.

Applications
- High Efficiency Machining (HEM) profiling
- Finishing

Usage
- Nickel based Alloys
- High-temp Alloys

Achieve faster material removal rates while attaining improved part finish.



Inconel Milling: Finishing Pass

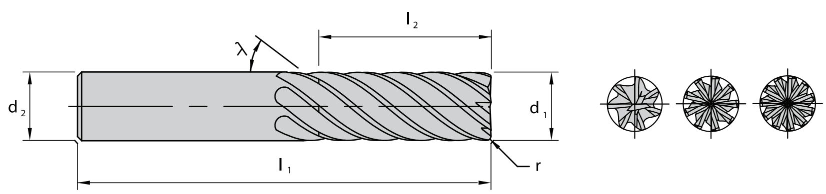
Tool:
HXR Tool Series (Ident No. HXR2650030)
Cutting Diameter (d) = 3/4” No. of Flutes (z) = 11

Cutting Material: Solid Carbide

Material: 718 Inconel

Cutting Data:

SFM (v_c) = 72.8	Chipload (f_z) = .0009 in
RPM (n) = 371	RDoC (a_e) = .0225 in
Feed (v_f) = 3.7 in/min	ADoC (a_p) = 2.25 in



	Non Chipbreaker	Chipbreaker
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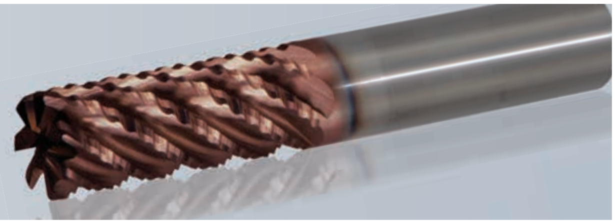
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Coating	Ident No.	Chipbreaker Ident. No.
HXRS-7	3/8	1/2	2 1/2	–	3/8	7	Square	ESR	• HXR2650000	–
HXRS-7	3/8	1/2	2 1/2	–	3/8	7	0.015	ESR	• HXR2650001	–
HXRM-7	3/8	7/8	2 1/2	–	3/8	7	Square	ESR	• HXR2650002	–
HXRM-7	3/8	7/8	2 1/2	–	3/8	7	0.015	ESR	• HXR2650003	–
HXRL-7	3/8	1 1/4	3	–	3/8	7	Square	ESR	• HXR2650004	• HXR2650005
HXRL-7	3/8	1 1/4	3	–	3/8	7	0.015	ESR	• HXR2650006	• HXR2650007
HXRS-9	1/2	5/8	2 1/2	–	1/2	9	Square	ESR	• HXR2650008	–
HXRS-9	1/2	5/8	2 1/2	–	1/2	9	0.030	ESR	• HXR2650009	–
HXRM-9	1/2	1 1/4	3	–	1/2	9	Square	ESR	• HXR2650010	–
HXRM-9	1/2	1 1/4	3	–	1/2	9	0.030	ESR	• HXR2650011	–
HXRL-9	1/2	1 5/8	4	–	1/2	9	Square	ESR	• HXR2650012	• HXR2650013
HXRL-9	1/2	1 5/8	4	–	1/2	9	0.030	ESR	• HXR2650014	• HXR2650015
HXRS-9	5/8	3/4	3	–	5/8	9	Square	ESR	• HXR2650016	–
HXRS-9	5/8	3/4	3	–	5/8	9	0.030	ESR	• HXR2650017	–
HXRM-9	5/8	1 3/8	3 1/2	–	5/8	9	Square	ESR	• HXR2650018	–
HXRM-9	5/8	1 3/8	3 1/2	–	5/8	9	0.030	ESR	• HXR2650019	–
HXRL-9	5/8	2 1/4	5	–	5/8	9	Square	ESR	• HXR2650020	• HXR2650021
HXRL-9	5/8	2 1/4	5	–	5/8	9	0.030	ESR	• HXR2650022	• HXR2650023
HXRS-11	3/4	1 1/8	3	–	3/4	11	Square	ESR	• HXR2650024	–
HXRS-11	3/4	1 1/8	3	–	3/4	11	0.030	ESR	• HXR2650025	–
HXRM-11	3/4	1 5/8	4	–	3/4	11	Square	ESR	• HXR2650026	–
HXRM-11	3/4	1 5/8	4	–	3/4	11	0.030	ESR	• HXR2650027	–
HXRL-11	3/4	2 1/4	5	–	3/4	11	Square	ESR	• HXR2650028	• HXR2650029
HXRL-11	3/4	2 1/4	5	–	3/4	11	0.030	ESR	• HXR2650030	• HXR2650031

Cutting data recommendations on page 101

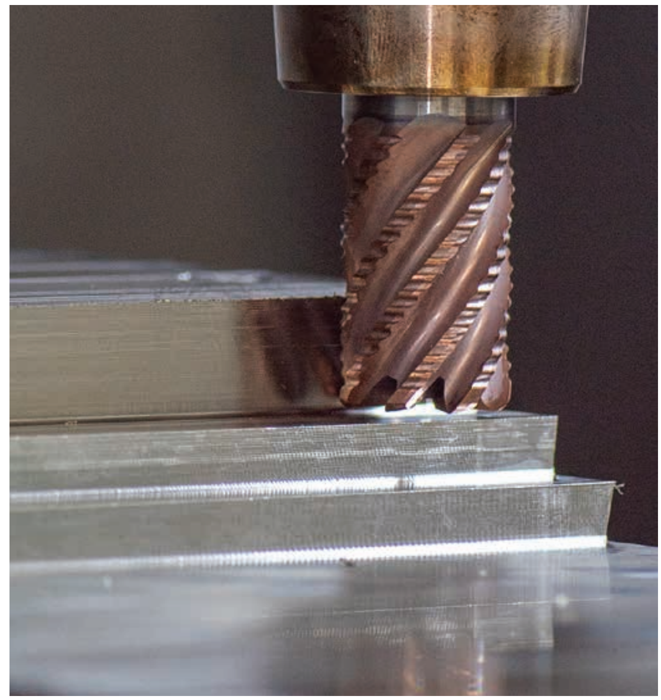
■ = First Choice ☐ = Second Choice ● = In Stock

NEW

RXR End Mills



Machining nickel-based alloys poses many challenges. LMT Onsrud's RXR series of endmills answers the challenges of tool life and reduces tool pressure.



Features and Benefits

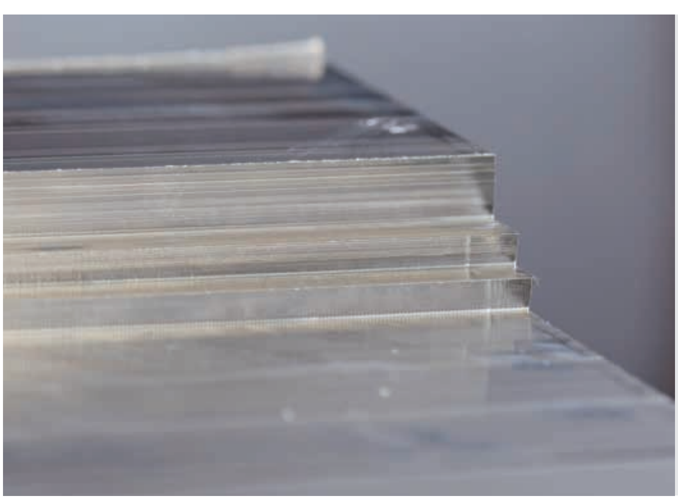
- 7 flute variable indexed geometry for unmatched material removal rates
- Fine pitch OD rougher pattern allows for reduced pressure on the cutting edge
- ENDURASpeed red coating formulated for longer tool life in nickel-based alloys

Applications

- Roughing

Usage

- Inconel
- Nickel-based alloys



Inconel Milling: Heavy Profile

Tool:
RXR Tool Series (Ident No. RXR2652258)
Cutting Diameter (d) = 1/2" No. of Flutes (z) = 7

Cutting Material: Solid Carbide

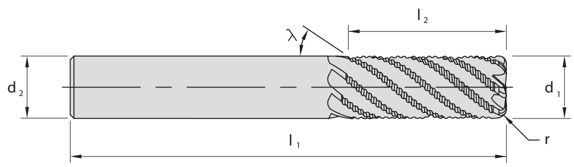
Material: 718 Inconel

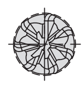
Cutting Data:

SFM (v_c) = 100	Chipload (f_z) = .0035 in
RPM (n) = 509	RDoC (a_e) = .060 in
Feed (v_f) = 11 in/min	ADoC (a_p) = 1in

LMT • ONSRUD

NEW





	7-Flute	7-Flute Weldon
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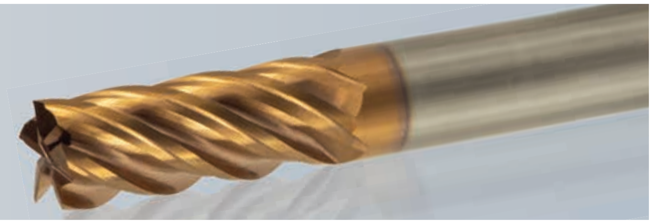
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.	Weldon Ident No.
RXRS-7	1/2	5/8	2 1/2	–	1/2	7	0.030	• RXR2652254	RXR2652254W
RXRS-7	1/2	5/8	2 1/2	–	1/2	7	0.060	• RXR2652255	RXR2652255W
RXRM-7	1/2	1 1/4	3	–	1/2	7	0.030	• RXR2652256	RXR2652256W
RXRM-7	1/2	1 1/4	3	–	1/2	7	0.060	• RXR2652257	RXR2652257W
RXRL-7	1/2	1 5/8	4	–	1/2	7	0.030	• RXR2652258	RXR2652258W
RXRL-7	1/2	1 5/8	4	–	1/2	7	0.060	• RXR2652259	RXR2652259W
RXRS-7	5/8	3/4	3	–	5/8	7	0.030	• RXR2652260	RXR2652260W
RXRS-7	5/8	3/4	3	–	5/8	7	0.060	• RXR2652261	RXR2652261W
RXRM-7	5/8	1 3/8	3 1/2	–	5/8	7	0.030	• RXR2652262	RXR2652262W
RXRM-7	5/8	1 3/8	3 1/2	–	5/8	7	0.060	• RXR2652263	RXR2652263W
RXRL-7	5/8	2 1/4	4	–	5/8	7	0.030	• RXR2652264	RXR2652264W
RXRL-7	5/8	2 1/4	4	–	5/8	7	0.060	• RXR2652265	RXR2652265W
RXRS-7	3/4	1 1/8	3	–	3/4	7	0.030	• RXR2652266	RXR2652266W
RXRS-7	3/4	1 1/8	3	–	3/4	7	0.060	• RXR2652267	RXR2652267W
RXRM-7	3/4	1 5/8	4	–	3/4	7	0.030	• RXR2652268	RXR2652268W
RXRM-7	3/4	1 5/8	4	–	3/4	7	0.060	• RXR2652269	RXR2652269W
RXRL-7	3/4	2 1/4	5	–	3/4	7	0.030	• RXR2652270	RXR2652270W
RXRL-7	3/4	2 1/4	5	–	3/4	7	0.060	• RXR2652271	RXR2652271W
RXRS-7	1	1 1/4	4	–	1	7	0.030	• RXR2652272	RXR2652272W
RXRS-7	1	1 1/4	4	–	1	7	0.060	• RXR2652273	RXR2652273W
RXRM-7	1	2 1/4	5	–	1	7	0.030	• RXR2652274	RXR2652274W
RXRM-7	1	2 1/4	5	–	1	7	0.060	• RXR2652275	RXR2652275W

Cutting data recommendations on page 102

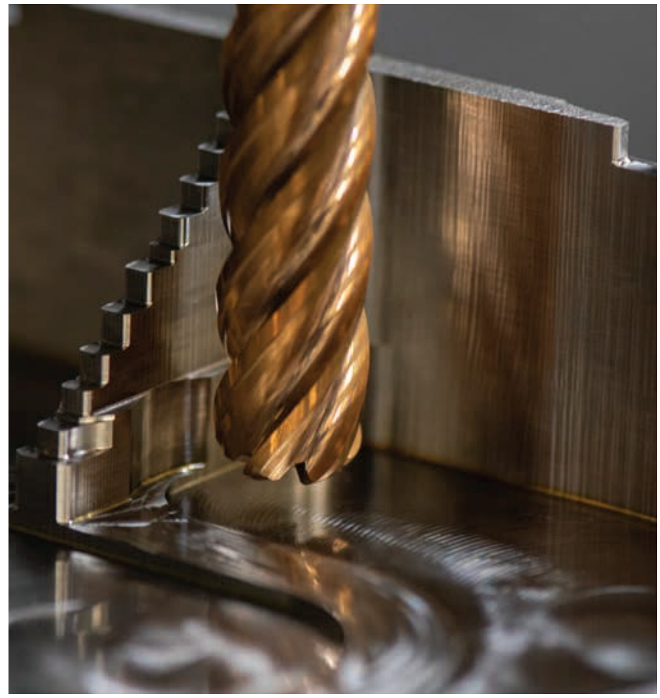
■ = First Choice ☐ = Second Choice • = In Stock

NEW

TRX End Mills



LMT Onsrud's newest addition to the end mill portfolio is the TRX series optimized specifically for Titanium. All design features of the TRX have been enhanced to provide unmatched results in roughing and semi finishing titanium.



Features and Benefits

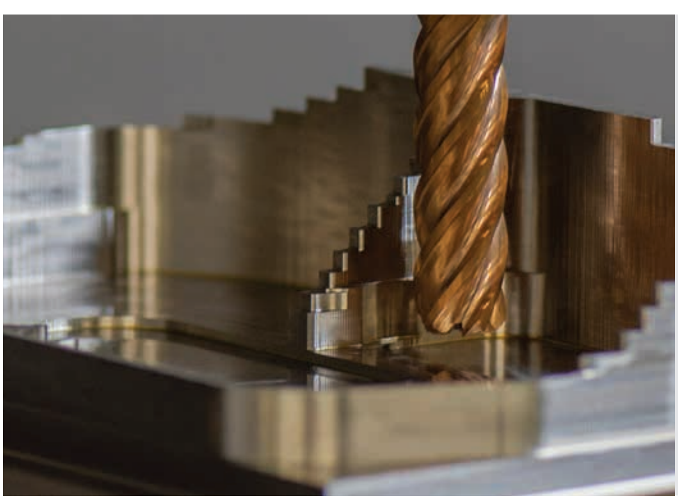
- Optimized dual helix and variable indexed 5 flute geometry for Titanium
- Enhanced micro-geometry for superior cutting edge
- X coating formulated with excellent wear resistance qualities for Titanium

Applications

- Roughing
- Heavy Profiling – 20% radial engagement
- HEM Profiling – 7% radial engagement

Usage

- Titanium



Titanium Milling: Heavy Profile

Tool:
TRX (Ident No. TRX2650602)
Cutting Diameter (d_1) = 5/8" No. of Flutes (z) =5

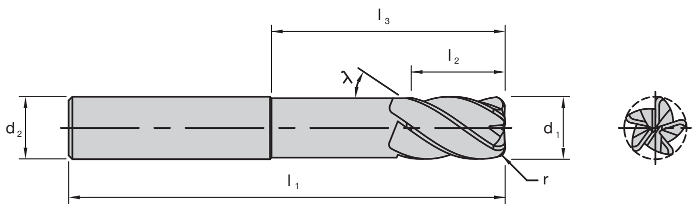
Cutting Material: Solid Carbide

Material: 6Al-4V Titanium

Cutting Data:

SFM (v_c) = 230	Chipload (f_z) = .0031 in
RPM (n) = 1,400	RDoC (a_e) = .100 - .125 in
Feed (v_f) = 22 in/min	ADoC (a_p) = .500 in

NEW



	5-Flute
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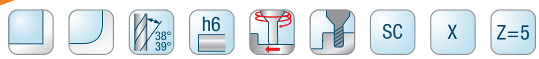
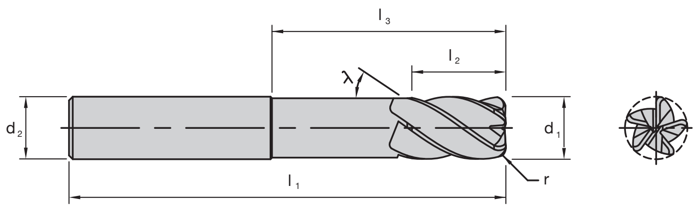
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
TRXS-5	1/4	3/8	2	–	1/4	5	Square	• TRX2652101
TRXS-5	1/4	3/8	2	–	1/4	5	0.015	• TRX2652102
TRXM-5	1/4	3/4	2 1/2	–	1/4	5	Square	• TRX2652103
TRXM-5	1/4	3/4	2 1/2	–	1/4	5	0.015	• TRX2652104
TRXL-5	1/4	1 1/8	3	–	1/4	5	Square	• TRX2652105
TRXL-5	1/4	1 1/8	3	–	1/4	5	0.015	• TRX2652106
TRXS-5	3/8	1/2	2 1/2	–	3/8	5	Square	• TRX2650567
TRXS-5	3/8	1/2	2 1/2	–	3/8	5	0.015	• TRX2650568
TRXS-5	3/8	1/2	2 1/2	–	3/8	5	0.030	• TRX2650569
TRXM-5	3/8	7/8	2 1/2	–	3/8	5	Square	• TRX2650573
TRXM-5	3/8	7/8	2 1/2	–	3/8	5	0.015	• TRX2650574
TRXM-5	3/8	7/8	2 1/2	–	3/8	5	0.030	• TRX2650575
TRXL-5	3/8	1 1/4	3	–	3/8	5	Square	• TRX2650579
TRXL-5	3/8	1 1/4	3	–	3/8	5	0.015	• TRX2650580
TRXL-5	3/8	1 1/4	3	–	3/8	5	0.030	• TRX2650581
TRXS-5	1/2	5/8	2 1/2	–	1/2	5	Square	• TRX2650031
TRXS-5	1/2	5/8	2 1/2	–	1/2	5	0.015	• TRX2650032
TRXS-5	1/2	5/8	2 1/2	–	1/2	5	0.030	• TRX2650033
TRXS-5	1/2	5/8	2 1/2	–	1/2	5	0.060	• TRX2650118
TRXS-5	1/2	5/8	2 1/2	–	1/2	5	0.120	• TRX2650120
TRXM-5	1/2	1 1/4	3	–	1/2	5	Square	• TRX2650037
TRXM-5	1/2	1 1/4	3	–	1/2	5	0.015	• TRX2650038
TRXM-5	1/2	1 1/4	3	–	1/2	5	0.030	• TRX2650039
TRXM-5	1/2	1 1/4	3	–	1/2	5	0.060	• TRX2650126
TRXM-5	1/2	1 1/4	3	–	1/2	5	0.120	• TRX2650128
TRXL-5	1/2	1 5/8	4	–	1/2	5	Square	• TRX2650591
TRXL-5	1/2	1 5/8	4	–	1/2	5	0.015	• TRX2650592

Cutting data recommendations on page 102

■ = First Choice ☐ = Second Choice ● = In Stock

NEW





		5-Flute
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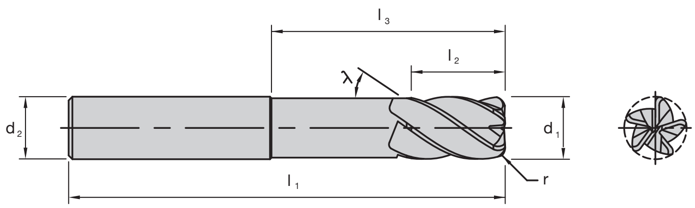
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
TRXL-5	1/2	1 5/8	4	–	1/2	5	0.030	• TRX2650593
TRXL-5	1/2	1 5/8	4	–	1/2	5	0.060	• TRX2650594
TRXL-5	1/2	1 5/8	4	–	1/2	5	0.120	• TRX2652130
TRXXL-5	1/2	2 1/8	4	–	1/2	5	Square	• TRX2650596
TRXXL-5	1/2	2 1/8	4	–	1/2	5	0.015	• TRX2650597
TRXXL-5	1/2	2 1/8	4	–	1/2	5	0.030	• TRX2650598
TRXXL-5	1/2	2 1/8	4	–	1/2	5	0.060	• TRX2650599
TRXXL-5	1/2	2 1/8	4	–	1/2	5	0.120	• TRX2652135
TRXNS-5	1/2	5/8	4	1 3/4	1/2	5	Square	• TRX2650043
TRXNS-5	1/2	5/8	4	1 3/4	1/2	5	0.030	• TRX2650044
TRXNS-5	1/2	5/8	4	1 3/4	1/2	5	0.060	• TRX2650045
TRXNS-5	1/2	5/8	4	1 3/4	1/2	5	0.120	• TRX2650134
TRXS-5	5/8	3/4	3	–	5/8	5	Square	• TRX2650601
TRXS-5	5/8	3/4	3	–	5/8	5	0.030	• TRX2650602
TRXS-5	5/8	3/4	3	–	5/8	5	0.060	• TRX2650603
TRXS-5	5/8	3/4	3	–	5/8	5	0.120	• TRX2650605
TRXM-5	5/8	1 3/8	3 1/2	–	5/8	5	Square	• TRX2650607
TRXM-5	5/8	1 3/8	3 1/2	–	5/8	5	0.030	• TRX2650608
TRXM-5	5/8	1 3/8	3 1/2	–	5/8	5	0.060	• TRX2650609
TRXM-5	5/8	1 3/8	3 1/2	–	5/8	5	0.120	• TRX2650611
TRXL-5	5/8	1 5/8	3 1/2	–	5/8	5	Square	• TRX2650613
TRXL-5	5/8	1 5/8	3 1/2	–	5/8	5	0.030	• TRX2650614
TRXL-5	5/8	1 5/8	3 1/2	–	5/8	5	0.060	• TRX2650615
TRXXL-5	5/8	2 1/4	4	–	5/8	5	Square	• TRX2650616
TRXXL-5	5/8	2 1/4	4	–	5/8	5	0.030	• TRX2650617
TRXXL-5	5/8	2 1/4	4	–	5/8	5	0.060	• TRX2650618
TRXS-5	3/4	1 1/8	3	–	3/4	5	Square	• TRX2650054

Cutting data recommendations on page 102

■ = First Choice ☐ = Second Choice ● = In Stock

NEW



	5-Flute
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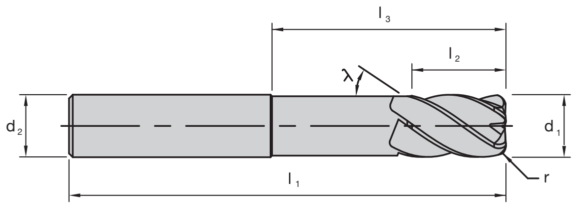
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
TRXS-5	3/4	1 1/8	3	–	3/4	5	0.030	• TRX2650055
TRXS-5	3/4	1 1/8	3	–	3/4	5	0.060	• TRX2650056
TRXS-5	3/4	1 1/8	3	–	3/4	5	0.090	• TRX2650147
TRXS-5	3/4	1 1/8	3	–	3/4	5	0.120	• TRX2650057
TRXS-5	3/4	1 1/8	3	–	3/4	5	0.250	• TRX2650149
TRXM-5	3/4	1 5/8	4	–	3/4	5	Square	• TRX2650063
TRXM-5	3/4	1 5/8	4	–	3/4	5	0.030	• TRX2650064
TRXM-5	3/4	1 5/8	4	–	3/4	5	0.060	• TRX2650065
TRXM-5	3/4	1 5/8	4	–	3/4	5	0.090	• TRX2650159
TRXM-5	3/4	1 5/8	4	–	3/4	5	0.120	• TRX2650066
TRXM-5	3/4	1 5/8	4	–	3/4	5	0.250	• TRX2650161
TRXL-5	3/4	2 1/4	5	–	3/4	5	Square	• TRX2650102
TRXL-5	3/4	2 1/4	5	–	3/4	5	0.030	• TRX2650103
TRXL-5	3/4	2 1/4	5	–	3/4	5	0.060	• TRX2650167
TRXL-5	3/4	2 1/4	5	–	3/4	5	0.090	• TRX2650168
TRXL-5	3/4	2 1/4	5	–	3/4	5	0.120	• TRX2650169
TRXL-5	3/4	2 1/4	5	–	3/4	5	0.250	• TRX2650171
TRXXL-5	3/4	3 1/8	5	–	3/4	5	Square	• TRX2650619
TRXXL-5	3/4	3 1/8	5	–	3/4	5	0.030	• TRX2650620
TRXXL-5	3/4	3 1/8	5	–	3/4	5	0.060	• TRX2650621
TRXNS-5	3/4	1 1/8	5	2 5/8	3/4	5	Square	• TRX2652175
TRXNS-5	3/4	1 1/8	5	2 5/8	3/4	5	0.030	• TRX2652176
TRXNS-5	3/4	1 1/8	5	2 5/8	3/4	5	0.060	• TRX2652177
TRXNS-5	3/4	1 1/8	5	2 5/8	3/4	5	0.090	• TRX2652178
TRXNS-5	3/4	1 1/8	5	2 5/8	3/4	5	0.120	• TRX2652179
TRXNS-5	3/4	1 1/8	5	2 5/8	3/4	5	0.190	• TRX2652180
TRXS-5	1	1 1/4	4	–	1	5	Square	• TRX2650193

Cutting data recommendations on page 102

■ = First Choice □ = Second Choice ● = In Stock

NEW



								5-Flute
P								
M								
K								
N								
S								■
H								
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
TRXS-5	1	1 1/4	4	–	1	5	0.030	• TRX2650081
TRXS-5	1	1 1/4	4	–	1	5	0.060	• TRX2650194
TRXS-5	1	1 1/4	4	–	1	5	0.090	• TRX2650195
TRXM-5	1	1 5/8	4	–	1	5	Square	• TRX2652185
TRXM-5	1	1 5/8	4	–	1	5	0.030	• TRX2652186
TRXM-5	1	1 5/8	4	–	1	5	0.060	• TRX2652187
TRXM-5	1	1 5/8	4	–	1	5	0.090	• TRX2652188
TRXL-5	1	2 1/8	5	–	1	5	Square	• TRX2650205
TRXL-5	1	2 1/8	5	–	1	5	0.030	• TRX2650090
TRXL-5	1	2 1/8	5	–	1	5	0.060	• TRX2650206
TRXL-5	1	2 1/8	5	–	1	5	0.090	• TRX2650207
TRXXL-5	1	3 1/8	6	–	1	5	Square	• TRX2650623
TRXXL-5	1	3 1/8	6	–	1	5	0.030	• TRX2650624
TRXXL-5	1	3 1/8	6	–	1	5	0.060	• TRX2650625
TRXNM-5	1	1 1/4	6	3 1/8	1	5	Square	• TRX2650208
TRXNM-5	1	1 1/4	6	3 1/8	1	5	0.030	• TRX2650209
TRXNM-5	1	1 1/4	6	3 1/8	1	5	0.060	• TRX2650094
TRXNL-5	1	1 1/4	7	4 1/8	1	5	Square	• TRX2650212
TRXNL-5	1	1 1/4	7	4 1/8	1	5	0.030	• TRX2650213
TRXNL-5	1	1 1/4	7	4 1/8	1	5	0.060	• TRX2650097

Cutting data recommendations on page 102

■ = First Choice ☐ = Second Choice • = In Stock

Radial Milling Cutter (RMC) Series

The Perfect Solution

Reduced Cycle Times. Increased Surface Quality.

A new breed of cutting tools powered by the latest in CAM technology is ready to take on some of the toughest challenges in the machining of complex parts.

LMT Onsrud's new Radial Milling Cutter family, with their large radii profiles, emulate ballnose tooling on an entirely different scale. The large radii increases your step over distance between tool paths. This enables more efficient strategies in blade machining, mold making, and the production of thin-walled aerostructures.

To take full advantage of this concept, a 5-axis machining center and a CAM system capable of supporting the tool path strategies is required.

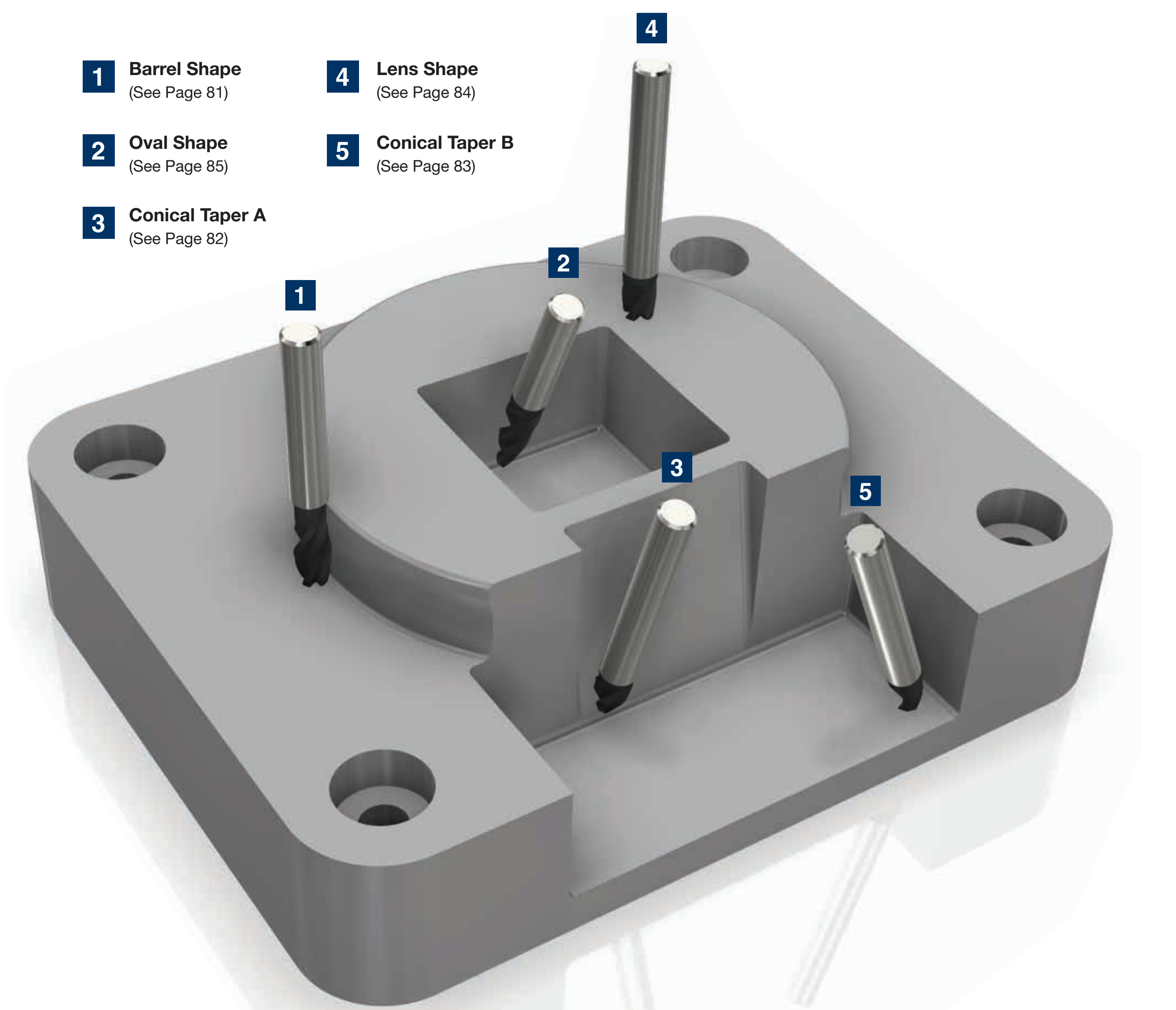
1 **Barrel Shape**
(See Page 81)

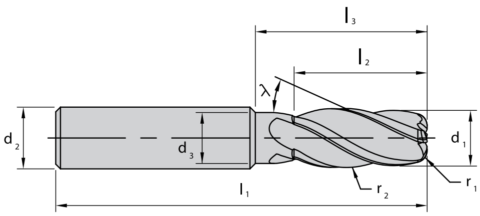
2 **Oval Shape**
(See Page 85)

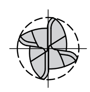
3 **Conical Taper A**
(See Page 82)

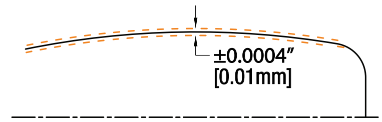
4 **Lens Shape**
(See Page 84)

5 **Conical Taper B**
(See Page 83)









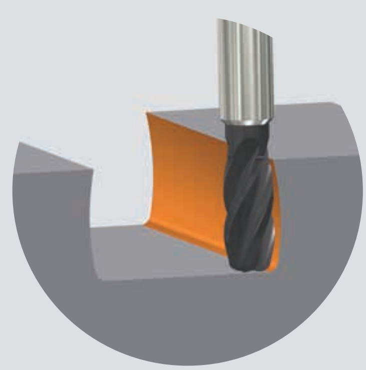
	4-Flute
P	■
M	■
K	■
N	■
S	■
H	■

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Neck Diameter d_3	Shank Diameter d_2	Flutes z	Corner Radius r	Barrel Radius r_3	Ident No.
RMC-B	3/8	7/8	3	1 1/8	0.278	3/8	4	0.080	2.000	RMC2647625
RMC-B	1/2	1	3	1 3/8	0.399	1/2	4	0.080	2.500	RMC2647626

Metric

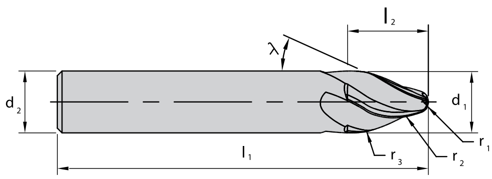
RMC-B	10	21	73	30	8	10	4	1	60	RMC2647642

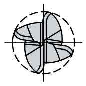
The Barrel Shape has a continuous radius along the length of cut and a reduced neck.

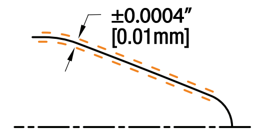


Cutting data recommendations on page 103

■ = First Choice ☐ = Second Choice ● = In Stock



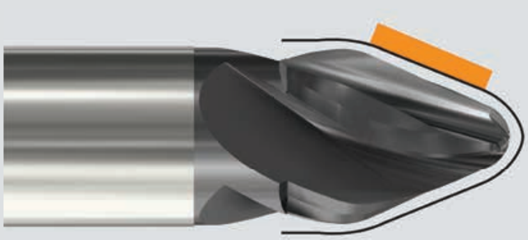


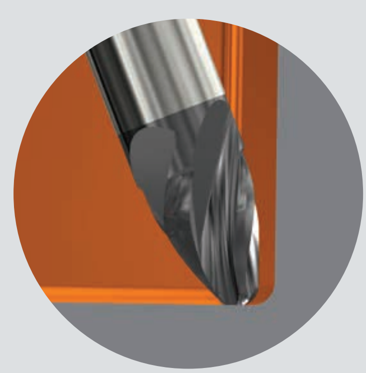


	4-Flute
P	■
M	■
K	■
N	■
S	■
H	■

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Neck Diameter d_3	Shank Diameter d_2	Flutes z	Radius r_1	Radius r_2	Radius r_3	Tilt Angle	Ident No.
RMC-CTA	1/4	0.425	2-1/2	–	–	1/4	4	0.040	10	0.120	12.5°	RMC2647631
RMC-CTA	5/8	1 1/4	4	–	–	5/8	4	0.080	40	0.190	12.5°	RMC2647632
RMC-CTA	5/16	0.450	3	–	–	5/16	4	0.060	10	0.150	17.5°	RMC2647633
RMC-CTA	3/8	0.475	3	–	–	3/8	4	0.080	10	0.190	20°	RMC2647634
RMC-CTA	1/2	1/2	3	–	–	1/2	4	0.120	10	0.250	20°	RMC2647635
RMC-CTA	5/8	5/8	4	–	–	5/8	4	0.160	60	0.250	20°	RMC2647636
Metric												
RMC-CTA	16	24	109	–	–	16	4	4	1000	5	12.5°	RMC2647646
RMC-CTA	6	9.5	64	–	–	6	4	1	250	3	17.5°	RMC2647647
RMC-CTA	10	12.5	80	–	–	10	4	2	250	5	20°	RMC2647648
RMC-CTA	12	22	88	–	–	12	4	3	250	6	20°	RMC2647649

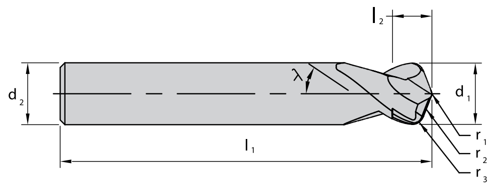
The Conical Taper Form A is a side cutting end mill with a mutiple radii blend for milling steep walls with a tilt angle <45°.

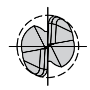


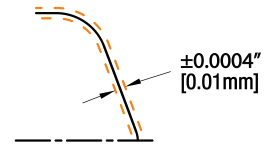


Cutting data recommendations on page 103

■ = First Choice ☐ = Second Choice ● = In Stock



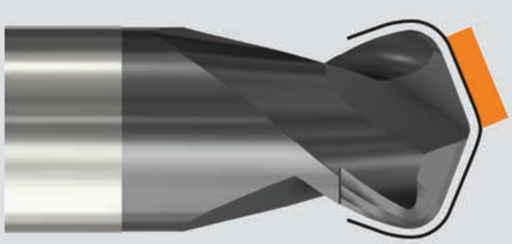


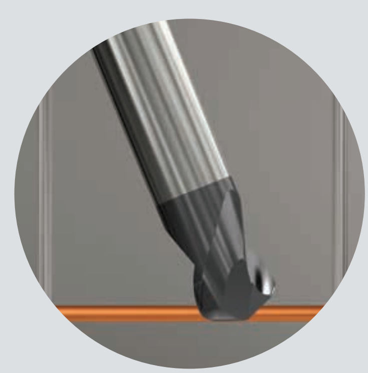


	2-Flute
P	■
M	■
K	■
N	■
S	■
H	■

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Neck Diameter d_3	Shank Diameter d_2	Flutes z	Radius r_1	Radius r_2	Radius r_3	Tilt Angle	Ident No.
RMC-CTB	3/8	1/4	3	–	–	3/8	2	0.040	8	0.060	70°	RMC2647637
Metric												
RMC-CTB	10	6	81	–	–	10	2	1	200	2	70°	RMC2647650

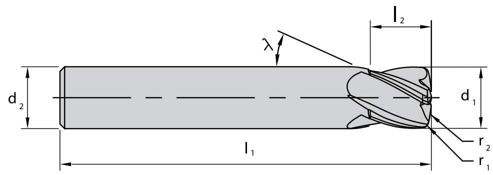
The Conical Taper Form B has an end cutting geometry for tilt angles >45° for semi-finishing and finishing workpiece floors.

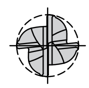


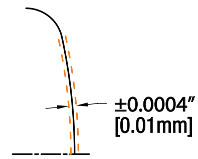


Cutting data recommendations on page 103

■ = First Choice ☐ = Second Choice ● = In Stock



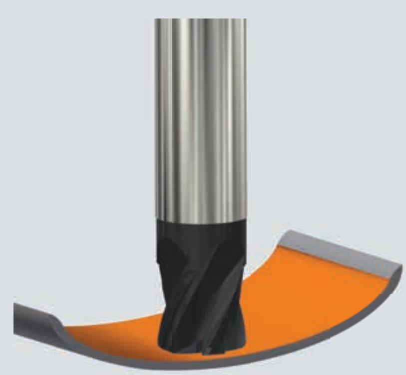




	4-Flute
P	■
M	■
K	■
N	■
S	■
H	■

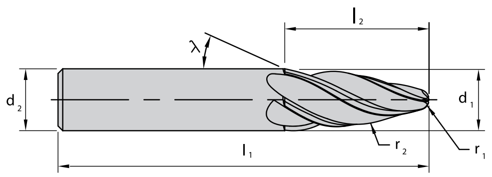
Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Neck Diameter d_3	Shank Diameter d_2	Flutes z	Corner Radius r_1	Lens Radius r_2	Ident No.
RMC-L	0.1575	1/4	2-1/2	3/4	0.1575	1/4	4	0.010	0.250	RMC2647638
RMC-L	5/16	5/16	2-1/2	–	–	5/16	4	0.030	0.600	RMC2647639
RMC-L	3/8	3/8	3	–	–	3/8	4	0.040	0.800	RMC2647640
RMC-L	1/2	1/2	3	–	–	1/2	4	0.050	1.000	RMC2647641
Metric										
RMC-L	16	16	100	–	–	16	4	2	30	RMC2647651

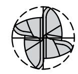
The Lens Shape Radial Milling Cutter utilizes a convex face cutting geometry which is useful for contoured floor finishing.

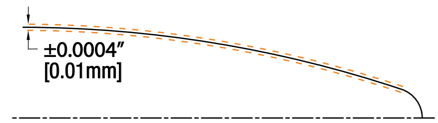


Cutting data recommendations on page 103

■ = First Choice □ = Second Choice ● = In Stock



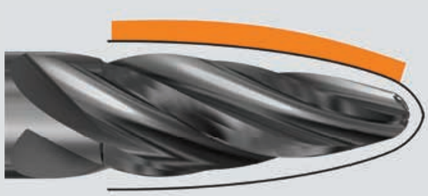


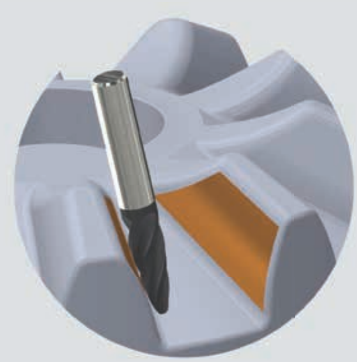


	4-Flute
P	■
M	■
K	■
N	■
S	■
H	■

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Neck Diameter d_3	Shank Diameter d_2	Flutes z	Radius r_1	Lens Radius r_2	Ident No.
RMC-O	1/4	0.830	2 1/2	–	–	1/4	4	0.040	3.750	RMC2647627
RMC-O	3/8	0.915	3	–	–	3/8	4	0.080	3.375	RMC2647628
RMC-O	1/2	1.100	3	–	–	1/2	4	0.080	3.125	RMC2647629
RMC-O	5/8	1.150	3 1/2	–	–	5/8	4	0.120	3.000	RMC2647630
Metric										
RMC-O	6	22	64	–	–	6	4	1	95	RMC2647643
RMC-O	10	24.5	73	–	–	10	4	2	90	RMC2647644
RMC-O	12	27	84	–	–	12	4	2	85	RMC2647645

The Oval Shape has a side cutting geometry with a continuous radius ending at the cutting diameter.

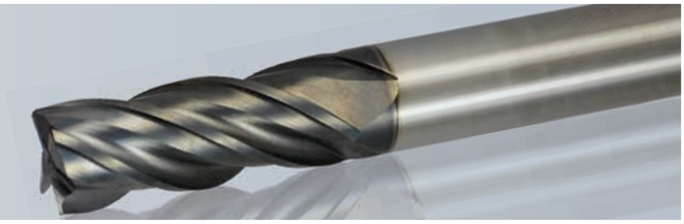




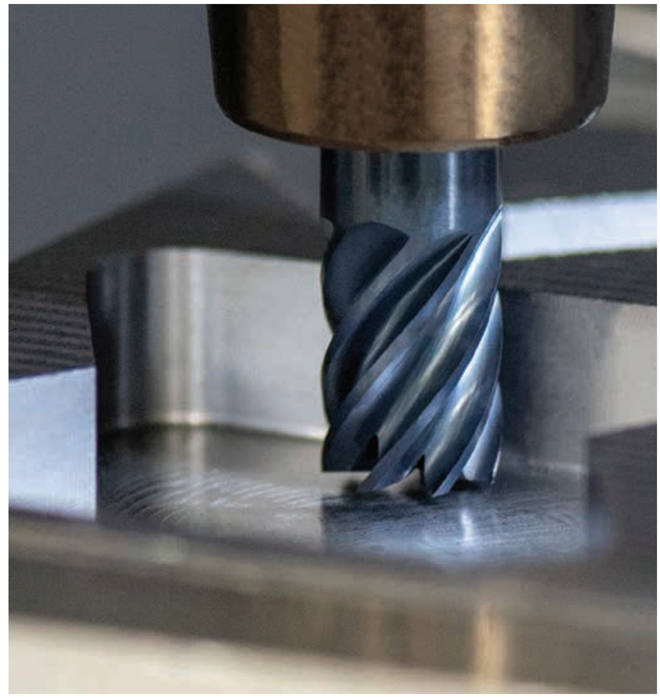
Cutting data recommendations on page 103

■ = First Choice □ = Second Choice ● = In Stock

SMC Premium Series End Mills



The SMC Premium is a 4 flute endmill series developed for Steel and Cast Iron.



Features and Benefits

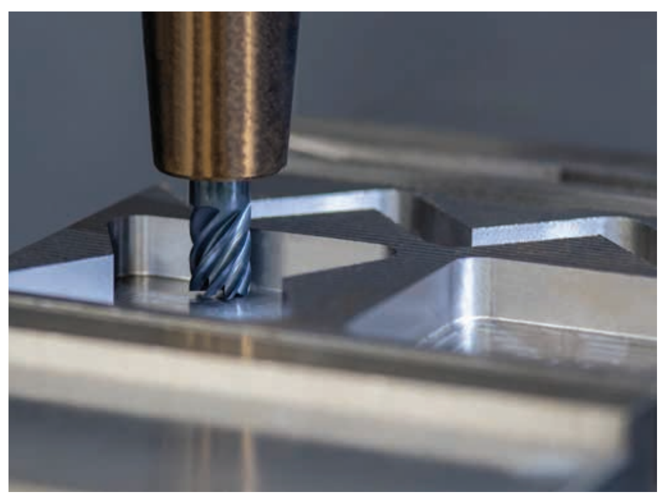
- The tapered web increases the end mill's toughness and the variable helix reduces the cutting forces.
- The combination of variable helix and variable index prevents harmonics, reducing chatter, therefore leaving a superior finish on the work piece.
- Chip control, higher feed rates, and increased depth of cut ensure a higher material removal rate.
- A combination of the substrate, the advanced cutting-edge conditioning and the innovative PVD high performance coating, results in increased tool life.

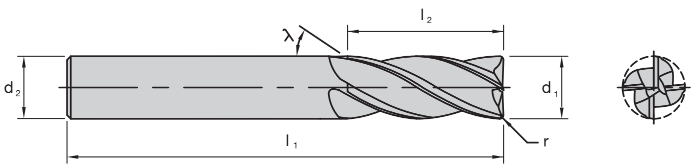
Applications

- Slotting
- Heavy Profiling
- HEM Profiling
- Finishing

Usage

- Steel
- Cast Iron
- Stainless Steel



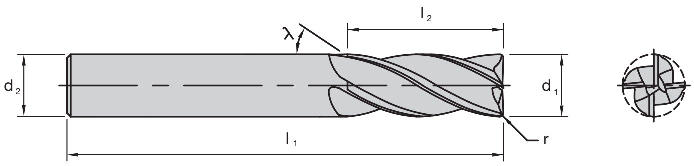


	4-Flute
P	■
M	■
K	■
N	
S	
H	

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
SMCPS-4	3/16	3/8	2	–	3/16	4	Corner Chamfer	• SMCP500002
SMCPS-4	3/16	3/8	2	–	3/16	4	0.010"	• SMCP500004
SMCPM-4	3/16	1/2	2	–	3/16	4	Corner Chamfer	• SMCP500042
SMCPM-4	3/16	1/2	2	–	3/16	4	0.010"	• SMCP500044
SMCPS-4	1/4	1/2	2 1/2	–	1/4	4	Corner Chamfer	• SMCP500006
SMCPS-4	1/4	1/2	2 1/2	–	1/4	4	0.015"	• SMCP500008
SMCPS-4	1/4	1/2	2 1/2	–	1/4	4	0.030"	• SMCP500010
SMCPM-4	1/4	5/8	2 1/2	–	1/4	4	Corner Chamfer	• SMCP500046
SMCPM-4	1/4	5/8	2 1/2	–	1/4	4	0.015"	• SMCP500048
SMCPM-4	1/4	5/8	2 1/2	–	1/4	4	0.030"	• SMCP500050
SMCPS-4	3/8	5/8	2 1/2	–	3/8	4	Corner Chamfer	• SMCP500012
SMCPS-4	3/8	5/8	2 1/2	–	3/8	4	0.015"	• SMCP500014
SMCPS-4	3/8	5/8	2 1/2	–	3/8	4	0.030"	• SMCP500016
SMCPM-4	3/8	1	3	–	3/8	4	Corner Chamfer	• SMCP500052
SMCPM-4	3/8	1	3	–	3/8	4	0.015"	• SMCP500054
SMCPM-4	3/8	1	3	–	3/8	4	0.030"	• SMCP500056
SMCPS-4	1/2	5/8	3	–	1/2	4	Corner Chamfer	• SMCP500018
SMCPS-4	1/2	5/8	3	–	1/2	4	0.030"	• SMCP500020
SMCPS-4	1/2	5/8	3	–	1/2	4	0.060"	• SMCP500022
SMCPM-4	1/2	1 1/4	3 1/2	–	1/2	4	Corner Chamfer	• SMCP500058
SMCPM-4	1/2	1 1/4	3 1/2	–	1/2	4	0.030"	• SMCP500060
SMCPM-4	1/2	1 1/4	3 1/2	–	1/2	4	0.060"	• SMCP500062
SMCPS-4	5/8	3/4	3	–	5/8	4	Corner Chamfer	• SMCP500024
SMCPS-4	5/8	3/4	3	–	5/8	4	0.030"	• SMCP500026
SMCPS-4	5/8	3/4	3	–	5/8	4	0.060"	• SMCP500028

Cutting data recommendations on page 104

■ = First Choice ☐ = Second Choice • = In Stock

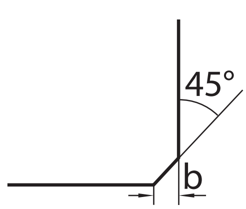


		4-Flute
P		■
M		■
K		■
N		
S		
H		

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Neck Length l_3	Shank Diameter d_2	Flutes z	Corner Radius r	Ident No.
SMCPM-4	5/8	1 1/4	3 1/2	–	5/8	4	Corner Chamfer	• SMCP500064
SMCPM-4	5/8	1 1/4	3 1/2	–	5/8	4	0.030"	• SMCP500066
SMCPM-4	5/8	1 1/4	3 1/2	–	5/8	4	0.060"	• SMCP500068
SMCPS-4	3/4	1	4	–	3/4	4	Corner Chamfer	• SMCP500030
SMCPS-4	3/4	1	4	–	3/4	4	0.030"	• SMCP500032
SMCPS-4	3/4	1	4	–	3/4	4	0.060"	• SMCP500034
SMCPM-4	3/4	1 1/2	4	–	3/4	4	Corner Chamfer	• SMCP500070
SMCPM-4	3/4	1 1/2	4	–	3/4	4	0.030"	• SMCP500072
SMCPM-4	3/4	1 1/2	4	–	3/4	4	0.060"	• SMCP500074
SMCPS-4	1	1 1/2	5	–	1	4	Corner Chamfer	• SMCP500036
SMCPS-4	1	1 1/2	5	–	1	4	0.030"	• SMCP500038
SMCPS-4	1	1 1/2	5	–	1	4	0.060"	• SMCP500040
SMCPM-4	1	2	5	–	1	4	Corner Chamfer	• SMCP500076
SMCPM-4	1	2	5	–	1	4	0.030"	• SMCP500078
SMCPM-4	1	2	5	–	1	4	0.060"	• SMCP500080

Edge Protection Chamfer (Corner Chamfer)

Cutting Diameter	b
3/16	0.006
1/4 - 3/8	0.008
1/2 - 3/4	0.012
1	0.016



Cutting data recommendations on page 104

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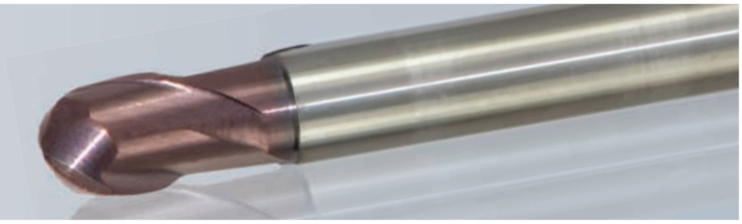
MDR Ballnose



The MDR Ballnose is optimized for High Speed Machining techniques with low radial engagement in mold and die steel.

Features and Benefits

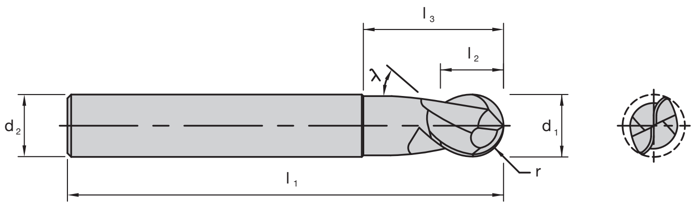
- Engineered to provide more clearance to make complex contours attainable.
- Unique conical design stabilizes the tool for superior finish.
- ENDURASpeed Red coating combined with a reinforced cutting edge ensures longer tool life.
- The MDR 2 flute ball nose end mill is specifically designed for mold steels.

Applications

- Finishing

Usage

- Mold and Die Steel



	2-Flute
P	
M	
K	
N	
S	
H	■

Series	Cutting Diameter d_1	LOC l_2	Overall Length l_1	Extended Reach l_3	Shank Diameter d_2	Angle	Flutes z	Corner Radius r	Ident No.
MDR-2	1/16	1/16	3	1/8	1/4	8	2	0.031	• MDR2641036
MDR-2	3/32	3/32	3	3/16	1/4	8	2	0.047	• MDR2641037
MDR-2	1/8	1/8	3	1/4	1/4	9	2	0.063	• MDR2641038
MDR-2	3/16	3/16	3	3/8	1/4	9	2	0.094	• MDR2641039
MDR-2	1/4	1/4	3 1/2	1/2	1/4	–	2	0.125	• MDR2641040
MDR-2	5/16	5/16	4	3/4	5/16	–	2	0.156	• MDR2641041
MDR-2	3/8	3/8	4	7/8	3/8	–	2	0.188	• MDR2641042
MDR-2	1/2	1/2	4 1/2	1 1/8	1/2	–	2	0.250	• MDR2641043

Cutting Diameter (inch)	Tolerances (inch) Diameter	SHK
1/16 - 3/32	+0/-0.0010	h6
> 3/32 - 1/4	+0/-0.0012	h6
> 1/4 - 3/8	+0/-0.0016	h6
> 3/8 - 1/2	+0/-0.0020	h6

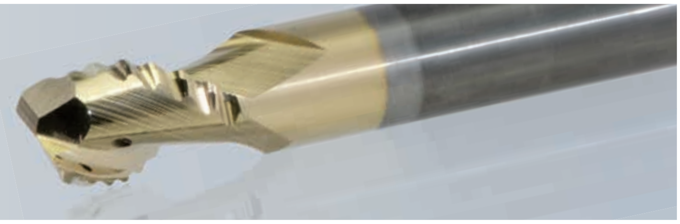
Cutting data recommendations on page 105

■ = First Choice ☐ = Second Choice ● = In Stock

Technical Information

LMT Onsrud has over 70 years of experience machining a wide-range of materials. LMT Onsrud's strengths are extensive engineering resources and technical expertise and service. LMT Onsrud has the deep, solution-based knowledge of how to solve complex problems.

Machining Formulas



RPM
(3.82 x SFM) / tool diameter

SFM
RPM x .262 x tool diameter

FEED RATE (in / min)
chipload x # flutes x RPM

Material Removal Rate (in^3 / min)
Feed Rate x ADoC x RDoC

Feed / Tooth (in)
Feed Rate / (RPM x # Flutes)

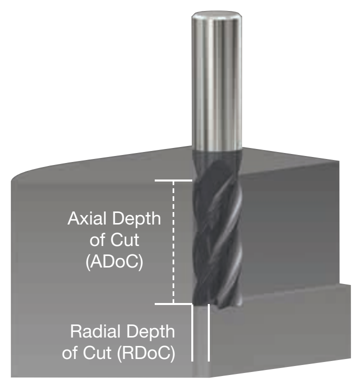
Required Motor Horsepower
Feed rate x axial doc x radial doc x unit power x machine efficiency %

Radial Chip Thinning

$$\frac{\text{Chipload x (dia/2)}}{\sqrt{\text{(dia x RDoC) - RDoC}^2}}$$

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

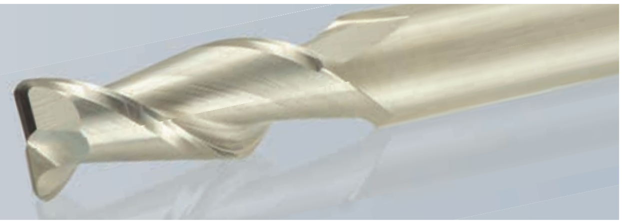
Ramp Angle = 1° - 3°
Reduce chipload by 20% of slotting rates.



Apply radial chip thinning formula when RDoC < 0.5 x tool dia.

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

Aluminum Finishers (AF) 2 & 3 Flute Series Cutting Data Recommendations



AF Chart (Non-Coolant Through)

ISO Grade	Material	Unit Power	SFM Range	Application	Recommended Starting Parameters											
					Rad DOC % of DIA	Axial DOC x DIA	SFM Starting	Chip Load Per Tooth								
								1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
N	Aluminum	0.32	500 - 1500	Full Slotting	100%	1x	1000	.0015	.0020	.0027	.0035	.0043	.0056	.0070	.0085	.0112
				Heavy Profile	33%	1x	1200	.0016	.0021	.0029	.0037	.0046	.0060	.0074	.0090	.0119
				HEM* Profile	15%	2x	1200	.0021	.0028	.0038	.0049	.0060	.0078	.0098	.0119	.0157
				Finishing	5%	2x	1000	.0034	.0046	.0062	.0080	.0099	.0128	.0161	.0195	.0257
	Brass / Bronze	0.64	500 - 900	Full Slotting	100%	1x	600	.0013	.0016	.0023	.0027	.0034	.0046	.0057	.0069	.0091
				Heavy Profile	25%	1x	700	.0015	.0018	.0027	.0031	.0039	.0053	.0066	.0080	.0105
				HEM* Profile	15%	2x	700	.0018	.0022	.0032	.0038	.0048	.0064	.0080	.0097	.0127
				Finishing	5%	2x	600	.0030	.0037	.0053	.0062	.0078	.0106	.0131	.0158	.0209
	Copper Alloys	1	700 - 1000	Full Slotting	100%	1x	500	.0014	.0017	.0020	.0023	.0026	.0030	.0035	.0040	.0045
				Heavy Profile	25%	1x	600	.0016	.0020	.0023	.0027	.0030	.0035	.0040	.0046	.0052
				HEM* Profile	15%	2x	600	.0020	.0024	.0028	.0032	.0036	.0042	.0049	.0056	.0063
				Finishing	5%	2x	500	.0032	.0039	.0046	.0053	.0060	.0069	.0080	.0092	.0103
	Magnesium	0.16	500 - 900	Full Slotting	100%	1x	500	.0016	.0019	.0028	.0034	.0042	.0056	.0070	.0085	.0112
				Heavy Profile	33%	1x	700	.0017	.0020	.0030	.0036	.0045	.0060	.0074	.0090	.0119
				HEM* Profile	15%	2x	700	.0022	.0027	.0039	.0048	.0059	.0078	.0098	.0119	.0157
				Finishing	5%	2x	500	.0037	.0044	.0064	.0078	.0096	.0128	.0161	.0195	.0257

AFC Chart (Coolant Through)

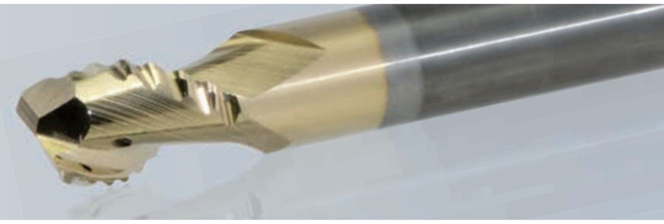
ISO Grade	Material	Unit Power	SFM Range	Application	Recommended Starting Parameters								
					Rad DOC % of DIA	Axial DOC x DIA	SFM Starting	Chip Load Per Tooth					
								1/4	3/8	1/2	5/8	3/4	1
N	Aluminum	0.32	500 - 1500	Full Slotting	100%	1x	1000	.0032	.0051	.0067	.0084	.0100	.0130
				Heavy Profile	33%	1x	1200	.0034	.0054	.0071	.0089	.0106	.0138
				HEM* Profile	15%	2x	1200	.0045	.0071	.0094	.0118	.0140	.0182
				Finishing	5%	2x	1000	.0073	.0117	.0154	.0193	.0229	.0298
	Brass / Bronze	0.64	500 - 900	Full Slotting	100%	1x	600	.0026	.0039	.0053	.0065	.0079	.0105
				Heavy Profile	25%	1x	700	.0030	.0045	.0061	.0075	.0091	.0121
				HEM* Profile	15%	2x	700	.0036	.0055	.0074	.0091	.0111	.0147
				Finishing	5%	2x	600	.0060	.0089	.0122	.0149	.0181	.0241
	Copper Alloys	1	300-800	Full Slotting	100%	1x	400	.0024	.0031	.0036	.0042	.0048	.0054
				Heavy Profile	25%	1x	600	.0028	.0036	.0042	.0048	.0055	.0062
				HEM* Profile	15%	2x	600	.0034	.0043	.0050	.0059	.0067	.0076
				Finishing	5%	2x	400	.0055	.0071	.0083	.0096	.0110	.0124
	Magnesium	0.16	500 - 900	Full Slotting	100%	1x	500	.0032	.0043	.0067	.0084	.0100	.0130
				Heavy Profile	25%	1x	700	.0037	.0050	.0077	.0097	.0115	.0150
				HEM* Profile	15%	2x	700	.0045	.0060	.0094	.0118	.0140	.0182
				Finishing	5%	2x	500	.0073	.0099	.0154	.0193	.0229	.0298

Remember to check horsepower requirements for your cut

Machine efficiency % ≈ 0.8

HEM* = High Efficiency Machining

Aluminum Roughers (AR) 2 & 3 Flute Series Cutting Data Recommendations



AR Chart (Non-Coolant Through)

ISO Grade	Material	Unit Power	SFM Range	Application	Recommended Starting Parameters						
					Rad DOC % of DIA	Axial DOC x DIA	SFM Starting	Chip Load Per Tooth			
								3/8	1/2	3/4	1
N	**Aluminum**	0.32	500 - 1500	Full Slotting	100%	1x	1000	.0060	.0080	.0120	.0156
				Heavy Profile	33%	1x	1200	.0064	.0085	.0128	.0166
				Profile	15%	1x	1200	.0084	.0112	.0168	.0218
	Brass / Bronze	0.64	500 - 900	Full Slotting	100%	1x	500	.0046	.0063	.0094	.0126
				Heavy Profile	33%	1x	700	.0049	.0067	.0100	.0134
				Profile	15%	1x	700	.0064	.0088	.0132	.0176
	Copper Alloys	1	700 - 1000	Full Slotting	100%	1x	400	.0038	.0043	.0058	.0065
				Heavy Profile	33%	1x	600	.0040	.0046	.0062	.0069
				Profile	15%	1x	600	.0053	.0060	.0081	.0091
	Magnesium	0.16	500 - 900	Full Slotting	100%	1x	500	.0051	.0080	.0120	.0155
				Heavy Profile	33%	1x	700	.0054	.0085	.0128	.0165
				Profile	15%	1x	700	.0071	.0112	.0168	.0217

ARC Chart (Coolant Through)

ISO Grade	Material	Unit Power	SFM Range	Application	Recommended Starting Parameters						
					Rad DOC % of DIA	Axial DOC x DIA	SFM Starting	Chip Load Per Tooth			
								3/8	1/2	3/4	1
N	**Aluminum**	0.32	500 - 1500	Full Slotting	100%	1x	1000	.0066	.0088	.0132	.0170
				Heavy Profile	33%	1x	1200	.0070	.0094	.0140	.0181
				Profile	15%	1x	1200	.0092	.0123	.0185	.0238
	Brass / Bronze	.064	500 - 900	Full Slotting	100%	1x	500	.0050	.0069	.0103	.0138
				Heavy Profile	33%	1x	700	.0053	.0073	.0110	.0147
				Profile	15%	1x	700	.0070	.0097	.0144	.0193
	Copper Alloys	1	700 - 1000	Full Slotting	100%	1x	400	.0041	.0047	.0063	.0071
				Heavy Profile	33%	1x	600	.0044	.0050	.0067	.0075
				Profile	15%	1x	600	.0057	.0066	.0088	.0099
	Magnesium	0.16	500 - 900	Full Slotting	100%	1x	500	.0056	.0088	.0132	.0170
				Heavy Profile	33%	1x	700	.0060	.0094	.0140	.0181
				Profile	15%	1x	700	.0078	.0123	.0185	.0238

Remember to check horsepower requirements for your cut

Machine efficiency % ≈ 0.8

HEM* = High Efficiency Machining

MaxQ 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	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%	.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	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, Ti5553	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

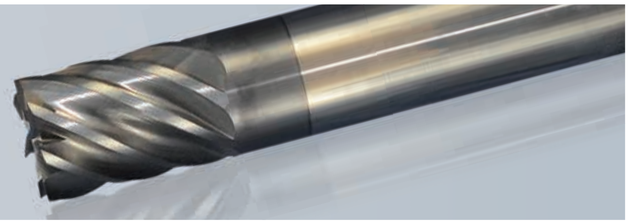
Chip Load Per Tooth (Inches)			HEM* = High Efficiency Machining			
1/8	1/4	3/8	1/2	5/8	3/4	1
.0008	.0016	.0024	.0028	.0036	.0044	.0050
.0009	.0017	.0026	.0030	.0038	.0047	.0053
.0011	.0022	.0034	.0039	.0050	.0062	.0070
.0020	.0041	.0061	.0071	.0092	.0112	.0128
.0008	.0016	.0024	.0028	.0036	.0044	.0050
.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

MaxQ 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

Chip Load Per Tooth (Inches)			HEM* = High Efficiency Machining)			
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	.0120	.0020	.0024	.0030	.0037	.0043
.0005	.0128	.0021	.0026	.0032	.0039	.0046
.0007	.0168	.0028	.0034	.0042	.0052	.0060
.0013	.0306	.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

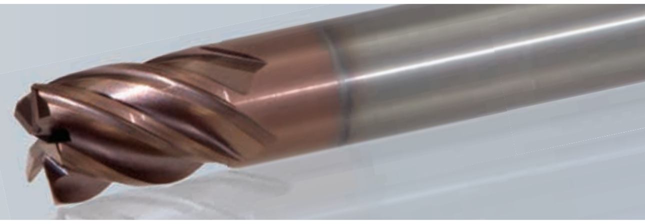
TV-7 End Mills Cutting Data Recommendations



ISO Grade	Material / Grade	SFM Hardness < 32Rc	SFM Hardness > 32Rc	Application	Rad DOC % of DIA	Axial DOC x DIA	SFM Starting (<32Rc)	1/2	5/8	3/4	1	1-1/4
					Recommended Starting Parameters (<32Rc)							
P	**Carbon Steel** 10XX, 11XX 12XX, 15XX	450 - 800	150 - 250	HEM* Profile	10%	2x	650	.0050	.0058	.0067	.0075	.0083
		450 - 800	150 - 250	HEM* Profile	7%	2x	650	.0059	.0069	.0078	.0088	.0098
		300 - 600	150 - 250	Finishing	2-3%	2x	450	.0096	.0112	.0128	.0144	.0160
	Alloy Steel 13XX, 40XX, 41XX, 43XX 44XX, 46XX, 47XX, 48XX	400 - 750	100 - 200	HEM* Profile	10%	2x	600	.0042	.0050	.0058	.0067	.0075
		400 - 750	100 - 200	HEM* Profile	7%	2x	600	.0049	.0059	.0069	.0078	.0088
		200 - 450	100 - 200	Finishing	2-3%	2x	400	.0080	.0096	.0112	.0128	.0144
	Mold & Die Steel M50, A2, D2, H13, L2, M2, P20, S7, T15, W2	300 - 550	70 - 150	HEM* Profile	10%	2x	400	.0037	.0043	.0050	.0058	.0067
		300 - 550	70 - 150	HEM* Profile	7%	2x	400	.0043	.0051	.0059	.0069	.0078
		150 - 250	70 - 150	Finishing	2-3%	2x	200	.0070	.0083	.0096	.0112	.0128
	Tool Steel PM STEELS	250 - 500	–	HEM* Profile	10%	2x	350	.0042	.0050	.0058	.0067	.0075
		250 - 500	–	HEM* Profile	7%	2x	350	.0049	.0059	.0069	.0078	.0088
		100 - 200	–	Finishing	2-3%	2x	150	.0080	.0096	.0112	.0128	.0144
M	**Austenitic Stainless** 301, 302, 303, 304/304L/304H, 316/316L, 317L, 321/321H, 347/347H, Nitronic, 309/309S, 310/310S/310H, 330	250 - 400	80 - 200	HEM* Profile	10%	2x	375	.0040	.0047	.0053	.0060	.0067
		250 - 400	80 - 200	HEM* Profile	7%	2x	375	.0047	.0055	.0063	.0071	.0078
		200 - 350	80 - 200	Finishing	2-3%	2x	250	.0077	.0090	.0102	.0115	.0128
	Martensitic Stainless 403, 405, 409, 410/410S/410HT, 416/416HT, 420, 422, 430, 440C	300 - 500	100 - 250	HEM* Profile	10%	2x	400	.0042	.0050	.0058	.0067	.0075
		300 - 500	100 - 250	HEM* Profile	7%	2x	400	.0049	.0059	.0069	.0078	.0088
		300 - 450	100 - 250	Finishing	2-3%	2x	350	.0080	.0096	.0112	.0128	.0144
	Precipitation Stainless 13-8 PH, 15-5 PH, 15-7 PH 17-4 PH, 17-7 PH, S143	250 - 500	90 - 125	HEM* Profile	10%	2x	325	.0040	.0047	.0053	.0060	.0067
		250 - 500	90 - 125	HEM* Profile	7%	2x	325	.0047	.0055	.0063	.0071	.0078
		120 - 225	90 - 125	Finishing	2-3%	2x	225	.0077	.0090	.0102	.0115	.0128
K	**Cast Iron Grey** 20A, 25A, 30A, 35A, 40A, 45A, 50A	400 - 750	130 - 300	HEM* Profile	10%	2x	550	.0050	.0058	.0067	.0075	.0083
		400 - 750	130 - 300	HEM* Profile	7%	2x	550	.0059	.0069	.0078	.0088	.0098
		375 - 500	130 - 300	Finishing	2-3%	2x	450	.0096	.0112	.0128	.0144	.0160
	Cast Ductile / Nodular 40010, 60-40-18, 65-45-12 32510, 32518	270 - 650	80 - 140	HEM* Profile	10%	2x	400	.0033	.0040	.0047	.0053	.0060
		270 - 650	80 - 140	HEM* Profile	7%	2x	400	.0039	.0047	.0055	.0063	.0071
		180 - 350	80 - 140	Finishing	2-3%	2x	275	.0064	.0077	.0090	.0102	.0115
S	**Cobalt Base** Haynes 21, 25, L-605, Mar-M302, NASA Co-W-Re, Stellite, Ultimet	90 - 160	40 - 90	HEM* Profile	10%	1.25x	125	.0027	.0030	.0035	.0040	.0045
		90 - 160	40 - 90	HEM* Profile	7%	1.25x	125	.0031	.0035	.0041	.0047	.0053
		70 - 140	40 - 90	Finishing	2-3%	1.5x	100	.0051	.0058	.0067	.0077	.0086
	Iron Base A-286, Discaloy Incoloy 800-802, Multimet, 16-25-6	100 - 160	40 - 70	HEM* Profile	10%	1.25x	140	.0030	.0035	.0040	.0045	.0050
		100 - 160	40 - 70	HEM* Profile	7%	1.25x	140	.0035	.0041	.0047	.0053	.0059
		90 - 135	40 - 70	Finishing	2-3%	1.5x	110	.0058	.0067	.0077	.0086	.0096
	Nickel Base Hastelloy, Haynes 242, Inconel 600, 625, 718, Invar, Kovar, Monel, Nimonic, Rene 41, 77, 95, Udimet, Waspaloy	100 - 150	40 - 90	HEM* Profile	10%	1.5x	130	.0033	.0040	.0047	.0053	.0060
		100 - 150	40 - 90	HEM* Profile	7%	1.5x	130	.0039	.0047	.0055	.0063	.0071
		105 - 180	40 - 90	Finishing	3%	1.5x	110	.0064	.0077	.0090	.0102	.0115
	Titanium 6Al-4V, Commercially Pure, Titanium Aluminide	180 - 350	100 - 160	HEM* Profile	10%	1.5x	325	.0033	.0040	.0047	.0053	.0060
		180 - 350	100 - 160	HEM* Profile	7%	1.5x	325	.0038	.0045	.0053	.0063	.0071
		160 - 300	100 - 220	Finishing	3%	1.5x	250	.0064	.0077	.0090	.0102	.0115
	Titanium Ti 10-2-3, Beta 21S, Ti5553	120 - 180	80 - 140	HEM* Profile	10%	1.5x	150	.0023	.0028	.0033	.0038	.0043
		120 - 180	80 - 140	HEM* Profile	7%	1.5x	150	.0027	.0033	.0039	.0045	.0051
		80 - 140	100 - 120	Finishing	3%	1.5x	115	.0045	.0054	.0064	.0074	.0083

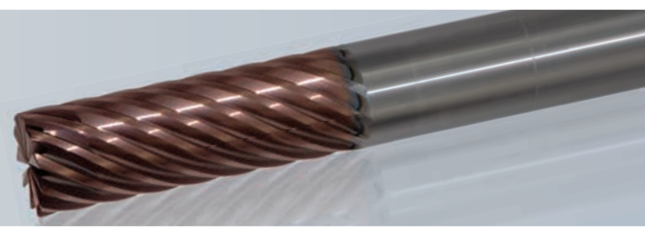
HEM* = High Efficiency Machining

MXR End Mills Cutting Data Recommendations



ISO Grade	Material / Grade	SFM Hardness		Application	Recommended Starting Parameters (<32Rc)									
		< 32Rc	> 32Rc		Rad DOC % of DIA	Axial DOC x DIA	SFM Starting (<32Rc)	1/8	1/4	3/8	1/2	5/8	3/4	1
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	.0002	.0005	.0011	.0014	.0018	.0023	.0027
		70 - 120	40 - 90	Heavy Profile	15%	.75x	100	.0003	.0007	.0015	.0020	.0025	.0032	.0038
		150 - 210	80 - 100	HEM Profile	8%	1.25x	170	.0004	.0009	.0020	.0026	.0033	.0042	.0050
	Iron Base A-286, Discaloy Incoloy 800-802, Multimet, 16-25-6	60 - 90	40 - 70	Full Slotting	100%	.25x	70	.0003	.0008	.0015	.0019	.0025	.0030	.0035
		80 - 140	40 - 70	Heavy Profile	15%	.75x	120	.0004	.0011	.0021	.0026	.0035	.0042	.0049
		150 - 200	60 - 80	HEM Profile	8%	1.25x	170	.0006	.0015	.0028	.0034	.0046	.0055	.0065
	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	.0002	.0005	.0011	.0015	.0019	.0022	.0026
		70 - 120	40 - 90	Heavy Profile	15%	.75x	90	.0003	.0007	.0015	.0021	.0027	.0031	.0036
		100 - 150	70 - 120	HEM Profile	8%	1.50x	125	.0004	.0009	.0020	.0028	.0035	.0041	.0048
	Titanium 6Al-4V, Commercially Pure, Titanium Aluminide	120 - 180	80 - 120	Full Slotting	100%	.5x	140	.0003	.0008	.0015	.0020	.0025	.0030	.0034
		120 - 200	90 - 130	Heavy Profile	30%	1x	160	.0003	.0008	.0016	.0022	.0027	.0033	.0037
		200 - 450	100 - 140	HEM Profile	10%	1.5x	350	.0005	.0013	.0025	.0033	.0042	.0050	.0057
	Titanium Ti 10-2-3, Beta 21S, Ti 5553	80 - 120	60 - 100	Full Slotting	100%	.25x	100	.0002	.0005	.0011	.0015	.0018	.0022	.0026
		90 - 140	80 - 120	Heavy Profile	20%	1x	120	.0003	.0006	.0014	.0019	.0023	.0028	.0033
		100 - 150	80 - 120	HEM Profile	8%	1.5x	140	.0004	.0009	.0020	.0028	.0033	.0041	.0048

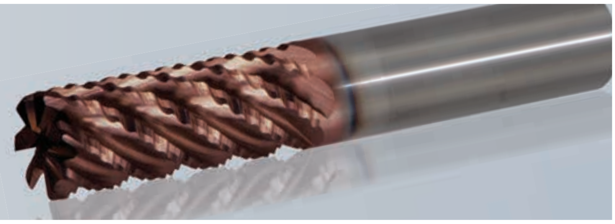
HXR End Mills Cutting Data Recommendations



ISO Grade	Material / Grade	SFM Hardness		Application	Recommended Starting Parameters (<32Rc)								
		< 32Rc	> 32Rc		Rad DOC % of DIA	Axial DOC x DIA	SFM Starting (<32Rc)	3/8	1/2	5/8	3/4	1	1-1/4
S	**Cobalt Base** Haynes 21, 25, L-605, Mar-M302, NASA Co-W-Re, Stellite, Ultimet	90-160	40 - 90	HEM Profile	10%	1.25x	125	.0018	.0023	.0030	.0038	.0045	.0053
		90-160	40 - 90	HEM Profile	7%	1.25x	125	.0022	.0027	.0035	.0045	.0053	.0063
		70- 140	40 - 90	Finishing	3%	2x	100	.0032	.0041	.0053	.0067	.0079	.0094
	Iron Base A-286, Discaloy Incoloy 800-802, Multimet, 16-25-6	100 -160	40 - 70	HEM Profile	10%	1.25x	140	.0025	.0031	.0042	.0050	.0058	.0067
		100 -160	40 - 70	HEM Profile	7%	1.25x	140	.0029	.0036	.0049	.0059	.0069	.0078
		90 - 135	40 - 70	Finishing	3%	2x	110	.0044	.0055	.0073	.0088	.0103	.0117
	Nickel Base Hastelloy, Haynes 242, Inconel 600, 625, 718, Invar, Kovar, Monel, Nimonic, Rene 41, 77, 95, Udimet, Waspaloy	100 - 150	40 - 90	HEM Profile	10%	1.5x	125	.0018	.0025	.0032	.0037	.0043	.0050
		100 - 150	40 - 90	HEM Profile	7%	1.5x	125	.0022	.0029	.0037	.0043	.0051	.0059
		105 - 180	40 - 90	Finishing	3%	2x	110	.0032	.0044	.0056	.0064	.0076	.0088
	Titanium 6Al-4V, Commercially Pure, Titanium Aluminide	180 - 350	100 - 160	HEM Profile	10%	1.5x	325	.0025	.0033	.0042	.0050	.0057	.0065
		180 - 350	100 - 160	HEM Profile	7%	1.5x	325	.0029	.0039	.0049	.0059	.0067	.0076
		160 - 300	100 - 220	Finishing	3%	2x	250	.0044	.0059	.0073	.0088	.0100	.0114
	Titanium Ti 10-2-3, Beta 21S, Ti5553	120 - 180	80 - 140	HEM Profile	10%	1.5x	150	.0018	.0025	.0030	.0037	.0043	.0050
		120 - 180	80 - 140	HEM Profile	7%	1.5x	150	.0022	.0029	.0035	.0043	.0051	.0059
		80 - 140	100 - 120	Finishing	3%	2x	115	.0032	.0044	.0053	.0064	.0076	.0088

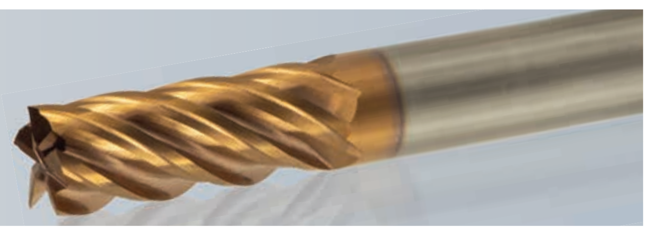
HEM* = High Efficiency Machining

RXR End Mills Cutting Data Recommendations



ISO Grade	Material / Grade	SFM Hardness		Application	Recommended Starting Parameters (<32Rc)							
		< 32Rc	> 32Rc		Rad DOC % of DIA	Axial DOC x DIA	SFM Starting (<32Rc)	1/2	5/8	3/4	1	1-1/4
S	**Cobalt Base** Haynes 21, 25, L-605 Mar-M302, NASA Co-W-Re, Stellite, Ultimet	70 - 120	30 - 70	Heavy Profile	10%	1.5x	95	.0027	.0030	.0035	.0040	.0045
		70 - 120	30 - 70	HEM Profile	5-7%	1.5x	95	.0031	.0035	.0041	.0047	.0053
		55 - 105	30 - 70	Finishing	3%	1.5x	75	.0047	.0053	.0062	.0070	.0079
	Iron Base A-286, Discaloy Incoloy 800-802, Multimet, 16-25-6	75 - 120	30 - 55	Heavy Profile	10%	1.5x	105	.0030	.0035	.0040	.0045	.0050
		75 - 120	30 - 55	HEM Profile	5-7%	1.5x	105	.0035	.0041	.0047	.0053	.0059
		70 - 100	30 - 55	Finishing	3%	1.5x	85	.0053	.0062	.0070	.0079	.0088
	Nickel Base Hastelloy, Haynes 242, Inconel 600, 625, 718, Invar, Kovar, Monel, Nimonic, Rene 41, 77, 95, Udimet, Waspaloy	75 - 115	30 - 70	Heavy Profile	10%	1.5x	95	.0035	.0042	.0051	.0058	.0066
		75 - 115	30 - 70	HEM Profile	5-7%	1.5x	95	.0041	.0050	.0059	.0069	.0078
		60 - 105	75 - 90	Finishing	3%	1.5x	90	.0044	.0053	.0064	.0073	.0085

TRX End Mills Cutting Data Recommendations

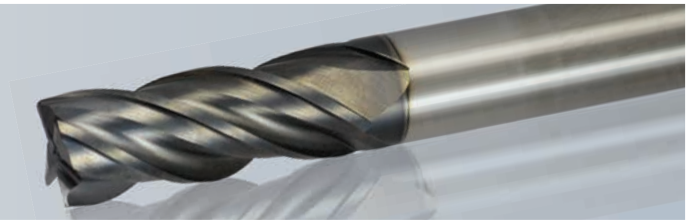


ISO Grade	Material / Grade	SFM Hardness		Application	Recommended Starting Parameters (<32Rc)									
		< 32Rc	> 32Rc		Rad DOC % of DIA	Axial DOC x DIA	SFM Starting (<32Rc)	1/4	3/8	1/2	5/8	3/4	1	1-1/4
S	**Titanium** 6Al-4V, Commercially Pure, Titanium Aluminide	160 - 225	100 - 160	Full Slotting	100%	1x	200	.0011	.0018	.0021	.0025	.0030	.0035	.0040
		180 - 300	100 - 160	Heavy Profile	20%	1.5x	230	.0013	.0023	.0026	.0031	.0038	.0044	.0050
		225 - 350	100 - 160	HEM Profile	7%	2x	325	.0021	.0035	.0041	.0049	.0059	.0069	.0078
		180 - 300	100 - 220	Finishing	2-3%	3x	260	.0034	.0058	.0067	.0080	.0096	.0112	.0128
	Titanium Ti 10-2-3, Beta 21S, Ti 5553	80 - 110	60 - 100	Full Slotting	100%	.5x	90	.0010	.0017	.0021	.0025	.0029	.0034	.0039
		90 - 120	80 - 100	Heavy Profile	20%	1x	95	.0013	.0022	.0026	.0031	.0036	.0043	.0049
		95 - 125	80 - 110	HEM Profile	12%	1.5x	105	.0015	.0027	.0032	.0038	.0045	.0052	.0060
		90 - 130	100 - 120	Finishing	3%	2x	120	.0032	.0056	.0067	.0080	.0093	.0109	.0125

Radial Milling Cutter (RMC) Cutting Data Recommendations

ISO Grade	Material / Grade	Lens Shape					Barrel Shape					Conical Taper Shape A&B					Oval Shape				
		SFM	Fz (in)				SFM	Fz (in)				SFM	Fz (in)				SFM	Fz (in)			
			1/4	3/8	1/2	5/8		1/4	3/8	1/2	5/8		1/4	3/8	1/2	5/8		1/4	3/8	1/2	5/8
P	**Carbon Steel** 10XX, 11XX 12XX, 15XX	900	.0010	.0015	.0020	.0025	900	.0013	.0019	.0025	.0031	900	.0008	.0011	.0015	.0019	900	.0013	.0019	.0025	.0031
	Alloy Steel 13XX, 40XX, 41XX, 43XX, 44XX, 46XX, 47XX, 48XX	800	.0010	.0015	.0020	.0025	825	.0010	.0015	.0020	.0025	825	.0008	.0011	.0015	.0019	825	.0010	.0015	.0020	.0025
	Mold & Die Steel 300M, 4340, 52100, M50, A2, D2, H13, L2, M2, P20, S7, T15, W2	650	.0008	.0011	.0015	.0019	675	.0008	.0011	.0015	.0019	675	.0005	.0008	.0010	.0013	675	.0008	.0011	.0015	.0019
	Tool Steel PM STEELS	600	.0005	.0008	.0010	.0013	650	.0005	.0008	.0010	.0013	650	.0005	.0008	.0010	.0013	650	.0005	.0008	.0010	.0013
M	**Austenitic Stainless** 301, 302, 303, 304/304L/304H, 316/316L, 317L, 321/321H, 347/347H, Nitronic, 309/309S, 310/310S/310H, 330	400	.0005	.0008	.0010	.0013	275	.0005	.0008	.0010	.0013	275	.0005	.0008	.0010	.0013	275	.0005	.0008	.0010	.0013
	Martensitic Stainless 403, 405, 409, 410/410S/410HT, 416/416HT, 420, 422, 430, 440C	500	.0005	.0008	.0010	.0013	325	.0005	.0008	.0010	.0013	325	.0005	.0008	.0010	.0013	325	.0005	.0008	.0010	.0013
	Precipitation Stainless 13-8 PH, 15-5 PH, 15-7 PH, 17-4 PH, 17-7 PH, S143	300	.0003	.0004	.0005	.0006	200	.0003	.0004	.0005	.0006	200	.0003	.0004	.0005	.0006	200	.0003	.0004	.0005	.0006
K	**Cast Iron Grey** 20A, 25A, 30A, 35A, 40A, 45A, 50A	1000	.0013	.0019	.0025	.0031	925	.0013	.0019	.0025	.0031	925	.0010	.0015	.0020	.0025	925	.0013	.0019	.0025	.0031
	Cast Ductile / Nodular 40010, 60-40-18, 65-45-12, 32518	900	.0010	.0015	.0020	.0025	825	.0010	.0015	.0020	.0025	825	.0010	.0015	.0020	.0025	825	.0010	.0015	.0020	.0025
N	**Aluminum**	2300	.0013	.0019	.0025	.0031	1950	.0013	.0019	.0025	.0031	1950	.0010	.0015	.0020	.0025	1950	.0013	.0019	.0025	.0031
	Brass / Bronze	1900	.0010	.0015	.0020	.0025	1300	.0010	.0015	.0020	.0025	1300	.0008	.0011	.0015	.0019	1300	.0013	.0019	.0025	.0031
	Copper Alloys	900	.0010	.0015	.0020	.0025	600	.0010	.0015	.0020	.0025	600	.0010	.0015	.0020	.0025	600	.0010	.0015	.0020	.0025
	Magnesium	1800	.0018	.0026	.0035	.0044	1300	.0018	.0026	.0035	.0044	1300	.0018	.0026	.0035	.0044	1300	.0018	.0026	.0035	.0044
S	**Cobalt Base** Haynes 21, 25, L-605, Mar-M302, NASA Co- W-Re, Stellite, Ultimet	250	.0003	.0004	.0005	.0006	100	.0003	.0004	.0005	.0006	100	.0003	.0004	.0005	.0006	100	.0003	.0004	.0005	.0006
	Iron Base A-286, Discaloy, Incoloy 800-802, Multimet, 16-25-6	250	.0003	.0004	.0005	.0006	100	.0003	.0004	.0005	.0006	100	.0003	.0004	.0005	.0006	100	.0003	.0004	.0005	.0006
	Nickel Base Hastelloy, Haynes 242, Inconel 600, 625, 718, Kovar, Monel, Nimonic, Rene 41, 77, 95 Udimet, Waspaloy	250	.0003	.0004	.0005	.0006	100	.0003	.0004	.0005	.0006	100	.0003	.0004	.0005	.0006	100	.0003	.0004	.0005	.0006
	Titanium 6AI-4V, Commercially Pure Aluminide	500	.0008	.0011	.0015	.0019	325	.0003	.0004	.0005	.0006	325	.0008	.0011	.0015	.0019	325	.0008	.0011	.0015	.0019
	Titanium Ti 0-2-3, Beta 21S, Ti 5553	400	.0005	.0008	.0010	.0013	250	.0005	.0008	.0010	.0013	250	.0005	.0008	.0010	.0013	250	.0005	.0008	.0010	.0013

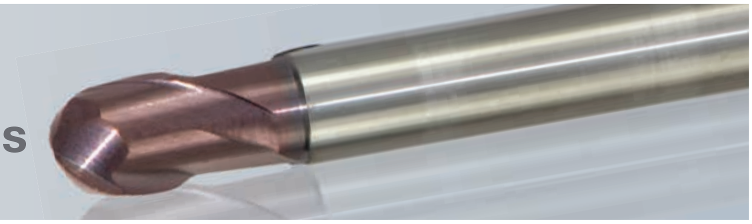
SMC Premium Cutting Data Recommendations



ISO Grade	Material / Grade	SFM Hardness		Application	Recommended Starting Parameters (<32Rc)								
		< 32Rc	> 32Rc		Rad DOC % of DIA	Axial DOC x DIA	SFM Starting (<32Rc)	1/4	3/8	1/2	5/8	3/4	1
P	**Carbon Steel** 10XX, 11XX 12XX, 15XX	400 - 600	150 - 250	Full Slotting	100%	.5x	350	.0016	.0025	.0028	.0036	.0044	.0050
		350 - 650	150 - 250	Heavy Profile	33%	1.25x	400	.0017	.0027	.0030	.0038	.0047	.0053
		500 - 850	225 - 325	HEM* Profile	15%	2x	550	.0022	.0035	.0039	.0050	.0062	.0070
		350 - 450	200 - 300	Finishing	3-5%	2x	450	.0041	.0064	.0071	.0092	.0112	.0128
	Alloy Steel 13XX, 40XX, 41XX, 43XX 44XX, 46XX, 47XX, 48XX	275 - 400	100 - 200	Full Slotting	100%	.5x	325	.0016	.0025	.0028	.0036	.0044	.0050
		300 - 450	150 - 225	Heavy Profile	33%	1.25x	350	.0017	.0027	.0030	.0038	.0047	.0053
		450 - 750	175 - 300	HEM* Profile	15%	2x	500	.0022	.0035	.0039	.0050	.0062	.0070
		375 - 450	200 - 250	Finishing	3-5%	2x	450	.0041	.0064	.0071	.0092	.0112	.0128
	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	.0012	.0017	.0024	.0028	.0033	.0038
		225 - 375	70 - 150	Heavy Profile	33%	1.25x	275	.0013	.0018	.0026	.0030	.0035	.0040
		350 - 500	150 - 275	HEM* Profile	10%	2x	400	.0020	.0028	.0040	.0047	.0055	.0063
		300 - 400	125 - 225	Finishing	3-5%	2x	350	.0031	.0043	.0061	.0071	.0084	.0097
	Tool Steel PM STEELS	125 - 275		Full Slotting	100%	.5x	200	.0010	.0020	.0025	.0030	.0035	.0040
		175 - 325		Heavy Profile	25%	1.25x	250	.0012	.0023	.0029	.0035	.0040	.0046
		275 - 475		HEM* Profile	10%	2x	350	.0017	.0033	.0042	.0050	.0058	.0067
		250 - 350		Finishing	3-5%	2x	350	.0026	.0051	.0064	.0077	.0089	.0102
M	**Austenitic Stainless** 201, 302, 303, 304/304L/304H, 316/316L, 317L, 321/321H, 347/347H, Nitronic, 309/309S, 310S/310H, 330	130 - 210	60 - 130	Full Slotting	100%	.75x	150	.0011	.0020	.0022	.0027	.0033	.0043
		160 - 220	60 -130	Heavy Profile	33%	1.25x	175	.0012	.0021	.0023	.0029	.0035	.0046
		300 - 500	150 - 275	HEM* Profile	15%	2x	375	.0015	.0028	.0031	.0038	.0046	.0060
		160 - 220	115 - 180	Finishing	2-5%	2x	175	.0030	.0054	.0060	.0073	.0090	.0117
	Martensitic Stainless 403, 405, 409, 410/410S/410HT, 416/416HT, 420, 422, 430, 440C	160 - 260	80 - 200	Full Slotting	100%	.5x	200	.0008	.0015	.0017	.0023	.0026	.0033
		180 - 280	80 - 200	Heavy Profile	25%	1.25x	225	.0009	.0017	.0020	.0027	.0030	.0038
		275 - 450	125 - 250	HEM* Profile	10%	2x	375	.0013	.0025	.0028	.0038	.0043	.0055
		200 - 280	120 - 220	Finishing	2-5%	2x	225	.0022	.0041	.0046	.0063	.0071	.0090
	Precipitation Stainless 13-8 PH, 15-5 PH, 15-7 PH 17-4 PH, 17-7 PH S143	130 - 180	80 - 160	Full Slotting	100%	.5x	125	.0008	.0015	.0017	.0023	.0026	.0033
		145 - 200	80 - 100	Heavy Profile	25%	1.25x	150	.0009	.0017	.0020	.0027	.0030	.0038
		225 - 450	125 - 250	HEM* Profile	10%	2x	375	.0013	.0025	.0028	.0038	.0043	.0055
		200 - 260	120 - 220	Finishing	2-5%	2x	200	.0022	.0041	.0046	.0063	.0071	.0090
K	**Cast Iron Grey** 20A, 25A, 30A, 35A, 40A, 45A, 50A	250 - 400	130 - 300	Full Slotting	100%	.5x	375	.0016	.0025	.0030	.0035	.0040	.0046
		250 - 450	170 - 300	Heavy Profile	33%	1.25x	425	.0017	.0027	.0032	.0037	.0043	.0049
		300 - 550	350 - 500	HEM* Profile	10%	2x	500	.0027	.0042	.0050	.0058	.0067	.0077
		300 - 400	300 - 400	Finishing	3-5%	2x	400	.0041	.0064	.0077	.0089	.0102	.0117
	Cast Ductile / Nodular 40010, 60-40-18, 65-45-12 32510, 32518	120 - 300	80 - 140	Full Slotting	100%	.5x	275	.0010	.0020	.0025	.0030	.0035	.0040
		220 - 350	100 - 150	Heavy Profile	33%	1.25x	325	.0011	.0021	.0027	.0032	.0037	.0043
		300 - 500	170 - 270	HEM* Profile	10%	2x	450	.0017	.0033	.0042	.0050	.0058	.0067
		275 - 400	140 - 200	Finishing	3-5%	2x	400	.0026	.0051	.0064	.0077	.0089	.0102

HEM* = High Efficiency Machining

MDR Ballnose Cutting Data Recommendations



ISO Grade	Material / Grade	Machinability Rating	Application	Recommended Starting Parameters (<32Rc)											
				Axial DOC	SFM Hardness			SFM Starting (<50Rc)	Chip Load Per Tooth						
					< 40Rc	40-50Rc	> 50Rc		1/16	3/32	1/8	3/16	1/4	3/8	1/2
P	**Mold & Die Steel** 300M, 4340, 52100, M50, A2, D2, H13, L2, M2, P20, S7, T15, W2	35-65%	Finishing	3%	750-1000	800-1200	800-1200	1000	.0008	.0012	.0022	.0025	.0030	.0045	.0060

Inquiry Sheet Solid Carbide End Mills

Customer Information

Company		Contact	
Address		Phone	
		E-Mail	
		Date	

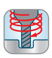
Application

☐ Roughing

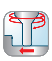
☐ Finishing

☐ Corner Milling 

☐ Slotting 

☐ Circular Milling 

☐ Pocket Milling 

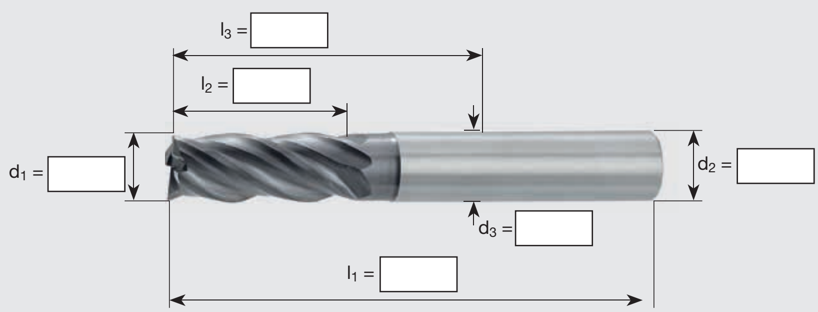
☐ Dynamic Milling 

☐ Other ______________________

Machine Information

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

Dimensions



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

Workpiece Data

Material	
Material Grade	
Hardness	
Depth of Cut	
Width of Cut	

Quantity & Pricing

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

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

Notes

Customer Information

Company		Contact	
Address		Phone	
		E-Mail	
		Date	

Material

Material Type	
Material Designation	
Hardness	
Additional Info	

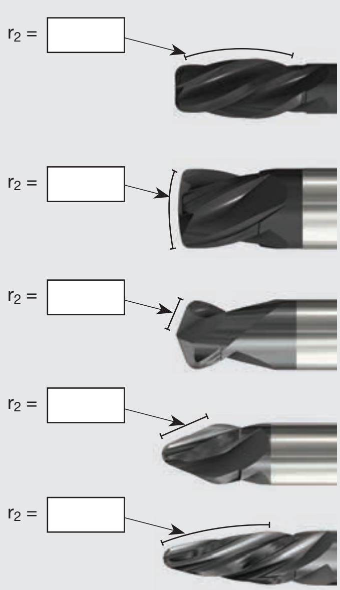
Machine (5-Axis Required)

Spindle Adaptation		
Max. Spindle Speed		
Lubrication	☐ Oil	☐ Emulsion ___________%
	☐ MQL	☐ Air Pressure
	☐ Dry	☐ Dust Collection

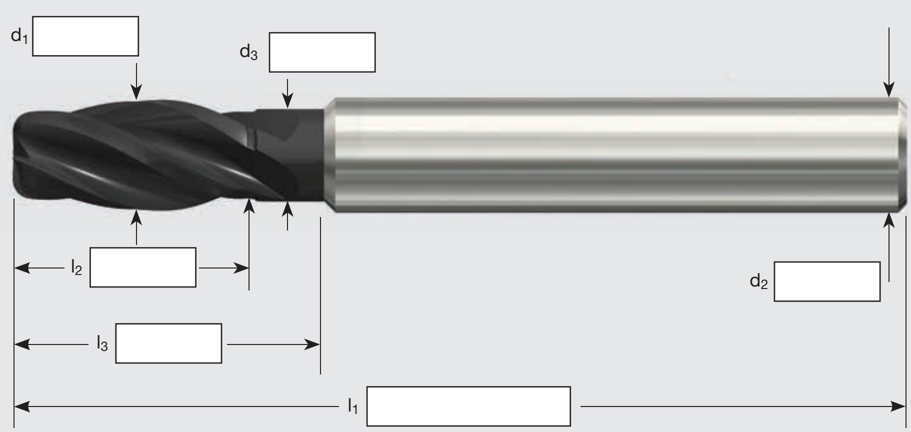
Tool Data

Quantity Breaks **(Minimum 6 Pieces)**		Coating	☐ Uncoated	☐ TIN
			☐ ESG	☐ Other
			☐ ESR	______________________
			☐ ZRN	

Face Geometry



Construction Dimensions



Type of Shank

☐ **HA** 

☐ **HE** 

☐ **HB** 

Notes

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