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is the **standard**[®]

TuffCut[®] X-AL

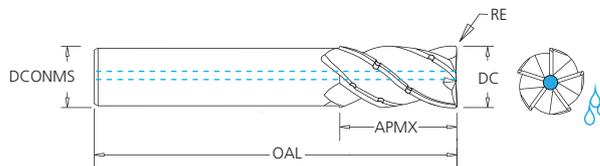
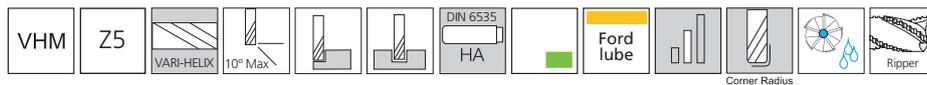
Series 137V5R

5 Flute Radius End Mill
Aluminium Rougher



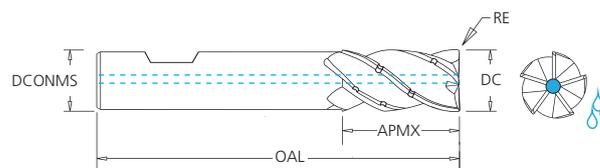
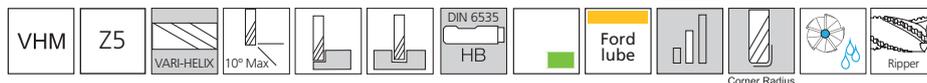
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TuffCut® X-AL Series 137V5R



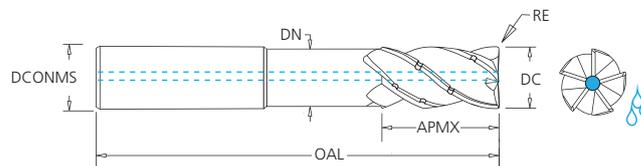
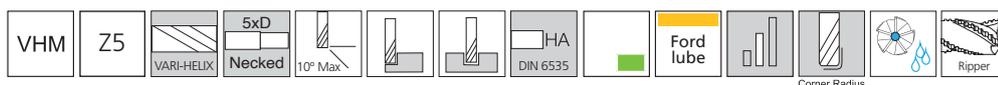
Tool No.	DC	DCONMS	OAL	APMX	RE
137V5R 1203-1.0RALC	12.0	12.0	87.0	38.0	1.0
137V5R 1203-3.0RALC	12.0	12.0	87.0	38.0	3.0
137V5R 1603-1.0RALC	16.0	16.0	104.0	50.0	1.0
137V5R 1603-3.0RALC	16.0	16.0	104.0	50.0	3.0

TuffCut® X-AL Series 137V5R-W



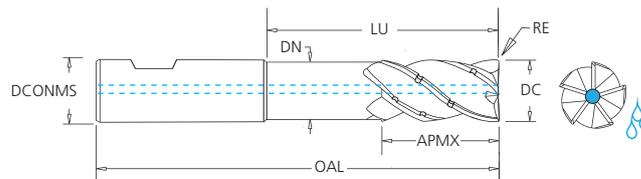
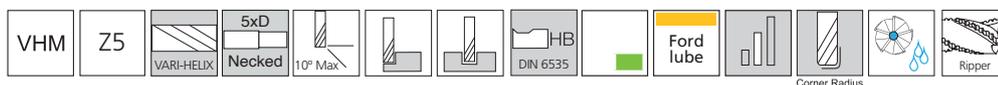
Tool No.	DC	DCONMS	OAL	APMX	RE
137V5R 1203-1.0RALCW	12.0	12.0	87.0	38.0	1.0
137V5R 1603-1.0RALCW	16.0	16.0	104.0	50.0	1.0

TuffCut® X-AL Series 137V5R N5



Tool No.	DC	DCONMS	OAL	APMX	LU	DN	RE
137V5R 12N5-1.0RALC	12.0	12.0	108.0	32.0	62.0	11.6	1.0
137V5R 16N5-1.0RALC	16.0	16.0	133.0	42.0	82.0	15.6	1.0

TuffCut® X-AL Series 137V5R N5-W



Tool No.	DC	DCONMS	OAL	APMX	LU	DN	RE
137V5R 12N5-1.0RALCW	12.0	12.0	108.0	32.0	62.0	11.6	1.0
137V5R 16N5-1.0RALCW	16.0	16.0	133.0	42.0	82.0	15.6	1.0

TuffCut® X-AL Series 137V5R - Slotting with 3xD APMX

Recommended Cutting Data | Conditions de coupe recommandées | Empfohlene Schnittdaten | Dati di taglio Raccomandati | Zalecane Parametry

Workpiece Material Group	ISO	Coolant			ADOC (Ap)		End Mill Diameter (mm)	
		Emulsion	Air	MQL	ADOC (Ap)		12	16
					50%	100%	← Consideration should be given to the axial depth of cut (ADOC) to avoid exceeding machine power limitations.	
					Vc - M/Min		fz - mm/tooth	
Aluminium (≤ 10 Si)	N	•	x	○	300 - 2000		0.100	0.134
Aluminium (> 10 Si)		•	x	○	250 - 750		0.100	0.134
Aluminium Lithium		•	x	○	300 - 1500		0.100	0.134

• Preferred ○ Possible x Not Possible

TuffCut® X-AL Series 137V5R - Profile Milling with 3xD APMX

Recommended Cutting Data | Conditions de coupe recommandées | Empfohlene Schnittdaten | Dati di taglio Raccomandati | Zalecane Parametry

Workpiece Material Group	ISO	Coolant			RWOC (Ae)				End Mill Diameter (mm)	
		Emulsion	Air	MQL	RWOC (Ae)				12	16
					10%	20%	30%	40-60%	← Multiply fz by this factor based on ae. When finishing, use the standard fz per chart below. Only add chip thinning when roughing or semi-finishing.	
					1.67	1.2	1.1	N/A	fz - mm/tooth	
Aluminium (≤ 10 Si)	N	•	○	•	300 - 2000				0.140	0.187
Aluminium (> 10 Si)		•	○	•	250 - 750				0.140	0.187
Aluminium Lithium		•	○	•	300 - 1500				0.140	0.187

• Preferred ○ Possible x Not Possible

Notes

- Cutting data provided should be considered advisory only. Adjustments may be necessary depending on the application, workpiece rigidity, machine tool, etc.
- The 137V5R should only be used in accurate tool holders with high gripping power. ER collet type holders are not recommended.

Helical interpolation recommendations:

- Under optimal conditions, with proper through coolant flow, up to 10° helical ramp angles are achievable with the 137V5R. Without through coolant max 5° to 2 x D depth
- A reduction of 30-50% in feed per tooth (fz) is recommended
- Recommended hole diameter = 1.9 x D
- To achieve a flat bottom, use a ramping diameter at least equal to tool diameter – 2 x corner radius.

RWOC (ae)	Chip Thickness Compensation Factor
1%	5.00
2%	3.57
3%	2.93
5%	2.30
7%	1.96
8%	1.84

RWOC (ae)	Chip Thickness Compensation Factor
10%	1.67
13%	1.49
15%	1.40
20%	1.2
30%	1.1

During profile milling with a radial width of less than 50% of the cutter diameter, the actual chip thickness at the cutting edge is less than the programmed feed per tooth (fz). The accompanying table shows the increase in fz by given radial width percentage to adjust for chip thinning. Multiply your recommended fz by the appropriate feed factor to establish the correct feed rate.

TuffCut® X-AL Series 137V5R N5 - Slotting with 2.5xD APMX

Recommended Cutting Data · Conditions de coupe recommandées · Empfohlene Schnittdaten · Dati di taglio Raccomandati · Zalecane Parametry

Workpiece Material Group	ISO	Coolant			ADOC (Ap)		End Mill Diameter (mm)	
		Emulsion	Air	MQL	ADOC (Ap)		12	16
					50%	100%	← Consideration should be given to the axial depth of cut (ADOC) to avoid exceeding machine power limitations.	
					Vc - M/Min		fz - mm/tooth	
Aluminium (≤ 10 Si)	N	•	x	○	300 - 2000		0.100	0.134
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• Preferred ○ Possible x Not Possible

TuffCut® X-AL Series 137V5R N5 - Profile Milling with 2.5xD APMX

Recommended Cutting Data · Conditions de coupe recommandées · Empfohlene Schnittdaten · Dati di taglio Raccomandati · Zalecane Parametry

Workpiece Material Group	ISO	Coolant			RWOC (Ae)				End Mill Diameter (mm)	
		Emulsion	Air	MQL	RWOC (Ae)				12	16
					10%	20%	30%	40-50%	← Multiply fz by this factor based on ae. When finishing, use the standard fz per chart below. Only add chip thinning when roughing or semi-finishing.	
					1.67	1.2	1.1	N/A	fz - mm/tooth	
Aluminium (≤ 10 Si)	N	•	○	•	300 - 2000				0.140	0.187
Aluminium (> 10 Si)		•	○	•	250 - 750				0.140	0.187
Aluminium Lithium		•	○	•	300 - 1500				0.140	0.187

• Preferred ○ Possible x Not Possible

Notes

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Helical interpolation recommendations:

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Without through coolant max 5° to 2 x D depth
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Where **high performance**
is the **standard**[®]



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