M.A. FORD
High Performance Cutting Tools

*Where **high performance** is the **standard***®

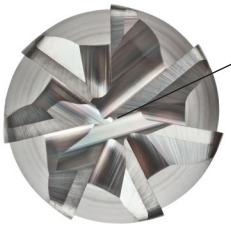
NEW PRODUCT 2025

APG
ADVANCED PRODUCT GROUP

TuffCut® XV Series XV7 / XV7CB

www.mafordeurope.com

TuffCut® XV Series XV7 / XV7CB



Centre-cutting end geometry
for increased ramp angles & improved floor finishes

38° helix, variable pitch geometry
for smooth cutting action & reduced harmonics

Thick core design
for increased strength in tough-to-machine materials

Continuous edge & staggered chipbreaker options
for both roughing & finishing applications

ALtima® Q coating
provides optimal heat & wear resistance allowing for increased tool life

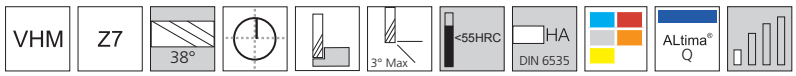
With high performance cutting geometry based off our proven and highly successful 180 series, the XV7 features a unique centre-cutting end geometry that allows for aggressive helical ramp angles (up to 3-5°) in difficult-to-machine materials such as titanium, high temp alloys, and stainless steels while also providing superior floor finishes. The newly developed ALtima® Q coating provides increased heat and wear resistance and has shown tool life increases of over 66% in certain workpiece materials.

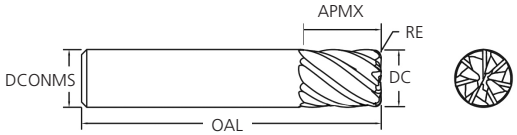
Suitable materials

Applications

The XV7 was developed for optimal metal removal rates and strength in dynamic milling strategies in tough-to-machine materials such as stainless steels, titanium, and high temp alloys. Available in a choice of flute lengths from 1xD up to 4xD, as well as a full range of standard aerospace corner radius options, the XV7 is an extremely versatile offering that can help boost both productivity and tool life.

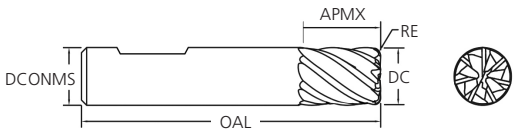
TuffCut® XV Series XV7 1xD





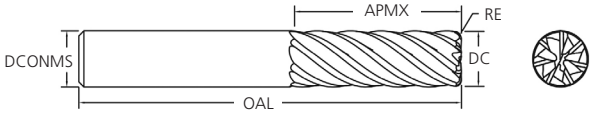
Tool No.	DC	DCONMS	OAL	APMX	RE
XV7M1001AQ	10.0	10.0	51.0	12.0	
XV7M1001-R0.5AQ	10.0	10.0	51.0	12.0	0.5

TuffCut® XV Series XV7 1xD-W



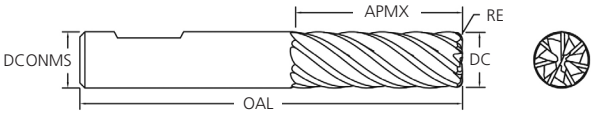
Tool No.	DC	DCONMS	OAL	APMX	RE
XV7M1201AQW	12.0	12.0	63.0	14.0	
XV7M1201-R0.5AQW	12.0	12.0	63.0	14.0	0.5
XV7M1601AQW	16.0	16.0	75.0	18.0	
XV7M1601-R0.5AQW	16.0	16.0	75.0	18.0	0.5

TuffCut® XV Series XV7 3xD



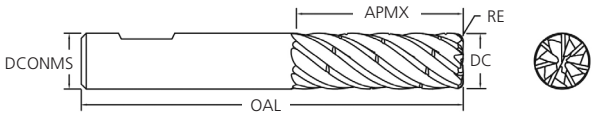
Tool No.	DC	DCONMS	OAL	APMX	RE
XV7M0603-R0.25AQ	6.0	6.0	63.0	21.0	0.25
XV7M0803-R0.5AQ	8.0	8.0	72.0	27.0	0.5
XV7M1003-R0.5AQ	10.0	10.0	80.0	33.0	0.5

TuffCut® XV Series XV7 3xD-W



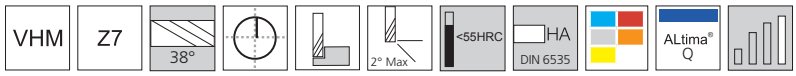
Tool No.	DC	DCONMS	OAL	APMX	RE
XV7M1203-R0.5AQW	12.0	12.0	93.0	40.0	0.5
XV7M1203-R1.0AQW	12.0	12.0	93.0	40.0	1.0
XV7M1203-R3.0AQW	12.0	12.0	93.0	40.0	3.0
XV7M1603-R1.0AQW	16.0	16.0	110.0	54.0	1.0
XV7M1603-R3.0AQW	16.0	16.0	110.0	54.0	3.0

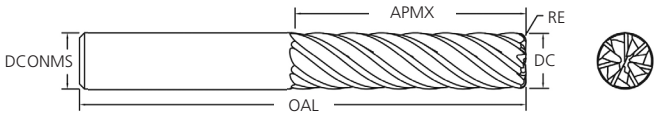
TuffCut® XV Series XV7CB 3xD-W



Tool No.	DC	DCONMS	OAL	APMX	RE
XV7CBM1003-R0.5AQW	10.0	10.0	80.0	33.0	0.5
XV7CBM1203-R0.5AQW	12.0	12.0	93.0	40.0	0.5
XV7CBM1603-R1.0AQW	16.0	16.0	110.0	54.0	1.0

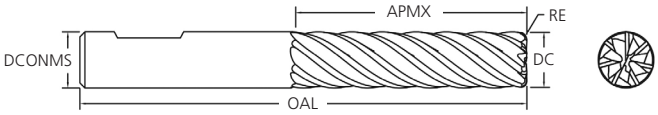
TuffCut® XV Series XV7 4xD





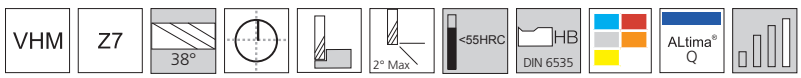
Tool No.	DC	DCONMS	OAL	APMX	RE
XV7M0604-R0.25AQ	6.0	6.0	63.0	25.0	0.25
XV7M0804-R0.5AQ	8.0	8.0	75.0	33.0	0.5
XV7M1004-R0.5AQ	10.0	10.0	90.0	43.0	0.5

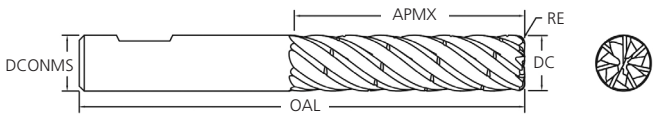
TuffCut® XV Series XV7 4xD-W



Tool No.	DC	DCONMS	OAL	APMX	RE
XV7M1204-R0.5AQW	12.0	12.0	104.0	51.0	0.5
XV7M1204-R3.0AQW	12.0	12.0	104.0	51.0	3.0
XV7M1604-R1.0AQW	16.0	16.0	123.0	67.0	1.0
XV7M1604-R3.0AQW	16.0	16.0	123.0	67.0	3.0

TuffCut® XV Series XV7CB 4xD-W





Tool No.	DC	DCONMS	OAL	APMX	RE
XV7CBM1004-R0.5AQW	10.0	10.0	90.0	43.0	0.5
XV7CBM1204-R0.5AQW	12.0	12.0	104.0	51.0	0.5
XV7CBM1604-R1.0AQW	16.0	16.0	125 .0	67.0	1.0

TuffCut® XV XV7 / XV7CB Series - Profile Milling with 1xD Cutting Length - Metric

Recommended Cutting Data

Workpiece Material Group	ISO	Coolant			RWOC (Ae)				End Mill Diameter (mm)					
									6	8	10	12	16	20
		Emulsion	Air	MQL	5%	10%	15%	20%	← 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.					
					2.3	1.67	1.4	1.2						
					Vc - M/Min				fz - mm/tooth					
Low Carbon Steels	P	o	•	o	380	350	300	290	0.036	0.048	0.060	0.072	0.096	0.120
Medium Carbon Steels		o	•	o	270	260	240	230	0.036	0.048	0.060	0.072	0.096	0.120
Alloy Steels		o	•	o	260	240	220	210	0.036	0.048	0.060	0.072	0.096	0.120
Die / Tool Steels		o	•	o	220	200	180	170	0.036	0.048	0.060	0.072	0.096	0.120
Free Machining Stainless Steels	M	•	•	o	205	180	150	140	0.036	0.048	0.060	0.072	0.096	0.120
Austenitic Stainless Steels		•	x	o	160	140	100	90	0.030	0.040	0.050	0.060	0.080	0.100
Difficult Stainless Steels		•	x	o	110	90	70	65	0.024	0.032	0.040	0.048	0.064	0.080
PH Stainless Steels		•	•	o	160	140	100	90	0.024	0.032	0.040	0.048	0.064	0.080
Cobalt Chrome Alloys		•	x	o	120	100	80	75	0.024	0.032	0.040	0.048	0.064	0.080
Duplex (22%)		•	x	o	75	65	60	55	0.024	0.032	0.040	0.048	0.064	0.080
Super Duplex (25%)		•	x	o	70	60	55	50	0.024	0.032	0.040	0.048	0.064	0.080
High Temp Alloys	S	•	x	x	50	40	-	-	0.024	0.032	0.040	0.048	0.064	0.080
Titanium Alloys		•	x	x	120	90	80	75	0.024	0.032	0.040	0.048	0.064	0.080
Gray Cast Irons	K	•	o	o	360	350	300	290	0.036	0.048	0.060	0.072	0.096	0.120
Ductile Cast Irons		•	o	o	270	260	240	230	0.036	0.048	0.060	0.072	0.096	0.120
Malleable Cast Irons		•	o	o	160	150	140	130	0.036	0.048	0.060	0.072	0.096	0.120
Hardened Steels 45-50 HRC	H	o	•	o	160	140	130	110	0.030	0.040	0.050	0.060	0.080	0.100
Hardened Steels 50-55 HRC		o	•	o	150	130	115	100	0.024	0.032	0.040	0.048	0.064	0.080

• Preferred o 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 XV7 / XV7CB 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 coolant flow/air blast techniques, up to 5° helical ramp angles are achievable with the XV7 / XV7CB in most materials
- A reduction of 30-50% in feed per tooth (fz) are recommended
- Recommended hole diameter = 1.9 x D

TuffCut® XV XV7 / XV7CB Series - Profile Milling with 3xD Cutting Length - Metric

Recommended Cutting Data

Workpiece Material Group	ISO	Coolant			RWOC (Ae)		End Mill Diameter (mm)					
							6	8	10	12	16	20
		Emulsion	Air	MQL	5%	10%	← 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.					
					2.3	1.67						
					Vc - M/Min		fz - mm/tooth					
Low Carbon Steels	P	o	•	o	380	350	0.036	0.048	0.060	0.072	0.096	0.120
Medium Carbon Steels		o	•	o	270	260	0.036	0.048	0.060	0.072	0.096	0.120
Alloy Steels		o	•	o	260	240	0.036	0.048	0.060	0.072	0.096	0.120
Die / Tool Steels		o	•	o	220	200	0.036	0.048	0.060	0.072	0.096	0.120
Free Machining Stainless Steels	M	•	•	o	205	180	0.036	0.048	0.060	0.072	0.096	0.120
Austenitic Stainless Steels		•	x	o	160	140	0.030	0.040	0.050	0.060	0.080	0.100
Difficult Stainless Steels		•	x	o	110	90	0.024	0.032	0.040	0.048	0.064	0.080
PH Stainless Steels		•	•	o	160	140	0.024	0.032	0.040	0.048	0.064	0.080
Cobalt Chrome Alloys		•	x	o	120	100	0.024	0.032	0.040	0.048	0.064	0.080
Duplex (22%)		•	x	o	75	65	0.024	0.032	0.040	0.048	0.064	0.080
Super Duplex (25%)		•	x	o	70	60	0.024	0.032	0.040	0.048	0.064	0.080
High Temp Alloys	S	•	x	x	45	38	0.024	0.032	0.040	0.048	0.064	0.080
Titanium Alloys		•	x	x	120	90	0.024	0.032	0.040	0.048	0.064	0.080
Gray Cast Irons	K	•	o	o	360	350	0.036	0.048	0.060	0.072	0.096	0.120
Ductile Cast Irons		•	o	o	270	260	0.036	0.048	0.060	0.072	0.096	0.120
Malleable Cast Irons		•	o	o	160	150	0.036	0.048	0.060	0.072	0.096	0.120
Hardened Steels 45-50 HRC	H	o	•	o	160	140	0.030	0.040	0.050	0.060	0.080	0.100
Hardened Steels 50-55 HRC		o	•	o	150	130	0.024	0.032	0.040	0.048	0.064	0.080

• Preferred o 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 XV7 / XV7CB 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 coolant flow/air blast techniques, up to 5° helical ramp angles are achievable with the XV7 / XV7CB in most materials
- A reduction of 30-50% in feed per tooth (fz) are recommended
- Recommended hole diameter = 1.9 x D

TuffCut® XV XV7 / XV7CB Series - Profile Milling with 4xD Cutting Length - Metric

Recommended Cutting Data

Workpiece Material Group	ISO	Coolant			RWOC (Ae)		End Mill Diameter (mm)					
							6	8	10	12	16	20
		Emulsion	Air	MQL	3%	5%	← 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.					
					2.93	2.3						
					Vc - M/Min		fz - mm/tooth					
Low Carbon Steels	P	o	•	o	320	300	0.024	0.032	0.040	0.048	0.064	0.080
Medium Carbon Steels		o	•	o	250	240	0.024	0.032	0.040	0.048	0.064	0.080
Alloy Steels		o	•	o	230	220	0.024	0.032	0.040	0.048	0.064	0.080
Die / Tool Steels		o	•	o	210	200	0.024	0.032	0.040	0.048	0.064	0.080
Free Machining Stainless Steels	M	•	•	o	200	180	0.024	0.032	0.040	0.048	0.064	0.080
Austenitic Stainless Steels		•	x	o	150	140	0.018	0.024	0.030	0.036	0.048	0.060
Difficult Stainless Steels		•	x	o	100	90	0.015	0.020	0.025	0.030	0.040	0.050
PH Stainless Steels		•	•	o	150	140	0.015	0.020	0.025	0.030	0.040	0.050
Cobalt Chrome Alloys		•	x	o	90	80	0.015	0.020	0.025	0.030	0.040	0.050
Duplex (22%)		•	x	o	75	65	0.015	0.020	0.025	0.030	0.040	0.050
Super Duplex (25%)		•	x	o	55	45	0.015	0.020	0.025	0.030	0.040	0.050
High Temp Alloys	S	•	x	x	40	35	0.012	0.016	0.020	0.024	0.032	0.040
Titanium Alloys		•	x	x	90	80	0.015	0.020	0.025	0.030	0.040	0.050
Gray Cast Irons	K	•	o	o	300	290	0.024	0.032	0.040	0.048	0.064	0.080
Ductile Cast Irons		•	o	o	230	215	0.024	0.032	0.040	0.048	0.064	0.080
Malleable Cast Irons		•	o	o	140	120	0.024	0.032	0.040	0.048	0.064	0.080
Hardened Steels 45-50 HRC	H	o	•	o	140	130	0.024	0.032	0.040	0.048	0.064	0.080
Hardened Steels 50-55 HRC		o	•	o	120	110	0.012	0.016	0.020	0.024	0.032	0.040

• Preferred o 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 XV7 / XV7CB 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 coolant flow/air blast techniques, up to 2° helical ramp angles are achievable with the XV7 / XV7CB in most materials
- A reduction of 30-50% in both cutting speed (Vc) & feed per tooth (fz) are recommended
- Recommended hole diameter = 1.9 x D

TuffCut® XV XV7 / XV7CB Series - Chip Thickness Compensation Factors - Metric

RWOC (Ae)	Chip Thicknesss Compensation Factor
5%	2.30
7%	1.96
8%	1.84
10%	1.67
13%	1.49
15%	1.40
20%	1.20

During profile milling with a radial width of less than 50% of the cutter diameter, the actual chip thickness at the cutting edge is reduced relative to the programmed feed per tooth (fz).
The accompanying table provides a factor that indicates how much the fz can be increased, depending on the radial width of the cut.
To determine the correct feed rate, multiply the recommended fz from the table by the appropriate compensation factor.

Notes

The M.A. Ford interactive cutting data app
- Everything you need at your fingertips

Our interactive app for iOS and Android devices makes tool cutting data calculations simpler and faster by minimising text input and using 3D graphics that respond instantly to changing cutting parameters, using smart-phone or tablet touch screens.

Developed around our proven cutting data, the app supports a wide range of ISO materials including steel, aluminium alloys, stainless steel and titanium, as well as cast iron, hardened steels and exotic alloys.

Once basic information has been selected from 'drop down' menus, such as tool type, diameter and material, the app allows you to 'drag' the tool graphic display to change the radial engagement and depth of cut, which instantly calculates speeds and feeds.

Colour coded feedback guides you toward the recommended cutting conditions based on the chosen input parameters. User over-ride controls allow cutting data to be fine-tuned for individual applications, as well as enabling calculations to be made that compare multiple scenarios instantly.

Proven cutting data can be stored via the 'Save' feature for future reference or shared with other app users. A hyperlink to M.A. Ford Europe's website also allows immediate access to online information and downloads.

Radial chip thinning data is also calculated for use with high-speed machining (HSM) strategies, which can significantly reduce cycle times and improve tool life.

Get it on Google Play

Download on the App Store

For further information please contact our support team on: 01332 267960

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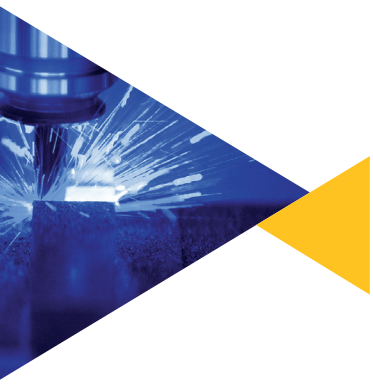

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ADVANCED PRODUCT GROUP

M.A. FORDMAX
RANGE

TuffCut® Endmills

cyclone Drills

Countersinks

Twister® Drills

Edgehog® Burrs

TrueSize® Reamers

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