

*sutton*<sup>®</sup>



# MILLING CARBIDE

- Slotting • Roughing • Finishing • Trochoidal
- Dynamic • Profiling • Ramping

ISO	VDI	Material Group	Sutton	
P	A	Steel	N	UNI
M	R	Stainless Steel	VA	
K	F	Cast Iron	GG	
N	N	Non-Ferrous Metals, Aluminiums & Coppers	Al W	
S	S	Titaniums & Super Alloys	Ti Ni	
H	H	Hard Materials (≥ 45 HRC)	H	

^ VDI 3323 material groups can also be determined by referring to the material cross reference listing in the application guide at the back of this catalogue.

## HARMONY UNI

Page



Catalogue Code  
 Type of Cut: **Slotting**  
**Finishing**  
**Universal**  
**Trochoidal/Dynamic**  
**Roughing**  
**Ramping**  
**Profiling**  
 Material  
 Surface Finish  
 Sutton Designation  
 Standard  
 Shank Tolerance

Page	245	246	247	251	252	253	254	255	256	256	256	257
Code	E482	E535 /E572	E559	E426	E533	E422	E424	E430	E483	E484	E485	E549
Slotting	●	●	●	●	●	●	●	●				
Finishing	●	●	●	●	●	●	●	●				
Universal	●	●	●	●	●	●	●	●				●
Trochoidal/Dynamic	●	●	●	●	●			●	●	●	●	
Roughing												●
Ramping	●					●	●					
Profiling												
Material	ULTRA	VHM-ULTRA						VHM-ULTRA			ULTRA	
Surface Finish	TiSiNos	AlCrN						TiSiNos			AlCrN	
Sutton Designation	UNI	UNI						UNI			UNI	
Standard	DIN6527L	DIN 6527L	DIN 6527L	DIN 6527L	DIN6527K	DIN6527K	DIN6527L	-	3 XL	4 XL	5 XL	DIN 6527L
Shank Tolerance	h5	h6	h6	h5	h5	h5	h5	h5	h6	h6	h6	h6

ISO	VDI 3323	Material	Condition	HB	N/mm <sup>2</sup>	245	246	247	251	252	253	254	255	256	256	256	257	
P	1	Steel - Non-alloy, cast & free cutting	- 0.15 %C	A	125	440	●	●	●	●	●	●	●	●	●	●	●	
	2		- 0.45 %C	A	190	640	●	●	●	●	●	●	●	●	●	●	●	●
	3			QT	250	840	●	●	●	●	●	●	●	●	●	●	●	●
	4		- 0.75 %C	A	270	910	●	●	●	●	●	●	●	●	●	●	●	●
	5		QT	300	1010	●	●	●	●	●	●	●	●	●	●	●	●	●
	6	Steel - Low alloy & cast < 5% of alloying elements		A	180	610	●	●	●	●	●	●	●	●	●	●	●	●
	7			QT	275	930	●	●	●	●	●	●	●	●	●	●	●	●
	8			QT	300	1010	●	●	●	●	●	●	●	●	●	●	●	●
	9			QT	350	1180	●	○	○	●	●	●	●	●	○	○	○	○
	10	Steel - High alloy, cast & tool		A	200	680	●	●	●	●	●	●	●	●	●	●	●	●
	11			HT	325	1100	●	○	○	●	○	●	●	○	○	○	○	
	12	Steel - Corrosion resistant & cast	Ferritic / Martensitic	A	200	680	●	○	○	●	○			○	○	○	○	●
	13		Martensitic	QT	240	810	●	○	○	○				○	○	○	○	○
M	14.1	Stainless Steel	Austenitic	AH	180	610	●	○	○	○	●	●	●	●	●	●	●	
	14.2		Duplex		230	780	●	○	○	●	○	○	○	○	○	○	○	
	14.3		Precipitation Hardening		300	780	●			●	●	●	●	○	○	○	○	
K	15	Cast Iron - Grey (GG)	Ferritic / Pearlitic		180	610	●	●	●	●	●	●	●	●	●	●	●	
	16		Pearlitic		260	880	●	○	○	●	○	○	○	○	○	○	○	
	17	Cast Iron - Nodular (GGG)	Ferritic		160	570	●	●	●	●	●	●	●	●	●	●	●	
	18		Pearlitic		250	840	●	○	○	●	○	○	○	○	○	○		
	19	Cast Iron - Malleable	Ferritic		130	460	●	●	●	●	●	●	●	●	●	●	●	
20	Pearlitic			230	780	●	●	●	●	●	●	●	●	●	●	●		
N	21	Aluminum & Magnesium - wrought alloy	Non Heat Treatable		60	210	○	○	○	○								
	22		Heat Treatable	AH	100	360	○	○	○	○								
	23	Aluminum & Magnesium - cast alloy ≤12% Si	Non Heat Treatable		75	270	○	○	○	○								
	24		Heat Treatable	AH	90	320	○	○	○	○								
	25	Al & Mg - cast alloy >12% Si	Non Heat Treatable		130	460	○											
	26	Copper & Cu alloys (Brass/Bronze)	Free cutting, Pb > 1%		110	390	○											
	27		Brass (CuZn, CuSnZn)		90	320	○											
	28		Bronze (CuSn)		100	360	○											
	29	Non-metallic - Thermosetting & fiber-reinforced plastics																
	30	Non-metallic - Hard rubber, wood etc.																
S	31	High temp. alloys	Fe based	A	200	680	○	○	○	○	○	○	○	○	○	○	○	
	32			AH	280	950	○	○	○	○	○	○	○	○	○	○	○	
	33		Ni / Co based	A	250	840	○	○	○	○	○	○	○	○	○	○	○	
	34			AH	350	1180	○			○	○	○	○	○	○	○		
	35			C	320	1080	○	○	○	○	○	○	○	○	○	○		
	36	Titanium & Ti alloys	CP Titanium		400	MPa	○	○	○	○	●	●	●	●	○	○	○	
	37.1		Alpha alloys		860	MPa	○	○	○	○	●	●	●	●	○	○	○	
	37.2		Alpha / Beta alloys	A	960	MPa	○	○	○	○	●	●	●	●	○	○	○	
	37.3			AH	1170	MPa	○	○	○	○	●	●	●	●	○	○	○	
	37.4		Beta alloys	A	830	MPa	○	○	○	○	○	○	○	○	○	○	○	
37.5		AH	1400	MPa	○			●	●	●	●	●						
H	38.1	Hardened steel		HT	45	HRC	○	○	○	●	○	●	●					
	38.2			HT	55	HRC				●	●	●						
	39.1			HT	58	HRC				●	●	●						
	39.2			HT	62	HRC												
	40			Cast Iron	Chilled	C	400	1350	●	●	●	●	●	●	●			
	41	HT	55			HRC	○	○	○	●	○	●	●					

Condition: A (Annealed), AH (Age Hardened), C (Cast), HT (Hardened & Tempered), QT (Quenched & Tempered)





ISO	VDI	Material Group	Sutton
P	A	Steel	N
M	R	Stainless Steel	VA
K	F	Cast Iron	GG
N	N	Non-Ferrous Metals, Aluminiums & Coppers	Al W
S	S	Titaniums & Super Alloys	Ti Ni
H	H	Hard Materials (≥ 45 HRC)	H

^ VDI 3323 material groups can also be determined by referring to the material cross reference listing in the application guide at the back of this catalogue.

Page	HARMONY Ni						
	270	271	272	273	274	275	276
	E472	E474	E486	E493	E487	E494	E481
	•	•	•	•	•	•	
	•	•	•	•	•	•	
	•	•	•	•	•	•	
							•
	<b>VHM-ULTRA</b>						
	<b>Xceed</b>						
	Ni	Ni	Ni	Ni	Ni	Ni	Ti / Ni / VA
	DIN 6527L	DIN 6527L	3XL	3XL	4XL	4XL	-
	h6	h6	h6	h6	h6	h6	h5

Catalogue Code  
 Type of Cut: **Slotting**  
**Finishing**  
**Universal**  
**Trochoidal/Dynamic**  
**Roughing**  
**Ramping**  
**Profiling**  
 Material  
 Surface Finish  
 Sutton Designation  
 Standard  
 Shank Tolerance

ISO	VDI 3323	Material	Condition	HB	N/mm <sup>2</sup>								
P	1	Steel - Non-alloy, cast & free cutting	- 0.15 %C	A	125	440							
	2		- 0.45 %C	A	190	640							
	3			QT	250	840							
	4		- 0.75 %C	A	270	910							
	5			QT	300	1010							
	6	Steel - Low alloy & cast < 5% of alloying elements		A	180	610	○	○	○	○	○	○	
	7			QT	275	930	○	○	○	○	○	○	
	8			QT	300	1010	○	○	○	○	○	○	●
	9			QT	350	1180	○	○	○	○	○	○	●
	10	Steel - High alloy, cast & tool		A	200	680	○	○	○	○	○	○	
	11			HT	325	1100	○	○	○	○	○	○	●
	12	Steel - Corrosion resistant & cast	Ferritic / Martensitic	A	200	680	○	○	○	○	○	○	
	13		Martensitic	QT	240	810	○	○	○	○	○	○	
M	14.1	Stainless Steel	Austenitic	AH	180	610	●	●	●	●	●	●	
	14.2		Duplex		230	780	●	●	●	●	●	●	
	14.3		Precipitation Hardening		300	780	●	●	●	●	●	●	
K	15	Cast Iron - Grey (GG)	Ferritic / Pearlitic		180	610							
	16		Pearlitic		260	880							
	17	Cast Iron - Nodular (GGG)	Ferritic		160	570							
	18		Pearlitic		250	840							
	19		Ferritic		130	460							
20	Cast Iron - Malleable	Pearlitic		230	780								
N	21	Aluminum & Magnesium - wrought alloy	Non Heat Treatable		60	210							
	22		Heat Treatable	AH	100	360							
	23	Aluminum & Magnesium - cast alloy ≤12% Si	Non Heat Treatable		75	270							
	24		Heat Treatable	AH	90	320							
	25	Al & Mg - cast alloy >12% Si	Non Heat Treatable		130	460							
	26	Copper & Cu alloys (Brass/Bronze)	Free cutting, Pb > 1%		110	390							
	27		Brass (CuZn, CuSnZn)		90	320							
	28		Bronze (CuSn)		100	360							
	29	Non-metallic - Thermosetting & fiber-reinforced plastics											
	30	Non-metallic - Hard rubber, wood etc.											
S	31	High temp. alloys	Fe based	A	200	680	●	●	●	●	●	○	
	32			AH	280	950	●	●	●	●	●	●	
	33		Ni / Co based	A	250	840	●	●	●	●	●	○	
	34			AH	350	1180	●	●	●	●	●	●	
	35			C	320	1080	●	●	●	●	●	●	
	36	Titanium & Ti alloys	CP Titanium		400 MPa							○	
	37.1		Alpha alloys		860 MPa							○	
	37.2		Alpha / Beta alloys	A	960 MPa							○	
	37.3			AH	1170 MPa							●	
	37.4		Beta alloys	A	830 MPa							○	
	37.5			AH	1400 MPa							●	
H	38.1	Hardened steel		HT	45 HRC								
	38.2			HT	55 HRC								
	39.1			HT	58 HRC								
	39.2			HT	62 HRC								
	40	Cast Iron	Chilled	C	400	1350							
41	HT			55 HRC									

Condition: A (Annealed), AH (Age Hardened), C (Cast), HT (Hardened & Tempered), QT (Quenched & Tempered)

**HARMONY Ti**

**HARMONY VH**

**HARMONY**

277	278	279	280	281	282	283	283	284
E464	E466	E468	E470	E476	E477	E491	E492	E721
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
<b>VHM-ULTRA</b>						<b>ULTRA</b>		
<i>AINova</i>						<i>Xceed</i>		
Ti	Ti	Ti	Ti	Ti	Ti	Ti	Ti	Ti - IK
DIN 6527L	DIN 6527L	3XL	4XL	3XL	4XL	4XL	DIN 6527L	
h6	h6	h6	h6	h6	h6	h6	h6	

285	286	287	288	289
E495	E496	E497	E498	E499
●	●	●		
			●	●
<b>VHM-ULTRA</b>				
<i>Durana</i>				
VH				
DIN 6527L				
h6				

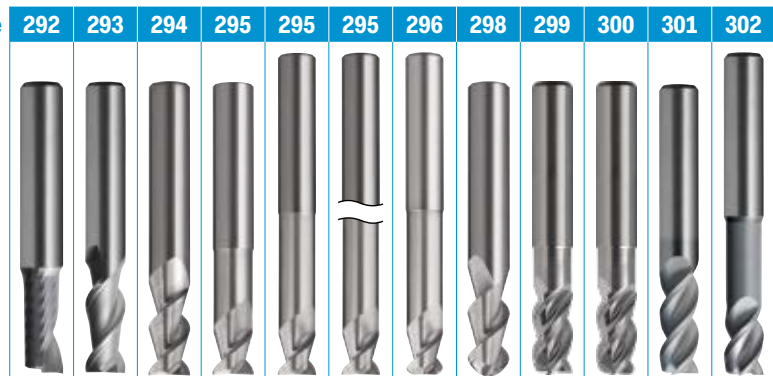
290	291	ISO
E566	E568	
●	●	
<b>VHM-ULTRA</b>		
<i>Aidura</i>		
VH		
DIN 6527L		
h6		
		VDI 322
		1
		2
		3
		4
		5
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		9
		10
		11
		12
		13
		14.1
		14.2
		14.3
		15
		16
		17
		18
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		20
		21
		22
		23
		24
		25
		26
		27
		28
		29
		30
		31
		32
		33
		34
		35
		36
●	●	37
●	●	37.1
●	●	37.2
●	●	37.3
●	●	37.4
●	●	37.5
		38.1
●	●	38.2
●	●	39.1
●	●	39.2
		40
●	●	41

Slotting  
Finishing  
Universal  
Troc/Dyn  
Roughing  
Ramping  
Profiling

ISO	VDI	Material Group	Sutton
P	A	Steel	N
M	R	Stainless Steel	VA
K	F	Cast Iron	GG
N	N	Non-Ferrous Metals, Aluminiums & Coppers	Al W
S	S	Titaniums & Super Alloys	Ti Ni
H	H	Hard Materials (≥ 45 HRC)	H

^ VDI 3323 material groups can also be determined by referring to the material cross reference listing in the application guide at the back of this catalogue.

Page



Catalogue Code  
 Type of Cut: **Slotting**  
**Finishing**  
**Universal**  
**Trochoidal/Dynamic**  
**Roughing**  
**Ramping**  
**Profiling**  
 Material  
 Surface Finish  
 Sutton Designation  
 Standard  
 Shank Tolerance

Code	E444	E310	E660	E670	E671	E672	E673	E661	E480	E478	E400	E402
Slotting	●	●	●	●	●	●	●	●	●	●	●	●
Finishing			●	●	●	●	●	●	●	●	●	●
Universal	●	●	●	●	●	●	●	●	●	●	●	●
Trochoidal/Dynamic								●	●	●	●	●
Roughing	●	●						●	●	●	●	●
Ramping			●	●	●	●	●		●	●	●	●
Profiling								●				
Material	VHM	VHM	ULTRA	ULTRA	ULTRA	ULTRA	ULTRA	ULTRA	ULTRA	ULTRA	ULTRA	ULTRA
Surface Finish	BrT	BrT	BrT	ASX	ASX	ASX	CrN	CrN	BrT	BrT	CrN	CrN
Sutton Designation	Al	Al	Al	Al	Al	Al	Al	Al	Al	Al	Al	Al
Standard	-	DIN 6527L	-	-	DIN 6527L	DIN 6527L	DIN 6527L	DIN 6527L	DIN 6527L	DIN 6527L	DIN 6527L	-
Shank Tolerance	h6	h6	h6	h6	h5	h5	h5	h5	h5	h5	h5	h5

ISO	VDI 3323	Material	Condition	HB	N/mm <sup>2</sup>	E444	E310	E660	E670	E671	E672	E673	E661	E480	E478	E400	E402			
P	1	Steel - Non-alloy, cast & free cutting	- 0.15 %C	A	125	440														
	2			A	190	640														
	3		- 0.45 %C	QT	250	840														
	4			A	270	910														
	5			QT	300	1010														
	6	Steel - Low alloy & cast < 5% of alloying elements		A	180	610														
	7			QT	275	930														
	8			QT	300	1010														
	9			QT	350	1180														
	10	Steel - High alloy, cast & tool		A	200	680														
	11			HT	325	1100														
	12	Steel - Corrosion resistant & cast	Ferritic / Martensitic	A	200	680														
	13			QT	240	810														
M	14.1	Stainless Steel	Austenitic	AH	180	610														
	14.2			Duplex	230	780														
	14.3			Precipitation Hardening	300	780														
K	15	Cast Iron - Grey (GG)	Ferritic / Pearlitic		180	610														
	16				260	880														
	17	Cast Iron - Nodular (GGG)	Ferritic		160	570														
	18				250	840														
	19				130	460														
20	Cast Iron - Malleable	Pearlitic		230	780															
N	21	Aluminum & Magnesium - wrought alloy	Non Heat Treatable		60	210	●	●	●	●	●	●	●	●	●	●	●	●		
	22			AH	100	360	●	●	●	●	●	●	●	●	●	●	●	●		
	23	Aluminum & Magnesium - cast alloy ≤12% Si	Non Heat Treatable		75	270	●	●	●	●	●	●	●	●	●	●	●	●		
	24			AH	90	320	●	●	●	●	●	●	●	●	●	●	●	●		
	25	Al & Mg - cast alloy >12% Si	Non Heat Treatable		130	460	○	●	●	○	●	●	●	●	●	●	●	●		
	26	Copper & Cu alloys (Brass/Bronze)	Free cutting, Pb > 1%		110	390	○	●	●	○	●	●	●	●	●	●	●	●		
	27			Brass (CuZn, CuSnZn)		90	320		●	●	●	●	●	●	●	●	●	●		
	28			Bronze (CuSn)		100	360	○	●	●	○	●	●	●	●	●	●	●		
	29	Non-metallic - Thermosetting & fiber-reinforced plastics																		
	30	Non-metallic - Hard rubber, wood etc.																		
S	31	High temp. alloys	Fe based	A	200	680														
	32			AH	280	950														
	33			Ni / Co based	A	250	840													
	34				AH	350	1180													
	35				C	320	1080													
	36	Titanium & Ti alloys	CP Titanium		400 MPa															
	37.1			Alpha alloys	860 MPa															
	37.2			Alpha / Beta alloys	A	960 MPa														
	37.3				AH	1170 MPa														
	37.4			Beta alloys	A	830 MPa														
37.5		AH	1400 MPa																	
H	38.1	Hardened steel		HT	45 HRC															
	38.2			HT	55 HRC															
	39.1			HT	58 HRC															
	39.2			HT	62 HRC															
	40	Cast Iron	Chilled	C	400	1350														
41			HT	55 HRC																

Condition: A (Annealed), AH (Age Hardened), C (Cast), HT (Hardened & Tempered), QT (Quenched & Tempered)





303	304	306	307	307	308	309	310	311	312
E668	E669	E408	E674	E675	E446	E662	E663	E665	E667
•	•		•	•	•	•	•	•	•
•	•		•	•	•	•	•	•	•
•	•		•	•	•	•	•	•	•
•	•		•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•
<b>ULTRA</b>	<b>ULTRA</b>	<b>ULTRA</b>	<b>VHM-ULTRA</b>	<b>VHM</b>	<b>ULTRA</b>	<b>VHM-ULTRA</b>			
<i>HCR</i>	<i>CrN</i>	<i>BrT</i>	<i>HCR</i>	<i>HCR</i>	<i>BrT</i>	<i>BrT</i>	<b>HCR</b>		
Al	Al	Al	Al	Al	Al	Al-1K	Al-CB		
-	DIN 6527L	DIN 6527L	DIN 6527L	-	DIN 6527L	-	DIN 6527L		
h5	h5	h5	h5	h5	h5	h6	h6	h6	h6

### Micro

342	346	348	350	353	357	359
E580	E581	E582	E489	E598	E650	E490
•	•			•	•	
•	•			•	•	
				•	•	
		•	•			•
<b>VHM</b>	<b>VHM</b>	<b>VHM</b>	<b>VHM</b>	<b>VHM</b>	<b>VHM</b>	<b>ULTRA</b>
<i>TiSiN</i>	<i>TiSiN</i>	<i>Durana</i>	<i>TiSiN</i>	<i>NH</i>	<i>AICrN</i>	
NH	NH	VH	N	NH	NH	
-	-	-	-	-	-	
h6	h6	h6	h6	h6	h6	h6

Slotting  
Finishing  
Universal  
Trocc/Dyn  
Roughing  
Ramping  
Profiling

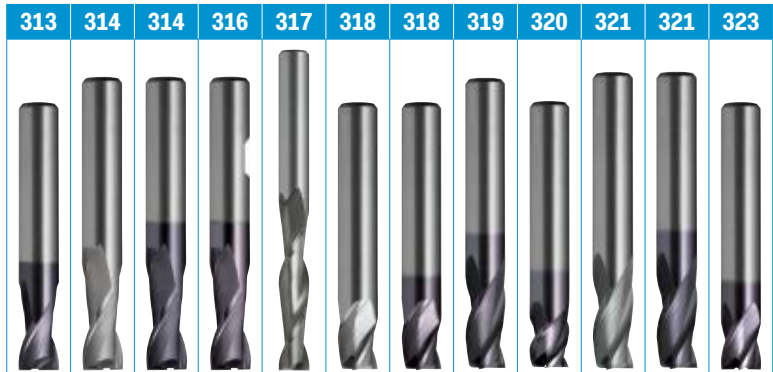
ISO	ISO
1	P
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14.1	M
14.2	
14.3	
15	K
16	
17	
18	
19	
20	N
21	
22	
23	
24	
25	
26	
27	
28	
29	S
30	
31	
32	
33	
34	
35	
36	
37.1	
37.2	H
37.3	
37.4	
37.5	
38.1	
38.2	
39.1	
39.2	
40	
41	

ISO	VDI	Material Group	Sutton	
P	A	Steel	N	UN
M	R	Stainless Steel	VA	
K	F	Cast Iron	GG	
N	N	Non-Ferrous Metals, Aluminiums & Coppers	Al W	
S	S	Titaniums & Super Alloys	Ti Ni	
H	H	Hard Materials (≥ 45 HRC)	H	

^ VDI 3323 material groups can also be determined by referring to the material cross reference listing in the application guide at the back of this catalogue.



Page



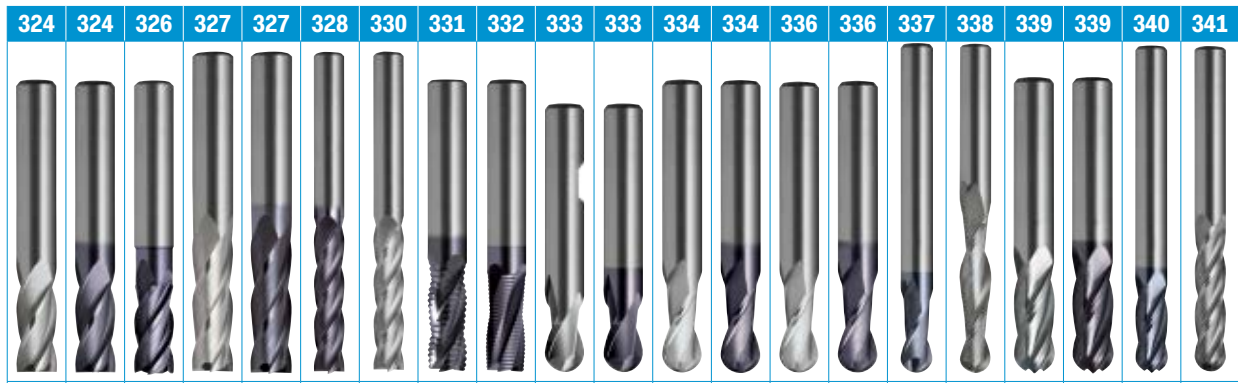
Catalogue Code  
 Type of Cut: Slotting  
 Finishing  
 Universal  
 Trochoidal/Dynamic  
 Roughing  
 Ramping  
 Profiling  
 Material  
 Surface Finish  
 Sutton Designation  
 Standard  
 Shank Tolerance

Model	E502	E600	E603	E507	E309	E509	E511	E515	E519/E523	E610	E611	E527
Type of Cut	•	•	•	•	•	•	•	•	•	•	•	•
Finishing						•	•	•	•	•	•	•
Universal						•	•	•	•	•	•	•
Trochoidal/Dynamic												
Roughing												
Ramping						•	•	•	•	•	•	
Profiling												
Material	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM
Surface Finish	TiAlN	Brt	TiAlN	TiAlN	Brt	Brt	TiAlN	TiAlN	TiAlN	Brt	TiAlN	TiAlN
Sutton Designation	N	N	N	N	N	N	N	N	W	N	N	N
Standard	DIN 6527K	-	DIN 6527L	-	DIN 6527K	DIN 6527K	DIN 6527L	DIN 6527K	-	DIN 6527K	-	DIN 6527K
Shank Tolerance	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6

ISO	VDI 3323	Material	Condition	HB	N/mm²	E502	E600	E603	E507	E309	E509	E511	E515	E519/E523	E610	E611	E527		
P	1	Steel - Non-alloy, cast & free cutting	- 0.15 %C	A	125	440	•	•	•	•	•	•	•	•	•	•	•	•	
	2		- 0.45 %C	A	190	640	•	•	•	•	•	•	•	•	•	•	•	•	•
	3			QT	250	840	•	•	•	•	•	•	•	•	•	•	•	•	•
	4		- 0.75 %C	A	270	910	•	•	•	•	•	•	•	•	•	•	•	•	•
	5			QT	300	1010	•	•	•	•	•	•	•	•	•	•	•	•	•
	6	Steel - Low alloy & cast < 5% of alloying elements	A	180	610	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	7		QT	275	930	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	8		QT	300	1010	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	9		QT	350	1180	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	10	Steel - High alloy, cast & tool	A	200	680	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	11		HT	325	1100	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	12	Steel - Corrosion resistant & cast	Ferritic / Martensitic	A	200	680	•	•	•	•	•	•	•	•	•	•	•	•	•
	13		Martensitic	QT	240	810	•	•	•	•	•	•	•	•	•	•	•	•	•
M	14.1	Stainless Steel	Austenitic	AH	180	610	•	•	•	•	•	•	•	•	•	•	•	•	
	14.2		Duplex		230	780	•	•	•	•	•	•	•	•	•	•	•	•	
	14.3		Precipitation Hardening		300	780	•	•	•	•	•	•	•	•	•	•	•	•	
K	15	Cast Iron - Grey (GG)	Ferritic / Pearlitic		180	610	•	•	•	•	•	•	•	•	•	•	•	•	
	16		Pearlitic		260	880	•	•	•	•	•	•	•	•	•	•	•	•	•
	17	Cast Iron - Nodular (GGG)	Ferritic		160	570	•	•	•	•	•	•	•	•	•	•	•	•	
	18		Pearlitic		250	840	•	•	•	•	•	•	•	•	•	•	•	•	•
	19		Ferritic		130	460	•	•	•	•	•	•	•	•	•	•	•	•	•
20	Cast Iron - Malleable	Pearlitic		230	780	•	•	•	•	•	•	•	•	•	•	•	•	•	
N	21	Aluminum & Magnesium - wrought alloy	Non Heat Treatable		60	210	•	•	•	•	•	•	•	•	•	•	•	•	
	22		Heat Treatable	AH	100	360	•	•	•	•	•	•	•	•	•	•	•	•	•
	23	Aluminum & Magnesium - cast alloy <12% Si	Non Heat Treatable		75	270	•	•	•	•	•	•	•	•	•	•	•	•	
	24		Heat Treatable	AH	90	320	•	•	•	•	•	•	•	•	•	•	•	•	•
	25	Al & Mg - cast alloy >12% Si	Non Heat Treatable		130	460	•	•	•	•	•	•	•	•	•	•	•	•	•
	26	Copper & Cu alloys (Brass/Bronze)	Free cutting, Pb > 1%		110	390	•	•	•	•	•	•	•	•	•	•	•	•	•
	27		Brass (CuZn, CuSnZn)		90	320	•	•	•	•	•	•	•	•	•	•	•	•	•
	28		Bronze (CuSn)		100	360	•	•	•	•	•	•	•	•	•	•	•	•	•
	29	Non-metallic - Thermosetting & fiber-reinforced plastics																	
	30	Non-metallic - Hard rubber, wood etc.																	
S	31	High temp. alloys	Fe based	A	200	680													
	32			AH	280	950													
	33		Ni / Co based	A	250	840													
	34			AH	350	1180													
	35			C	320	1080													
	36	Titanium & Ti alloys	CP Titanium		400	MPa													
	37.1		Alpha alloys		860	MPa													
	37.2		Alpha / Beta alloys	A	960	MPa													
37.3	AH			1170	MPa														
37.4	Beta alloys		A	830	MPa														
37.5		AH	1400	MPa															
H	38.1	Hardened steel	HT	45	HRC														
	38.2		HT	55	HRC														
	39.1		HT	58	HRC														
	39.2		HT	62	HRC														
	40	Cast Iron	Chilled	C	400	1350													
41	HT		55	HRC															

Condition: A (Annealed), AH (Age Hardened), C (Cast), HT (Hardened & Tempered), QT (Quenched & Tempered)

TECLINE



324	324	326	327	327	328	330	331	332	333	333	334	334	336	336	337	338	339	339	340	341
E333/E601	E604/E336	E635	E337	E340	E344/E637	E609	E547	E450	E453	E454	E602	E605	E551	E553	E555	E315	E606	E607	E557	E320

Slotting  
Finishing  
Universal  
Troc/Dyn  
Roughing  
Ramping  
Profiling

VHM	VHM	ULTRA	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM	ULTRA	VHM	VHM	VHM	ULTRA	VHM	
BrT	TiAlN	TiAlN	BrT	TiAlN	TiAlN	BrT	TiAlN	TiAlN	BrT	TiAlN	BrT	TiAlN	BrT	TiAlN	AlCrN	BrT	BrT	TiAlN	AlCrN	BrT
N	N	N	N	N	N	N	N	HR	N	N	N	N	N	N	N	N	N	N	N	N
-	-	-	-	-	-	DIN 6527L	DIN 6527L	DIN 6527K	-	-	DIN 6527L	-	-	-	-	-	-	-	-	
h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	h6	

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○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	26
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	27
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	28
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	○							●											○		37.1
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																					39.1
																					39.2
	●							●		●					●				●		40
																					41





# Endmills Carbide, 4 Flute, R40/42, Stub, Harmony UNI+



- Unique end gash design provides ramping up to 45° in soft steels.
- Versatile endmill, best suited for materials up to 35 HRC



## Fraise carbure 4 dents R40/42° universel + DIN 6527L Harmony

- Géométrie unique pour les applications de ramping jusqu'à 45° dans les aciers tendres.
- Fraise polyvalente, parfaite pour les matériaux jusqu'à 35Hrc



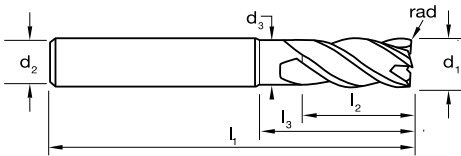
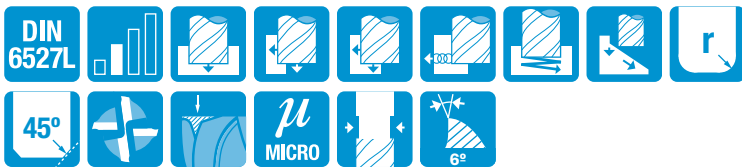
## Frese in metallo duro, 4 taglienti, R40/42 UNI+, DIN6527L, Harmony

- L'esclusivo design dello scarico in testa dopo il tagliente, consente di lavorare in rampa fino a 45 gradi negli acciai dolci.
- Fresa a candela versatile, ideale per materiali fino a 35 HRC



## Fresas de metal duro, 4 labios, R40/42 UNI+ DIN6527L, Harmony

- El diseño único de la hendidura final proporciona una rampa de hasta 45 grados en aceros blandos.
- Fresa versátil, más adecuada para materiales de hasta 35 HRC



Catalogue Code	<b>E482</b>
Discount Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>TiSiNos</b>
Sutton Designation	<b>UNI+</b>
Geometry	R40/42
Shank Form (DIN 6535)	HA
Shank Tolerance	h5

Vc Page #: 420 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
<b>0400</b>	<b>4.0</b>	57.0	11.0	18.0	6.0	3.8	4	0.15	E482 0400
<b>0500</b>	<b>5.0</b>	57.0	13.0	18.0	6.0	4.8	4	0.15	E482 0500
<b>0600</b>	<b>6.0</b>	57.0	13.0	20.0	6.0	5.8	4	0.20	E482 0600
<b>0800</b>	<b>8.0</b>	63.0	19.0	26.0	8.0	7.6	4	0.20	E482 0800
<b>1000</b>	<b>10.0</b>	72.0	22.0	30.0	10.0	9.5	4	0.30	E482 1000
<b>1200</b>	<b>12.0</b>	83.0	26.0	36.0	12.0	11.5	4	0.35	E482 1200
<b>1400</b>	<b>14.0</b>	83.0	26.0	36.0	14.0	13.5	4	0.35	E482 1400
<b>1600</b>	<b>16.0</b>	92.0	32.0	42.0	16.0	15.5	4	0.40	E482 1600
<b>2000</b>	<b>20.0</b>	104.0	38.0	52.0	20.0	19.5	4	0.50	E482 2000

ISO	P													M			K			N						S						H																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
<b>E482</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R35/38, Regular, Harmony UNI



- VHM-ULTRA grade of carbide for high performance
- 35/38° variable flute helix for chatter free milling
- AlCrN for longer tool life



## Fraise 4 dents carbure, R35/38°, DIN6527L

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 35/38° pour la suppression des vibrations
- Revêtement AlCrN pour une meilleure durée de vie



## Frese metallo duro, 4 Taglienti, R35/38, DIN6527L

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Elica tagliente variabile 35/38° per lavorazioni senza vibrazioni
- AlCrN per Ottimizzare vita utensile

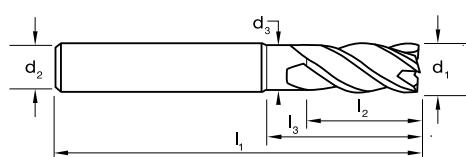
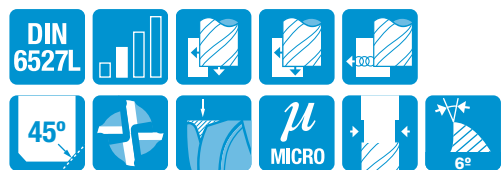


## Fresas de MD, 4 ranuras, R35/38, DIN6527L

- Grado de MD, VHM-ULTRA para alto rendimiento
- Hélice de ranura variable 35/38° para fresado sin vibraciones
- AlCrN para una mayor vida útil de la herramienta



watch the video



Vc Page #: 420 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Cnr Chamf	Item #	Item #
0300	3.0	57	8	19	6	2.8	4	0.04/0.08	E535 0300	E536 0300
0400	4.0	57	11	19	6	3.7	4	0.04/0.08	E535 0400	E536 0400
0500	5.0	57	13	20	6	4.6	4	0.08/0.12	E535 0500	E536 0500
0600	6.0	57	13	21	6	5.5	4	0.08/0.12	E535 0600	E536 0600
0800	8.0	63	19	27	8	7.5	4	0.08/0.12	E535 0800	E536 0800
1000	10.0	72	22	32	10	9.5	4	0.15/0.25	E535 1000	E536 1000
1200	12.0	83	26	38	12	11.2	4	0.15/0.25	E535 1200	E536 1200
1400	14.0	83	26	38	14	13.0	4	0.25/0.35	E535 1400	E536 1400
1600	16.0	92	32	44	16	15.0	4	0.25/0.35	E535 1600	E536 1600
1800	18.0	92	32	44	18	17.0	4	0.25/0.35	E535 1800	E536 1800
2000	20.0	104	38	54	20	19.0	4	0.25/0.35	E535 2000	E536 2000
2500	25.0	120	45	64	25	24.0	4	0.40/0.50	E535 2500	E536 2500



Catalogue Code	E535	E536
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	AlCrN	AlCrN
Sutton Designation	UNI	UNI
Geometry	R35/38	R35/38
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

	E572																																				
0635	1/4	2-1/2	1/2	11/16	1/4	-	4	0.004"	E572 0635																												
0794	5/16	2-1/2	13/16	1-3/16	5/16	-	4	0.008"	E572 0794																												
0953	3/8	2-1/2	7/8	1-1/4	3/8	-	4	0.008"	E572 0953																												
1111	7/16	3	1	1-1/2	7/16	-	4	0.008"	E572 1111																												
1270	1/2	3	1	1-1/2	1/2	-	4	0.008"	E572 1270																												
1588	5/8	3-1/2	1-1/4	1-3/4	5/8	-	4	0.011"	E572 1588																												
1905	3/4	4	1-1/2	2	3/4	-	4	0.011"	E572 1905																												
2540	1"	4	1-1/2	2	1	-	4	0.011"	E572 2540																												

ISO	P										M			K				N										S							H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41			
E535/E572	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E536	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R35/38, Cnr Rad, Regular, Harmony UNI



- VHM-ULTRA grade of carbide for high performance
- For precision finishing applications
- AlCrN for longer tool life



## Fraise 4 dents carbure, R35°/38°, Torique, DIN6527L

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 35/38° pour la suppression des vibrations
- Revêtement AlCrN pour une meilleure durée de vie



## Freses metallo duro, 4 Taglienti, R35/38, Toriche, DIN6527L

- VHM-ULTRA, grado di metallo duro per alte prestazioni
- Fresa ideale per lavorazioni di finitura
- AlCrN per Ottimizzare vita utensile

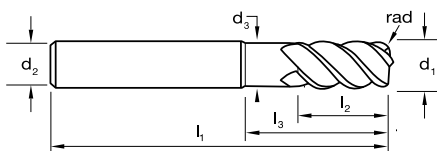


## Fresas de MD, 4 ranuras, R35/38, Tórica, DIN6527L

- Grado de MD, VHM-ULTRA para alto rendimiento
- Para fresado de precisión de ranuras
- AlCrN para una mayor vida útil de la herramienta



watch the video



Vc Page #: 421 →

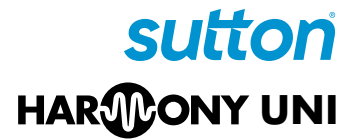
Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
0303	3.0	57	8	19	6	2.8	4	0.3	E559 0303	E560 0303
0305	3.0	57	8	19	6	2.8	4	0.5	E559 0305	E560 0305
0403	4.0	57	11	19	6	3.7	4	0.3	E559 0403	E560 0403
0405	4.0	57	11	19	6	3.7	4	0.5	E559 0405	E560 0405
0410	4.0	57	11	19	6	3.7	4	1.0	E559 0410	E560 0410
0503	5.0	57	13	20	6	4.6	4	0.3	E559 0503	E560 0503
0505	5.0	57	13	20	6	4.6	4	0.5	E559 0505	E560 0505
0510	5.0	57	13	20	6	4.6	4	1.0	E559 0510	E560 0510
0603	6.0	57	13	21	6	5.5	4	0.3	E559 0603	E560 0603
0605	6.0	57	13	21	6	5.5	4	0.5	E559 0605	E560 0605
0610	6.0	57	13	21	6	5.5	4	1.0	E559 0610	E560 0610
0803	8.0	63	19	27	8	7.5	4	0.3	E559 0803	E560 0803
0805	8.0	63	19	27	8	7.5	4	0.5	E559 0805	E560 0805
0810	8.0	63	19	27	8	7.5	4	1.0	E559 0810	E560 0810
0815	8.0	63	19	27	8	7.5	4	1.5	E559 0815	E560 0815
0820	8.0	63	19	27	8	7.5	4	2.0	E559 0820	E560 0820
1003	10.0	72	22	32	10	9.5	4	0.3	E559 1003	E560 1003
1005	10.0	72	22	32	10	9.5	4	0.5	E559 1005	E560 1005
1010	10.0	72	22	32	10	9.5	4	1.0	E559 1010	E560 1010
1015	10.0	72	22	32	10	9.5	4	1.5	E559 1015	E560 1015
1020	10.0	72	22	32	10	9.5	4	2.0	E559 1020	E560 1020
1203	12.0	83	26	38	12	11.2	4	0.3	E559 1203	E560 1203
1205	12.0	83	26	38	12	11.2	4	0.5	E559 1205	E560 1205
1210	12.0	83	26	38	12	11.2	4	1.0	E559 1210	E560 1210
1215	12.0	83	26	38	12	11.2	4	1.5	E559 1215	E560 1215
1220	12.0	83	26	38	12	11.2	4	2.0	E559 1220	E560 1220
1230	12.0	83	26	38	12	11.2	4	3.0	E559 1230	E560 1230
1605	16.0	92	32	44	16	15.0	4	0.5	E559 1605	E560 1605

ISO	P					M					K					N					S					H																							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E559	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
E560	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R35/38, Cnr Rad, Regular, Harmony UNI



- VHM-ULTRA grade of carbide for high performance
- For precision finishing applications
- AlCrN for longer tool life



## Fraise 4 dents carbure, R35°/38°, Torique, DIN6527L

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 35/38° pour la suppression des vibrations
- Revêtement AlCrN pour une meilleure durée de vie



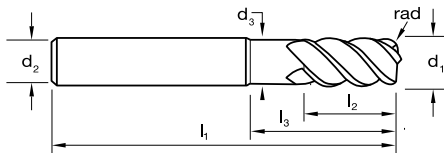
## Fresa metallo duro, 4 Taglienti, R35/38, Toriche, DIN6527L

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Fresa ideale per lavorazioni di finitura
- AlCrN per Ottimizzare vita utensile



## Fresas de MD, 4 ranuras, R35/38, Tórica, DIN6527L

- Grado de MD, VHM-ULTRA para alto rendimiento
- Para fresado de precisión de ranuras
- AlCrN para una mayor vida útil de la herramienta



Vc Page #: 421 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
1620	16.0	92	32	44	16	15.0	4	2.0	E559 1620	E560 1620
1630	16.0	92	32	44	16	15.0	4	3.0	E559 1630	E560 1630
2005	20.0	104	38	54	20	19.0	4	0.5	E559 2005	E560 2005
2010	20.0	104	38	54	20	19.0	4	1.0	E559 2010	E560 2010
2015	20.0	104	38	54	20	19.0	4	1.5	E559 2015	E560 2015
2020	20.0	104	38	54	20	19.0	4	2.0	E559 2020	E560 2020
2030	20.0	104	38	54	20	19.0	4	3.0	E559 2030	E560 2030



Catalogue Code	E559	E560
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	AlCrN	AlCrN
Sutton Designation	UNI	UNI
Geometry	R35/38	R35/38
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P													M			K						N						S						H																
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E559	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
E560	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective





- VHM-ULTRA grade of carbide for high performance
- For precision finishing applications
- AlCrN for longer tool life



**Fraise 4 dents carbure, R35°/38°, Torique, DIN6527L**

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 35/38° pour la suppression des vibrations
- Revêtement AlCrN pour une meilleure durée de vie



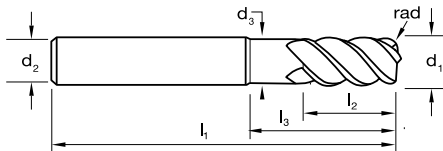
**Freses metallo duro, 4 Taglienti, R35/38, Toriche, DIN6527L**

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Fresa ideale per lavorazioni di finitura
- AlCrN per Ottimizzare vita utensile



**Fresas de MD, 4 ranuras, R35/38, Tórica, DIN6527L**

- Grado de MD, VHM-ULTRA para alto rendimiento
- Para fresado de precisión de ranuras
- AlCrN para una mayor vida útil de la herramienta



Vc Page #: 421 → Refer E559

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
0636	1/4	2-1/2	1/2	11/16	1/4	-	4	0.020	E576 0636
0637	1/4	2-1/2	1/2	11/16	1/4	-	4	0.030	E576 0637
0638	1/4	2-1/2	1/2	11/16	1/4	-	4	0.045	E576 0638
0794	5/16	2-1/2	13/16	1-3/16	5/16	-	4	0.015	E576 0794
0795	5/16	2-1/2	13/16	1-3/16	5/16	-	4	0.020	E576 0795
0796	5/16	2-1/2	13/16	1-3/16	5/16	-	4	0.030	E576 0796
0797	5/16	2-1/2	13/16	1-3/16	5/16	-	4	0.045	E576 0797
0953	3/8	2-1/2	7/8	1-1/4	3/8	-	4	0.015	E576 0953
0956	3/8	2-1/2	7/8	1-1/4	3/8	-	4	0.020	E576 0956
0957	3/8	2-1/2	7/8	1-1/4	3/8	-	4	0.030	E576 0957
1111	7/16	3	1	1-1/2	7/16	-	4	0.015	E576 1111
1112	7/16	3	1	1-1/2	7/16	-	4	0.020	E576 1112
1113	7/16	3	1	1-1/2	7/16	-	4	0.030	E576 1113
1114	7/16	3	1	1-1/2	7/16	-	4	0.045	E576 1114
1270	1/2	3	1	1-1/2	1/2	-	4	0.015	E576 1270
1271	1/2	3	1	1-1/2	1/2	-	4	0.020	E576 1271
1273	1/2	3	1	1-1/2	1/2	-	4	0.045	E576 1273
1274	1/2	3	1	1-1/2	1/2	-	4	0.060	E576 1274
1588	5/8	3-1/2	1-1/4	1-3/4	5/8	-	4	0.015	E576 1588
1589	5/8	3-1/2	1-1/4	1-3/4	5/8	-	4	0.020	E576 1589
1590	5/8	3-1/2	1-1/4	1-3/4	5/8	-	4	0.030	E576 1590
1591	5/8	3-1/2	1-1/4	1-3/4	5/8	-	4	0.045	E576 1591
1592	5/8	3-1/2	1-1/4	1-3/4	5/8	-	4	0.060	E576 1592
1593	5/8	3-1/2	1-1/4	1-3/4	5/8	-	4	0.090	E576 1593
1905	3/4	4	1-1/2	2	3/4	-	4	0.015	E576 1905
1906	3/4	4	1-1/2	2	3/4	-	4	0.020	E576 1906
1907	3/4	4	1-1/2	2	3/4	-	4	0.030	E576 1907
1908	3/4	4	1-1/2	2	3/4	-	4	0.045	E576 1908

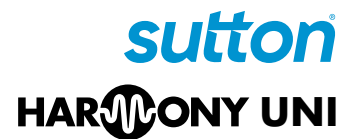


**Catalogue Code** E576  
**Product Group** B0210  
**Material** VHM-ULTRA  
**Surface Finish** AlCrN  
**Sutton Designation** UNI  
**Geometry** R35 / 38  
**Shank Form (DIN 6535)** HA  
**Shank Tolerance** h6

ISO	P										M				K				N										S										H											
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E576	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**P** Steel **M** Stainless Steel **K** Cast Iron **N** Non-Ferrous Metals **S** Titanium & Super Alloys **H** Hard Materials ● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R35/38, Cnr Rad, Regular, Harmony UNI



- VHM-ULTRA grade of carbide for high performance
- For precision finishing applications
- AlCrN for longer tool life



## Fraise 4 dents carbure, R35°/38°, Torique, DIN6527L

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 35/38° pour la suppression des vibrations
- Revêtement AlCrN pour une meilleure durée de vie



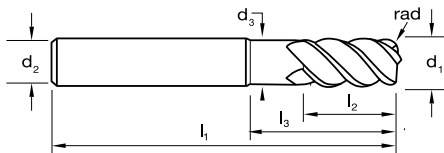
## Frese metallo duro, 4 Taglienti, R35/38, Toriche, DIN6527L

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Fresa ideale per lavorazioni di finitura
- AlCrN per Ottimizzare vita utensile



## Fresas de MD, 4 ranuras, R35/38, Tórica, DIN6527L

- Grado de MD, VHM-ULTRA para alto rendimiento
- Para fresado de precisión de ranuras
- AlCrN para una mayor vida útil de la herramienta



Vc Page #: 421 → Refer E559

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
1909	3/4	4	1-1/2	2	3/4	-	4	0.060	E576 1909
1910	3/4	4	1-1/2	2	3/4	-	4	0.090	E576 1910
1911	3/4	4	1-1/2	2	3/4	-	4	0.125	E576 1911
2540	1"	4	1-1/2	2	1	-	4	0.015	E576 2540
2541	1"	4	1-1/2	2	1	-	4	0.020	E576 2541
2542	1"	4	1-1/2	2	1	-	4	0.030	E576 2542
2543	1"	4	1-1/2	2	1	-	4	0.045	E576 2543
2544	1"	4	1-1/2	2	1	-	4	0.060	E576 2544
2545	1"	4	1-1/2	2	1	-	4	0.090	E576 2545
2546	1"	4	1-1/2	2	1	-	4	0.125	E576 2546



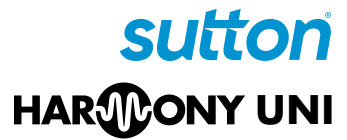
Catalogue Code	E576
Product Group	B0210
Material	VHM-ULTRA
Surface Finish	AlCrN
Sutton Designation	UNI
Geometry	R35 / 38
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P													M			K						N										S							H											
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E576	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R45/44, Regular, Harmony UNI



- VHM-ULTRA grade of carbide for high performance
- 45/44° variable flute helix for chatter free milling
- AlCrN for longer tool life



### Fraise 4 dents carbure, R45°/44°, DIN6527L

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 45°/44° pour la suppression des vibrations
- Revêtement AlCrN pour une meilleure durée de vie



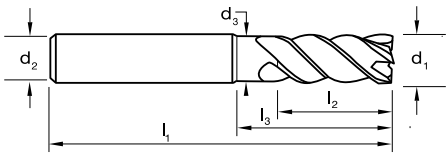
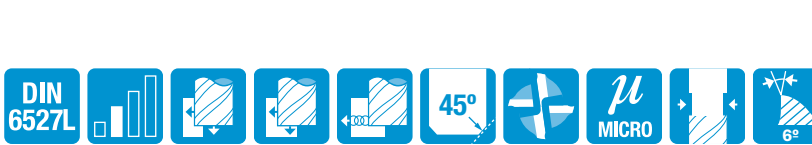
### Frese metallo duro, 4 Taglienti, R45/44, DIN6527L

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Elica tagliente variabile 44/45° per lavorazioni senza vibrazioni
- AlCrN per Ottimizzare vita utensile



### Fresas de MD, 4 ranuras, R45/44, Tórica, DIN6527L

- Grado de MD, VHM-ULTRA para alto rendimiento
- Hélice de ranura variable 45/44° para fresado sin vibraciones
- AlCrN para una mayor vida útil de la herramienta



Vc Page #: 421 →



Catalogue Code	E426	E427
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	AlCrN	AlCrN
Sutton Designation	UNI	UNI
Geometry	R45/44	R45/44
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5

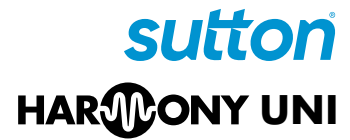
Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
0300	3.0	57	8	14	6	2.8	4	E426 0300	E427 0300
0350	3.5	57	11	16	6	3.3	4	E426 0350	E427 0350
0400	4.0	57	11	16	6	3.8	4	E426 0400	E427 0400
0450	4.5	57	13	18	6	4.3	4	E426 0450	E427 0450
0500	5.0	57	13	18	6	4.8	4	E426 0500	E427 0500
0550	5.5	57	13	18	6	5.3	4	E426 0550	E427 0550
0600	6.0	57	13	19	6	5.7	4	E426 0600	E427 0600
0800	8.0	63	19	25	8	7.6	4	E426 0800	E427 0800
1000	10.0	72	22	30	10	9.5	4	E426 1000	E427 1000
1200	12.0	83	26	36	12	11.5	4	E426 1200	E427 1200
1400	14.0	83	26	36	14	13.5	4	E426 1400	E427 1400
1600	16.0	92	32	42	16	15.5	4	E426 1600	E427 1600
1800	18.0	92	32	42	18	17.5	4	E426 1800	E427 1800
2000	20.0	104	38	52	20	19.5	4	E426 2000	E427 2000
2500	25.0	120	45	62	25	24.0	4	E426 2500	E427 2500

ISO	P													M				K				N							S							H																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
E426	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●											○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E427	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●											○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R35/38, Stub, Harmony UNI



- VHM-ULTRA grade of carbide for high performance
- 35/38° variable flute helix for chatter free milling
- AlCrN for longer tool life



## Fraise 4 dents carbure, R35°/38°, DIN6527K

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 35/38° pour la suppression des vibrations
- Revêtement AlCrN pour une meilleure durée de vie



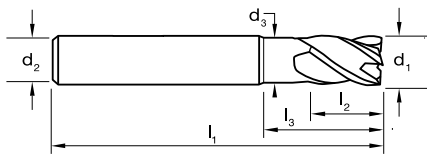
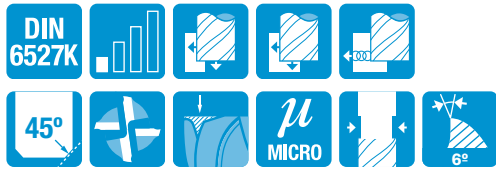
## Frese metallo duro, 4 Taglienti, R35/38, DIN6527K

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Elica tagliente variabile 35/38° per lavorazioni senza vibrazioni
- AlCrN per Ottimizzare vita utensile



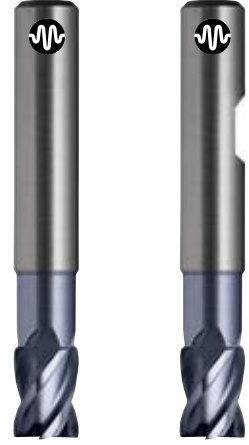
## Fresas de MD, 4 ranuras, R35/38, DIN6527K

- Grado de MD, VHM-ULTRA para alto rendimiento
- Hélice de ranura variable 35/38° para fresado sin vibraciones
- AlCrN para una mayor vida útil de la herramienta



Vc Page #: 421 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
0600	6.0	54	10	18	6	5.5	4	E533 0600	E534 0600
0800	8.0	58	12	22	8	7.5	4	E533 0800	E534 0800
1000	10.0	66	14	24	10	9.5	4	E533 1000	E534 1000
1200	12.0	73	16	28	12	11.2	4	E533 1200	E534 1200
1600	16.0	82	22	34	16	15.0	4	E533 1600	E534 1600
2000	20.0	92	26	42	20	19.0	4	E533 2000	E534 2000



Catalogue Code	<b>E533</b>	<b>E534</b>
Discount Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>AlCrN</b>	<b>AlCrN</b>
Sutton Designation	<b>UNI</b>	<b>UNI</b>
Geometry	R35/38	R35/38
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

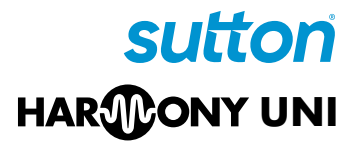
ISO	P													M			K						N							S							H																
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
E533	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
E534	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



# Endmills Carbide, 3 Flute, R38/37/39, Stub, Harmony UNI



- VHM-ULTRA grade of carbide for high performance
- Universal use for slotting & finishing with the one tool
- 38/37/39° variable flute helix for chatter free milling



## Fraise 3 dents carbure, R38°/37°/39°, DIN6527K

- Carbure VHM-ULTRA pour une meilleure performance
- Pour le rainurage et la finition
- Hélice variable 38°/37°/39° pour la suppression des vibrations



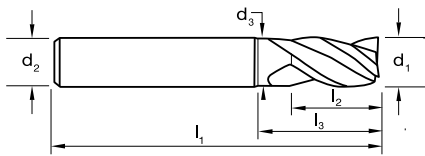
## Fresa metallo duro, 3 Taglienti, R38/37/39, DIN6527K

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Fresa universale per cave e lavorazioni di finitura
- Elica tagliente variabile 38/37/39° per lavorazioni senza vibrazioni



## Fresas de MD, 3 ranuras, R38/37/39, DIN6527K

- Grado de MD, VHM-ULTRA para alto rendimiento
- Uso universal para ranurado y acabado con una herramienta
- Hélice de ranura variable 38/37/39° para fresado sin vibraciones



Vc Page #: 421 →

Size Ref.	$d_1$ (e8)	$l_1$	$l_2$	$l_3$	$d_2$	$d_3$	$z$	Item #	Item #
0300	3.0	50	5	-	6	-	3	E422 0300	E423 0300
0350	3.5	50	6	-	6	-	3	E422 0350	E423 0350
0400	4.0	54	8	13	6	3.8	3	E422 0400	E423 0400
0450	4.5	54	8	13	6	4.3	3	E422 0450	E423 0450
0500	5.0	54	9	15	6	4.8	3	E422 0500	E423 0500
0550	5.5	54	9	15	6	5.3	3	E422 0550	E423 0550
0600	6.0	54	10	16	6	5.7	3	E422 0600	E423 0600
0800	8.0	58	12	20	8	7.6	3	E422 0800	E423 0800
1000	10.0	66	14	24	10	9.5	3	E422 1000	E423 1000
1200	12.0	73	16	26	12	11.5	3	E422 1200	E423 1200
1400	14.0	73	16	26	14	13.5	3	E422 1400	E423 1400
1600	16.0	82	22	32	16	15.5	3	E422 1600	E423 1600
1800	18.0	82	22	32	18	17.5	3	E422 1800	E423 1800
2000	20.0	92	26	40	20	19.5	3	E422 2000	E423 2000



Catalogue Code  
Discount Group  
Material  
Surface Finish  
Sutton Designation  
Geometry  
Shank Form (DIN 6535)  
Shank Tolerance

E422	E423
B0210	B0210
VHM-ULTRA	VHM-ULTRA
AlCrN	AlCrN
UNI	UNI
R38/37/39	R38/37/39
HA	HB
h5	h5

ISO	P												M					K					N										S										H						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E422	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●											○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E423	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●											○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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# Endmills Carbide, 4 Flute, R45/44, Cnr Rad, Long Reach, Harmony UNI



- VHM-ULTRA grade of carbide for high performance
- 45/44° variable flute helix for chatter free milling
- AlCrN for longer tool life



## Fraise 4 dents carbure, R45/44°, Torique, Longue

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 45°/44° pour la suppression des vibrations
- Revêtement AlCrN pour une meilleure durée de vie



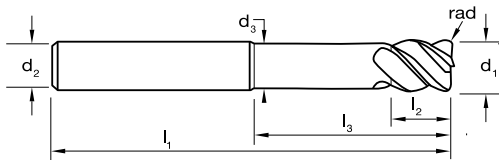
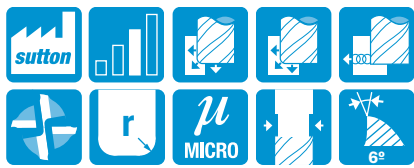
## Frese metallo duro, 4 Taglienti, R45/44, Toriche, Lunga Portata

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Elica tagliente variabile 44/45° per lavorazioni senza vibrazioni
- AlCrN per Ottimizzare vita utensile



## Fresas de MD, 4 ranuras, R45/44, Tórica, DIN6527L

- Grado de MD, VHM-ULTRA para alto rendimiento
- Hélice de ranura variable 45/44° para fresado sin vibraciones
- AlCrN para una mayor vida útil de la herramienta



Vc Page #: 421 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
0403	4.0	57	5	16	6	3.6	4	0.3	E430 0403	E431 0403
0405	4.0	57	5	16	6	3.6	4	0.5	E430 0405	E431 0405
0603	6.0	62	7	24	6	5.4	4	0.3	E430 0603	E431 0603
0605	6.0	62	7	24	6	5.4	4	0.5	E430 0605	E431 0605
0610	6.0	62	7	24	6	5.4	4	1.0	E430 0610	E431 0610
0615	6.0	62	7	24	6	5.4	4	1.5	E430 0615	E431 0615
0803	8.0	68	9	30	8	7.2	4	0.3	E430 0803	E431 0803
0805	8.0	68	9	30	8	7.2	4	0.5	E430 0805	E431 0805
0810	8.0	68	9	30	8	7.2	4	1.0	E430 0810	E431 0810
0815	8.0	68	9	30	8	7.2	4	1.5	E430 0815	E431 0815
1005	10.0	80	11	38	10	9.0	4	0.5	E430 1005	E431 1005
1010	10.0	80	11	38	10	9.0	4	1.0	E430 1010	E431 1010
1015	10.0	80	11	38	10	9.0	4	1.5	E430 1015	E431 1015
1020	10.0	80	11	38	10	9.0	4	2.0	E430 1020	E431 1020
1205	12.0	93	13	46	12	11.0	4	0.5	E430 1205	E431 1205
1210	12.0	93	13	46	12	11.0	4	1.0	E430 1210	E431 1210
1215	12.0	93	13	46	12	11.0	4	1.5	E430 1215	E431 1215
1220	12.0	93	13	46	12	11.0	4	2.0	E430 1220	E431 1220
1610	16.0	108	17	58	16	15.0	4	1.0	E430 1610	E431 1610
1620	16.0	108	17	58	16	15.0	4	2.0	E430 1620	E431 1620
1630	16.0	108	17	58	16	15.0	4	3.0	E430 1630	E431 1630
1640	16.0	108	17	58	16	15.0	4	4.0	E430 1640	E431 1640



Catalogue Code	E430	E431
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	AlCrN	AlCrN
Sutton Designation	UNI	UNI
Geometry	R45/44	R45/44
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5

ISO	P													M				K				N							S							H																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
E430	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●											○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E431	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●											○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Chipbreakers eliminate build up of swarf
- Increases machine productivity
- Designed for Trochoidal/Dynamic machining strategies
- TiSiNos for long tool life



## Fraises en carbure, 5 cannelures, R45, extra longues, brise-copeaux

- Pour application d'ébauche en dynamique, trochoïdal et contourage
- TiSiNos pour une meilleure durée de vie dans les aciers à usinage difficiles



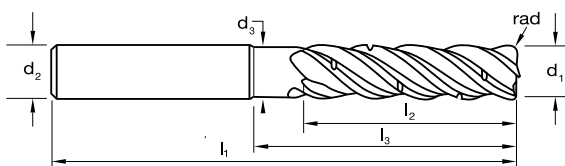
## Frese in metallo duro, 5 taglienti, R45, extra lunghe, rompitruciolo

- I rompitruciolo evaquano velocemente i trucioli
- Aumento della produttività della macchina
- Progettato per strategie di lavorazione trocoidali/dinamiche



## Fresas de carburo, 5 flautas, R45, extralargas, rompevirutas

- Los rompevirutas eliminan la acumulación de virutas
- Aumenta la productividad de la máquina
- Diseñado para estrategias de mecanizado trocoidal/dinámico.
- TiSiNos para una mayor vida útil de la herramienta



Catalogue Code  
Product Group  
Material  
Surface Finish  
Sutton Designation  
Geometry  
Shank Form (DIN 6535)  
Shank Tolerance



E483	E484	E485
B0210	B0210	B0210
VHM-ULTRA	VHM-ULTRA	VHM-ULTRA
TiSiNos	TiSiNos	TiSiNos
UNI - 3XL	UNI - 4XL	UNI - 5XL
R45	R45	R45
HA	HA	HA
h6	h6	h6

Vc Page #: 421 →

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #	Item #
0600	6.0	62.0	18.0	25.0	6.0	5.8	5	0.2	E483 0600		
0800	8.0	68.0	24.0	30.0	8.0	7.6	5	0.2	E483 0800		
1000	10.0	80.0	30.0	35.0	10.0	9.5	5	0.3	E483 1000		
1200	12.0	93.0	36.0	45.0	12.0	11.5	5	0.35	E483 1200		
1600	16.0	108.0	48.0	55.0	16.0	15.5	5	0.4	E483 1600		
2000	20.0	126.0	60.0	70.0	20.0	19.5	5	0.5	E483 2000		
0600	6.0	66.0	24.0	29.0	6.0	5.8	5	0.2		E484 0600	
0800	8.0	75.0	32.0	37.0	8.0	7.6	5	0.2		E484 0800	
1000	10.0	90.0	40.0	45.0	10.0	9.5	5	0.3		E484 1000	
1200	12.0	97.0	48.0	53.0	12.0	11.5	5	0.35		E484 1200	
1600	16.0	120.0	64.0	69.0	16.0	15.5	5	0.4		E484 1600	
2000	20.0	140.0	80.0	85.0	20.0	19.5	5	0.5		E484 2000	
0600	6.0	70.0	30.0	35.0	6.0	5.8	5	0.2			E485 0600
0800	8.0	81.0	40.0	45.0	8.0	7.6	5	0.2			E485 0800
1000	10.0	96.0	50.0	55.0	10.0	9.5	5	0.3			E485 1000
1200	12.0	112.0	60.0	65.0	12.0	11.5	5	0.35			E485 1200
1600	16.0	140.0	80.0	85.0	16.0	15.5	5	0.4			E485 1600
2000	20.0	163.0	100.0	105.0	20.0	19.5	5	0.5			E485 2000

ISO	P										M			K							N							S							H														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E483	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
E484	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
E485	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- HRS geometry allows for heavy cuts in short & long chipping materials
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- AlCrN for longer tool life



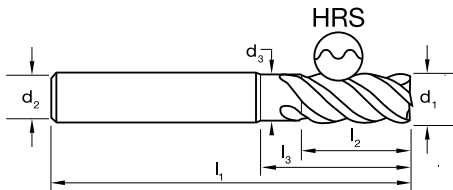
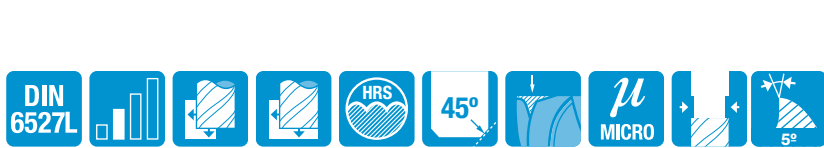
- Fraise d'ébauche carbure, Profil HRS, R45°, DIN 6527L**
- Brise-copeaux (HRS) pour dans les matériaux à coupeaux longs
  - Convient aux matériaux jusqu'à 1600N/mm<sup>2</sup>
  - Revêtement AlCrN pour une meilleure durée de vie



- Fresce metallo duro rompitruciolo, HRS, R45, DIN6527L**
- Geometria HR permette lavorazioni gravose su materiali di difficile lavorabilità
  - Ideale per materiali fino a 1600 N/mm<sup>2</sup>
  - AlCrN per Ottimizzare vita utensile



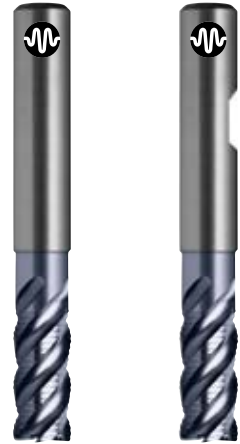
- Fresas de MD, Desbaste, HRS, R45, DIN6527L**
- Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>
  - Diseño de ranura (HRS), para gran desbaste en materiales de viruta corta y larga
  - AlCrN para una mayor vida útil de la herramienta



Vc Page #: 421 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
<b>0400</b>	<b>4.0</b>	57	11	19	6	3.7	3	E549 0400	E550 0400
<b>0500</b>	<b>5.0</b>	57	13	20	6	4.6	4	E549 0500	E550 0500
<b>0600</b>	<b>6.0</b>	57	16	21	6	5.5	4	E549 0600	E550 0600
<b>0800</b>	<b>8.0</b>	63	19	27	8	7.5	4	E549 0800	E550 0800
<b>1000</b>	<b>10.0</b>	72	22	32	10	9.5	4	E549 1000	E550 1000
<b>1200</b>	<b>12.0</b>	83	26	38	12	11.2	4	E549 1200	E550 1200
<b>1400</b>	<b>14.0</b>	83	26	38	14	13.5	4	E549 1400	E550 1400
<b>1600</b>	<b>16.0</b>	92	32	44	16	15.5	5	E549 1600	E550 1600
<b>1800</b>	<b>18.0</b>	92	32	44	16	17.5	5	E549 1800	E550 1800
<b>2000</b>	<b>20.0</b>	104	38	54	20	19.0	6	E549 2000	E550 2000
<b>2500</b>	<b>25.0</b>	120	45	60	25	24.5	6	E549 2500	E550 2500

Catalogue Code	<b>E549</b>	<b>E550</b>
Discount Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>AlCrN</b>	<b>AlCrN</b>
Sutton Designation	<b>UNI</b>	<b>UNI</b>
Geometry	R45 HRS	R45 HRS
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6



ISO	P													M				K						N										S						H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E549	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●														●	●	●	●	●	●							
E550	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●														●	●	●	●	●	●							

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective



# Endmills Carbide, 4 Flute, R50 NH, Cnr Rad, Regular, *Harmony DUO*

sutton

HARMONY DUO



- VHM-ULTRA grade of carbide for high performance
- Dual stepped core for optimal stability
- Ideal design for pocket milling in MQL & HSC
- Suitable for materials up to 48 HRC
- AlCrN for longer tool life



- Fresas de MD, 4 Ranuras, R50, Tórica, DIN6527L**
- Grado de MD, VHM-ULTRA para alto rendimiento
  - Doble núcleo escalonado para una estabilidad óptima
  - Diseño ideal para fresado con sistemas MQL y HSC
  - Adecuado para materiales hasta 48 HRC
  - AlCrN para una mayor vida útil de la herramienta



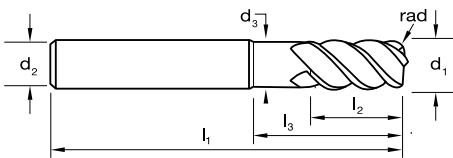
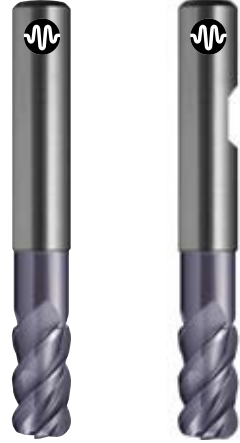
watch the video



- Fraise 4 dents carbure, R50°, Torique, DIN6527L**
- Carbure VHM-ULTRA pour une meilleure performance
  - Double goujures
  - Ideale pour les ébauches de poches en MQL & HSC
  - Convient aux matériaux jusqu'à 48 HRC et les super alliages
  - Revêtement AlCrN pour une meilleure durée de vie



- Frese metallo duro, 4 Taglienti, R50, Toriche, DIN6527L**
- VHM-ULTRA, grado di metallo duro per alte prestazione
  - Doppio gradino al nocciolo per un'ottima stabilità durante la lavorazione
  - Progettata per la formazione di tasche con strategia MQL & HSC
  - Ideale per materiale duri fino a 48 HRC
  - AlCrN per Ottimizzare vita utensile



Vc Page #: 422 →

Catalogue Code	<b>E564</b>	<b>E565</b>
Discount Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>AlCrN</b>	<b>AlCrN</b>
Sutton Designation	<b>NH</b>	<b>NH</b>
Geometry	R50	R50
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
<b>0603</b>	<b>6.0</b>	57	13	21	6	5.5	4	0.3	E564 0603	E565 0603
<b>0605</b>	<b>6.0</b>	57	13	21	6	5.5	4	0.5	E564 0605	E565 0605
<b>0610</b>	<b>6.0</b>	57	13	21	6	5.5	4	1.0	E564 0610	E565 0610
<b>0803</b>	<b>8.0</b>	63	19	27	8	7.5	4	0.3	E564 0803	E565 0803
<b>0805</b>	<b>8.0</b>	63	19	27	8	7.5	4	0.5	E564 0805	E565 0805
<b>0810</b>	<b>8.0</b>	63	19	27	8	7.5	4	1.0	E564 0810	E565 0810
<b>0815</b>	<b>8.0</b>	63	19	27	8	7.5	4	1.5	E564 0815	E565 0815
<b>0820</b>	<b>8.0</b>	63	19	27	8	7.5	4	2.0	E564 0820	E565 0820
<b>1003</b>	<b>10.0</b>	72	22	32	10	9.5	4	0.3	E564 1003	E565 1003
<b>1005</b>	<b>10.0</b>	72	22	32	10	9.5	4	0.5	E564 1005	E565 1005
<b>1010</b>	<b>10.0</b>	72	22	32	10	9.5	4	1.0	E564 1010	E565 1010
<b>1015</b>	<b>10.0</b>	72	22	32	10	9.5	4	1.5	E564 1015	E565 1015
<b>1020</b>	<b>10.0</b>	72	22	32	10	9.5	4	2.0	E564 1020	E565 1020
<b>1203</b>	<b>12.0</b>	83	26	38	12	11.2	4	0.3	E564 1203	E565 1203
<b>1205</b>	<b>12.0</b>	83	26	38	12	11.2	4	0.5	E564 1205	E565 1205
<b>1210</b>	<b>12.0</b>	83	26	38	12	11.2	4	1.0	E564 1210	E565 1210
<b>1215</b>	<b>12.0</b>	83	26	38	12	11.2	4	1.5	E564 1215	E565 1215
<b>1220</b>	<b>12.0</b>	83	26	38	12	11.2	4	2.0	E564 1220	E565 1220
<b>1225</b>	<b>12.0</b>	83	26	38	12	11.2	4	2.5	E564 1225	•
<b>1230</b>	<b>12.0</b>	83	26	38	12	11.2	4	3.0	E564 1230	E565 1230
<b>1240</b>	<b>12.0</b>	83	26	38	12	11.2	4	4.0	E564 1240	•
<b>1403</b>	<b>14.0</b>	83	26	38	14	13.0	4	0.3	E564 1403	E565 1403
<b>1405</b>	<b>14.0</b>	83	26	38	14	13.0	4	0.5	E564 1405	E565 1405
<b>1410</b>	<b>14.0</b>	83	26	38	14	13.0	4	1.0	E564 1410	E565 1410
<b>1415</b>	<b>14.0</b>	83	26	38	14	13.0	4	1.5	E564 1415	E565 1415
<b>1420</b>	<b>14.0</b>	83	26	38	14	13.0	4	2.0	E564 1420	E565 1420
<b>1430</b>	<b>14.0</b>	83	26	38	14	13.0	4	3.0	E564 1430	E565 1430
<b>1605</b>	<b>16.0</b>	92	32	44	16	15.0	4	0.5	E564 1605	E565 1605

ISO	P													M					K					N										S										H														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41									
<b>E564</b>	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○																																				
<b>E565</b>	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○																																				

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

• Available on request as special manufacture. Subject to lead time.



# Endmills Carbide, 4 Flute, R50 NH, Cnr Rad, Regular, *Harmony DUO*



- VHM-ULTRA grade of carbide for high performance
- Dual stepped core for optimal stability
- Ideal design for pocket milling in MQL & HSC
- Suitable for materials up to 48 HRC
- AlCrN for longer tool life



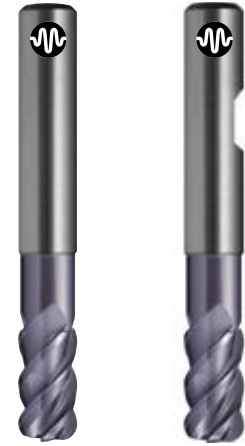
- Fresas de MD, 4 Ranuras, R50, Tórica, DIN6527L**
- Grado de MD, VHM-ULTRA para alto rendimiento
  - Doble núcleo escalonado para una estabilidad óptima
  - Diseño ideal para fresado con sistemas MQL y HSC
  - Adecuado para materiales hasta 48 HRC
  - AlCrN para una mayor vida útil de la herramienta



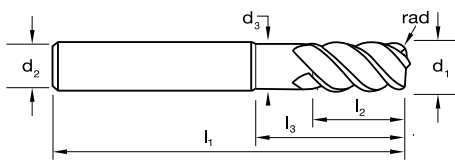
- Fraise 4 dents carbure, R50°, Torique, DIN6527L**
- Carbure VHM-ULTRA pour une meilleure performance
  - Double goujures
  - Ideale pour les ébauches de poches en MQL & HSC
  - Convient aux matériaux jusqu'à 48 HRC et les super alliages
  - Revêtement AlCrN pour une meilleure durée de vie



- Frese metallo duro, 4 Taglienti, R50, Toriche, DIN6527L**
- M-ULTRA, grado di metallo duro per alte prestazioni
  - Doppio gradino al nocciolo per un'ottima stabilità durante la lavorazione
  - Progettata per la formazione di tasche con strategia MQL & HSC
  - Ideale per materiali duri fino a 48 HRC
  - AlCrN per Ottimizzare vita utensile



**DIN 6527L**



Catalogue Code	<b>E564</b>	<b>E565</b>
Discount Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>AlCrN</b>	<b>AlCrN</b>
Sutton Designation	<b>NH</b>	<b>NH</b>
Geometry	R50	R50
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

Vc Page #: 422 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
1610	16.0	92	32	44	16	15.0	4	1.0	E564 1610	E565 1610
1615	16.0	92	32	44	16	15.0	4	1.5	E564 1615	E565 1615
1620	16.0	92	32	44	16	15.0	4	2.0	E564 1620	E565 1620
1625	16.0	92	32	44	16	15.0	4	2.5	E564 1625	•
1630	16.0	92	32	44	16	15.0	4	3.0	E564 1630	E565 1630
1640	16.0	92	32	44	16	15.0	4	4.0	E564 1640	E565 1640
2005	20.0	104	38	54	20	19.0	4	0.5	E564 2005	E565 2005
2010	20.0	104	38	54	20	19.0	4	1.0	E564 2010	E565 2010
2015	20.0	104	38	54	20	19.0	4	1.5	E564 2015	E565 2015
2020	20.0	104	38	54	20	19.0	4	2.0	E564 2020	E565 2020
2025	20.0	104	38	54	20	19.0	4	2.5	E564 2025	•
2030	20.0	104	38	54	20	19.0	4	3.0	E564 2030	E565 2030
2040	20.0	104	38	54	20	19.0	4	4.0	E564 2040	E565 2040

ISO	P					M					K					N					S					H																							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E564					●									●	●	●	●	●	●	●	●	●																					○						
E565					●									●	●	●	●	●	●	●	●	●																					○						

P Steel 
 M Stainless Steel 
 K Cast Iron 
 N Non-Ferrous Metals 
 S Titanium & Super Alloys 
 H Hard Materials 
 ● Optimal 
 ○ Effective

Endmills Carbide, 4 Flute, R50 NH, Extra Long, Harmony DUO



- Ideal for long reach applications, such as multi-taskers & 5-axis
- The dual stepped core design improves rigidity in long overhang set-ups



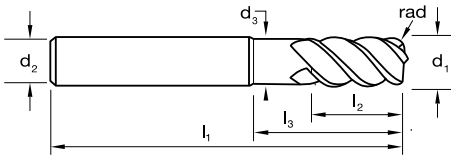
- Fraise carbure 4 dents, R50 NH, Extra longue, Harmony DUO**
- Pour les applications à très longue portée, multi usages et fraisage 5 axes
  - La conception avec la double goujure permet plus de rigidité



- Frese in metallo duro, 4 taglienti, R50 NH, extra lunghe, Harmony DUO**
- Ideale per applicazioni su applicazioni profonde, come multi-tasker e 5 assi
  - Il design a doppio nocciolo a gradini migliora la rigidità nelle configurazioni a sbalzo lungo.



- Fresas de metal duro, 4 labios, R50 NH, Extra larga, Harmony DUO**
- Ideal para aplicaciones de largo alcance, como multitarea y 5 ejes
  - El diseño de doble núcleo escalonado mejora la rigidez en configuraciones de voladizos largos



Catalogue Code	<b>E599</b>
Discount Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>AICrN</b>
Sutton Designation	<b>NH</b>
Geometry	R50
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 422 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
1200	12.0	100.0	26.0	53.0	12.0	11.4	4	0.0	E599 1200
1210	12.0	100.0	26.0	53.0	12.0	11.4	4	1.0	E599 1210
1215	12.0	100.0	26.0	53.0	12.0	11.4	4	1.5	•
1220	12.0	100.0	26.0	53.0	12.0	11.4	4	2.0	•
1225	12.0	100.0	26.0	53.0	12.0	11.4	4	2.5	•
1230	12.0	100.0	26.0	53.0	12.0	11.4	4	3.0	•
1240	12.0	100.0	26.0	53.0	12.0	11.4	4	4.0	E599 1240
1600	16.0	115.0	32.0	65.0	16.0	15.2	4	0.0	E599 1600
1610	16.0	115.0	32.0	65.0	16.0	15.2	4	1.0	E599 1610
1615	16.0	115.0	32.0	65.0	16.0	15.2	4	1.5	•
1620	16.0	115.0	32.0	65.0	16.0	15.2	4	2.0	•
1625	16.0	115.0	32.0	65.0	16.0	15.2	4	2.5	•
1630	16.0	115.0	32.0	65.0	16.0	15.2	4	3.0	•
1640	16.0	115.0	32.0	65.0	16.0	15.2	4	4.0	E599 1640
2000	20.0	125.0	38.0	73.0	20.0	19.0	4	0.0	E599 2000
2010	20.0	125.0	38.0	73.0	20.0	19.0	4	1.0	E599 2010
2015	20.0	125.0	38.0	73.0	20.0	19.0	4	1.5	•
2020	20.0	125.0	38.0	73.0	20.0	19.0	4	2.0	•
2025	20.0	125.0	38.0	73.0	20.0	19.0	4	2.5	•
2030	20.0	125.0	38.0	73.0	20.0	19.0	4	3.0	•
2040	20.0	125.0	38.0	73.0	20.0	19.0	4	4.0	E599 2040
2050	20.0	125.0	38.0	73.0	20.0	19.0	4	5.0	•
2060	20.0	125.0	38.0	73.0	20.0	19.0	4	6.0	•

ISO	P										M					K					N										S					H														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E599	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel 
 M Stainless Steel 
 K Cast Iron 
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 S Titanium & Super Alloys 
 H Hard Materials

● Optimal ○ Effective

• Available on request as special manufacture. Subject to lead time.

# Endmills Carbide, 6-8 Flute, R50/35, Regular, Harmony NH



- VHM-ULTRA grade of carbide for high performance
- For super fine finishing applications
- 50/35° variable flute helix for chatter free milling
- Suitable for hard, short chipping materials up to 48 HRC
- AlCrN for longer tool life



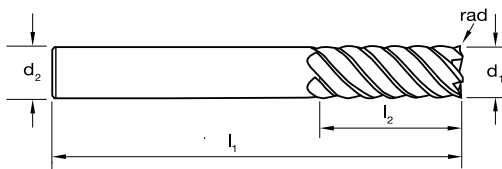
- Fresas de MD, 6-8 ranuras, R50/35, DIN6527L**
- Grado de carburo VHM-ULTRA para alto rendimiento
  - Para aplicaciones de super acabado
  - Hélice de ranura variable de 50/35° para fresado sin vibraciones
  - Geometría optimizada para materiales de viruta corta hasta 48HrC
  - AlCrN para una mayor vida de la herramienta



- Fraise carbure Multi-Dents, R50°/35°, DIN6527L**
- Carbure VHM-ULTRA pour une meilleure performance
  - Pour la super finition
  - Hélice variable 50°/35° pour la suppression des vibrations
  - Convient pour les matériaux à copeaux courts jusqu'à 48 HRC
  - AlCrN pour une meilleure durée de vie



- Frese metallo duro, 6-8 Taglienti, R50/35, DIN6527L**
- VHM-ULTRA, grado di metallo duro per alte prestazioni
  - Fresa specifica per finiture ad altissima precisione
  - Elica tagliente variabile 50/35° per lavorazioni senza vibrazioni
  - Ideale per materiale duri, con truciolo corto fino a 48 HRC
  - AlCrN per Ottimizzare vita utensile



Vc Page #: 422 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0600	6.0	57	13	6	6	E432 0600	E433 0600
0800	8.0	63	19	8	6	E432 0800	E433 0800
1000	10.0	72	22	10	6	E432 1000	E433 1000
1200	12.0	83	26	12	6	E432 1200	E433 1200
1400	14.0	83	26	14	6	E432 1400	E433 1400
1600	16.0	92	32	16	6	E432 1600	E433 1600
1800	18.0	92	32	18	8	E432 1800	E433 1800
2000	20.0	104	38	20	8	E432 2000	E433 2000
2500	25.0	120	45	25	8	E432 2500	E433 2500



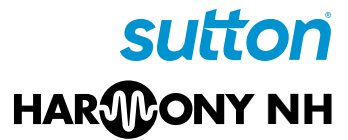
	E432	E433
Catalogue Code	B0210	B0210
Discount Group		
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	AlCrN	AlCrN
Sutton Designation	NH	NH
Geometry	R50/35	R50/35
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5

ISO	P												M			K				N							S							H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E432	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E433	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 6-8 Flute, R50/35, Extra Long, Harmony NH



- VHM-ULTRA grade of carbide for high performance
- For super fine finishing applications
- 50/35° variable flute helix for chatter free milling
- Suitable for hard, short chipping materials up to 48 HRC
- AlCrN for longer tool life



## Fraise carbure Multi-Dents, R50°/35°, Extra-Longue

- Carbure VHM-ULTRA pour une meilleure performance
- Pour la super finition
- Hélice variable 50°/35° pour la suppression des vibrations
- Convient pour les matériaux à copeaux courts jusqu'à 48 HRC
- AlCrN pour une meilleure durée de vie



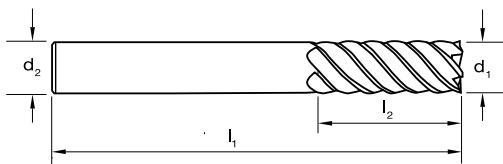
## Frese metallo duro, 6-8 Taglienti, R50/35, Extra Lunga

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Fresa specifica per finiture ad altissima precisione
- Elica tagliente variabile 50/35° per lavorazioni senza vibrazioni
- Ideale per materiale duri, con truciolo corto fino a 48 HRC
- AlCrN per Ottimizzare vita utensile



## Fresas de MD, 6-8 ranuras, R50/35, Extra Larga

- Grado de carburo VHM-ULTRA para alto rendimiento
- Para aplicaciones de super acabado
- Hélice de ranura variable de 50/35° para fresado sin vibraciones
- Geometría optimizada para materiales de viruta corta hasta 48HrC
- AlCrN para una mayor vida de la herramienta



Vc Page #: 422 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0600	6.0	62	18	6	6	E434 0600	E435 0600
0800	8.0	68	24	8	6	E434 0800	E435 0800
1000	10.0	80	30	10	6	E434 1000	E435 1000
1200	12.0	93	36	12	6	E434 1200	E435 1200
1600	16.0	108	48	16	6	E434 1600	E435 1600
2000	20.0	126	60	20	8	E434 2000	E435 2000
2500	25.0	150	85	25	8	E434 2500	E435 2500



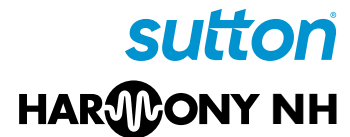
Catalogue Code	E434	E435
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	AlCrN	AlCrN
Sutton Designation	NH	NH
Geometry	R50/35	R50/35
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5

ISO	P													M			K			N										S							H													
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E434	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○																												
E435	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○																												

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 6-8 Flute, R50/35, Cnr Rad, Long Reach, Harmony NH



- VHM-ULTRA grade of carbide for high performance
- For super fine finishing applications
- 50/35° variable flute helix for chatter free milling
- Suitable for hard, short chipping materials up to 48 HRC
- AlCrN for longer tool life



## Fresas de MD, 6-8 ranuras, R50/35, Tórica, Larga

- Grado de carburo VHM-ULTRA para alto rendimiento
- Para aplicaciones de super acabado
- Hélice de ranura variable de 50/35° para fresado sin vibraciones
- Geometría optimizada para materiales de viruta corta hasta 48HrC
- AlCrN para una mayor vida de la herramienta



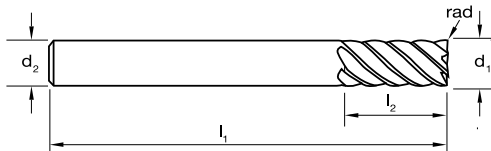
## Fraise carbure Multi-Dents, R50/35°, Torique, Extra-Longue

- Carbure VHM-ULTRA pour une meilleure performance
- Pour la super finition
- Hélice variable 50°/35° pour la suppression des vibrations
- Convient pour les matériaux à copeaux courts jusqu'à 48 HRC
- AlCrN pour une meilleure durée de vie



## Frese metallo duro, 6-8 Taglienti, R50/35, Toriche, Lunga Portata

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Fresa specifica per finiture ad altissima precisione
- Elica tagliente variabile 50/35° per lavorazioni senza vibrazioni
- Ideale per materiale duri, con truciolo corto fino a 48 HRC
- AlCrN per Ottimizzare vita utensile

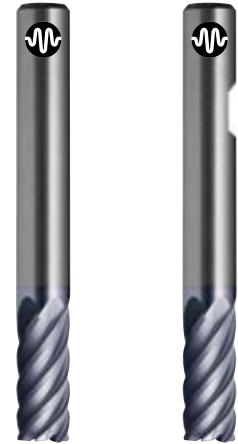


Vc Page #: 422 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	rad	Item #	Item #
0605	6.0	62	13	6	6	0.5	E436 0605	E437 0605
0610	6.0	62	13	6	6	1.0	E436 0610	E437 0610
0805	8.0	68	19	8	6	0.5	E436 0805	E437 0805
0810	8.0	68	19	8	6	1.0	E436 0810	E437 0810
1005	10.0	80	22	10	6	0.5	E436 1005	E437 1005
1010	10.0	80	22	10	6	1.0	E436 1010	E437 1010
1015	10.0	80	22	10	6	1.5	E436 1015	E437 1015
1020	10.0	80	22	10	6	2.0	E436 1020	E437 1020
1205	12.0	93	26	12	6	0.5	E436 1205	E437 1205
1210	12.0	93	26	12	6	1.0	E436 1210	E437 1210
1215	12.0	93	26	12	6	1.5	E436 1215	E437 1215
1220	12.0	93	26	12	6	2.0	E436 1220	E437 1220
1605	16.0	108	32	16	6	0.5	E436 1605	E437 1605
1610	16.0	108	32	16	6	1.0	E436 1610	E437 1610
1615	16.0	108	32	16	6	1.5	E436 1615	E437 1615
1620	16.0	108	32	16	6	2.0	E436 1620	E437 1620
2005	20.0	126	38	20	8	0.5	E436 2005	E437 2005
2010	20.0	126	38	20	8	1.0	E436 2010	E437 2010
2015	20.0	126	38	20	8	1.5	E436 2015	E437 2015
2020	20.0	126	38	20	8	2.0	E436 2020	E437 2020



	E436	E437
Catalogue Code	B0210	B0210
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	AlCrN	AlCrN
Sutton Designation	NH	NH
Geometry	R50/35	R50/35
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5



ISO	P													M			K				N						S					H																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E436	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E437	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- For super fine finishing applications
- Suitable for various materials up to 56 HRC
- Multi-flute & heavy core design enable high feed rates
- AlCrN for longer tool life



**Fraise carbure Multi-Dents, R45°, DIN6527L**

- Pour la super finition
- Convient pour les matériaux jusqu'à 56 HRC
- Multi-dents avec un noyau renforcé
- AlCrN pour une meilleure durée de vie



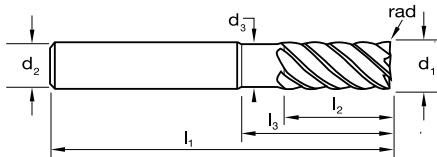
**Frese metallo duro, 6-8 Taglienti, R45, DIN6527L**

- Fresa specifica per finiture ad altissima precisione
- Ideale per vari materiali duri fino a 56 HRC
- Multi tagliente con nocciolo fresa rinforzato per consentire alti avanzamenti
- AlCrN per Ottimizzare vita utensile



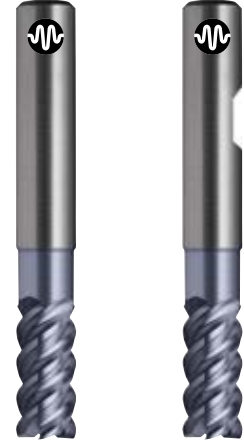
**Fresas de MD, 6-8 ranuras, R45, DIN6527L**

- Para aplicaciones de acabado súper fino
- Adecuado para diversos materiales hasta 56HrC
- El diseño de múltiples ranuras y núcleo robusto, permite altas velocidades de avance
- AlCrN para una mayor vida útil de la herramienta



Vc Page #: 422 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
0600	6.0	57	13	21	6	5.5	6	E543 0600	E544 0600
0800	8.0	63	19	27	8	7.5	6	E543 0800	E544 0800
1000	10.0	72	22	32	10	9.5	6	E543 1000	E544 1000
1200	12.0	83	26	38	12	11.2	6	E543 1200	E544 1200
1600	16.0	92	32	44	16	15.0	8	E543 1600	E544 1600
2000	20.0	104	38	54	20	19.0	8	E543 2000	E544 2000

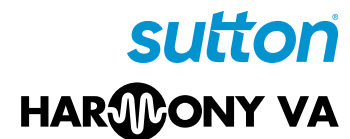


Catalogue Code	<b>E543</b>	<b>E544</b>
Discount Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>AlCrN</b>	<b>AlCrN</b>
Sutton Designation	<b>NH</b>	<b>NH</b>
Geometry	R45	R45
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P							M							K							N							S							H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
E543					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																															
E544					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																														

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R40/42, Regular, Harmony VA



- Excellent solution for stainless steels tough materials
- Optimised geometry with variable helix design ensures high productivity
- Suitable for universal applications with the one tool



## Fraise 4 dents carbure, R40°/42°, DIN6527L

- Excellente solution pour les inox et certains Super Alliages
- Hélice variable 40°/42° pour la suppression des vibrations
- Convient aux matériaux jusqu'à 1600N/mm<sup>2</sup>



## Frese metallo duro, 4 Taglienti, R40/42, DIN6527L

- Eccellente soluzione per lavorazioni di acciai inossidabili & super leghe
- Geometria tagliente variabile, ottimizzata per consentire alta produttività
- ideale per esecuzione di cave, contornature e finiture precise con un unico utensile

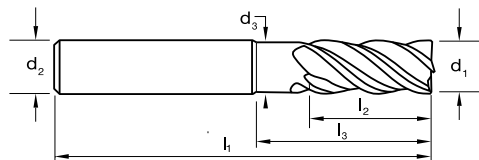
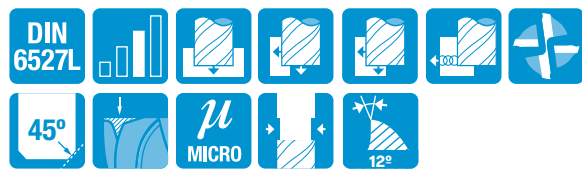


## Fresas de MD, 4 Ranuras, R40/42, DIN6527L

- Excelente solución para aceros inoxidable y materiales difíciles, como súper aleaciones
- La geometría optimizada con diseño de hélice variable garantiza una alta productividad
- Adecuado para aplicaciones de ranurado, corte lateral y acabado con una herramienta

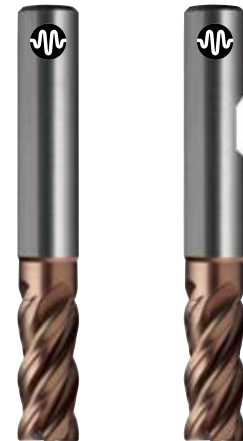


watch the video



Vc Page #: 423 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Chamfer	Item #	Item #
0300	3.0	57	8	14	6	2.8	4	0.06 x 45°	E459 0300	E460 0300
0400	4.0	57	11	16	6	3.8	4	0.06 x 45°	E459 0400	E460 0400
0500	5.0	57	13	18	6	4.8	4	0.10 x 45°	E459 0500	E460 0500
0600	6.0	57	13	19	6	5.7	4	0.10 x 45°	E459 0600	E460 0600
0800	8.0	63	19	25	8	7.6	4	0.10 x 45°	E459 0800	E460 0800
1000	10.0	72	22	30	10	9.5	4	0.20 x 45°	E459 1000	E460 1000
1200	12.0	83	26	36	12	11.5	4	0.20 x 45°	E459 1200	E460 1200
1400	14.0	83	26	36	14	13.5	4	0.30 x 45°	E459 1400	E460 1400
1600	16.0	92	32	42	16	15.5	4	0.30 x 45°	E459 1600	E460 1600
1800	18.0	92	32	42	18	17.5	4	0.30 x 45°	E459 1800	E460 1800
2000	20.0	104	38	52	20	19.5	4	0.30 x 45°	E459 2000	E460 2000



Catalogue Code	E459	E460
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	HELICA	HELICA
Sutton Designation	VA	VA
Geometry	R40/42	R40/42
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

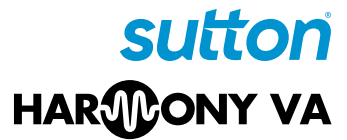
ISO	P												M			K						N										S										H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E459	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E460	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



# Endmills Carbide, 4 Flute, R40/42, Cnr Rad, Regular, Harmony VA



- Excellent solution for stainless steels tough materials
- Optimised geometry with variable helix design ensures high productivity
- Suitable for universal applications with the one tool



## Fraise 4 dents carbure, R40°/42°, Torique, DIN6527L

- Excellente solution pour les inox et certains Super Allages
- Hélice variable 40°/42° pour la suppression des vibrations
- Convient aux matériaux jusqu'à 1600N/mm<sup>2</sup>



## Frese metallo duro, 4 Taglienti, R40/42, Toriche, DIN6527L

- Eccellente soluzione per lavorazioni di acciai inossidabili & super leghe
- Geometria tagliente variabile, ottimizzata per consentire alta produttività
- ideale per esecuzione di cave, contornature e finiture precise con un unico utensile

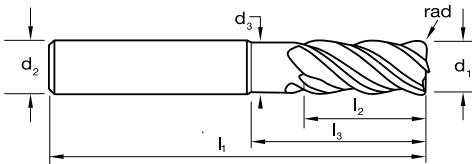
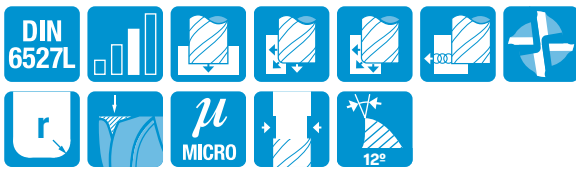
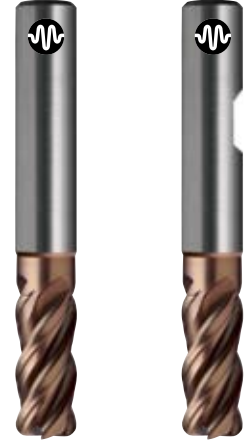


## Fresas de MD, 4 Ranuras, R40/42, Tórica, DIN6527L

- Excelente solución para aceros inoxidable y materiales difíciles, como súper aleaciones
- La geometría optimizada con diseño de hélice variable garantiza una alta productividad
- Adecuado para aplicaciones de ranurado, corte lateral y acabado con una herramienta



watch the video



Vc Page #: 423 →

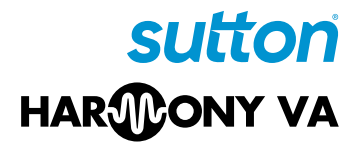
Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
0603	6.0	57	13	21	6	5.5	4	0.3	E462 0603	E463 0603
0605		57	13	21	6	5.5	4	0.5	E462 0605	E463 0605
0610		57	13	21	6	5.5	4	1.0	E462 0610	E463 0610
0803	8.0	63	19	27	8	7.5	4	0.3	E462 0803	E463 0803
0805		63	19	27	8	7.5	4	0.5	E462 0805	E463 0805
0810		63	19	27	8	7.5	4	1.0	E462 0810	E463 0810
0815		63	19	27	8	7.5	4	1.5	E462 0815	E463 0815
0820		63	19	27	8	7.5	4	2.0	E462 0820	E463 0820
1003	10.0	72	22	32	10	9.5	4	0.3	E462 1003	E463 1003
1005		72	22	32	10	9.5	4	0.5	E462 1005	E463 1005
1010		72	22	32	10	9.5	4	1.0	E462 1010	E463 1010
1015		72	22	32	10	9.5	4	1.5	E462 1015	E463 1015
1020		72	22	32	10	9.5	4	2.0	E462 1020	E463 1020
1203	12.0	83	26	38	12	11.2	4	0.3	E462 1203	E463 1203
1205		83	26	38	12	11.2	4	0.5	E462 1205	E463 1205
1210		83	26	38	12	11.2	4	1.0	E462 1210	E463 1210
1215		83	26	38	12	11.2	4	1.5	E462 1215	E463 1215
1220		83	26	38	12	11.2	4	2.0	E462 1220	E463 1220
1230		83	26	38	12	11.2	4	3.0	E462 1230	E463 1230
1605	16.0	92	32	44	16	15.0	4	0.5	E462 1605	E463 1605
1610		92	32	44	16	15.0	4	1.0	E462 1610	E463 1610
1615		92	32	44	16	15.0	4	1.5	E462 1615	E463 1615
1620		92	32	44	16	15.0	4	2.0	E462 1620	E463 1620
1625		92	32	44	16	15.0	4	2.5	E462 1625	
1630		92	32	44	16	15.0	4	3.0	E462 1630	E463 1630
1640		92	32	44	16	15.0	4	4.0	E462 1640	E463 1640
2005	20.0	104	38	54	20	19.0	4	0.5	E462 2005	E463 2005
2010		104	38	54	20	19.0	4	1.0	E462 2010	E463 2010
2015		104	38	54	20	19.0	4	1.5	E462 2015	E463 2015
2020		104	38	54	20	19.0	4	2.0	E462 2020	E463 2020
2030		104	38	54	20	19.0	4	3.0	E462 2030	E463 2030
2040		104	38	54	20	19.0	4	4.0	E462 2040	E463 2040

ISO	P					M					K					N					S					H																																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	37.1	37.2	37.3	37.4	37.5	38	38.1	38.2	39	39.1	39.2	40	41						
E462						○	○	○	○	○	○	○	○	●	●	●	●							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○														
E463						○	○	○	○	○	○	○	○	○	○	○	○								○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○													

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 3 Flute, R55/54/56, Regular, Harmony VA



- VHM-ULTRA grade of carbide for high performance
- Optimised geometry for stainless steels
- 55/54/56° variable flute helix for chatter free milling
- Universal use for slotting and finishing with the one tool
- Helica for superior wear resistance in stainless steel



## Fraise 3 dents carbure, R55°/54°/56°, DIN6527L

- Carbure VHM-ULTRA pour une meilleure performance
- Recommandé pour les inox
- Hélice variable 55°/54°/56° pour la suppression des vibrations
- Revêtement HELICA pour une meilleure durée de vie



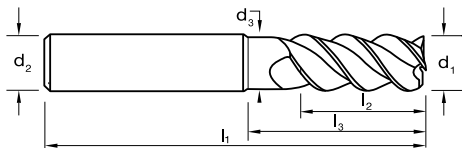
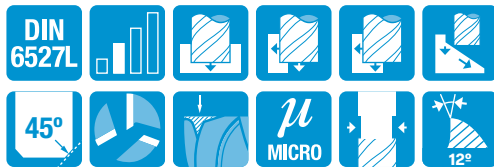
## Frese metallo duro, 3 Taglienti, R55/54/56, DIN6527L

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Geometria ottimizzata per acciai inossidabili
- Elica tagliente variabile 55/54/64° per lavorazioni senza vibrazioni
- Fresa universale per lavorazioni di cave e finitura di precisione
- Helica per consentire una resistenza all'usura superiore su acciai inossidabili



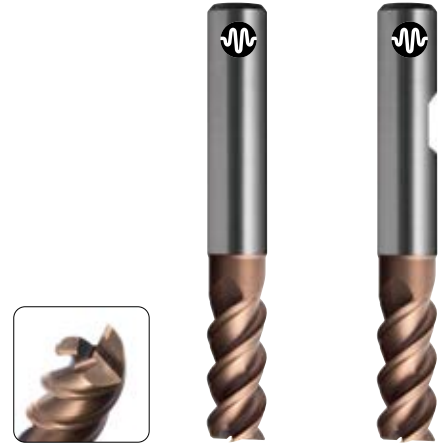
## Fresas de MD, 3 Ranuras, R55/54/56, DIN6527L

- Grado de MD, VHM-ULTRA para alto rendimiento
- Geometría optimizada para aceros inoxidable
- 55/54/56° hélice de ranura variable para fresado sin vibraciones
- Uso universal para ranurado y acabado con una herramienta
- Helica para una resistencia al desgaste superior, en acero inoxidable



Vc Page #: 423 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
0300	3.0	57	8	14	6	2.8	3	E410 0300	E411 0300
0400	4.0	57	11	16	6	3.8	3	E410 0400	E411 0400
0500	5.0	57	13	18	6	4.8	3	E410 0500	E411 0500
0600	6.0	57	13	19	6	5.7	3	E410 0600	E411 0600
0800	8.0	63	19	25	8	7.6	3	E410 0800	E411 0800
1000	10.0	72	22	30	10	9.5	3	E410 1000	E411 1000
1200	12.0	83	26	36	12	11.5	3	E410 1200	E411 1200
1400	14.0	83	26	36	14	13.5	3	E410 1400	E411 1400
1600	16.0	92	32	42	16	15.5	3	E410 1600	E411 1600
1800	18.0	92	32	42	18	17.5	3	E410 1800	E411 1800
2000	20.0	104	38	52	20	19.5	3	E410 2000	E411 2000



Catalogue Code	E410	E411
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	HELICA	HELICA
Sutton Designation	VA	VA
Geometry	R55/54/56	R55/54/56
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5

ISO	P										M			K					N										S							H																		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
E410																																																						
E411																																																						

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Roughers Carbide, R39/41, Regular, Harmony VA-R



- Variable Helix minimises vibrations for stable machining
- Heavy duty core structure, enables highest metal removal rates
- Sinusoidal profile provides easy evacuation in heavy cutting
- AlCrN coating provides outstanding heat resistance & minimises tool wear
- Necked for extra reach



## Fraise d'ébauge carbure hélice variable R39/41, DIN6527L

- Hélice variable pour la suppression des vibrations
- Structure renforcé pour le gros débit copeaux
- Profil sinusoidal pour une évacuation parfaite des copeaux
- Revêtement AlCrN pour une meilleure résistance
- Micro protection d'arete pour une meilleure stabilité



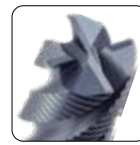
## Sgrossatura Metallo duro, R39/41, DIN6527L

- Elica variabile per minimizzare le vibrazioni e avere una lavorazione stabile
- Nocciolo fresa irrobustito, adatto per i più alti volumi di asportazione truciolo
- Profilo sinusoidale per fornire una facile evquazione truciolo nelle alte asportazioni
- Micro protezione dello spigolo tagliente per aumentarne stabilità AlCrN per Ottimizzare vita utensile

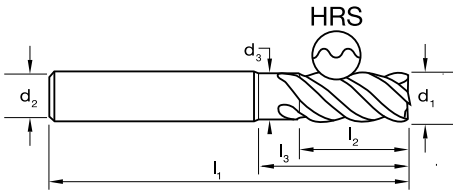


## Fresa de desbaste en Carburo, R39/41, DIN6527L

- La Hélice Variable minimiza la vibración para un mecanizado estable
- Núcleo reforzado para evitar flexión, permite volúmenes alto de arranque de viruta
- Perfil sinusoidal que permite una fácil evacuación en corte pesado
- Filo con microgeometría para una mayor estabilidad



Catalogue Code	E488
Discount Group	B0210
Material	VHM-ULTRA
Surface Finish	AlCrN
Sutton Designation	VA-R
Geometry	R39/41
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Vc Page #: 423 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
0400	4.0	57	11	17	6	3.8	4	E488 0400
0500	5.0	57	13	19	6	4.8	4	E488 0500
0600	6.0	57	13	21	6	5.8	4	E488 0600
0800	8.0	63	19	27	8	7.6	4	E488 0800
1000	10.0	72	22	32	10	9.5	4	E488 1000
1200	12.0	83	26	38	12	11.5	4	E488 1200
1600	16.0	92	32	44	16	15.5	4	E488 1600
2000	20.0	104	38	54	20	19.5	4	E488 2000
2500	25.0	121	45	65	25	24.5	4	E488 2500

ISO	P											M					K					N										S					H														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E488	●	●	●	●	●	●	○	○	○	○	○	○	○	●	●	●	●																						●	●	○	●	○								

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills 5 Flute, R40/42, Regular, Harmony Ni



- Excellent solution for stainless steels and super alloy
- Optimised geometry with variable helix design
- Suitable for slotting, side cutting and finishing
- Xceed for outstanding oxidation resistance and hot hardness



## Fraise 5 dents carbure, R40°/42°, Torique, DIN6527L

- Optimisée pour les bases Nickel, Duplex et Super-Duplex
- Hélice variable pour supprimer les vibrations
- Convient pour les applications de contourage, rainurage et trocoidale
- Revêtement Xceed pour une bonne résistance à l'oxidation et à les hautes températures



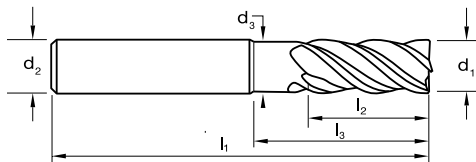
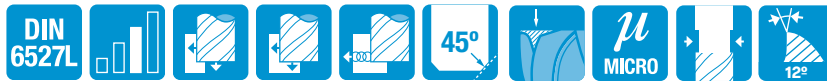
## Frese metallo duro, 5 Taglienti, R40/42, Toriche, DIN6527L

- Fresa torica il cui raggio di testa viene interamente rettificato in un'unica volta senza riprese
- Ottimizzata per una vita utensile maggiore su leghe di inconel, acciaio inossidabile
- Elica variabile per eliminare le vibrazioni
- Web rastremato per aumentare rigidità
- Xceed per un'eccezionale resistenza all'ossidazione e alle alte temperature



## Fresas de MD, 5 Ranuras, R40/42, DIN6527L

- Filo facetado para aplicaciones de acabado
- Optimizado para una mayor vida útil de la herramienta en aleaciones de inconel, acero inoxidable
- Diseño de hélice variable para suprimir vibraciones
- Núcleo cónico para aumentar la rigidez
- Xceed para una excelente resistencia a la oxidación y dureza en caliente



Catalogue Code  
Product Group  
Material  
Surface Finish  
Sutton Designation  
Geometry  
Shank Form (DIN 6535)  
Shank Tolerance

E472	E473
B0210	B0210
VHM-ULTRA	VHM-ULTRA
Xceed	Xceed
Ni	Ni
R40/42	R40/42
HA	HB
h6	h6

Vc Page #: 440 →

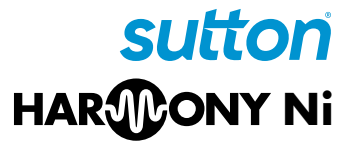
Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	chf	Item #	Item #
0600	6.0	57	13	21	6	5.7	5	0.20	E472 0600	E473 0600
0800	8.0	63	19	27	8	7.6	5	0.20	E472 0800	E473 0800
1000	10.0	72	22	32	10	9.5	5	0.25	E472 1000	E473 1000
1200	12.0	83	26	38	12	11.5	5	0.25	E472 1200	E473 1200
1600	16.0	92	32	44	16	15.5	5	0.35	E472 1600	E473 1600
2000	20.0	104	38	54	20	19.5	5	0.35	E472 2000	E473 2000

ISO	P													M			K					N										S					H												
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E472						○	○	○	○	○	○	○	○	●	●	●																	●	●	●	●	●												
E473						○	○	○	○	○	○	○	○	●	●	●																	●	●	●	●	●												

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 5 Flute, R40/42, Cnr Rad, Harmony Ni



- Excellent solution for stainless steels and super alloy
- Optimised geometry with variable helix design
- Suitable for slotting, side cutting and finishing
- Xceed for outstanding oxidation resistance and hot hardness



## Fraise 5 dents carbure, R40°/42°, DIN6527L, Torique

- Optimisée pour les bases Nickel, Duplex et Super-Duplex
- Hélice variable pour supprimer les vibrations
- Convient pour les applications de contournage, rainurage et trocoidale
- Revêtement Xceed pour une bonne résistance à l'oxydation et à les hautes températures



## Frese metallo duro, 5 Taglienti, R40/42, Toriche, DIN6527L

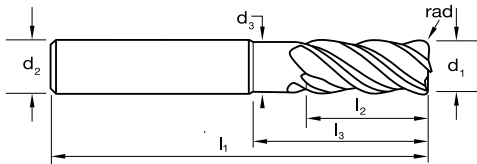
- Fresa torica il cui raggio di testa viene interamente rettificato in un'unica volta senza riprese
- Ottimizzata per una vita utensile maggiore su leghe di inconel, acciaio inossidabile
- Elica variabile per eliminare le vibrazioni
- Web rastremato per aumentare rigidità
- Xceed per un'eccezionale resistenza all'ossidazione e alle alte temperature



## Fresas de MD, 5 Ranuras, R40/42, DIN6527L

- Filo facetado para aplicaciones de acabado
- Optimizado para una mayor vida útil de la herramienta en aleaciones de inconel, acero inoxidable
- Diseño de hélice variable para suprimir vibraciones
- Núcleo cónico para aumentar la rigidez
- Xceed para una excelente resistencia a la oxidación y dureza en caliente

DIN 6527L



Catalogue Code  
Product Group  
Material  
Surface Finish  
Sutton Designation  
Geometry  
Shank Form (DIN 6535)  
Shank Tolerance

E474	E475
B0210	B0210
VHM-ULTRA	VHM-ULTRA
Xceed	Xceed
Ni	Ni
R40/42	R40/42
HA	HB
h6	h6

Vc Page #: 440 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
0810	8.0	63	19	27	8	7.6	5	1.0	E474 0810	E475 0810
1005	10.0	72	22	32	10	9.5	5	0.5	E474 1005	E475 1005
1010	10.0	72	22	32	10	9.5	5	1.0	E474 1010	E475 1010
1210	12.0	83	26	38	12	11.5	5	1.0	E474 1210	E475 1210
1215	12.0	83	26	38	12	11.5	5	1.5	E474 1215	E475 1215
1225	12.0	83	26	38	12	11.5	5	2.5	E474 1225	E475 1225
1240	12.0	83	26	38	12	11.5	5	4.0	E474 1240	E475 1240
1610	16.0	92	32	44	16	15.5	5	1.0	E474 1610	E475 1610
1615	16.0	92	32	44	16	15.5	5	1.5	E474 1615	E475 1615
1625	16.0	92	32	44	16	15.5	5	2.5	E474 1625	E475 1625
1630	16.0	92	32	44	16	15.5	5	4.0	E474 1630	E475 1630
1640	16.0	92	32	44	16	15.5	5	4.0	E474 1640	E475 1640
2010	20.0	104	38	54	20	19.5	5	1.0	E474 2010	E475 2010
2015	20.0	104	38	54	20	19.5	5	1.5	E474 2015	E475 2015
2025	20.0	104	38	54	20	19.5	5	2.5	E474 2025	E475 2025
2040	20.0	104	38	54	20	19.5	5	4.0	E474 2040	E475 2040

ISO	P					M			K			N						S					H																														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
E474						○	○	○	○	○	○	○	○	●	●	●																	●	●	●	●	●																
E475						○	○	○	○	○	○	○	○	●	●	●																		●	●	●	●	●															

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Excellent solution for stainless steels and super alloy
- Optimised geometry with variable helix design
- Suitable for slotting, side cutting and finishing
- Xceed for outstanding oxidation resistance and hot hardness



### Fraise 7 dents carbure, R40°/42°, DIN6527L, Torique

- Optimisée pour les bases Nickel, Duplex et Super-Duplex
- Hélice variable pour supprimer les vibrations
- Convient pour les applications de contournage, rainurage et trocoidale
- Revêtement Xceed pour une bonne résistance à l'oxydation et à les hautes températures



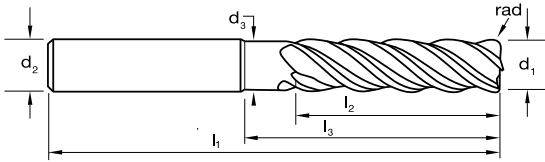
### Frese metallo duro, 7 Taglienti, R40/42, Toriche, DIN6527L

- Fresa torica il cui raggio di testa viene interamente rettificato in un unica volta senza riprese
- Ottimizzata per una vita utensile maggiore su leghe di inconel, acciaio inossidabile
- Elica variabile per eliminare le vibrazioni
- Web rastremato per aumentare rigidità
- Xceed per un'eccezionale resistenza all'ossidazione e alle alte temperature



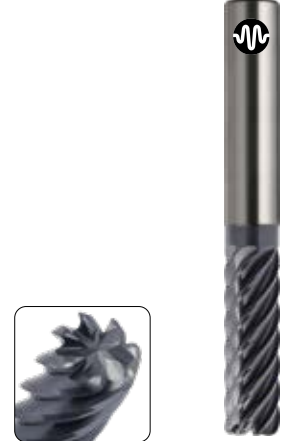
### Fresas de MD, 7 Ranuras, R40/42, DIN6527L

- Filo facetado para aplicaciones de acabado
- Optimizado para una mayor vida útil de la herramienta en aleaciones de inconel, acero inoxidable
- Diseño de hélice variable para suprimir vibraciones
- Núcleo cónico para aumentar la rigidez
- Xceed para una excelente resistencia a la oxidación y dureza en caliente



Vc Page #: 441 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	
<b>SUTTON STD - 3XL</b>									
1000	10.0	85	34	44	10	95	7	-	E486 1000
1020	10.0	85	34	44	10	95	7	2	E486 1020
1025	10.0	85	34	44	10	95	7	2.5	E486 1025
1040	10.0	85	34	44	10	95	7	4	E486 1040
1200	12.0	96	40	51	12	11.5	7	-	E486 1200
1210	12.0	96	40	51	12	11.5	7	1	E486 1210
1215	12.0	96	40	51	12	11.5	7	1.5	E486 1215
1220	12.0	96	40	51	12	11.5	7	2	E486 1220
1225	12.0	96	40	51	12	11.5	7	2.5	E486 1225
1230	12.0	96	40	51	12	11.5	7	3	E486 1230
1240	12.0	96	40	51	12	11.5	7	4	E486 1240
1600	16.0	105	52	57	16	15.5	7	-	E486 1600
1610	16.0	105	52	57	16	15.5	7	1	E486 1610
1615	16.0	105	52	57	16	15.5	7	1.5	E486 1615
1620	16.0	105	52	57	16	15.5	7	2	E486 1620
1625	16.0	105	52	57	16	15.5	7	2.5	E486 1625
1630	16.0	105	52	57	16	15.5	7	3	E486 1630
1640	16.0	105	52	57	16	15.5	7	4	E486 1640
2000	20.0	140	64	88	20	19.5	7	-	E486 2000
2010	20.0	140	64	88	20	19.5	7	1	E486 2010
2015	20.0	140	64	88	20	19.5	7	1.5	E486 2015
2020	20.0	140	64	88	20	19.5	7	2	E486 2020
2025	20.0	140	64	88	20	19.5	7	2.5	E486 2025
2030	20.0	140	64	88	20	19.5	7	3	E486 2030
2040	20.0	140	64	88	20	19.5	7	4	E486 2040
2050	20.0	140	64	88	20	19.5	7	5	E486 2050



Catalogue Code	E486
Product Group	B0210
Material	VHM-ULTRA
Surface Finish	Xceed
Sutton Designation	Ni-3XL
Geometry	R40/42
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P										M			K				N										S					H																						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41						
E486						○	○							●	●	●																	●	●	●	●	●																		

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Chipbreakers eliminate build up of swarf
- Increases machine productivity
- Designed for Trochoidal/Dynamic machining strategies in Nickel based alloys & stainless steels



**Fraise carbure, 7 dents, R40/42° Ni, longue, brises-copeaux**

- L'apport des brise-copeaux permet d'éviter le collage et les longs copeaux,
- D'augmenter la productivité et de la durée de vie des outils
- Parfait pour les applications de fraisage dynamique et trochoidal dans les bases nickel et les inox



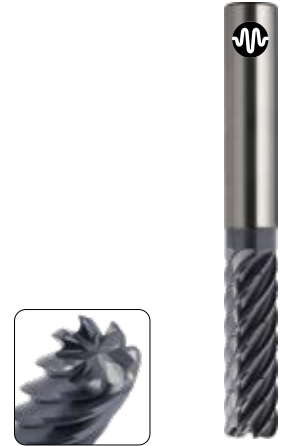
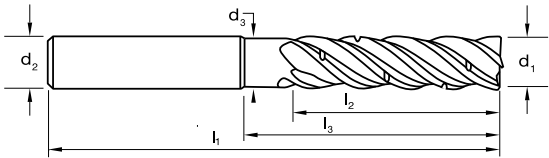
**Frese a candela in metallo duro, 7 taglienti, R40/42 Ni, lunghe, rompitruciolo**

- I rompitruciolo evaquano velocemente i trucioli
- Aumento della produttività della macchina
- Progettato per strategie di lavorazione trocoidali/dinamiche in leghe a base di nichel



**Fresas de MD, 7 Labios, R40/42 Ni, larga, Rompevirutas**

- Los rompevirutas eliminan la acumulación de virutas
- Aumenta la productividad de la máquina
- Diseñado para estrategias de mecanizado trocoidal/dinámico en aleaciones a base de níquel.



Catalogue Code	<b>E493</b>
Product Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Xceed</b>
Sutton Designation	<b>Ni-3XL</b>
Geometry	R40/42
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 441 → Refer E486

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
<b>SUTTON STD - 3XL</b>								
<b>1000</b>	<b>10.0</b>	85.0	34.0	44.0	10.0	9.5	7	E493 1000
<b>1200</b>	<b>12.0</b>	96.0	40.0	51.0	12.0	11.5	7	E493 1200
<b>1600</b>	<b>16.0</b>	105.0	52.0	57.0	16.0	15.3	7	E493 1600
<b>2000</b>	<b>20.0</b>	140.0	64.0	88.0	20.0	19.3	7	E493 2000

ISO	P					M			K				N										S					H																						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
<b>E493</b>						●	●	●	●	●	●	●	●	●	●	●																	●	●	●	●	●													

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective





- Excellent solution for stainless steels and super alloy
- Optimised geometry with variable helix design
- Suitable for slotting, side cutting and finishing
- Xceed for outstanding oxidation resistance and hot hardness

- Web rastremato per aumentare rigidità
- Xceed per un'eccezionale resistenza all'ossidazione e alle alte temperature



### Fresas de MD, 9 Ranuras, R40/42, DIN6527L

- Filo facetado para aplicaciones de acabado
- Optimizado para una mayor vida útil de la herramienta en aleaciones de iniconel, acero inoxidable
- Diseño de hélice variable para suprimir vibraciones
- Núcleo cónico para aumentar la rigidez
- Xceed para una excelente resistencia a la oxidación y dureza en caliente



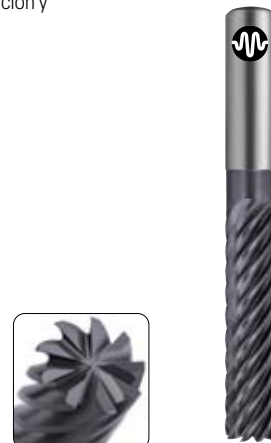
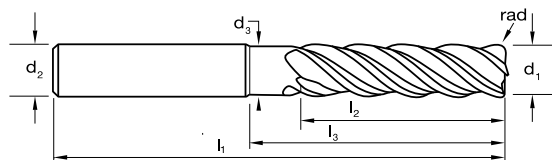
### Fraise 9 dents carbure, R40°/42°, DIN6527L, Torique

- Optimisée pour les bases Nickel, Duplex et Super-Duplex
- Hélice variable pour supprimer les vibrations
- Convient pour les applications de contourage, rainurage et trocoidale
- Revêtement Xceed pour une bonne résistance à l'oxidation et à les hautes températures



### Frese metallo duro, 9 Taglienti, R40/42, Toriche, DIN6527L

- Fresa torica il cui raggio di testa viene interamente rettificato in un'unica volta senza riprese
- Ottimizzata per una vita utensile maggiore su leghe di iniconel, acciaio inossidabile
- Elica variabile per eliminare le vibrazioni



Catalogue Code	<b>E487</b>
Product Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Xceed</b>
Sutton Designation	<b>Ni-4XL</b>
Geometry	R40/42
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 441 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
<b>SUTTON STD - 4XL</b>									
<b>1000</b>	<b>10.0</b>	93	42	52	10	9.5	9	-	E487 1000
<b>1020</b>	<b>10.0</b>	93	42	52	10	9.5	9	2	E487 1020
<b>1025</b>	<b>10.0</b>	93	42	52	10	9.5	9	2.5	E487 1025
<b>1040</b>	<b>10.0</b>	93	42	52	10	9.5	9	4	E487 1040
<b>1200</b>	<b>12.0</b>	110	50	65	12	11.5	9	-	E487 1200
<b>1210</b>	<b>12.0</b>	110	50	65	12	11.5	9	1	E487 1210
<b>1215</b>	<b>12.0</b>	110	50	65	12	11.5	9	1.5	E487 1215
<b>1220</b>	<b>12.0</b>	110	50	65	12	11.5	9	2	E487 1220
<b>1225</b>	<b>12.0</b>	110	50	65	12	11.5	9	2.5	E487 1225
<b>1230</b>	<b>12.0</b>	110	50	65	12	11.5	9	3	E487 1230
<b>1240</b>	<b>12.0</b>	110	50	65	12	11.5	9	4	E487 1240
<b>1600</b>	<b>16.0</b>	130	66	82	16	15.5	9	-	E487 1600
<b>1610</b>	<b>16.0</b>	130	66	82	16	15.5	9	1	E487 1610
<b>1615</b>	<b>16.0</b>	130	66	82	16	15.5	9	1.5	E487 1615
<b>1620</b>	<b>16.0</b>	130	66	82	16	15.5	9	2	E487 1620
<b>1625</b>	<b>16.0</b>	130	66	82	16	15.5	9	2.5	E487 1625
<b>1630</b>	<b>16.0</b>	130	66	82	16	15.5	9	3	E487 1630
<b>1640</b>	<b>16.0</b>	130	66	82	16	15.5	9	4	E487 1640
<b>2000</b>	<b>20.0</b>	160	82	100	20	19.5	9	-	E487 2000
<b>2010</b>	<b>20.0</b>	160	82	100	20	19.5	9	1	E487 2010
<b>2015</b>	<b>20.0</b>	160	82	100	20	19.5	9	1.5	E487 2015
<b>2020</b>	<b>20.0</b>	160	82	100	20	19.5	9	2	E487 2020
<b>2025</b>	<b>20.0</b>	160	82	100	20	19.5	9	2.5	E487 2025
<b>2030</b>	<b>20.0</b>	160	82	100	20	19.5	9	3	E487 2030
<b>2040</b>	<b>20.0</b>	160	82	100	20	19.5	9	4	E487 2040
<b>2050</b>	<b>20.0</b>	160	82	100	20	19.5	9	5	E487 2050

ISO	P													M			K					N										S							H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
<b>E487</b>																																																								

**P** Steel **M** Stainless Steel **K** Cast Iron **N** Non-Ferrous Metals **S** Titanium & Super Alloys **H** Hard Materials

● Optimal ○ Effective



- Chipbreakers eliminate build up of swarf
- Increases machine productivity
- Designed for Trochoidal/Dynamic machining strategies in Nickel based alloys & stainless steels



**Fraise carbure, 9 dents, R40°/42° Ni, longue, brises-copeaux**

- L'apport des brise-copeaux permet d'éviter le collage et les longs copeaux,
- D'augmenter de la productivité et de la durée de vie des outils
- Parfait pour les applications de fraisage dynamique et trochoidal dans les bases nickel et les inox



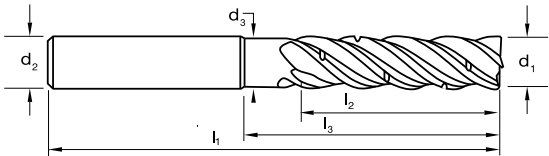
**Frese a candela in metallo duro, 9 taglienti, R40/42 Ni, extra lunghe, rompitrucciolo**

- I rompitrucciolo evaquano velocemente i trucioli
- Aumento della produttività della macchina
- Progettato per strategie di lavorazione trocoidali/dinamiche in leghe a base di nichel



**Fresas de MD, 9 Labios, R40/42 Ni, extra larga, Rompevirutas**

- Los rompevirutas eliminan la acumulación de virutas
- Aumenta la productividad de la máquina
- Diseñado para estrategias de mecanizado trocoidal/dinámico en aleaciones a base de níquel



Catalogue Code	<b>E494</b>
Product Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Xceed</b>
Sutton Designation	<b>Ni-4XL</b>
Geometry	R40/42
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 441 → Refer E487

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
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**SUTTON STD - 4XL**

<b>1000</b>	<b>10.0</b>	100.0	40.0	50.0	10.0	9.5	9	E494 1000
<b>1200</b>	<b>12.0</b>	100.0	48.0	60.0	12.0	11.5	9	E494 1200
<b>1600</b>	<b>16.0</b>	125.0	65.0	80.0	16.0	15.3	9	E494 1600
<b>2000</b>	<b>20.0</b>	150.0	80.0	100.0	20.0	19.3	9	E494 2000

ISO	P										M					K					N										S					H													
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, Ballnose, 4 Flute, R30, Long Reach, *Harmony Ti-Ni-VA*



- VHM-ULTRA grade of carbide for high performance
- For profile & contour milling in long reach applications
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- AlCrN for longer tool life



## Fraise 4 dents carbure, R30°, Longue

- Pour le fraisage de formes et de poches profondes
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- AlCrN et VHM-ULTRA pour une meilleure durée de vie



## Fresa metallo duro, Sferiche, 4 Taglienti, R30, Lunga Portata

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Ideale per lavorazioni di contornatura e profilatura
- Adatta per materiali fino a 1600 N/mm<sup>2</sup>
- AlCrN per Ottimizzare vita utensile



## Fresas de MD, Esféricas, 4 ranuras, R30, Larga

- Grado de MD, VHM-ULTRA para alto rendimiento
- Para fresado de perfiles y contornos en aplicaciones de largo alcance
- Adecuado para materiales hasta 1600 N/mm<sup>2</sup>
- AlCrN para una mayor vida útil de la herramienta

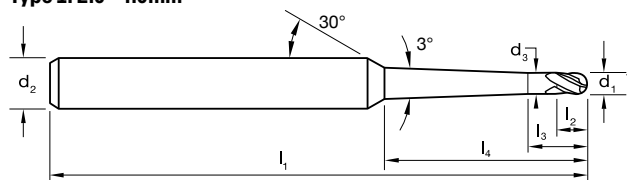


Catalogue Code	<b>E481</b>
Discount Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Xceed</b>
Sutton Designation	<b>Ti-Ni-VA</b>
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h5

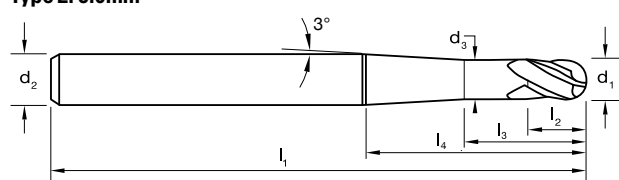


Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Angle	Item #
<b>TYPE 1</b>										
<b>0200</b>	<b>2.0</b>	62	3	7.0	24	6	1.9	4	3°	E481 0200
<b>0300</b>	<b>3.0</b>	62	4	9.5	24.6	6	2.8	4	3°	E481 0300
<b>0400</b>	<b>4.0</b>	62	5	12.0	25.3	6	3.8	4	3°	E481 0400
<b>TYPE 2</b>										
<b>0500</b>	<b>5.0</b>	80	6	14.5		6	4.8	4	3°	E481 0500
<b>TYPE 3</b>										
<b>0600</b>	<b>6.0</b>	80	7	17.0		6	5.7	4		E481 0600
<b>0800</b>	<b>8.0</b>	90	9	22.0		8	7.6	4		E481 0800
<b>1000</b>	<b>10.0</b>	100	11	27.0		10	9.5	4		E481 1000
<b>1200</b>	<b>12.0</b>	120	13	32.0		12	11.5	4		E481 1200
<b>1600</b>	<b>16.0</b>	140	17	42.0		16	15.5	4		E481 1600

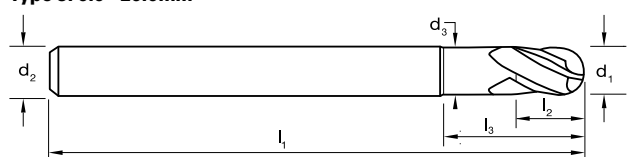
Type 1: 2.0 - 4.0mm



Type 2: 5.0mm



Type 3: 6.0 - 16.0mm



ISO	P													M			K					N										S							H															
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
<b>E481</b>								○	●	●	●	●	●	○	○	○	○	○	○	○	○	○											○	○	○	○	○	○	○	○	○	○	○											

P Steel 
 M Stainless Steel 
 K Cast Iron 
 N Non-Ferrous Metals 
 S Titanium & Super Alloys 
 H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 5 Flute, R40/42, Regular, *Harmony Ti*



- Square end for finishing applications
- Optimised for longer tool life in Titanium Alloys
- Variable helix design to suppress vibration
- Web taper to increase rigidity
- AlNova for outstanding oxidation resistance and hot hardness



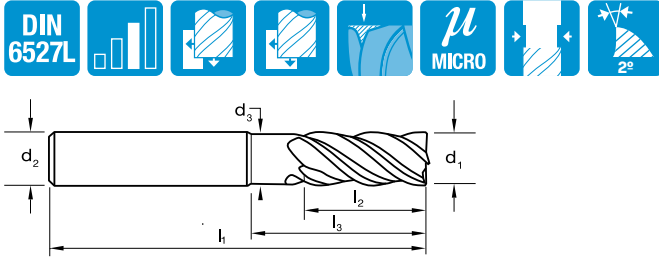
## Fraise 5 dents carbure, R40°/42°, DIN6527L

- Optimisée pour le Titane
- Hélice variable pour supprimer les vibrations
- Taillage conique pour conserver la rigidité
- Revêtement AlNova pour une bonne résistance à l'oxydation et à la haute vitesse



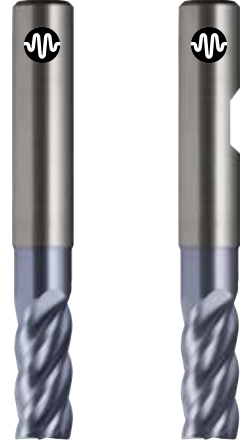
## Frese metallo duro, 5 Taglienti, R40/42, DIN6527L

- Fresa a spigolo vivo per lavorazioni di finitura
- Ottimizzata per una vita utensile maggiore su leghe di Titanio
- Elica variabile per eliminare le vibrazioni
- Web rastremato per aumentare rigidità
- AlNova per un'eccezionale resistenza all'ossidazione e alle alte temperature



## Fresas de MD, 5 Ranuras, R40/42, DIN6527L

- Filo facetado para aplicaciones de acabado
- Optimizado para una mayor vida útil de la herramienta en aleaciones de titanio
- Diseño de hélice variable para suprimir vibraciones
- Núcleo cónico para aumentar la rigidez
- AlNova para una excelente resistencia a la oxidación y dureza en caliente



Catalogue Code	<b>E464</b>	<b>E465</b>
Discount Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>AlNova</b>	<b>AlNova</b>
Sutton Designation	<b>Ti</b>	<b>Ti</b>
Geometry	R40/42	R40/42
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
<b>0600</b>	<b>6.0</b>	57	13	21	6	5.7	5	E464 0600	
<b>0800</b>	<b>8.0</b>	63	19	27	8	7.6	5	E464 0800	
<b>1000</b>	<b>10.0</b>	72	22	32	10	9.5	5	E464 2000	
<b>1200</b>	<b>12.0</b>	83	26	36	12	11.5	5	E464 1200	E465 1200
<b>1600</b>	<b>16.0</b>	92	32	42	16	15.5	5	E464 1600	E465 1600
<b>2000</b>	<b>20.0</b>	104	38	52	20	19.5	5	E464 2000	E465 2000
<b>2500</b>	<b>25.0</b>	125	45	64	25	24	5	E464 2500	

ISO	P													M					K					N										S					H										
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
<b>E464</b>																																																	
<b>E465</b>																																																	

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Unique corner radius grind for added strength
- Optimised for longer tool life in Titanium Alloys
- Variable helix design to suppress vibration
- AlNova for outstanding oxidation resistance and hot hardness



### Fraise 5 dents carbure, R40°/42°, Torique, DIN6527L

- Optimisée pour le Titane
- Hélice variable pour supprimer les vibrations, Torique
- Taillage conique pour conserver la rigidité
- Revêtement AlNova pour une bonne résistance à l'oxydation et à la haute vitesse



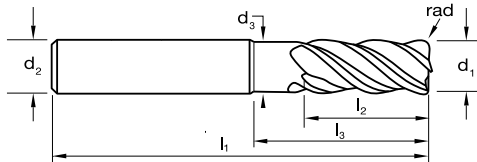
### Frese metallo duro, 5 Taglienti, R40/42, Toriche, DIN6527L

- Fresa torica il cui raggio di testa viene interamente rettificato in un'unica volta senza riprese
- Ottimizzata per una vita utensile maggiore su leghe di Titanio
- Elica variabile per eliminare le vibrazioni
- Web rastremato per aumentare rigidità
- AlNova per un'eccellente resistenza all'ossidazione e alle alte temperature



### Fresas de MD, 5 Ranuras, R40/42, Tórica, DIN6527L

- Filo facetado para aplicaciones de acabado
- Optimizado para una mayor vida útil de la herramienta en aleaciones de titanio
- Diseño de hélice variable para suprimir vibraciones
- Núcleo cónico para aumentar la rigidez
- AlNova para una excelente resistencia a la oxidación y dureza en caliente



Catalogue Code  
Discount Group  
Material  
Surface Finish  
Sutton Designation  
Geometry  
Shank Form (DIN 6535)  
Shank Tolerance

E466	E467
B0210	B0210
VHM-ULTRA	VHM-ULTRA
AlNova	AlNova
Ti	Ti
R40/42	R40/42
HA	HB
h6	h6

Vc Page #: 424 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
0605	6.0	57	13	21	6	5.5	5	0.5	E466 0605	
0610	6.0	57	13	21	6	5.5	5	1.0	E466 0610	
0805	8.0	63	19	27	8	7.5	5	0.5	E466 0805	
0810	8.0	63	19	27	8	7.5	5	1.0	E466 0810	
1005	10.0	72	22	32	10	9.5	5	0.5	E466 1005	
1010	10.0	72	22	32	10	9.5	5	1.0	E466 1010	
1210	12.0	83	26	38	12	11.2	5	1.0	E466 1210	E467 1210
1215	12.0	83	26	38	12	11.2	5	1.5	E466 1215	
1225	12.0	83	26	38	12	11.2	5	2.5	E466 1225	E467 1225
1230	12.0	83	26	38	12	11.2	5	3.0	E466 1230	
1240	12.0	83	26	38	12	11.2	5	4.0	E466 1240	E467 1240
1610	16.0	92	32	44	16	15	5	1.0	E466 1610	E467 1610
1625	16.0	92	32	44	16	15	5	2.5	E466 1625	E467 1625
1630	16.0	92	32	44	16	15	5	3.0	E466 1630	E467 1630
1640	16.0	92	32	44	16	15	5	4.0	E466 1640	E467 1640
2010	20.0	104	38	54	20	19	5	1.0	E466 2010	E467 2010
2025	20.0	104	38	54	20	19	5	2.5	E466 2025	E467 2025
2030	20.0	104	38	54	20	19	5	3.0	E466 2030	
2040	20.0	104	38	54	20	19	5	4.0	E466 2040	E467 2040
2050	20.0	104	38	54	20	19	5	5.0	E466 2050	E467 2050
2060	20.0	104	38	54	20	19	5	6.0	E466 2060	E467 2060
2510	25.0	120	45	64	25	24	5	1.0	E466 2510	
2525	25.0	120	45	64	25	24	5	2.5	E466 2525	
2530	25.0	120	45	64	25	24	5	3.0	E466 2530	
2540	25.0	120	45	64	25	24	5	4.0	E466 2540	
2550	25.0	120	45	64	25	24	5	5.0	E466 2550	
2560	25.0	120	45	64	25	24	5	6.0	E466 2560	

ISO	P													M			K						N										S							H										
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E466																																																		
E467																																																		

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 6 Flute, R40/42, Regular, Harmony Ti



- Square end for finishing applications
- Optimised for longer tool life in Titanium Alloys
- Variable helix design to suppress vibration
- Web taper to increase rigidity
- AlNova for outstanding oxidation resistance and hot hardness



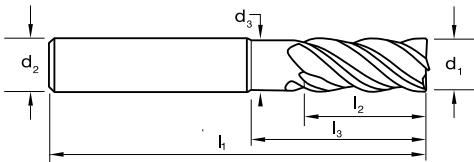
### Fraise 6 dents carbure, R40°/42°, DIN6527L

- Optimisée pour le Titane
- Hélice variable pour supprimer les vibrations
- Taillage conique pour conserver la rigidité
- Revêtement AlNova pour une bonne résistance à l'oxydation et à la haute vitesse



### Frese metallo duro, 6 Taglienti, R40/42, DIN6527L

- Fresa a spigolo vivo per lavorazioni di finitura
- Ottimizzata per una vita utensile maggiore su leghe di Titanio
- Elica variabile per eliminare le vibrazioni
- Web rastremato per aumentare rigidità
- AlNova per un'eccezionale resistenza all'ossidazione e alle alte temperature



Vc Page #: 424 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
1200	12.0	83	26	38	12	11.5	6	E468 1200	E469 1200
1600	16.0	92	32	44	16	15.5	6	E468 1600	E469 1600
2000	20.0	104	38	54	20	19.5	6	E468 2000	E469 2000



Catalogue Code	<b>E468</b>	<b>E469</b>
Product Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>AlNova</b>	<b>AlNova</b>
Sutton Designation	<b>Ti</b>	<b>Ti</b>
Geometry	R40/42	R40/42
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P													M				K				N							S					H															
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E468																																					●	●	●	●	●	●							
E469																																					●	●	●	●	●	●							

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective







- Optimised design for trochoidal and HSM milling strategies in titanium alloys
- For extra deep pocket milling in typically thin wall components
- Variable helix design to suppress vibration
- AlNova for outstanding oxidation resistance and hot hardness



### Fraise 5 dents carbure, R40°/42°, longue

- Optimisée pour le Titane, en fraisage trocoidale, dynamique, de poche et finition
- Hélice variable pour supprimer les vibrations
- Taillage conique pour conserver la rigidité
- Revêtement AlNova pour une bonne résistance à l'oxidation et à la haute vitesse
- Carbure VHM-ULTRA



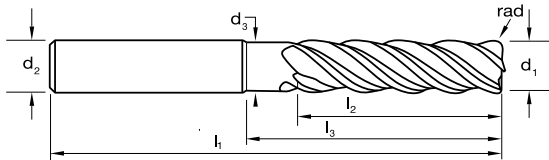
### Frese metallo duro, 5 Taglienti, R40/42, Extra Lunga

- Design ottimizzato per lavorazioni con strategie di trocoidale e HSM su leghe di Titanio
- Ideale per fresare tasche molto profonde con pareti tipicamente molto sottili
- Elica variabile per eliminare le vibrazioni
- AlNova per un'eccezionale resistenza all'ossidazione e alle alte temperature



### Fresas de MD, 5 Ranuras, R40/42, Extra Larga

- Diseño optimizado para fresado trocoidal y HSM en aleaciones de titanio
- Para fresado profundo en componentes de paredes delgadas
- Diseño de hélice variable para suprimir vibraciones
- AlNova para una excelente resistencia a la oxidación y dureza en caliente



Vc Page #: 424 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	
<b>SUTTON STD - 3XL</b>									
1000	10.0	85	34	44	10	9.5	5	-	E476 1000
1020	10.0	85	34	44	10	9.5	5	2	E476 1020
1025	10.0	85	34	44	10	9.5	5	2.5	E476 1025
1040	10.0	85	34	44	10	9.5	5	4	E476 1040
1200	12.0	96	40	51	12	11.5	5	-	E476 1200
1210	12.0	96	40	51	12	11.5	5	1	E476 1210
1215	12.0	96	40	51	12	11.5	5	1.5	E476 1215
1220	12.0	96	40	51	12	11.5	5	2	E476 1220
1225	12.0	96	40	51	12	11.5	5	2.5	E476 1225
1230	12.0	96	40	51	12	11.5	5	3	E476 1230
1240	12.0	96	40	51	12	11.5	5	4	E476 1240
1600	16.0	105	52	57	16	15.5	5	-	E476 1600
1610	16.0	105	52	57	16	15.5	5	1	E476 1610
1615	16.0	105	52	57	16	15.5	5	1.5	E476 1615
1620	16.0	105	52	57	16	15.5	5	2	E476 1620
1625	16.0	105	52	57	16	15.5	5	2.5	E476 1625
1630	16.0	105	52	57	16	15.5	5	3	E476 1630
1640	16.0	105	52	57	16	15.5	5	4	E476 1640
2000	20.0	140	64	88	20	19.5	5	-	E476 2000
2010	20.0	140	64	88	20	19.5	5	1	E476 2010
2015	20.0	140	64	88	20	19.5	5	1.5	E476 2015
2020	20.0	140	64	88	20	19.5	5	2	E476 2020
2025	20.0	140	64	88	20	19.5	5	2.5	E476 2025
2030	20.0	140	64	88	20	19.5	5	3	E476 2030
2040	20.0	140	64	88	20	19.5	5	4	E476 2040
2050	20.0	140	64	88	20	19.5	5	5	E476 2050
2060	20.0	140	64	88	20	19.5	5	6	E476 2060



Catalogue Code	E476
Product Group	B0210
Material	VHM-ULTRA
Surface Finish	AlNova
Sutton Designation	Ti-3XL
Geometry	R40/42
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P							M							K							N							S							H														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E476																																																		

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Optimised design for trochoidal and HSM milling strategies in titanium alloys
- For extra deep pocket milling in typically thin wall components
- Variable helix design to suppress vibration
- AlNova for outstanding oxidation resistance and hot hardness



### Fraise 5 dents carbure, R40°/42°, longue

- Optimisée pour le Titane, en fraisage trochoïdale, dynamique, de poche et finition
- Hélice variable pour supprimer les vibrations
- Taillage conique pour conserver la rigidité
- Revêtement AlNova pour une bonne résistance à l'oxydation et à la haute vitesse
- Carbure VHM-ULTRA



### Frese metallo duro, 5 Taglienti, R40/42, Extra Lunga

- Design ottimizzato per lavorazioni con strategie di trocoidale e HSM su leghe di Titanio
- Ideale per fresare tasche molto profonde con pareti tipicamente molto sottili
- Elica variabile per eliminare le vibrazioni
- AlNova per un'eccezionale resistenza all'ossidazione e alle alte temperature

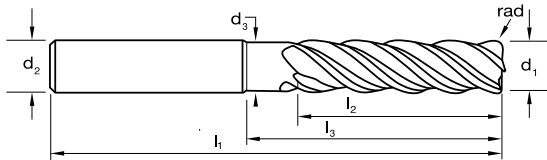


### Fresas de MD, 5 Ranuras, R40/42, Extra Larga

- Diseño optimizado para fresado trocoidal y HSM en aleaciones de titanio
- Para fresado profundo en componentes de paredes delgadas
- Diseño de hélice variable para suprimir vibraciones
- AlNova para una excelente resistencia a la oxidación y dureza en caliente



Catalogue Code	<b>E477</b>
Product Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>AlNova</b>
Sutton Designation	<b>Ti-4XL</b>
Geometry	R40/42
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Vc Page #: 424 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
<b>SUTTON STD - 4XL</b>									
1000	10.0	93	42	52	10	9.5	5	-	E477 1000
1020	10.0	93	42	52	10	9.5	5	2	E477 1020
1025	10.0	93	42	52	10	9.5	5	2.5	E477 1025
1040	10.0	93	42	52	10	9.5	5	4	E477 1040
1200	12.0	110	50	65	12	11.5	5	-	E477 1200
1210	12.0	110	50	65	12	11.5	5	1	E477 1210
1215	12.0	110	50	65	12	11.5	5	1.5	E477 1215
1220	12.0	110	50	65	12	11.5	5	2	E477 1220
1225	12.0	110	50	65	12	11.5	5	2.5	E477 1225
1230	12.0	110	50	65	12	11.5	5	3	E477 1230
1240	12.0	110	50	65	12	11.5	5	4	E477 1240
1600	16.0	130	66	82	16	15.5	5	-	E477 1600
1610	16.0	130	66	82	16	15.5	5	1	E477 1610
1615	16.0	130	66	82	16	15.5	5	1.5	E477 1615
1620	16.0	130	66	82	16	15.5	5	2	E477 1620
1625	16.0	130	66	82	16	15.5	5	2.5	E477 1625
1630	16.0	130	66	82	16	15.5	5	3	E477 1630
1640	16.0	130	66	82	16	15.5	5	4	E477 1640
2000	20.0	160	82	100	20	19.5	5	-	E477 2000
2010	20.0	160	82	100	20	19.5	5	1	E477 2010
2015	20.0	160	82	100	20	19.5	5	1.5	E477 2015
2020	20.0	160	82	100	20	19.5	5	2	E477 2020
2025	20.0	160	82	100	20	19.5	5	2.5	E477 2025
2030	20.0	160	82	100	20	19.5	5	3	E477 2030
2040	20.0	160	82	100	20	19.5	5	4	E477 2040
2050	20.0	160	82	100	20	19.5	5	5	E477 2050
2060	20.0	160	82	100	20	19.5	5	6	E477 2060

ISO	P							M							K							N							S							H													
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E477																																																	

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Chipbreakers eliminate build up of swarf
- Increases machine productivity
- Designed for Trochoidal/Dynamic machining strategies in Titanium



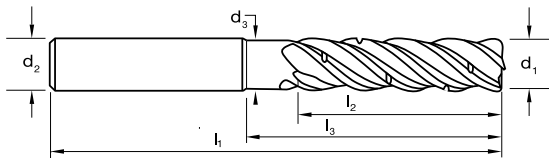
- Fraise 5 dents carbure 5 dents, R40°/42° Ti, longue, brises-copeaux**
- L'apport des brise-copeaux permet d'éviter le collage et les longs copeaux
  - D'augmenter la productivité et de la durée de vie des outils
  - Parfait pour les applications de fraisage dynamique et trochoidal dans les Titanes



- Frese in metallo duro, 5 taglienti, R40/42 Ti, lunghe, rompitruciolo**
- I rompitruciolo evaquano velocemente i trucioli
  - Aumento della produttività della macchina
  - Progettato per strategie di lavorazione Trocoidale/Dinamica in Titanio



- Fresas de MD, 5 labios, R40/42 Ti, Larga, Rompevirutas**
- Los rompevirutas eliminan la acumulación de virutas
  - Aumenta la productividad de la máquina
  - Diseñado para estrategias de mecanizado trocoidal/dinámico en titanio



Vc Page #: 424 →

Catalogue Code	<b>E491</b>	<b>E492</b>
Product Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>AINova</b>	<b>AINova</b>
Sutton Designation	<b>Ti</b>	<b>Ti</b>
Geometry	R40/42	R40/42
Shank Form (DIN 6535)	HA	HA
Shank Tolerance	h6	h6

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
<b>SUTTON STD - 3XL</b>									
<b>1000</b>	<b>10.0</b>	10.0	85.0	34.0	9.5	44.0	5	E491 1000	
<b>1200</b>	<b>12.0</b>	12.0	96.0	40.0	11.5	51.0	5	E491 1200	
<b>1600</b>	<b>16.0</b>	16.0	105.0	52.0	15.3	57.0	5	E491 1600	
<b>2000</b>	<b>20.0</b>	20.0	140.0	64.0	19.3	88.0	5	E491 2000	
<b>SUTTON STD - 4XL</b>									
<b>1000</b>	<b>10.0</b>	10.0	100.0	40.0	9.5	50.0	5		E492 1000
<b>1200</b>	<b>12.0</b>	12.0	100.0	48.0	11.5	60.0	5		E492 1200
<b>1600</b>	<b>16.0</b>	16.0	125.0	65.0	15.3	80.0	5		E492 1600
<b>2000</b>	<b>20.0</b>	20.0	150.0	80.0	19.3	100.0	5		E492 2000

ISO	P												M			K				N										S					H																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	38.3	39.1	39.2	40	41				
E491																																						●	●	●	●	●												
E492																																								○	○	○	○	○										

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Variable Helix minimizes vibrations for stable machining
- Heavy duty core structure, enables highest metal removal rates
- Special edge profile & internal coolant ducts provides easy evacuation of chips in heavy cutting



### Fraise carbure, brises-copeaux 6 dents, R40/42 arrosage central

- Hélice variable pour réduire les vibrations et stabiliser l'usinage
- Core macif permettant les gros enlèvements de copeaux
- Son profil spécial et l'arrosage au centre permettent une parfaite évacuation copeaux



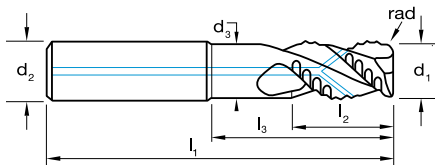
### Frese in metallo duro, 6 taglienti, R40/42 Ti, lunghe, rompitrucolo. Refrigerazione interna centrale e tagliente adatto a massima evacuazione trucioli

- Elica variabile per ridurre le vibrazioni e stabilizzare la lavorazione
- Nucleo Macif che consente una grande asportazione di trucioli
- Il suo profilo speciale e il refrigerante centrale consentono una perfetta evacuazione del trucioli



### Fresas de MD, 6 labios, R40/42 Ti, Rompevirutas, Mejorado con refrigerante interior y forma de ranura ancha para la máxima evacuación de virutas

- Hélice variable para reducir las vibraciones y estabilizar el mecanizado
- Núcleo Macif que permite una gran eliminación de virutas
- Su perfil especial y su refrigerante central permiten una perfecta evacuación de la viruta



Catalogue Code	<b>E721</b>
Discount Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Xceed</b>
Sutton Designation	<b>Ti - IK</b>
Geometry	R40/42
Shank Form (DIN 6535)	HB
Shank Tolerance	h6

Vc Page #: 425 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
1200	12	83	26	38	12	11.40	6	-	E721 1200
1210	12	83	26	38	12	11.40	6	1	E721 1210
1220	12	83	26	38	12	11.40	6	2	E721 1220
1225	12	83	26	38	12	11.40	6	2.5	E721 1225
1230	12	83	26	38	12	11.40	6	3	E721 1230
1240	12	83	26	38	12	11.40	6	4	E721 1240
1600	16	92	34	44	16	15.20	6	-	E721 1600
1610	16	92	34	44	16	15.20	6	1	E721 1610
1620	16	92	34	44	16	15.20	6	2	E721 1620
1625	16	92	34	44	16	15.20	6	2.5	E721 1625
1630	16	92	34	44	16	15.20	6	3	E721 1630
1640	16	92	34	44	16	15.20	6	4	E721 1640
2000	20	104	42	52	20	19.00	6	-	E721 2000
2010	20	104	42	52	20	19.00	6	1	E721 2010
2020	20	104	42	52	20	19.00	6	2	E721 2020
2025	20	104	42	52	20	19.00	6	2.5	E721 2025
2030	20	104	42	52	20	19.00	6	3	E721 2030
2040	20	104	42	52	20	19.00	6	4	E721 2040

ISO	P													M			K			N							S							H																					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41						
E721														○	○	○																	○	○	○	○	○	○	●	●	●	●	●												

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Designed for Super-Finishing
- For Hardened Steels up to 65 HRC.
- High-helix geometry & flute profile produces mirror like surface finish



**Fraises carbure 6 dents, R55 VH, DIN 6527L**

- Adapté pour la super finition jusqu'à 65Hrc
- La géométrie et le profil de la denture permettent d'excellents états de surface



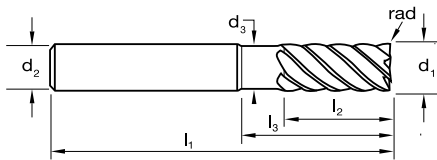
**Frese in metallo duro, 6 taglienti, R55 VH, DIN6527L**

- Progettato per la superfinitura
- Per acciai temprati fino a 65 HRC
- La geometria elica stretta con il suo profilo tagliente specifico, producono una finitura superficiale a specchio



**Fresas de metal duro, 6 labios, R55 VH, DIN6527L**

- Diseñado para un superacabado
- Para aceros templados hasta 65 HRC.
- La geometría de alta hélice y el perfil de flauta producen un acabado superficial similar al de un espejo



Vc Page #: 425 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
<b>0600</b>	<b>6.0</b>	57.0	13.0	21.0	6.0	5.8	6	0.50	E495 0600
<b>0800</b>	<b>8.0</b>	63.0	19.0	27.0	8.0	7.6	6	0.50	E495 0800
<b>1000</b>	<b>10.0</b>	72.0	22.0	32.0	10.0	9.5	6	0.50	E495 1000
<b>1200</b>	<b>12.0</b>	83.0	26.0	38.0	12.0	11.5	6	0.50	E495 1200
<b>1600</b>	<b>16.0</b>	92.0	32.0	44.0	16.0	15.5	6	1.00	E495 1600
<b>2000</b>	<b>20.0</b>	104.0	38.0	54.0	20.0	19.5	6	1.00	E495 2000

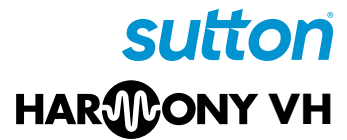


Catalogue Code	<b>E495</b>
Discount Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Durana</b>
Sutton Designation	<b>VH</b>
Geometry	R55
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P													M				K							N											S											H			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	37.1	37.2	37.3	37.4	37.5	38	39	40	41				
<b>E495</b>																																										●	●	●	●	●	●	●	●	

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R30, Regular, Harmony VH



- Designed for versatile use
- For Hardened Steels upto 65 HRC



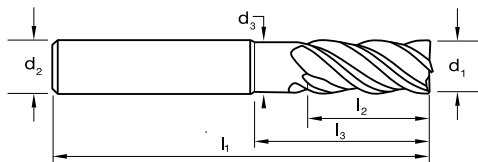
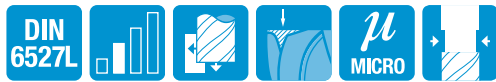
- Fraise carbure, 4 dents, R30 VH, DIN 6527L**
- Adapter pour les applications générales jusqu'à 65Hrc



- Frese in metallo duro, 4 taglienti, R30 VH, DIN6527L**
- Progettato per un uso versatile
  - Per acciai temprati fino a 65 HRC



- Fresas de metal duro, 4 labios, R30 VH, DIN6527L**
- Diseñado para un uso versátil
  - Para aceros templados hasta 65 HRC



Catalogue Code	E496
Discount Group	B0210
Material	VHM-ULTRA
Surface Finish	Durana
Sutton Designation	VH
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 425 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
0100	1.0	50.0	9.0	-	6.0	-	4	E496 0100
0200	2.0	50.0	9.0	-	6.0	-	4	E496 0200
0300	3.0	50.0	9.0	-	6.0	-	4	E496 0300
0400	4.0	50.0	14.0	-	6.0	-	4	E496 0400
0500	5.0	50.0	15.0	-	6.0	-	4	E496 0500
0600	6.0	50.0	17.0	-	6.0	-	4	E496 0600
0800	8.0	60.0	20.0	-	8.0	-	4	E496 0800
1000	10.0	75.0	25.0	-	10.0	-	4	E496 1000
1200	12.0	75.0	30.0	-	12.0	-	4	E496 1200

ISO	P													M			K					N										S										H												
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
E496																																																						

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective





# Endmills Carbide, Ballnose, 2 Flute, R30, Long Reach, *Harmony VH*



- Designed for profile/copy milling applications
- For Hardened Steels up to 65 HRC



## Fraise carbure hémisphérique, 2 dents, R30VH, longue

- Adapter pour les applications de copiage et de finition dans les aciers jusqu'à 65Hrc



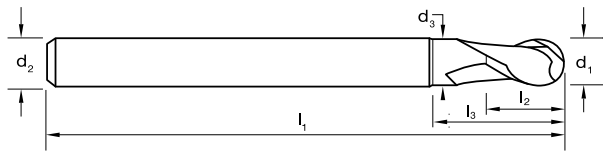
## Frese in metallo duro, 2 taglienti, R30 VH, sferica, lunga

- Progettato per applicazioni di fresatura di profili e copiatura
- Per acciai temprati fino a 65 HRC



## Fresas de metal duro, esférica 2 labios, R30VH, largo alcance

- Diseñado para aplicaciones de fresado de perfiles/copias
- Para aceros templados hasta 65 HRC



Vc Page #: 425 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
<b>0200</b>	<b>2.0</b>	75.0	4.0	-	6.0	-	2	E498 0200
<b>0300</b>	<b>3.0</b>	75.0	6.0	-	6.0	-	2	E498 0300
<b>0400</b>	<b>4.0</b>	75.0	8.0	-	6.0	-	2	E498 0400
<b>0500</b>	<b>5.0</b>	75.0	10.0	-	6.0	-	2	E498 0500
<b>0600</b>	<b>6.0</b>	75.0	12.0	-	6.0	-	2	E498 0600
<b>0800</b>	<b>8.0</b>	75.0	16.0	-	8.0	-	2	E498 0800
<b>1000</b>	<b>10.0</b>	100.0	20.0	-	10.0	-	2	E498 1000
<b>1200</b>	<b>12.0</b>	100.0	24.0	-	12.0	-	2	E498 1200



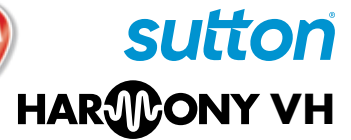
Catalogue Code	<b>E498</b>
Discount Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Durana</b>
Sutton Designation	<b>VH</b>
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P													M			K						N						S					H															
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
<b>E498</b>														●	●	●																						●	●	●	●								

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, Ballnose, 4 Flute, R30, Long Reach, Harmony VH



- Designed for profile/copy milling applications
- For Hardened Steels up to 65 HRC



## Fraise carbure hémisphérique, 4 dents, R30VH, longue

- Adapter pour les applications de copiage et de finition dans les aciers jusqu'à 65Hrc



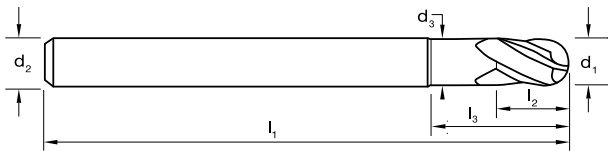
## Frese in metallo duro, 4 taglienti, R30 VH, sferica, lunga

- Progettato per applicazioni di fresatura di profili e copiatura
- Per acciai temprati fino a 65 HRC



## Fresas de metal duro, esférica 4 labios, R30VH, largo alcance

- Diseñado para aplicaciones de fresado de perfiles/copias
- Para aceros templados hasta 65 HRC



Vc Page #: 425 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
0200	2.0	75.0	4.0	-	6.0	-	4	E499 0200
0300	3.0	75.0	6.0	-	6.0	-	4	E499 0300
0400	4.0	75.0	8.0	-	6.0	-	4	E499 0400
0500	5.0	75.0	10.0	-	6.0	-	4	E499 0500
0600	6.0	75.0	12.0	-	6.0	-	4	E499 0600
0800	8.0	75.0	16.0	-	8.0	-	4	E499 0800
1000	10.0	100.0	20.0	-	10.0	-	4	E499 1000
1200	12.0	100.0	24.0	-	12.0	-	4	E499 1200



Catalogue Code	E499
Discount Group	B0210
Material	VHM-ULTRA
Surface Finish	Durana
Sutton Designation	VH
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P													M			K					N										S										H							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E499																																																	

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R50 VH, Regular, *Harmony VH*



- Dual stepped core for optimal strength
- Ideal design for hard machining
- Suitable for materials up to 63 HRC
- Aldura for longer tool life



## Fraise 4 dents carbure, R50°, DIN6527L

- Double goujures
- Ideale pour les opérations de fraisage difficiles
- Convient aux matériaux jusqu'à 63 HRC
- Revêtement Aldura pour une meilleure durée de vie



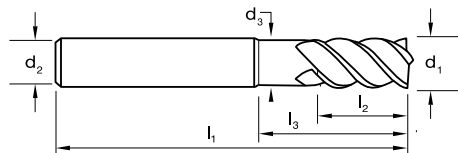
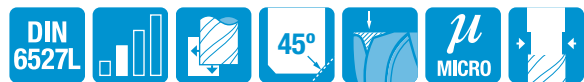
## Frese metallo duro, 4 Taglienti, R50, DIN6527L

- Doppio gradino al nocciolo per un'ottima stabilità durante la lavorazione
- Progettata per lavorazioni gravose
- Ideale per materiali fino a 63 HRC
- Aldura per Ottimizzare vita utensile



## Fresas de MD, 4 Ranuras, R50, DIN6527L

- Doble núcleo escalonado para una resistencia óptima
- Diseño ideal para mecanizado duro
- Adecuado para materiales hasta 63HrC
- Aldura para una mayor vida útil de la herramienta



Vc Page #: 425 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
<b>0600</b>	<b>6.0</b>	57	13	21	6	5.5	4	E566 0600	E567 0600
<b>0800</b>	<b>8.0</b>	63	19	27	8	7.5	4	E566 0800	E567 0800
<b>1000</b>	<b>10.0</b>	72	22	32	10	9.5	4	E566 1000	E567 1000
<b>1200</b>	<b>12.0</b>	83	26	38	12	11.2	4	E566 1200	E567 1200
<b>1400</b>	<b>14.0</b>	83	26	38	14	13.0	4	E566 1400	E567 1400
<b>1600</b>	<b>16.0</b>	92	32	44	16	15.0	4	E566 1600	E567 1600
<b>2000</b>	<b>20.0</b>	104	38	54	20	19.0	4	E566 2000	E567 2000



watch the video



Catalogue Code	<b>E566</b>	<b>E567</b>
Discount Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>Aldura</b>	<b>Aldura</b>
Sutton Designation	<b>VH</b>	<b>VH</b>
Geometry	R50	R50
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P													M			K						N						S						H															
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
<b>E566</b>																																																		
<b>E567</b>																																																		

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R50, Cnr Rad, Regular, Harmony DUO-VH

sutton

HARMONY VH



- VHM-ULTRA grade of carbide for high performance
- Dual stepped core for optimal strength
- Ideal design for hard machining
- Suitable for materials up to 63 HRC
- Aldura for longer tool life



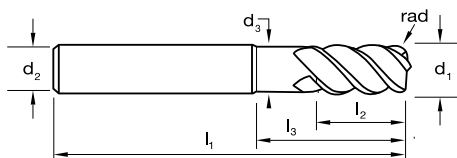
## Fraise 4 dents carbure, R50°, Torique, DIN6527L

- Carbure VHM-ULTRA pour une meilleure performance
- Double goujures
- Ideale pour les opérations de fraisage difficiles
- Convient aux matériaux jusqu'à 63 HRC
- Revêtement Aldura pour une meilleure durée de vie



## Frese metallo duro, 4 Taglienti, R50, Toriche, DIN6527L

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Doppio gradino al nocciolo per un ottima stabilità durante la lavorazione
- Progettata per lavorazioni gravose
- Ideale per materiali fino a 63 HRC
- Aldura per Ottimizzare vita utensile



Vc Page #: 425 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
<b>0610</b>	<b>6.0</b>	57	13	21	6	5.5	4	1.0	E568 0610	E569 0610
<b>0820</b>	<b>8.0</b>	63	19	27	8	7.5	4	2.0	E568 0820	E569 0820
<b>1020</b>	<b>10.0</b>	72	22	32	10	9.5	4	2.0	E568 1020	E569 1020
<b>1230</b>	<b>12.0</b>	83	26	38	12	11.2	4	3.0	E568 1230	E569 1230
<b>1430</b>	<b>14.0</b>	83	26	38	14	13.0	4	3.0	E568 1430	E569 1430
<b>1640</b>	<b>16.0</b>	92	32	44	16	15.0	4	4.0	E568 1640	E569 1640
<b>2040</b>	<b>20.0</b>	104	38	54	20	19.0	4	4.0	E568 2040	E569 2040



## Fresas de MD, 4 Ranuras, R50, Tórica, DIN6527L

- Grado de MD, VHM-ULTRA para alto rendimiento
- Doble núcleo escalonado para una resistencia óptima
- Diseño ideal para mecanizado duro
- Adecuado para materiales hasta 63HrC
- Aldura para una mayor vida útil de la herramienta



Catalogue Code	E568	E569
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	Aldura	Aldura
Sutton Designation	VH	VH
Geometry	R50	R50
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P												M					K					N					S					H																																		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41																		
<b>E568</b>																																																																			
<b>E569</b>																																																																			

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

## Endmills Carbide, 1 Flute, R30 AI, Short



- For non ferrous aluminium alloys such as aluminium sheet & extrusions, brass & bronze
- Large single flute provides maximum chip evacuation when ran at high RPM & feed rates
- Centre cutting for straight plunging or ramping
- Suitable for use in hi speed routers & air tools for trimming plastics and similar materials



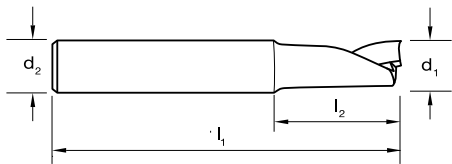
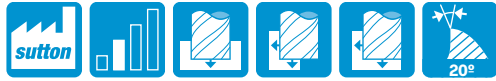
### Fraise 1 dent carbure, R30° AI, courte

- Recommandé pour l'aluminium en feuille et extrusion, les bronzes et plastiques
- Grosse goujure pour une évacuation maximale pendant les utilisations à haute vitesses
- Coupe au centre pour les opérations de plongées ou ramping, utilisation sous AIR recommandée pour les plastiques



### Frese metallo duro, 1 Taglienti, R30 AI, Corte

- Ideale per material non ferrosi, leghe di alluminio, lamiere di alluminio & fusioni, ottone e bronzo
- Ampio vano truciolo in un unico tagliente consentendo al massimo l'evacuazione truciolo riferito ad alti avanzanzamenti
- Tagliente al centro per consentire applicazione forante
- Ideale per essere applicate su utensili pneumatici utili per taglio di aterie plastiche e similari



Vc Page #: 426 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #
0300	3.0	50	8	6	1	E444 0300
0400	4.0	54	11	6	1	E444 0400
0500	5.0	54	13	6	1	E444 0500
0600	6.0	54	13	6	1	E444 0600
0800	8.0	58	19	8	1	E444 0800
1000	10.0	66	22	10	1	E444 1000
1200	12.0	73	26	12	1	E444 1200



### Fresas de MD, 1 ranura, R30 AI, Corta

- Para aleaciones de aluminio no ferrosos, como láminas y perfiles de aluminio, latón y bronce
- La ranura única y grande proporciona la máxima evacuación de viruta cuando se trabaja a altas RPM y velocidades de avance
- Corte central para perforaciones o rampas rectas
- Adecuado para usar en husillos de alta velocidad y husillos neumáticos, para recortar plásticos y materiales similares



Catalogue Code **E444**

Discount Group **B0208**

Material **VHM**

Surface Finish **Brt**

Sutton Designation **AI**

Geometry **R30**

Shank Form (DIN 6535) **HA**

Shank Tolerance **h6**

ISO	P													M			K							N							S							H																
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
E444																							●	●	●	○	○	○	○	○	○	○																						

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Slot Drills Carbide, 2 Flute, R40 AI, Regular



- For precision milling of slots & cavities
- Optimised geometry for aluminums & non-ferrous materials
- High speed & high feed rates can be achieved
- Highly efficient chip disposal



## Fraise 2 dents carbure, R40° AI, courte

- Pour le fraisage de rainures, de poches dans les aluminums et non-ferreux
- Utilisable en haute vitesse
- Evacuation copeaux optimale



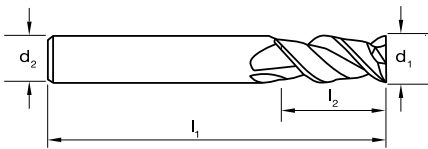
## Frese metallo duro, 2 Taglienti, R40 AI, DIN6527L

- Fresa universale per cave e lavorazioni di finitura
- Geometria tagliente ottimizzata per materiali non ferrosi & alluminio
- Supporta alti avanzamenti e alte velocità di taglio
- Elevata evacuazione truciolo



## Fresas de MD, 2 ranuras, R40 AI, DIN6527L

- Para fresado de precisión de ranuras y cavidades
- Geometría optimizada para aluminio y materiales no ferrosos
- Se pueden lograr altas velocidades de corte y altas velocidades de avance
- Eliminación de virutas altamente eficiente



Vc Page #: 426 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	z	chamf	Item #
0200	2.0	57	7	10	6	2	0.05	E310 0200
0300	3.0	57	8	10	6	2	0.05	E310 0300
0350	3.5	57	10	10	6	2	0.05	•
0400	4.0	57	11	10	6	2	0.05	E310 0400
0450	4.5	57	11	10	6	2	0.05	•
0500	5.0	57	13	8	6	2	0.05	E310 0500
0600	6.0	57	13	-	6	2	0.06	E310 0600
0700	7.0	63	16	-	8	2	0.07	•
0800	8.0	63	19	-	8	2	0.08	E310 0800
0900	9.0	72	19	-	10	2	0.09	•
1000	10.0	72	22	-	10	2	0.10	E310 1000
1200	12.0	83	26	-	12	2	0.12	E310 1200
1400	14.0	83	26	-	14	2	0.14	E310 1400
1600	16.0	92	32	-	16	2	0.16	E310 1600
1800	18.0	92	32	-	18	2	0.18	•
2000	20.0	104	38	-	20	2	0.20	E310 2000



Catalogue Code	E310
Discount Group	B0208
Material	VHM
Surface Finish	Brt
Sutton Designation	AI
Geometry	R40
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P													M			K					N										S										H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E310																																																			
	P	M	K	N	S	H																																													

● Optimal ○ Effective

• Available on request as special manufacture. Subject to lead time.



- 55° Helix, Centre Cutting, HSM
- Uniquely designed flute geometry for high chip evacuations
- Improves surface finishes at higher feed rates



### Fraise 2 dents carbure R55 AI

- Hélice 55° coupe au centre
- Design special pour une meilleure évacuation copeaux
- Etat de surface poli pour grande avance



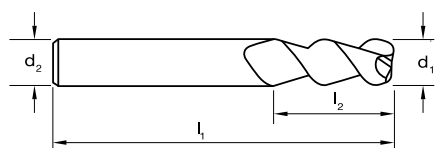
### Fresa metallo duro, 2 taglienti, R55 AI

- 55° Elica, Tagliente al centro, HSM
- Geometria unica del tagliente per un alta evacuazione truciolo
- Finiture migliori ad avanzamento elevato



### Fresas de MD, 2 ranuras, R55 AI

- Hélice de 55°, corte frontal, HSM
- Geometría de ranura de diseño único para evacuaciones de virutas elevadas
- Mejora los acabados superficiales a velocidades de avance más altas



Catalogue Code	<b>E660</b>
Discount Group	B0208
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Brt</b>
Sutton Designation	<b>AI</b>
Geometry	R55
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 426 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
0100	1.0	50	3	-	4.0	-	2	E660 0100
0150	1.5	50	4	-	4.0	-	2	E660 0150
0200	2.0	50	6	-	4.0	-	2	E660 0200
0250	2.5	50	7	-	4.0	-	2	E660 0250
0300	3.0	50	12	-	3.0	-	2	E660 0300
0400	4.0	50	15	-	4.0	-	2	E660 0400
0500	5.0	50	20	-	5.0	-	2	E660 0500
0600	6.0	57	20	-	6.0	-	2	E660 0600
0700	7.0	60	20	-	7.0	-	2	E660 0700
0800	8.0	63	20	-	8.0	-	2	E660 0800
1000	10.0	73	25	-	10.0	-	2	E660 1000
1200	12.0	83	25	-	12.0	-	2	E660 1200
1400	14.0	92	30	-	14.0	-	2	E660 1400
1600	16.0	92	30	-	26.0	-	2	E660 1600
2000	20.0	102	38	-	20.0	-	2	E660 2000
2500	25.0	104	38	-	25.0	-	2	E660 2500

ISO	P													M			K					N							S										H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
E660														●	●	●							●	●	●	●	●	●																												

P Steel 
 M Stainless Steel 
 K Cast Iron 
 N Non-Ferrous Metals 
 S Titanium & Super Alloys 
 H Hard Materials

● Optimal ○ Effective



# Endmills Carbide, 2 Flute, R55 AI, Long Reach



- 55° Helix, Centre Cutting, HSM
- Uniquely designed flute geometry for high chip evacuations
- Improves surface finishes at higher feed rates



## Fraise 2 dents carbure R55 AI

- Hélice 55° coupe au centre
- Design special pour une meilleure évacuation copeaux
- Etat de surface poli pour grande avance



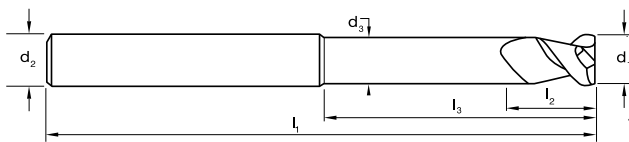
## Fresa metallo duro, 2 taglienti, R55 AI

- 55° Elica, Tagliente al centro, HSM
- Geometria unica del tagliente per un'alta evacuazione truciolo
- Finiture migliori ad avanzamento elevato



## Fresas de MD, 2 ranuras, R55 AI

- Hélice de 55°, corte frontal, HSM
- Geometría de ranura de diseño único para evacuaciones de virutas elevadas
- Mejora los acabados superficiales a velocidades de avance más altas



Catalogue Code	<b>E670</b>	<b>E671</b>	<b>E672</b>
Product Group	B0210	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>ASX</b>	<b>ASX</b>	<b>ASX</b>
Sutton Designation	<b>AI</b>	<b>AI</b>	<b>AI</b>
Geometry	R55	R55	R55
Shank Form (DIN 6535)	HA	HA	HA
Shank Tolerance	h6	h5	h6

Vc Page #: 427 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #	Item #
<b>0600</b>	<b>6.0</b>	57	6	30	6.0	5.70	2	E670 0600		
<b>0800</b>	<b>8.0</b>	63	8	30	8.0	7.70	2	E670 0800		
<b>1000</b>	<b>10.0</b>	73	10	35	10.0	9.50	2	E670 1000		
<b>1200</b>	<b>12.0</b>	83	12	35	12.0	11.50	2	E670 1200		
<b>1600</b>	<b>16.0</b>	92	16	40	16.0	15.30	2	E670 1600		
<b>2000</b>	<b>20.0</b>	104	20	40	20.0	19.30	2	E670 2000		
<b>0300</b>	<b>3.0</b>	75	3	12	6.0	2.80	2		E671 0300	
<b>0400</b>	<b>4.0</b>	75	4	15	6.0	3.60	2		E671 0400	
<b>0500</b>	<b>5.0</b>	75	5	20	6.0	4.70	2		E671 0500	
<b>0600</b>	<b>6.0</b>	100	6	50	6.0	5.70	2		E671 0600	
<b>0800</b>	<b>8.0</b>	100	8	50	8.0	7.70	2		E671 0800	
<b>1000</b>	<b>10.0</b>	100	10	50	10.0	9.50	2		E671 1000	
<b>1200</b>	<b>12.0</b>	100	12	50	12.0	11.50	2		E671 1200	
<b>1600</b>	<b>16.0</b>	125	16	75	16.0	15.30	2		E671 1600	
<b>2000</b>	<b>20.0</b>	125	20	75	20.0	19.30	2		E671 2000	
<b>0600</b>	<b>6.0</b>	150	6	100	6.0	5.70	2			E672 0600
<b>0800</b>	<b>8.0</b>	150	8	100	8.0	7.70	2			E672 0800
<b>1000</b>	<b>10.0</b>	150	10	100	10.0	9.50	2			E672 1000
<b>1200</b>	<b>12.0</b>	150	12	100	12.0	11.50	2			E672 1200
<b>1600</b>	<b>16.0</b>	150	16	100	16.0	15.30	2			E672 1600
<b>2000</b>	<b>20.0</b>	150	20	100	20.0	19.30	2			E672 2000

ISO	P													M			K							N							S							H				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
E670																																										
E671																																										
E672																																										

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 2 Flute, R55 Al, Long Series, Corner Rad



- 55° Helix, Centre Cutting
- Unique flute geometry offers excellent copy milling capabilities
- High helix angle and short flutes for improved surface finish



## Fraise 2 dents carbure, R55 Al, longue avec rayons

- Hélice 55° coupe au centre
- Design special pour une meilleure évacuation copeaux dans les grandes profondeurs
- Faible hauteur de coupe pour une meilleures stabilité



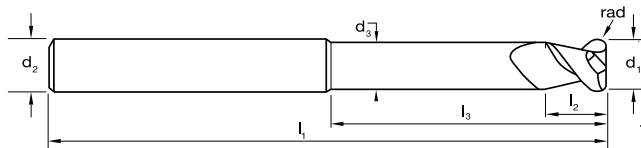
## Fresa metallo duro, 2 taglienti, R55 Al, Serie lunga, Torica

- 55° Elica, Tagliente al centro
- Geometria unica per eccellenti prestazioni in copiatura
- Elevato angolo Elica e tagliente corto per una migliore finitura



## Fresas de MD, 2 ranuras, R55 Al, larga, Torica

- Hélice de 55°, corte frontal
- La geometría única de la ranura ofrece excelentes capacidades de fresado en copiado
- Alto ángulo de hélice y ranuras cortas para mejorar el acabado superficial



Catalogue Code	<b>E673</b>
Product Group	B0204
Material	<b>VHM</b>
Surface Finish	<b>ASX</b>
Sutton Designation	<b>AI</b>
Geometry	R55
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 427 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
<b>0605</b>	<b>6.0</b>	100	6	50	6.0	5.70	2	0.50	E673 0605
<b>0610</b>	<b>6.0</b>	100	6	50	6.0	5.70	2	1.00	E673 0610
<b>0615</b>	<b>6.0</b>	100	6	50	6.0	5.70	2	1.50	E673 0615
<b>0620</b>	<b>6.0</b>	100	6	50	6.0	5.70	2	2.00	E673 0620
<b>0805</b>	<b>8.0</b>	100	8	50	8.0	7.70	2	0.50	E673 0805
<b>0810</b>	<b>8.0</b>	100	8	50	8.0	7.70	2	1.00	E673 0810
<b>0815</b>	<b>8.0</b>	100	8	50	8.0	7.70	2	1.50	E673 0815
<b>0820</b>	<b>8.0</b>	100	8	50	8.0	7.70	2	2.00	E673 0820
<b>0825</b>	<b>8.0</b>	100	8	50	8.0	7.70	2	2.50	E673 0825
<b>0830</b>	<b>8.0</b>	100	8	50	8.0	7.70	2	3.00	E673 0830
<b>1005</b>	<b>10.0</b>	100	10	50	10.0	9.50	2	0.50	E673 1005
<b>1010</b>	<b>10.0</b>	100	10	50	10.0	9.50	2	1.00	E673 1010
<b>1015</b>	<b>10.0</b>	100	10	50	10.0	9.50	2	1.50	E673 1015
<b>1020</b>	<b>10.0</b>	100	10	50	10.0	9.50	2	2.00	E673 1020
<b>1025</b>	<b>10.0</b>	100	10	50	10.0	9.50	2	2.50	E673 1025
<b>1030</b>	<b>10.0</b>	100	10	50	10.0	9.50	2	3.00	E673 1030
<b>1205</b>	<b>12.0</b>	100	12	50	12.0	11.50	2	0.50	E673 1205
<b>1210</b>	<b>12.0</b>	100	12	50	12.0	11.50	2	1.00	E673 1210
<b>1215</b>	<b>12.0</b>	100	12	50	12.0	11.50	2	1.50	E673 1215
<b>1220</b>	<b>12.0</b>	100	12	50	12.0	11.50	2	2.00	E673 1220
<b>1225</b>	<b>12.0</b>	100	12	50	12.0	11.50	2	2.50	E673 1225
<b>1230</b>	<b>12.0</b>	100	12	50	12.0	11.50	2	3.00	E673 1230
<b>1605</b>	<b>16.0</b>	125	16	75	16.0	15.30	2	0.50	E673 1605
<b>1610</b>	<b>16.0</b>	125	16	75	16.0	15.30	2	1.00	E673 1610
<b>1615</b>	<b>16.0</b>	125	16	75	16.0	15.30	2	1.50	E673 1615
<b>1620</b>	<b>16.0</b>	125	16	75	16.0	15.30	2	2.00	E673 1620
<b>1625</b>	<b>16.0</b>	125	16	75	16.0	15.30	2	2.50	E673 1625
<b>1630</b>	<b>16.0</b>	125	16	75	16.0	15.30	2	3.00	E673 1630

ISO	P													M		K		N										S							H																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
<b>E673</b>																							●	●	●	●	●	●	●	●																								

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- 55° Helix, Centre Cutting
- Unique flute geometry offers excellent copy milling capabilities
- High helix angle and short flutes for improved surface finish



### Fraise 2 dents carbure, R55 AI, longue avec rayons

- Hélice 55° coupe au centre
- Design special pour une meilleure évacuation copeaux dans les grandes profondeurs
- Faible hauteur de coupe pour une meilleures stabilité



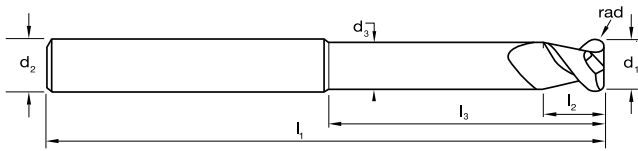
### Fresa metallo duro, 2 taglienti, R55 AI, Serie lunga, Torica

- 55° Elica, Tagliente al centro
- Geometria unica per eccellenti prestazioni in copiatura
- Elevato angolo Elica e tagliente corto per una migliore finitura



### Fresas de MD, 2 ranuras, R55 AI, larga, Torica

- Hélice de 55°, corte frontal
- La geometría única de la ranura ofrece excelentes capacidades de fresado en copiado
- Alto ángulo de hélice y ranuras cortas para mejorar el acabado superficial



Vc Page #: 427 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
1640	16.0	125	16	75	16.0	15.30	2	4.00	E673 1640
2005	20.0	125	20	75	20.0	15.30	2	0.50	E673 2005
2010	20.0	125	20	75	20.0	19.30	2	1.00	E673 2010
2015	20.0	125	20	75	20.0	19.30	2	1.50	E673 2015
2020	20.0	125	20	75	20.0	19.30	2	2.00	E673 2020
2025	20.0	125	20	75	20.0	19.30	2	2.50	E673 2025
2030	20.0	125	20	75	20.0	19.30	2	3.00	E673 2030
2040	20.0	125	20	75	20.0	19.30	2	4.00	E673 2040



Catalogue Code	E673
Product Group	B0204
Material	VHM
Surface Finish	ASX
Sutton Designation	AI
Geometry	R55
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P										M				K				N							S							H																
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E673																							●	●	●	●	●	●	●	●																			

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- 55° Helix, Centre Cutting, HSM
- Uniquely designed flute geometry for high chip evacuations
- Improves surface finishes at higher feed rates especially when copy milling



**Fraise 2 dents carbure, Al hémisphérique, coupe au centre**

- Hélice 55° coupe au centre
- Design spécial pour une meilleure évacuation copeaux
- Etat de surface poli pour grande avance ane copiage



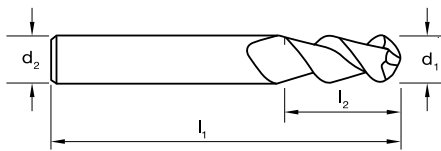
**Fresa metallo duro, 2 taglienti, Semisferica, Al, Taglientite al centro**

- 55° Elica, Tagliente al centro, HSM
- Geometria unica del tagliente per un alta evacuazione truciolo
- Finiture migliori ad avanzamento elevato specialmente in copiatura



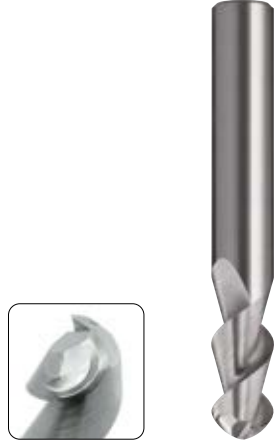
**Fresas de MD, Esferica, 2 ranuras, Al**

- Hélice de 55°, corte frontal, HSM
- Geometría de ranura de diseño único para evacuaciones de virutas elevadas
- Mejora los acabados superficiales a velocidades de avance más altas, especialmente cuando se fresa en copiado



Vc Page #: 427 →

Size Ref.	d <sub>1</sub> (k10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
0300	3.0	50	12	-	3.0	-	2	E661 0300
0400	4.0	50	15	-	4.0	-	2	E661 0400
0500	5.0	50	20	-	5.0	-	2	E661 0500
0600	6.0	57	20	-	6.0	-	2	E661 0600
0800	8.0	63	20	-	8.0	-	2	E661 0800
1000	10.0	72	25	-	10.0	-	2	E661 1000
1200	12.0	83	25	-	12.0	-	2	E661 1200
1400	14.0	83	30	-	14.0	-	2	E661 1400
1600	16.0	92	30	-	26.0	-	2	E661 1600
2000	20.0	104	38	-	20.0	-	2	E661 2000



Catalogue Code	<b>E661</b>
Discount Group	B0208
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Brt</b>
Sutton Designation	<b>AI</b>
Geometry	R55
Shank Form (DIN 6535)	HA
Shank Tolerance	h5

ISO	P													M			K						N						S						H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41			
E661																																																				

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

# Endmills Carbide, 3 Flute, R45/46/44, Regular, Harmony AI



- VHM-ULTRA grade of carbide for high performance
- 45/46/44° variable flute helix for chatter free milling
- Optimised geometry for soft materials



## Fraise 3 dents carbure, R45°/46°/44° AI, Longue

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 45°/46°/44° pour la suppression des vibrations
- Géométrie optimisée les non-ferreux et cuivres



## Frese metallo duro, 3 Taglienti, R45/46/44 AI, Lunga Portata

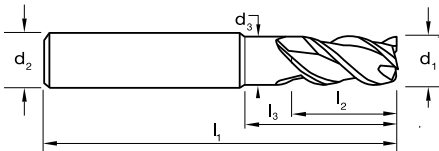
- VHM-ULTRA, grado di metallo duro per alte prestazione
- Elica tagliente variabile 45/46/44° per lavorazioni senza vibrazioni
- Geometria ottimizzata per materiali morbidi



## Fresas de MD, 3 ranuras, R45/46/44 AI, Larga

- Grado de MD, VHM-ULTRA para alto rendimiento
- Hélice de ranura variable 45/46/44° para fresado sin vibraciones
- Geometría optimizada para materiales blandos

DIN 6527L



Catalogue Code	E480
Discount Group	B0210
Material	VHM-ULTRA
Surface Finish	Brt
Sutton Designation	AI
Geometry	R45/46/44
Shank Form (DIN 6535)	HA
Shank Tolerance	h5

Vc Page #: 427 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	Chamfer	Item #
0300	3.0	57	8	19	6	2.8	0.08/0.12 x 45°	E480 0300
0400	4.0	57	11	19	6	3.7	0.08/0.12 x 45°	E480 0400
0500	5.0	57	13	20	6	4.6	0.08/0.12 x 45°	E480 0500
0600	6.0	57	13	21	6	5.1	0.08/0.12 x 45°	E480 0600
0800	8.0	63	19	27	8	7.1	0.08/0.12 x 45°	E480 0800
1000	10.0	72	22	32	10	9.1	0.15/0.25 x 45°	E480 1000
1200	12.0	83	26	40	12	11.1	0.15/0.25 x 45°	E480 1200
1600	16.0	92	32	50	16	14.8	0.25/0.35 x 45°	E480 1600
2000	20.0	104	38	60	20	18.5	0.25/0.35 x 45°	E480 2000

ISO	P													M			K							N										S										H												
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	37.2	37.3	37.4	37.5	38	38.2	39	39.2	40	41							
E480																							●	●	●	●	●	●	●	●																										

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 3 Flute, R45/46/44, Rad, Regular, Harmony AI



- VHM-ULTRA grade of carbide for high performance
- 45/46/44° variable flute helix for chatter free milling
- Optimised geometry for soft materials



## Fraise 3 dents carbure, R45°/46°/44° AI, Longue

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 45°/46°/44° pour la suppression des vibrations
- Géométrie optimisée les non-ferreux et cuivres



## Frese metallo duro, 3 Taglienti, R45/46/44 AI, Lunga Portata

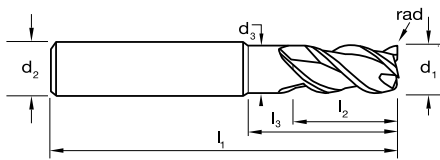
- VHM-ULTRA, grado di metallo duro per alte prestazione
- Elica tagliente variabile 45/46/44° per lavorazioni senza vibrazioni
- Geometria ottimizzata per materiali morbidi



## Fresas de MD, 3 ranuras, R45/46/44 AI, Larga

- Grado de MD, VHM-ULTRA para alto rendimiento
- Hélice de ranura variable 45/46/44° para fresado sin vibraciones
- Geometría optimizada para materiales blandos

DIN 6527L



Catalogue Code	<b>E478</b>
Discount Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Brt</b>
Sutton Designation	<b>AI</b>
Geometry	R45/46/44
Shank Form (DIN 6535)	HA
Shank Tolerance	h5

Vc Page #: 427 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	rad	Item #
<b>1210</b>	<b>12.0</b>	83	26	40	12	11.1	1	E478 1210
<b>1225</b>	<b>12.0</b>	83	26	40	12	11.1	2.5	E478 1225
<b>1230</b>	<b>12.0</b>	83	26	40	12	11.1	3	E478 1230
<b>1240</b>	<b>12.0</b>	83	26	40	12	11.1	4	E478 1240
<b>1610</b>	<b>16.0</b>	92	32	50	16	14.8	1	E478 1610
<b>1625</b>	<b>16.0</b>	92	32	50	16	14.8	2.5	E478 1625
<b>1630</b>	<b>16.0</b>	92	32	50	16	14.8	3	E478 1630
<b>1640</b>	<b>16.0</b>	92	32	50	16	14.8	4	E478 1640
<b>2010</b>	<b>20.0</b>	104	38	60	20	18.5	1	E478 2010
<b>2025</b>	<b>20.0</b>	104	38	60	20	18.5	2.5	E478 2025
<b>2030</b>	<b>20.0</b>	104	38	60	20	18.5	3	E478 2030
<b>2040</b>	<b>20.0</b>	104	38	60	20	18.5	4	E478 2040

ISO	P													M			K							N							S							H																
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
<b>E478</b>																							●	●	●	●	●	●	●	●																								

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

# Endmills Carbide, 3 Flute, R45/46/44, Regular, Harmony AI



- VHM-ULTRA grade of carbide for high performance
- 45/46/44° variable flute helix for chatter free milling
- Optimised geometry for soft materials
- CrN for copper and non-ferrous materials



## Fraise 3 dents carbure, R45°/46°/44° AI, DIN6527L

- Carbure VHM Ultra pour une meilleure performance
- Hélice variable 45°/46°/44° pour la suppression des vibrations
- Géométrie optimisée pour les matériaux légers
- Revêtement CrN pour les cuivres et non-ferreux



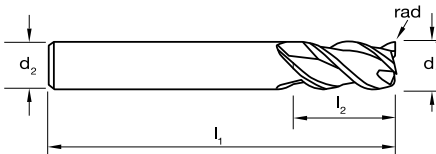
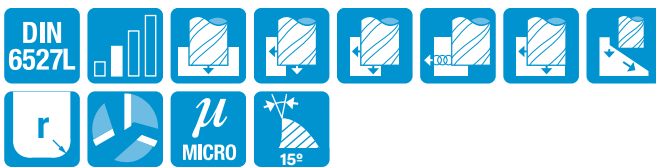
## Frese metallo duro, 3 Taglienti, R45/46/44 AI, DIN6527L

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Elica tagliente variabile 45/46/44° per lavorazioni senza vibrazioni
- Geometria ottimizzata per materiali morbidi
- CrN specifico per le lavorazioni di rame e materiali non ferrosi



## Fresas de MD, 3 ranuras, R45/46/44 AI, DIN6527L

- Grado de MD, VHM-ULTRA para alto rendimiento
- Hélice de ranura variable 45/46/44° para fresado sin vibraciones
- Geometría optimizada para materiales blandos
- CrN para cobres y materiales no ferrosos



Vc Page #: 427 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	rad	Item #	Item #
0600	6.0	57	13	6	3	0.2	E400 0600	E401 0600
0800	8.0	63	19	8	3	0.2	E400 0800	E401 0800
1000	10.0	72	24	10	3	0.3	E400 1000	E401 1000
1200	12.0	83	28	12	3	0.4	E400 1200	E401 1200
1400	14.0	83	30	14	3	0.4	E400 1400	E401 1400
1600	16.0	92	35	16	3	0.5	E400 1600	E401 1600
1800	18.0	92	38	18	3	0.5	E400 1800	E401 1800
2000	20.0	104	42	20	3	0.6	E400 2000	E401 2000
2500	25.0	120	50	25	3	0.6	E400 2500	E401 2500



Catalogue Code	E400	E401
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	CrN	CrN
Sutton Designation	AI	AI
Geometry	R45/46/44	R45/46/44
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5

ISO	P													M			K					N										S										H								
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E400																							●	●	●	●	●	●	●	●	●	●																		
E401																							●	●	●	●	●	●	●	●	●	●																		

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



# Endmills Carbide, 3 Flute, R45/46/44, Long Reach, Harmony AI



- VHM-ULTRA grade of carbide for high performance
- 45/46/44° variable flute helix for chatter free milling
- Optimised geometry for soft materials
- CrN for copper and non-ferrous materials



## Fraise 3 dents carbure, R45°/46°/44° AI, Longue

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 45°/46°/44° pour la suppression des vibrations
- Géométrie optimisée et revêtement CrN pour les non-ferreux et cuivres



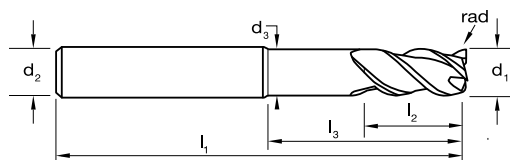
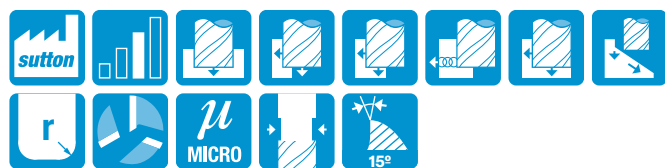
## Frese metallo duro, 3 Taglienti, R45/46/44 AI, Lunga Portata

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Elica tagliente variabile 45/46/44° per lavorazioni senza vibrazioni
- Geometria ottimizzata per materiali morbidi
- CrN specifico per le lavorazioni di rame e materiali non ferrosi



## Fresas de MD, 3 ranuras, R45/46/44 AI, Larga

- Grado de MD, VHM-ULTRA para alto rendimiento
- Hélice de ranura variable 45/46/44° para fresado sin vibraciones
- Geometría optimizada para materiales blandos
- CrN para cobres y materiales no ferrosos



Vc Page #: 427 →

Size Ref.	d <sub>1</sub> (k10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
0600	6.0	62	7	24	6	5.0	3	0.2	E402 0600	
0800	8.0	68	9	30	8	7.0	3	0.2	E402 0800	
1000	10.0	80	12	38	10	9.0	3	0.3	E402 1000	E403 1000
1200	12.0	93	14	46	12	11.0	3	0.4	E402 1200	E403 1200
1400	14.0	93	16	46	14	13.0	3	0.4	E402 1400	E403 1400
1600	16.0	108	18	58	16	15.0	3	0.5	E402 1600	E403 1600
1800	18.0	108	20	58	18	17.0	3	0.5	E402 1800	E403 1800
2000	20.0	126	22	74	20	19.0	3	0.6	E402 2000	E403 2000
2500	25.0	150	27	92	25	24.0	3	0.6	E402 2500	E403 2500



Catalogue Code

Discount Group

Material

Surface Finish

Sutton Designation

Geometry

Shank Form (DIN 6535)

Shank Tolerance



E402	E403
B0210	B0210
VHM-ULTRA	VHM-ULTRA
CrN	CrN
AI	AI
R45/46/44	R45/46/44
HA	HB
h5	h5

ISO	P													M			K							N							S							H											
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E402																								●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
E403																								●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 3 Flute, R40, AI, Long Reach



- 40° Helix, Centre cutting
- Extra reach with wide gullets to enable higher feed rates
- HCR coating allows for roughing and finishing using the same tool



## Fraise 3 dents carbure, R40, AI, longue

- Hélice 40°, coupe au centre
- Série longue avec d'importantes goujures pour des avances plus élevées
- Revêtement HCR pour l'ébauche et la finition avec le meme outil



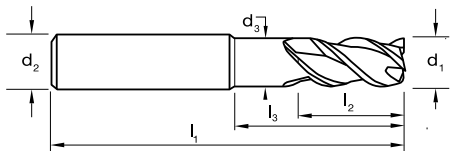
## Fresa metallo duro, 3 taglienti, R40, AI, Lavorazio profonda

- 40° Elica, Tagliente al centro
- Lunghezza extra con scarico dopo tagliente per avanzamenti elevati
- Rivestimento HCR adatto per sgrossare e finire con lo stesso utensile



## Fresas de MD, 3 ranuras, R40 AI, larga

- Hélice de 40°, corte frontal
- Alcance adicional facetas anchas para permitir mayores velocidades de corte
- El recubrimiento HCR permite desbaste y acabado con la misma herramienta



Vc Page #: 428 →

Size Ref.	d <sub>1</sub> (k10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
0600	6.0	100	24	50	6.0	5.70	3	E668 0600
0800	8.0	100	25	50	8.0	7.70	3	E668 0800
1000	10.0	100	27	50	10.0	9.50	3	E668 1000
1200	12.0	100	32	60	12.0	11.50	3	E668 1200
1600	16.0	125	39	80	16.0	15.30	3	E668 1600
2000	20.0	150	42	100	20.0	19.30	3	E668 2000



Catalogue Code	E668
Discount Group	B0210
Material	VHM-ULTRA
Surface Finish	HCR
Sutton Designation	AI
Geometry	R40
Shank Form (DIN 6535)	HA
Shank Tolerance	h5

ISO	P													M			K							N							S							H														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41			
E668																							●	●	●	●	●	●	●	●																						

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- 40° Helix, 3 Teeth to Centre
- Extra reach with wide gullets to enable higher feed rates
- ASX coating allows for roughing and finishing using the same tool



### Fraise 3 dents carbure R40 AI longue avec rayons

- Hélice 40°, 3 dents, coupe au centre avec rayons
- Série longue avec d'importantes goujures pour des avances plus élevées
- Revêtement ASX pour l'ébauche et la finition avec le meme outil



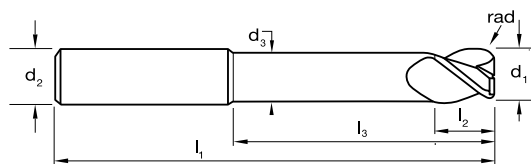
### Fresa metallo duro, 3 taglienti, R40, AI, Lavorazio profonda, Torica

- 40° Elica, 3 Taglienti al centro
- Lunghezza extra con scarico dopo tagliente per avanzamenti elevati
- Rivestimento ASX adatto per sgrossare e finire con lo stesso utensile



### Fresas de MD, 3 ranuras, R40 AI, larga, Torica

- Hélice de 40°, 3 dientes, corte frontal
- Alcance adicional facetas anchas para permitir mayores velocidades de corte
- El recubrimiento ASX permite desbaste y acabado con la misma herramienta



Vc Page #: 428 →

Size Ref.	d <sub>1</sub> (k10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
0605	6.0	100	6	30	6.0	5.70	3	0.50	E669 0605
0610	6.0	100	6	30	6.0	5.70	3	1.00	E669 0610
0615	6.0	100	6	30	6.0	5.70	3	1.50	E669 0615
0620	6.0	100	6	30	6.0	5.70	3	2.00	E669 0620
0805	8.0	100	8	30	8.0	7.70	3	0.50	E669 0805
0810	8.0	100	8	30	8.0	7.70	3	1.00	E669 0810
0815	8.0	100	8	30	8.0	7.70	3	1.50	E669 0815
0820	8.0	100	8	30	8.0	7.70	3	2.00	E669 0820
0825	8.0	100	8	30	8.0	7.70	3	2.50	E669 0825
0830	8.0	100	8	30	8.0	7.70	3	3.00	E669 0830
1005	10.0	100	10	35	10.0	9.50	3	0.50	E669 1005
1010	10.0	100	10	35	10.0	9.50	3	1.00	E669 1010
1015	10.0	100	10	35	10.0	9.50	3	1.50	E669 1015
1020	10.0	100	10	35	10.0	9.50	3	2.00	E669 1020
1025	10.0	100	10	35	10.0	9.50	3	2.50	E669 1025
1030	10.0	100	10	35	10.0	9.50	3	3.00	E669 1030
1205	12.0	100	12	35	12.0	11.50	3	0.50	E669 1205
1210	12.0	100	12	35	12.0	11.50	3	1.00	E669 1210
1215	12.0	100	12	35	12.0	11.50	3	1.50	E669 1215
1220	12.0	100	12	35	12.0	11.50	3	2.00	E669 1220
1225	12.0	100	12	35	12.0	11.50	3	2.50	E669 1225
1230	12.0	100	12	35	12.0	11.50	3	3.00	E669 1230
1605	16.0	125	16	40	16.0	15.30	3	0.50	E669 1605
1610	16.0	125	16	40	16.0	15.30	3	1.00	E669 1610
1615	16.0	125	16	40	16.0	15.30	3	1.50	E669 1615
1620	16.0	125	16	40	16.0	15.30	3	2.00	E669 1620
1625	16.0	125	16	40	16.0	15.30	3	2.50	E669 1625
1630	16.0	125	16	40	16.0	15.30	3	3.00	E669 1630

ISO	P													M			K							N							S							H																
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
E669																							●	●	●	●	●	●	●	●																								

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



Catalogue Code	E669
Discount Group	B0210
Material	VHM-ULTRA
Surface Finish	ASX
Sutton Designation	AI
Geometry	R40
Shank Form (DIN 6535)	HA
Shank Tolerance	h5



- 40° Helix, 3 Teeth to Centre
- Extra reach with wide gullets to enable higher feed rates
- ASX coating allows for roughing and finishing using the same tool



### Fraise 3 dents carbure Al longue avec rayons

- Hélice 40°, 3 dents, coupe au centre avec rayons
- Série longue avec d'importantes goujures pour des avances plus élevées
- Revêtement ASX pour l'ébauche et la finition avec le meme outil



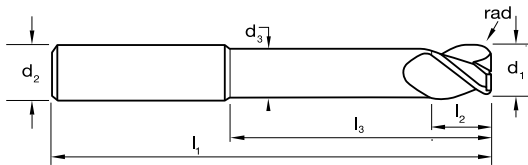
### Fresa metallo duro, 3 taglienti, Lavorazio profonda, AI, Torica

- 40° Elica, 3 Taglienti al centro
- Lunghezza extra con scarico dopo tagliente per avanzamenti elevati
- Rivestimento ASX adatto per sgrossare e finire con lo stesso utensile



### Fresas de MD, 3 ranuras, R40 AI, larga, Torica

- Hélice de 40°, 3 dientes, corte frontal
- Alcance adicional facetas anchas para permitir mayores velocidades de corte
- El recubrimiento ASX permite desbaste y acabado con la misma herramienta



Vc Page #: 428 →

Size Ref.	d <sub>1</sub> (k10)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
1640	16.0	125	16	40	16.0	15.30	3	4.00	E669 1640
2005	20.0	125	20	40	20.0	15.30	3	0.50	E669 2005
2010	20.0	125	20	40	20.0	19.30	3	1.00	E669 2010
2015	20.0	125	20	40	20.0	19.30	3	1.50	E669 2015
2020	20.0	125	20	40	20.0	19.30	3	2.00	E669 2020
2025	20.0	125	20	40	20.0	19.30	3	2.50	E669 2025
2030	20.0	125	20	40	20.0	19.30	3	3.00	E669 2030
2040	20.0	125	20	40	20.0	19.30	3	4.00	E669 2040



Catalogue Code	E669
Discount Group	B0210
Material	VHM-ULTRA
Surface Finish	ASX
Sutton Designation	AI
Geometry	R40
Shank Form (DIN 6535)	HA
Shank Tolerance	h5

ISO	P													M			K							N							S							H																		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
E669																							●	●	●	●	●	●	●	●																										

P Steel 
 M Stainless Steel 
 K Cast Iron 
 N Non-Ferrous Metals 
 S Titanium & Super Alloys 
 H Hard Materials 
 ● Optimal ○ Effective

# Endmills Carbide, Ballnose, 3 Flute, R45/46/44, Long Reach, Harmony AI



- VHM-ULTRA grade of carbide for high performance
- 45/46/44° variable flute helix for chatter free milling
- Optimised geometry for soft materials
- CrN for copper and non-ferrous materials



## Fraise 3 dents carbure, Hémisphérique, R45°/46°/44° Longue

- Carbure VHM-ULTRA pour une meilleure performance
- Pour le fraisage de formes et de poches profondes
- Hélice variable 45°/46°/44° pour la suppression des vibrations
- Géométrie optimisée et revêtement CrN pour les non-ferreux et cuivres



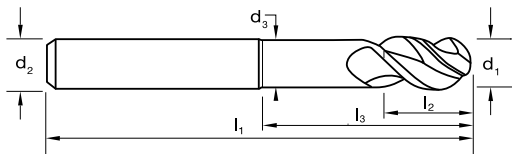
## Frese metallo duro, Sferiche, 3 Taglienti, R45/46/44 AI, Lunga Portata

- VHM-ULTRA, grado di metallo duro per alte prestazioni
- Elica tagliente variabile 45/46/44° per lavorazioni senza vibrazioni
- Geometria ottimizzata per materiali morbidi
- CrN specifico per le lavorazioni di rame e materiali non ferrosi



## Fresas de MD, Esférica, 3 ranuras, R45/46/44 AI, Larga

- Grado de MD, VHM-ULTRA para alto rendimiento
- Hélice de ranura variable 45/46/44° para fresado sin vibraciones
- Geometría optimizada para materiales blandos
- CrN para cobres y materiales no ferrosos



Vc Page #: 428 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	z	Item #	Item #
0600	6.0	62	9	24	6	3	E408 0600	E409 0600
0800	8.0	68	12	30	8	3	E408 0800	E409 0800
1000	10.0	80	15	38	10	3	E408 1000	E409 1000
1200	12.0	93	18	46	12	3	E408 1200	E409 1200
1400	14.0	93	21	46	14	3	E408 1400	E409 1400
1600	16.0	108	24	58	16	3	E408 1600	E409 1600
1800	18.0	108	27	58	18	3	E408 1800	E409 1800
2000	20.0	126	30	74	20	3	E408 2000	E409 2000
2500	25.0	150	38	92	25	3	E408 2500	E409 2500



Catalogue Code	E408	E409
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	CrN	CrN
Sutton Designation	AI	AI
Geometry	R45/46/44	R45/46/44
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5



ISO	P													M			K							N										S										H														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41									
E408																							●	●	●	●	●	●	●	●																												
E409																							●	●	●	●	●	●	●	●																												

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- V45/46/44° variable flute helix for chatter free milling
- Optimised geometry for soft materials



### Fraise carbure, profil ébauche, 3 dents R45/46/44, AI

- Hélice variable pour la suppression des vibrations
- Géométrie optimisée les non-ferreux et cuivres



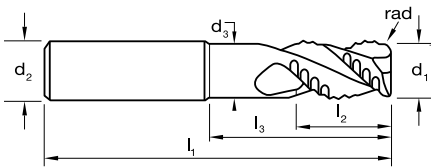
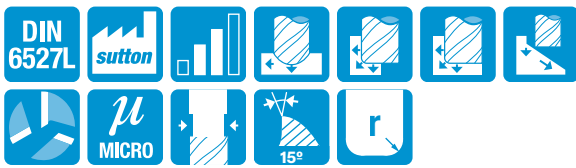
### Fresa metallo duro, 3 taglienti, R45/46/44, AI

- Rompitrucciolo evaquano velocemente i trucioli
- Aumento della produttività della macchina
- Progettato per strategie di lavorazione trocoidali/dinamiche per materiali fino a 1300N/mm<sup>2</sup>, TiSiN<sub>0.5</sub> per una maggiore durata dell'utensile



### Fresas de MD, 3 ranuras, R45/46/44, AI

- Hélice de ranura variable para fresado sin vibraciones
- Geometría optimizada para materiales blandos



Vc Page #: 429 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
<b>DIN6527L</b>										
0610	6.0	60.0	13.0	23.0	6.0	5.7	3	1.0	E674 0610	
0810	8.0	64.0	18.0	28.0	8.0	7.7	3	1.0	E674 0810	
1010	10.0	73.0	21.0	31.0	10.0	9.5	3	1.0	E674 1010	
1210	12.0	84.0	25.0	35.0	12.0	11.5	3	1.0	E674 1210	
1610	16.0	93.0	32.0	50.0	16.0	15.3	3	1.0	E674 1610	
2010	20.0	104.0	40.0	60.0	20.0	19.3	3	1.0	E674 2010	
<b>SUTTON STD</b>										
1210	12.0	100.0	31.0	60.0	12.0	11.5	3	1.0		E675 1210
1610	16.0	130.0	41.0	80.0	16.0	15.3	3	1.0		E675 1610
2010	20.0	150.0	52.0	100.0	20.0	19.3	3	1.0		E675 2010



Catalogue Code	E674	E675
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	HCR	HCR
Sutton Designation	AI	AI
Geometry	R45/46/44	R45/46/44
Shank Form (DIN 6535)	HA	HA
Shank Tolerance	h5	h5

ISO	P													M					K					N										S										H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41												
E674																																																					
E675																																																					

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- For roughing applications
- NR geometry allows for heavy cuts
- For soft non ferrous aluminium alloys
- High rake angle for long chipping materials



## Fraise d'ébauche, Profil NR, R25° AI, DIN 6527L

- Carbure VHM-ULTRA pour une meilleure performance
- Hélice variable 45°/46°/44° pour la suppression des vibrations
- Géométrie optimisée et revêtement CrN pour les non-ferreux et cuivres



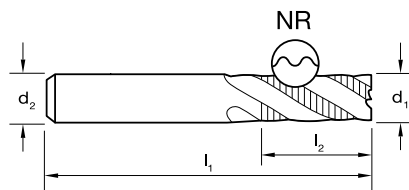
## Frese metallo duro rompitruciolo, NR (normal), R25 AI, DIN 6527L

- Fresa ideale per lavorazioni di sgrossatura
- Geometria NR permette lavorazioni gravose
- Ideale per materiali morbidi o non ferrosi
- Elevato angolo di spoglia per lavorazione di materiale con difficile truciabilità



## Fresas Desbaste, NR (normal), R25 AI, DIN6527L

- Para aplicaciones de desbaste
- La geometría NR permite grandes pasadas
- Adecuado para materiales no ferrosos y aluminio aleado
- Ángulo de corte positivo, para materiales de viruta larga



Vc Page #: 429 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0600	6.0	57	13	6	3	E446 0600	E447 0600
0800	8.0	63	19	8	3	E446 0800	E447 0800
1000	10.0	72	22	10	3	E446 1000	E447 1000
1200	12.0	83	26	12	3	E446 1200	E447 1200
1400	14.0	83	26	14	3	•	•
1600	16.0	92	32	16	3	E446 1600	E447 1600
1800	18.0	92	32	18	3	•	•
2000	20.0	104	38	20	3	E446 2000	E447 2000



Catalogue Code	<b>E446</b>	<b>E447</b>
Discount Group	B0208	B0208
Material	<b>VHM</b>	<b>VHM</b>
Surface Finish	<b>Brt</b>	<b>Brt</b>
Sutton Designation	<b>AI</b>	<b>AI</b>
Geometry	R25 NR	R25 NR
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5

ISO	P													M			K						N						S						H																					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
E446																							●	●	●	○	○	○																												
E447																							●	●	●	○	○	○																												

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective





- 45° Helix, Centre Cutting, Sinusoidal Form
- Uniquely designed for high material removal rates
- Enhanced with through coolant and wide flute form for maximum swarf removal



**Fraise 3 dents carbure, R45, AI, arrosage central profil ebauche**

- Hélice 45° sinusoidale, coupe au centre, série longue
- Idéale pour le fraisage trochoïdal et la finition
- Revêtement HCR



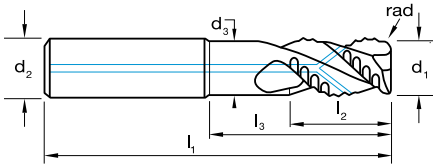
**Fresa metallo duro, 3 taglienti, R45, AI, Refrigerazione interna con rompitrucolo**

- 45° Elica, Tagliente al centro, Forma Sinusoidale
- Geometria unica per alti avanzamenti
- Refrigerazione interna centrale e tagliente adatto a massima evacuazione trucioli



**Fresas Debaste, NR, R45, AI, Refrigerante**

- Hélice de 45°, corte frontal, forma sinusoidal
- Diseñado exclusivamente para altos arranques de material
- Mejorado con refrigerante interior y forma de ranura ancha para la máxima evacuación de virutas



Vc Page #: 429 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
<b>1210</b>	<b>12.0</b>	83	18	40	12.0	-	3	1.00	E662 1210
<b>1220</b>	<b>12.0</b>	83	18	40	12.0	-	3	2.00	E662 1220
<b>1225</b>	<b>12.0</b>	83	18	40	12.0	-	3	2.50	E662 1225
<b>1230</b>	<b>12.0</b>	83	18	40	12.0	-	3	3.00	E662 1230
<b>1240</b>	<b>12.0</b>	83	18	40	12.0	-	3	4.00	E662 1240
<b>1610</b>	<b>16.0</b>	92	18	40	12.0	-	3	1.00	E662 1610
<b>1620</b>	<b>16.0</b>	92	25	50	16.0	-	3	2.00	E662 1620
<b>1625</b>	<b>16.0</b>	92	25	50	16.0	-	3	2.50	E662 1625
<b>1630</b>	<b>16.0</b>	92	25	50	16.0	-	3	3.00	E662 1630
<b>1640</b>	<b>16.0</b>	92	25	50	16.0	-	3	4.00	E662 1640
<b>1650</b>	<b>16.0</b>	92	25	50	16.0	-	3	5.00	E662 1650
<b>2010</b>	<b>20.0</b>	104	36	64	20.0	-	3	1.00	E662 2010
<b>2020</b>	<b>20.0</b>	104	36	64	20.0	-	3	2.00	E662 2020
<b>2025</b>	<b>20.0</b>	104	36	64	20.0	-	3	2.50	E662 2025
<b>2030</b>	<b>20.0</b>	104	36	64	20.0	-	3	3.00	E662 2030
<b>2040</b>	<b>20.0</b>	104	36	64	20.0	-	3	4.00	E662 2040
<b>2050</b>	<b>20.0</b>	104	36	64	20.0	-	3	5.00	E662 2050



Catalogue Code	<b>E662</b>
Discount Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>Brt</b>
Sutton Designation	<b>AI - IK</b>
Geometry	R45
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P												M			K					N						S										H																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
E662																							●	●	●	●	●	●	●	●																										

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- 45° Helix, Centre cutting
- Extended flute length and added chip breakers for excellent swarf removal
- Ideal for trochoidal milling
- HCR coating enables excellent feed rates



### Fraise 4 dents carbure, R45, AI, Extra longue, brise copeaux

- Hélice 45°, coupe au centre
- Série longue avec brises copeaux
- Idéale pour le fraisage trochoidal
- Revêtement HCR



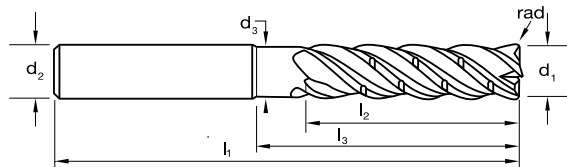
### Fresa metallo duro, 4 taglienti, R45, AI, Extra lunga, Rompitruciolo

- 45° Elica, Tagliente al centro
- Lunghezza tagliente esteso con rompitruciolo per un'eccellente lavorazione del materiale
- Ideale per lavorazioni in trocoidale
- Rivestimento HCR per supportare alte velocità di taglio



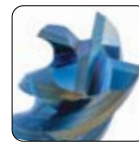
### Fresas de MD, 4 ranuras, R40 AI, Extra larga, Torica

- Hélice de 45°, corte frontal
- Longitud de ranura extendida y rompevirutas para un excelente ratio de avance
- Ideal para molienda trocoidal
- El recubrimiento HCR permite excelentes velocidades de alimentación



Vc Page #: 429 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad
0600	6.0	100	24	50	6.0	5.70	4	0.20
0800	8.0	100	32	50	8.0	7.70	4	0.20
1000	10.0	100	40	50	10.0	9.50	4	0.20
1200	12.0	100	48	60	12.0	11.50	4	0.20
1600	16.0	125	65	80	16.0	15.30	4	0.20
2000	20.0	150	80	100	20.0	19.30	4	0.20



	E663	E664
Catalogue Code	E663	E664
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	HCR	HCR
Sutton Designation	AI - CB	AI - CB
Geometry	R45	R45
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
0600	6.0	100	24	50	6.0	5.70	4	0.20	E663 0600	E664 0600
0800	8.0	100	32	50	8.0	7.70	4	0.20	E663 0800	E664 0800
1000	10.0	100	40	50	10.0	9.50	4	0.20	E663 1000	E664 1000
1200	12.0	100	48	60	12.0	11.50	4	0.20	E663 1200	E664 1200
1600	16.0	125	65	80	16.0	15.30	4	0.20	E663 1600	E664 1600
2000	20.0	150	80	100	20.0	19.30	4	0.20	E663 2000	E664 2000

ISO	P													M			K						N						S						H																							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41									
E663																							●	●	●	●	●	●	●	●																												
E664																							●	●	●	●	●	●	●	●																												

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- 45° Helix, Centre cutting, extended flute length
- Excellent for trochoidal milling
- HCR coating enables excellent feed rates



### Fraise 4 dents carbure, R45, AI extra longue, pour finition

- Hélice 45°, coupe au centre, série longue
- Idéale pour le fraisage trochoidal et la finition
- Revêtement HCR



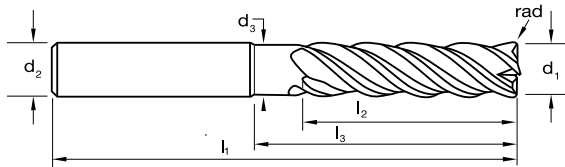
### Fresa metallo duro, 4 taglienti, R45, AI, Extra lunga, Finitura

- 45° Elica, Tagliente al centro, Lunghezza tagliente esteso
- Eccellente per lavorazioni in trocoidale
- Rivestimento HCR per supportare alte velocità di taglio



### Fresas de MD, 4 ranuras, R40 AI, extra larga

- Hélice de 45°, corte frontal, longitud de ranura ancha
- Excelente para fresado trocoidal
- El recubrimiento HCR permite excelentes velocidades de corte



Vc Page #: 429 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #	Item #
<b>0600</b>	<b>6.0</b>	100	24	50	6.0	5.70	4	0.20	E665 0600	E666 0600
<b>0800</b>	<b>8.0</b>	100	32	50	8.0	7.70	4	0.20	E665 0800	E666 0800
<b>1000</b>	<b>10.0</b>	100	40	50	10.0	9.50	4	0.20	E665 1000	E666 1000
<b>1200</b>	<b>12.0</b>	100	48	60	12.0	11.50	4	0.20	E665 1200	E666 1200
<b>1600</b>	<b>16.0</b>	125	65	80	16.0	15.30	4	0.20	E665 1600	E666 1600
<b>2000</b>	<b>20.0</b>	150	80	100	20.0	19.30	4	0.20	E665 2000	E666 2000



Catalogue Code	<b>E665</b>	<b>E666</b>
Discount Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>HCR</b>	<b>HCR</b>
Sutton Designation	<b>AI</b>	<b>AI</b>
Geometry	R45	R45
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P										M					K					N					S					H																										
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41								
<b>E665</b>																							●	●	●	●	●	●	●	●																											
<b>E666</b>																							●	●	●	●	●	●	●	●																											

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- 45° Helix, Centre cutting, extended flute length
- Excellent for trochoidal milling
- HCR coating enables excellent feed rates



### Fraise 4 dents carbure, R45, AI, extra longue, pour finition avec rayons

- Hélice 45°, coupe au centre, série longue
- Idéale pour le fraisage trochoidal
- Revêtement HCR



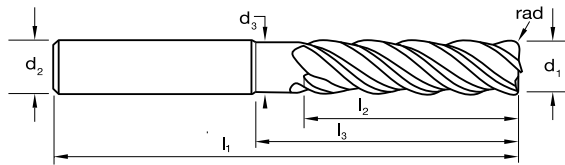
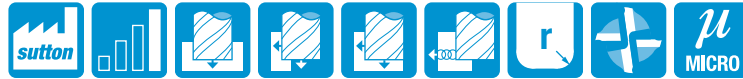
### Fresa metallo duro, 4 taglienti, R45, AI, Extra lunga, Finitura, Torica

- 45° Elica, Tagliente al centro, Lunghezza tagliente esteso
- Eccellente per lavorazioni in trocoidale
- Rivestimento HCR per supportare alte velocità di taglio



### Fresas de MD, 4 ranuras, R40 AI, extra larga, Torica

- Hélice de 45°, corte frontal, longitud de ranura ancha
- Excelente para fresado trocoidal
- El recubrimiento HCR permite excelentes velocidades de corte



Vc Page #: 429 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad	Item #
1210	12.0	100	48	60	12.0	11.50	4	1.00	E667 1210
1220	12.0	100	48	60	12.0	11.50	4	2.00	E667 1220
1225	12.0	100	48	60	12.0	11.50	4	2.50	E667 1225
1230	12.0	100	48	60	12.0	11.50	4	3.00	E667 1230
1240	12.0	100	48	60	12.0	11.50	4	4.00	E667 1240
1610	16.0	125	65	80	16.0	15.30	4	1.00	E667 1610
1620	16.0	125	65	80	16.0	15.30	4	2.00	E667 1620
1625	16.0	125	65	80	16.0	15.30	4	2.50	E667 1625
1630	16.0	125	65	80	16.0	15.30	4	3.00	E667 1630
1640	16.0	125	65	80	16.0	15.30	4	4.00	E667 1640
2010	20.0	150	80	100	20.0	19.30	4	1.00	E667 2010
2020	20.0	150	80	100	20.0	19.30	4	2.00	E667 2020
2025	20.0	150	80	100	20.0	19.30	4	2.50	E667 2025
2030	20.0	150	80	100	20.0	19.30	4	3.00	E667 2030
2040	20.0	150	80	100	20.0	19.30	4	4.00	E667 2040



Catalogue Code	E667
Discount Group	B0210
Material	VHM-ULTRA
Surface Finish	HCR
Sutton Designation	AI
Geometry	R45
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P													M			K							N							S							H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41						
E667																																																							

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- For precision milling of slots & cavities
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAlN for longer tool life



**Fraise à rainurer 2 dents carbure, R30 N, DIN6527K**

- Pour le fraisage de rainures et de poches
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



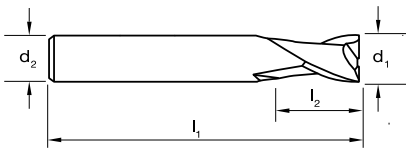
**Fresatura metallo duro, 2 Taglienti, R30 N, DIN6527K**

- Fresatura di cave ad alta precisione
- Ideale per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



**Fresas de MD, 2 ranuras, R30 N, DIN6527K**

- Para fresado de precisión de ranuras
- Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: 430 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0200	2.0	50	3	6	2	E502 0200	E503 0200
0300	3.0	50	4	6	2	E502 0300	E503 0300
0400	4.0	54	5	6	2	E502 0400	E503 0400
0500	5.0	54	6	6	2	E502 0500	E503 0500
0600	6.0	54	7	6	2	E502 0600	E503 0600
0800	8.0	58	9	8	2	E502 0800	E503 0800
1000	10.0	66	11	10	2	E502 1000	E503 1000
1200	12.0	72	12	12	2	E502 1200	E503 1200
1600	16.0	82	16	16	2	E502 1600	E503 1600
2000	20.0	92	20	20	2	E502 2000	E503 2000



Catalogue Code	<b>E502</b>	<b>E503</b>
Discount Group	B0210	B0210
Material	<b>VHM</b>	<b>VHM</b>
Surface Finish	<b>TiAlN</b>	<b>TiAlN</b>
Sutton Designation	<b>N</b>	<b>N</b>
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P										M					K					N										S										H												
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
E502	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E503	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

**Slot Drills Carbide, 2 Flute, R30 N, Regular, Tecline**



- For precision milling of slots & cavities
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAIN for longer tool life



**Fraise à rainurer 2 dents carbure, R30 N**

- Pour le fraisage de rainures et de poches
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAIN pour une meilleure durée de vie



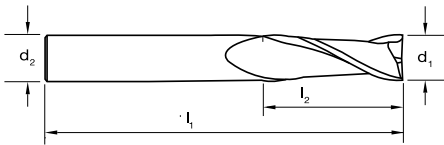
**Frese metallo duro, 2 Taglienti, R30 N, Media**

- Fresatura di cave ad alta precisione
- Ideale per materiali fino a 1600 N/mm<sup>2</sup>
- TiAIN per Ottimizzare vita utensile



**Fresas de MD, 2 ranuras, R30 N, Regular**

- Para fresado de precisión de ranuras
- Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>
- TiAIN para una mayor vida útil de la herramienta



Catalogue Code	<b>E600</b>	<b>E603</b>
Discount Group	B0212	B0214
Material	<b>VHM</b>	<b>VHM</b>
Surface Finish	<b>BrT</b>	<b>TiAIN</b>
Sutton Designation	<b>N</b>	<b>N</b>
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HA
Shank Tolerance	h6	h6

Vc Page #: 430 →

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
<b>0100</b>	<b>1.0</b>	38	4	3	2	E600 0100	E603 0100
<b>0150</b>	<b>1.5</b>	38	4.5	3	2	E600 0150	E603 0150
<b>0200</b>	<b>2.0</b>	38	6	3	2	E600 0200	E603 0200
<b>0250</b>	<b>2.5</b>	38	9.5	3	2	E600 0250	E603 0250
<b>0300</b>	<b>3.0</b>	38	12	3	2	E600 0300	E603 0300
<b>0350</b>	<b>3.5</b>	50	12	4	2	E600 0350	E603 0350
<b>0400</b>	<b>4.0</b>	50	14	4	2	E600 0400	E603 0400
<b>0450</b>	<b>4.5</b>	50	16	6	2	E600 0450	E603 0450
<b>0500</b>	<b>5.0</b>	50	16	6	2	E600 0500	E603 0500
<b>0600</b>	<b>6.0</b>	50	19	6	2	E600 0600	E603 0600
<b>0700</b>	<b>7.0</b>	63	19	8	2	E600 0700	E603 0700
<b>0800</b>	<b>8.0</b>	63	20	8	2	E600 0800	E603 0800
<b>0900</b>	<b>9.0</b>	75	22	10	2	E600 0900	E603 0900
<b>1000</b>	<b>10.0</b>	75	22	10	2	E600 1000	E603 1000
<b>1100</b>	<b>11.0</b>	75	25	12	2	E600 1100	E603 1100
<b>1200</b>	<b>12.0</b>	75	25	12	2	E600 1200	E603 1200
<b>1400</b>	<b>14.0</b>	89	32	14	2	E600 1400	E603 1400
<b>1600</b>	<b>16.0</b>	89	32	16	2	E600 1600	E603 1600
<b>1800</b>	<b>18.0</b>	100	38	18	2	E600 1800	E603 1800
<b>2000</b>	<b>20.0</b>	100	38	20	2	E600 2000	E603 2000
<b>2500</b>	<b>25.0</b>	100	38	25	2	E600 2500	E603 2500

ISO	P										M			K										N										S										H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
E600	●	●	●	●	●	●				○				○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○					
E603	●	●	●	●	○	○	○	○	○	○				○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○					

**P** Steel **M** Stainless Steel **K** Cast Iron **N** Non-Ferrous Metals **S** Titanium & Super Alloys **H** Hard Materials

● Optimal ○ Effective

# Slot Drills Carbide, 2 Flute, R30 N, Regular, Tecline



- For precision milling of slots & cavities
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAlN for longer tool life



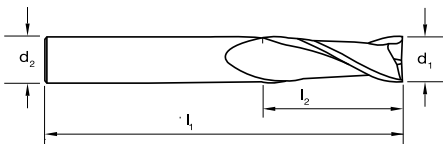
- Fraise à rainurer 2 dents carbure, R30 N**
- Pour le fraisage de rainures et de poches
  - Convient aux matériaux jusqu'à 1600 N/mm<sup>2</sup>
  - TiAlN pour une meilleure durée de vie



- Frese metallo duro, 2 Taglienti, R30 N, Media**
- Fresatura di cave ad alta precisione
  - Ideale per materiali fino a 1600 N/mm<sup>2</sup>
  - TiAlN per Ottimizzare vita utensile



- Fresas de MD, 2 ranuras, R30 N, Regular**
- Para fresado de precisión de ranuras
  - Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>
  - TiAlN para una mayor vida útil de la herramienta



Vc Page #: 430 → Refer E600

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0159	1/16	1-1/2	3/16	1/8	2	E304 0159	E307 0159
0238	3/32	1-1/2	5/16	1/8	2	E304 0238	E307 0238
0318	1/8	1-1/2	1/2	1/8	2	E304 0318	E307 0318
0397	5/32	2	9/16	3/16	2	E304 0397	E307 0397
0476	3/16	2	5/8	3/16	2	E304 0476	E307 0476
0556	7/32	2-1/2	5/8	1/4	2	E304 0556	E307 0556
0635	1/4	2-1/2	3/4	1/4	2	E304 0635	E307 0635
0794	5/16	2-1/2	13/16	5/16	2	E304 0794	E307 0794
0953	3/8	2-1/2	7/8	3/8	2	E304 0953	E307 0953
1111	7/16	2-3/4	1	7/16	2	E304 1111	E307 1111
1270	1/2	3	1	1/2	2	E304 1270	E307 1270
1588	5/8	3-1/2	1-1/4	5/8	2	E304 1588	E307 1588
1905	3/4	4	1-1/2	3/4	2	E304 1905	E307 1905
2223	7/8	4	1-1/2	7/8	2	E304 2223	E307 2223
2540	1"	4	1-1/2	1	2	E304 2540	E307 2540



Catalogue Code	E304	E307
Discount Group	B0208	B0210
Material	VHM	VHM
Surface Finish	BrT	TiAlN
Sutton Designation	N	N
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HA
Shank Tolerance	h6	h6

ISO	P										M					K					N					S					H																					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41			
E304	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E307	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Slot Drills Carbide, 2 Flute, R30 N, Regular



- For precision milling of slots & cavities
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAlN for longer tool life



## Fraise à rainurer 2 dents carbure, R30 N, DIN6527L

- Pour le fraisage de rainures et de poches
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



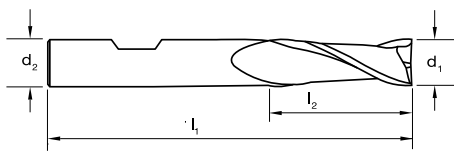
## Frese metallo duro, 2 Taglienti, R30 N, DIN6527L

- Fresatura di cave ad alta precisione
- Ideale per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



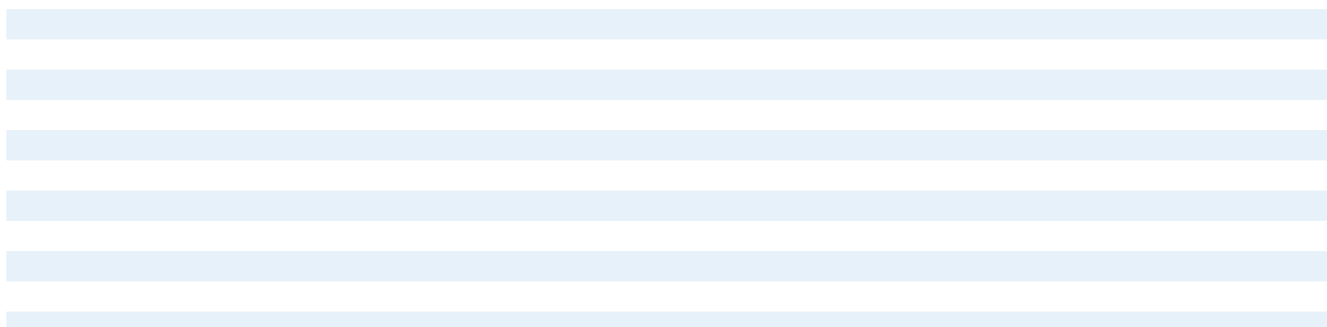
## Fresas de MD, 2 ranuras, R30 N, DIN6527L

- Para fresado de precisión de ranuras
- Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: 430 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #
0200	2.0	57	6	6	2	E507 0200
0300	3.0	57	7	6	2	E507 0300
0350	3.5	57	7	6	2	•
0400	4.0	57	8	6	2	E507 0400
0450	4.5	57	8	6	2	•
0500	5.0	57	10	6	2	E507 0500
0600	6.0	57	10	6	2	E507 0600
0700	7.0	63	16	8	2	E507 0700
0800	8.0	63	16	8	2	E507 0800
0900	9.0	72	19	10	2	E507 0900
1000	10.0	72	22	10	2	E507 1000
1200	12.0	83	22	12	2	E507 1200
1400	14.0	83	22	14	2	E507 1400
1600	16.0	92	26	16	2	E507 1600
1800	18.0	92	26	18	2	E507 1800
2000	20.0	104	32	20	2	E507 2000



ISO	P										M			K						N										S										H														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
E507	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



Catalogue Code	E507
Discount Group	B0210
Material	VHM
Surface Finish	TiAlN
Sutton Designation	N
Geometry	R30
Shank Form (DIN 6535)	HB
Shank Tolerance	h6



# Endmills Carbide, 2 Flute, R30 N, Extra Long, Tecline



- For precision milling of slots & cavities
- Suitable for materials up to 1600 N/mm<sup>2</sup>



## Fraise à rainurer 2 dents carbure, R30 N, Extra Longue

- Pour le fraisage de poches et finition
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>



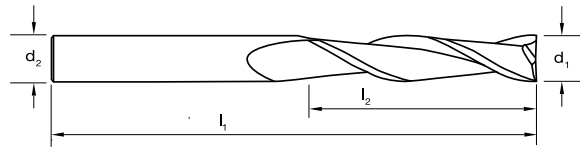
## Frese metallo duro, 2 Taglienti, R30 N, Extra Lunga

- Fresatura di cave molto profonda
- Ideale per materiali fino a 1600 N/mm<sup>2</sup>



## Fresas de MD, 2 ranuras, R30 N, Extra Larga

- Para fresado de precisión de ranuras
- Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>



Vc Page #: 430 →

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0300	3.0	76	25	3	2	E309 0300	
0400	4.0	76	28	4	2	E309 0400	
0500	5.0	76	32	5	2	E309 0500	
0600	6.0	102	38	6	2	E309 0600	
0800	8.0	102	42	8	2	E309 0800	
1000	10.0	102	45	10	2	E309 1000	
1200	12.0	153	76	12	2	E309 1200	
1400	14.0	153	76	14	2	E309 1400	
1600	16.0	153	76	16	2	E309 1600	
1800	18.0	153	76	18	2	E309 1800	
2000	20.0	153	76	20	2	E309 2000	

0300	3.0	100	40	3	2		E608 0300
0400	4.0	100	40	4	2		E608 0400
0500	5.0	100	40	5	2		E608 0500
0600	6.0	100	50	6	2		E608 0600
0800	8.0	100	50	8	2		E608 0800
1000	10.0	150	75	10	2		E608 1000
1200	12.0	150	75	12	2		E608 1200
1600	16.0	150	75	16	2		E608 1600
2000	20.0	150	75	20	2		E608 2000



Catalogue Code	E309	E608
Discount Group	B0208	B0212
Material	VHM	VHM
Surface Finish	Brt	Brt
Sutton Designation	N	N
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HA
Shank Tolerance	h6	h6

ISO	P											M					K					N										S					H											
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41							
E309	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
E608	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel
 M Stainless Steel
 K Cast Iron
 N Non-Ferrous Metals
 S Titanium & Super Alloys
 H Hard Materials
 ● Optimal ○ Effective



# Endmills Carbide, 3 Flute, R30 N, Regular



- Universal use for slotting and finishing with the one tool
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAlN for longer tool life



## Fraise à rainurer 3 dents carbure, R30 N, DIN6527L

- Pour le fraisage de rainures, de poches et finition
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



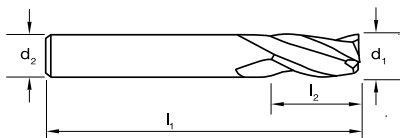
## Fresa metallo duro, 3 Taglienti, R30 N, DIN6527L

- Fresa universale per cave e lavorazioni di finitura
- Ideale per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



## Fresas de MD, 3 ranuras, R30 N, DIN6527L

- Para fresado de precisión de ranuras
- Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: 431 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0300	3.0	57	7	6	3	E515 0300	E516 0300
0350	3.5	57	7	6	3	•	•
0400	4.0	57	8	6	3	E515 0400	E516 0400
0450	4.5	57	8	6	3	•	•
0500	5.0	57	10	6	3	E515 0500	E516 0500
0600	6.0	57	10	6	3	E515 0600	E516 0600
0700	7.0	63	13	8	3	E515 0700	E516 0700
0800	8.0	63	16	8	3	E515 0800	E516 0800
0900	9.0	72	16	10	3	E515 0900	E516 0900
1000	10.0	72	19	10	3	E515 1000	E516 1000
1200	12.0	83	22	12	3	E515 1200	E516 1200
1400	14.0	83	22	14	3	E515 1400	E516 1400
1600	16.0	92	26	16	3	E515 1600	E516 1600
1800	18.0	92	26	18	3	E515 1800	E516 1800
2000	20.0	104	32	20	3	E515 2000	E516 2000



Catalogue Code	E515	E516
Discount Group	B0210	B0210
Material	VHM	VHM
Surface Finish	TiAlN	TiAlN
Sutton Designation	N	N
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P													M			K			N						S						H																								
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
E515	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●								
E516	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

• Available on request as special manufacture. Subject to lead time.

# Endmills Carbide, 3 Flute, R45 W, Stub



- Universal use for slotting and finishing with the one tool
- Suitable for materials up to 45 HRC, SOFT MATERIALS
- TiAIN for longer tool life



### Fraise à rainurer 3 dents carbure, R45 W, DIN6527K

- Pour le fraisage de rainures, de poches et finition
- Convient au matériaux aciers doux et non-ferreux
- Brt pour les non-ferreux
- TiAIN pour une meilleure durée de vie



### Frese metallo duro, 3 Taglienti, R45 W, DIN6527K

- Fresa universale per cave e lavorazioni di finitura
- Ideale per materiali fino a 45 HRC
- TiAIN per Ottimizzare vita utensile



### Fresas de MD, 3 ranuras, R45 W, DIN6527K

- Para ranurado y acabado con una herramienta
- Geometría optimizada para materiales blandos
- Brt para materiales no férricos
- TiAIN para una mayor vida útil de la herramienta



Catalogue Code	E519	E520
Discount Group	B0210	B0210
Material	VHM	VHM
Surface Finish	TiAIN	TiAIN
Sutton Designation	W	W
Geometry	R45	R45
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

Vc Page #: 431 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
<b>0300</b>	<b>3.0</b>	50	4	6	3	E519 0300	E520 0300
<b>0400</b>	<b>4.0</b>	54	5	6	3	E519 0400	E520 0400
<b>0500</b>	<b>5.0</b>	54	6	6	3	E519 0500	E520 0500
<b>0600</b>	<b>6.0</b>	54	7	6	3	E519 0600	E520 0600
<b>0800</b>	<b>8.0</b>	58	9	8	3	E519 0800	E520 0800
<b>1000</b>	<b>10.0</b>	66	11	10	3	E519 1000	E520 1000
<b>1200</b>	<b>12.0</b>	73	12	12	3	E519 1200	E520 1200
<b>1600</b>	<b>16.0</b>	82	16	16	3	E519 1600	E520 1600
<b>2000</b>	<b>20.0</b>	92	20	20	3	E519 2000	E520 2000

ISO	P										M			K						N						S					H																				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E519	●	●	●	○	○	○	○	○	○															●	●	●	●	●	●	●																					
E520	●	●	●	○	○	○	○	○																●	●	●	●	●	●	●																					

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 3 Flute, R30 N, Regular, Tecline



- For precision milling of slots & cavities
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAlN for longer tool life



## Fraise à rainurer 3 dents carbure, R30 N

- Pour le fraisage de rainures et de poches
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



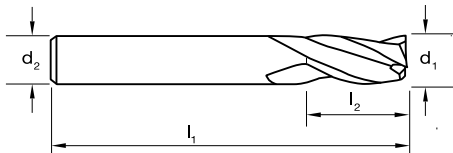
## Fresa metallo duro, 3 Taglienti, R30 N, Media

- Fresatura di cave ad alta precisione
- Ideale per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



## Fresas de MD, 3 ranuras, R30 N, Regular

- Para fresado de precisión de ranuras
- Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: 431 →

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0100	1.0	38	4	3	3	E610 0100	E611 0100
0150	1.5	38	4.5	3	3	E610 0150	E611 0150
0200	2.0	38	6	3	3	E610 0200	E611 0200
0250	2.5	38	9.5	3	3	E610 0250	E611 0250
0300	3.0	38	12	3	3	E610 0300	E611 0300
0350	3.5	50	12	4	3	E610 0350	E611 0350
0400	4.0	50	14	4	3	E610 0400	E611 0400
0450	4.5	50	16	6	3	E610 0450	E611 0450
0500	5.0	50	16	6	3	E610 0500	E611 0500
0600	6.0	50	19	6	3	E610 0600	E611 0600
0700	7.0	63	19	8	3	E610 0700	E611 0700
0800	8.0	63	20	8	3	E610 0800	E611 0800
0900	9.0	75	22	10	3	E610 0900	E611 0900
1000	10.0	75	22	10	3	E610 1000	E611 1000
1100	11.0	75	25	12	3	E610 1100	E611 1100
1200	12.0	75	25	12	3	E610 1200	E611 1200
1400	14.0	89	32	14	3	E610 1400	E611 1400
1600	16.0	89	32	16	3	E610 1600	E611 1600
1800	18.0	100	38	18	3	E610 1800	E611 1800
2000	20.0	100	38	20	3	E610 2000	E611 2000
2500	25.0	100	38	25	3	E610 2500	E611 2500



Catalogue Code	E610	E611
Product Group	B0212	B0214
Material	VHM	VHM
Surface Finish	BrT	TiAlN
Sutton Designation	N	N
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HA
Shank Tolerance	h6	h6

ISO	P										M					K					N										S										H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41			
E610	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E611	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, 3 Flute, R45 W, Regular



- Universal use for slotting and finishing with the one tool
- Optimised geometry for soft materials
- Brt for non-ferrous materials
- TiAlN for longer tool life



## Fraise à rainurer 3 dents carbure, R45 W, DIN6527L

- Pour le fraisage de rainures, de poches et finition
- Convient au matériaux aciers doux et non-ferreux
- Brt pour les non-ferreux
- TiAlN pour une meilleure durée de vie



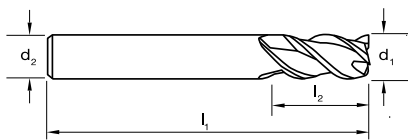
## Frese metallo duro, 3 Taglienti, R45 W, DIN6527L

- Fresa universale per cave e lavorazioni di finitura
- Geometria tagliente ottimizzate per materiali morbidi
- Brt per materiali non ferrosi
- TiAlN per Ottimizzare vita utensile



## Fresas de MD, 3 ranuras, R45 W, DIN6527L

- Para ranurado y acabado con una herramienta
- Geometría optimizada para materiales blandos
- Brt para materiales no férricos
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
<b>0300</b>	<b>3.0</b>	57	7	6	3	E523 0300	E524 0300
<b>0400</b>	<b>4.0</b>	57	8	6	3	E523 0400	E524 0400
<b>0500</b>	<b>5.0</b>	57	10	6	3	E523 0500	E524 0500
<b>0600</b>	<b>6.0</b>	57	10	6	3	E523 0600	E524 0600
<b>0800</b>	<b>8.0</b>	63	16	8	3	E523 0800	E524 0800
<b>1000</b>	<b>10.0</b>	72	19	10	3	E523 1000	E524 1000
<b>1200</b>	<b>12.0</b>	83	22	12	3	E523 1200	E524 1200
<b>1600</b>	<b>16.0</b>	92	26	16	3	E523 1600	E524 1600
<b>2000</b>	<b>20.0</b>	104	32	20	3	E523 2000	E524 2000



Catalogue Code	<b>E523</b>	<b>E524</b>
Discount Group	B0210	B0210
Material	<b>VHM</b>	<b>VHM</b>
Surface Finish	<b>TiAlN</b>	<b>TiAlN</b>
Sutton Designation	<b>W</b>	<b>W</b>
Geometry	R45	R45
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P										M			K					N										S										H														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
<b>E523</b>	●	●	●	○	○	○	○	○																																													
<b>E524</b>	●	●	●	○	○	○	○	○																																													

**P** Steel **M** Stainless Steel **K** Cast Iron **N** Non-Ferrous Metals **S** Titanium & Super Alloys **H** Hard Materials

● Optimal ○ Effective



- For precision finish milling applications
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAIN for longer tool life



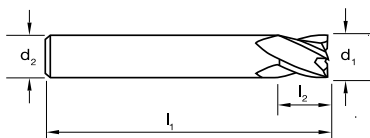
- Fraise 4 dents carbure, R30 N, DIN6527K**
- Pour le fraisage de rainures, de poches et finition
  - Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
  - TiAIN pour une meilleure durée de vie



- Fresa metallo duro, 4 Taglienti, R30 N, DIN6527K**
- Fresa ideale per lavorazioni di finitura
  - Ideale per materiali fino a 1600 N/mm<sup>2</sup>
  - TiAIN per Ottimizzare vita utensile



- Fresas de MD, 4 ranuras, R30 N, DIN6527K**
- Para fresado de precisión de ranuras
  - Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>
  - TiAIN para una mayor vida útil de la herramienta



Vc Page #: 431 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0300	3.0	50	5	6	4	E527 0300	E528 0300
0400	4.0	54	8	6	4	E527 0400	E528 0400
0500	5.0	54	9	6	4	E527 0500	E528 0500
0600	6.0	54	10	6	4	E527 0600	E528 0600
0800	8.0	58	12	8	4	E527 0800	E528 0800
1000	10.0	66	14	10	4	E527 1000	E528 1000
1200	12.0	73	16	12	4	E527 1200	E528 1200
1600	16.0	82	22	16	4	E527 1600	E528 1600
2000	20.0	92	26	20	4	E527 2000	E528 2000



Catalogue Code	E527	E528
Discount Group	B0210	B0210
Material	VHM	VHM
Surface Finish	TiAIN	TiAIN
Sutton Designation	N	N
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P											M				K				N							S							H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E527	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E528	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective





# Endmills Carbide, 4 Flute, R30 N, Regular



- For precision finish milling applications
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAlN for longer tool life



### Fraise 4 dents carbure, R30 N, DIN6527L

- Pour le fraisage de rainures, de poches et finition
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



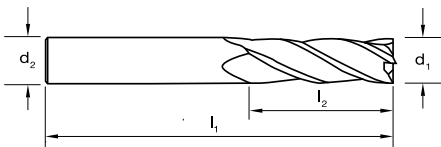
### Frese metallo duro, 4 Taglienti, R30 N, DIN6527L

- Fresa ideale per lavorazioni di finitura
- Ideale per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



### Fresas de MD, 4 ranuras, R30 N, DIN6527L

- Para fresado de precisión de ranuras
- Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: 431 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0300	3.0	57	8	6	4	E531 0300	E532 0300
0400	4.0	57	11	6	4	E531 0400	E532 0400
0500	5.0	57	13	6	4	E531 0500	E532 0500
0600	6.0	57	13	6	4	E531 0600	E532 0600
0700	7.0	63	16	8	4	E531 0700	E532 0700
0800	8.0	63	19	8	4	E531 0800	E532 0800
0900	9.0	72	19	10	4	E531 0900	E532 0900
1000	10.0	72	22	10	4	E531 1000	E532 1000
1200	12.0	83	26	12	4	E531 1200	E532 1200
1400	14.0	83	26	14	4	E531 1400	E532 1400
1600	16.0	92	32	16	4	E531 1600	E532 1600
1800	18.0	92	32	18	4	E531 1800	E532 1800
2000	20.0	104	38	20	4	E531 2000	E532 2000



	E531	E532
Catalogue Code	E531	E532
Discount Group	B0210	B0210
Material	VHM	VHM
Surface Finish	TiAlN	TiAlN
Sutton Designation	N	N
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P										M					K					N					S					H																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E531	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E532	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- 35/38° variable flute helix for chatter free milling
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAlN for longer tool life



### Fraise 4 dents carbure, R35°/38°, Régulières

- Hélice variable 35/38° pour la suppression des vibrations
- Convient aux matériaux jusqu'à 1600N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



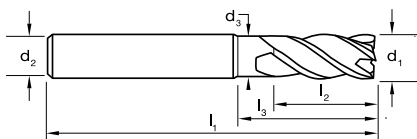
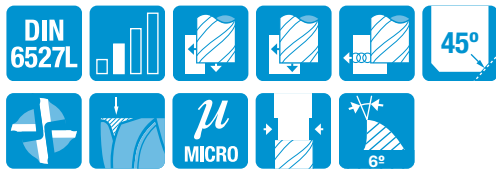
### Frese metallo duro, 4 Taglienti, R35°/38°, Media

- Elica tagliente variabile 35/38° per lavorazioni senza vibrazioni
- Adatta per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



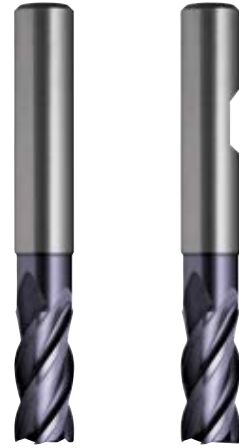
### Fresas de MD, 4 ranuras, R35°/38°, Regular

- Hélice de ranura variable 35/38° para fresado sin vibraciones
- Adecuado para materiales hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta

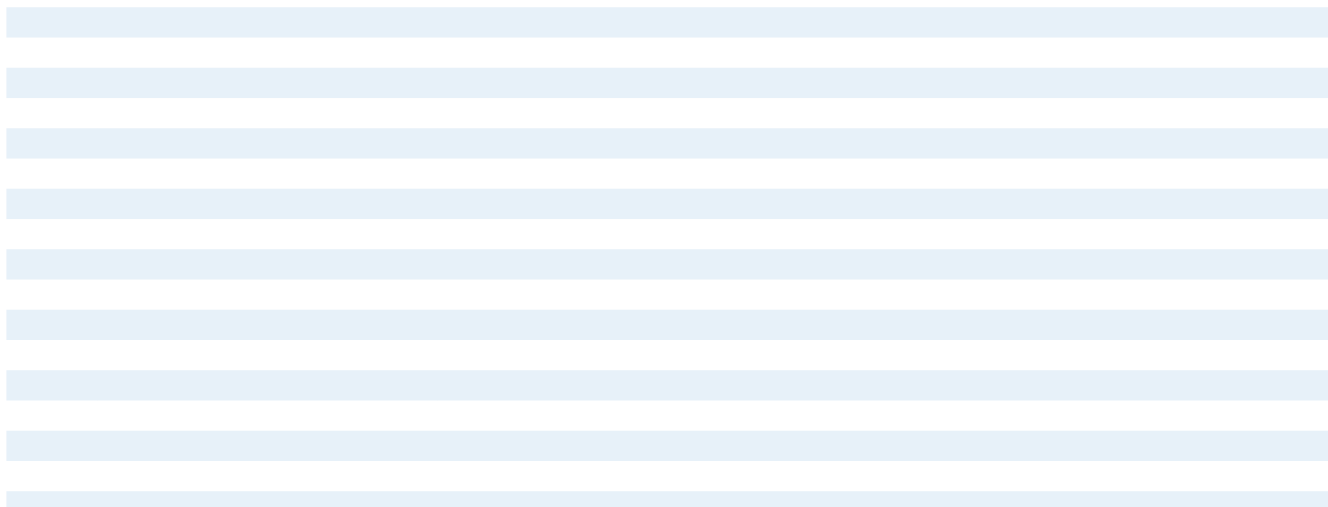


Vc Page #: 431 →

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
0300	3.0	57	8	19	6	2.8	4	E635 0300	E636 0300
0400	4.0	57	11	19	6	3.7	4	E635 0400	E636 0400
0500	5.0	57	13	20	6	4.6	4	E635 0500	E636 0500
0600	6.0	57	13	21	6	5.5	4	E635 0600	E636 0600
0800	8.0	63	19	27	8	7.5	4	E635 0800	E636 0800
1000	10.0	72	22	32	10	9.5	4	E635 1000	E636 1000
1200	12.0	83	26	38	12	11.2	4	E635 1200	E636 1200
1400	14.0	83	26	38	14	13.0	4	E635 1400	E636 1400
1600	16.0	92	32	44	16	15.0	4	E635 1600	E636 1600
2000	20.0	104	38	54	20	19.0	4	E635 2000	E636 2000



	E635	E636
Catalogue Code	B0214	B0214
Product Group	B0214	B0214
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	TiAlN	TiAlN
Sutton Designation	N	N
Geometry	R35/38	R35/38
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6



ISO	P													M			K					N									S								H												
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E635	●	●	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E636	●	●	●	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

# Endmills Carbide, 4 Flute, R30 N, Long



- For long-reach finish milling applications
- Suitable for materials up to 1300 N/mm<sup>2</sup>
- TiAlN for longer tool life



### Fraise carbure, 4 dents, R30N, longue

- Pour le fraisage de profils et de contours dans les applications à très longue portée
- Convient aux matériaux jusqu'à 1300 N/mm<sup>2</sup>
- TiAlN pour une durée de vie plus longue



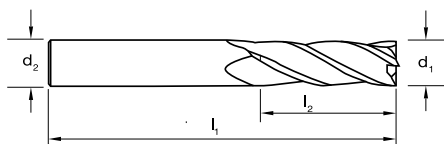
### Frese in metallo duro, 4 taglienti, R30 N, lunghe

- Per applicazioni di fresatura di finitura a lungo raggio
- Adatto per materiali fino a 1300 N/mm<sup>2</sup>
- TiAlN per una maggiore durata dell'utensile



### Fresas de metal duro, 4 labios, R30N, largas

- Para aplicaciones de fresado de acabado de largo alcance
- Adecuado para materiales de hasta 1300 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: 431 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
<b>0300</b>	<b>3.0</b>	60	19	3	4	•	E340 0300
<b>0400</b>	<b>4.0</b>	60	19	4	4	•	E340 0400
<b>0500</b>	<b>5.0</b>	60	19	5	4	•	E340 0500
<b>0600</b>	<b>6.0</b>	75	31	6	4	•	E340 0600
<b>0800</b>	<b>8.0</b>	75	31	8	4	•	E340 0800
<b>1000</b>	<b>10.0</b>	75	31	10	4	•	E340 1000
<b>1200</b>	<b>12.0</b>	100	50	12	4	•	E340 1200
<b>1400</b>	<b>14.0</b>	125	57	14	4	•	E340 1400
<b>1600</b>	<b>16.0</b>	125	57	16	4	•	E340 1600
<b>1800</b>	<b>18.0</b>	125	57	18	4	•	E340 1800
<b>2000</b>	<b>20.0</b>	125	57	20	4	•	E340 2000
<hr/>							
<b>0318</b>	<b>1/8</b>	2-1/4	3/4	1/8	4	E337 0318	E340 0318
<b>0635</b>	<b>1/4</b>	3	1-1/8	1/4	4	E337 0635	E340 0635
<b>0794</b>	<b>5/16</b>	3	1-1/8	5/16	4	E337 0794	E340 0794
<b>0953</b>	<b>3/8</b>	3	1-1/8	3/8	4	E337 0953	E340 0953
<b>1270</b>	<b>1/2</b>	4	2	1/2	4	E337 1270	E340 1270
<b>1588</b>	<b>5/8</b>	5	2-1/4	5/8	4	E337 1588	E340 1588
<b>1905</b>	<b>3/4</b>	5	2-1/4	3/4	4	E337 1905	E340 1905
<hr/>							

ISO	P													M			K							N							S							H																
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
<b>E337</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
<b>E340</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

• Available on request as special manufacture. Subject to lead time.

# Endmills Carbide, 4 Flute, R30 N, Extra Long



- For extra long-reach finish milling applications
- Suitable for materials up to 1300 N/mm<sup>2</sup>
- TiAlN for longer tool life



**Fraise carbure, 4 dents, R30N, extra longue**

- Pour le fraisage de profils et de contours dans les applications à très longue portée
- Convient aux matériaux jusqu'à 1300 N/mm<sup>2</sup>
- TiAlN pour une durée de vie plus longue



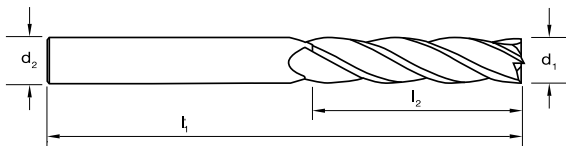
**Frese in metallo duro, 4 taglienti, R30 N, extra lunghe**

- Per applicazioni di fresatura di finitura extra lungo
- Adatto per materiali fino a 1300 N/mm<sup>2</sup>
- TiAlN per una maggiore durata dell'utensile



**Fresas de metal duro, 4 labios, R30N, extra largas**

- Para aplicaciones de fresado de acabado de largo alcance
- Adecuado para materiales de hasta 1300 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Catalogue Code	<b>E344</b>
Discount Group	B0210
Material	<b>VHM</b>
Surface Finish	<b>TiAlN</b>
Sutton Designation	<b>N</b>
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 431 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #
<b>0300</b>	<b>3.0</b>	75	25	3	4	E344 0300
<b>0400</b>	<b>4.0</b>	75	28	4	4	E344 0400
<b>0500</b>	<b>5.0</b>	75	32	5	4	E344 0500
<b>0600</b>	<b>6.0</b>	100	38	6	4	E344 0600
<b>0800</b>	<b>8.0</b>	100	41	8	4	E344 0800
<b>1000</b>	<b>10.0</b>	100	44	10	4	E344 1000
<b>1200</b>	<b>12.0</b>	150	75	12	4	E344 1200
<b>1400</b>	<b>14.0</b>	150	75	14	4	E344 1400
<b>1600</b>	<b>16.0</b>	150	75	16	4	E344 1600
<b>1800</b>	<b>18.0</b>	150	75	18	4	E344 1800
<b>2000</b>	<b>20.0</b>	150	75	20	4	E344 2000

ISO	P							M			K			N							S							H																									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
<b>E344</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



# Endmills Carbide, 4 Flute, R30 N, Extra Long, Tecline



- For precision finish milling applications
- Suitable for materials up to 1600 N/mm<sup>2</sup>



**Fraise 4 dents carbure, R30N, Extra Longue**

- Pour le fraisage de poches et finition
- Convient au matériaux jusqu'à 1300 N/mm<sup>2</sup>



**Fresa metallo duro, 4 Taglienti, R30 N, Extra Lunga**

- Fresa ideale per lavorazioni di finitura
- Ideale per materiali fino a 1600 N/mm<sup>2</sup>



**Fresas de MD, 2 ranuras, R30 N, Extra Larga**

- Para fresado de precisión de ranuras
- Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>



Catalogue Code **E609**

Discount Group **B0212**

Material **VHM**

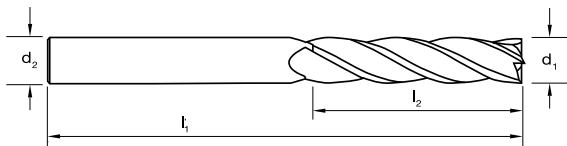
Surface Finish **Brt**

Sutton Designation **N**

Geometry **R30**

Shank Form (DIN 6535) **HA**

Shank Tolerance **h6**



Vc Page #: 432 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #
<b>0300</b>	<b>3.0</b>	100	40	3	4	E609 0300
<b>0400</b>	<b>4.0</b>	100	40	4	4	E609 0400
<b>0500</b>	<b>5.0</b>	100	40	5	4	E609 0500
<b>0600</b>	<b>6.0</b>	100	50	6	4	E609 0600
<b>0800</b>	<b>8.0</b>	100	50	8	4	E609 0800
<b>1000</b>	<b>10.0</b>	150	75	10	4	E609 1000
<b>1200</b>	<b>12.0</b>	150	75	12	4	E609 1200
<b>1600</b>	<b>16.0</b>	150	75	16	4	E609 1600
<b>2000</b>	<b>20.0</b>	150	75	20	4	E609 2000

ISO	P													M			K						N						S						H														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
<b>E609</b>	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- For roughing applications
- NR geometry allows for heavy cuts
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAlN for longer tool life



**Fresas Desbaste, NR (normal), R30 N, DIN6527L**

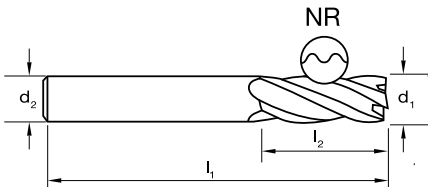
- Para aplicaciones de desbaste
- La geometría NR permite grandes pasadas
- Adecuado para materiales de hasta 1200 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta

**Fraise ravageuse carbure, profil NR (normal) R30°, Type N, DIN 6527L**

- Pour les applications d' ébauche
- Convient aux matériaux jusqu'à 1600N/mm<sup>2</sup>
- Revêtement TiAlN pour une meilleure durée de vie
- Brise-copeaux (NR) pour les coupes difficiles

**Frese metallo duro rompi triciolo, NR (normal), R30 N, DIN6527L**

- Fresa ideale per lavorazioni di sgrossatura
- Geometria NR permette lavorazioni gravose
- Ideale per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



Vc Page #: 432 →

Size Ref.	d <sub>1</sub> (js14)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0400	4.0	57	11	6	3	E547 0400	E548 0400
0500	5.0	57	13	6	3	E547 0500	E548 0500
0600	6.0	57	13	6	3	E547 0600	E548 0600
0800	8.0	63	19	8	3	E547 0800	E548 0800
1000	10.0	72	22	10	4	E547 1000	E548 1000
1200	12.0	83	26	12	4	E547 1200	E548 1200
1600	16.0	92	32	16	4	E547 1600	E548 1600
2000	20.0	104	38	20	4	E547 2000	E548 2000



Catalogue Code	E547	E548
Discount Group	B0210	B0210
Material	VHM	VHM
Surface Finish	TiAlN	TiAlN
Sutton Designation	N	N
Geometry	R30 NR	R30 NR
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P				M				K				N				S				H																													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
VDI 3323																																																		
E547	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○				
E548	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective



- For roughing applications
- HR geometry allows for heavier cuts in harder materials
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- TiAlN for longer tool life



### Fraise carbure, Ebauche, profil HR, R20 HR, DIN 6527L

- Pour les applications d'ébauche
- Brises copeaux HR pour les gros enlèvements dans les matériaux durs
- Convient aux matériaux jusqu'à 1600 N/mm<sup>2</sup>
- Revêtement TiAlN pour une meilleure durée de vie



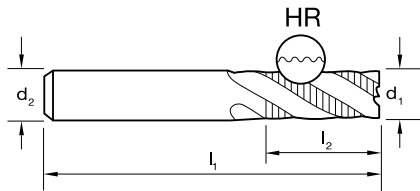
### Frese metallo duro rompi triciolo, HR (fine), R20 HR, DIN6527L

- Fresa ideale per lavorazioni di sgrassatura
- Geometria HR permette lavorazioni gravose su materiali di difficile lavorabilità
- Ideale per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



### Fresas Desbaste, HR (fino), R20 HR, DIN6527L

- Para aplicaciones de desbaste
- La geometría HR permite mayores pasadas en materiales más duros
- Adecuado para materiales de hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: 432 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
<b>0600</b>	<b>6.0</b>	57	13	6	3	E450 0600	E451 0600
<b>0800</b>	<b>8.0</b>	63	19	8	3	E450 0800	E451 0800
<b>1000</b>	<b>10.0</b>	72	22	10	4	E450 1000	E451 1000
<b>1200</b>	<b>12.0</b>	83	26	12	4	E450 1200	E451 1200
<b>1400</b>	<b>14.0</b>	83	26	14	4	•	•
<b>1600</b>	<b>16.0</b>	92	32	16	4	E450 1600	E451 1600
<b>1800</b>	<b>18.0</b>	92	32	18	4	•	•
<b>2000</b>	<b>20.0</b>	104	38	20	4	E450 2000	E451 2000



Catalogue Code	<b>E450</b>	<b>E451</b>
Discount Group	B0210	B0210
Material	<b>VHM</b>	<b>VHM</b>
Surface Finish	<b>TiAlN</b>	<b>TiAlN</b>
Sutton Designation	<b>HR</b>	<b>HR</b>
Geometry	R20 HR	R20 HR
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P													M			K							N										S										H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
<b>E450</b>	●	●	●	●	●	○	○	○	○	○							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
<b>E451</b>	●	●	●	●	○	○	○										●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective





- For profiling of contour milling applications
- Suitable for materials up to 1600N/mm<sup>2</sup>
- TiAlN for longer tool life



**Fraise à rainurer 2 dents carbure, Hémisphérique, R30 N, DIN6527K**

- Pour le fraisage de formes et de poches
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



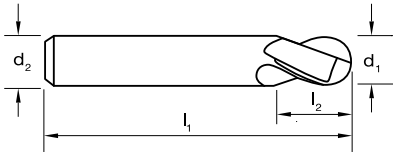
**Fresse metallo duro, Sferiche, 2 Taglienti, R30 N, DIN6527K**

- Ideale per lavorazioni di contornatura e profilatura
- Adatta per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



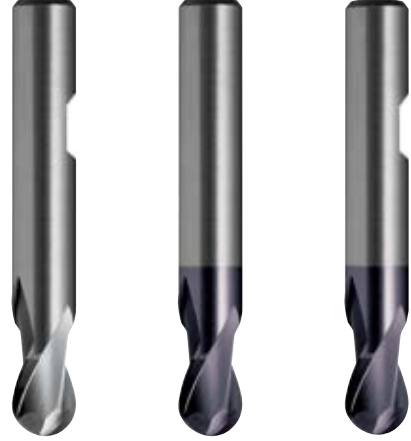
**Fresas de MD esféricas, 2 ranuras, R30 N, DIN6527K**

- Para fresado de perfiles y contornos en aplicaciones de largo alcance
- Adecuado para materiales hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: 432 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #	Item #
0300	3.0	50	4	6	2	E453 0300	E454 0300	E455 0300
0400	4.0	54	5	6	2	E453 0400	E454 0400	E455 0400
0500	5.0	54	6	6	2	E453 0500	E454 0500	E455 0500
0600	6.0	54	7	6	2	E453 0600	E454 0600	E455 0600
0800	8.0	58	9	8	2	E453 0800	E454 0800	E455 0800
1000	10.0	66	11	10	2	E453 1000	E454 1000	E455 1000
1200	12.0	73	12	12	2	E453 1200	E454 1200	E455 1200
1400	14.0	75	14	14	2	.	.	.
1600	16.0	82	16	16	2	E453 1600	E454 1600	E455 1600
1800	18.0	84	18	18	2	.	.	.
2000	20.0	92	20	20	2	E453 2000	E454 2000	E455 2000



Catalogue Code	E453	E454	E455
Discount Group	B0208	B0210	B0210
Material	VHM	VHM	VHM
Surface Finish	Brt	TiAlN	TiAlN
Sutton Designation	N	N	N
Geometry	R30	R30	R30
Shank Form (DIN 6535)	HB	HA	HB
Shank Tolerance	h6	h6	h6

ISO	P												M				K				N										S						H																		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41						
E453	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
E454 / E455	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

• Available on request as special manufacture. Subject to lead time.

# Slot Drills Carbide, Ballnose, 2 Flute, R30N, Regular, Tecline



- For profile & contour milling applications
- Suitable for materials up to 1600N/mm<sup>2</sup>
- TiAlN for longer tool life



## Fraise à rainurer 2 dents carbure, Hémisphérique, R30 N

- Pour le fraisage de formes et de poches
- Convient aux matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



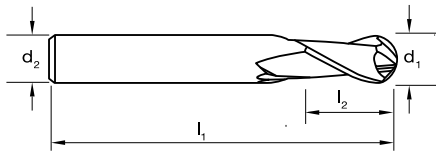
## Fresa metallo duro, Sferiche, 2 Taglienti, R30 N, Media

- Ideale per lavorazioni di contornatura e profilatura
- Adatta per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



## Fresas de MD esféricas, 2 ranuras, R30 N, Regular

- Para fresado de perfiles y contornos en aplicaciones de largo alcance
- Adecuado para materiales hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: 433 →

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0100	1.0	38	4	3	2	E602 0100	E605 0100
0150	1.5	38	4.5	3	2	E602 0150	E605 0150
0200	2.0	38	6	3	2	E602 0200	E605 0200
0250	2.5	38	9.5	3	2	E602 0250	E605 0250
0300	3.0	38	12	3	2	E602 0300	E605 0300
0350	3.5	50	12	4	2		E605 0350
0400	4.0	50	14	4	2	E602 0400	E605 0400
0500	5.0	50	16	6	2	E602 0500	E605 0500
0600	6.0	50	19	6	2	E602 0600	E605 0600
0700	7.0	63	19	8	2	E602 0700	E605 0700
0800	8.0	63	20	8	2	E602 0800	E605 0800
0900	9.0	75	20	10	2	E602 0900	E605 0900
1000	10.0	75	22	10	2	E602 1000	E605 1000
1100	11.0	75	25	12	2	E602 1100	E605 1100
1200	12.0	75	25	12	2	E602 1200	E605 1200
1400	14.0	89	32	14	2	E602 1400	E605 1400
1600	16.0	89	32	16	2	E602 1600	E605 1600
1800	18.0	100	38	18	2		E605 1800
2000	20.0	100	38	20	2	E602 2000	E605 2000
2500	25.0	100	38	25	2		E605 2500



Catalogue Code	<b>E602</b>	<b>E605</b>
Discount Group	B0212	B0214
Material	<b>VHM</b>	<b>VHM</b>
Surface Finish	<b>BrT</b>	<b>TiAlN</b>
Sutton Designation	<b>N</b>	<b>N</b>
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HA
Shank Tolerance	h6	h6

ISO	P										M			K						N										S										H												
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41			
E602	●	●	●	●	●	●	●	●	●	○				○	○	○	○	○	○	○	○	○																														
E605	●	●	●	●	○	○	○	○	○	○				○	○	○	○	○	○	○	○	○																														

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

# Slot Drills Carbide, Ballnose, 2 Flute, R30 N, Regular, Tecline



- For profile & contour milling applications
- Suitable for materials up to 1600N/mm<sup>2</sup>
- TiAlN for longer tool life



## Fraise à rainurer 2 dents carbure, Hémisphérique, R30 N

- Pour le fraisage de formes et de poches
- Convient aux matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



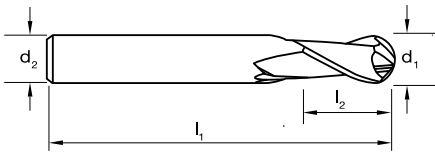
## Freses metallo duro, Sferiche, 2 Taglienti, R30 N, Media

- Ideale per lavorazioni di contornatura e profilatura
- Adatta per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



## Fresas de MD esféricas, 2 ranuras, R30 N, Regular

- Para fresado de perfiles y contornos en aplicaciones de largo alcance
- Adecuado para materiales hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Catalogue Code	<b>E311</b>	<b>E314</b>
Discount Group	B0208	B0210
Material	<b>VHM</b>	<b>VHM</b>
Surface Finish	<b>Brt</b>	<b>TiAlN</b>
Sutton Designation	<b>N</b>	<b>N</b>
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HA
Shank Tolerance	h6	h6

Vc Page #: 433 → Refer E602

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
<b>0159</b>	<b>1/16</b>	1-1/2	3/16	1/8	2	E311 0159	E314 0159
<b>0238</b>	<b>3/32</b>	1-1/2	5/16	1/8	2	E311 0238	E314 0238
<b>0318</b>	<b>1/8</b>	1-1/2	1/2	1/8	2	E311 0318	E314 0318
<b>0397</b>	<b>5/32</b>	2	9/16	3/16	2	E311 0397	E314 0397
<b>0476</b>	<b>3/16</b>	2	5/8	3/16	2	E311 0476	E314 0476
<b>0635</b>	<b>1/4</b>	2-1/2	3/4	1/4	2	E311 0635	E314 0635
<b>0794</b>	<b>5/16</b>	2-1/2	13/16	5/16	2	E311 0794	E314 0794
<b>0953</b>	<b>3/8</b>	2-1/2	7/8	3/8	2	E311 0953	E314 0953
<b>1111</b>	<b>7/16</b>	2-3/4	1	7/16	2	E311 1111	E314 1111
<b>1270</b>	<b>1/2</b>	3	1	1/2	2	E311 1270	E314 1270
<b>1588</b>	<b>5/8</b>	3-1/2	1-1/4	5/8	2	E311 1588	E314 1588
<b>1905</b>	<b>3/4</b>	4	1-1/2	3/4	2	E311 1905	E314 1905

ISO	P												M			K					N										S					H													
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
<b>E311</b>	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>E314</b>	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel 
 M Stainless Steel 
 K Cast Iron 
 N Non-Ferrous Metals 
 S Titanium & Super Alloys 
 H Hard Materials 
 ● Optimal ○ Effective

## Slot Drills Carbide, Ballnose, 2 Flute, R30N, Regular



- For profile & contour milling applications
- Suitable for materials up to 1600N/mm<sup>2</sup>
- TiAlN for longer tool life



### Fraise à rainurer 2 dents carbure, Hémisphérique, R30 N, DIN6527L

- Pour le fraisage de formes et de poches
- Convient aux matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



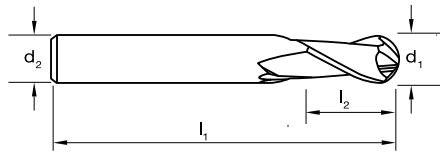
### Frese metallo duro, Sferiche, 2 Taglienti, R30 N, DIN6527L

- Ideale per lavorazioni di contornatura e profilatura
- Adatta per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



### Fresas de MD esféricas, 2 ranuras, R30 N, DIN6527L

- Para fresado de perfiles y contornos en aplicaciones de largo alcance
- Adecuado para materiales hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Catalogue Code	<b>E551</b>	<b>E553</b>	<b>E554</b>
Discount Group	B0208	B0210	B0210
Material	<b>VHM</b>	<b>VHM</b>	<b>VHM</b>
Surface Finish	<b>Brt</b>	<b>TiAlN</b>	<b>TiAlN</b>
Sutton Designation	<b>N</b>	<b>N</b>	<b>N</b>
Geometry	R30	R30	R30
Shank Form (DIN 6535)	HA	HA	HB
Shank Tolerance	h6	h6	h6

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #	Item #
0200	2.0	57	6	6	2	E551 0200	E553 0200	E554 0200
0300	3.0	57	7	6	2	E551 0300	E553 0300	E554 0300
0400	4.0	57	8	6	2	E551 0400	E553 0400	E554 0400
0500	5.0	57	10	6	2	E551 0500	E553 0500	E554 0500
0600	6.0	57	10	6	2	E551 0600	E553 0600	E554 0600
0800	8.0	63	16	8	2	E551 0800	E553 0800	E554 0800
1000	10.0	72	19	10	2	E551 1000	E553 1000	E554 1000
1200	12.0	83	22	12	2	E551 1200	E553 1200	E554 1200

Vc Page #: 433 →

ISO	P													M			K						N										S										H							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E551	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E553 / E554	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective



- VHM-ULTRA grade of carbide for high performance
- For profile & contour milling in long reach applications
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- AlCrN for longer tool life



## Fraise à rainurer 2 dents carbure, Hémisphérique, R30 N, Longue

- Pour le fraisage de formes et de poches profondes
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- AlCrN et VHM-ULTRA pour une meilleure durée de vie



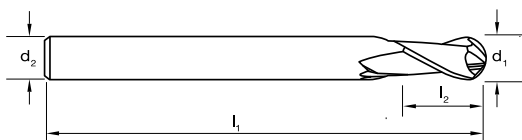
## Frese metallo duro, Sferiche, 2 Taglienti, R30 N, Lunga Portata

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Ideale per lavorazioni di contornatura e profilatura
- Adatta per materiali fino a 1600 N/mm<sup>2</sup>
- AlCrN per Ottimizzare vita utensile



## Fresas de MD eféricas, 2 ranuras, R30 N, Larga

- Para fresado de perfiles y contornos en aplicaciones de largo alcance
- Adecuado para materiales hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Vc Page #: 433 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0200	2.0	50	5	6	2	E555 0200	E556 0200
0300	3.0	60	8	6	2	E555 0300	E556 0300
0400	4.0	70	8	6	2	E555 0400	E556 0400
0500	5.0	80	10	6	2	E555 0500	E556 0500
0600	6.0	90	12	6	2	E555 0600	E556 0600
0800	8.0	100	14	8	2	E555 0800	E556 0800
1000	10.0	100	18	10	2	E555 1000	E556 1000
1200	12.0	110	22	12	2	E555 1200	E556 1200



Catalogue Code	<b>E555</b>	<b>E556</b>
Discount Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>AlCrN</b>	<b>AlCrN</b>
Sutton Designation	<b>N</b>	<b>N</b>
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h6	h6

ISO	P										M					K					N										S					H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
E555	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
E556	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Slot Drills Carbide, Ballnose, 2 Flute, R30 N, Extra Long



- For profile & contour milling in extra long reach applications
- Suitable for materials up to 1300 N/mm<sup>2</sup>



## Fraise carbure hémisphérique, 2 dents, R30N, extra longue

- Pour le fraisage de profils et de contours dans les applications à très longue portée, convient au matériaux jusqu'à 1300 N/mm<sup>2</sup>



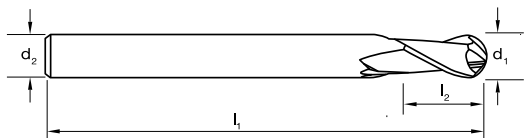
## Frese in metallo duro per scanalature, sferica, 2 taglienti, R30 N, extra lunghe

- Per la fresatura di profili e coperture in applicazioni extra lunghe
- Adatto per materiali fino a 1300 N/mm<sup>2</sup>



## Fresas de metal duro, esférica 2 labios, R30N, extra largas

- Para el fresado de perfiles y contornos en aplicaciones de alcance extra largo
- Adecuado para materiales de hasta 1300 N/mm<sup>2</sup>



Catalogue Code	<b>E315</b>
Discount Group	B0208
Material	<b>VHM</b>
Surface Finish	<b>Brt</b>
Sutton Designation	<b>N</b>
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 433 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #
<b>0300</b>	<b>3.0</b>	76	25	3	2	E315 0300
<b>0400</b>	<b>4.0</b>	76	28	4	2	E315 0400
<b>0600</b>	<b>6.0</b>	102	38	6	2	E315 0600
<b>0800</b>	<b>8.0</b>	102	42	8	2	E315 0800
<b>1000</b>	<b>10.0</b>	102	45	10	2	E315 1000
<b>1200</b>	<b>12.0</b>	153	76	12	2	E315 1200

ISO	P													M			K						N										S							H																
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
<b>E315</b>	●	●	○	○						○	○			○	○		○	○	○	○	○	○																																		

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, Ballnose, 4 Flute, R30 N, Regular, Tecline



- For profile & contour milling applications
- Suitable for materials up to 1600N/mm<sup>2</sup>
- TiAlN for longer tool life



## Fraise 4 dents carbure, Hémisphérique, R30 N

- Pour le fraisage de rainures, de poches et finition
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- TiAlN pour une meilleure durée de vie



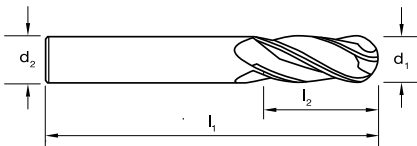
## Fresce metallo duro, Sferiche, 4 Taglienti, R30 N, Media

- Ideale per lavorazioni di contornatura e profilatura
- Adatta per materiali fino a 1600 N/mm<sup>2</sup>
- TiAlN per Ottimizzare vita utensile



## Fresas de MD esféricas, 4 ranuras, R30 N, Regular

- Para fresado de perfiles y contornos en aplicaciones de largo alcance
- Adecuado para materiales hasta 1600 N/mm<sup>2</sup>
- TiAlN para una mayor vida útil de la herramienta



Catalogue Code	E606	E607
Discount Group	B0208	B0214
Material	VHM	VHM
Surface Finish	Brt	TiAlN
Sutton Designation	N	N
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HA
Shank Tolerance	h6	h6

Vc Page #: 433 →

Size Ref.	d <sub>1</sub> (h10)	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	Item #	Item #
0100	1.0	38	4	3	4	E606 0100	E607 0100
0150	1.5	38	4.5	3	4	E606 0150	E607 0150
0200	2.0	38	6	3	4	E606 0200	E607 0200
0250	2.5	38	9.5	3	4	E606 0250	E607 0250
0300	3.0	38	12	3	4	E606 0300	E607 0300
0350	3.5	50	12	4	4		E607 0350
0400	4.0	50	14	4	4	E606 0400	E607 0400
0450	4.5	50	16	6	4		E607 0450
0500	5.0	50	16	6	4	E606 0500	E607 0500
0600	6.0	50	19	6	4	E606 0600	E607 0600
0700	7.0	63	19	8	4		E607 0700
0800	8.0	63	20	8	4	E606 0800	E607 0800
0900	9.0	75	22	10	4		E607 0900
1000	10.0	75	22	10	4	E606 1000	E607 1000
1100	11.0	75	25	12	4		E607 1100
1200	12.0	75	25	12	4	E606 1200	E607 1200
1400	14.0	89	32	14	4		E607 1400
1600	16.0	89	32	16	4	E606 1600	E607 1600
1800	18.0	100	38	18	4		E607 1800
2000	20.0	100	38	20	4	E606 2000	E607 2000
2500	25.0	100	38	25	4		E607 2500
Product Group							B0210
E319							E319
0159	1/16	1-1/2	3/16	1/8	4		E319 0159
0318	1/8	1-1/2	1/2	1/8	4		E319 0318
0476	3/16	2	5/8	3/16	4		E319 0476
0635	1/4	2-1/2	3/4	1/4	4		E319 0635
0794	5/16	2-1/2	13/16	5/16	4		E319 0794
0953	3/8	2-1/2	7/8	3/8	4		E319 0953
1270	1/2	3	1	1/2	4		E319 1270

ISO	P													M				K					N										S										H											
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
E606	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																						
E607	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																					

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

• Available on request as special manufacture. Subject to lead time.













- For precision milling of cavities
- Suitable for materials up to 35-52 HRC
- TiSiN for high speed machining



### Micro-fraise 2 dents, R40 NH, Long

- Pour le Micro-Fraisage de poches, de rainures et gravage
- Convient aux matériaux de 35-52 HRC
- Revêtement TiSiN, résistant à la haute vitesse



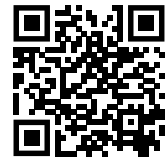
### Fresa metallo duro, Micro, 2 Taglienti, R40 NH, Lunga Portata

- Fresatura cave di precisione
- Ideale per materiali fino a 32-52 HRC
- TiSiN per Lavorazioni ad alto avanzamento



### Fresas de MD micro, 2 ranuras, R40 NH, Larga

- Para ranurado de precisión
- Adecuado para materiales entre 35-52 HRC
- TiSiN para mecanizado de alta velocidad



watch the video



Catalogue Code **E580**

Discount Group **B0218**

Material **VHM**

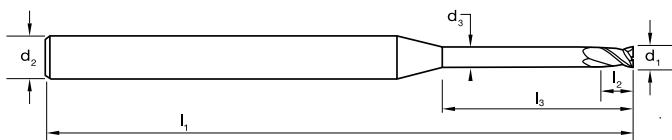
Surface Finish **TiSiN**

Application **NH**

Geometry **R40**

Shank Form (DIN 6535) **HA**

Shank Tolerance **h6**



Vc Page #: 434 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
0161	1.6	50	2.4	6	4	1.55	2	E580 0161
0162	1.6	50	2.4	8	4	1.55	2	E580 0162
0163	1.6	50	2.4	10	4	1.55	2	E580 0163
0164	1.6	50	2.4	12	4	1.55	2	E580 0164
0165	1.6	50	2.4	14	4	1.55	2	E580 0165
0166	1.6	50	2.4	16	4	1.55	2	E580 0166
0167	1.6	60	2.4	18	4	1.55	2	E580 0167
0168	1.6	60	2.4	20	4	1.55	2	E580 0168
0181	1.8	50	2.7	6	4	1.75	2	E580 0181
0182	1.8	50	2.7	8	4	1.75	2	E580 0182
0183	1.8	50	2.7	10	4	1.75	2	E580 0183
0184	1.8	50	2.7	12	4	1.75	2	E580 0184
0185	1.8	50	2.7	14	4	1.75	2	E580 0185
0186	1.8	50	2.7	16	4	1.75	2	E580 0186
0187	1.8	60	2.7	18	4	1.75	2	E580 0187
0188	1.8	60	2.7	20	4	1.75	2	E580 0188
0201	2.0	50	3.0	6	4	1.95	2	E580 0201
0202	2.0	50	3.0	8	4	1.95	2	E580 0202
0203	2.0	50	3.0	10	4	1.95	2	E580 0203
0204	2.0	50	3.0	12	4	1.95	2	E580 0204
0205	2.0	50	3.0	16	4	1.95	2	E580 0205
0206	2.0	60	3.0	20	4	1.95	2	E580 0206
0207	2.0	75	3.0	25	4	1.95	2	E580 0207
0208	2.0	50	3	14	4	1.95	2	E580 0208
0209	2.0	60	3	18	4	1.95	2	E580 0209
0210	2.0	75	3	30	4	1.95	2	E580 0210
0251	2.5	50	3.7	8	4	2.40	2	E580 0251
0252	2.5	50	3.7	12	4	2.40	2	E580 0252

ISO	P										M					K					N					S					H																							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
E580									●				○	○	○																						●	●			●	●												

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective





- For precision milling of cavities
- Suitable for materials up to 35-52 HRC
- TiSiN for high speed machining



### Micro-fraise 2 dents, R40 NH, Torique

- Pour le Micro-Fraisage de poches
- Convient aux matériaux de 35-52 HRC
- Revêtement TiSiN, résistant à la haute vitesse



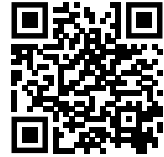
### Fresa metallo duro, Micro, 2 Taglienti, R40 NH, Toriche

- Fresatura cave di precisione
- Ideale per materiali fino a 32-52 HRC
- TiSiN per Lavorazioni ad alto avanzamento



### Fresas de MD micro, 2 ranuras, R40 NH, Tórica

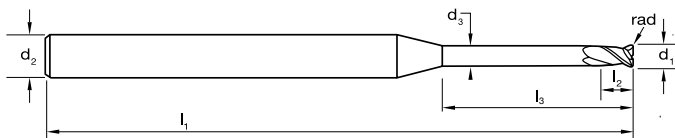
- Para ranurado de precisión
- Adecuado para materiales entre 35-52 HRC
- TiSiN para mecanizado de alta velocidad



watch the video



Catalogue Code	<b>E581</b>
Discount Group	B0218
Material	<b>VHM</b>
Surface Finish	<b>TiSiN</b>
Application	<b>NH</b>
Geometry	R40
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Vc Page #: 434 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad†	Item #
<b>0021</b>	<b>0.2</b>	50	0.3	0.5	4	0.16	2	0.02	E581 0021
<b>0022</b>	<b>0.2</b>	50	0.3	1	4	0.16	2	0.02	E581 0022
<b>0023</b>	<b>0.2</b>	50	0.3	1.5	4	0.16	2	0.02	E581 0023
<b>0041</b>	<b>0.4</b>	50	0.6	2	4	0.37	2	0.03	E581 0041
<b>0042</b>	<b>0.4</b>	50	0.6	4	4	0.37	2	0.03	E581 0042
<b>0051</b>	<b>0.5</b>	50	0.7	2	4	0.45	2	0.05	E581 0051
<b>0052</b>	<b>0.5</b>	50	0.7	4	4	0.45	2	0.05	E581 0052
<b>0053</b>	<b>0.5</b>	50	0.7	6	4	0.45	2	0.05	E581 0053
<b>0061</b>	<b>0.6</b>	50	0.9	4	4	0.55	2	0.05	E581 0061
<b>0062</b>	<b>0.6</b>	50	0.9	8	4	0.55	2	0.05	E581 0062
<b>0081</b>	<b>0.8</b>	50	1.2	4	4	0.75	2	0.08	E581 0081
<b>0082</b>	<b>0.8</b>	50	1.2	6	4	0.75	2	0.08	E581 0082
<b>0083</b>	<b>0.8</b>	50	1.2	8	4	0.75	2	0.08	E581 0083
<b>0101</b>	<b>1.0</b>	50	1.5	6	4	0.95	2	0.1	E581 0101
<b>0102</b>	<b>1.0</b>	50	1.5	8	4	0.95	2	0.1	E581 0102
<b>0103</b>	<b>1.0</b>	50	1.5	10	4	0.95	2	0.1	E581 0103
<b>0104</b>	<b>1.0</b>	50	1.5	12	4	0.95	2	0.1	E581 0104
<b>0105</b>	<b>1.0</b>	50	1.5	16	4	0.95	2	0.1	E581 0105
<b>0121</b>	<b>1.2</b>	50	1.8	6	4	1.15	2	0.1	E581 0121
<b>0122</b>	<b>1.2</b>	50	1.8	10	4	1.15	2	0.1	E581 0122
<b>0123</b>	<b>1.2</b>	50	1.8	12	4	1.15	2	0.1	E581 0123
<b>0151</b>	<b>1.5</b>	50	2.3	6	4	1.45	2	0.15	E581 0151
<b>0152</b>	<b>1.5</b>	50	2.3	8	4	1.45	2	0.15	E581 0152
<b>0153</b>	<b>1.5</b>	50	2.3	12	4	1.45	2	0.15	E581 0153
<b>0154</b>	<b>1.5</b>	50	2.3	16	4	1.45	2	0.15	E581 0154
<b>0155</b>	<b>1.5</b>	60	2.3	20	4	1.45	2	0.15	E581 0155
<b>0201</b>	<b>2.0</b>	50	3.0	6	4	1.95	2	0.2	E581 0201
<b>0202</b>	<b>2.0</b>	50	3.0	8	4	1.95	2	0.2	E581 0202

ISO	P												M			K			N						S						H																							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
<b>E581</b>									●				○	○	○	○																		●	●			●	●	●	●	●					●							

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective



- For precision milling of cavities
- Suitable for materials up to 35-52 HRC
- TiSiN for high speed machining



**Micro-fraise 2 dents, R40 NH, Torique**

- Pour le Micro-Fraisage de poches
- Convient aux matériaux de 35-52 HRC
- Revêtement TiSiN, résistant à la haute vitesse



**Fresse metallo duro, Micro, 2 Taglienti, R40 NH, Toriche**

- Fresatura cave di precisione
- Ideale per materiali fino a 32-52 HRC
- TiSiN per Lavorazioni ad alto avanzamento



**Fresas de MD micro, 2 ranuras, R40 NH, Tórica**

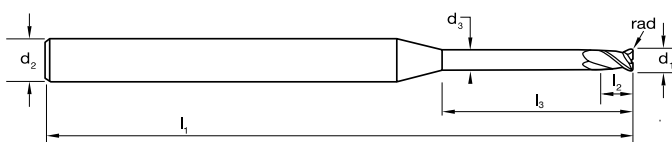
- Para ranurado de precisión
- Adecuado para materiales entre 35-52 HRC
- TiSiN para mecanizado de alta velocidad



watch the video



Catalogue Code	<b>E581</b>
Discount Group	<b>B0218</b>
Material	<b>VHM</b>
Surface Finish	<b>TiSiN</b>
Application	<b>NH</b>
Geometry	R40
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Vc Page #: 434 →

Size Ref.	$d_1^*$	$l_1$	$l_2$	$l_3$	$d_2$	$d_3$	$z$	rad <sup>†</sup>	Item #
<b>0203</b>	<b>2.0</b>	50	3.0	10	4	1.95	2	0.2	E581 0203
<b>0204</b>	<b>2.0</b>	50	3.0	12	4	1.95	2	0.2	E581 0204
<b>0205</b>	<b>2.0</b>	50	3.0	16	4	1.95	2	0.2	E581 0205
<b>0206</b>	<b>2.0</b>	60	3.0	20	4	1.95	2	0.2	E581 0206
<b>0207</b>	<b>2.0</b>	75	3.0	25	4	1.95	2	0.2	E581 0207
<b>0251</b>	<b>2.5</b>	50	3.7	8	4	2.40	2	0.3	E581 0251
<b>0252</b>	<b>2.5</b>	50	3.7	12	4	2.40	2	0.3	E581 0252
<b>0301</b>	<b>3.0</b>	60	4.5	16	6	2.95	2	0.3	E581 0301
<b>0302</b>	<b>3.0</b>	60	4.5	20	6	2.95	2	0.3	E581 0302
<b>0303</b>	<b>3.0</b>	75	4.5	25	6	2.95	2	0.3	E581 0303

ISO	P													M					K					N										S										H										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
VDI 3323																																																						
E581								●	●				○																															●	●									

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

\*Cutting Ø tolerance:  $d_1 < 0.7 = 0 / -0.012$   $d_1 > 0.7 = 0 / -0.020$  †Radius tolerance: Rad = +-0.01



- For profile & contour milling applications
- Suitable for materials up to 35-52 HRC
- TiSiN for high speed machining



## Frese à rainurer 2 dents carbure, Hémisphérique, R30 NH

- Pour le Micro-Fraisage de poches et super finition
- Convient aux matériaux de 35-52 HRC
- Revêtement TiSiN, résistant à la haute vitesse



## Fresate metallo duro, Micro, Sferiche, 2 Taglienti, R30 NH

- Fresatura cave di precisione
- Ideale per materiali fino a 32-52 HRC
- TiSiN per Lavorazioni ad alto avanzamento

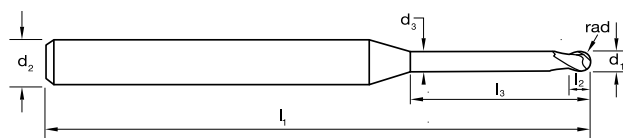


## Fresas de MD micro, 2 ranuras, esféricas, R30 NH

- Para ranurado de precisión
- Adecuado para materiales entre 35-52 HRC
- TiSiN para mecanizado de alta velocidad



watch the video



Catalogue Code	E582
Discount Group	B0218
Material	VHM
Surface Finish	TiSiN
Application	NH
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 435 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad†	Item #
0021	0.2	50	0.2	0.5	4	0.15	2	0.1	E582 0021
0022	0.2	50	0.2	1	4	0.15	2	0.1	E582 0022
0023	0.2	50	0.2	1.5	4	0.15	2	0.1	E582 0023
0031	0.3	50	0.3	1	4	0.25	2	0.15	E582 0031
0032	0.3	50	0.3	2	4	0.25	2	0.15	E582 0032
0033	0.3	50	0.3	3	4	0.25	2	0.15	E582 0033
0040	0.4	50	0.4	1	4	0.35	2	0.2	E582 0040
0041	0.4	50	0.4	2	4	0.35	2	0.2	E582 0041
0042	0.4	50	0.4	4	4	0.35	2	0.2	E582 0042
0043	0.4	50	0.4	3	4	0.35	2	0.2	E582 0043
0044	0.4	50	0.4	5	4	0.35	2	0.2	E582 0044
0051	0.5	50	0.4	2	4	0.45	2	0.25	E582 0051
0052	0.5	50	0.4	6	4	0.45	2	0.25	E582 0052
0053	0.5	50	0.4	3	4	0.45	2	0.25	E582 0053
0054	0.5	50	0.4	4	4	0.45	2	0.25	E582 0054
0055	0.6	50	0.4	5	4	0.45	2	0.25	E582 0055
0056	0.6	50	0.4	8	4	0.45	2	0.25	E582 0056
0061	0.6	50	0.5	2	4	0.55	2	0.3	E582 0061
0062	0.8	50	0.5	4	4	0.55	2	0.3	E582 0062
0063	0.8	50	0.5	6	4	0.55	2	0.3	E582 0063
0064	0.8	50	0.5	8	4	0.55	2	0.3	E582 0064
0065	0.8	50	0.5	3	4	0.55	2	0.3	E582 0065
0066	0.8	50	0.5	5	4	0.55	2	0.3	E582 0066
0081	0.8	50	0.6	4	4	0.75	2	0.4	E582 0081
0082	1.0	50	0.6	8	4	0.75	2	0.4	E582 0082
0083	1.0	50	0.6	10	4	0.75	2	0.4	E582 0083
0101	1.0	50	0.8	4	4	0.95	2	0.5	E582 0101
0102	1.0	50	0.8	6	4	0.95	2	0.5	E582 0102

ISO	P										M					K					N										S										H													
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
E582									●					○	●																					●	●				●	●												

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective





- For profile & contour milling applications
- Suitable for materials up to 35-52 HRC
- TiSiN for high speed machining



### Fraise à rainurer 2 dents carbure, Hémisphérique, R30 NH

- Pour le Micro-Fraisage de poches et super finition
- Convient aux matériaux de 35-52 HRC
- Revêtement TiSiN, résistant à la haute vitesse



### Fresate metallo duro, Micro, Sferiche, 2 Taglienti, R30 NH

- Fresatura cave di precisione
- Ideale per materiali fino a 32-52 HRC
- TiSiN per Lavorazioni ad alto avanzamento

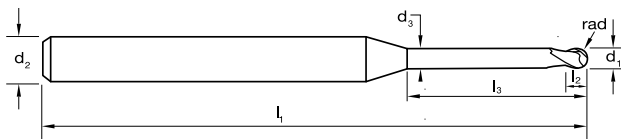


### Fresas de MD micro, eféricas, 2 ranuras, R30 NH

- Para ranurado de precisión
- Adecuado para materiales entre 35-52 HRC
- TiSiN para mecanizado de alta velocidad



watch the video



Vc Page #: 435 →

Catalogue Code	E582
Discount Group	B0218
Material	VHM
Surface Finish	TiSiN
Application	NH
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad†	Item #
0103	1.0	50	0.8	8	4	0.95	2	0.5	E582 0103
0104	1.0	50	0.8	10	4	0.95	2	0.5	E582 0104
0105	1.0	50	0.8	12	4	0.95	2	0.5	E582 0105
0106	1.0	50	0.8	14	4	0.95	2	0.5	E582 0106
0107	1.0	60	0.8	20	4	0.95	2	0.5	E582 0107
0121	1.2	50	1.0	8	4	1.15	2	0.6	E582 0121
0123	1.2	50	1.0	10	4	1.15	2	0.6	E582 0123
0122	1.2	50	1.0	12	4	1.15	2	0.6	E582 0122
0151	1.5	50	1.2	8	4	1.45	2	0.75	E582 0151
0152	1.5	50	1.2	12	4	1.45	2	0.75	E582 0152
0153	1.5	50	1.2	16	4	1.45	2	0.75	E582 0153
0154	1.5	50	1.2	18	4	1.45	2	0.75	E582 0154
0201	2.0	50	1.6	6	4	1.95	2	1.0	E582 0201
0202	2.0	50	1.6	8	4	1.95	2	1.0	E582 0202
0203	2.0	50	1.6	12	4	1.95	2	1.0	E582 0203
0204	2.0	50	1.6	16	4	1.95	2	1.0	E582 0204
0205	2.0	60	1.6	20	4	1.95	2	1.0	E582 0205
0206	2.0	75	1.6	30	4	1.95	2	1.0	E582 0206
0301	3.0	50	2.4	10	6	2.85	2	1.5	E582 0301
0302	3.0	60	2.4	16	6	2.85	2	1.5	E582 0302
0303	3.0	75	2.4	25	6	2.85	2	1.5	E582 0303
0304	3.0	75	2.4	30	6	2.85	2	1.5	E582 0304

ISO	P													M			K						N										S										H										
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
E582									●	●	○	○	○	○	○	○																																					

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

\*Cutting Ø tolerance: d<sub>1</sub> < 0.7 = 0 / -0.012 d<sub>1</sub> > 0.7 = 0 / -0.020 †Radius tolerance: Rad = +-0.01

# Endmills Carbide, Micro, Ballnose, 2 Flute, R20 VH



sutton



- For profile & contour milling applications  
Micro machining of hardened steels up to 65 HRC



## Micro-fraise carbure hémisphérique 2 dents R20 VH

- Pour application de profils, copiage dans les aciers trempés jusqu'à 65Hrc, géométrie optimisée, carbure et revêtement spéciaux pour ces applications



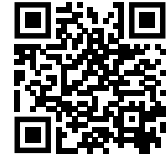
## Frese in metallo duro, sferica, 4 taglienti, R20 VH, extra lunghe

- Per la fresatura di profili e copiature in acciai temprati fino a 65 HRC. Geometria, qualità di metallo duro e rivestimento ottimizzati specifici per questa applicazione.



## Fresas de metal duro, esférica 2 labios, R20VH

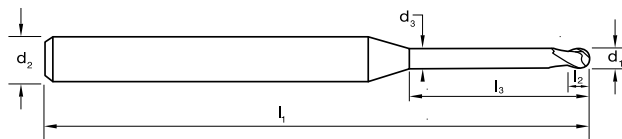
- Para el fresado de perfiles/copias en aceros templados hasta 65 HRC.  
• Geometría, calidad de metal duro y recubrimiento optimizados específicos para esta aplicación



watch the video



Catalogue Code	<b>E489</b>
Discount Group	B0218
Material	<b>VHM</b>
Surface Finish	<b>Durana</b>
Application	<b>VH</b>
Geometry	R20
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Vc Page #: 436 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
0100	1.0	45	1	2	4	1	2	E489 0100
0101	1.0	50	1	3	4	1	2	E489 0101
0102	1.0	50	1	4	4	1	2	E489 0102
0103	1.0	50	1	6	4	1	2	E489 0103
0104	1.0	50	1	8	4	1	2	E489 0104
0105	1.0	50	1	10	4	1	2	E489 0105
0106	1.0	50	1	14	4	1	2	E489 0106
0107	1.0	50	1	18	4	1	2	E489 0107
0108	1.0	50	1	20	4	1	2	E489 0108
0109	1.0	60	1	25	4	1	2	E489 0109
0120	1.2	50	1.2	4	4	1.1	2	E489 0120
0121	1.2	50	1.2	6	4	1.1	2	E489 0121
0122	1.2	50	1.2	8	4	1.1	2	E489 0122
0123	1.2	50	1.2	10	4	1.1	2	E489 0123
0124	1.2	50	1.2	12	4	1.1	2	E489 0124
0125	1.2	60	1.2	16	4	1.1	2	E489 0125
0126	1.2	60	1.2	20	4	1.1	2	E489 0126
0127	1.2	65	1.2	24	4	1.1	2	E489 0127
0140	1.4	50	1.4	6	4	1.3	2	E489 0140
0141	1.4	50	1.4	8	4	1.3	2	E489 0141
0142	1.4	50	1.4	12	4	1.3	2	E489 0142
0143	1.4	50	1.4	16	4	1.3	2	E489 0143
0150	1.5	50	1.5	3	4	1.4	2	E489 0150
0151	1.5	50	1.5	4	4	1.4	2	E489 0151
0152	1.5	50	1.5	6	4	1.4	2	E489 0152
0153	1.5	50	1.5	8	4	1.4	2	E489 0153
0154	1.5	50	1.5	10	4	1.4	2	E489 0154
0155	1.5	50	1.5	12	4	1.4	2	E489 0155
0156	1.5	50	1.5	16	4	1.4	2	E489 0156
0157	1.5	50	1.5	20	4	1.4	2	E489 0157

ISO	P													M			K								N										S										H					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E489																																																		

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

# Endmills Carbide, Micro, Ballnose, 2 Flute, R20 VH



sutton



- For profile & contour milling applications  
Micro machining of hardened steels up to 65 HRC



## Micro-fraise carbure hémisphérique 2 dents R20 VH

- Pour application de profils, copiage dans les aciers trempés jusqu'à 65Hrc, géométrie optimisée, carbure et revêtement spéciaux pour ces applications



## Frese in metallo duro, sferica, 4 taglianti, R20 VH, extra lunghe

- Per la fresatura di profili e copiature in acciai temprati fino a 65 HRC. Geometria, qualità di metallo duro e rivestimento ottimizzati specifici per questa applicazione.



## Fresas de metal duro, esférica 2 labios, R20VH

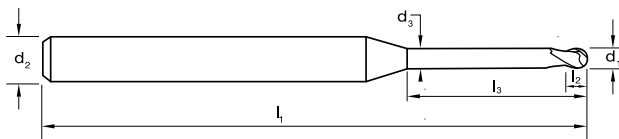
- Para el fresado de perfiles/copias en aceros templados hasta 65 HRC. Geometría, calidad de metal duro y recubrimiento optimizados específicos para esta aplicación



watch the video



Catalogue Code	<b>E489</b>
Discount Group	B0218
Material	<b>VHM</b>
Surface Finish	<b>Durana</b>
Application	<b>VH</b>
Geometry	R20
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Vc Page #: 436 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
<b>0158</b>	<b>1.5</b>	60	1.5	25	4	1.4	2	E489 0158
<b>0159</b>	<b>1.5</b>	70	1.5	30	4	1.4	2	E489 0159
<b>0160</b>	<b>1.6</b>	50	1.6	6	4	1.5	2	E489 0160
<b>0161</b>	<b>1.6</b>	50	1.6	8	4	1.5	2	E489 0161
<b>0162</b>	<b>1.6</b>	50	1.6	12	4	1.5	2	E489 0162
<b>0163</b>	<b>1.6</b>	50	1.6	16	4	1.5	2	E489 0163
<b>0164</b>	<b>1.6</b>	50	1.6	20	4	1.5	2	E489 0164
<b>0180</b>	<b>1.8</b>	50	1.8	6	4	1.7	2	E489 0180
<b>0181</b>	<b>1.8</b>	50	1.8	8	4	1.7	2	E489 0181
<b>0182</b>	<b>1.8</b>	50	1.8	12	4	1.7	2	E489 0182
<b>0183</b>	<b>1.8</b>	50	1.8	16	4	1.7	2	E489 0183
<b>0184</b>	<b>1.8</b>	50	1.8	20	4	1.7	2	E489 0184
<b>0200</b>	<b>2.0</b>	50	2	4	4	1.9	2	E489 0200
<b>0201</b>	<b>2.0</b>	50	2	6	4	1.9	2	E489 0201
<b>0202</b>	<b>2.0</b>	50	2	8	4	1.9	2	E489 0202
<b>0203</b>	<b>2.0</b>	50	2	10	4	1.9	2	E489 0203
<b>0204</b>	<b>2.0</b>	50	2	12	4	1.9	2	E489 0204
<b>0205</b>	<b>2.0</b>	50	2	16	4	1.9	2	E489 0205
<b>0206</b>	<b>2.0</b>	50	2	20	4	1.9	2	E489 0206
<b>0207</b>	<b>2.0</b>	65	2	25	4	1.9	2	E489 0207
<b>0208</b>	<b>2.0</b>	70	2	30	4	1.9	2	E489 0208
<b>0209</b>	<b>2.0</b>	80	2	40	4	1.9	2	E489 0209
<b>0250</b>	<b>2.5</b>	50	2.5	8	4	2.4	2	E489 0250
<b>0251</b>	<b>2.5</b>	50	2.5	10	4	2.4	2	E489 0251
<b>0252</b>	<b>2.5</b>	50	2.5	12	4	2.4	2	E489 0252
<b>0253</b>	<b>2.5</b>	50	2.5	16	4	2.4	2	E489 0253
<b>0254</b>	<b>2.5</b>	60	2.5	20	4	2.4	2	E489 0254
<b>0255</b>	<b>2.5</b>	60	2.5	25	4	2.4	2	E489 0255
<b>0256</b>	<b>2.5</b>	70	2.5	30	4	2.4	2	E489 0256
<b>0257</b>	<b>2.5</b>	70	2.5	35	4	2.4	2	E489 0257

ISO	P													M			K				N						S						H																	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E489																																																		

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- For profile & contour milling applications  
Micro machining of hardened steels up to 65 HRC



### Micro-fraise carbure hémisphérique 2 dents R20 VH

- Pour application de profils, copiage dans les aciers trempés jusqu'à 65Hrc, géométrie optimisée, carbure et revêtement spéciaux pour ces applications



### Frese in metallo duro, sferica, 4 taglianti, R20 VH, extra lunghe

- Per la fresatura di profili e copiature in acciai temprati fino a 65 HRC. Geometria, qualità di metallo duro e rivestimento ottimizzati specifici per questa applicazione.



### Fresas de metal duro, esférica 2 labios, R20VH

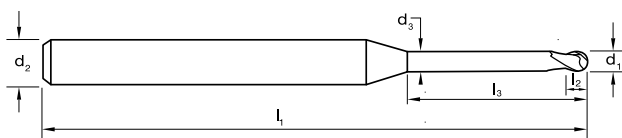
- Para el fresado de perfiles/copias en aceros templados hasta 65 HRC. Geometría, calidad de metal duro y recubrimiento optimizados específicos para esta aplicación



watch the video



Catalogue Code	<b>E489</b>
Discount Group	B0218
Material	<b>VHM</b>
Surface Finish	<b>Durana</b>
Application	<b>VH</b>
Geometry	R20
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Vc Page #: 436 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
0300	3.0	50	3	6	6	2.8	2	E489 0300
0301	3.0	50	3	10	6	2.8	2	E489 0301
0302	3.0	60	3	16	6	2.8	2	E489 0302
0303	3.0	60	3	20	6	2.8	2	E489 0303
0304	3.0	70	3	30	6	2.8	2	E489 0304
0305	3.0	75	3	35	6	2.8	2	E489 0305
0306	3.0	80	3	40	6	2.8	2	E489 0306
0307	3.0	90	3	45	6	2.8	2	E489 0307
0308	3.0	100	3	50	6	2.8	2	E489 0308
0309	3.0	100	3	60	6	2.8	2	E489 0309
0400	4.0	50	4	10	6	3.8	2	E489 0400
0401	4.0	60	4	16	6	3.8	2	E489 0401
0402	4.0	60	4	20	6	3.8	2	E489 0402
0403	4.0	70	4	30	6	3.8	2	E489 0403
0404	4.0	75	4	35	6	3.8	2	E489 0404
0405	4.0	80	4	40	6	3.8	2	E489 0405
0406	4.0	90	4	45	6	3.8	2	E489 0406
0407	4.0	100	4	50	6	3.8	2	E489 0407
0408	4.0	100	4	55	6	3.8	2	E489 0408
0409	4.0	100	4	60	6	3.8	2	E489 0409
0500	5.0	60	5	15	6	4.8	2	E489 0500
0501	5.0	60	5	20	6	4.8	2	E489 0501
0502	5.0	70	5	25	6	4.8	2	E489 0502
0503	5.0	75	5	30	6	4.8	2	E489 0503
0504	5.0	80	5	40	6	4.8	2	E489 0504
0505	5.0	90	5	45	6	4.8	2	E489 0505
0506	5.0	100	5	50	6	4.8	2	E489 0506
0507	5.0	100	5	60	6	4.8	2	E489 0507
0600	6.0	55	6	15	6	5.8	2	E489 0600
0601	6.0	110	6	30	6	5.8	2	E489 0601

ISO	P													M			K					N							S							H																				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
E489																																																								

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Increased feedrates
- TiSiN coating for better lifespan
- Variable helix design for chatter-free machining
- Machine Material 35 to 63 HRC



## Fraise 4 dents carbure, Hi-Feed, R40 N, Torique

- Fraise grande avance
- Revêtement TiSiN pour une meilleure durée de vie
- Convient aux matériaux de 35 to 63HRC



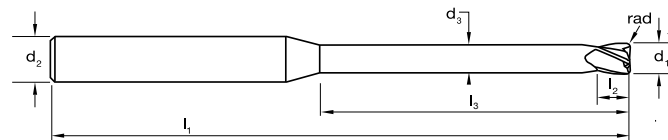
## Frese metallo duro, Hi-Feed Micro, 4 Taglienti, R40 N, Toriche

- Lavorazione ad alti avanzamenti
- Rivestimento resistente per una lunga vita utensile
- Tagliante a elica variabile per lavorazioni prive di vibrazioni
- Adatta per materiali da 35 a 63HRC



## Fresas de MD alto avance, micro, 4 ranuras, R40 N, Tórica

- Aumento de avance
- Recubrimiento resistente para una larga vida útil de la herramienta
- Diseño de hélice variable para mecanizado sin vibraciones
- Material de la máquina entre 35 - 63HRC



watch the video



Catalogue Code	<b>E598</b>
Product Group	<b>B0218</b>
Material	<b>VHM</b>
Surface Finish	<b>TiSiN</b>
Application	<b>N</b>
Geometry	<b>R40</b>
Shank Form (DIN 6535)	<b>HA</b>
Shank Tolerance	<b>h6</b>

Vc Page #: 437 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad†	Item #
<b>0102</b>	<b>1.0</b>	50	1	4	4	-	4	0.1	E598 0102
<b>0103</b>	<b>1.0</b>	50	1	6	4	-	4	0.1	E598 0103
<b>0104</b>	<b>1.0</b>	50	1	8	4	-	4	0.1	E598 0104
<b>0105</b>	<b>1.0</b>	50	1	10	4	-	4	0.1	E598 0105
<b>0106</b>	<b>1.0</b>	50	1	12	4	-	4	0.1	E598 0106
<b>0107</b>	<b>1.0</b>	50	1	14	4	-	4	0.1	E598 0107
<b>0108</b>	<b>1.0</b>	50	1	16	4	-	4	0.1	E598 0108
<b>0110</b>	<b>1.0</b>	75	1	20	4	-	4	0.1	E598 0110
<b>0112</b>	<b>1.0</b>	50	1	4	4	-	4	0.2	E598 0112
<b>0113</b>	<b>1.0</b>	50	1	6	4	-	4	0.2	E598 0113
<b>0114</b>	<b>1.0</b>	50	1	8	4	-	4	0.2	E598 0114
<b>0115</b>	<b>1.0</b>	50	1	10	4	-	4	0.2	E598 0115
<b>0116</b>	<b>1.0</b>	50	1	12	4	-	4	0.2	E598 0116
<b>0117</b>	<b>1.0</b>	50	1	14	4	-	4	0.2	E598 0117
<b>0118</b>	<b>1.0</b>	50	1	16	4	-	4	0.2	E598 0118
<b>0120</b>	<b>1.0</b>	60	1	20	4	-	4	0.2	E598 0120
<b>0122</b>	<b>1.0</b>	50	1	6	4	-	4	0.3	E598 0122
<b>0123</b>	<b>1.0</b>	50	1	10	4	-	4	0.3	E598 0123
<b>0124</b>	<b>1.0</b>	50	1	16	4	-	4	0.3	E598 0124
<b>0126</b>	<b>1.0</b>	60	1	20	4	-	4	0.3	E598 0126
<b>0152</b>	<b>1.5</b>	50	1.5	6	4	-	4	0.1	E598 0152
<b>0153</b>	<b>1.5</b>	50	1.5	8	4	-	4	0.1	E598 0153
<b>0154</b>	<b>1.5</b>	50	1.5	12	4	-	4	0.1	E598 0154
<b>0155</b>	<b>1.5</b>	50	1.5	16	4	-	4	0.1	E598 0155
<b>0157</b>	<b>1.5</b>	60	1.5	20	4	-	4	0.1	E598 0157
<b>0159</b>	<b>1.5</b>	50	1.5	6	4	-	4	0.2	E598 0159
<b>0160</b>	<b>1.5</b>	50	1.5	8	4	-	4	0.2	E598 0160
<b>0161</b>	<b>1.5</b>	50	1.5	10	4	-	4	0.2	E598 0161

ISO	P													M			K			N						S					H																														
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41												
E598					○	●		●	●	●	●	●	●	●	●	●																							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel   
M Stainless Steel   
K Cast Iron   
N Non-Ferrous Metals   
S Titanium & Super Alloys   
H Hard Materials   
● Optimal   
○ Effective

\*Cutting Ø tolerance: d<sub>1</sub> < 0.7 = 0 / -0.012    d<sub>1</sub> > 0.7 = 0 / -0.020



- Increased feedrates
- TiSiN coating for better lifespan
- Variable helix design for chatter-free machining
- Machine Material 35 to 63 HRC



### Fraise 4 dents carbure, Hi-Feed, R40 N, Torique

- Fraise grande avance
- Revêtement TiSiN pour une meilleure durée de vie
- Convient aux matériaux de 35 to 63HRC



### Frese metallo duro, Hi-Feed Micro, 4 Taglienti, R40 N, Toriche

- Lavorazione ad alti avanzamenti
- Rivestimento resistente per una lunga vita utensile
- Tagliente a elica variabile per lavorazioni prive di vibrazioni
- Adatta per materiali da 35 a 63HRC



### Fresas de MD alto avance, micro, 4 ranuras, R40 N, Tórica

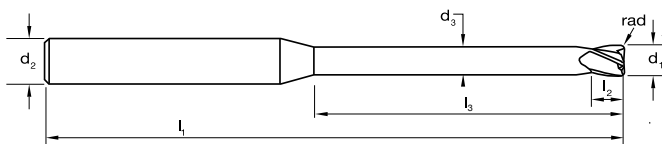
- Aumento de avance
- Recubrimiento resistente para una larga vida útil de la herramienta
- Diseño de hélice variable para mecanizado sin vibraciones
- Material de la máquina entre 35 - 63HRC



watch the video



Catalogue Code	<b>E598</b>
Product Group	B0218
Material	<b>VHM</b>
Surface Finish	<b>TiSiN</b>
Application	<b>N</b>
Geometry	R40
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Vc Page #: 437 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad†	Item #
<b>0162</b>	<b>1.5</b>	50	1.5	12	4	-	4	0.2	E598 0162
<b>0163</b>	<b>1.5</b>	50	1.5	14	4	-	4	0.2	E598 0163
<b>0164</b>	<b>1.5</b>	50	1.5	16	4	-	4	0.2	E598 0164
<b>0166</b>	<b>1.5</b>	60	1.5	18	4	-	4	0.2	E598 0166
<b>0167</b>	<b>1.5</b>	60	1.5	20	4	-	4	0.2	E598 0167
<b>0169</b>	<b>1.5</b>	50	1.5	8	4	-	4	0.3	E598 0169
<b>0170</b>	<b>1.5</b>	50	1.5	16	4	-	4	0.3	E598 0170
<b>0172</b>	<b>1.5</b>	60	1.5	20	4	-	4	0.3	E598 0172
<b>0202</b>	<b>2.0</b>	50	2	6	4	-	4	0.2	E598 0202
<b>0203</b>	<b>2.0</b>	50	2	8	4	-	4	0.2	E598 0203
<b>0204</b>	<b>2.0</b>	50	2	10	4	-	4	0.2	E598 0204
<b>0205</b>	<b>2.0</b>	50	2	12	4	-	4	0.2	E598 0205
<b>0206</b>	<b>2.0</b>	50	2	14	4	-	4	0.2	E598 0206
<b>0207</b>	<b>2.0</b>	50	2	16	4	-	4	0.2	E598 0207
<b>0209</b>	<b>2.0</b>	60	2	18	4	-	4	0.2	E598 0209
<b>0210</b>	<b>2.0</b>	60	2	20	4	-	4	0.2	E598 0210
<b>0212</b>	<b>2.0</b>	75	2	25	4	-	4	0.2	E598 0212
<b>0213</b>	<b>2.0</b>	75	2	30	4	-	4	0.2	E598 0213
<b>0215</b>	<b>2.0</b>	50	2	8	4	-	4	0.3	E598 0215
<b>0216</b>	<b>2.0</b>	50	2	16	4	-	4	0.3	E598 0216
<b>0218</b>	<b>2.0</b>	60	2	20	4	-	4	0.3	E598 0218
<b>0220</b>	<b>2.0</b>	50	2	6	4	-	4	0.5	E598 0220
<b>0221</b>	<b>2.0</b>	50	2	8	4	-	4	0.5	E598 0221
<b>0222</b>	<b>2.0</b>	50	2	12	4	-	4	0.5	E598 0222
<b>0223</b>	<b>2.0</b>	50	2	16	4	-	4	0.5	E598 0223
<b>0225</b>	<b>2.0</b>	60	2	20	4	-	4	0.5	E598 0225
<b>0227</b>	<b>2.0</b>	75	2	25	4	-	4	0.5	E598 0227
<b>0228</b>	<b>2.0</b>	75	2	30	4	-	4	0.5	E598 0228

ISO	P										M					K					N					S					H																		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E598					○			●	●	●	●	○	○																						○	○	○	●	●										

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Increased feedrates
- TiSiN coating for better lifespan
- Variable helix design for chatter-free machining
- Machine Material 35 to 63 HRC



**Fraise 4 dents carbure, Hi-Feed, R40 N, Torique**

- Fraise grande avance
- Revêtement TiSiN pour une meilleure durée de vie
- Convient aux matériaux de 35 to 63HRC



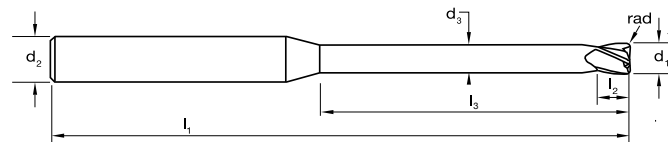
**Frese metallo duro, Hi-Feed Micro, 4 Taglienti, R40 N, Toriche**

- Lavorazione ad alti avanzamenti
- Rivestimento resistente per una lunga vita utensile
- Tagliente a elica variabile per lavorazioni prive di vibrazioni
- Adatta per materiali da 35 a 63HRC



**Fresas de MD alto avance, micro, 4 ranuras, R40 N, Tórica**

- Aumento de avance
- Recubrimiento resistente para una larga vida útil de la herramienta
- Diseño de hélice variable para mecanizado sin vibraciones
- Material de la máquina entre 35 - 63HRC



Vc Page #: 437 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad <sup>†</sup>	Item #
0259	2.5	60	2.5	20	4	-	4	0.3	E598 0259
0260	2.5	60	2.5	25	4	-	4	0.3	E598 0260
0262	2.5	75	2.5	30	4	-	4	0.3	E598 0262
0264	2.5	50	2.5	8	4	-	4	0.5	E598 0264
0265	2.5	50	2.5	12	4	-	4	0.5	E598 0265
0266	2.5	50	2.5	16	4	-	4	0.5	E598 0266
0268	2.5	60	2.5	20	4	-	4	0.5	E598 0268
0269	2.5	60	2.5	25	4	-	4	0.5	E598 0269
0271	2.5	75	2.5	30	4	-	4	0.5	E598 0271
0303	3.0	50	3	8	6	-	4	0.2	E598 0303
0304	3.0	50	3	10	6	-	4	0.2	E598 0304
0305	3.0	50	3	12	6	-	4	0.2	E598 0305
0306	3.0	50	3	14	6	-	4	0.2	E598 0306
0308	3.0	60	3	16	6	-	4	0.2	E598 0308
0309	3.0	60	3	18	6	-	4	0.2	E598 0309
0310	3.0	60	3	20	6	-	4	0.2	E598 0310
0312	3.0	75	3	25	6	-	4	0.2	E598 0312
0314	3.0	50	3	8	6	-	4	0.3	E598 0314
0315	3.0	60	3	10	6	-	4	0.3	E598 0315
0316	3.0	50	3	12	6	-	4	0.3	E598 0316
0317	3.0	50	3	14	6	-	4	0.3	E598 0317
0319	3.0	60	3	16	6	-	4	0.3	E598 0319
0320	3.0	60	3	18	6	-	4	0.3	E598 0320
0321	3.0	60	3	20	6	-	4	0.3	E598 0321
0323	3.0	75	3	30	6	-	4	0.3	E598 0323
0325	3.0	50	3	8	6	-	4	0.5	E598 0325
0326	3.0	50	3	10	6	-	4	0.5	E598 0326
0327	3.0	50	3	12	6	-	4	0.5	E598 0327

ISO	P						M						K						N						S						H																				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41		
E598				○	●		●	●	●	●	○			●	●	●																																			

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective



watch the video



Catalogue Code	<b>E598</b>
Product Group	<b>B0218</b>
Material	<b>VHM</b>
Surface Finish	<b>TiSiN</b>
Application	<b>N</b>
Geometry	<b>R40</b>
Shank Form (DIN 6535)	<b>HA</b>
Shank Tolerance	<b>h6</b>

\*Cutting Ø tolerance: d<sub>1</sub> < 0.7 = 0 / -0.012 d<sub>1</sub> > 0.7 = 0 / -0.020

# Endmills Carbide, Hi-Feed Micro, 4 Flute, R40 N, Corner Rad

sutton



- Increased feedrates
- TiSiN coating for better lifespan
- Variable helix design for chatter-free machining
- Machine Material 35 to 63 HRC



## Fraise 4 dents carbure, Hi-Feed, R40 N, Torique

- Fraise grande avance
- Revêtement TiSiN pour une meilleure durée de vie
- Convient aux matériaux de 35 to 63HRC



## Frese metallo duro, Hi-Feed Micro, 4 Taglienti, R40 N, Toriche

- Lavorazione ad alti avanzamenti
- Rivestimento resistente per una lunga vita utensile
- Tagliente a elica variabile per lavorazioni prive di vibrazioni
- Adatta per materiali da 35 a 63HRC

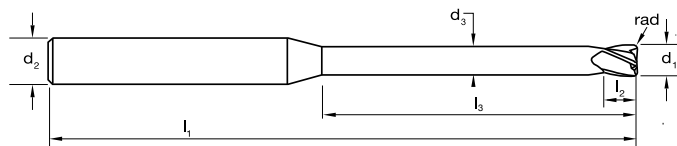


## Fresas de MD alto avance, micro, 4 ranuras, R40 N, Tórica

- Aumento de avance
- Recubrimiento resistente para una larga vida útil de la herramienta
- Diseño de hélice variable para mecanizado sin vibraciones
- Material de la máquina entre 35 - 63HRC



watch the video



Catalogue Code	E598
Product Group	B0218
Material	VHM
Surface Finish	TiSiN
Application	N
Geometry	R40
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 437 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad†	Item #
0328	3.0	50	3	14	6	-	4	0.5	E598 0328
0330	3.0	60	3	16	6	-	4	0.5	E598 0330
0331	3.0	60	3	18	6	-	4	0.5	E598 0331
0332	3.0	60	3	20	6	-	4	0.5	E598 0332
0334	3.0	75	3	30	6	-	4	0.5	E598 0334
0402	4.0	60	4	10	6	-	4	0.3	E598 0402
0403	4.0	60	4	15	6	-	4	0.3	E598 0403
0404	4.0	60	4	20	6	-	4	0.3	E598 0404
0406	4.0	75	4	25	6	-	4	0.3	E598 0406
0407	4.0	75	4	32	6	-	4	0.3	E598 0407
0408	4.0	75	4	40	6	-	4	0.3	E598 0408
0410	4.0	60	4	10	6	-	4	0.5	E598 0410
0411	4.0	60	4	15	6	-	4	0.5	E598 0411
0412	4.0	60	4	20	6	-	4	0.5	E598 0412
0414	4.0	75	4	25	6	-	4	0.5	E598 0414
0415	4.0	75	4	32	6	-	4	0.5	E598 0415
0416	4.0	75	4	40	6	-	4	0.5	E598 0416

ISO	P										M				K				N				S								H																		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E598				●	●			●	●	●	●	○	○		●	●																			○	○	○	○	●	●			○	○	○	○			

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective





- Increased feedrates
- TiSiN coating for better lifespan
- Variable helix design for chatter-free machining
- Machine Material 35 to 63 HRC



**Fraise 4 dents carbure, Hi-Feed, R40 N, Torique**

- Fraise grande avance
- Revêtement TiSiN pour une meilleure durée de vie
- Convient aux matériaux de 35 to 63 HRC



**Frese metallo duro, Hi-Feed, 4 Taglienti, R40 N, Toriche**

- Lavorazione ad alti avanzamenti
- Rivestimento resistente per una lunga vita utensile
- Tagliante a elica variabile per lavorazioni prive di vibrazioni
- Adatta per materiali da 35 a 63 HRC



**Fresas de MD alto avance, 4 ranuras, R40 N, Tórica**

- Aumento de avance
- Recubrimiento resistente para una larga vida útil de la herramienta
- Diseño de hélice variable para mecanizado sin vibraciones
- Material de la máquina entre 35 - 63 HRC



Vc Page #: 438 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad†	Item #
<b>0201</b>	<b>2.0</b>	60	2	6	6	-	4	0.3	E650 0201
<b>0202</b>	<b>2.0</b>	60	2	6	6	-	4	0.5	E650 0202
<b>0301</b>	<b>3.0</b>	60	3	7	6	-	4	0.3	E650 0301
<b>0302</b>	<b>3.0</b>	60	3	7	6	-	4	0.5	E650 0302
<b>0401</b>	<b>4.0</b>	60	4	8	6	-	4	0.3	E650 0401
<b>0402</b>	<b>4.0</b>	60	4	8	6	-	4	0.5	E650 0402
<b>0601</b>	<b>6.0</b>	60	6	-	6	-	4	0.3	E650 0601
<b>0602</b>	<b>6.0</b>	60	6	-	6	-	4	0.5	E650 0602
<b>0603</b>	<b>6.0</b>	60	6	-	6	-	4	1.0	E650 0603



Catalogue Code	<b>E650</b>
Product Group	<b>B0218</b>
Material	<b>VHM</b>
Surface Finish	<b>TiSiN</b>
Application	<b>N</b>
Geometry	R40
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

ISO	P													M				K				N							S							H													
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41
E650					○	●			●	●	●	○	○																													●	●	○					

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective

\*Cutting Ø tolerance: d<sub>1</sub> < 0.7 = 0 / -0.012 d<sub>1</sub> > 0.7 = 0 / -0.020



- Increased feedrates
- TiSiN coating for better lifespan
- Variable helix design for chatter-free machining
- Machine Material 35 to 63 HRC



## Fraise 6 dents carbure, Hi-Feed, R40 N, Torique

- Fraise grande avance
- Revêtement TiSiN pour une meilleure durée de vie
- Convient aux matériaux de 35 to 63 HRC



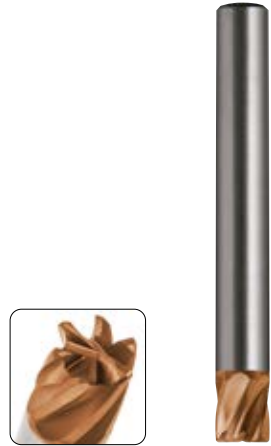
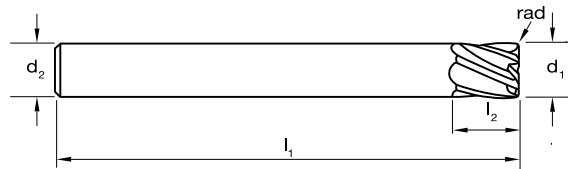
## Frese metallo duro, Hi-Feed, 6 Taglienti, R40 N, Toriche

- Lavorazione ad alti avanzamenti
- Rivestimento resistente per una lunga vita utensile
- Tagliente a elica variabile per lavorazioni prive di vibrazioni
- Adatta per materiali da 35 a 63 HRC



## Fresas de MD alto avance, 6 ranuras, R40 N, Tórica

- Aumento de avance
- Recubrimiento resistente para una larga vida útil de la herramienta
- Diseño de hélice variable para mecanizado sin vibraciones
- Material de la máquina entre 35 - 63 HRC



Catalogue Code	<b>E650</b>
Product Group	B0218
Material	<b>VHM</b>
Surface Finish	<b>TiSiN</b>
Application	<b>N</b>
Geometry	R40
Shank Form (DIN 6535)	HA
Shank Tolerance	h6

Vc Page #: 438 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	rad†	Item #
0801	8.0	64	8	-	8	-	6	0.3	E650 0801
0802	8.0	64	8	-	8	-	6	0.5	E650 0802
0803	8.0	64	8	-	8	-	6	1.0	E650 0803
0804	8.0	64	8	-	8	-	6	2.0	E650 0804
1001	10.0	75	10	-	10	-	6	0.3	E650 1001
1002	10.0	75	10	-	10	-	6	0.5	E650 1002
1003	10.0	75	10	-	10	-	6	1.0	E650 1003
1004	10.0	75	10	-	10	-	6	2.0	E650 1004
1201	12.0	75	12	-	12	-	6	0.3	E650 1201
1202	12.0	75	12	-	12	-	6	0.5	E650 1202
1203	12.0	75	12	-	12	-	6	1.0	E650 1203
1204	12.0	75	12	-	12	-	6	2.0	E650 1204

ISO	P										M					K					N					S					H																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
E650				○	●			●	●	●	○	○																																	●	●	○			

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective

\*Cutting Ø tolerance: d<sub>1</sub> < 0.7 = 0 / -0.012 d<sub>1</sub> > 0.7 = 0 / -0.020



- Rib processing
- For machining intricate components
- Profile, copy milling
- For steels up to 50 HRC



## Fraises en carbure, micro, nez sphérique, 2 cannelures, R30 NH

- Traitement des côtes
- Pour l'usinage de composants complexes
- Profil, fraisage par copie
- Pour aciers jusqu'à 50 HRC



## Frese in metallo duro, micro, a testa sferica, 2 taglienti, R30 NH

- Lavorazione in costa
- Per la lavorazione di componenti complessi
- Profilo, copiatura
- Per acciai fino a 50 HRC



## Fresas de carburo, micro, punta esférica, 2 flautas, R30 NH

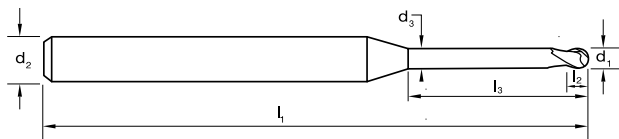
- Procesamiento de costillas
- Para mecanizar componentes complejos
- Perfil, copia fresado
- Para aceros hasta 50 HRC



watch the video



Catalogue Code	E490
Product Group	B0218
Material	VHM
Surface Finish	AICrN
Application	NH
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Vc Page #: 439 →

Size Ref.	d <sub>1</sub> *	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #
0080	0.8	45.0	1.2	6.0	4.0	0.8	2	E490 0080
0081	0.8	45.0	1.2	8.0	4.0	0.8	2	E490 0081
0100	1.0	45.0	1.5	6.0	4.0	1.0	2	E490 0100
0101	1.0	45.0	1.5	8.0	4.0	1.0	2	E490 0101
0102	1.0	45.0	1.5	12.0	4.0	0.9	2	E490 0102
0120	1.2	45.0	1.8	8.0	4.0	1.2	2	E490 0120
0121	1.2	45.0	1.8	12.0	4.0	1.1	2	E490 0121
0140	1.4	45.0	2.1	12.0	4.0	1.3	2	E490 0140
0150	1.5	45.0	2.3	8.0	4.0	1.5	2	E490 0150
0151	1.5	45.0	2.3	12.0	4.0	1.4	2	E490 0151
0152	1.5	50.0	2.3	16.0	4.0	1.4	2	E490 0152
0160	1.6	50.0	2.4	16.0	4.0	1.5	2	E490 0160
0180	1.8	50.0	2.7	16.0	4.0	1.7	2	E490 0180
0200	2.0	45.0	3.0	8.0	4.0	2.0	2	E490 0200
0201	2.0	45.0	3.0	10.0	4.0	2.0	2	E490 0201
0202	2.0	50.0	3.0	16.0	4.0	1.9	2	E490 0202
0203	2.0	55.0	3.0	20.0	4.0	1.9	2	E490 0203
0300	3.0	55.0	4.5	16.0	6.0	2.9	2	E490 0300
0301	3.0	60.0	4.5	20.0	6.0	2.9	2	E490 0301
0400	4.0	60.0	6.0	16.0	6.0	3.9	2	E490 0400
0401	4.0	65.0	6.0	20.0	6.0	3.9	2	E490 0401

ISO	P													M			K						N										S										H													
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41							
E490	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- VHM-ULTRA grade of carbide for high performance
- For profile & contour milling in long reach applications
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- AlCrN for longer tool life



## Fraise à rainurer 2 dents carbure, Hémisphérique, R30° UNI

- VHM-ULTRA grade of carbide for high performance
- For profile & contour milling in long reach applications
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- AlCrN for longer tool life



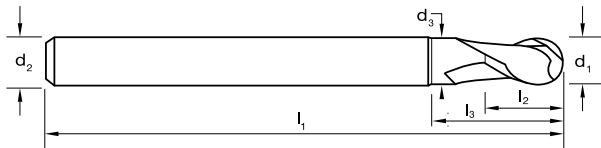
## Frese metallo duro, Sferiche, 2 Taglienti, R30 UNI, Lunga Portata

- VHM-ULTRA, grado di metallo duro per alte prestazioni
- Ideale per lavorazioni di contornatura e profilatura
- Adatta per materiali fino a 1600 N/mm<sup>2</sup>
- AlCrN per Ottimizzare vita utensile



## Fresas de MD, Esféricas, 2 ranuras, R30 UNI, Larga

- Grado de MD, VHM-ULTRA para alto rendimiento
- Para fresado de perfiles y contornos en aplicaciones de largo alcance
- Adecuado para materiales hasta 1600 N/mm<sup>2</sup>
- AlCrN para una mayor vida útil de la herramienta



Vc Page #: 433 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
0200	2.0	62	3	7.0	6	1.9	2	E440 0200	E441 0200
0300	3.0	62	4	9.5	6	2.8	2	E440 0300	E441 0300
0400	4.0	62	5	12.0	6	3.8	2	E440 0400	E441 0400
0500	5.0	80	6	14.5	6	4.8	2	E440 0500	E441 0500
0600	6.0	80	7	17.0	6	5.7	2	E440 0600	E441 0600
0800	8.0	90	9	22.0	8	7.6	2	E440 0800	E441 0800
1000	10.0	100	11	27.0	10	9.5	2	E440 1000	E441 1000
1200	12.0	120	13	32.0	12	11.5	2	E440 1200	E441 1200
1400	14.0	120	15	37.0	14	13.5	2	E440 1400	E441 1400
1600	16.0	140	17	42.0	16	15.5	2	E440 1600	E441 1600
1800	18.0	140	19	47.0	18	17.5	2	E440 1800	E441 1800
2000	20.0	160	21	52.0	20	19.5	2	E440 2000	E441 2000



Catalogue Code	<b>E440</b>	<b>E441</b>
Discount Group	B0210	B0210
Material	<b>VHM-ULTRA</b>	<b>VHM-ULTRA</b>
Surface Finish	<b>AlCrN</b>	<b>AlCrN</b>
Sutton Designation	<b>UNI</b>	<b>UNI</b>
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5

ISO	P												M			K							N							S							H																		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41						
E440			●	●	●		●	●	●	●	●						●	●	●	●	●	●												●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
E441			●	●	●		●	●	●	●	●						●	●	●	●	●	●	●											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ● Optimal ○ Effective



- VHM-ULTRA grade of carbide for high performance
- For profile & contour milling in long reach applications
- Suitable for materials up to 1600 N/mm<sup>2</sup>
- AlCrN for longer tool life



### Fraise 4 dents carbure, R30° UNI, Longue

- Pour le fraisage de formes et de poches profondes
- Convient au matériaux jusqu'à 1600 N/mm<sup>2</sup>
- AlCrN et VHM-ULTRA pour une meilleure durée de vie



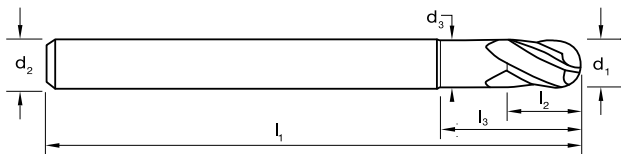
### Frese metallo duro, Sferiche, 4 Taglienti, R30 UNI, Lunga Portata

- VHM-ULTRA, grado di metallo duro per alte prestazione
- Ideale per lavorazioni di contornatura e profilatura
- Adatta per materiali fino a 1600 N/mm<sup>2</sup>
- AlCrN per Ottimizzare vita utensile



### Fresas de MD, Esféricas, 4 ranuras, R30 UNI, Larga

- Grado de MD, VHM-ULTRA para alto rendimiento
- Para fresado de perfiles y contornos en aplicaciones de largo alcance
- Adecuado para materiales hasta 1600 N/mm<sup>2</sup>
- AlCrN para una mayor vida útil de la herramienta



Vc Page #: 433 →

Size Ref.	d <sub>1</sub> (e8)	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	d <sub>2</sub>	d <sub>3</sub>	z	Item #	Item #
0200	2.0	62	3	7.0	6	1.9	4	E442 0200	E443 0200
0300	3.0	62	4	9.5	6	2.8	4	E442 0300	E443 0300
0400	4.0	62	5	12.0	6	3.8	4	E442 0400	E443 0400
0500	5.0	80	6	14.5	6	4.8	4	E442 0500	E443 0500
0600	6.0	80	7	17.0	6	5.7	4	E442 0600	E443 0600
0800	8.0	90	9	22.0	8	7.6	4	E442 0800	E443 0800
1000	10.0	100	11	27.0	10	9.5	4	E442 1000	E443 1000
1200	12.0	120	13	32.0	12	11.5	4	E442 1200	E443 1200
1400	14.0	120	15	37.0	14	13.5	4	E442 1400	E443 1400
1600	16.0	140	17	42.0	16	15.5	4	E442 1600	E443 1600
1800	18.0	140	19	47.0	18	17.5	4	E442 1800	•
2000	20.0	160	21	52.0	20	19.5	4	E442 2000	•



Catalogue Code	E442	E443
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	AlCrN	AlCrN
Sutton Designation	UNI	UNI
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HB
Shank Tolerance	h5	h5

ISO	P													M			K				N										S							H															
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41				
E442	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○											○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E443	○	○	○	○	○	○	○	○	○	○	○	○	○				○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials ○ Optimal ○ Effective

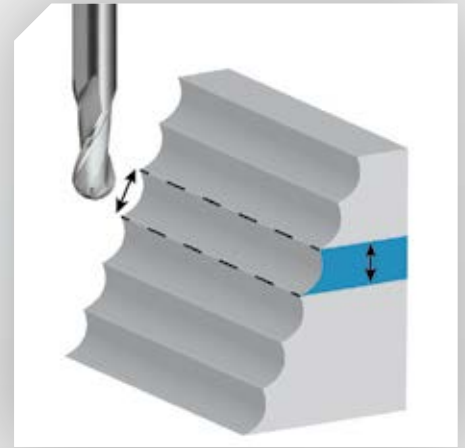
• Available on request as special manufacture. Subject to lead time.

# HARMONY 5-Axis

Optimize your 5-Axis Machining



Ball Nose Endmill



Barrel Endmill



- Up to 90% cycle time savings over Ball Nose Endmills
- Ideal for finishing/semi-finishing of 3D surfaces
- Less than 10um profile deviation for high workpiece accuracy
- Hybrid CNC-3D Printing applications
- Customized solutions available



# Endmills Oval Form, Harmony 5 Axis

sutton

HARMONY 5-Axis



- Highly efficient finishing
- Form tolerance  $\pm 0.01$  mm
- Suitable for high-strength materials
- Suitable for HSC finishing



## Fraises 5 axes, forme ovale

- Finition très efficace
- Tolérance de forme  $\pm 0,01$  mm
- Convient aux matériaux à haute résistance
- Convient pour la finition HSC



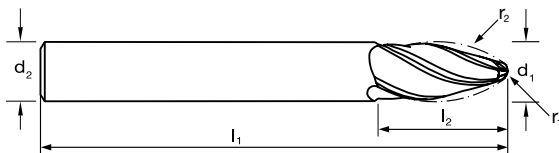
## Frese 5 Assi, Forma Ovale

- Finitura altamente efficiente
- Tolleranza di forma  $\pm 0,01$  mm
- Adatto per materiali ad alta resistenza
- Adatto per finitura HSC



## Fresas 5 Ejes, Forma Ovalada

- Acabado altamente eficiente
- Tolerancia de forma  $\pm 0,01$  mm
- Adecuado para materiales de alta resistencia
- Adecuado para acabado HSC



Vc Page #: 442 →

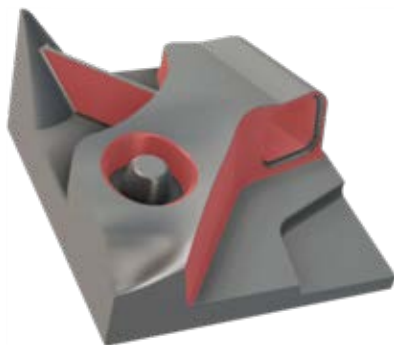
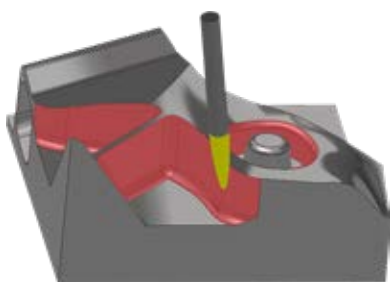
Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	r <sub>1</sub>	r <sub>2</sub>	Item #
<b>0600</b>	<b>6</b>	62	20.5	6	4	1	100	E700 0600
<b>0800</b>	<b>8</b>	70	22	8	4	1.5	95	E700 0800
<b>1000</b>	<b>10</b>	80	24.5	10	4	2	90	E700 1000
<b>1200</b>	<b>12</b>	93	27	12	4	2	85	E700 1200



Scan for more info



Catalogue Code	<b>E700</b>
Discount Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>AiCrN</b>
Sutton Designation	<b>UNI</b>
Geometry	R30
Shank Form (DIN 6535)	HA / HB
Shank Tolerance	h6



Item #	Tilt (z)	Step over max (mm) @ middle angle + 0.2 step down	cusp Height	Fine Step over (Cusp 0.0025mm)	Nom. dia
E700 0600	0-12°(6)	12.6	0.398	1	6
E700 0800	0-13°(6.5)	12.3	0.4	0.97	8
E700 1000	0-15°(7.5)	12	0.402	0.95	10
E700 1200	0-18°(9)	11.6	0.477	0.92	12

ISO	P				M				K				N				S				H																													
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41	
<b>E700</b>	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective





- Highly efficient finishing
- Form tolerance  $\pm 0.01$  mm
- Suitable for high-strength materials
- Suitable for HSC finishing



### Fraises 5 axes, forme ovale

- Finition très efficace
- Tolérance de forme  $\pm 0,01$  mm
- Convient aux matériaux à haute résistance
- Convient pour la finition HSC



### Frese 5 Assi, Forma Ovale

- Finitura altamente efficiente
- Tolleranza di forma  $\pm 0,01$  mm
- Adatto per materiali ad alta resistenza
- Adatto per finitura HSC



### Fresas 5 Ejes, Forma Ovalada

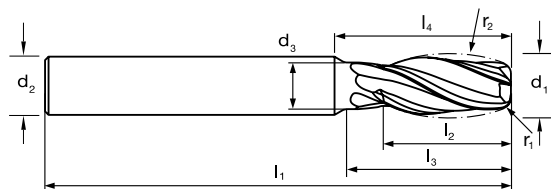
- Acabado altamente eficiente
- Tolerancia de forma  $\pm 0,01$  mm
- Adecuado para materiales de alta resistencia
- Adecuado para acabado HSC



Scan for more info

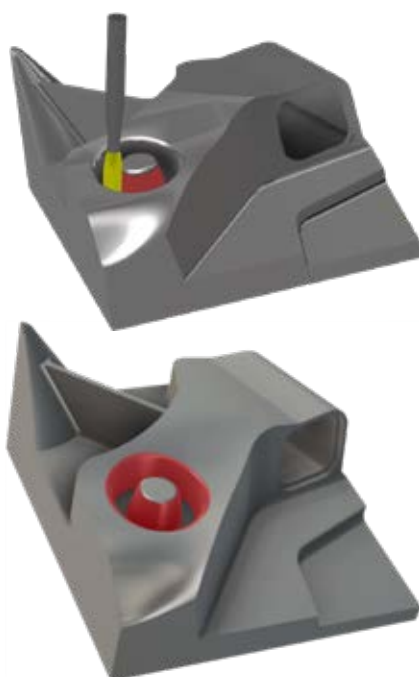


Catalogue Code	<b>E701</b>
Discount Group	B0210
Material	<b>VHM-ULTRA</b>
Surface Finish	<b>AICrN</b>
Sutton Designation	<b>UNI</b>
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Vc Page #: 442 →

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	d <sub>2</sub>	d <sub>3</sub>	z	r <sub>1</sub>	r <sub>2</sub>	Item #
<b>1000</b>	<b>10</b>	73	19	30	34	10	8	4	1	60	E701 1000
<b>1200</b>	<b>12</b>	83	23	36	42	12	10	4	1	70	E701 1200



Item #	Tilt (z)	Step over max (mm) @ middle angle + 0.2 step down	cuspid Height	Fine Step over (Cuspid 0.0025mm)	Nom. dia
E701 1000	-4°-7°	9.75	0.398	0.77	10
E701 1200	-3°-6°	10.6	0.404	0.84	12

ISO	P										M					K					N					S					H																							
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41					
E701	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



# Endmills Taper Form, Harmony 5 Axis



- Highly efficient finishing
- Form tolerance  $\pm 0.01$  mm
- Suitable for high-strength materials
- Suitable for HSC finishing



### Fraises 5 axes, forme ovale

- Finition très efficace
- Tolérance de forme  $\pm 0,01$  mm
- Convient aux matériaux à haute résistance
- Convient pour la finition HSC



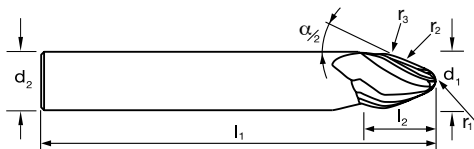
### Frese 5 Assi, Forma Ovale

- Finitura altamente efficiente
- Tolleranza di forma  $\pm 0,01$  mm
- Adatto per materiali ad alta resistenza
- Adatto per finitura HSC



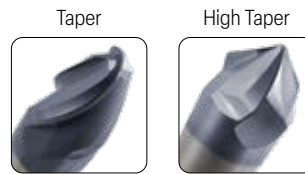
### Fresas 5 Ejes, Forma Ovalada

- Acabado altamente eficiente
- Tolerancia de forma  $\pm 0,01$  mm
- Adecuado para materiales de alta resistencia
- Adecuado para acabado HSC



Vc Page #: 442 →

Size Ref.	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	z	r <sub>1</sub>	r <sub>2</sub>	r <sub>3</sub>	$\alpha/2$	Item #	Item #
0618	6	60	8	6	4	0.5	250	3	18°	E702 0618	
1218	12	90	14.5	12	4	2	500	3	18°	E702 1218	
1209	12	90	14.5	12	4	2	500	3	9°	E702 1209	
1618	16	90	16	16	4	3	1000	4	18°	E702 1618	
1627	16	90	16	12.5	4	3	1000	4	27°	E702 1627	
0845	8	80	3.5	8	3	1.5	180	1	45°		E703 0845
0863	8	80	2.4	8	3	1.5	180	1	63°		E703 0863
0872	8	80	1.9	8	3	1.5	180	1	72°		E703 0872
0881	8	80	1.4	8	3	3	180	1	81°		E703 0881
1245	12	120	4.5	12	5	2	220	1	45°		E703 1245
1263	12	120	3.5	12	5	2	220	1	63°		E703 1263
1272	12	120	2.5	12	5	2	220	1	72°		E703 1272
1281	12	120	1.4	12	5	4	220	1	81°		E703 1281



Catalogue Code	E702	E703
Discount Group	B0210	B0210
Material	VHM-ULTRA	VHM-ULTRA
Surface Finish	AICrN	AICrN
Sutton Designation	UNI	UNI
Geometry	R30	R30
Shank Form (DIN 6535)	HA	HA
Shank Tolerance	h6	h6



Item #	Tilt (z)	Step over max (mm) @ middle angle + 0.2 step down	cuspid Height	Fine Step over (Cuspid 0.0025mm)	Nom. dia
E702 0618	18°	7.5	0.0563	1.58	6
E702 1218	18°	12.8	0.0819	2.24	12
E702 1209	9°	25.5	0.325	2.24	12
E702 1618	18°	16	0.064	3.16	16
E702 1627	27°	10.8	0.0292	3.16	16
E703 0845	45°	3.7	0.019	1.34	8
E703 0863	63°	3.1	0.0133	1.34	8
E703 0872	72°	3	0.0125	1.34	8
E703 0881	81°	2.55	0.009	1.34	8
E703 1245	45°	6.1	0.0243	1.48	12
E703 1263	63°	5.1	0.0296	1.48	12
E703 1272	72°	4.9	0.0273	1.48	12
E703 1281	81°	4.6	0.024	1.48	12

ISO	P										M										K										N										S										H									
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	38.1	39.2	40	41											
E702 / E703	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective



- Highly efficient finishing
- Form tolerance  $\pm 0.01$  mm
- Suitable for high-strength materials
- Suitable for HSC finishing



### Fraises 5 axes, forme ovale

- Finition très efficace
- Tolérance de forme  $\pm 0,01$  mm
- Convient aux matériaux à haute résistance
- Convient pour la finition HSC



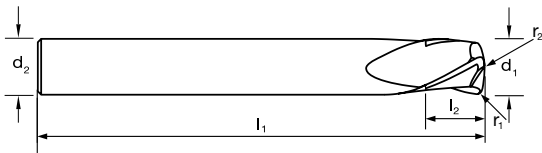
### Frese 5 Assi, Forma Ovale

- Finitura altamente efficiente
- Tolleranza di forma  $\pm 0,01$  mm
- Adatto per materiali ad alta resistenza
- Adatto per finitura HSC



### Fresas 5 Ejes, Forma Ovalada

- Acabado altamente eficiente
- Tolerancia de forma  $\pm 0,01$  mm
- Adecuado para materiales de alta resistencia
- Adecuado para acabado HSC



Vc Page #: 442 →

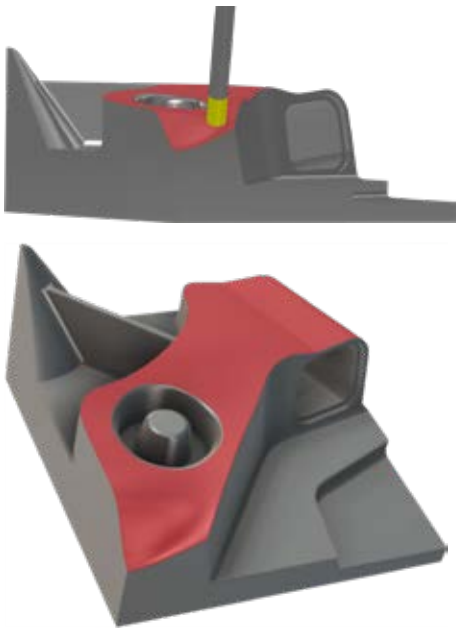
Size Ref.	$d_1$	$l_1$	$l_2$	$l_3$	$l_4$	$d_2$	$d_3$	$z$	$r_1$	$r_2$	Item #
0400	6	62	4	-	-	4	-	3	0.25	6	E704 0400
0600	6	62	6	-	-	6	-	3	0.5	10	E704 0600
0800	8	68	8	-	-	8	-	3	0.75	15	E704 0800
1000	10	80	10	-	-	10	-	3	1	20	E704 1000
1200	12	93	12	-	-	12	-	3	1.25	25	E704 1200



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Catalogue Code	E704
Discount Group	B0210
Material	VHM-ULTRA
Surface Finish	AiCrN
Sutton Designation	UNI
Geometry	R30
Shank Form (DIN 6535)	HA
Shank Tolerance	h6



Item #	Tilt (z)	Step over max (mm) @ middle angle + 0.2 step down	cuspl Height	Fine Step over (Cusp 0.0025mm)	Nom. dia
E704 0400	-	3.05	0.4165	0.24	4
E704 0600	-	3.95	0.4066	0.32	6
E704 0800	-	4.85	0.4029	0.39	8
E704 1000	-	5.6	0.4	0.45	10
E704 1200	-	6.25	0.3969	0.5	12

ISO	P			M			K			N			S			H																																										
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14.1	14.2	14.3	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37.1	37.2	37.3	37.4	37.5	38.1	38.2	39.1	39.2	40	41									
E704	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metals S Titanium & Super Alloys H Hard Materials

● Optimal ○ Effective