FRESAL CATALOGUE

• SOLID CARBIDE REAMERS •
• STEEL REAMERS •

FRESAL ALESATORI

CATALOGUE AL019.01GB

SOLID CARBIDE REAMERS
STEEL REAMERS

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FRESAL

ALESATORI

We produce reliable and innovative tools through the use of high technology. With commitment and passion.

The range of tools in this catalog is the result of our experience and listening to the needs of our customers.

Many of the items that are now part of our standard production are the result of specific solutions.

Because it is important for us to realize excellent tools and offer the best service in a logic of wider collaboration.

Key
to quickly find information

Type of tools.

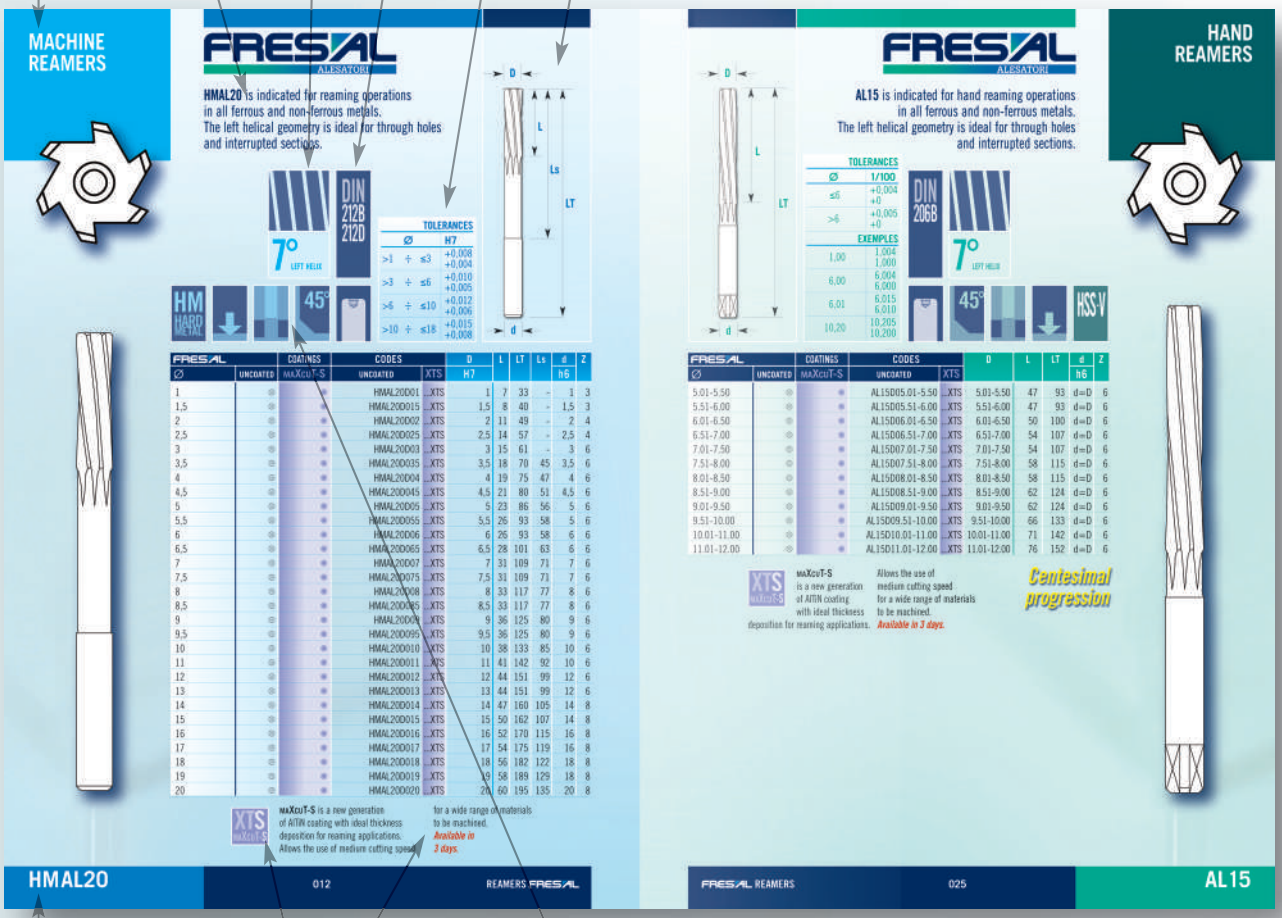
Short description.

Helix angle.

Material icons.

Tolerances

Lateral view.



Fresal Code.

Coatings and delivery time.

Carbide grade and indication of use.

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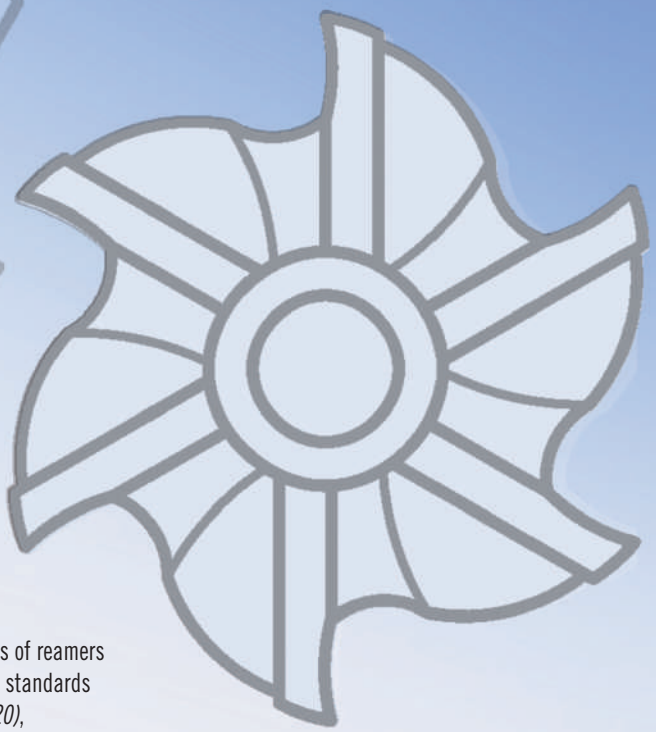
SOLID CARBIDE REAMERS

STEEL REAMERS



Reaming is a finishing operation performed to obtain holes of high accuracy.

It's necessary to seek the best working conditions *(cutting speed, adequate allowance, a suitable lubrication, etc.)* to get the best hole quality in terms of surface finishing, roundness of the hole and tight tolerances.

In most processes are produced through holes, for which it is recommended the use of reamers with left helical grooves.

Fresal range for this application provides three types of reamers complying with the standards DIN212B/D *(HMAL20)*, DIN 8089 *(HMAL30)* and an **extra-long series** realized according to internal standard *(HMAL27)*.

These three «families» are built to obtain holes with **H7 tolerance** and **centesimal progression**.

For the production of Blind Holes in H7 tolerance, we recommend the use of reamers HMALD20 with right helical grooves according to DIN212D.

Service: any diameter not immediately available will be provided within 24 hours.

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SOLID CARBIDE REAMERS

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HMAL20 is indicated for reaming operations in all ferrous and non-ferrous metals.
The left helical geometry is ideal for through holes and interrupted sections.

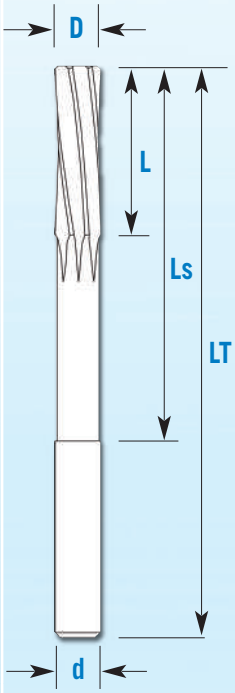
7° LEFT HELIX

DIN 212B 212D

HM HARD METAL

45°

TOLERANCES	
Ø	H7
>1 ÷ ≤3	+0,008 +0,004
>3 ÷ ≤6	+0,010 +0,005
>6 ÷ ≤10	+0,012 +0,006
>10 ÷ ≤18	+0,015 +0,008

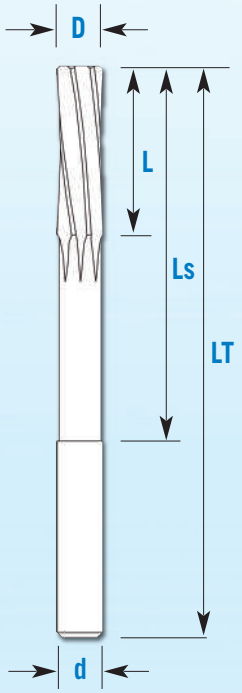


FRESAL		COATINGS	CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS	H7				h6	
1	◎	◉	HMAL20D01	...XTS	1	7	33	-	1	3
1,5	◎	◉	HMAL20D015	...XTS	1,5	8	40	-	1,5	3
2	◎	◉	HMAL20D02	...XTS	2	11	49	-	2	4
2,5	◎	◉	HMAL20D025	...XTS	2,5	14	57	-	2,5	4
3	◎	◉	HMAL20D03	...XTS	3	15	61	-	3	6
3,5	◎	◉	HMAL20D035	...XTS	3,5	18	70	45	3,5	6
4	◎	◉	HMAL20D04	...XTS	4	19	75	47	4	6
4,5	◎	◉	HMAL20D045	...XTS	4,5	21	80	51	4,5	6
5	◎	◉	HMAL20D05	...XTS	5	23	86	56	5	6
5,5	◎	◉	HMAL20D055	...XTS	5,5	26	93	58	5	6
6	◎	◉	HMAL20D06	...XTS	6	26	93	58	6	6
6,5	◎	◉	HMAL20D065	...XTS	6,5	28	101	63	6	6
7	◎	◉	HMAL20D07	...XTS	7	31	109	71	7	6
7,5	◎	◉	HMAL20D075	...XTS	7,5	31	109	71	7	6
8	◎	◉	HMAL20D08	...XTS	8	33	117	77	8	6
8,5	◎	◉	HMAL20D085	...XTS	8,5	33	117	77	8	6
9	◎	◉	HMAL20D09	...XTS	9	36	125	80	9	6
9,5	◎	◉	HMAL20D095	...XTS	9,5	36	125	80	9	6
10	◎	◉	HMAL20D010	...XTS	10	38	133	85	10	6
11	◎	◉	HMAL20D011	...XTS	11	41	142	92	10	6
12	◎	◉	HMAL20D012	...XTS	12	44	151	99	12	6
13	◎	◉	HMAL20D013	...XTS	13	44	151	99	12	6
14	◎	◉	HMAL20D014	...XTS	14	47	160	105	14	8
15	◎	◉	HMAL20D015	...XTS	15	50	162	107	14	8
16	◎	◉	HMAL20D016	...XTS	16	52	170	115	16	8
17	◎	◉	HMAL20D017	...XTS	17	54	175	119	16	8
18	◎	◉	HMAL20D018	...XTS	18	56	182	122	18	8
19	◎	◉	HMAL20D019	...XTS	19	58	189	129	18	8
20	◎	◉	HMAL20D020	...XTS	20	60	195	135	20	8

XTS MAXCUT-S

MAXCUT-S is a new generation of AlTiN coating with ideal thickness deposition for reaming applications. Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

FRESAL ALESATORI



HMAL25 is indicated for reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes and interrupted sections.

TOLERANCES	
Ø	1/100
≤6	+0,004 +0
>6	+0,005 +0
EXEMPLES	
1,00	1,004 1,000
6,00	6,004 6,000
6,01	6,015 6,010
16,20	16,205 16,200

FRESAL	COATINGS		CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS					h6	
2.00-2.36	◎	◉	HMAL25D02.00-2.36	...XTS	2.00-2.36	12	53	-	2,5	4
2.37-2.65	◎	◉	HMAL25D02.37-2.65	...XTS	2.37-2.65	14	57	-	2,5/3	4
2.66-3.05	◎	◉	HMAL25D02.66-3.05	...XTS	2.66-3.05	15	61	-	3	6
3.06-3.35	◎	◉	HMAL25D03.06-3.35	...XTS	3.06-3.35	16	65	-	3	6
3.36-3.75	◎	◉	HMAL25D03.36-3.75	...XTS	3.36-3.75	18	70	-	3,5	6
3.76-4.25	◎	◉	HMAL25D03.76-4.25	...XTS	3.76-4.25	19	75	47	4	6
4.26-4.75	◎	◉	HMAL25D04.26-4.75	...XTS	4.26-4.75	21	80	51	4,5	6
4.76-5.30	◎	◉	HMAL25D04.76-5.30	...XTS	4.76-5.30	23	86	56	5	6
5.31-6.22	◎	◉	HMAL25D05.31-6.22	...XTS	5.31-6.22	26	93	58	5/6	6
6.23-6.71	◎	◉	HMAL25D06.23-6.71	...XTS	6.23-6.71	28	101	63	6	6
6.72-7.70	◎	◉	HMAL25D06.72-7.70	...XTS	6.72-7.70	31	109	71	7	6
7.71-8.70	◎	◉	HMAL25D07.71-8.70	...XTS	7.71-8.70	33	117	77	8	6
8.71-9.70	◎	◉	HMAL25D08.71-9.70	...XTS	8.71-9.70	36	125	80	9	6
9.71-10.70	◎	◉	HMAL25D09.71-10.70	...XTS	9.71-10.70	38	133	85	10	6
10.71-11.70	◎	◉	HMAL25D10.71-11.70	...XTS	10.71-11.70	41	142	92	10	6
11.71-13.20	◎	◉	HMAL25D11.71-13.20	...XTS	11.71-13.20	44	151	99	12	6
13.21-14.20	◎	◉	HMAL25D13.21-14.20	...XTS	13.21-14.20	47	160	105	14	8
14.21-15.20	◎	◉	HMAL25D14.21-15.20	...XTS	14.21-15.20	50	162	107	14	8
15.21-16.20	◎	◉	HMAL25D15.21-16.20	...XTS	15.21-16.20	52	170	115	16	8
16.21-17.20	◎	◉	HMAL25D16.21-17.20	...XTS	16.21-17.20	54	175	119	16	8
17.21-18.20	◎	◉	HMAL25D17.21-18.20	...XTS	17.21-18.20	56	182	122	18	8
18.21-19.20	◎	◉	HMAL25D18.21-19.20	...XTS	18.21-19.20	58	189	129	18	8
19.21-20.20	◎	◉	HMAL25D19.21-20.20	...XTS	19.21-20.20	60	195	135	20	8

XTS MAXCUT-S

MAXCUT-S is a new generation of AlTiN coating with ideal thickness deposition for reaming applications.

Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

Centesimal progression

REAMERS EXTRA-LONG

FRESAL ALESATORI

HMAL27 is indicated for reaming operations in all ferrous and non-ferrous metals.
The left helical geometry is ideal for through holes and interrupted sections.

7° LEFT HELIX

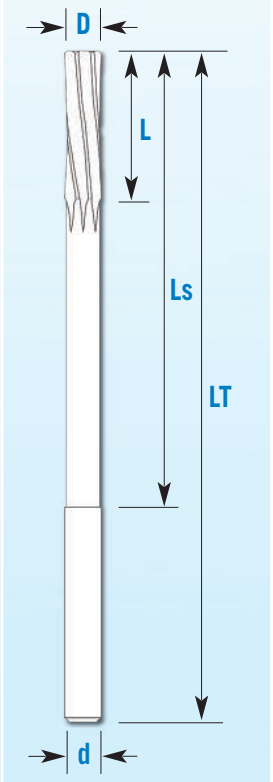
FRESAL NORM

HM HARD METAL

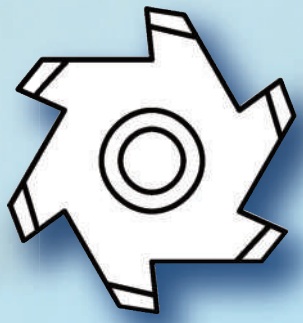
45°

TOLERANCES

Ø	H7
>1 ÷ ≤3	+0,008 +0,004
>3 ÷ ≤6	+0,010 +0,005
>6 ÷ ≤10	+0,012 +0,006
>10 ÷ ≤18	+0,015 +0,008



FRESAL		COATINGS	CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS	H7				h6	
2	◎	◉	HMAL27D02	...XTS	2	18	100	60	2	4
2,5	◎	◉	HMAL27D025	...XTS	2,5	20	120	70	2,5	4
3	◎	◉	HMAL27D03	...XTS	3	20	120	70	3	6
3,5	◎	◉	HMAL27D035	...XTS	3,5	25	150	100	4	6
4	◎	◉	HMAL27D04	...XTS	4	25	150	100	4	6
4,5	◎	◉	HMAL27D045	...XTS	4,5	30	180	120	5	6
5	◎	◉	HMAL27D05	...XTS	5	30	180	120	5	6
5,5	◎	◉	HMAL27D055	...XTS	5,5	35	200	140	6	6
6	◎	◉	HMAL27D06	...XTS	6	35	200	140	6	6
6,5	◎	◉	HMAL27D065	...XTS	6,5	40	200	140	7	6
7	◎	◉	HMAL27D07	...XTS	7	40	200	140	7	6
7,5	◎	◉	HMAL27D075	...XTS	7,5	40	200	140	8	6
8	◎	◉	HMAL27D08	...XTS	8	40	200	140	8	6
8,5	◎	◉	HMAL27D085	...XTS	8,5	45	220	150	9	6
9	◎	◉	HMAL27D09	...XTS	9	45	220	150	9	6
9,5	◎	◉	HMAL27D095	...XTS	9,5	45	220	150	10	6
10	◎	◉	HMAL27D10	...XTS	10	45	220	150	10	6
11	◎	◉	HMAL27D11	...XTS	11	50	250	175	10	6
12	◎	◉	HMAL27D12	...XTS	12	50	250	175	12	6
13	◎	◉	HMAL27D13	...XTS	13	50	250	175	13	6
14	◎	◉	HMAL27D14	...XTS	14	55	270	195	14	8
15	◎	◉	HMAL27D15	...XTS	15	60	280	200	15	8
16	◎	◉	HMAL27D16	...XTS	16	60	280	200	16	8



XTS MAXCUT-S

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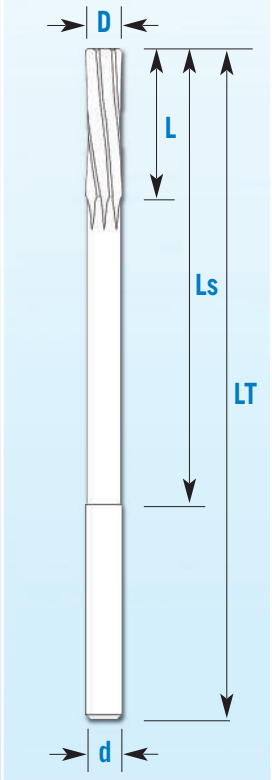

FRESAL ALESATORI

HMAL28 is indicated for reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes and interrupted sections.

TOLERANCES	
Ø	1/100
≤6	+0,004 +0
>6	+0,005 +0
EXEMPLES	
1,00	1,004 1,000
6,00	6,004 6,000
6,01	6,015 6,010
16,20	16,205 16,200

FRESAL	COATINGS		CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS					h6	
2.00-2.30	◎	◉	HMAL28D02.00-2.30	...XTS	2.00-2.30	18	100	60	2	4
2.31-3.25	◎	◉	HMAL28D02.31-3.25	...XTS	2.31-3.25	20	120	70	2,5/3	4/6
3.26-4.25	◎	◉	HMAL28D03.26-4.25	...XTS	3.26-4.25	25	150	100	4	6
4.26-5.25	◎	◉	HMAL28D04.26-5.25	...XTS	4.26-5.25	30	180	120	5	6
5.26-6.25	◎	◉	HMAL28D05.26-6.25	...XTS	5.26-6.25	35	200	140	6	6
6.26-7.25	◎	◉	HMAL28D06.26-7.25	...XTS	6.26-7.25	40	200	140	7	6
7.26-8.25	◎	◉	HMAL28D07.26-8.25	...XTS	7.26-8.25	40	200	140	8	6
8.26-9.25	◎	◉	HMAL28D08.26-9.25	...XTS	8.26-9.25	45	220	150	9	6
9.26-10.25	◎	◉	HMAL28D09.26-10.25	...XTS	9.26-10.25	45	220	150	10	6
10.26-11.25	◎	◉	HMAL28D10.26-11.25	...XTS	10.26-11.25	50	250	175	10	6
11.26-12.25	◎	◉	HMAL28D11.26-12.25	...XTS	11.26-12.25	50	250	175	12	6
12.26-13.25	◎	◉	HMAL28D12.26-13.25	...XTS	12.26-13.25	50	250	175	13	6
13.26-14.25	◎	◉	HMAL28D13.26-14.25	...XTS	13.26-14.25	55	270	195	14	8
14.26-15.25	◎	◉	HMAL28D14.26-15.25	...XTS	14.26-15.25	60	280	200	15	8
15.26-16.20	◎	◉	HMAL28D15.26-16.20	...XTS	15.26-16.20	60	280	200	16	8

XTS MAXCUT-S

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Available in 3 days.

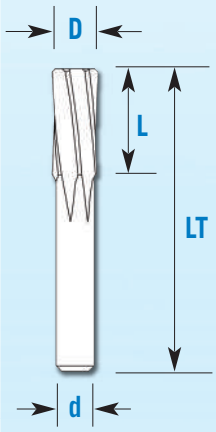
Centesimal progression

REAMERS FOR AUTOMATIC MACHINES

FRESAL ALESATORI

HMAL30 is indicated for reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes.

TOLERANCES	
Ø	H7
>1 ÷ ≤3	+0,008 +0,004
>3 ÷ ≤6	+0,010 +0,005
>6 ÷ ≤10	+0,012 +0,006
>10 ÷ ≤18	+0,015 +0,008



FRESAL		COATINGS	CODES		D	L	LT	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS	H7			h6	
4	◎	◉	HMAL30D04	...XTS	4	20	56	3,5	6
4,5	◎	◉	HMAL30D045	...XTS	4,5	22	63	4	6
5	◎	◉	HMAL30D05	...XTS	5	22	63	4	6
5,5	◎	◉	HMAL30D055	...XTS	5,5	22	63	5	6
6	◎	◉	HMAL30D06	...XTS	6	22	63	5	6
6,5	◎	◉	HMAL30D065	...XTS	6,5	22	63	6	6
7	◎	◉	HMAL30D07	...XTS	7	25	71	6	6
7,5	◎	◉	HMAL30D075	...XTS	7,5	25	71	6	6
8	◎	◉	HMAL30D08	...XTS	8	25	71	6	6
8,5	◎	◉	HMAL30D085	...XTS	8,5	25	71	8	6
9	◎	◉	HMAL30D09	...XTS	9	25	71	8	6
9,5	◎	◉	HMAL30D095	...XTS	9,5	25	71	8	6
10	◎	◉	HMAL30D10	...XTS	10	25	71	8	6
11	◎	◉	HMAL30D11	...XTS	11	28	80	10	6
12	◎	◉	HMAL30D12	...XTS	12	28	80	10	6
13	◎	◉	HMAL30D13	...XTS	13	28	80	12	6
14	◎	◉	HMAL30D14	...XTS	14	32	90	12	8
15	◎	◉	HMAL30D15	...XTS	15	32	90	14	8
16	◎	◉	HMAL30D16	...XTS	16	32	90	14	8

XTS MAXCUT-S

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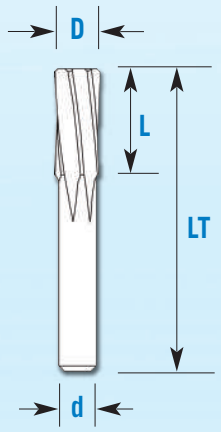
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

FRESAL ALESATORI

HMAL31 is indicated for reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes.



TOLERANCES	
Ø	1/100
≤6	+0,004 +0
>6	+0,005 +0
EXEMPLES	
1,00	1,004 1,000
6,00	6,004 6,000
6,01	6,015 6,010
16,20	16,205 16,200

FRESAL		COATINGS	CODES		D	L	LT	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS				h6	
4.00-4.25	◎	◉	HMAL31D04.00-4.25	...XTS	4.00-4.25	20	56	3,5	6
4.26-5.25	◎	◉	HMAL31D04.26-5.25	...XTS	4.26-5.25	22	63	4	6
5.26-6.25	◎	◉	HMAL31D05.26-6.25	...XTS	5.26-6.25	22	63	5	6
6.26-7.25	◎	◉	HMAL31D06.26-7.25	...XTS	6.26-7.25	22	63	6	6
7.26-8.25	◎	◉	HMAL31D07.26-8.25	...XTS	7.26-8.25	25	71	6	6
8.26-9.25	◎	◉	HMAL31D08.26-9.25	...XTS	8.26-9.25	25	71	8	6
9.26-10.25	◎	◉	HMAL31D09.26-10.25	...XTS	9.26-10.25	25	71	8	6
10.26-11.25	◎	◉	HMAL31D10.26-11.25	...XTS	10.26-11.25	28	80	10	6
11.26-12.25	◎	◉	HMAL31D11.26-12.25	...XTS	11.26-12.25	28	80	10	6
12.26-13.25	◎	◉	HMAL31D12.26-13.25	...XTS	12.26-13.25	28	80	12	6
13.26-14.25	◎	◉	HMAL31D13.26-14.25	...XTS	13.26-14.25	32	90	12	8
14.26-15.25	◎	◉	HMAL31D14.26-15.25	...XTS	14.26-15.25	32	90	14	8
15.26-16.20	◎	◉	HMAL31D15.26-16.20	...XTS	15.26-16.20	32	90	14	8

XTS MAXCUT-S

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Available in 3 days.

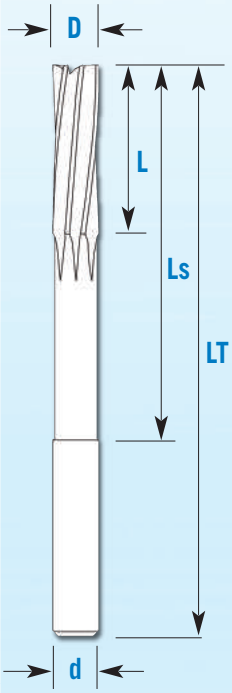
Centesimal progression

MACHINE REAMERS for blind holes

FRESAL ALESATORI

HMALD20 is indicated for reaming operations in all ferrous and non-ferrous metals.
The right helical geometry with frontal cutting edges is ideal for blind holes.

TOLERANCES	
Ø	H7
>1 ÷ ≤3	+0,008 +0,004
>3 ÷ ≤6	+0,010 +0,005
>6 ÷ ≤10	+0,012 +0,006
>10 ÷ ≤18	+0,015 +0,008



FRESAL		COATINGS	CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS	H7				h6	
4	◎	◉	HMALD20D04	...XTS	4	19	75	47	4	6
4,5	◎	◉	HMALD20D045	...XTS	4,5	21	80	51	4	6
5	◎	◉	HMALD20D05	...XTS	5	23	86	56	5	6
5,5	◎	◉	HMALD20D055	...XTS	5,5	26	93	58	5	6
6	◎	◉	HMALD20D06	...XTS	6	26	93	58	6	6
7	◎	◉	HMALD20D07	...XTS	7	31	109	71	7	6
8	◎	◉	HMALD20D08	...XTS	8	33	117	77	8	6
9	◎	◉	HMALD20D09	...XTS	9	36	125	80	9	6
10	◎	◉	HMALD20D10	...XTS	10	38	133	85	10	6
12	◎	◉	HMALD20D12	...XTS	12	44	151	99	12	6

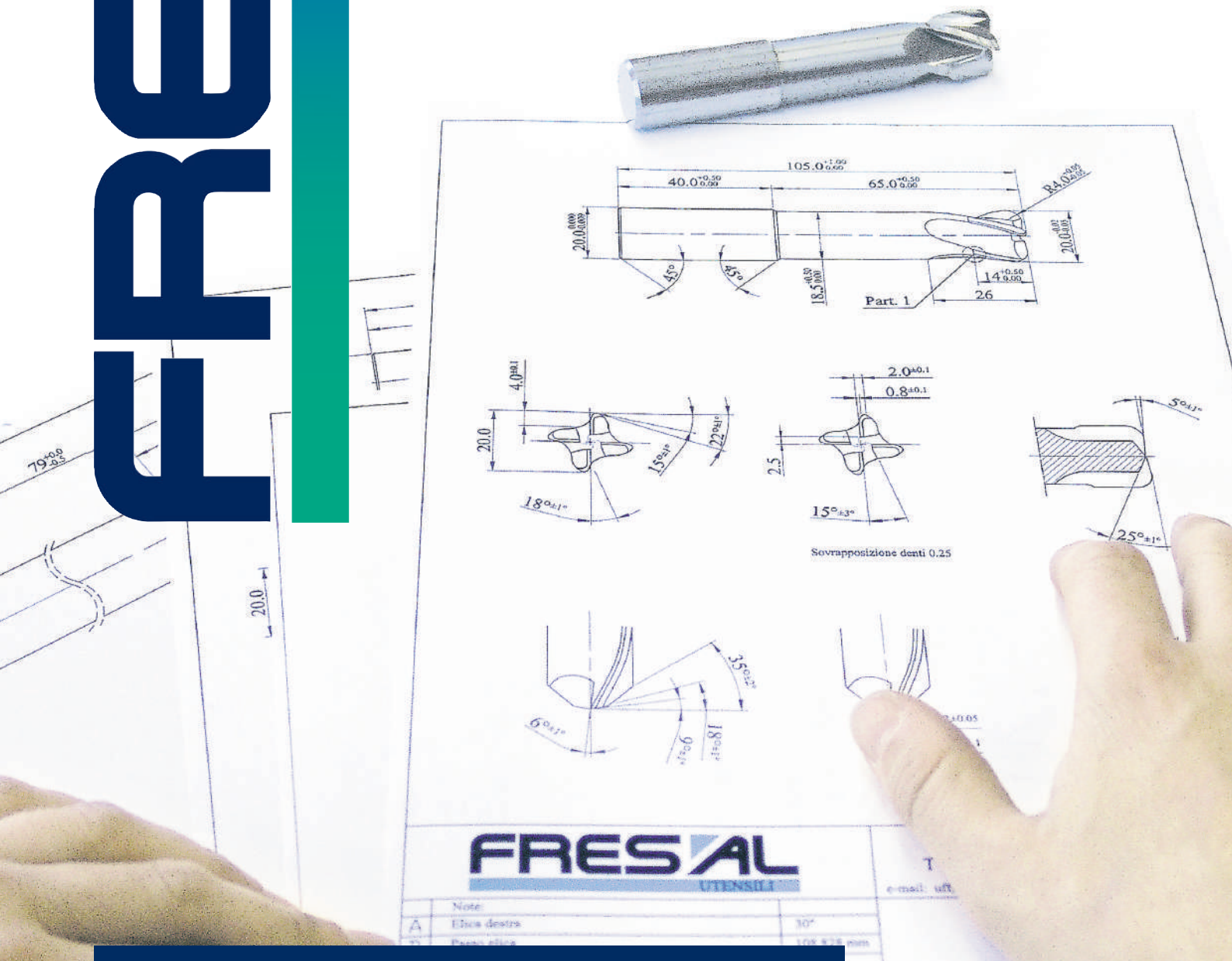
XTS MAXCUT-S

MAXCUT-S is a new generation of AlTiN coating with ideal thickness deposition for reaming applications.

Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

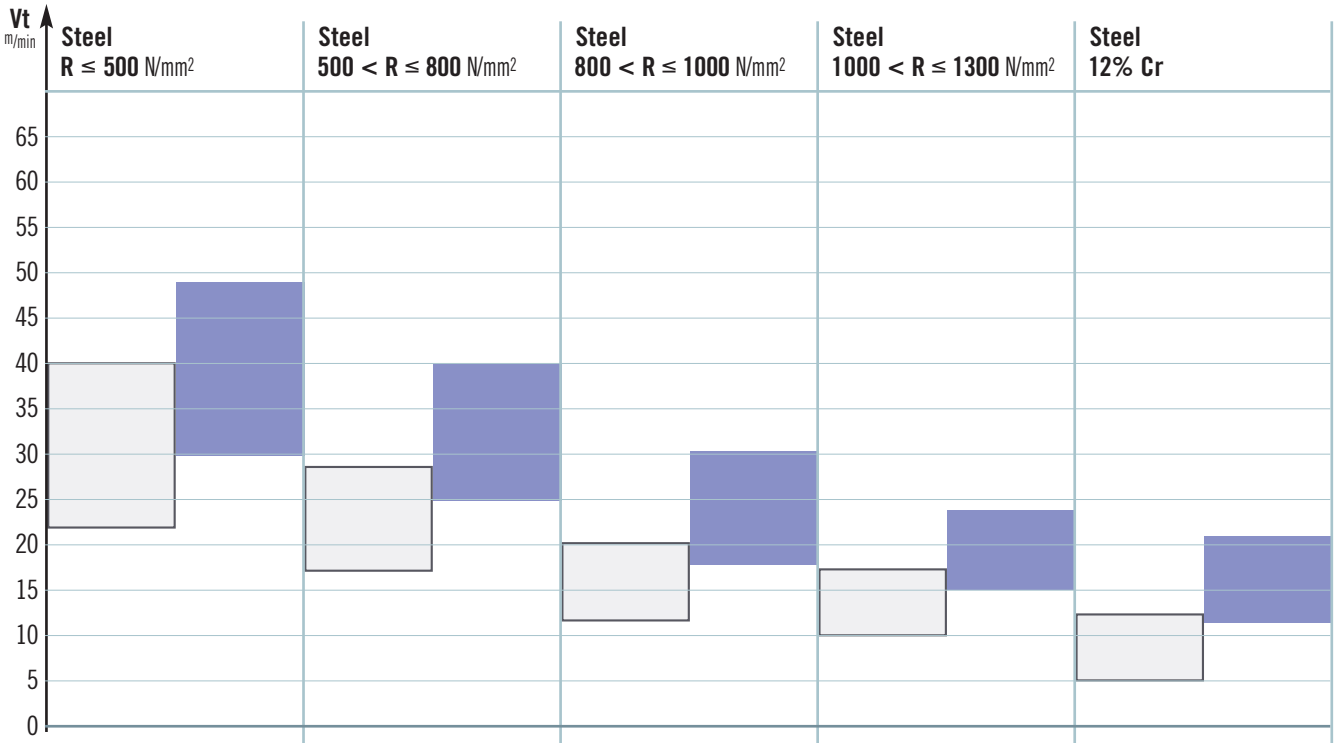
FRESAL ALESATORI

The technical tables provide indicative machining parameters. According to the machined material and the operation that has to be carried out, in order to optimize energy, time and tool performance.



Machining parameters for reamers.
Reamers uncoated and coated maXcuT-S.

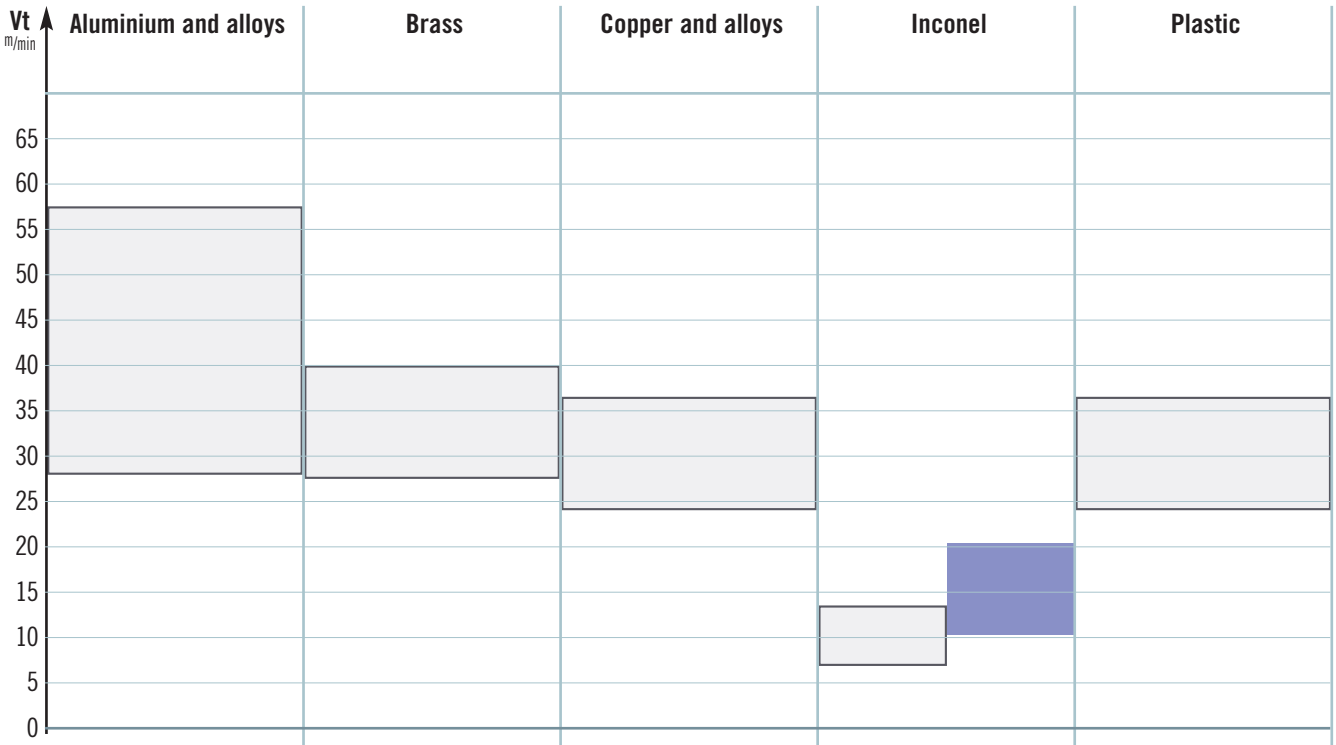
UNCOATED | XTS maXcuT-S



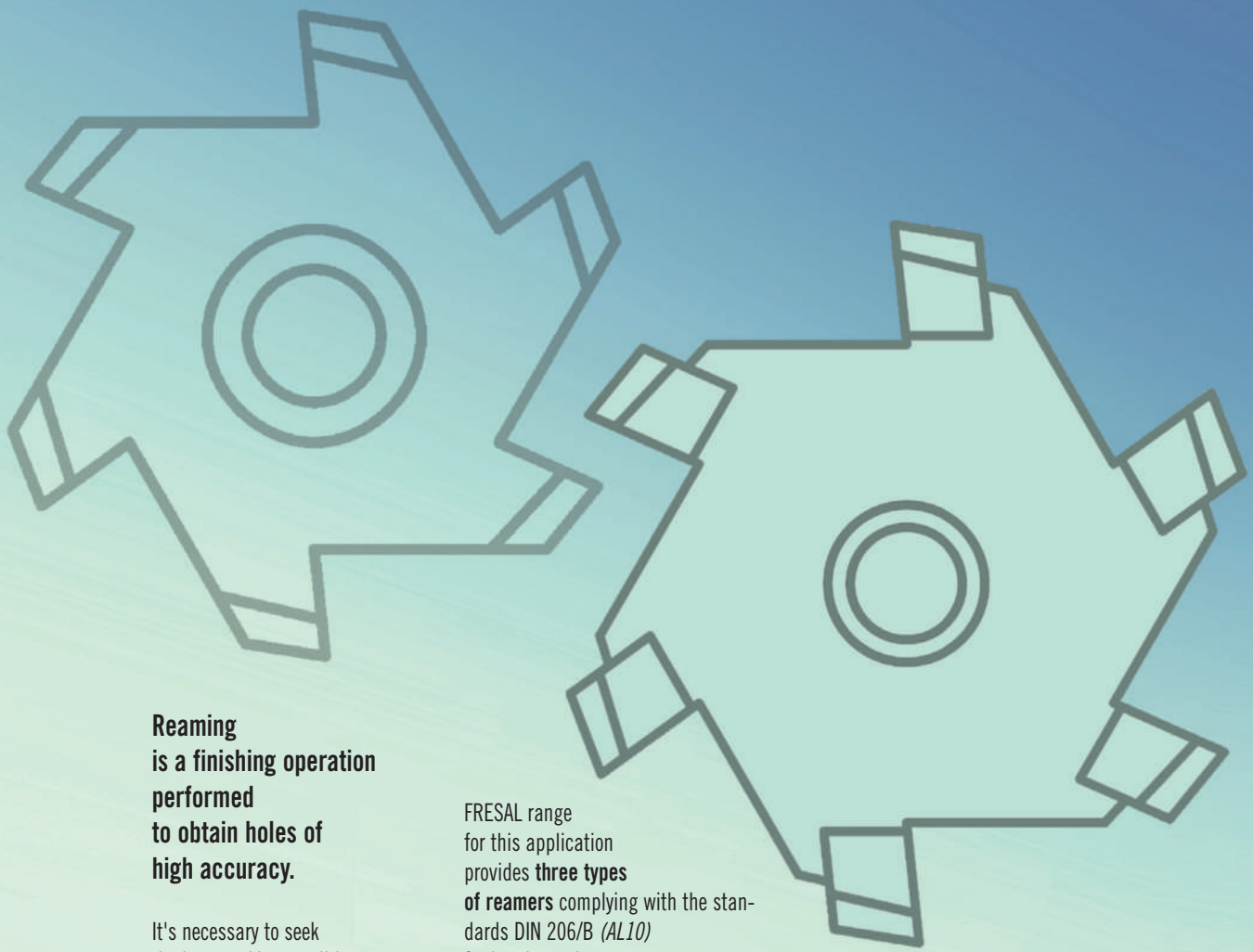
Steel R ≤ 500 N/mm2		Steel 500 < R ≤ 800 N/mm2		Steel 800 < R ≤ 1000 N/mm2		Steel 1000 < R ≤ 1300 N/mm2		Steel 12% Cr	
∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)
5	0,15	5	0,12	5	0,12	5	0,08	5	0,08
10	0,25	10	0,18	10	0,15	10	0,13	10	0,12
16	0,30	16	0,20	16	0,20	16	0,18	16	0,15
20	0,36	20	0,34	20	0,30	20	0,25	20	0,20

Machining parameters for reamers.
Reamers uncoated and coated maXcuT-S.

UNCOATED | XTS maXcuT-S



Aluminium and alloys		Brass		Copper and alloys		Inconel		Plastic	
∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)
5	0,15	5	0,18	5	0,18	5	0,10	5	0,15
10	0,25	10	0,25	10	0,20	10	0,13	10	0,25
16	0,30	16	0,30	16	0,28	16	0,15	16	0,33
20	0,40	20	0,40	20	0,35	20	0,20	20	0,45



Reaming is a finishing operation performed to obtain holes of high accuracy.

It's necessary to seek the best working conditions *(cutting speed, adequate allowance, a suitable lubrication, etc.)* to get the best hole quality in terms of surface finishing, roundness of the hole and tight tolerances.

In most processes are produced through holes, for which it is recommended the use of reamers with left helical grooves.

FRESAL range for this application provides **three types of reamers** complying with the standards DIN 206/B *(AL10)* for hand reaming, DIN 212B/D *(AL20)*, DIN 208B *(AL35)* with conical shank and an **extra-long series** realized according to internal standard *(AL27)* and a series with brazed flutes *(AL70)*.

These three «families» are built to obtain holes with **H7 tolerance** and **centesimal progression**.

For the production of Blind Holes in H7 tolerance, we recommend the use of reamers HMALD20 with right helical grooves according to DIN 212D.

Service: any diameter not immediately available will be provided within 24 hours.

FRESAL

ALESATORI

STEEL REAMERS

FRESAL ALESATORI

AL10 is indicated for hand reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes and interrupted sections.

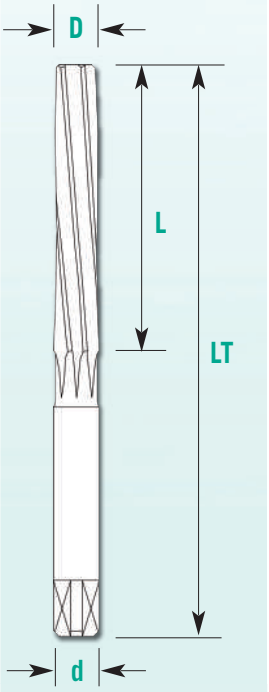
7° LEFT HELIX

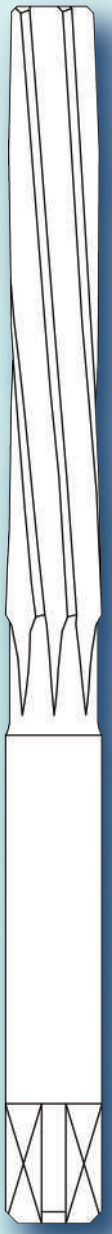
DIN 206B

HSS-V

45°

TOLERANCES	
Ø	H7
>1 ÷ ≤3	+0,008 +0,004
>3 ÷ ≤6	+0,010 +0,005
>6 ÷ ≤10	+0,012 +0,006
>10 ÷ ≤18	+0,015 +0,008





FRESAL		COATINGS	CODES		D	L	LT	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS	H7			h6	
1	◎	◉	AL10D010	...XTS	1	15	40	1	3
1,5	◎	◉	AL10D015	...XTS	1,5	20	41	1,5	3
2	◎	◉	AL10D020	...XTS	2	25	50	2	4
2,5	◎	◉	AL10D025	...XTS	2,5	29	58	2,5	4
3	◎	◉	AL10D030	...XTS	3	31	62	3	6
3,5	◎	◉	AL10D035	...XTS	3,5	35	71	3,5	6
4	◎	◉	AL10D040	...XTS	4	38	76	4	6
4,5	◎	◉	AL10D045	...XTS	4,5	41	81	4,5	6
5	◎	◉	AL10D050	...XTS	5	44	87	5	6
5,5	◎	◉	AL10D055	...XTS	5,5	47	93	5,5	6
6	◎	◉	AL10D060	...XTS	6	47	93	6	6
6,5	◎	◉	AL10D065	...XTS	6,5	50	100	6,5	6
7	◎	◉	AL10D070	...XTS	7	54	107	7	6
7,5	◎	◉	AL10D075	...XTS	7,5	54	107	7,5	6
8	◎	◉	AL10D080	...XTS	8	58	115	8	6
8,5	◎	◉	AL10D085	...XTS	8,5	58	115	8,5	6
9	◎	◉	AL10D090	...XTS	9	62	124	9	6
9,5	◎	◉	AL10D095	...XTS	9,5	62	124	9,5	6
10	◎	◉	AL10D100	...XTS	10	66	133	10	6
11	◎	◉	AL10D110	...XTS	11	71	142	11	6
12	◎	◉	AL10D120	...XTS	12	76	152	12	6
13	◎	◉	AL10D130	...XTS	13	76	152	13	6
14	◎	◉	AL10D140	...XTS	14	81	163	14	6
15	◎	◉	AL10D150	...XTS	15	81	163	15	8
16	◎	◉	AL10D160	...XTS	16	87	175	16	8
17	◎	◉	AL10D170	...XTS	17	87	175	17	8
18	◎	◉	AL10D180	...XTS	18	93	188	18	8
19	◎	◉	AL10D190	...XTS	19	93	188	19	8
20	◎	◉	AL10D200	...XTS	20	100	201	20	8

XTS MAXCUT-S

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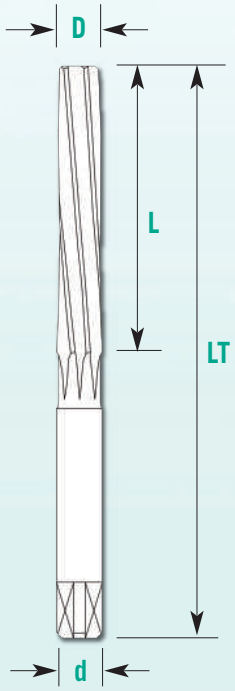
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

FRESAL ALESATORI



AL15 is indicated for hand reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes and interrupted sections.

TOLERANCES	
Ø	1/100
≤6	+0,004 +0
>6	+0,005 +0
EXEMPLES	
1,00	1,004 1,000
6,00	6,004 6,000
6,01	6,015 6,010
10,20	10,205 10,200

FRESAL	COATINGS		CODES		D	L	LT	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS				h6	
5.01-5.50	◎	◉	AL15D05.01-5.50	...XTS	5.01-5.50	47	93	d=D	6
5.51-6.00	◎	◉	AL15D05.51-6.00	...XTS	5.51-6.00	47	93	d=D	6
6.01-6.50	◎	◉	AL15D06.01-6.50	...XTS	6.01-6.50	50	100	d=D	6
6.51-7.00	◎	◉	AL15D06.51-7.00	...XTS	6.51-7.00	54	107	d=D	6
7.01-7.50	◎	◉	AL15D07.01-7.50	...XTS	7.01-7.50	54	107	d=D	6
7.51-8.00	◎	◉	AL15D07.51-8.00	...XTS	7.51-8.00	58	115	d=D	6
8.01-8.50	◎	◉	AL15D08.01-8.50	...XTS	8.01-8.50	58	115	d=D	6
8.51-9.00	◎	◉	AL15D08.51-9.00	...XTS	8.51-9.00	62	124	d=D	6
9.01-9.50	◎	◉	AL15D09.01-9.50	...XTS	9.01-9.50	62	124	d=D	6
9.51-10.00	◎	◉	AL15D09.51-10.00	...XTS	9.51-10.00	66	133	d=D	6
10.01-11.00	◎	◉	AL15D10.01-11.00	...XTS	10.01-11.00	71	142	d=D	6
11.01-12.00	◎	◉	AL15D11.01-12.00	...XTS	11.01-12.00	76	152	d=D	6

XTS MAXCUT-S

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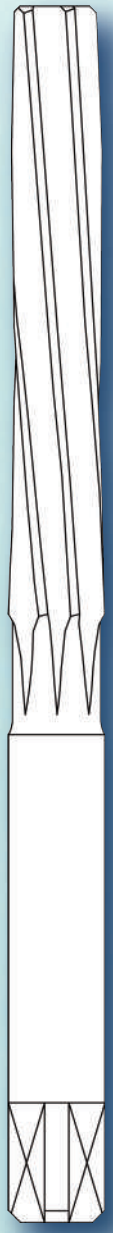
Centesimal progression



FRESAL ALESATORI

AL20 is indicated for reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes and interrupted sections.

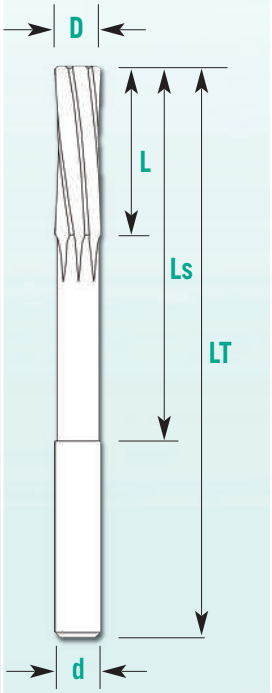
7° LEFT HELIX

DIN 212B 212D

HSS-V

45°

TOLERANCES	
Ø	H7
>1 ÷ ≤3	+0,008 +0,004
>3 ÷ ≤6	+0,010 +0,005
>6 ÷ ≤10	+0,012 +0,006
>10 ÷ ≤18	+0,015 +0,008



FRESAL		COATINGS	CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS	H7				h6	
1	◎	◉	AL20D010	...XTS	1	7	34	-	1	3
1,5	◎	◉	AL20D015	...XTS	1,5	8	40	-	1,5	3
2	◎	◉	AL20D020	...XTS	2	11	49	-	2	4
2,5	◎	◉	AL20D025	...XTS	2,5	14	57	-	2,5	4
3	◎	◉	AL20D030	...XTS	3	15	61	-	3	6
3,5	◎	◉	AL20D035	...XTS	3,5	18	70	45	3,5	6
4	◎	◉	AL20D040	...XTS	4	19	75	47	4	6
4,5	◎	◉	AL20D045	...XTS	4,5	21	80	51	4	6
5	◎	◉	AL20D050	...XTS	5	23	86	56	5	6
5,5	◎	◉	AL20D055	...XTS	5,5	26	93	58	5	6
6	◎	◉	AL20D060	...XTS	6	26	93	58	6	6
6,5	◎	◉	AL20D065	...XTS	6,5	28	101	63	6	6
7	◎	◉	AL20D070	...XTS	7	31	109	71	7	6
7,5	◎	◉	AL20D075	...XTS	7,5	31	109	71	7	6
8	◎	◉	AL20D080	...XTS	8	33	117	77	8	6
8,5	◎	◉	AL20D085	...XTS	8,5	33	117	77	8	6
9	◎	◉	AL20D090	...XTS	9	36	125	80	9	6
9,5	◎	◉	AL20D095	...XTS	9,5	36	125	80	9	6
10	◎	◉	AL20D100	...XTS	10	38	133	85	10	6
11	◎	◉	AL20D110	...XTS	11	41	142	92	10	6
12	◎	◉	AL20D120	...XTS	12	44	151	99	10	6
13	◎	◉	AL20D130	...XTS	13	44	151	99	10	6
14	◎	◉	AL20D140	...XTS	14	47	160	105	12	8
15	◎	◉	AL20D150	...XTS	15	50	162	107	14	8
16	◎	◉	AL20D160	...XTS	16	52	170	115	14	8
17	◎	◉	AL20D170	...XTS	17	54	175	119	14	8
18	◎	◉	AL20D180	...XTS	18	56	182	122	14	8
19	◎	◉	AL20D190	...XTS	19	58	189	129	16	8
20	◎	◉	AL20D200	...XTS	20	60	195	135	16	8

XTS MAXCUT-S

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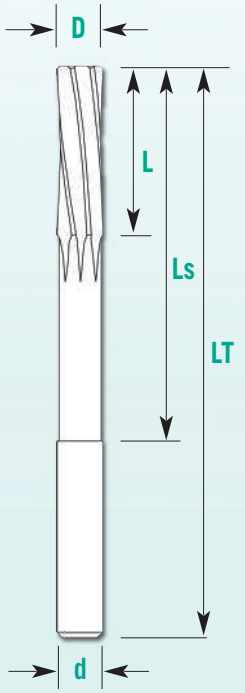
Available in 3 days.

FRESAL ALESATORI



AL25 is indicated for reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes and interrupted sections.

TOLERANCES	
Ø	1/100
≤6	+0,004 +0
>6	+0,005 +0
EXEMPLES	
1,00	1,004 1,000
6,00	6,004 6,000
6,01	6,015 6,010
16,20	16,205 16,200

FRESAL	COATINGS		CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS					h6	
0.95-1.50	◎	◉	AL25D00.95-1.50	...XTS	0.95-1.50	8	40	-	-	3
1.51-1.70	◎	◉	AL25D01.51-1.70	...XTS	1.51-1.70	9	43	-	-	3
1.71-1.90	◎	◉	AL25D01.71-1.90	...XTS	1.71-1.90	10	46	-	-	3
1.91-2.12	◎	◉	AL25D01.91-2.12	...XTS	1.91-2.12	11	49	-	2	3
2.13-2.36	◎	◉	AL25D02.13-2.36	...XTS	2.13-2.36	12	53	-	2,5	4
2.37-2.65	◎	◉	AL25D02.37-2.65	...XTS	2.37-2.65	14	57	-	2,5/3	4
2.66-3.00	◎	◉	AL25D02.66-3.00	...XTS	2.66-3.00	15	61	-	3	6
3.01-3.35	◎	◉	AL25D03.01-3.35	...XTS	3.01-3.35	16	65	-	3	6
3.36-3.75	◎	◉	AL25D03.36-3.75	...XTS	3.36-3.75	18	70	-	3,5	6
3.76-4.25	◎	◉	AL25D03.76-4.25	...XTS	3.76-4.25	19	75	47	4	6
4.26-4.75	◎	◉	AL25D04.26-4.75	...XTS	4.26-4.75	21	80	51	4,5	6
4.76-5.30	◎	◉	AL25D04.76-5.30	...XTS	4.76-5.30	23	86	56	5	6
5.31-6.22	◎	◉	AL25D05.31-6.22	...XTS	5.31-6.22	26	93	58	5/6	6
6.23-6.71	◎	◉	AL25D06.23-6.71	...XTS	6.23-6.71	28	101	63	6	6
6.72-7.51	◎	◉	AL25D06.72-7.51	...XTS	6.72-7.51	31	109	71	7	6
7.52-8.50	◎	◉	AL25D07.52-8.50	...XTS	7.52-8.50	33	117	77	8	6
8.51-9.50	◎	◉	AL25D08.51-9.50	...XTS	8.51-9.50	36	125	80	9	6
9.51-10.60	◎	◉	AL25D09.51-10.60	...XTS	9.51-10.60	38	133	85	10	6
10.61-11.80	◎	◉	AL25D10.61-11.80	...XTS	10.61-11.80	41	142	92	10	6
11.81-12.20	◎	◉	AL25D11.81-12.20	...XTS	11.81-12.20	44	151	99	10	6
12.21-13.20	◎	◉	AL25D12.21-13.20	...XTS	12.21-13.20	44	151	99	10	6
13.21-14.20	◎	◉	AL25D13.21-14.20	...XTS	13.21-14.20	47	160	105	12	8
14.21-15.20	◎	◉	AL25D14.21-15.20	...XTS	14.21-15.20	50	162	107	14	8
15.21-16.20	◎	◉	AL25D15.21-16.20	...XTS	15.21-16.20	52	170	115	14	8
16.21-17.20	◎	◉	AL25D16.21-17.20	...XTS	16.21-17.20	54	175	119	14	8
17.21-18.20	◎	◉	AL25D17.21-18.20	...XTS	17.21-18.20	56	182	122	14	8
18.21-19.20	◎	◉	AL25D18.21-19.20	...XTS	18.21-19.20	58	189	129	16	8
19.21-20.20	◎	◉	AL25D19.21-20.20	...XTS	19.21-20.20	60	195	135	16	8

XTS MAXCUT-S

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Available in 3 days.

Centesimal progression

REAMERS EXTRA-LONG

FRESAL ALESATORI

AL27 is indicated for reaming operations in all ferrous and non-ferrous metals.
The left helical geometry is ideal for through holes and interrupted sections.

7° LEFT HELIX

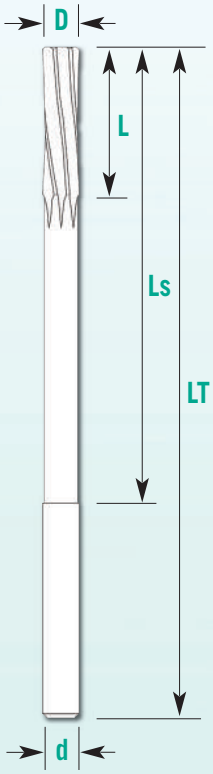
FRESAL NORM

HSS-V

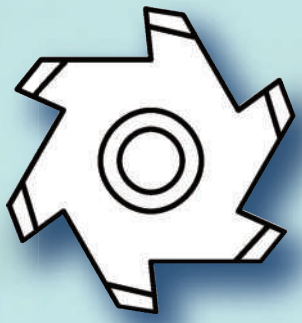
45°

TOLERANCES

Ø	H7
>1 ÷ ≤3	+0,008 +0,004
>3 ÷ ≤6	+0,010 +0,005
>6 ÷ ≤10	+0,012 +0,006
>10 ÷ ≤18	+0,015 +0,008

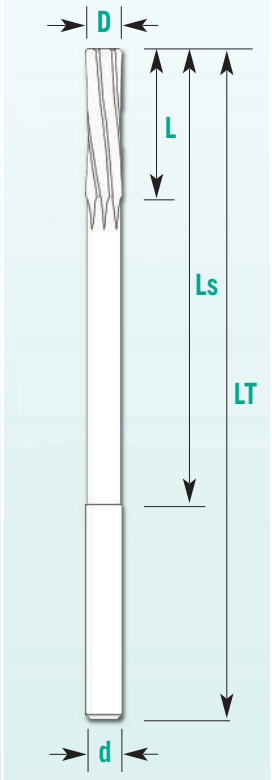


FRESAL		COATINGS	CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS	H7				h6	
2	◎	◉	AL27D02	...XTS	2	18	110	65	2	4
2,5	◎	◉	AL27D025	...XTS	2,5	20	120	65	2,5	4
3	◎	◉	AL27D03	...XTS	3	20	120	65	3	6
3,5	◎	◉	AL27D035	...XTS	3,5	30	150	90	3,5	6
4	◎	◉	AL27D04	...XTS	4	30	150	90	4	6
4,5	◎	◉	AL27D045	...XTS	4,5	35	180	115	4	6
5	◎	◉	AL27D05	...XTS	5	35	180	115	5	6
5,5	◎	◉	AL27D055	...XTS	5,5	40	200	130	5	6
6	◎	◉	AL27D06	...XTS	6	40	200	130	6	6
6,5	◎	◉	AL27D065	...XTS	6,5	45	200	130	6	6
7	◎	◉	AL27D07	...XTS	7	45	200	130	7	6
8	◎	◉	AL27D08	...XTS	8	45	200	130	8	6
9	◎	◉	AL27D09	...XTS	9	50	220	145	9	6
10	◎	◉	AL27D10	...XTS	10	50	220	145	10	6
11	◎	◉	AL27D11	...XTS	11	55	250	170	10	6
12	◎	◉	AL27D12	...XTS	12	55	250	170	12	6
13	◎	◉	AL27D13	...XTS	13	55	250	170	12	6
14	◎	◉	AL27D14	...XTS	14	65	270	185	14	8
15	◎	◉	AL27D15	...XTS	15	70	280	195	14	8
16	◎	◉	AL27D16	...XTS	16	70	280	195	16	8
18	◎	◉	AL27D18	...XTS	18	80	280	195	16	8
20	◎	◉	AL27D20	...XTS	20	100	300	210	20	8



XTS MAXCUT-S

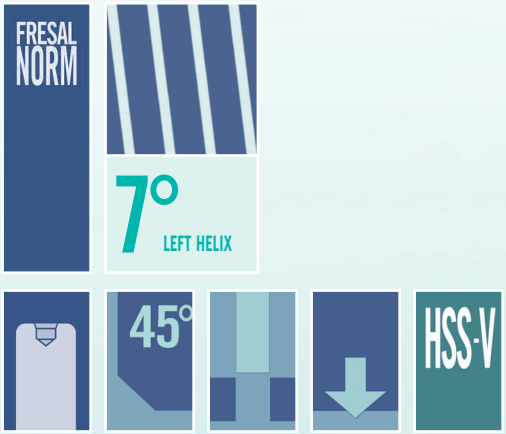
MAXCUT-S is a new generation of AlTiN coating with ideal thickness deposition for reaming applications. Allows the use of medium cutting speed for a wide range of materials to be machined. *Available in 3 days.*



FRESAL ALESATORI

AL28 is indicated for reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes and interrupted sections.

TOLERANCES	
Ø	1/100
≤6	+0,004 +0
>6	+0,005 +0
EXEMPLES	
1,00	1,004 1,000
6,00	6,004 6,000
6,01	6,015 6,010
16,20	16,205 16,200

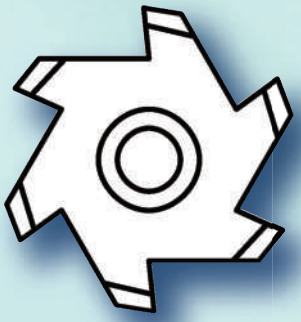


FRESAL		COATINGS	CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS					h6	
2.00-2.30	◎	◉	AL28D02.00-2.30	...XTS	2.00-2.30	18	110	65	2	4
2.31-3.25	◎	◉	AL28D02.31-3.25	...XTS	2.31-3.25	20	120	65	2,5/3	4/6
3.26-4.25	◎	◉	AL28D03.26-4.25	...XTS	3.26-4.25	30	150	90	4	6
4.26-5.25	◎	◉	AL28D04.26-5.25	...XTS	4.26-5.25	35	180	115	4/5	6
5.26-6.25	◎	◉	AL28D05.26-6.25	...XTS	5.26-6.25	40	200	130	5/6	6
6.26-7.25	◎	◉	AL28D06.26-7.25	...XTS	6.26-7.25	45	200	130	6/7	6
7.26-8.25	◎	◉	AL28D07.26-8.25	...XTS	7.26-8.25	45	200	130	8	6
8.26-9.25	◎	◉	AL28D08.26-9.25	...XTS	8.26-9.25	50	220	145	9	6
9.26-10.25	◎	◉	AL28D09.26-10.25	...XTS	9.26-10.25	50	220	145	10	6
10.26-11.25	◎	◉	AL28D10.26-11.25	...XTS	10.26-11.25	55	250	170	10	6
11.26-12.25	◎	◉	AL28D11.26-12.25	...XTS	11.26-12.25	55	250	170	12	6
12.26-13.25	◎	◉	AL28D12.26-13.25	...XTS	12.26-13.25	55	250	170	12	6
13.26-14.25	◎	◉	AL28D13.26-14.25	...XTS	13.26-14.25	65	270	185	14	8
14.26-15.25	◎	◉	AL28D14.26-15.25	...XTS	14.26-15.25	70	280	195	14	8
15.26-16.25	◎	◉	AL28D15.26-16.25	...XTS	15.26-16.25	70	280	195	16	8
16.26-18.25	◎	◉	AL28D16.26-18.25	...XTS	16.26-18.25	80	280	195	16	8
18.26-20.20	◎	◉	AL28D18.26-20.20	...XTS	18.26-20.20	100	300	210	20	8

XTS MAXCUT-S

MAXCUT-S is a new generation of AlTiN coating with ideal thickness deposition for reaming applications. Allows the use of medium cutting speed for a wide range of materials to be machined. *Available in 3 days.*

Centesimal progression

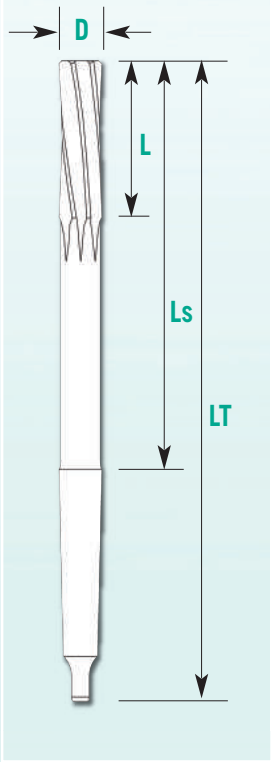


MACHINE REAMERS
morse taper

FRESAL ALESATORI

AL35 is indicated for reaming operations in all ferrous and non-ferrous metals.
The left helical geometry is ideal for through holes and interrupted sections.

TOLERANCES	
Ø	H7
>1 ÷ ≤3	+0,008 +0,004
>3 ÷ ≤6	+0,010 +0,005
>6 ÷ ≤10	+0,012 +0,006
>10 ÷ ≤18	+0,015 +0,008



FRESAL		COATINGS	CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS	H7				C.M.	
5	◎	◉	AL35D05	...XTS	5	23	133	67	1	6
6	◎	◉	AL35D06	...XTS	6	26	138	72	1	6
7	◎	◉	AL35D07	...XTS	7	31	150	84	1	6
8	◎	◉	AL35D08	...XTS	8	33	156	90	1	6
9	◎	◉	AL35D09	...XTS	9	36	162	96	1	6
10	◎	◉	AL35D10	...XTS	10	38	168	102	1	6
11	◎	◉	AL35D11	...XTS	11	41	175	109	1	6
12	◎	◉	AL35D12	...XTS	12	44	182	116	1	6
13	◎	◉	AL35D13	...XTS	13	44	182	116	1	6
14	◎	◉	AL35D14	...XTS	14	47	189	123	1	8
15	◎	◉	AL35D15	...XTS	15	50	204	124	2	8
16	◎	◉	AL35D16	...XTS	16	52	210	130	2	8
17	◎	◉	AL35D17	...XTS	17	54	214	134	2	8
18	◎	◉	AL35D18	...XTS	18	56	219	139	2	8
19	◎	◉	AL35D19	...XTS	19	58	223	143	2	8
20	◎	◉	AL35D20	...XTS	20	60	228	148	2	8
21	◎	◉	AL35D21	...XTS	21	62	232	152	2	8
22	◎	◉	AL35D22	...XTS	22	64	237	157	2	8
23	◎	◉	AL35D23	...XTS	23	66	241	161	2	8
24	◎	◉	AL35D24	...XTS	24	68	268	169	3	8
25	◎	◉	AL35D25	...XTS	25	68	268	169	3	8
26	◎	◉	AL35D26	...XTS	26	70	273	174	3	8
27	◎	◉	AL35D27	...XTS	27	71	277	178	3	10
28	◎	◉	AL35D28	...XTS	28	71	277	178	3	10
29	◎	◉	AL35D29	...XTS	29	73	281	182	3	10
30	◎	◉	AL35D30	...XTS	30	73	281	182	3	10

XTS MAXCUT-S

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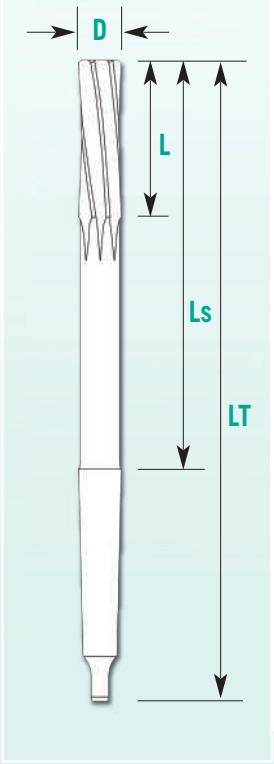
Allows the use of medium cutting speed for a wide range of materials to be machined.
Available in 3 days.

FRESAL ALESATORI



AL36 is indicated for reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes and interrupted sections.

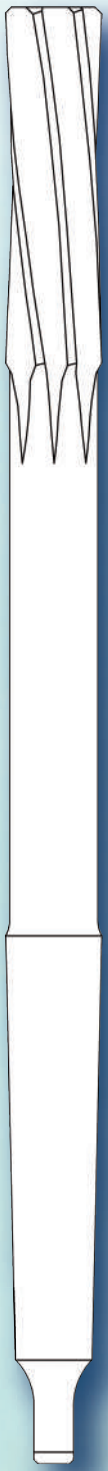
TOLERANCES	
Ø	1/100
≤6	+0,004 +0
>6	+0,005 +0
EXEMPLES	
1,00	1,004 1,000
6,00	6,004 6,000
6,01	6,015 6,010
16,20	16,205 16,200

DIN 208B

7° LEFT HELIX

45°

F05 AISI M35



FRESAL		COATINGS	CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS					C.M.	
4.76-5.25	◎	◉	AL36D04.76-5.25	...XTS	4.76-5.25	23	133	67	1	6
5.26-6.25	◎	◉	AL36D05.26-6.25	...XTS	5.26-6.25	26	138	72	1	6
6.26-7.25	◎	◉	AL36D06.26-7.25	...XTS	6.26-7.25	31	150	84	1	6
7.26-8.25	◎	◉	AL36D07.26-8.25	...XTS	7.26-8.25	33	156	90	1	6
8.26-9.25	◎	◉	AL36D08.26-9.25	...XTS	8.26-9.25	36	162	96	1	6
9.26-10.25	◎	◉	AL36D09.26-10.25	...XTS	9.26-10.25	38	168	102	1	6
10.26-11.25	◎	◉	AL36D10.26-11.25	...XTS	10.26-11.25	41	175	109	1	6
11.26-12.25	◎	◉	AL36D11.26-12.25	...XTS	11.26-12.25	44	182	116	1	6
12.26-13.25	◎	◉	AL36D12.26-13.25	...XTS	12.26-13.25	44	182	116	1	6
13.26-14.25	◎	◉	AL36D13.26-14.25	...XTS	13.26-14.25	47	189	123	1	8
14.26-15.25	◎	◉	AL36D14.26-15.25	...XTS	14.26-15.25	50	204	124	2	8
15.26-16.25	◎	◉	AL36D15.26-16.25	...XTS	15.26-16.25	52	210	130	2	8
16.26-17.25	◎	◉	AL36D16.26-17.25	...XTS	16.26-17.25	54	214	134	2	8
17.26-18,25	◎	◉	AL36D17.26-18.25	...XTS	17.26-18.25	56	219	139	2	8
18.26-19,25	◎	◉	AL36D18.26-19.25	...XTS	18.26-19.25	58	223	143	2	8
19.26-20,25	◎	◉	AL36D19.26-20.25	...XTS	19.26-20.25	60	228	148	2	8
20.26-21,25	◎	◉	AL36D20.26-21.25	...XTS	20.26-21.25	62	232	152	2	8
21.26-22,25	◎	◉	AL36D21.26-22.25	...XTS	21.26-22.25	64	237	157	2	8
22.26-23,25	◎	◉	AL36D22.26-23.25	...XTS	22.26-23.25	66	241	161	2	8
23.26-24,25	◎	◉	AL36D23.26-24.25	...XTS	23.26-24.25	68	268	169	3	8
24.26-25,25	◎	◉	AL36D24.26-25.25	...XTS	24.26-25.25	68	268	169	3	8
25.26-26,25	◎	◉	AL36D25.26-26.25	...XTS	25.26-26.25	70	273	174	3	8
26.26-27,25	◎	◉	AL36D26.26-27.25	...XTS	26.26-27.25	71	277	178	3	10
27.26-28,25	◎	◉	AL36D27.26-28.25	...XTS	27.26-28.25	71	277	178	3	10
28.26-29,25	◎	◉	AL36D28.26-29.25	...XTS	28.26-29.25	73	281	182	3	10
29.26-30,20	◎	◉	AL36D29.26-30.20	...XTS	29.26-30.20	73	281	182	3	10

XTS MAXCUT-S

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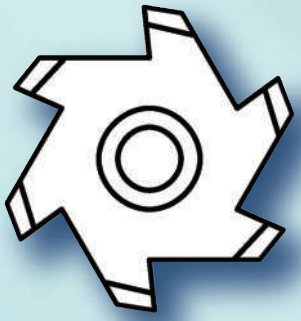


MACHINE REAMERS
- Brazed

FRESAL ALESATORI

AL70 is indicated for reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes and interrupted sections.

7° LEFT HELIX

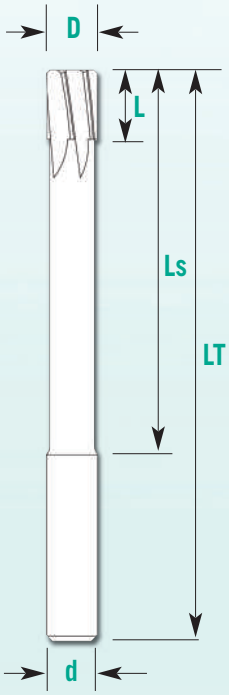
FRESAL NORM

SB

45°

TOLERANCES

Ø	H7
>1 ÷ ≤3	+0,008 +0,004
>3 ÷ ≤6	+0,010 +0,005
>6 ÷ ≤10	+0,012 +0,006
>10 ÷ ≤18	+0,015 +0,008



FRESAL		COATINGS	CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS	H7				h6	
12	◎	◉	AL70D12	...XTS	12	19	151	105	12	6
14	◎	◉	AL70D14	...XTS	14	19	160	110	14	6
16	◎	◉	AL70D16	...XTS	16	22	170	120	16	6
18	◎	◉	AL70D18	...XTS	18	22	182	130	18	6
20	◎	◉	AL70D20	...XTS	20	22	195	137	20	6
25	◎	◉	AL70D25	...XTS	25	25	225	160	25	6

XTS MAXCUT-S

MAXCUT-S
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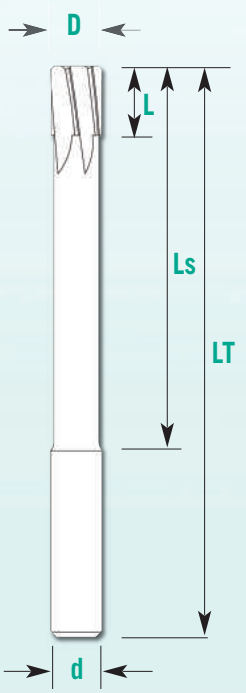
Available in 3 days.

FRESAL ALESATORI



AL75 is indicated for reaming operations in all ferrous and non-ferrous metals. The left helical geometry is ideal for through holes and interrupted sections.

TOLERANCES	
Ø	1/100
≤6	+0,004 +0
>6	+0,005 +0
EXEMPLES	
1,00	1,004 1,000
6,00	6,004 6,000
6,01	6,015 6,010
16,20	16,205 16,200

FRESAL		COATINGS	CODES		D	L	LT	Ls	d	Z
Ø	UNCOATED	MAXCUT-S	UNCOATED	XTS					h6	
11.75-12.25	◎	◉	AL75D11.75-12.25	...XTS	11.75-12.25	19	151	105	12	6
13.75-14.25	◎	◉	AL75D13.75-14.25	...XTS	13.75-14.25	19	160	110	14	6
15.75-16.25	◎	◉	AL75D15.75-16.25	...XTS	15.75-16.25	22	170	120	16	6
17.75-18.25	◎	◉	AL75D17.75-18.25	...XTS	17.75-18.25	22	182	130	18	6
19.75-20.25	◎	◉	AL75D19.75-20.25	...XTS	19.75-20.25	22	195	137	20	6
24.75-25.25	◎	◉	AL75D24.75-25.25	...XTS	24.75-25.25	25	225	160	25	6

XTS MAXCUT-S

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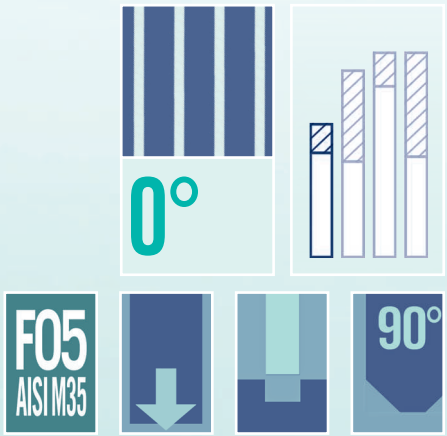
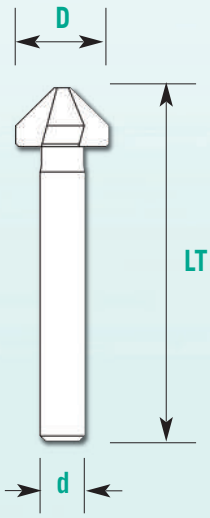
Centesimal progression

COUNTERSINK 90°

AL60 is produced with three flutes obtained during grinding.



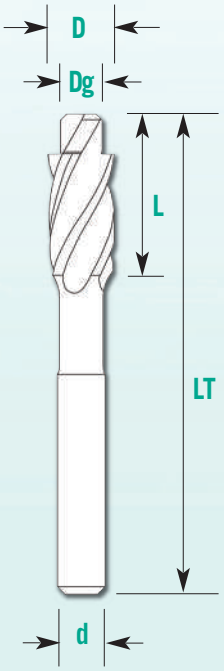


FRESAL		COATINGS	CODES		D	LT	d	Z
∅	UNCOATED	AllCut	UNCOATED	AC			h6	
6,3	◎	◉	AL60D063	...AC	6,3	44	5	3
8,3	◎	◉	AL60D083	...AC	8,3	48	6	3
10,4	◎	◉	AL60D104	...AC	10,4	50	6	3
12,4	◎	◉	AL60D124	...AC	12,4	58	8	3
16,5	◎	◉	AL60D165	...AC	16,5	62	8	3
20,5	◎	◉	AL60D205	...AC	20,5	63	10	3
25	◎	◉	AL60D250	...AC	25	67	10	3
31	◎	◉	AL60D310	...AC	31	71	12	3

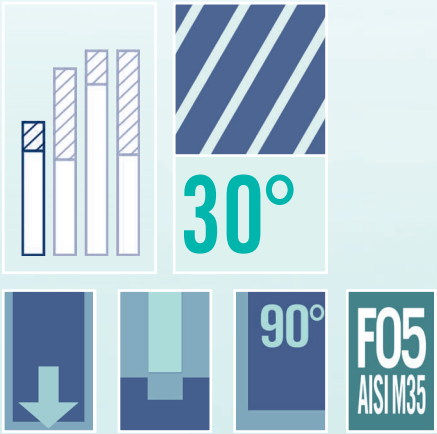
AC AllCut

AllCut
Is a coating with an AlCrN structure that allows a reduced wear in a wide range of machining conditions and materials.
Available in 3 days.

END MILLS FOR SCREW SEATS



AL65 is indicated for machining screw seats with cylindrical heads.

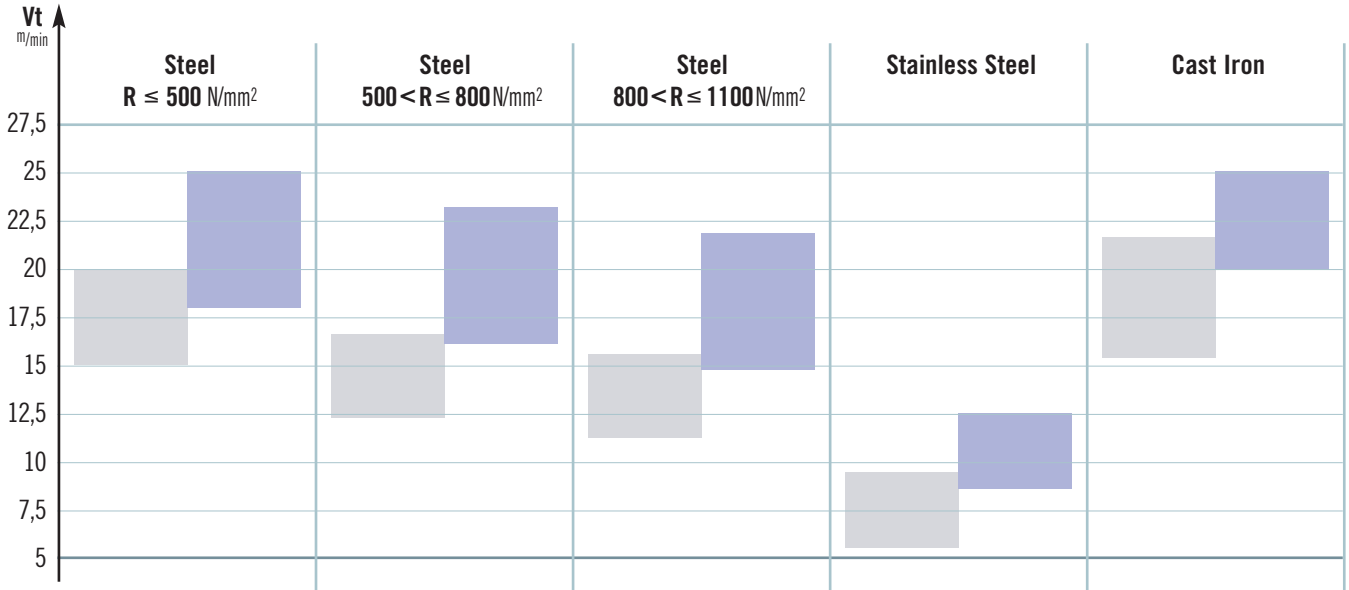


FRESAL		COATINGS	CODES		D	Dg	L	LT	d	Z
∅	UNCOATED	ALLCUT	UNCOATED	AC	h8	h8			h6	
M3	◎	◉	AL65M03	...AC	5,9	3,2	12	70	6	4
M4	◎	◉	AL65M04	...AC	7,4	4,3	12	70	8	4
M5	◎	◉	AL65M05	...AC	9,4	5,3	15	90	10	4
M6	◎	◉	AL65M06	...AC	10,4	6,4	16	90	10	4
M8	◎	◉	AL65M08	...AC	13,5	8,4	20	110	12	4
M10	◎	◉	AL65M10	...AC	16,5	10,5	22	115	12	4
M12	◎	◉	AL65M12	...AC	19	13	25	120	16	4
M14	◎	◉	AL65M14	...AC	22	15	30	130	16	4
M16	◎	◉	AL65M16	...AC	25	17	35	150	20	4
M18	◎	◉	AL65M18	...AC	28	19	35	160	20	4
M20	◎	◉	AL65M20	...AC	31	21	45	170	20	4

ALLCUT
Is a coating with an AlCrN structure that allows a reduced wear in a wide range of machining conditions and materials.
Available in 3 days.

Machining parameters for brazed reamers. Uncoated and maXcuT coated.

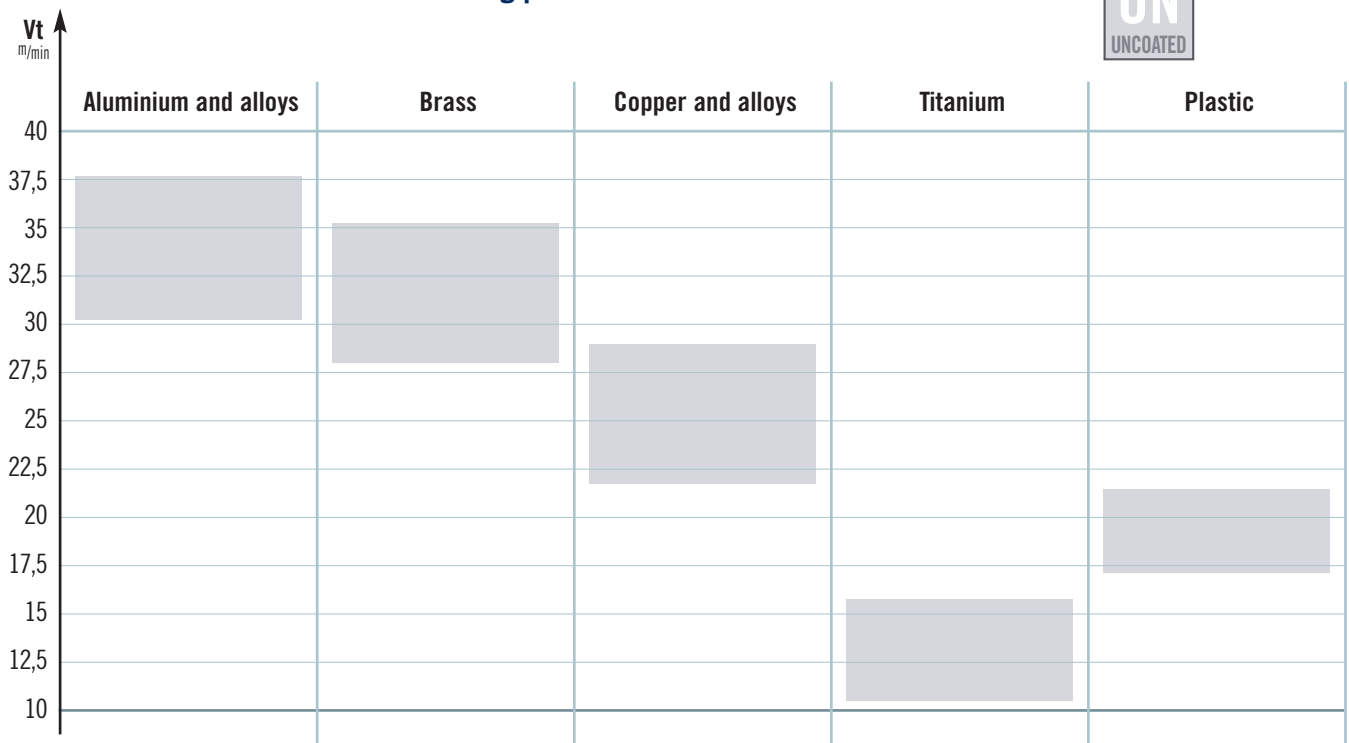
UN UNCOATED | XT maXcuT



Steel R ≤ 500 N/mm²		Steel 500 < R ≤ 800 N/mm²		Steel 800 < R ≤ 1100 N/mm²		Stainless Steel		Cast Iron	
Ø Reamers	F (mm/g)	Ø Reamers	F (mm/g)	Ø Reamers	F (mm/g)	Ø Reamers	F (mm/g)	Ø Reamers	F (mm/g)
12	0,25	12	0,24	12	0,20	12	0,20	12	0,20
16	0,31	16	0,29	16	0,25	16	0,25	16	0,25
20	0,40	20	0,36	20	0,30	20	0,31	20	0,31

Machining parameters for brazed reamers.

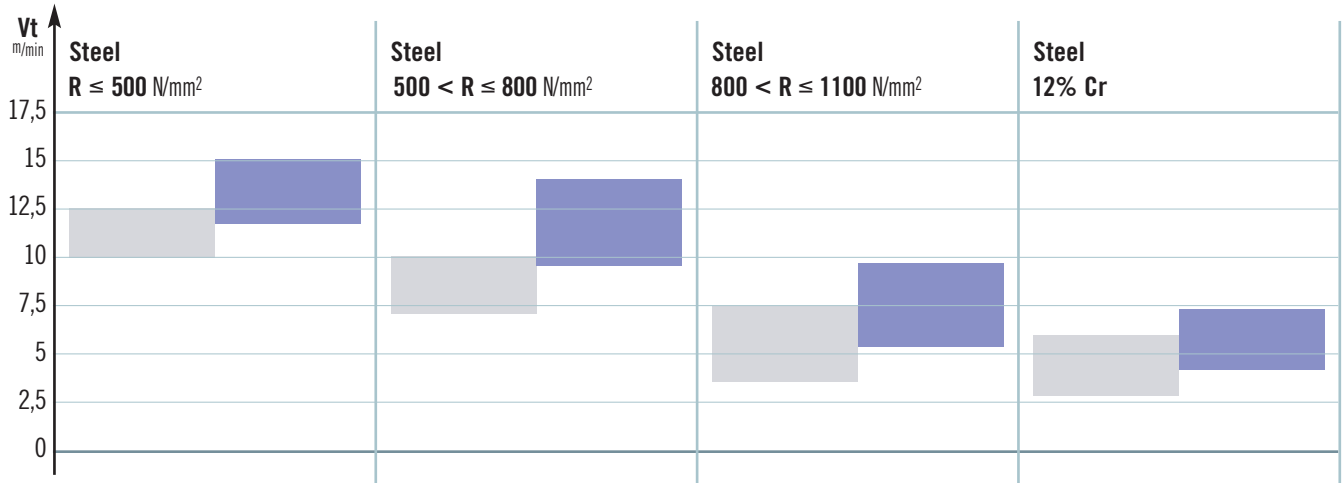
UN UNCOATED



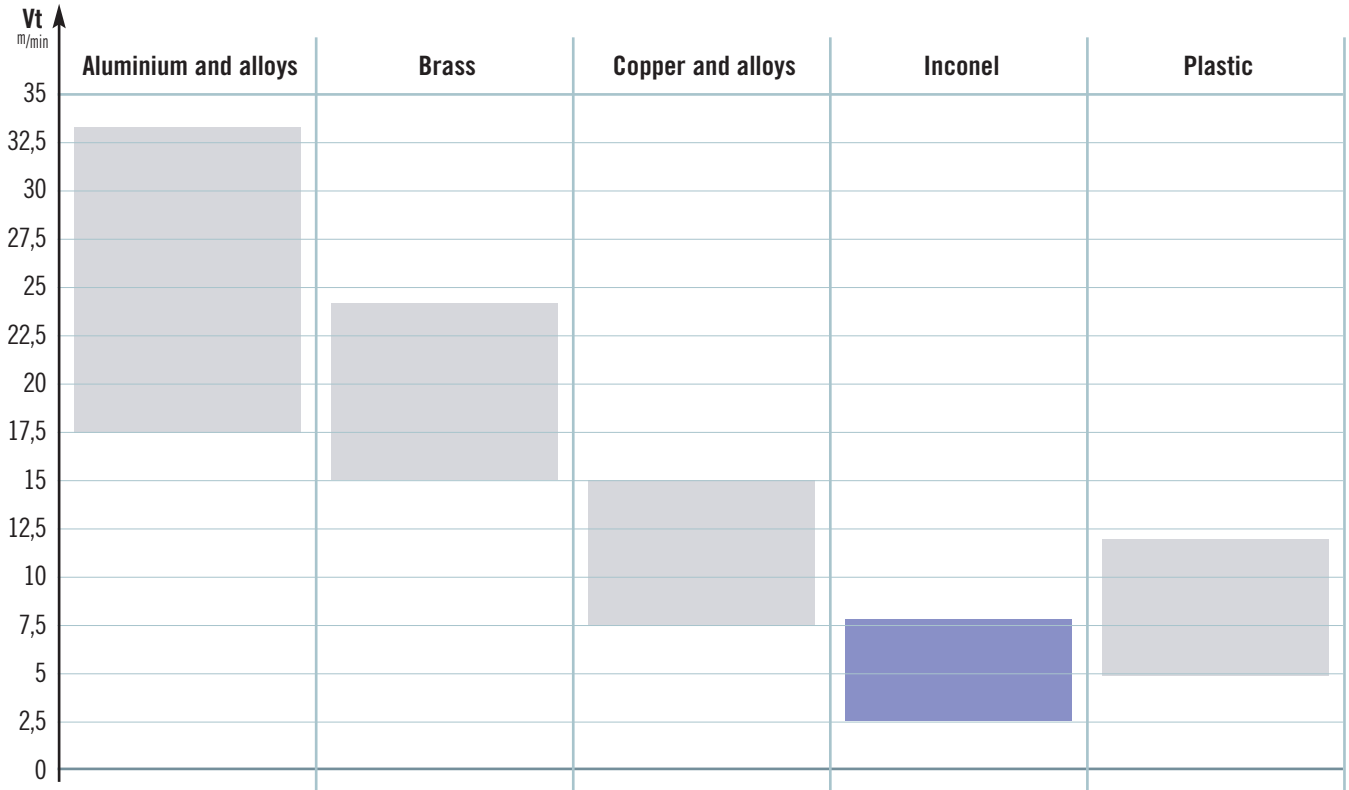
Aluminium and alloys		Brass		Copper and alloys		Titanium		Plastic	
Ø Reamers	F (mm/g)	Ø Reamers	F (mm/g)	Ø Reamers	F (mm/g)	Ø Reamers	F (mm/g)	Ø Reamers	F (mm/g)
12	0,31	12	0,25	12	0,25	12	0,20	12	0,32
16	0,40	16	0,30	16	0,30	16	0,25	16	0,40
20	0,50	20	0,40	20	0,40	20	0,31	20	0,50

Machining parameters for reamers.
Uncoated and maXcuT-S coated.

UN UNCOATED | XTS maXcuTS



Steel R ≤ 500 N/mm²		Steel 500 < R ≤ 800 N/mm²		Steel 800 < R ≤ 1100 N/mm²		Steel 12% Cr	
∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)
5	0,10	5	0,10	5	0,08	5	0,08
10	0,15	10	0,15	10	0,10	10	0,08
16	0,20	16	0,20	16	0,15	16	0,13
20	0,25	20	0,25	20	0,20	20	0,16



Aluminium and alloys		Brass		Copper and alloys		Inconel		Plastic	
∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)	∅ Reamers	F (mm/g)
5	0,15	5	0,20	5	0,15	5	0,08	5	0,20
10	0,20	10	0,30	10	0,20	10	0,11	10	0,25
16	0,25	16	0,35	16	0,25	16	0,13	16	0,30
20	0,30	20	0,40	20	0,30	20	0,17	20	0,35

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Plant and offices:
Italy - 10088 Volpiano (Torino)
Via Brandizzo, 170
Tel. (39) 011.9884920
Fax (39) 011.9881814
info@fresal.com
www.fresal.com

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