

THE NEW VALUE FRONTIER



SOLID CARBIDE MICRO TOOLS

VHM MIKRO ZERSPANUNGSWERKZEUGE

OUTILS D'USINAGE MICRO CARBURE

MICRO UTENSILI IN METALLO DURO



KYOCERA Microtools

Since 1987, Kyocera has designed and manufactured tight tolerance carbide cutting tools and miniature parts for a broad range of markets including the electronics, industrial, medical and aerospace industries. We offer high-volume CNC grinding consistency and superior surface finishes. Kyocera offers a complete range of micro diameter cutting tools.

Our state-of-the-art facilities include over 65 Swiss-made Rollomatic CNC grinding centers and extensive automated optical inspection (AOI) to ensure quality and consistency. Every tool we build is CAD/CAM designed and has SPC lot traceability as our ISO 9001:2008 and 14001:2004 certifications require.

If you have need for advanced technology, consistent quality and technical support, then Kyocera is the perfect partner for you.



2018 - 2019 KYOCERA Microtools

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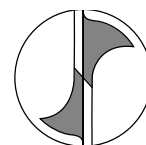
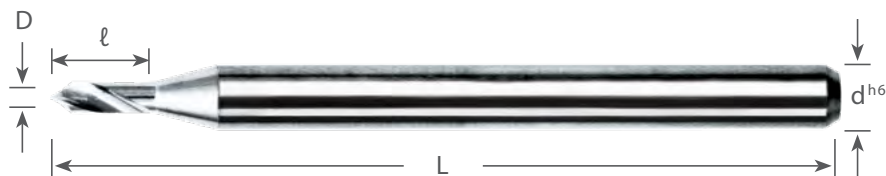
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MR34	74	MICRO REAMERS	MIKRO REIBAHLEN	MICRO ALESOIRS	MICRO ALESATORI
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MIKRO NC ANBOHRER
MICRO FORET A POINTER NC
MICRO PUNTE DA CENTRO



4 Facet Point Geometry



D (mm) +0/-0.008	l (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.15	0.65	3	38	081-0059.90	081-0059L90
0.25	0.90	3	38	081-0098.90	081-0098L90
0.40	1.15	3	38	081-0157.90	081-0157L90
0.50	1.30	3	38	081-0197.90	081-0197L90
1.00	2.30	3	38	081-0394.90	081-0394L90
1.50	5.00	3	38	081-0591.90	081-0591L90
2.00	5.00	3	38	081-0787.90	081-0787L90
3.00	5.00	3	38	081-1181.90	081-1181L90



D (mm) +0/-0.008	l (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.15	0.65	3	38	081-0059.130	081-0059L130
0.25	0.90	3	38	081-0098.130	081-0098L130
0.40	1.15	3	38	081-0157.130	081-0157L130
0.50	1.30	3	38	081-0197.130	081-0197L130
1.00	2.30	3	38	081-0394.130	081-0394L130
1.50	5.00	3	38	081-0591.130	081-0591L130
2.00	5.00	3	38	081-0787.130	081-0787L130
3.00	5.00	3	38	081-1181.130	081-1181L130

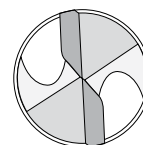
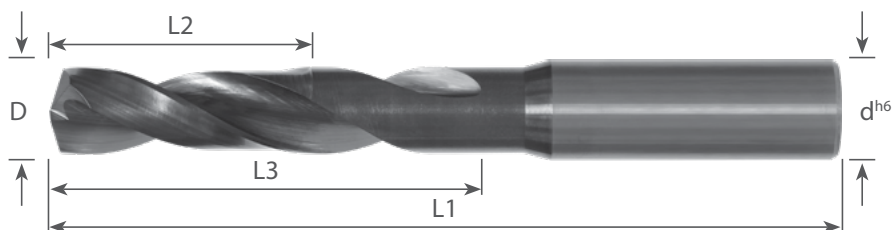
SERIES 081 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆		☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	☆	☆	☆	☆	☆		☆

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER
FORET A GRAND RENDEMENT
PUNTE AD ALTA RENDIMENTO

DRILLS



6 Facet Point Geometry



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

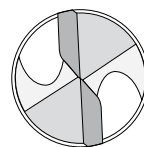
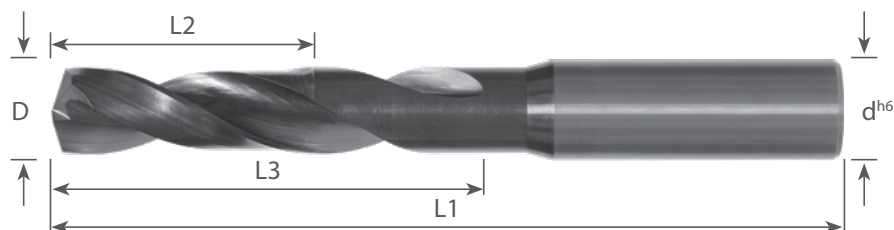
D (mm) m7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	Art. No. (AITiN NANO coated)
1.00	3.00	50.00	3.00	5.00	165-0394AG197
1.10	3.00	50.00	3.30	5.50	165-0433AG217
1.20	3.00	50.00	3.60	6.00	165-0472AG236
1.30	3.00	50.00	3.90	6.50	165-0512AG256
1.40	3.00	50.00	4.20	7.00	165-0551AG276
1.50	3.00	50.00	4.50	7.50	165-0591AG295
1.60	3.00	50.00	4.80	8.00	165-0630AG315
1.70	3.00	50.00	5.10	8.50	165-0669AG335
1.80	3.00	50.00	5.40	9.00	165-0709AG354
1.90	3.00	50.00	5.70	9.50	165-0748AG374
2.00	3.00	50.00	6.00	10.00	165-0787AG394
2.10	3.00	50.00	6.30	10.50	165-0827AG413
2.20	3.00	50.00	6.60	11.00	165-0866AG433
2.30	3.00	50.00	6.90	11.50	165-0906AG453
2.40	3.00	50.00	7.20	12.00	165-0945AG472
2.50	3.00	50.00	7.50	12.50	165-0984AG492
2.60	3.00	50.00	7.80	13.00	165-1024AG512
2.70	3.00	50.00	8.10	13.50	165-1063AG531
2.80	3.00	50.00	8.40	14.00	165-1102AG551
2.90	3.00	50.00	8.70	14.50	165-1142AG571
3.00	4.00	60.00	9.00	15.00	165-1181AG591
3.10	4.00	60.00	9.30	15.50	165-1220AG610
3.20	4.00	60.00	9.60	16.00	165-1260AG630
3.30	4.00	60.00	9.90	16.50	165-1299AG650
3.40	4.00	60.00	10.20	17.00	165-1339AG669
3.50	4.00	60.00	10.50	17.50	165-1378AG689
3.60	4.00	60.00	10.80	18.00	165-1417AG709
3.70	4.00	60.00	11.10	18.50	165-1457AG728
3.80	4.00	60.00	11.40	19.00	165-1496AG748
3.90	4.00	60.00	11.70	19.50	165-1535AG768
4.00	6.00	70.00	12.00	20.00	165-1575AG787
4.10	6.00	70.00	12.30	20.50	165-1614AG807
4.20	6.00	70.00	12.60	21.00	165-1654AG827

*L2 dimensions refers to the Max. length of cut (3 x ØD).
There is a 2 x ØD length at the top of the flute for chip exhaust.

SERIES 165 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AITiN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER
FORET A GRAND RENDEMENT
PUNTE AD ALTA RENDIMENTO



6 Facet Point Geometry

DRILLS



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) m7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	Art. No. (AITIN NANO coated)
4.30	6.00	70.00	12.90	21.50	165-1693AG846
4.40	6.00	70.00	13.20	22.00	165-1732AG866
4.50	6.00	70.00	13.50	22.50	165-1772AG886
4.60	6.00	70.00	13.80	23.00	165-1811AG906
4.70	6.00	70.00	14.10	23.50	165-1850AG925
4.80	6.00	70.00	14.40	24.00	165-1890AG945
4.90	6.00	70.00	14.70	24.50	165-1929AG965
5.00	6.00	70.00	15.00	25.00	165-1969AG984
5.10	6.00	70.00	15.30	25.50	165-2008AG1004
5.20	6.00	70.00	15.60	26.00	165-2047AG1024
5.30	6.00	70.00	15.90	26.50	165-2087AG1043
5.40	6.00	70.00	16.20	27.00	165-2126AG1063
5.50	6.00	70.00	16.50	27.50	165-2165AG1083
5.60	6.00	70.00	16.80	28.00	165-2205AG1102
5.70	6.00	70.00	17.10	28.50	165-2244AG1122
5.80	6.00	70.00	17.40	29.00	165-2283AG1142
5.90	6.00	70.00	17.70	29.50	165-2323AG1161
6.00	8.00	80.00	18.00	30.00	165-2362AG1181
6.10	8.00	80.00	18.30	30.50	165-2402AG1201
6.20	8.00	80.00	18.60	31.00	165-2441AG1220
6.30	8.00	80.00	18.90	31.50	165-2480AG1240
6.40	8.00	80.00	19.20	32.00	165-2520AG1260
6.50	8.00	80.00	19.50	32.50	165-2559AG1280
6.60	8.00	80.00	19.80	33.00	165-2598AG1299
6.70	8.00	80.00	20.10	33.50	165-2638AG1319
6.80	8.00	80.00	20.40	34.00	165-2677AG1339
6.90	8.00	80.00	20.70	34.50	165-2717AG1358
7.00	8.00	80.00	21.00	35.00	165-2756AG1378
7.10	8.00	80.00	21.30	35.50	165-2795AG1398
7.20	8.00	80.00	21.60	36.00	165-2835AG1417
7.30	8.00	80.00	21.90	36.50	165-2874AG1437
7.40	8.00	80.00	22.20	37.00	165-2913AG1457
7.50	8.00	80.00	22.50	37.50	165-2953AG1476

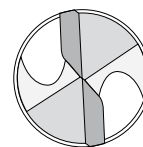
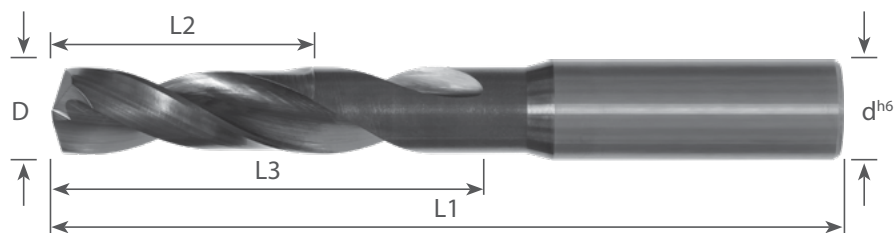
*L2 dimensions refers to the Max. length of cut (3 x ØD).
There is a 2 x ØD length at the top of the flute for chip exhaust.

SERIES 165 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AITIN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER
FORET A GRAND RENDEMENT
PUNTE AD ALTA RENDIMENTO

DRILLS



6 Facet Point Geometry



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

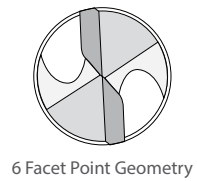
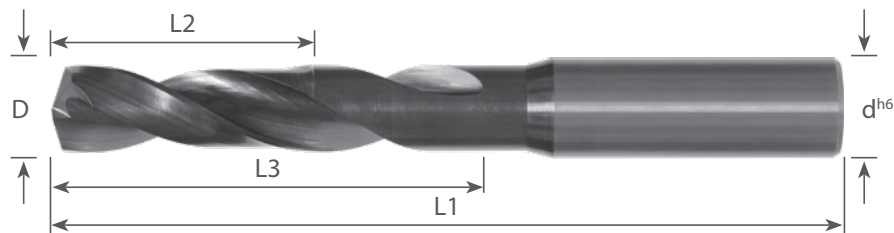
D (mm) m7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	Art. No. (AITIN NANO coated)
7.60	8.00	80.00	22.80	38.00	165-2992AG1496
7.70	8.00	80.00	23.10	38.50	165-3031AG1516
7.80	8.00	80.00	23.40	39.00	165-3071AG1535
7.90	8.00	80.00	23.70	39.50	165-3110AG1555
8.00	10.00	100.00	24.00	40.00	165-3150AG1575
8.10	10.00	100.00	24.30	40.50	165-3189AG1594
8.20	10.00	100.00	24.60	41.00	165-3228AG1614
8.30	10.00	100.00	24.90	41.50	165-3268AG1634
8.40	10.00	100.00	25.20	42.00	165-3307AG1654
8.50	10.00	100.00	25.50	42.50	165-3346AG1673
8.60	10.00	100.00	25.80	43.00	165-3386AG1693
8.70	10.00	100.00	26.10	43.50	165-3425AG1713
8.80	10.00	100.00	26.40	44.00	165-3465AG1732
8.90	10.00	100.00	26.70	44.50	165-3504AG1752
9.00	10.00	100.00	27.00	45.00	165-3543AG1772
9.10	10.00	100.00	27.30	45.50	165-3583AG1791
9.20	10.00	100.00	27.60	46.00	165-3622AG1811
9.30	10.00	100.00	27.90	46.50	165-3661AG1831
9.40	10.00	100.00	28.20	47.00	165-3701AG1850
9.50	10.00	100.00	28.50	47.50	165-3740AG1870
9.60	10.00	100.00	28.80	48.00	165-3780AG1890
9.70	10.00	100.00	29.10	48.50	165-3819AG1909
9.80	10.00	100.00	29.40	49.00	165-3858AG1929
9.90	10.00	100.00	29.70	49.50	165-3898AG1949
10.00	12.00	110.00	30.00	50.00	165-3937AG1969
10.10	12.00	110.00	30.30	50.50	165-3976AG1988
10.20	12.00	110.00	30.60	51.00	165-4016AG2008
10.30	12.00	110.00	30.90	51.50	165-4055AG2028
10.40	12.00	110.00	31.20	52.00	165-4094AG2047
10.50	12.00	110.00	31.50	52.50	165-4134AG2067
10.60	12.00	110.00	31.80	53.00	165-4173AG2087
10.70	12.00	110.00	32.10	53.50	165-4213AG2106
10.80	12.00	110.00	32.40	54.00	165-4252AG2126

*L2 dimensions refers to the Max. length of cut (3 x ØD).
There is a 2 x ØD length at the top of the flute for chip exhaust.

SERIES 165 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AITIN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER
FORET A GRAND RENDEMENT
PUNTE AD ALTA RENDIMENTO



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) m7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	Art. No. (AITiN NANO coated)
10.90	12.00	110.00	32.70	54.50	165-4291AG2146
11.00	12.00	110.00	33.00	55.00	165-4331AG2165
11.10	12.00	110.00	33.30	55.50	165-4370AG2185
11.20	12.00	110.00	33.60	56.00	165-4409AG2205
11.30	12.00	110.00	33.90	56.50	165-4449AG2224
11.40	12.00	110.00	34.20	57.00	165-4488AG2244
11.50	12.00	110.00	34.50	57.50	165-4528AG2264
11.60	12.00	110.00	34.80	58.00	165-4567AG2283
11.70	12.00	110.00	35.10	58.50	165-4606AG2303
11.80	12.00	110.00	35.40	59.00	165-4646AG2323
11.90	12.00	110.00	35.70	59.50	165-4685AG2343
12.00	14.00	110.00	36.00	60.00	165-4724AG2362

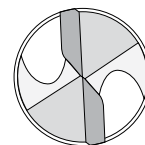
*L2 dimensions refers to the Max. length of cut (3 x ØD).
There is a 2 x ØD length at the top of the flute for chip exhaust.

SERIES 165 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AITiN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER
FORET A GRAND RENDEMENT
PUNTE AD ALTA RENDIMENTO

DRILLS



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

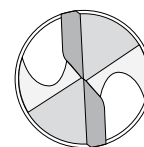
D (mm) m7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	Art. No. (AITIN NANO coated)
1.00	3.00	60.00	5.00	0.276	165-0394AG276
1.10	3.00	60.00	5.50	0.303	165-0433AG303
1.20	3.00	60.00	6.00	0.331	165-0472AG331
1.30	3.00	60.00	6.50	0.358	165-0512AG358
1.40	3.00	60.00	7.00	0.386	165-0551AG386
1.50	3.00	60.00	7.50	10.50	165-0591AG413
1.60	3.00	60.00	8.00	11.20	165-0630AG441
1.70	3.00	60.00	8.50	11.90	165-0669AG469
1.80	3.00	60.00	9.00	12.60	165-0709AG496
1.90	3.00	60.00	9.50	13.30	165-0748AG524
2.00	3.00	60.00	10.00	14.00	165-0787AG551
2.10	3.00	60.00	10.50	14.70	165-0827AG579
2.20	3.00	60.00	11.00	15.40	165-0866AG606
2.30	3.00	60.00	11.50	16.10	165-0906AG634
2.40	3.00	60.00	12.00	16.80	165-0945AG661
2.50	3.00	60.00	12.50	17.50	165-0984AG689
2.60	3.00	60.00	13.00	18.20	165-1024AG717
2.70	3.00	60.00	13.50	18.90	165-1063AG744
2.80	3.00	60.00	14.00	19.60	165-1102AG772
2.90	3.00	60.00	14.50	20.30	165-1142AG799
3.00	4.00	70.00	15.00	21.00	165-1181AG827
3.10	4.00	70.00	15.50	21.70	165-1220AG854
3.20	4.00	70.00	16.00	22.40	165-1260AG882
3.30	4.00	70.00	16.50	23.10	165-1299AG909
3.40	4.00	70.00	17.00	23.80	165-1339AG937
3.50	4.00	70.00	17.50	24.50	165-1378AG965
3.60	4.00	70.00	18.00	25.20	165-1417AG992
3.70	4.00	70.00	18.50	25.90	165-1457AG1020
3.80	4.00	70.00	19.00	26.60	165-1496AG1047
3.90	4.00	70.00	19.50	27.30	165-1535AG1075
4.00	6.00	90.00	20.00	28.00	165-1575AG1102
4.10	6.00	90.00	20.50	28.70	165-1614AG1130
4.20	6.00	90.00	21.00	29.40	165-1654AG1157

*L2 dimensions refers to the Max. length of cut (5 x ØD).
There is a 2 x ØD length at the top of the flute for chip exhaust.

SERIES 165 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AITIN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER
FORET A GRAND RENDEMENT
PUNTE AD ALTA RENDIMENTO



DRILLS



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) m7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	Art. No. (AITiN NANO coated)
4.30	6.00	90.00	21.50	30.10	165-1693AG1185
4.40	6.00	90.00	22.00	30.80	165-1732AG1213
4.50	6.00	90.00	22.50	31.50	165-1772AG1240
4.60	6.00	90.00	23.00	32.20	165-1811AG1268
4.70	6.00	90.00	23.50	32.90	165-1850AG1295
4.80	6.00	90.00	24.00	33.60	165-1890AG1323
4.90	6.00	90.00	24.50	34.30	165-1929AG1350
5.00	6.00	90.00	25.00	35.00	165-1969AG1378
5.10	6.00	90.00	25.50	35.70	165-2008AG1406
5.20	6.00	90.00	26.00	36.40	165-2047AG1433
5.30	6.00	90.00	26.50	37.10	165-2087AG1461
5.40	6.00	90.00	27.00	37.80	165-2126AG1488
5.50	6.00	90.00	27.50	38.50	165-2165AG1516
5.60	6.00	90.00	28.00	39.20	165-2205AG1543
5.70	6.00	90.00	28.50	39.90	165-2244AG1571
5.80	6.00	90.00	29.00	40.60	165-2283AG1598
5.90	6.00	90.00	29.50	41.30	165-2323AG1626
6.00	8.00	100.00	30.00	42.00	165-2362AG1654
6.10	8.00	100.00	30.50	42.70	165-2402AG1681
6.20	8.00	100.00	31.00	43.40	165-2441AG1709
6.30	8.00	100.00	31.50	44.10	165-2480AG1736
6.40	8.00	100.00	32.00	44.80	165-2520AG1764
6.50	8.00	100.00	32.50	45.50	165-2559AG1791
6.60	8.00	100.00	33.00	46.20	165-2598AG1819
6.70	8.00	100.00	33.50	46.90	165-2638AG1846
6.80	8.00	100.00	34.00	47.60	165-2677AG1874
6.90	8.00	100.00	34.50	48.30	165-2717AG1902
7.00	8.00	100.00	35.00	49.00	165-2756AG1929
7.10	8.00	100.00	35.50	49.70	165-2795AG1957
7.20	8.00	100.00	36.00	50.40	165-2835AG1984
7.30	8.00	100.00	36.50	51.10	165-2874AG2012
7.40	8.00	100.00	37.00	51.80	165-2913AG2039
7.50	8.00	100.00	37.50	52.50	165-2953AG2067

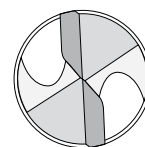
*L2 dimensions refers to the Max. length of cut (5 x ØD).
There is a 2 x ØD length at the top of the flute for chip exhaust.

SERIES 165 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AITiN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER
FORET A GRAND RENDEMENT
PUNTE AD ALTA RENDIMENTO

DRILLS



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

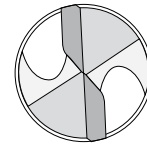
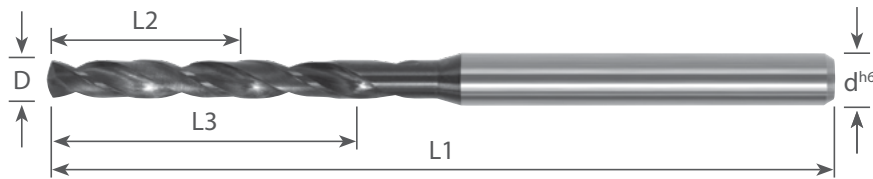
D (mm) m7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	Art. No. (AITiN NANO coated)
7.60	8.00	100.00	38.00	53.20	165-2992AG2094
7.70	8.00	100.00	38.50	53.90	165-3031AG2122
7.80	8.00	100.00	39.00	54.60	165-3071AG2150
7.90	8.00	100.00	39.50	55.30	165-3110AG2177
8.00	10.00	120.00	40.00	56.00	165-3150AG2205
8.10	10.00	120.00	40.50	56.70	165-3189AG2232
8.20	10.00	120.00	41.00	57.40	165-3228AG2260
8.30	10.00	120.00	41.50	58.10	165-3268AG2287
8.40	10.00	120.00	42.00	58.80	165-3307AG2315
8.50	10.00	120.00	42.50	59.50	165-3346AG2343
8.60	10.00	120.00	43.00	60.20	165-3386AG2370
8.70	10.00	120.00	43.50	60.90	165-3425AG2398
8.80	10.00	120.00	44.00	61.60	165-3465AG2425
8.90	10.00	120.00	44.50	62.30	165-3504AG2453
9.00	10.00	120.00	45.00	63.00	165-3543AG2480
9.10	10.00	120.00	45.50	63.70	165-3583AG2508
9.20	10.00	120.00	46.00	64.40	165-3622AG2535
9.30	10.00	120.00	46.50	65.10	165-3661AG2563
9.40	10.00	120.00	47.00	65.80	165-3701AG2591
9.50	10.00	120.00	47.50	66.50	165-3740AG2618
9.60	10.00	120.00	48.00	67.20	165-3780AG2646
9.70	10.00	120.00	48.50	67.90	165-3819AG2673
9.80	10.00	120.00	49.00	68.60	165-3858AG2701
9.90	10.00	120.00	49.50	69.30	165-3898AG2728
10.00	12.00	140.00	50.00	70.00	165-3937AG2756
10.10	12.00	140.00	50.50	70.70	165-3976AG2783
10.20	12.00	140.00	51.00	71.40	165-4016AG2811
10.30	12.00	140.00	51.50	72.10	165-4055AG2839
10.40	12.00	140.00	52.00	72.80	165-4094AG2866
10.50	12.00	140.00	52.50	73.50	165-4134AG2894
10.60	12.00	140.00	53.00	74.20	165-4173AG2921
10.70	12.00	140.00	53.50	74.90	165-4213AG2949
10.80	12.00	140.00	54.00	75.60	165-4252AG2976

*L2 dimensions refers to the Max. length of cut (5 x ØD).
There is a 2 x ØD length at the top of the flute for chip exhaust.

SERIES 165 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AITiN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER
FORET A GRAND RENDEMENT
PUNTE AD ALTA RENDIMENTO



DRILLS



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) m7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	Art. No. (AITiN NANO coated)
10.90	12.00	140.00	54.50	76.30	165-4291AG3004
11.00	12.00	140.00	55.00	77.00	165-4331AG3031
11.10	12.00	140.00	55.50	77.70	165-4370AG3059
11.20	12.00	140.00	56.00	78.40	165-4409AG3087
11.30	12.00	140.00	56.50	79.10	165-4449AG3114
11.40	12.00	140.00	57.00	79.80	165-4488AG3142
11.50	12.00	140.00	57.50	80.50	165-4528AG3169
11.60	12.00	140.00	58.00	81.20	165-4567AG3197
11.70	12.00	140.00	58.50	81.90	165-4606AG3224
11.80	12.00	140.00	59.00	82.60	165-4646AG3252
11.90	12.00	140.00	59.50	83.30	165-4685AG3280
12.00	14.00	140.00	60.00	84.00	165-4724AG3307

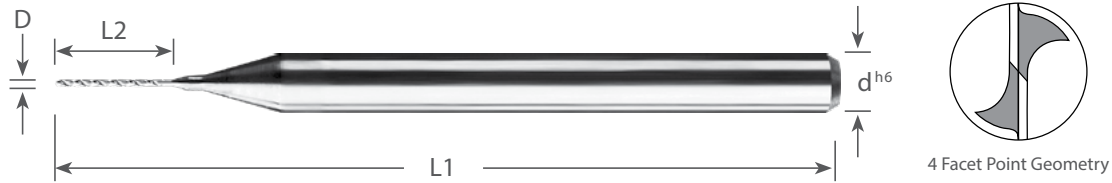
*L2 dimensions refers to the Max. length of cut (5 x ØD).
There is a 2 x ØD length at the top of the flute for chip exhaust.

SERIES 165 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AITiN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER
MICRO FORET
MICRO PUNTE

DRILLS



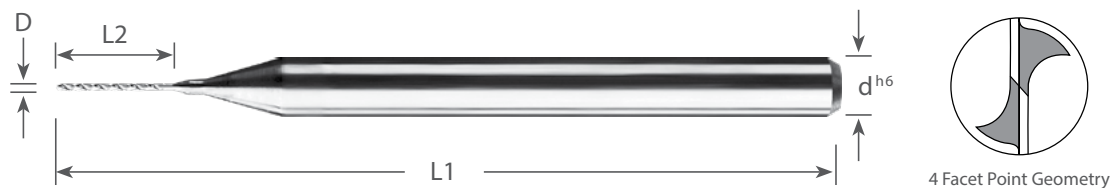
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.04	3	38	0.5	226-0016.020	
0.045	3	38	0.65	226-0018.025	
0.05	3	38	0.8	226-0020.030	
0.06	3	38	0.8	226-0024.030	
0.07	3	38	1.3	226-0028.050	
0.08	3	38	1.3	226-0031.050	
0.09	3	38	1.3	226-0035.050	
0.10	3	38	1.2	226-0039.040	
0.11	3	38	1.2	226-0043.040	
0.12	3	38	1.2	226-0047.040	
0.13	3	38	1.2	226-0051.040	
0.14	3	38	2.2	226-0055.040	
0.15	3	38	2.2	226-0059.080	
0.16	3	38	2.2	226-0063.080	
0.17	3	38	2.2	226-0067.080	
0.18	3	38	2.7	226-0071.100	
0.19	3	38	2.7	226-0075.100	
0.20	3	38	2.7	226-0079.100	
0.21	3	38	2.7	226-0083.100	
0.22	3	38	2.7	226-0087.100	
0.23	3	38	4.0	226-0091.150	
0.24	3	38	4.0	226-0094.150	
0.25	3	38	4.0	226-0098.150	226-0098L150
0.26	3	38	4.0	226-0102.150	226-0102L150
0.27	3	38	4.0	226-0106.150	226-0106L150
0.28	3	38	4.0	226-0110.150	226-0110L150
0.29	3	38	4.0	226-0114.150	226-0114L150
0.30	3	38	5.9	226-0118.225	226-0118L225
0.31	3	38	5.9	226-0122.225	226-0122L225
0.32	3	38	5.9	226-0126.225	226-0126L225
0.33	3	38	5.9	226-0130.225	226-0130L225
0.34	3	38	5.9	226-0134.225	226-0134L225

SERIES 226 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER
MICRO FORET
MICRO PUNTE



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

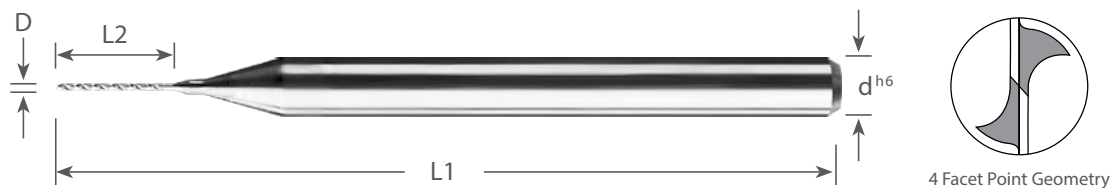
D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.35	3	38	5.7	226-0138.225	226-0138L225
0.36	3	38	5.7	226-0142.225	226-0142L225
0.37	3	38	5.7	226-0146.225	226-0146L225
0.38	3	38	6.4	226-0150.250	226-0150L250
0.39	3	38	6.4	226-0154.250	226-0154L250
0.40	3	38	6.4	226-0157.250	226-0157L250
0.41	3	38	6.4	226-0161.250	226-0161L250
0.42	3	38	6.4	226-0165.250	226-0165L250
0.43	3	38	6.4	226-0169.250	226-0169L250
0.44	3	38	6.4	226-0173.250	226-0173L250
0.45	3	38	6.4	226-0177.250	226-0177L250
0.46	3	38	6.4	226-0181.250	226-0181L250
0.47	3	38	6.4	226-0185.250	226-0185L250
0.48	3	38	6.6	226-0189.260	226-0189L260
0.49	3	38	6.6	226-0193.260	226-0193L260
0.50	3	38	6.6	226-0197.260	226-0197L260
0.51	3	38	6.6	226-0201.260	226-0201L260
0.52	3	38	6.6	226-0205.260	226-0205L260
0.53	3	38	6.6	226-0209.260	226-0209L260
0.54	3	38	6.6	226-0213.260	226-0213L260
0.55	3	38	8.6	226-0217.340	226-0217L340
0.56	3	38	8.6	226-0220.340	226-0220L340
0.57	3	38	8.6	226-0224.340	226-0224L340
0.58	3	38	8.6	226-0228.340	226-0228L340
0.59	3	38	8.6	226-0232.340	226-0232L340
0.60	3	38	8.6	226-0236.340	226-0236L340
0.61	3	38	8.6	226-0240.340	226-0240L340
0.62	3	38	8.6	226-0244.340	226-0244L340
0.63	3	38	8.6	226-0248.340	226-0248L340
0.64	3	38	8.6	226-0252.340	226-0252L340
0.65	3	38	8.6	226-0256.340	226-0256L340
0.66	3	38	8.6	226-0260.340	226-0260L340
0.67	3	38	8.6	226-0264.340	226-0264L340
0.68	3	38	8.6	226-0268.340	226-0268L340
0.69	3	38	8.6	226-0272.340	226-0272L340
0.70	3	38	10.2	226-0276.400	226-0276L400
0.71	3	38	10.2	226-0280.400	226-0280L400
0.72	3	38	10.2	226-0283.400	226-0283L400
0.73	3	38	10.2	226-0287.400	226-0287L400

SERIES 226 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

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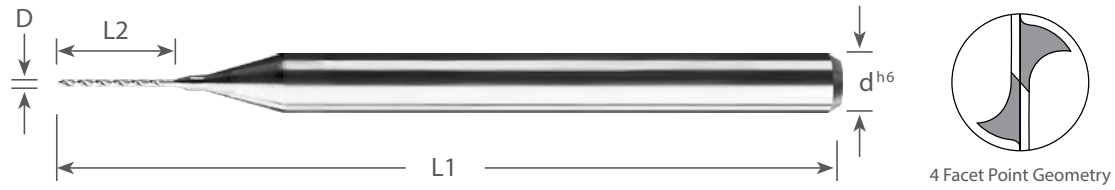
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.74	3	38	10.2	226-0291.400	226-0291L400
0.75	3	38	10.2	226-0295.400	226-0295L400
0.76	3	38	10.2	226-0299.400	226-0299L400
0.77	3	38	10.2	226-0303.400	226-0303L400
0.78	3	38	10.2	226-0307.400	226-0307L400
0.79	3	38	10.2	226-0311.400	226-0311L400
0.80	3	38	10.2	226-0315.400	226-0315L400
0.81	3	38	10.2	226-0319.400	226-0319L400
0.82	3	38	10.2	226-0323.400	226-0323L400
0.83	3	38	10.2	226-0327.400	226-0327L400
0.84	3	38	10.2	226-0331.400	226-0331L400
0.85	3	38	10.2	226-0335.400	226-0335L400
0.86	3	38	10.2	226-0339.400	226-0339L400
0.87	3	38	10.2	226-0343.400	226-0343L400
0.88	3	38	10.2	226-0346.400	226-0346L400
0.89	3	38	10.2	226-0350.400	226-0350L400
0.90	3	38	10.2	226-0354.400	226-0354L400
0.91	3	38	10.2	226-0358.400	226-0358L400
0.92	3	38	10.2	226-0362.400	226-0362L400
0.93	3	38	10.2	226-0366.400	226-0366L400
0.94	3	38	10.2	226-0370.400	226-0370L400
0.95	3	38	10.2	226-0374.400	226-0374L400
0.96	3	38	10.2	226-0378.400	226-0378L400
0.97	3	38	10.2	226-0382.400	226-0382L400
0.98	3	38	10.2	226-0386.400	226-0386L400
0.99	3	38	10.2	226-0390.400	226-0390L400
1.00	3	38	10.2	226-0394.400	226-0394L400
1.01	3	38	10.2	226-0398.400	226-0398L400
1.02	3	38	10.2	226-0402.400	226-0402L400
1.03	3	38	10.2	226-0406.400	226-0406L400
1.04	3	38	10.2	226-0409.400	226-0409L400
1.05	3	38	10.2	226-0413.400	226-0413L400
1.06	3	38	10.2	226-0417.400	226-0417L400
1.07	3	38	10.2	226-0421.400	226-0421L400
1.08	3	38	10.2	226-0425.400	226-0425L400
1.09	3	38	10.2	226-0429.400	226-0429L400
1.10	3	38	10.2	226-0433.400	226-0433L400
1.11	3	38	10.2	226-0437.400	226-0437L400
1.12	3	38	10.2	226-0441.400	226-0441L400

SERIES 226 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated						☆	☆	★	☆	★	★	★			☆

★ : Priority Materials ☆ : Applicable Materials

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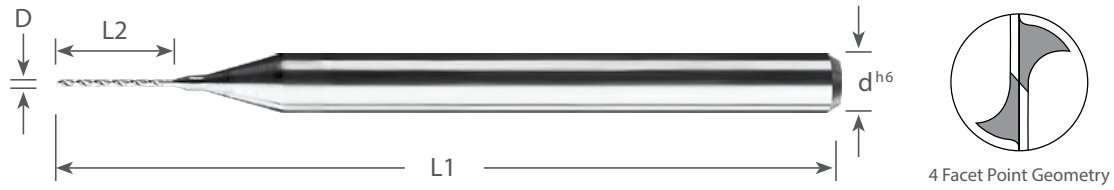
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
1.13	3	38	10.2	226-0445.400	226-0445L400
1.14	3	38	10.2	226-0449.400	226-0449L400
1.15	3	38	10.2	226-0453.400	226-0453L400
1.16	3	38	10.2	226-0457.400	226-0457L400
1.17	3	38	10.2	226-0461.400	226-0461L400
1.18	3	38	10.2	226-0465.400	226-0465L400
1.19	3	38	10.2	226-0469.400	226-0469L400
1.20	3	38	10.2	226-0472.400	226-0472L400
1.21	3	38	10.2	226-0476.400	226-0476L400
1.22	3	38	10.2	226-0480.400	226-0480L400
1.23	3	38	10.2	226-0484.400	226-0484L400
1.24	3	38	10.2	226-0488.400	226-0488L400
1.25	3	38	10.2	226-0492.400	226-0492L400
1.26	3	38	10.2	226-0496.400	226-0496L400
1.27	3	38	10.2	226-0500.400	226-0500L400
1.28	3	38	10.2	226-0504.400	226-0504L400
1.29	3	38	10.2	226-0508.400	226-0508L400
1.30	3	38	10.2	226-0512.400	226-0512L400
1.31	3	38	10.2	226-0516.400	226-0516L400
1.32	3	38	10.2	226-0520.400	226-0520L400
1.33	3	38	10.2	226-0524.400	226-0524L400
1.34	3	38	10.2	226-0528.400	226-0528L400
1.35	3	38	10.2	226-0531.400	226-0531L400
1.36	3	38	10.2	226-0535.400	226-0535L400
1.37	3	38	10.2	226-0539.400	226-0539L400
1.38	3	38	10.2	226-0543.400	226-0543L400
1.39	3	38	10.2	226-0547.400	226-0547L400
1.40	3	38	10.2	226-0551.400	226-0551L400
1.41	3	38	10.2	226-0555.400	226-0555L400
1.42	3	38	10.2	226-0559.400	226-0559L400
1.43	3	38	10.2	226-0563.400	226-0563L400
1.44	3	38	10.2	226-0567.400	226-0567L400
1.45	3	38	10.2	226-0571.400	226-0571L400
1.46	3	38	10.2	226-0575.400	226-0575L400
1.47	3	38	10.2	226-0579.400	226-0579L400
1.48	3	38	10.2	226-0583.400	226-0583L400
1.49	3	38	10.2	226-0587.400	226-0587L400
1.50	3	38	10.2	226-0591.400	226-0591L400
1.51	3	38	10.2	226-0594.400	226-0594L400

SERIES 226 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30-40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel/ Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

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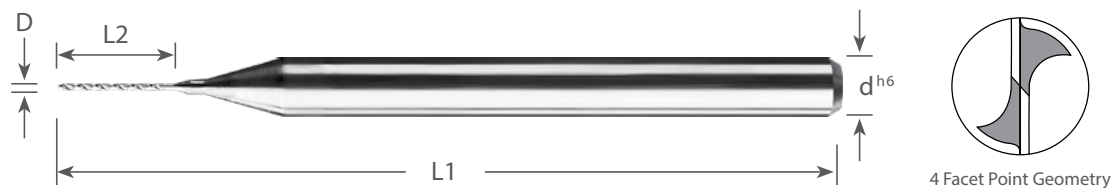
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
1.52	3	38	10.2	226-0598.400	226-0598L400
1.53	3	38	10.2	226-0602.400	226-0602L400
1.54	3	38	10.2	226-0606.400	226-0606L400
1.55	3	38	10.2	226-0610.400	226-0610L400
1.56	3	38	10.2	226-0614.400	226-0614L400
1.57	3	38	10.2	226-0618.400	226-0618L400
1.58	3	38	10.2	226-0622.400	226-0622L400
1.59	3	38	10.2	226-0626.400	226-0626L400
1.60	3	38	10.2	226-0630.400	226-0630L400
1.61	3	38	10.2	226-0634.400	226-0634L400
1.62	3	38	10.2	226-0638.400	226-0638L400
1.63	3	38	10.2	226-0642.400	226-0642L400
1.64	3	38	10.2	226-0646.400	226-0646L400
1.65	3	38	10.2	226-0650.400	226-0650L400
1.66	3	38	10.2	226-0654.400	226-0654L400
1.67	3	38	10.2	226-0657.400	226-0657L400
1.68	3	38	10.2	226-0661.400	226-0661L400
1.69	3	38	10.2	226-0665.400	226-0665L400
1.70	3	38	10.2	226-0669.400	226-0669L400
1.71	3	38	10.2	226-0673.400	226-0673L400
1.72	3	38	10.2	226-0677.400	226-0677L400
1.73	3	38	10.2	226-0681.400	226-0681L400
1.74	3	38	10.2	226-0685.400	226-0685L400
1.75	3	38	10.2	226-0689.400	226-0689L400
1.76	3	38	10.2	226-0693.400	226-0693L400
1.77	3	38	10.2	226-0697.400	226-0697L400
1.78	3	38	10.2	226-0701.400	226-0701L400
1.79	3	38	10.2	226-0705.400	226-0705L400
1.80	3	38	10.2	226-0709.400	226-0709L400
1.81	3	38	10.2	226-0713.400	226-0713L400
1.82	3	38	10.2	226-0717.400	226-0717L400
1.83	3	38	10.2	226-0720.400	226-0720L400
1.84	3	38	10.2	226-0724.400	226-0724L400
1.85	3	38	10.2	226-0728.400	226-0728L400
1.86	3	38	10.2	226-0732.400	226-0732L400
1.87	3	38	10.2	226-0736.400	226-0736L400
1.88	3	38	10.2	226-0740.400	226-0740L400
1.89	3	38	10.2	226-0744.400	226-0744L400
1.90	3	38	10.2	226-0748.400	226-0748L400

SERIES 226 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

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Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

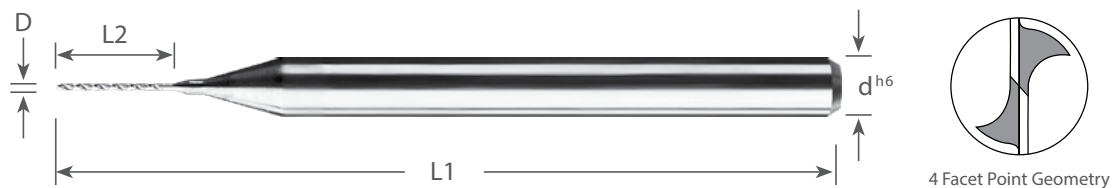
D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
1.91	3	38	10.2	226-0752.400	226-0752L400
1.92	3	38	10.2	226-0756.400	226-0756L400
1.93	3	38	10.2	226-0760.400	226-0760L400
1.94	3	38	10.2	226-0764.400	226-0764L400
1.95	3	38	10.2	226-0768.400	226-0768L400
1.96	3	38	10.2	226-0772.400	226-0772L400
1.97	3	38	10.2	226-0776.400	226-0776L400
1.98	3	38	10.2	226-0780.400	226-0780L400
1.99	3	38	10.2	226-0783.400	226-0783L400
2.00	3	38	10.2	226-0787.400	226-0787L400
2.01	3	38	10.2	226-0791.400	226-0791L400
2.02	3	38	10.2	226-0795.400	226-0795L400
2.03	3	38	10.2	226-0799.400	226-0799L400
2.04	3	38	10.2	226-0803.400	226-0803L400
2.05	3	38	10.2	226-0807.400	226-0807L400
2.06	3	38	10.2	226-0811.400	226-0811L400
2.07	3	38	10.2	226-0815.400	226-0815L400
2.08	3	38	10.2	226-0819.400	226-0819L400
2.09	3	38	10.2	226-0823.400	226-0823L400
2.10	3	38	10.2	226-0827.400	226-0827L400
2.11	3	38	10.2	226-0831.400	226-0831L400
2.12	3	38	10.2	226-0835.400	226-0835L400
2.13	3	38	10.2	226-0839.400	226-0839L400
2.14	3	38	10.2	226-0843.400	226-0843L400
2.15	3	38	10.2	226-0846.400	226-0846L400
2.16	3	38	10.2	226-0850.400	226-0850L400
2.17	3	38	10.2	226-0854.400	226-0854L400
2.18	3	38	10.2	226-0858.400	226-0858L400
2.19	3	38	10.2	226-0862.400	226-0862L400
2.20	3	38	10.2	226-0866.400	226-0866L400
2.21	3	38	10.2	226-0870.400	226-0870L400
2.22	3	38	10.2	226-0874.400	226-0874L400
2.23	3	38	10.2	226-0878.400	226-0878L400
2.24	3	38	10.2	226-0882.400	226-0882L400
2.25	3	38	10.2	226-0886.400	226-0886L400
2.26	3	38	10.2	226-0890.400	226-0890L400
2.27	3	38	10.2	226-0894.400	226-0894L400
2.28	3	38	10.2	226-0898.400	226-0898L400
2.29	3	38	10.2	226-0902.400	226-0902L400

SERIES 226 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30-40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

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DRILLS



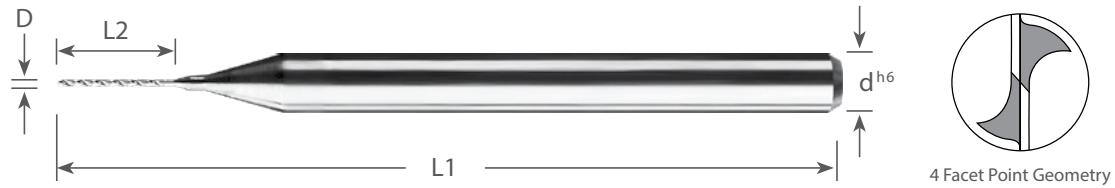
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
2.30	3	38	10.2	226-0906.400	226-0906L400
2.31	3	38	10.2	226-0909.400	226-0909L400
2.32	3	38	10.2	226-0913.400	226-0913L400
2.33	3	38	10.2	226-0917.400	226-0917L400
2.34	3	38	10.2	226-0921.400	226-0921L400
2.35	3	38	10.2	226-0925.400	226-0925L400
2.36	3	38	10.2	226-0929.400	226-0929L400
2.37	3	38	10.2	226-0933.400	226-0933L400
2.38	3	38	10.2	226-0937.400	226-0937L400
2.39	3	38	10.2	226-0941.400	226-0941L400
2.40	3	38	10.2	226-0945.400	226-0945L400
2.41	3	38	10.2	226-0949.400	226-0949L400
2.42	3	38	10.2	226-0953.400	226-0953L400
2.43	3	38	10.2	226-0957.400	226-0957L400
2.44	3	38	10.2	226-0961.400	226-0961L400
2.45	3	38	10.2	226-0965.400	226-0965L400
2.46	3	38	10.2	226-0969.400	226-0969L400
2.47	3	38	10.2	226-0972.400	226-0972L400
2.48	3	38	10.2	226-0976.400	226-0976L400
2.49	3	38	10.2	226-0980.400	226-0980L400
2.50	3	38	10.2	226-0984.400	226-0984L400
2.51	3	38	10.2	226-0988.400	226-0988L400
2.52	3	38	10.2	226-0992.400	226-0992L400
2.53	3	38	10.2	226-0996.400	226-0996L400
2.54	3	38	10.2	226-1000.400	226-1000L400
2.55	3	38	10.2	226-1004.400	226-1004L400
2.56	3	38	10.2	226-1008.400	226-1008L400
2.57	3	38	10.2	226-1012.400	226-1012L400
2.58	3	38	10.2	226-1016.400	226-1016L400
2.59	3	38	10.2	226-1020.400	226-1020L400
2.60	3	38	10.2	226-1024.400	226-1024L400
2.61	3	38	10.2	226-1028.400	226-1028L400
2.62	3	38	10.2	226-1031.400	226-1031L400
2.63	3	38	10.2	226-1035.400	226-1035L400
2.64	3	38	10.2	226-1039.400	226-1039L400
2.65	3	38	10.2	226-1043.400	226-1043L400
2.66	3	38	10.2	226-1047.400	226-1047L400
2.67	3	38	10.2	226-1051.400	226-1051L400
2.68	3	38	10.2	226-1055.400	226-1055L400

SERIES 226 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

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MICRO FORET
MICRO PUNTE



DRILLS



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

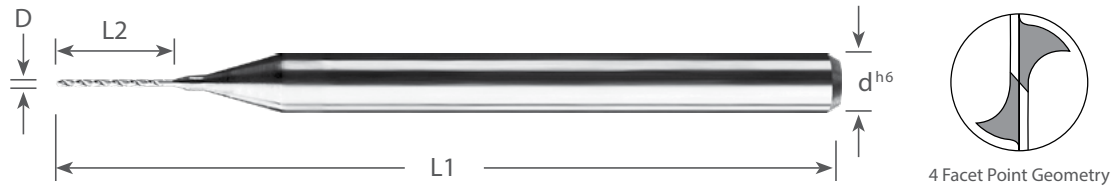
D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
2.69	3	38	10.2	226-1059.400	226-1059L400
2.70	3	38	10.2	226-1063.400	226-1063L400
2.71	3	38	10.2	226-1067.400	226-1067L400
2.72	3	38	10.2	226-1071.400	226-1071L400
2.73	3	38	10.2	226-1075.400	226-1075L400
2.74	3	38	10.2	226-1079.400	226-1079L400
2.75	3	38	10.2	226-1083.400	226-1083L400
2.76	3	38	10.2	226-1087.400	226-1087L400
2.77	3	38	10.2	226-1091.400	226-1091L400
2.78	3	38	10.2	226-1094.400	226-1094L400
2.79	3	38	10.2	226-1098.400	226-1098L400
2.80	3	38	10.2	226-1102.400	226-1102L400
2.81	3	38	10.2	226-1106.400	226-1106L400
2.82	3	38	10.2	226-1110.400	226-1110L400
2.83	3	38	10.2	226-1114.400	226-1114L400
2.84	3	38	10.2	226-1118.400	226-1118L400
2.85	3	38	10.2	226-1122.400	226-1122L400
2.86	3	38	10.2	226-1126.400	226-1126L400
2.87	3	38	10.2	226-1130.400	226-1130L400
2.88	3	38	10.2	226-1134.400	226-1134L400
2.89	3	38	10.2	226-1138.400	226-1138L400
2.90	3	38	10.2	226-1142.400	226-1142L400
2.91	3	38	10.2	226-1146.400	226-1146L400
2.92	3	38	10.2	226-1150.400	226-1150L400
2.93	3	38	10.2	226-1154.400	226-1154L400
2.94	3	38	10.2	226-1157.400	226-1157L400
2.95	3	38	10.2	226-1161.400	226-1161L400
2.96	3	38	10.2	226-1165.400	226-1165L400
2.97	3	38	10.2	226-1169.400	226-1169L400
2.98	3	38	10.2	226-1173.400	226-1173L400
2.99	3	38	10.2	226-1177.400	226-1177L400
3.00	3	38	10.2	226-1181.400	226-1181L400

SERIES 226 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER
MICRO FORET
MICRO PUNTE

DRILLS



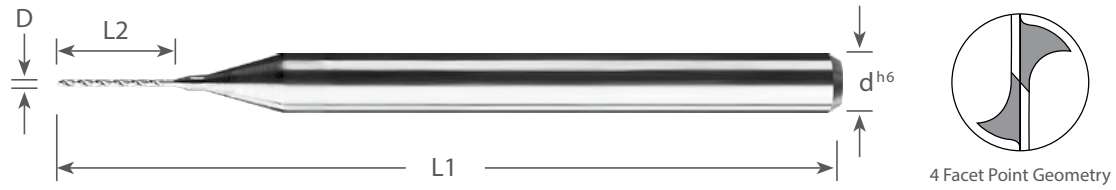
Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.75	3	50	11.0	226-0295.433	226-0295L433
0.80	3	50	11.0	226-0315.433	226-0315L433
0.85	3	50	13.0	226-0335.512	226-0335L512
0.90	3	50	13.0	226-0354.512	226-0354L512
0.95	3	50	15.0	226-0374.591	226-0374L591
1.00	3	50	15.0	226-0394.591	226-0394L591
1.05	3	50	17.0	226-0413.670	226-0413L670
1.10	3	50	17.0	226-0433.670	226-0433L670
1.15	3	50	17.0	226-0453.670	226-0453L670
1.20	3	50	17.0	226-0472.670	226-0472L670
1.25	3	50	19.0	226-0492.749	226-0492L749
1.30	3	50	19.0	226-0512.749	226-0512L749
1.35	3	50	19.0	226-0531.749	226-0531L749
1.40	3	50	19.0	226-0551.749	226-0551L749
1.45	3	50	20.0	226-0571.788	226-0571L788
1.50	3	50	20.0	226-0591.788	226-0591L788
1.55	3	50	20.0	226-0610.788	226-0610L788
1.60	3	50	20.0	226-0630.788	226-0630L788
1.65	3	50	20.0	226-0650.788	226-0650L788
1.70	3	50	20.0	226-0669.788	226-0669L788
1.75	3	50	20.0	226-0689.788	226-0689L788
1.80	3	50	20.0	226-0709.788	226-0709L788
1.85	3	50	22.8	226-0728.898	226-0728L898
1.90	3	60	22.8	226-0748.898	226-0748L898
1.95	3	60	23.4	226-0768.945	226-0768L945
2.00	3	60	24.0	226-0787.945	226-0787L945
2.05	3	60	24.6	226-0807.992	226-0807L992
2.10	3	60	25.2	226-0827.992	226-0827L992
2.15	3	60	25.8	226-0846.1039	226-0846L1039
2.20	3	60	26.4	226-0866.1039	226-0866L1039
2.25	3	60	27.0	226-0886.1087	226-0886L1087
2.30	3	60	27.6	226-0906.1087	226-0906L1087
2.35	3	60	28.2	226-0925.1134	226-0925L1134
2.40	3	60	28.8	226-0945.1134	226-0945L1134
2.45	3	60	29.4	226-0965.1181	226-0965L1181
2.50	3	60	30.0	226-0984.1181	226-0984L1181
2.55	3	60	30.6	226-1004.1228	226-1004L1228
2.60	3	60	31.2	226-1024.1228	226-1024L1228
2.65	3	60	31.8	226-1043.1276	226-1043L1276

SERIES 226 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER
MICRO FORET
MICRO PUNTE



DRILLS



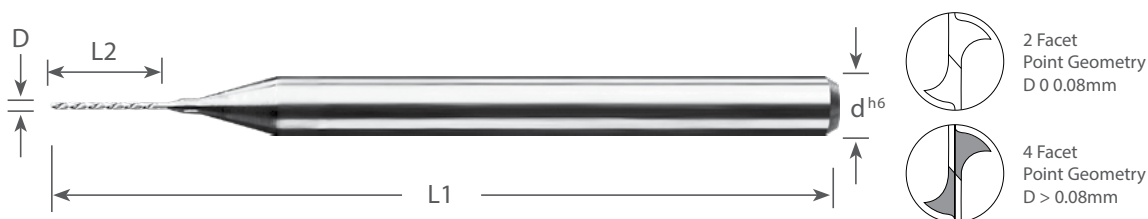
Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
2.70	3	60	32.4	226-1063.1276	226-1063L1276
2.75	3	60	33.0	226-1083.1299	226-1083L1299
2.80	3	60	33.6	226-1102.1323	226-1102L1323
2.85	3	60	34.2	226-1122.1346	226-1122L1346
2.90	3	60	34.8	226-1142.1370	226-1142L1370
2.95	3	60	35.4	226-1161.1394	226-1161L1394
3.00	3	60	36.0	226-1181.1417	226-1181L1417

SERIES 226 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30-40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆		☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER / LINKSSCHNEIDEND
MICRO FORET / COUPE A GAUCHE
MICRO PUNTE / ESECUZIONE SINISTRA



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

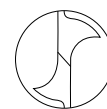
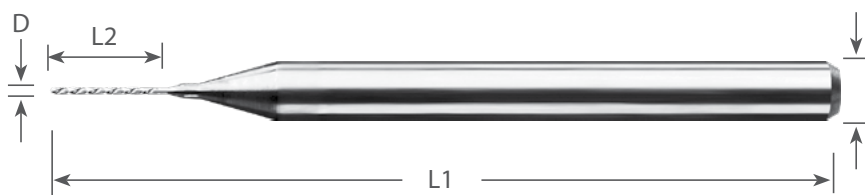
D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.04	3	38	0.5	226L-0016.020*	
0.05	3	38	0.8	226L-0020.030*	
0.06	3	38	0.8	226L-0024.030*	
0.07	3	38	1.3	226L-0028.050*	
0.08	3	38	1.3	226L-0031.050*	
0.09	3	38	1.3	226L-0035.050*	
0.10	3	38	1.0	226L-0039.040*	
0.11	3	38	1.0	226L-0043.040*	
0.12	3	38	1.0	226L-0047.040*	
0.13	3	38	1.0	226L-0051.040*	
0.14	3	38	2.0	226L-0055.080*	
0.15	3	38	2.0	226L-0059.080*	
0.16	3	38	2.0	226L-0063.080*	
0.17	3	38	2.0	226L-0067.080*	
0.18	3	38	2.5	226L-0071.100*	
0.19	3	38	2.5	226L-0075.100*	
0.20	3	38	2.5	226L-0079.100*	
0.21	3	38	2.5	226L-0083.100*	
0.22	3	38	2.5	226L-0087.100*	
0.23	3	38	3.8	226L-0091.150*	
0.24	3	38	3.8	226L-0094.150*	
0.25	3	38	3.8	226L-0098.150*	226L-0098L150
0.26	3	38	3.8	226L-0102.150*	226L-0102L150*
0.27	3	38	3.8	226L-0106.150*	226L-0106L150*
0.28	3	38	3.8	226L-0110.150*	226L-0110L150*
0.29	3	38	3.8	226L-0114.150*	226L-0114L150*
0.30	3	38	5.7	226L-0118.225*	226L-0118L225*
0.31	3	38	5.7	226L-0122.225*	226L-0122L225*
0.32	3	38	5.7	226L-0126.225*	226L-0126L225*
0.33	3	38	5.7	226L-0130.225*	226L-0130L225*
0.34	3	38	5.7	226L-0134.225*	226L-0134L225*

*CHECK AVAILABILITY | VERFÜGBARKEIT PRÜFEN | VÉRIFIER LA DISPONIBILITÉ | DA VERIFICARE

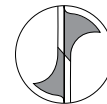
SERIES 226L WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30-40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel/ Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER / LINKSSCHNEIDEND
MICRO FORET / COUPE A GAUCHE
MICRO PUNTE / ESECUZIONE SINISTRA



2 Facet
Point Geometry
D 0 0.08mm



4 Facet
Point Geometry
D > 0.08mm



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

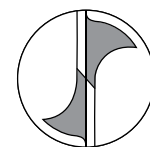
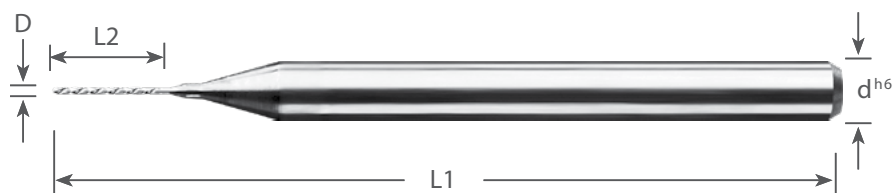
D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.35	3	38	5.7	226L-0138.225*	226L-0138L225*
0.36	3	38	5.7	226L-0142.225*	226L-0142L225*
0.37	3	38	5.7	226L-0146.225*	226L-0146L225*
0.38	3	38	6.4	226L-0150.250*	226L-0150L250*
0.39	3	38	6.4	226L-0154.250*	226L-0154L250*
0.40	3	38	6.4	226L-0157.250*	226L-0157L250*
0.41	3	38	6.4	226L-0161.250*	226L-0161L250*
0.42	3	38	6.4	226L-0165.250*	226L-0165L250*
0.43	3	38	6.4	226L-0169.250*	226L-0169L250*
0.44	3	38	6.4	226L-0173.250*	226L-0173L250*
0.45	3	38	6.4	226L-0177.250*	226L-0177L250*
0.46	3	38	6.4	226L-0181.250*	226L-0181L250*
0.47	3	38	6.4	226L-0185.250*	226L-0185L250*
0.48	3	38	6.6	226L-0189.260*	226L-0189L260*
0.49	3	38	6.6	226L-0193.260*	226L-0193L260*
0.50	3	38	6.6	226L-0197.260*	226L-0197L260*
0.51	3	38	6.6	226L-0201.260*	226L-0201L260*
0.52	3	38	6.6	226L-0205.260*	226L-0205L260*
0.53	3	38	6.6	226L-0209.260*	226L-0209L260*
0.54	3	38	6.6	226L-0213.260*	226L-0213L260*

*CHECK AVAILABILITY | VERFÜGBARKEIT PRÜFEN | VÉRIFIER LA DISPONIBILITÉ | DA VERIFICARE

SERIES 226L WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER / LINKSSCHNEIDEND
MICRO FORET / COUPE A GAUCHE
MICRO PUNTE / ESECUZIONE SINISTRA



4 Facet Point Geometry



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

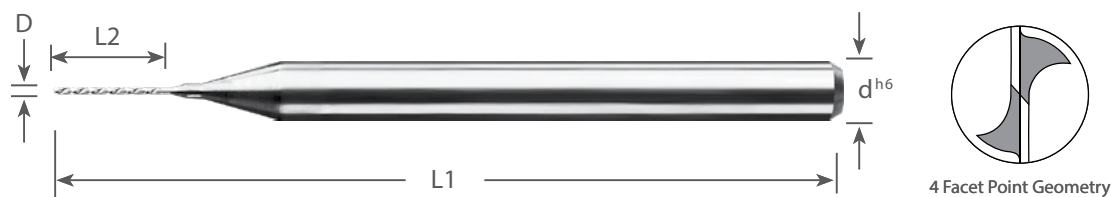
D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.55	3	38	8.6	226L-0217.340*	226L-0217L340*
0.56	3	38	8.6	226L-0220.340*	226L-0220L340*
0.57	3	38	8.6	226L-0224.340*	226L-0224L340*
0.58	3	38	8.6	226L-0228.340*	226L-0228L340*
0.59	3	38	8.6	226L-0232.340*	226L-0232L340*
0.60	3	38	8.6	226L-0236.340*	226L-0236L340*
0.61	3	38	8.6	226L-0240.340*	226L-0240L340*
0.62	3	38	8.6	226L-0244.340*	226L-0244L340*
0.63	3	38	8.6	226L-0248.340*	226L-0248L340*
0.64	3	38	8.6	226L-0252.340*	226L-0252L340*
0.65	3	38	8.6	226L-0256.340*	226L-0256L340*
0.66	3	38	8.6	226L-0260.340*	226L-0260L340*
0.67	3	38	8.6	226L-0264.340*	226L-0264L340*
0.68	3	38	8.6	226L-0268.340*	226L-0268L340*
0.69	3	38	8.6	226L-0272.340*	226L-0272L340*
0.70	3	38	10.2	226L-0276.400*	226L-0276L400*
0.71	3	38	10.2	226L-0280.400*	226L-0280L400*
0.72	3	38	10.2	226L-0283.400*	226L-0283L400*
0.73	3	38	10.2	226L-0287.400*	226L-0287L400*
0.74	3	38	10.2	226L-0291.400*	226L-0291L400*
0.75	3	38	10.2	226L-0295.400*	226L-0295L400*
0.76	3	38	10.2	226L-0299.400*	226L-0299L400*
0.77	3	38	10.2	226L-0303.400*	226L-0303L400*
0.78	3	38	10.2	226L-0307.400*	226L-0307L400*
0.79	3	38	10.2	226L-0311.400*	226L-0311L400*
0.80	3	38	10.2	226L-0315.400*	226L-0315L400*
0.81	3	38	10.2	226L-0319.400*	226L-0319L400*
0.82	3	38	10.2	226L-0323.400*	226L-0323L400*
0.83	3	38	10.2	226L-0327.400*	226L-0327L400*
0.84	3	38	10.2	226L-0331.400*	226L-0331L400*
0.85	3	38	10.2	226L-0335.400*	226L-0335L400*
0.86	3	38	10.2	226L-0339.400*	226L-0339L400*
0.87	3	38	10.2	226L-0343.400*	226L-0343L400*
0.88	3	38	10.2	226L-0346.400*	226L-0346L400*
0.89	3	38	10.2	226L-0350.400*	226L-0350L400*
0.90	3	38	10.2	226L-0354.400*	226L-0354L400*
0.91	3	38	10.2	226L-0358.400*	226L-0358L400*
0.92	3	38	10.2	226L-0362.400*	226L-0362L400*
0.93	3	38	10.2	226L-0366.400*	226L-0366L400*

*CHECK AVAILABILITY | VERFÜGBARKEIT PRÜFEN | VÉRIFIER LA DISPONIBILITÉ | DA VERIFICARE

SERIES 226L WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER / LINKSSCHNEIDEND
MICRO FORET / COUPE A GAUCHE
MICRO PUNTE / ESECUZIONE SINISTRA



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.94	3	38	10.2	226L-0370.400*	226L-0370L400*
0.95	3	38	10.2	226L-0374.400*	226L-0374L400*
0.96	3	38	10.2	226L-0378.400*	226L-0378L400*
0.97	3	38	10.2	226L-0382.400*	226L-0382L400*
0.98	3	38	10.2	226L-0386.400*	226L-0386L400*
0.99	3	38	10.2	226L-0390.400*	226L-0390L400*
1.00	3	38	10.2	226L-0394.400*	226L-0394L400*
1.05	3	38	10.2	226L-0413.400*	226L-0413L400*
1.10	3	38	10.2	226L-0433.400*	226L-0433L400*
1.15	3	38	10.2	226L-0453.400*	226L-0453L400*
1.20	3	38	10.2	226L-0472.400*	226L-0472L400*
1.25	3	38	10.2	226L-0492.400*	226L-0492L400*
1.30	3	38	10.2	226L-0512.400*	226L-0512L400*
1.35	3	38	10.2	226L-0531.400*	226L-0531L400*
1.40	3	38	10.2	226L-0551.400*	226L-0551L400*
1.45	3	38	10.2	226L-0571.400*	226L-0571L400*
1.50	3	38	10.2	226L-0591.400*	226L-0591L400*
1.55	3	38	10.2	226L-0610.400*	226L-0610L400*
1.60	3	38	10.2	226L-0630.400*	226L-0630L400*
1.65	3	38	10.2	226L-0650.400*	226L-0650L400*
1.70	3	38	10.2	226L-0669.400*	226L-0669L400*
1.75	3	38	10.2	226L-0689.400*	226L-0689L400*
1.80	3	38	10.2	226L-0709.400*	226L-0709L400*
1.85	3	38	10.2	226L-0728.400*	226L-0728L400*
1.90	3	38	10.2	226L-0748.400*	226L-0748L400*
1.95	3	38	10.2	226L-0768.400*	226L-0768L400*
2.00	3	38	10.2	226L-0787.400*	226L-0787L400*
2.05	3	38	10.2	226L-0807.400*	226L-0807L400*
2.10	3	38	10.2	226L-0827.400*	226L-0827L400*
2.15	3	38	10.2	226L-0846.400*	226L-0846L400*
2.20	3	38	10.2	226L-0866.400*	226L-0866L400*
2.25	3	38	10.2	226L-0886.400*	226L-0886L400*
2.30	3	38	10.2	226L-0906.400*	226L-0906L400*
2.35	3	38	10.2	226L-0925.400*	226L-0925L400*
2.40	3	38	10.2	226L-0945.400*	226L-0945L400*
2.45	3	38	10.2	226L-0965.400*	226L-0965L400*
2.50	3	38	10.2	226L-0984.400*	226L-0984L400*
2.55	3	38	10.2	226L-1004.400*	226L-1004L400*
2.60	3	38	10.2	226L-1024.400*	226L-1024L400*

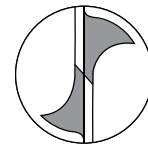
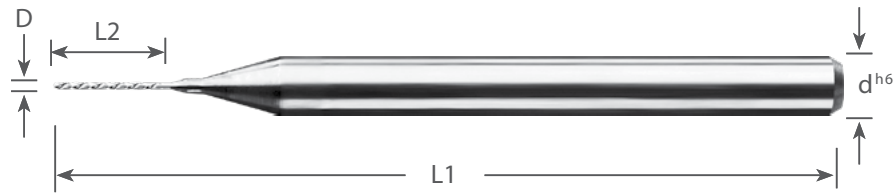
*CHECK AVAILABILITY | VERFÜGBARKEIT PRÜFEN | VÉRIFIER LA DISPONIBILITÉ | DA VERIFICARE

SERIES 226L WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER / LINKSSCHNEIDEND
MICRO FORET / COUPE A GAUCHE
MICRO PUNTE / ESECUZIONE SINISTRA

DRILLS



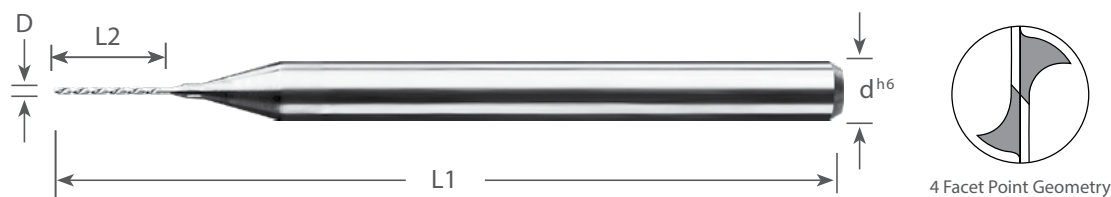
4 Facet Point Geometry



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
2.65	3	38	10.2	226L-1043.400*	226L1043L400*
2.70	3	38	10.2	226L-1063.400*	226L-1063L400*
2.75	3	38	10.2	226L-1083.400*	226L-1083L400*
2.80	3	38	10.2	226L-1102.400*	226L-1102L400*
2.85	3	38	10.2	226L-1122.400*	226L-1122L400*
2.90	3	38	10.2	226L-1142.400*	226L-1142L400*
2.95	3	38	10.2	226L-1161.400*	226L-1161L400*
3.00	3	38	10.2	226L-1181.400*	226L-1181L400*

MIKRO BOHRER / LINKSSCHNEIDEND
MICRO FORET / COUPE A GAUCHE
MICRO PUNTE / ESECUZIONE SINISTRA



Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.75	3	50	11.0	226L-0295.433*	226L-0295L433*
0.80	3	50	11.0	226L-0315.433*	226L-0315L433*
0.85	3	50	13.0	226L-0335.512*	226L-0335L512*
0.90	3	50	13.0	226L-0354.512*	226L-0354L512*
0.95	3	50	15.0	226L-0374.591*	226L-0374L591*
1.00	3	50	15.0	226L-0394.591*	226L-0394L591*
1.05	3	50	17.0	226L-0413.670*	226L-0413L670*
1.10	3	50	17.0	226L-0433.670*	226L-0433L670*
1.15	3	50	17.0	226L-0453.670*	226L-0453L670*
1.20	3	50	17.0	226L-0472.670*	226L-0472L670*
1.25	3	50	19.0	226L-0492.749*	226L-0492L749*
1.30	3	50	19.0	226L-0512.749*	226L-0512L749*
1.35	3	50	19.0	226L-0531.749*	226L-0531L749*
1.40	3	50	19.0	226L-0551.749*	226L-0551L749*
1.45	3	50	20.0	226L-0571.788*	226L-0571L788*
1.50	3	50	20.0	226L-0591.788*	226L-0591L788*
1.55	3	50	20.0	226L-0610.788*	226L-0610L788*
1.60	3	50	20.0	226L-0630.788*	226L-0630L788*
1.65	3	50	20.0	226L-0650.788*	226L-0650L788*
1.70	3	50	20.0	226L-0669.788*	226L-0669L788*
1.75	3	50	20.0	226L-0689.788*	226L-0689L788*
1.80	3	50	20.0	226L-0709.788*	226L-0709L788*
1.85	3	50	22.8	226L-0728.898*	226L-0728L898*
1.90	3	60	22.8	226L-0748.898*	226L-0748L898*
1.95	3	60	23.4	226L-0768.921*	226L-0768L921*
2.00	3	60	24.0	226L-0787.945*	226L-0787L945*
2.05	3	60	24.6	226L-0807.969*	226L-0807L969*
2.10	3	60	25.2	226L-0827.992*	226L-0827L992*
2.15	3	60	25.8	226L-0846.1016*	226L-0846L1016*
2.20	3	60	26.4	226L-0866.1039*	226L-0866L1039*
2.25	3	60	27.0	226L-0886.1063*	226L-0886L1063*
2.30	3	60	27.6	226L-0906.1087*	226L-0906L1087*
2.35	3	60	28.2	226L-0925.1110*	226L-0925L1110*
2.40	3	60	28.8	226L-0945.1134*	226L-0945L1134*
2.45	3	60	29.4	226L-0965.1157*	226L-0965L1157*
2.50	3	60	30.0	226L-0984.1181*	226L-0984L1181*
2.55	3	60	30.6	226L-1004.1205*	226L-1004L1205*
2.60	3	60	31.2	226L-1024.1228*	226L-1024L1228*
2.65	3	60	31.8	226L-1043.1252*	226L-1043L1252*

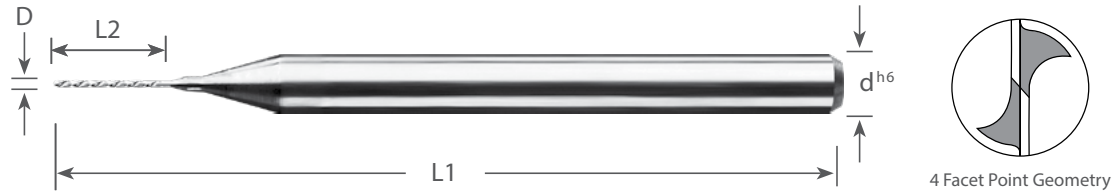
*CHECK AVAILABILITY | VERFÜGBARKEIT PRÜFEN | VERIFIER LA DISPONIBILITE | DA VERIFICARE

SERIES 226L WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER / LINKSSCHNEIDEND
MICRO FORET / COUPE A GAUCHE
MICRO PUNTE / ESECUZIONE SINISTRA

DRILLS



Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

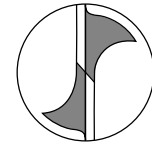
D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
2.70	3	60	32.4	226L-1063.1276*	226L-1063L1276*
2.75	3	60	33.0	226L-1083.1299*	226L-1083L1299*
2.80	3	60	33.6	226L-1102.1323*	226L-1102L1323*
2.85	3	60	34.2	226L-1122.1346*	226L-1122L1346*
2.90	3	60	34.8	226L-1142.1370*	226L-1142L1370*
2.95	3	60	35.4	226L-1161.1394*	226L-1161L1394*
3.00	3	60	36.0	226L-1181.1417*	226L-1181L1417*

*CHECK AVAILABILITY | VERFÜGBARKEIT PRÜFEN | VÉRIFIER LA DISPONIBILITÉ | DA VERIFICARE

SERIES 226L WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆		☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER
MICRO FORET
MICRO PUNTE



4 Facet Point Geometry



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.008	d (mm) h6	L1 (mm)	L2 (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.12	1	25	1.45	392-0046.057	
0.14	1	25	1.45	392-0054.057	
0.16	1	25	1.45	392-0063.057	
0.18	1	25	1.45	392-0071.057	
0.20	1	25	1.45	392-0079.057	
0.25	1	25	1.75	392-0098.069	392-0098L069
0.27	1	25	1.75	392-0106.069	392-0106L069
0.29	1	25	3.65	392-0114.144	392-0114L144
0.30	1	25	3.65	392-0118.144	392-0118L144
0.31	1	25	3.65	392-0122.144	392-0122L144
0.32	1	25	3.65	392-0126.144	392-0126L144
0.34	1	25	3.65	392-0134.144	392-0134L144
0.36	1	25	3.65	392-0142.144	392-0142L144
0.38	1	25	3.65	392-0150.144	392-0150L144
0.40	1	25	3.65	392-0157.144	392-0157L144
0.42	1	25	3.65	392-0165.144	392-0165L144
0.44	1	25	3.65	392-0173.144	392-0173L144
0.46	1	25	3.65	392-0181.144	392-0181L144
0.48	1	25	3.65	392-0189.144	392-0189L144
0.50	1	25	3.65	392-0197.144	392-0197L144
0.52	1	25	3.65	392-0205.144	392-0205L144
0.54	1	25	3.65	392-0213.144	392-0213L144
0.56	1	25	3.65	392-0220.144	392-0220L144
0.58	1	25	3.65	392-0228.144	392-0228L144
0.60	1	25	3.65	392-0236.144	392-0236L144

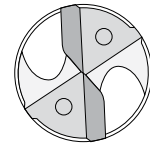
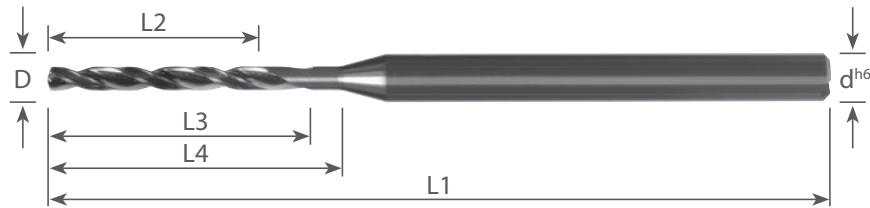
SERIES 392 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆		☆	☆	☆	☆	☆	☆	☆	☆
Uncoated							☆	☆	★	☆	★	★	★		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER MIT INNENKÜHLUNG
 MICRO FORET AVEC ARROSAGE INTERNE
 MICRO PUNTE CON ADDUZIONE REFRIGERANTE

DRILLS



6 Facet Point Geometry



D (mm) k6	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	L4 (mm)	Art. No. (AlTiN NANO coated)
1.00	4.00	53.00	8.00	13.30	14.36	814-0394L524
1.10	4.00	53.00	8.80	14.10	15.23	814-0433L555
1.20	4.00	53.00	9.60	14.90	16.09	814-0472L587
1.30	4.00	53.00	10.40	15.70	16.96	814-0512L618
1.40	4.00	53.00	11.20	16.50	17.82	814-0551L650
1.50	4.00	53.00	12.00	17.30	18.68	814-0591L681
1.60	4.00	64.00	12.80	18.10	19.55	814-0630L713
1.70	4.00	64.00	13.60	18.90	20.41	814-0669L744
1.80	4.00	64.00	14.40	20.40	22.03	814-0709L803
1.90	4.00	64.00	15.20	21.20	22.90	814-0748L835
2.00	4.00	64.00	16.00	22.00	23.76	814-0787L866
2.10	4.00	64.00	16.80	22.80	24.62	814-0827L898
2.20	4.00	64.00	17.60	25.70	27.76	814-0866L1012
2.30	4.00	64.00	18.40	26.50	28.62	814-0906L1043
2.40	4.00	64.00	19.20	27.30	29.48	814-0945L1075
2.50	4.00	64.00	20.00	28.10	30.35	814-0984L1106
2.60	4.00	76.00	20.80	28.90	31.21	814-1024L1138
2.70	4.00	76.00	21.60	29.70	32.08	814-1063L1169
2.80	4.00	76.00	22.40	30.50	32.94	814-1102L1201
2.90	4.00	76.00	23.20	32.20	34.78	814-1142L1268
3.00	4.00	76.00	24.00	33.00	35.64	814-1181L1299
3.10	4.00	76.00	24.80	33.80	36.50	814-1220L1331
3.20	4.00	76.00	25.60	34.60	37.37	814-1260L1362
3.30	4.00	76.00	26.40	35.40	38.23	814-1299L1394
3.40	4.00	76.00	27.20	38.10	41.15	814-1339L1500
3.50	4.00	76.00	28.00	38.90	42.01	814-1378L1531
3.60	4.00	76.00	28.80	39.70	42.88	814-1417L1563
3.70	4.00	76.00	29.60	40.50	43.74	814-1457L1594
3.80	4.00	76.00	30.40	41.30	44.60	814-1496L1626
3.90	4.00	76.00	31.20	42.10	45.47	814-1535L1657
4.00	4.00	76.00	32.00	42.90	46.33	814-1575L1689

*L2 dimensions refers to the Max. length of cut (8 x ØD).

SERIES 814 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	★	★
Uncoated	☆	☆	☆	☆	☆	☆	★	☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER MIT INNENKÜHLUNG
 MICRO FORET AVEC ARROSAGE INTERNE
 MICRO PUNTE CON ADDUZIONE REFRIGERANTE



D (mm) k6	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	L4 (mm)	Art. No. (AlTiN NANO coated)
1.00	4.00	53.00	8.00	13.30	14.36	814-0394L524
1.10	4.00	53.00	8.80	14.10	15.23	814-0433L555
1.20	4.00	53.00	9.60	14.90	16.09	814-0472L587
1.30	4.00	53.00	10.40	15.70	16.96	814-0512L618
1.40	4.00	53.00	11.20	16.50	17.82	814-0551L650
1.50	4.00	53.00	12.00	17.30	18.68	814-0591L681
1.60	4.00	64.00	12.80	18.10	19.55	814-0630L713
1.70	4.00	64.00	13.60	18.90	20.41	814-0669L744
1.80	4.00	64.00	14.40	20.40	22.03	814-0709L803
1.90	4.00	64.00	15.20	21.20	22.90	814-0748L835
2.00	4.00	64.00	16.00	22.00	23.76	814-0787L866
2.10	4.00	64.00	16.80	22.80	24.62	814-0827L898
2.20	4.00	64.00	17.60	25.70	27.76	814-0866L1012
2.30	4.00	64.00	18.40	26.50	28.62	814-0906L1043
2.40	4.00	64.00	19.20	27.30	29.48	814-0945L1075
2.50	4.00	64.00	20.00	28.10	30.35	814-0984L1106
2.60	4.00	76.00	20.80	28.90	31.21	814-1024L1138
2.70	4.00	76.00	21.60	29.70	32.08	814-1063L1169
2.80	4.00	76.00	22.40	30.50	32.94	814-1102L1201
2.90	4.00	76.00	23.20	32.20	34.78	814-1142L1268
3.00	4.00	76.00	24.00	33.00	35.64	814-1181L1299
3.10	4.00	76.00	24.80	33.80	36.50	814-1220L1331
3.20	4.00	76.00	25.60	34.60	37.37	814-1260L1362
3.30	4.00	76.00	26.40	35.40	38.23	814-1299L1394
3.40	4.00	76.00	27.20	38.10	41.15	814-1339L1500
3.50	4.00	76.00	28.00	38.90	42.01	814-1378L1531
3.60	4.00	76.00	28.80	39.70	42.88	814-1417L1563
3.70	4.00	76.00	29.60	40.50	43.74	814-1457L1594
3.80	4.00	76.00	30.40	41.30	44.60	814-1496L1626
3.90	4.00	76.00	31.20	42.10	45.47	814-1535L1657
4.00	4.00	76.00	32.00	42.90	46.33	814-1575L1689

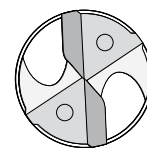
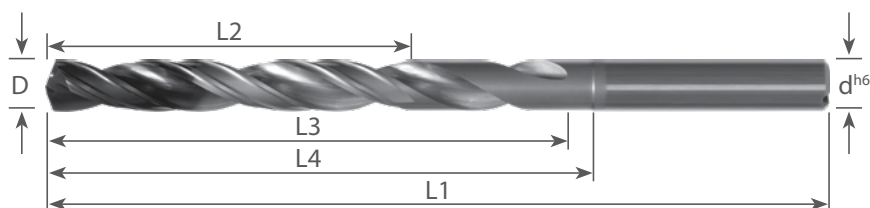
*L2 dimensions refers to the Max. length of cut (15 x ØD).

SERIES 814 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	★	★
Uncoated	☆	☆	☆	☆	☆	☆	★	☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER MIT INNENKÜHLUNG
FORET AVEC ARROSAGE INTERNE
PUNTE CON ADDUZIONE REFRIGERANTE

DRILLS



6 Facet Point Geometry



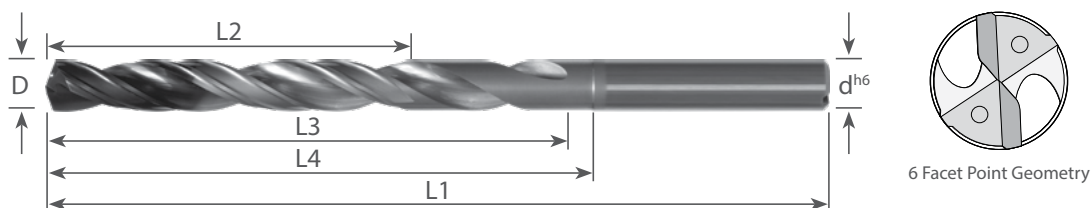
D (mm) h7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	L4 (mm)	Art. No. (AITIN NANO coated)
3.00	3.00	80.37	21.00	30.00	31.50	865-1181AG1181
3.10	4.00	80.37	21.70	31.00	32.55	865-1220AG1220
3.20	4.00	80.37	22.40	32.00	33.60	865-1260AG1260
3.30	4.00	80.37	23.10	33.00	34.65	865-1299AG1299
3.40	4.00	80.37	23.80	34.00	35.70	865-1339AG1339
3.50	4.00	80.37	24.50	35.00	36.75	865-1378AG1378
3.60	4.00	80.37	25.20	36.00	37.80	865-1417AG1417
3.70	4.00	90.37	25.90	37.00	38.85	865-1457AG1457
3.80	4.00	90.37	26.60	38.00	39.90	865-1496AG1496
3.90	4.00	90.37	27.30	39.00	40.95	865-1535AG1535
4.00	4.00	90.37	28.00	40.00	42.00	865-1575AG1575
4.10	6.00	90.37	28.70	41.00	43.05	865-1614AG1614
4.20	6.00	90.37	29.40	42.00	44.10	865-1654AG1654
4.30	6.00	90.37	30.10	43.00	45.15	865-1693AG1693
4.40	6.00	90.37	30.80	44.00	46.20	865-1732AG1732
4.50	6.00	100.37	31.50	45.00	47.25	865-1772AG1772
4.60	6.00	100.37	32.20	46.00	48.30	865-1811AG1811
4.70	6.00	100.37	32.90	47.00	49.35	865-1850AG1850
4.80	6.00	100.37	33.60	48.00	50.40	865-1890AG1890
4.90	6.00	100.37	34.30	49.00	51.45	865-1929AG1929
5.00	6.00	100.37	35.00	50.00	52.50	865-1969AG1969
5.10	6.00	100.37	35.70	51.00	53.55	865-2008AG2008
5.20	6.00	100.37	36.40	52.00	54.60	865-2047AG2047
5.30	6.00	110.37	37.10	53.00	55.65	865-2087AG2087
5.40	6.00	110.37	37.80	54.00	56.70	865-2126AG2126
5.50	6.00	110.37	38.50	55.00	57.75	865-2165AG2165
5.60	6.00	110.37	39.20	56.00	58.80	865-2205AG2205
5.70	6.00	110.47	39.90	57.00	59.85	865-2244AG2244
5.80	6.00	110.47	40.60	58.00	60.90	865-2283AG2283
5.90	6.00	110.47	41.30	59.00	61.95	865-2323AG2323
6.00	6.00	110.47	42.00	60.00	63.00	865-2362AG2362
6.10	8.00	110.47	42.70	61.00	64.05	865-2402AG2402
6.20	8.00	110.47	43.40	62.00	65.10	865-2441AG2441
6.30	8.00	110.47	44.10	63.00	66.15	865-2480AG2480
6.40	8.00	120.47	44.80	64.00	67.20	865-2520AG2520

*L2 dimensions refers to the Max. length of cut (7 x ØD).

SERIES 865 WORKPIECE MATERIAL															
Coating	P	P	H	H	M	K	N	N	N	N	N	N	S	S	
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic	Nickel / Cobalt	Titanium Alloy
AITIN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER MIT INNENKÜHLUNG
FORET AVEC ARROSAGE INTERNE
PUNTE CON ADDUZIONE REFRIGERANTE



DRILLS



D (mm) h7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	L4 (mm)	Art. No. (AlTiN NANO coated)
6.50	8.00	120.47	45.50	65.00	68.25	865-2559AG2559
6.60	8.00	120.47	46.20	66.00	69.30	865-2598AG2598
6.70	8.00	120.47	46.90	67.00	70.35	865-2638AG2638
6.80	8.00	120.47	47.60	68.00	71.40	865-2677AG2677
6.90	8.00	120.47	48.30	69.00	72.45	865-2717AG2717
7.00	8.00	120.47	49.00	70.00	73.50	865-2756AG2756
7.10	8.00	120.47	49.70	71.00	74.55	865-2795AG2795
7.20	8.00	120.47	50.40	72.00	75.60	865-2835AG2835
7.30	8.00	120.47	51.10	73.00	76.65	865-2874AG2874
7.40	8.00	130.47	51.80	74.00	77.70	865-2913AG2913
7.50	8.00	130.47	52.50	75.00	78.75	865-2953AG2953
7.60	8.00	130.62	53.20	76.00	79.80	865-2992AG2992
7.70	8.00	130.62	53.90	77.00	80.85	865-3031AG3031
7.80	8.00	130.62	54.60	78.00	81.90	865-3071AG3071
7.90	8.00	130.62	55.30	79.00	82.95	865-3110AG3110
8.00	8.00	130.62	56.00	80.00	84.00	865-3150AG3150
8.10	10.00	140.62	56.70	81.00	85.05	865-3189AG3189
8.20	10.00	140.62	57.40	82.00	86.10	865-3228AG3228
8.30	10.00	140.62	58.10	83.00	87.15	865-3268AG3268
8.40	10.00	140.62	58.80	84.00	88.20	865-3307AG3307
8.50	10.00	140.62	59.50	85.00	89.25	865-3346AG3346
8.60	10.00	140.62	60.20	86.00	90.30	865-3386AG3386
8.70	10.00	140.62	60.90	87.00	91.35	865-3425AG3425
8.80	10.00	140.62	61.60	88.00	92.40	865-3465AG3465
8.90	10.00	140.62	62.30	89.00	93.45	865-3504AG3504
9.00	10.00	140.62	63.00	90.00	94.50	865-3543AG3543
9.10	10.00	140.62	63.70	91.00	95.55	865-3583AG3583
9.20	10.00	140.62	64.40	92.00	96.60	865-3622AG3622
9.30	10.00	140.62	65.10	93.00	97.65	865-3661AG3661
9.40	10.00	150.62	65.80	94.00	98.70	865-3701AG3701
9.50	10.00	150.62	66.50	95.00	99.75	865-3740AG3740
9.60	10.00	150.62	67.20	96.00	100.80	865-3780AG3780
9.70	10.00	150.62	67.90	97.00	101.85	865-3819AG3819
9.80	10.00	150.62	68.60	98.00	102.90	865-3858AG3858
9.90	10.00	150.62	69.30	99.00	103.95	865-3898AG3898

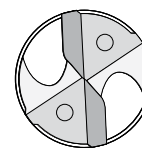
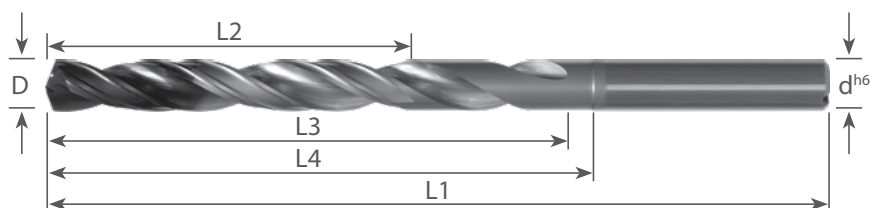
*L2 dimensions refers to the Max. length of cut (7 x ØD).

SERIES 865 WORKPIECE MATERIAL															
Coating	P	P	H	H	M	K	N	N	N	N	N	N	S	S	
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic	Nickel / Cobalt	Titanium Alloy
AlTiN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER MIT INNENKÜHLUNG
FORET AVEC ARROSAGE INTERNE
PUNTE CON ADDUZIONE REFRIGERANTE

DRILLS



6 Facet Point Geometry



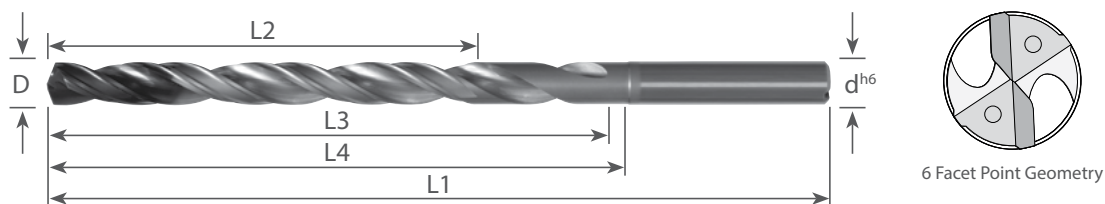
D (mm) h7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	L4 (mm)	Art. No. (AITIN NANO coated)
10.00	10.00	150.62	70.00	100.00	105.00	865-3937AG3937
10.10	12.00	150.62	70.70	101.00	106.05	865-3976AG3976
10.20	12.00	160.62	71.40	102.00	107.10	865-4016AG4016
10.30	12.00	160.62	72.10	103.00	108.15	865-4055AG4055
10.40	12.00	160.62	72.80	104.00	109.20	865-4094AG4094
10.50	12.00	160.62	73.50	105.00	110.25	865-4134AG4134
10.60	12.00	160.62	74.20	106.00	111.30	865-4173AG4173
10.70	12.00	160.62	74.90	107.00	112.35	865-4213AG4213
10.80	12.00	160.62	75.60	108.00	113.40	865-4252AG4252
10.90	12.00	160.62	76.30	109.00	114.45	865-4291AG4291
11.00	12.00	160.62	77.00	110.00	115.50	865-4331AG4331
11.10	12.00	160.62	77.70	111.00	116.55	865-4370AG4370
11.20	12.00	170.62	78.40	112.00	117.60	865-4409AG4409
11.30	12.00	170.77	79.10	113.00	118.65	865-4449AG4449
11.40	12.00	170.77	79.80	114.00	119.70	865-4488AG4488
11.50	12.00	170.77	80.50	115.00	120.75	865-4528AG4528
11.60	12.00	170.77	81.20	116.00	121.80	865-4567AG4567
11.70	12.00	170.77	81.90	117.00	122.85	865-4606AG4606
11.80	12.00	170.77	82.60	118.00	123.90	865-4646AG4646
11.90	12.00	170.77	83.30	119.00	124.95	865-4685AG4685
12.00	12.00	170.77	84.00	120.00	126.00	865-4724AG4724

*L2 dimensions refers to the Max. length of cut (7 x ØD).

SERIES 865 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER MIT INNENKÜHLUNG
FORET AVEC ARROSAGE INTERNE
PUNTE CON ADDUZIONE REFRIGERANTE



DRILLS



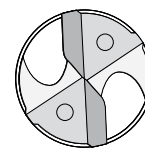
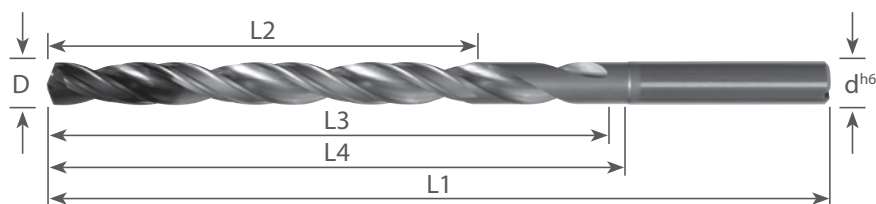
D (mm) h7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	L4 (mm)	Art. No. (AITIN NANO coated)
3.00	3.00	90.00	30.00	39.00	40.50	865-1181AG1535
3.10	4.00	90.00	31.00	40.30	41.85	865-1220AG1587
3.20	4.00	90.00	32.00	41.60	43.20	865-1260AG1638
3.30	4.00	90.00	33.00	42.90	44.55	865-1299AG1689
3.40	4.00	90.00	34.00	44.20	45.90	865-1339AG1740
3.50	4.00	90.00	35.00	45.50	47.25	865-1378AG1791
3.60	4.00	90.00	36.00	46.80	48.60	865-1417AG1843
3.70	4.00	100.00	37.00	48.10	49.95	865-1457AG1894
3.80	4.00	100.00	38.00	49.40	51.30	865-1496AG1945
3.90	4.00	100.00	39.00	50.70	52.65	865-1535AG1996
4.00	4.00	100.00	40.00	52.00	54.00	865-1575AG2047
4.10	6.00	100.00	41.00	53.30	55.35	865-1614AG2098
4.20	6.00	110.00	42.00	54.60	56.70	865-1654AG2150
4.30	6.00	110.00	43.00	55.90	58.05	865-1693AG2201
4.40	6.00	110.00	44.00	57.20	59.40	865-1732AG2252
4.50	6.00	110.00	45.00	58.50	60.75	865-1772AG2303
4.60	6.00	110.00	46.00	59.80	62.10	865-1811AG2354
4.70	6.00	110.00	47.00	61.10	63.45	865-1850AG2406
4.80	6.00	110.00	48.00	62.40	64.80	865-1890AG2457
4.90	6.00	110.00	49.00	63.70	66.15	865-1929AG2508
5.00	6.00	110.00	50.00	65.00	67.50	865-1969AG2559
5.10	6.00	120.00	51.00	66.30	68.85	865-2008AG2610
5.20	6.00	120.00	52.00	67.60	70.20	865-2047AG2661
5.30	6.00	120.00	53.00	68.90	71.55	865-2087AG2713
5.40	6.00	120.00	54.00	70.20	72.90	865-2126AG2764
5.50	6.00	120.00	55.00	71.50	74.25	865-2165AG2815
5.60	6.00	120.00	56.00	72.80	75.60	865-2205AG2866
5.70	6.00	120.00	57.00	74.10	76.95	865-2244AG2917
5.80	6.00	120.00	58.00	75.40	78.30	865-2283AG2969
5.90	6.00	120.00	59.00	76.70	79.65	865-2323AG3020
6.00	6.00	130.00	60.00	78.00	81.00	865-2362AG3071
6.10	8.00	130.00	61.00	79.30	82.35	865-2402AG3122
6.20	8.00	130.00	62.00	80.60	83.70	865-2441AG3173
6.30	8.00	130.00	63.00	81.90	85.05	865-2480AG3224
6.40	8.00	130.00	64.00	83.20	86.40	865-2520AG3276

*L2 dimensions refers to the Max. length of cut (10 x ØD).

SERIES 865 WORKPIECE MATERIAL															
Coating	P	P	H	H	M	K	N	N	N	N	N	N	S	S	
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic	Nickel / Cobalt	Titanium Alloy
AITIN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER MIT INNENKÜHLUNG
FORET AVEC ARROSAGE INTERNE
PUNTE CON ADDUZIONE REFRIGERANTE



6 Facet Point Geometry



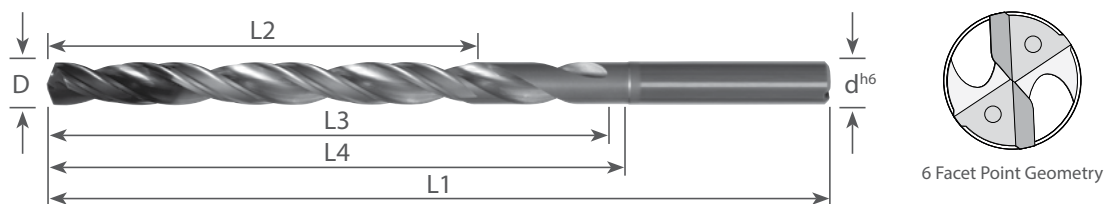
D (mm) h7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	L4 (mm)	Art. No. (AITIN NANO coated)
6.50	8.00	140.00	65.00	84.50	87.75	865-2559AG3327
6.60	8.00	140.00	66.00	85.80	89.10	865-2598AG3378
6.70	8.00	140.00	67.00	87.10	90.45	865-2638AG3429
6.80	8.00	140.00	68.00	88.40	91.80	865-2677AG3480
6.90	8.00	140.00	69.00	89.70	93.15	865-2717AG3531
7.00	8.00	140.00	70.00	91.00	94.50	865-2756AG3583
7.10	8.00	140.00	71.00	92.30	95.85	865-2795AG3634
7.20	8.00	140.00	72.00	93.60	97.20	865-2835AG3685
7.30	8.00	140.00	73.00	94.90	98.55	865-2874AG3736
7.40	8.00	150.00	74.00	96.20	99.90	865-2913AG3787
7.50	8.00	150.00	75.00	97.50	101.25	865-2953AG3839
7.60	8.00	150.00	76.00	98.80	102.60	865-2992AG3890
7.70	8.00	150.00	77.00	100.10	103.95	865-3031AG3941
7.80	8.00	150.00	78.00	101.40	105.30	865-3071AG3992
7.90	8.00	150.00	79.00	102.70	106.65	865-3110AG4043
8.00	8.00	150.00	80.00	104.00	108.00	865-3150AG4094
8.10	10.00	160.00	81.00	105.30	109.35	865-3189AG4146
8.20	10.00	160.00	82.00	106.60	110.70	865-3228AG4197
8.30	10.00	160.00	83.00	107.90	112.05	865-3268AG4248
8.40	10.00	160.00	84.00	109.20	113.40	865-3307AG4299
8.50	10.00	160.00	85.00	110.50	114.75	865-3346AG4350
8.60	10.00	160.00	86.00	111.80	116.10	865-3386AG4402
8.70	10.00	160.00	87.00	113.10	117.45	865-3425AG4453
8.80	10.00	170.00	88.00	114.40	118.80	865-3465AG4504
8.90	10.00	170.00	89.00	115.70	120.15	865-3504AG4555
9.00	10.00	170.00	90.00	117.00	121.50	865-3543AG4606
9.10	10.00	170.00	91.00	118.30	122.85	865-3583AG4657
9.20	10.00	170.00	92.00	119.60	124.20	865-3622AG4709
9.30	10.00	170.00	93.00	120.90	125.55	865-3661AG4760
9.40	10.00	170.00	94.00	122.20	126.90	865-3701AG4811
9.50	10.00	170.00	95.00	123.50	128.25	865-3740AG4862
9.60	10.00	180.00	96.00	124.80	129.60	865-3780AG4913
9.70	10.00	180.00	97.00	126.10	130.95	865-3819AG4965
9.80	10.00	180.00	98.00	127.40	132.30	865-3858AG5016
9.90	10.00	180.00	99.00	128.70	133.65	865-3898AG5067

*L2 dimensions refers to the Max. length of cut (10 x ØD).

SERIES 865 WORKPIECE MATERIAL															
Coating	P	P	H	H	M	K	N	N	N	N	N	N	S	S	
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic	Nickel / Cobalt	Titanium Alloy
AITIN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

HOCHLEISTUNGSBOHRER MIT INNENKÜHLUNG
FORET AVEC ARROSAGE INTERNE
PUNTE CON ADDUZIONE REFRIGERANTE



DRILLS



D (mm) h7	d (mm) h6	L1 (mm)	*L2 (mm)	L3 (mm)	L4 (mm)	Art. No. (AlTiN NANO coated)
10.00	10.00	180.00	100.00	130.00	135.00	865-3937AG5118
10.10	12.00	180.00	101.00	131.30	136.35	865-3976AG5169
10.20	12.00	190.00	102.00	132.60	137.70	865-4016AG5220
10.30	12.00	190.00	103.00	133.90	139.05	865-4055AG5272
10.40	12.00	190.00	104.00	135.20	140.40	865-4094AG5323
10.50	12.00	190.00	105.00	136.50	141.75	865-4134AG5374
10.60	12.00	190.00	106.00	137.80	143.10	865-4173AG5425
10.70	12.00	190.00	107.00	139.10	144.45	865-4213AG5476
10.80	12.00	190.00	108.00	140.40	145.80	865-4252AG5528
10.90	12.00	190.00	109.00	141.70	147.15	865-4291AG5579
11.00	12.00	200.00	110.00	143.00	148.50	865-4331AG5630
11.10	12.00	200.00	111.00	144.30	149.85	865-4370AG5681
11.20	12.00	200.00	112.00	145.60	151.20	865-4409AG5732
11.30	12.00	200.00	113.00	146.90	152.55	865-4449AG5783
11.40	12.00	200.00	114.00	148.20	153.90	865-4488AG5835
11.50	12.00	200.00	115.00	149.50	155.25	865-4528AG5886
11.60	12.00	200.00	116.00	150.80	156.60	865-4567AG5937
11.70	12.00	200.00	117.00	152.10	157.95	865-4606AG5988
11.80	12.00	200.00	118.00	153.40	159.30	865-4646AG6039
11.90	12.00	210.00	119.00	154.70	160.65	865-4685AG6091
12.00	12.00	210.00	120.00	156.00	162.00	865-4724AG6142

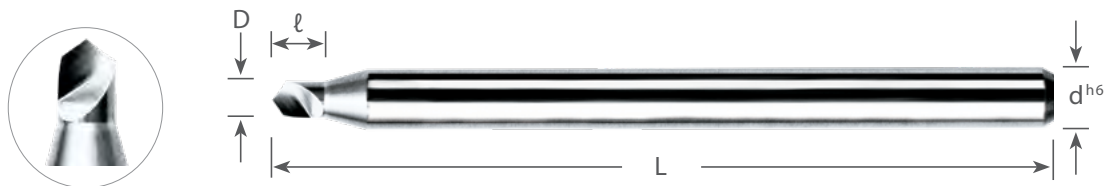
*L2 dimensions refers to the Max. length of cut (10 x ØD).

SERIES 865 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN Nano	★	★	★	★	★	☆		☆	☆		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO BOHRER FÜR MESSING
MICRO FORET POUR CUIVRE
MICRO PUNTE PER OTTONE

DRILLS



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

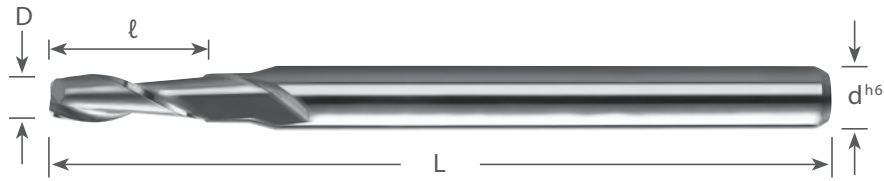
D (mm) +0/-0.008	l (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (TiCN coated)
0.30	1.65	3	38	885-0118.065	885-0118C065
0.35	1.65	3	38	885-0138.065	885-0138C065
0.40	1.65	3	38	885-0157.065	885-0157C065
0.45	1.65	3	38	885-0177.065	885-0177C065
0.50	2.15	3	38	885-0197.085	885-0197C085
0.55	2.15	3	38	885-0217.085	885-0217C085
0.60	2.15	3	38	885-0236.085	885-0236C085
0.65	2.15	3	38	885-0256.085	885-0256C085
0.70	2.15	3	38	885-0276.085	885-0276C085
0.75	2.15	3	38	885-0295.085	885-0295C085
0.80	2.15	3	38	885-0315.085	885-0315C085
0.85	2.15	3	38	885-0335.085	885-0335C085
0.90	2.15	3	38	885-0354.085	885-0354C085
0.95	2.15	3	38	885-0374.085	885-0374C085
1.00	2.15	3	38	885-0394.085	885-0394C085
1.10	2.85	3	38	885-0433.112	885-0433C112
1.20	2.85	3	38	885-0472.112	885-0472C112
1.30	2.85	3	38	885-0512.112	885-0512C112
1.40	2.85	3	38	885-0551.112	885-0551C112
1.50	2.85	3	38	885-0591.112	885-0591C112
1.60	2.85	3	38	885-0630.112	885-0630C112
1.70	2.85	3	38	885-0669.112	885-0669C112
1.80	2.85	3	38	885-0709.112	885-0709C112
1.90	2.85	3	38	885-0748.112	885-0748C112
2.00	2.85	3	38	885-0787.112	885-0787C112

SERIES 885 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
TiCN	☆	☆	☆	☆	☆	☆	☆	☆	★					☆	☆
Uncoated	☆	☆	☆	☆	★	★	☆	☆	★		☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER
MICRO FRAISE
MICRO FRESE



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

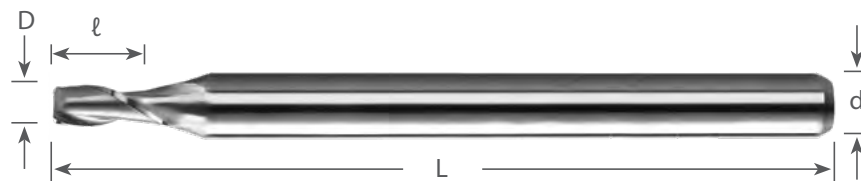
D (mm) +0/-0.02	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.10	0.30	3	38	1610-0039.012	1610-0039L012
0.15	0.45	3	38	1610-0059.018	1610-0059L018
0.20	0.60	3	38	1610-0079.024	1610-0079L024
0.25	0.75	3	38	1610-0098.029	1610-0098L029
0.30	0.90	3	38	1610-0118.035	1610-0118L035
0.35	1.05	3	38	1610-0138.041	1610-0138L041
0.40	1.20	3	38	1610-0157.047	1610-0157L047
0.45	1.35	3	38	1610-0177.053	1610-0177L053
0.50	1.50	3	38	1610-0197.059	1610-0197L059
0.60	1.80	3	38	1610-0236.071	1610-0236L071
0.70	2.10	3	38	1610-0276.083	1610-0276L083
0.80	2.40	3	38	1610-0315.095	1610-0315L095
0.90	2.70	3	38	1610-0354.106	1610-0354L106
1.00	3.00	3	38	1610-0394.118	1610-0394L118
1.10	3.30	3	38	1610-0433.130	1610-0433L130
1.20	3.60	3	38	1610-0472.142	1610-0472L142
1.30	3.90	3	38	1610-0512.154	1610-0512L154
1.40	4.20	3	38	1610-0551.165	1610-0551L165
1.50	4.50	3	38	1610-0591.177	1610-0591L177
1.60	4.80	3	38	1610-0630.189	1610-0630L189
1.70	5.10	3	38	1610-0669.201	1610-0669L201
1.80	5.40	3	38	1610-0709.213	1610-0709L213
1.90	5.70	3	38	1610-0748.224	1610-0748L224
2.00	6.00	3	38	1610-0787.236	1610-0787L236
2.50	7.50	3	38	1610-0984.295	1610-0984L295
2.80	9.00	3	38	1610-1102.354	1610-1102L354
3.00	9.00	3	38	1610-1181.354	1610-1181L354
3.50	10.50	4	50	1610-1378.413	1610-1378L413
3.80	12.00	5	50	1610-1496.473	1610-1496L473
4.00	12.00	5	50	1610-1575.473	1610-1575L473
4.50	13.50	5	50	1610-1772.532	1610-1772L532
4.80	15.00	5	50	1610-1890.590	1610-1890L590
5.00	15.00	5	50	1610-1968.590	1610-1968L590
5.50	16.50	6	50	1610-2165.650	1610-2165L650
5.80	18.00	6	50	1610-2283.709	1610-2283L709
6.00	18.00	6	50	1610-2362.709	1610-2362L709

SERIES 1610 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30-40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆								☆	☆
Uncoated							☆	☆	★	☆	★	★	☆		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER
MICRO FRAISE
MICRO FRESE



END MILLS

Stub Length | Kurze Ausführung | Exécution Courte | Versione Corta

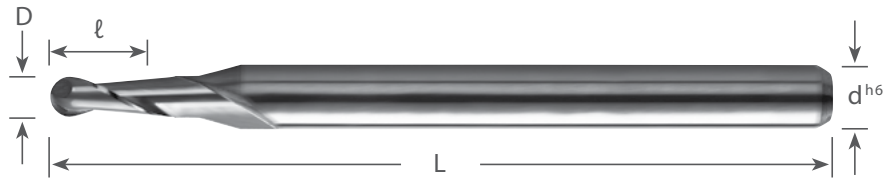
D (mm) +0/-0.02	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.10	0.15	3	38	1620-0039.006	1620-0039L006
0.15	0.23	3	38	1620-0059.009	1620-0059L009
0.20	0.30	3	38	1620-0079.012	1620-0079L012
0.25	0.38	3	38	1620-0098.015	1620-0098L015
0.30	0.45	3	38	1620-0118.018	1620-0118L018
0.35	0.53	3	38	1620-0138.021	1620-0138L021
0.40	0.60	3	38	1620-0157.024	1620-0157L024
0.45	0.68	3	38	1620-0177.027	1620-0177L027
0.50	0.75	3	38	1620-0197.030	1620-0197L030
0.60	0.90	3	38	1620-0236.035	1620-0236L035
0.70	1.05	3	38	1620-0276.041	1620-0276L041
0.80	1.20	3	38	1620-0315.047	1620-0315L047
0.90	1.35	3	38	1620-0354.053	1620-0354L053
1.00	1.50	3	38	1620-0394.059	1620-0394L059
1.10	1.65	3	38	1620-0433.065	1620-0433L065
1.20	1.80	3	38	1620-0472.071	1620-0472L071
1.30	2.60	3	38	1620-0512.102	1620-0512L102
1.40	2.80	3	38	1620-0551.110	1620-0551L110
1.50	2.25	3	38	1620-0591.089	1620-0591L089
1.60	3.20	3	38	1620-0630.126	1620-0630L126
1.70	3.70	3	38	1620-0669.146	1620-0669L146
1.80	3.60	3	38	1620-0709.142	1620-0709L142
1.90	3.80	3	38	1620-0748.150	1620-0748L150
2.00	3.00	3	38	1620-0787.118	1620-0787L118
2.50	3.75	3	38	1620-0984.148	1620-0984L148
2.80	4.50	3	38	1620-1102.177	1620-1102L177
3.00	4.50	3	38	1620-1181.177	1620-1181L177
3.50	5.25	4	50	1620-1378.207	1620-1378L207
3.80	6.00	5	50	1620-1496.236	1620-1496L236
4.00	6.00	5	50	1620-1575.236	1620-1575L236
4.50	6.75	5	50	1620-1772.266	1620-1772L266
4.80	7.50	5	50	1620-1890.295	1620-1890L295
5.00	7.50	5	50	1620-1968.295	1620-1968L295
5.50	8.25	6	50	1620-2165.325	1620-2165L325
5.80	9.00	6	50	1620-2283.354	1620-2283L354
6.00	9.00	6	50	1620-2362.354	1620-2362L354

SERIES 1620 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30-40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆								☆	☆
Uncoated							☆	☆	★	☆	★	★	☆		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO STIRNRADIUSFRÄSER
MICRO FRAISE HEMISPHERIQUE
MICRO FRESE SFERICA



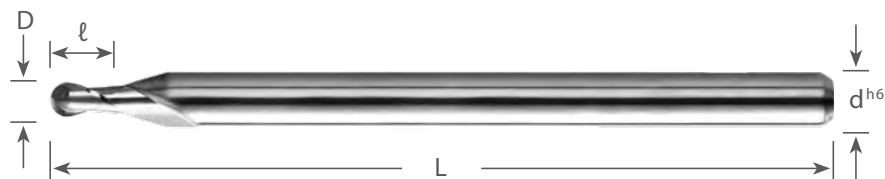
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.02	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.10	0.30	3	38	1625-0039.012	1625-0039L012
0.15	0.45	3	38	1625-0059.018	1625-0059L018
0.20	0.60	3	38	1625-0079.024	1625-0079L024
0.25	0.75	3	38	1625-0098.029	1625-0098L029
0.30	0.90	3	38	1625-0118.035	1625-0118L035
0.35	1.05	3	38	1625-0138.041	1625-0138L041
0.40	1.20	3	38	1625-0157.047	1625-0157L047
0.45	1.35	3	38	1625-0177.053	1625-0177L053
0.50	1.50	3	38	1625-0197.059	1625-0197L059
0.60	1.80	3	38	1625-0236.071	1625-0236L071
0.70	2.10	3	38	1625-0276.083	1625-0276L083
0.80	2.40	3	38	1625-0315.095	1625-0315L095
0.90	2.70	3	38	1625-0354.106	1625-0354L106
1.00	3.00	3	38	1625-0394.118	1625-0394L118
1.10	3.30	3	38	1625-0433.130	1625-0433L130
1.20	3.60	3	38	1625-0472.142	1625-0472L142
1.30	3.90	3	38	1625-0512.154	1625-0512L154
1.40	4.20	3	38	1625-0551.165	1625-0551L165
1.50	4.50	3	38	1625-0591.177	1625-0591L177
1.60	4.80	3	38	1625-0630.189	1625-0630L189
1.70	5.10	3	38	1625-0669.201	1625-0669L201
1.80	5.40	3	38	1625-0709.213	1625-0709L213
1.90	5.70	3	38	1625-0748.224	1625-0748L224
2.00	6.00	3	38	1625-0787.236	1625-0787L236
2.50	7.50	3	38	1625-0984.295	1625-0984L295
3.00	9.00	3	38	1625-1181.354	1625-1181L354
3.50	10.50	4	50	1625-1378.413	1625-1378L413
4.00	12.00	5	50	1625-1575.473	1625-1575L473
4.50	13.50	5	50	1625-1772.532	1625-1772L532
5.00	15.00	5	50	1625-1968.590	1625-1968L590
5.50	16.50	6	50	1625-2165.650	1625-2165L650
6.00	18.00	6	50	1625-2362.709	1625-2362L709

SERIES 1625 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆								☆	☆
Uncoated							☆	☆	★	☆	★	★			☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO STIRNRADIUSFRÄSER
MICRO FRAISE HEMISPHERIQUE
MICRO FRESE SFERICA



END MILLS

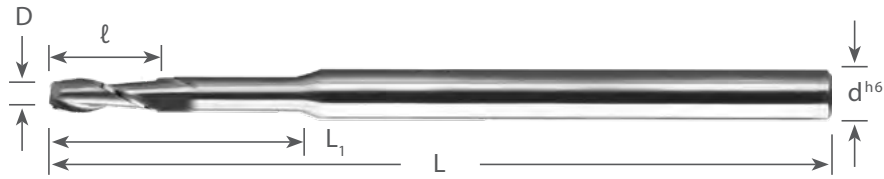
Stub Length | Kurze Ausführung | Exécution Courte | Versione Corta

D (mm) +0/-0.02	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.10	0.15	3	38	1635-0039.006	1635-0039L006
0.15	0.23	3	38	1635-0059.009	1635-0059L009
0.20	0.30	3	38	1635-0079.012	1635-0079L012
0.25	0.38	3	38	1635-0098.015	1635-0098L015
0.30	0.45	3	38	1635-0118.018	1635-0118L018
0.35	0.53	3	38	1635-0138.021	1635-0138L021
0.40	0.60	3	38	1635-0157.024	1635-0157L024
0.45	0.68	3	38	1635-0177.027	1635-0177L027
0.50	0.75	3	38	1635-0197.030	1635-0197L030
0.60	0.90	3	38	1635-0236.035	1635-0236L035
0.70	1.05	3	38	1635-0276.041	1635-0276L041
0.80	1.20	3	38	1635-0315.047	1635-0315L047
0.90	1.35	3	38	1635-0354.053	1635-0354L053
1.00	1.50	3	38	1635-0394.059	1635-0394L059
1.10	1.65	3	38	1635-0433.065	1635-0433L065
1.20	1.80	3	38	1635-0472.071	1635-0472L071
1.30	1.95	3	38	1635-0512.077	1635-0512L077
1.40	2.10	3	38	1635-0551.083	1635-0551L083
1.50	2.25	3	38	1635-0591.089	1635-0591L089
1.60	2.40	3	38	1635-0630.095	1635-0630L095
1.70	2.50	3	38	1635-0669.098	1635-0669L098
1.80	2.70	3	38	1635-0709.106	1635-0709L106
1.90	2.85	3	38	1635-0748.112	1635-0748L112
2.00	3.00	3	38	1635-0787.118	1635-0787L118
2.50	3.75	3	38	1635-0984.148	1635-0984L148
3.00	4.50	3	38	1635-1181.177	1635-1181L177
3.50	5.25	4	50	1635-1378.207	1635-1378L207
4.00	6.00	5	50	1635-1575.236	1635-1575L236
4.50	6.75	5	50	1635-1772.266	1635-1772L266
5.00	7.50	5	50	1635-1968.295	1635-1968L295
5.50	8.25	6	50	1635-2165.325	1635-2165L325
6.00	9.00	6	50	1635-2362.354	1635-2362L354

SERIES 1635 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆								☆	☆
Uncoated							☆	☆	★	☆	★	★	☆		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER
MICRO FRAISE
MICRO FRESE



Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

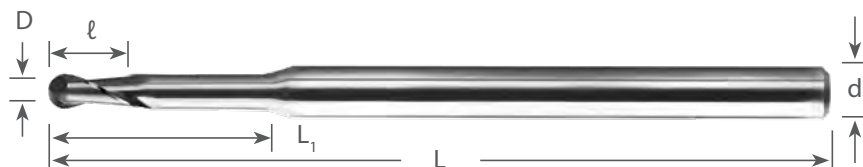
D (mm) +0/-0.02	ℓ (mm)	L1 (mm)	L (mm)	d (mm) h6	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.40	1.20	3	38	3	1640-0157.118	1640-0157L118
0.50	1.50	4	38	3	1640-0197.157	1640-0197L157
0.60	1.80	5	38	3	1640-0236.197	1640-0236L197
0.65	1.95	6	38	3	1640-0256.236	1640-0256L236
0.70	2.10	7	38	3	1640-0276.276	1640-0276L276
0.75	2.25	8	38	3	1640-0295.315	1640-0295L315
0.80	2.4	9	50	3	1640-0315.354	1640-0315L354
0.90	2.7	10	50	3	1640-0354.394	1640-0354L394
1.00	3.0	10	50	3	1640-0394.394	1640-0394L394
1.50	4.5	15	50	3	1640-0591.591	1640-0591L591
2.00	6.0	20	50	3	1640-0787.787	1640-0787L787
2.50	7.5	23	50	3	1640-0984.906	1640-0984L906
3.00	9.0	23	50	3	1640-1181.906	1640-1181L906
3.50	10.5	25	75	6	1640-1378.984	1640-1378L984
4.00	12.0	25	75	6	1640-1575.984	1640-1575L984
4.50	13.5	30	75	6	1640-1772.1181	1640-1772L1181
5.00	15.0	30	75	6	1640-1968.1181	1640-1968L1181
5.50	16.5	30	75	6	1640-2165.1181	1640-2165L1181
6.00	18.0	30	75	6	1640-2362.1181	1640-2362L1181

SERIES 1640 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆								☆	☆
Uncoated							☆	☆	★	☆	★	★	☆		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO STIRNRADIUSFRÄSER
MICRO FRAISE HEMISPHERIQUE
MICRO FRESE SFERICA



END MILLS

Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

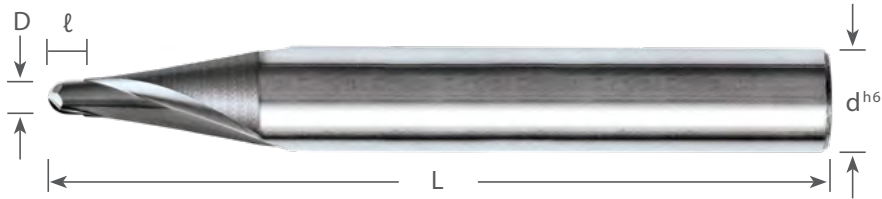
D (mm) +0/-0.02	ℓ (mm)	L1 (mm)	L (mm)	d (mm) h6	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.40	1.20	3	38	3	1645-0157.118	1645-0157L118
0.50	1.50	4	38	3	1645-0197.157	1645-0197L157
0.60	1.80	5	38	3	1645-0236.197	1645-0236L197
0.65	1.95	6	38	3	1645-0256.236	1645-0256L236
0.70	2.10	7	38	3	1645-0276.276	1645-0276L276
0.75	2.25	8	38	3	1645-0295.315	1645-0295L315
0.80	2.40	9	50	3	1645-0315.354	1645-0315L354
0.90	2.70	10	50	3	1645-0354.394	1645-0354L394
1.00	3.00	10	50	3	1645-0394.394	1645-0394L394
1.50	4.50	15	50	3	1645-0591.591	1645-0591L591
2.00	6.00	20	50	3	1645-0787.787	1645-0787L787
2.50	7.50	23	50	3	1645-0984.906	1645-0984L906
3.00	9.00	23	50	3	1645-1181.906	1645-1181L906
3.50	10.5	25	75	6	1645-1378.984	1645-1378L984
4.00	12.0	25	75	6	1645-1575.984	1645-1575L984
4.50	13.5	30	75	6	1645-1772.1181	1645-1772L1181
5.00	15.0	30	75	6	1645-1968.1181	1645-1968L1181
5.50	16.5	30	75	6	1645-2165.1181	1645-2165L1181
6.00	18.0	30	75	6	1645-2362.1181	1645-2362L1181

SERIES 1645 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆								☆	☆
Uncoated							☆	☆	★	☆	★	★	☆		☆

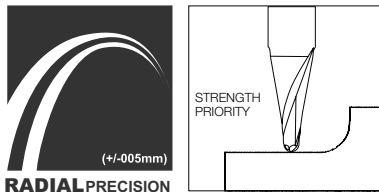
★ : Priority Materials ☆ : Applicable Materials

MIKRO STIRNRADIUSFRÄSER / HARTBEARBEITUNG
MICRO FRAISE HEMISPHERIQUE / POUR USINAGE DUR
MICRO FRESE SFERICA / PER MATERIALI TEMPRATI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

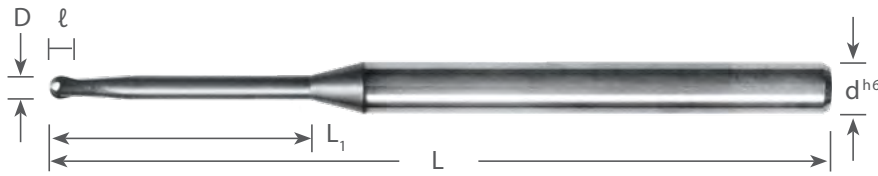
r (mm) +0/-0.005	D (mm)	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (AX coated)
0.10	0.20	0.2	6	45	1625-0079J008S
0.15	0.30	0.3	6	45	1625-0118J012S
0.20	0.40	0.4	6	45	1625-0157J016S
0.25	0.50	0.5	6	45	1625-0197J020S
0.30	0.60	0.6	6	45	1625-0236J024S
0.40	0.80	0.8	6	45	1625-0315J032S
0.50	1.00	1.0	6	45	1625-0394J040S
0.60	1.20	1.2	6	45	1625-0472J048S
0.70	1.40	1.4	6	45	1625-0551J055S
0.75	1.50	1.5	6	45	1625-0591J060S
0.80	1.60	1.6	6	45	1625-0630J063S
0.90	1.80	1.8	6	45	1625-0709J071S
1.00	2.00	2.0	6	45	1625-0787J078S
1.25	2.50	2.5	6	45	1625-0984J098S
1.50	3.00	3.0	6	45	1625-1181J118S



SERIES 16 HMS WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AX	☆	☆	★	★	☆	☆								☆	☆

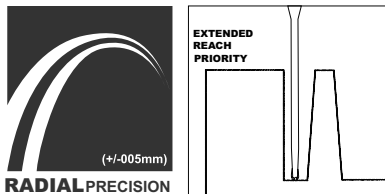
★ : Priority Materials ☆ : Applicable Materials

MIKRO STIRNRADIUSFRÄSER / HARTBEARBEITUNG
 MICRO FRAISE HEMISPHERIQUE / POUR USINAGE DUR
 MICRO FRESE SFERICA / PER MATERIALI TEMPRATI



Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

r (mm) +0/-0.005	D (mm)	ℓ (mm)	L1 (mm)	L1Ø (mm)	d (mm) h6	L (mm)	Art. No. (AX coated)
0.10	0.20	0.2	2	0.17	4	50	1625-0079J008R
0.15	0.30	0.3	3	0.26	4	50	1625-0118J012R
0.20	0.40	0.4	4	0.36	4	50	1625-0157J016R
0.25	0.50	0.5	5	0.45	4	50	1625-0197J020R
0.30	0.60	0.6	6	0.57	4	50	1625-0236J024R
0.40	0.80	0.8	8	0.76	4	50	1625-0315J032R
0.50	1.00	1.0	10	0.95	4	50	1625-0394J040R
0.60	1.20	1.2	12	1.14	4	50	1625-0472J048R
0.70	1.40	1.4	14	1.33	4	50	1625-0551J055R
0.75	1.50	1.5	15	1.43	4	50	1625-0591J060R
0.80	1.60	1.6	16	1.52	4	50	1625-0630J063R
0.90	1.80	1.8	18	1.71	4	50	1625-0709J071R
1.00	2.00	2.0	20	1.90	4	60	1625-0787J078R
1.25	2.50	2.5	25	2.43	4	60	1625-0984J098R
1.50	3.00	3.0	30	2.91	6	70	1625-1181J118R



SERIES 16 HMR WORKPIECE MATERIAL

Series to Match Workpiece Material															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AX	☆	☆	★	★	☆	☆								☆	☆

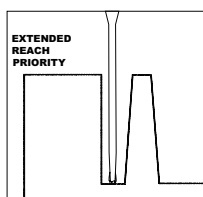
★ : Priority Materials ☆ : Applicable Materials

MIKRO STIRNRADIUSFRÄSER / HARTBEARBEITUNG
 MICRO FRAISE HEMISPHERIQUE / POUR USINAGE DUR
 MICRO FRESE SFERICA / PER MATERIALI TEMPRATI



Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

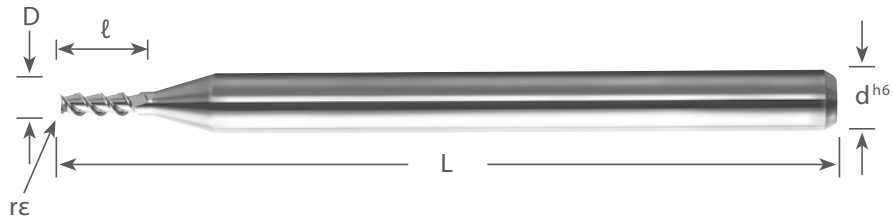
r (mm) +0/-0.005	D (mm) +0/-0.0254	ℓ (mm)	L1 (mm)	d (mm) h6	L (mm)	Art. No. (AX coated)
0.5	1	1	2	4	50	16RB0394U-2
0.5	1	1	4	4	50	16RB0394U-4
0.5	1	1	6	4	50	16RB0394U-6
0.5	1	1	8	4	50	16RB0394U-8
0.5	1	1	10	4	50	16RB0394U-10
0.5	1	1	12	4	50	16RB0394U-12
0.75	1.5	1.5	2	4	50	16RB0591U-2
0.75	1.5	1.5	4	4	50	16RB0591U-4
0.75	1.5	1.5	6	4	50	16RB0591U-6
0.75	1.5	1.5	8	4	50	16RB0591U-8
0.75	1.5	1.5	10	4	50	16RB0591U-10
0.75	1.5	1.5	12	4	50	16RB0591U-12
1	2	2	2	4	50	16RB0787U-2
1	2	2	4	4	50	16RB0787U-4
1	2	2	6	4	50	16RB0787U-6
1	2	2	8	4	50	16RB0787U-8
1	2	2	10	4	50	16RB0787U-10
1	2	2	12	4	50	16RB0787U-12
1.5	3	3	2	6	60	16RB1181U-2
1.5	3	3	4	6	60	16RB1181U-4
1.5	3	3	6	6	60	16RB1181U-6
1.5	3	3	8	6	60	16RB1181U-8
1.5	3	3	10	6	60	16RB1181U-10
1.5	3	3	12	6	60	16RB1181U-12



SERIES 16RB WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AX	☆	☆	★	★	☆	☆								☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER MIT ECKENRADIUS
MICRO FRAISE TORIQUE
MICRO FRESE CON RAGGIO SFERICHE



END MILLS

Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

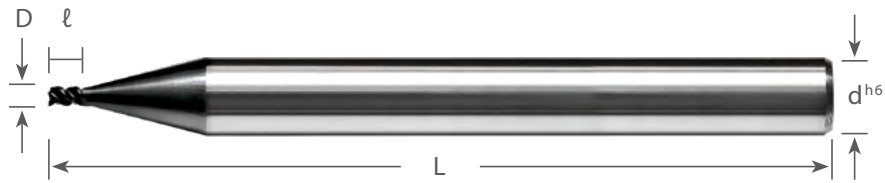
D (mm) +0/-0.02	ℓ (mm)	rε (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
1.00	3	0.10	3	38	1703-0394.118R	1703-0394L118R
1.50	4.5	0.15	3	38	1703-0591.177R	1703-0591L177R
2.00	6	0.20	3	38	1703-0787.236R	1703-0787L236R
2.50	7.5	0.25	3	38	1703-0984.295R	1703-0984L295R
3.00	9	0.30	3	38	1703-1181.354R	1703-1181L354R
3.50	12	0.35	6	50	1703-1378.472R	1703-1378L472R
4.00	12	0.40	5	50	1703-1575.473R	1703-1575L473R
4.50	15	0.45	6	50	1703-1772.591R	1703-1772L591R
5.00	15	0.50	5	50	1703-1968.590R	1703-1968L590R
5.50	18	0.55	6	50	1703-2165.709R	1703-2165L709R
6.00	18	0.60	6	50	1703-2362.709R	1703-2362L709R

Corner Radius Tolerance	
Diameter (D)	1.00 mm - 6.00 mm
+ / -	0.03 mm

SERIES 1703 WORKPIECE MATERIAL														
Coating	P Steel ~30HRC	P Steel 30-40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt
AlTiN	★	★	★	☆	☆	☆								☆
Uncoated							☆	☆	☆	☆	☆	☆	☆	☆

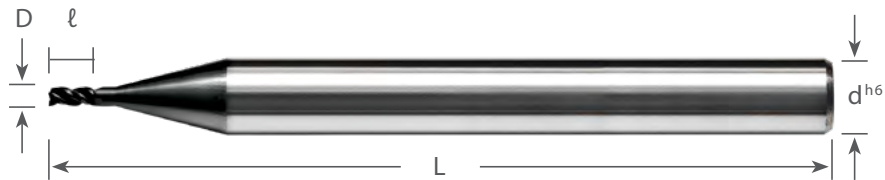
★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER
MICRO FRAISE
MICRO FRESE



Stub Length | Kurze Ausführung | Exécution Courte | Versione Corta

D (mm) +0/-0.02	d (mm) h6	ℓ (mm)	L (mm)	Art. No. (AX coated)
1.00	6	1.5	63.5	T03940059
1.50	6	2.5	63.5	T05910098
2.00	6	3.0	63.5	T07870118
2.50	6	4.0	63.5	T09840157
3.00	6	5.0	63.5	T11810197
4.00	6	6.0	63.5	T15750236
5.00	6	8.0	63.5	T19690315
6.00	6	9.0	63.5	T23620354
8.00	8	12.0	63.5	T31500472



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.02	d (mm) h6	ℓ (mm)	L (mm)	Art. No. (AX coated)
1.00	6	3.0	63.5	T03940118
1.50	6	4.5	63.5	T05910177
2.00	6	6.0	63.5	T07870236
2.50	6	7.5	63.5	T09840295
3.00	6	9.0	63.5	T11810354
4.00	6	12.0	63.5	T15750472
5.00	6	15.0	63.5	T19690591
6.00	6	18.0	63.5	T23620709
8.00	8	24.0	63.5	T31500945

TITAN-AX / TITAN-AXM WORKPIECE MATERIAL													
Coating	P	P	H	H	M	K	N	N	N	N	N	N	S
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic
AX	☆	☆	★	★	☆	☆							★

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER
MICRO FRAISE
MICRO FRESE



END MILLS

Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

D (mm) +0/-0.02	d (mm) h6	ℓ (mm)	L (mm)	L1 (mm)	Art. No. (AlTiN coated)
1.00	6	3.0	75	10	T03940118ER
1.50	6	4.5	75	15	T05910177ER
2.00	6	6.0	75	20	T07870236ER
2.50	6	7.5	75	25	T09840295ER
3.00	6	9.0	75	30	T11810354ER
4.00	6	12.0	75	30	T15750472ER
5.00	6	15.0	75	40	T19690591ER
6.00	6	18.0	75	45	T23620709ER
8.00	8	24.0	100	50	T31500945ER

TITAN-AX / TITAN-AXM WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AX	☆	☆	★	★	☆	☆								★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER MIT ECKENRADIUS
MICRO FRAISE TORIQUE
MICRO FRESE CON RAGGIO ANGOLARE



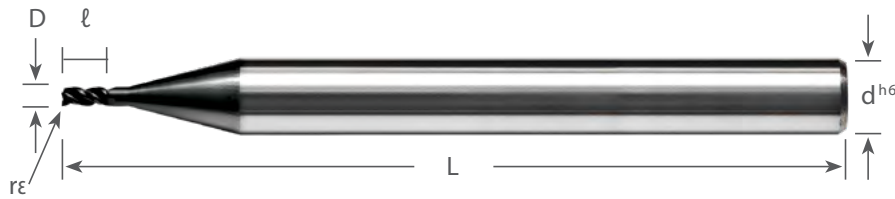
Stub Length | Kurze Ausführung | Exécution Courte | Versione Corta

D (mm) +0/-0.02	d (mm) h6	ℓ (mm)	L (mm)	rε	Art. No. (AX coated)
1.00	6	1.5	63.5	0.1	T03940059CR1
1.00	6	1.5	63.5	0.2	T03940059CR2
1.00	6	1.5	63.5	0.3	T03940059CR3
1.50	6	2.5	63.5	0.1	T05910098CR1
1.50	6	2.5	63.5	0.2	T05910098CR2
1.50	6	2.5	63.5	0.3	T05910098CR3
1.50	6	2.5	63.5	0.5	T05910098CR4
2.00	6	3.0	63.5	0.2	T07870118CR1
2.00	6	3.0	63.5	0.3	T07870118CR2
2.00	6	3.0	63.5	0.5	T07870118CR3
2.50	6	4.0	63.5	0.2	T09840157CR1
2.50	6	4.0	63.5	0.3	T09840157CR2
2.50	6	4.0	63.5	0.5	T09840157CR3
3.00	6	5.0	63.5	0.2	T11810197CR1
3.00	6	5.0	63.5	0.3	T11810197CR2
3.00	6	5.0	63.5	0.5	T11810197CR3
3.00	6	5.0	63.5	1.0	T11810197CR4
4.00	6	6.0	63.5	0.2	T15750236CR1
4.00	6	6.0	63.5	0.3	T15750236CR2
4.00	6	6.0	63.5	0.5	T15750236CR3
4.00	6	6.0	63.5	1.0	T15750236CR4
5.00	6	8.0	63.5	0.2	T19690315CR1
5.00	6	8.0	63.5	0.3	T19690315CR2
5.00	6	8.0	63.5	0.5	T19690315CR3
5.00	6	8.0	63.5	1.0	T19690315CR4
5.00	6	8.0	63.5	1.5	T19690315CR5
6.00	6	9.0	63.5	0.2	T23620354CR1
6.00	6	9.0	63.5	0.3	T23620354CR2
6.00	6	9.0	63.5	0.5	T23620354CR3
6.00	6	9.0	63.5	1.0	T23620354CR4
6.00	6	9.0	63.5	1.5	T23620354CR5
6.00	6	9.0	63.5	2.0	T23620354CR6
8.00	8	12.0	63.5	0.2	T31500472CR1
8.00	8	12.0	63.5	0.3	T31500472CR2
8.00	8	12.0	63.5	0.5	T31500472CR3
8.00	8	12.0	63.5	1.0	T31500472CR4
8.00	8	12.0	63.5	1.5	T31500472CR5
8.00	8	12.0	63.5	2.0	T31500472CR6

TITAN-AX / TITAN-AXM WORKPIECE MATERIAL													
Coating	P	P	H	H	M	K	N	N	N	N	N	N	S
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic
AX	☆	☆	★	★	☆	☆							★

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER MIT ECKENRADIUS
MICRO FRAISE TORIQUE
MICRO FRESE CON RAGGIO ANGOLARE



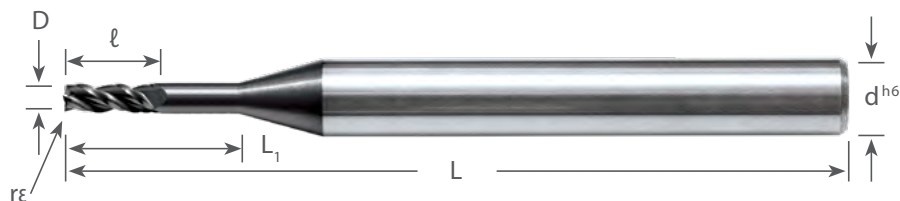
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.02	d (mm) h6	ℓ (mm)	L (mm)	rε	Art. No. (AX coated)
1.00	6	3.0	63.5	0.1	T03940118CR1
1.00	6	3.0	63.5	0.2	T03940118CR2
1.00	6	3.0	63.5	0.3	T03940118CR3
1.50	6	4.5	63.5	0.1	T05910177CR1
1.50	6	4.5	63.5	0.2	T05910177CR2
1.50	6	4.5	63.5	0.3	T05910177CR3
1.50	6	4.5	63.5	0.5	T05910177CR4
2.00	6	6.0	63.5	0.2	T07870236CR1
2.00	6	6.0	63.5	0.3	T07870236CR2
2.00	6	6.0	63.5	0.5	T07870236CR3
2.50	6	7.5	63.5	0.2	T09840295CR1
2.50	6	7.5	63.5	0.3	T09840295CR2
2.50	6	7.5	63.5	0.5	T09840295CR3
3.00	6	9.0	63.5	0.2	T11810354CR1
3.00	6	9.0	63.5	0.3	T11810354CR2
3.00	6	9.0	63.5	0.5	T11810354CR3
3.00	6	9.0	63.5	1.0	T11810354CR4
4.00	6	12.0	63.5	0.2	T15750472CR1
4.00	6	12.0	63.5	0.3	T15750472CR2
4.00	6	12.0	63.5	0.5	T15750472CR3
4.00	6	12.0	63.5	1.0	T15750472CR4
5.00	6	15.0	63.5	0.2	T19690591CR1
5.00	6	15.0	63.5	0.3	T19690591CR2
5.00	6	15.0	63.5	0.5	T19690591CR3
5.00	6	15.0	63.5	1.0	T19690591CR4
5.00	6	15.0	63.5	1.5	T19690591CR5
6.00	6	18.0	63.5	0.2	T23620709CR1
6.00	6	18.0	63.5	0.3	T23620709CR2
6.00	6	18.0	63.5	0.5	T23620709CR3
6.00	6	18.0	63.5	1.0	T23620709CR4
6.00	6	18.0	63.5	1.5	T23620709CR5
6.00	6	18.0	63.5	2.0	T23620709CR6
8.00	8	24.0	63.5	0.2	T31500945CR1
8.00	8	24.0	63.5	0.3	T31500945CR2
8.00	8	24.0	63.5	0.5	T31500945CR3
8.00	8	24.0	63.5	1.0	T31500945CR4
8.00	8	24.0	63.5	1.5	T31500945CR5
8.00	8	24.0	63.5	2.0	T31500945CR6

TITAN-AX / TITAN-AXM WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AX	☆	☆	★	★	☆	☆								★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER MIT ECKENRADIUS
MICRO FRAISE TORIQUE
MICRO FRESE CON RAGGIO ANGOLARE



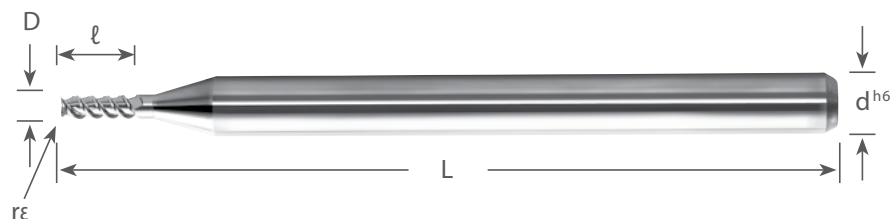
Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

D (mm) +0/-0.02	d (mm) h6	ℓ (mm)	L (mm)	L1 (mm)	rε	Art. No. (AX coated)
1.00	6	3.0	75	10	0.1	T03940118ECR1
1.00	6	3.0	75	10	0.2	T03940118ECR2
1.00	6	3.0	75	10	0.3	T03940118ECR3
1.50	6	4.5	75	15	0.1	T05910177ECR1
1.50	6	4.5	75	15	0.2	T05910177ECR2
1.50	6	4.5	75	15	0.3	T05910177ECR3
1.50	6	4.5	75	15	0.5	T05910177ECR4
2.00	6	6.0	75	20	0.2	T07870236ECR1
2.00	6	6.0	75	20	0.3	T07870236ECR2
2.00	6	6.0	75	20	0.5	T07870236ECR3
2.50	6	7.5	75	25	0.2	T09840295ECR1
2.50	6	7.5	75	25	0.3	T09840295ECR2
2.50	6	7.5	75	25	0.5	T09840295ECR3
3.00	6	9.0	75	30	0.2	T11810354ECR1
3.00	6	9.0	75	30	0.3	T11810354ECR2
3.00	6	9.0	75	30	0.5	T11810354ECR3
3.00	6	9.0	75	30	1.0	T11810354ECR4
4.00	6	12.0	75	30	0.2	T15750472ECR1
4.00	6	12.0	75	30	0.3	T15750472ECR2
4.00	6	12.0	75	30	0.5	T15750472ECR3
4.00	6	12.0	75	30	1.0	T15750472ECR4
5.00	6	15.0	75	40	0.2	T19690591ECR1
5.00	6	15.0	75	40	0.3	T19690591ECR2
5.00	6	15.0	75	40	0.5	T19690591ECR3
5.00	6	15.0	75	40	1.0	T19690591ECR4
5.00	6	15.0	75	40	1.5	T19690591ECR5
6.00	6	18.0	75	45	0.2	T23620709ECR1
6.00	6	18.0	75	45	0.3	T23620709ECR2
6.00	6	18.0	75	45	0.5	T23620709ECR3
6.00	6	18.0	75	45	1.0	T23620709ECR4
6.00	6	18.0	75	45	1.5	T23620709ECR5
6.00	6	18.0	75	45	2.0	T23620709ECR6
8.00	8	24.0	100	50	0.2	T31500945ECR1
8.00	8	24.0	100	50	0.3	T31500945ECR2
8.00	8	24.0	100	50	0.5	T31500945ECR3
8.00	8	24.0	100	50	1.0	T31500945ECR4
8.00	8	24.0	100	50	1.5	T31500945ECR5
8.00	8	24.0	100	50	2.0	T31500945ECR6

TITAN-AX / TITAN-AXM WORKPIECE MATERIAL													
Coating	P	P	H	H	M	K	N	N	N	N	N	N	S
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic
AX	☆	☆	★	★	☆	☆							★
													★

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER MIT ECKENRADIUS
MICRO FRAISE TORIQUE
MICRO FRESE CON RAGGIO SFERICHE



END MILLS

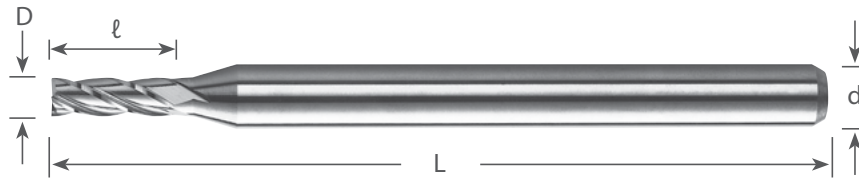
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.02	ℓ (mm)	rε	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
1.00	3	0.10	3	38	1804-0394.118R	1804-0394L118R
1.50	4.5	0.15	3	38	1804-0591.177R	1804-0591L177R
2.00	6	0.20	3	38	1804-0787.236R	1804-0787L236R
2.50	7.5	0.25	3	38	1804-0984.295R	1804-0984L295R
3.00	9	0.30	3	38	1804-1181.354R	1804-1181L354R
3.50	12	0.35	6	50	1804-1378.473R	1804-1378L473R
4.00	12	0.40	5	50	1804-1575.473R	1804-1575L473R
4.50	15	0.45	6	50	1804-1772.590R	1804-1772L590R
5.00	15	0.50	5	50	1804-1968.590R	1804-1968L590R
5.50	18	0.55	6	50	1804-2165.709R	1804-2165L709R
6.00	18	0.60	6	50	1804-2362.709R	1804-2362L709R

SERIES 1804 WORKPIECE MATERIAL														
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt
AlTiN	★	★	★	☆	☆	☆								☆
Uncoated							☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER
MICRO FRAISE
MICRO FRESE



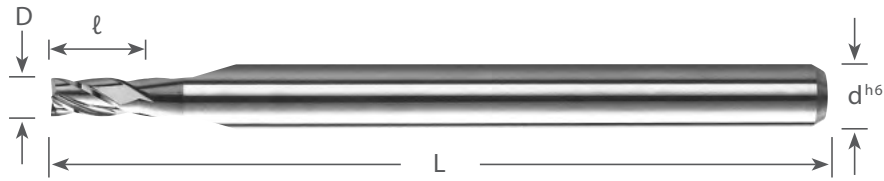
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.02	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.10	0.30	3	38	1810-0039.012	1810-0039L012
0.15	0.45	3	38	1810-0059.018	1810-0059L018
0.20	0.60	3	38	1810-0079.024	1810-0079L024
0.25	0.75	3	38	1810-0098.029	1810-0098L029
0.30	0.90	3	38	1810-0118.035	1810-0118L035
0.35	1.05	3	38	1810-0138.041	1810-0138L041
0.40	1.20	3	38	1810-0157.047	1810-0157L047
0.45	1.35	3	38	1810-0177.053	1810-0177L053
0.50	1.50	3	38	1810-0197.059	1810-0197L059
0.60	1.80	3	38	1810-0236.071	1810-0236L071
0.70	2.10	3	38	1810-0276.083	1810-0276L083
0.80	2.40	3	38	1810-0315.095	1810-0315L095
0.90	2.70	3	38	1810-0354.106	1810-0354L106
1.00	3.00	3	38	1810-0394.118	1810-0394L118
1.10	3.30	3	38	1810-0433.130	1810-0433L130
1.20	3.60	3	38	1810-0472.142	1810-0472L142
1.30	3.90	3	38	1810-0512.154	1810-0512L154
1.40	4.20	3	38	1810-0551.165	1810-0551L165
1.50	4.50	3	38	1810-0591.177	1810-0591L177
1.60	4.80	3	38	1810-0630.189	1810-0630L189
1.70	5.10	3	38	1810-0669.200	1810-0669L200
1.80	5.40	3	38	1810-0709.213	1810-0709L213
1.90	5.70	3	38	1810-0748.224	1810-0748L224
2.00	6.00	3	38	1810-0787.236	1810-0787L236
2.50	7.50	3	38	1810-0984.295	1810-0984L295
2.80	9.00	3	38	1810-1102.354	1810-1102.354
3.00	9.00	3	38	1810-1181.354	1810-1181L354
3.50	10.50	4	50	1810-1378.413	1810-1378L413
3.80	12.00	5	50	1810-1496.473	1810-1496.473
4.00	12.00	5	50	1810-1575.473	1810-1575L473
4.50	13.50	5	50	1810-1772.532	1810-1772L532
4.80	15.00	5	50	1810-1890.590	1810-1890.590
5.00	15.00	5	50	1810-1968.590	1810-1968L590
5.50	16.50	6	50	1810-2165.650	1810-2165L650
5.80	18.00	6	50	1810-2283.709	1810-2283.709
6.00	18.00	6	50	1810-2362.709	1810-2362L709

SERIES 1810 WORKPIECE MATERIAL														
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt
AlTiN	★	★	★	☆	☆	☆								☆
Uncoated							☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER
MICRO FRAISE
MICRO FRESE



END MILLS

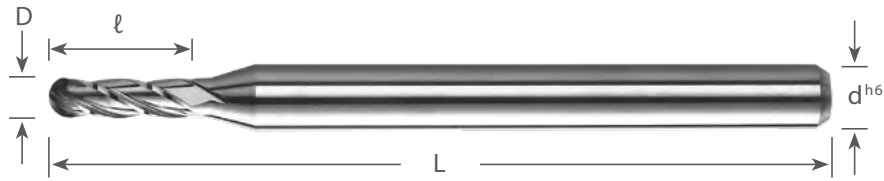
Stub Length | Kurze Ausführung | Exécution Courte | Versione Corta

D (mm) +0/-0.02	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.10	0.15	3	38	1820-0039.006	1820-0039L006
0.15	0.23	3	38	1820-0059.009	1820-0059L009
0.20	0.30	3	38	1820-0079.012	1820-0079L012
0.25	0.38	3	38	1820-0098.015	1820-0098L015
0.30	0.45	3	38	1820-0118.018	1820-0118L018
0.35	0.53	3	38	1820-0138.021	1820-0138L021
0.40	0.60	3	38	1820-0157.024	1820-0157L024
0.45	0.68	3	38	1820-0177.027	1820-0177L027
0.50	0.75	3	38	1820-0197.030	1820-0197L030
0.60	0.90	3	38	1820-0236.035	1820-0236L035
0.70	1.05	3	38	1820-0276.041	1820-0276L041
0.80	1.20	3	38	1820-0315.047	1820-0315L047
0.90	1.35	3	38	1820-0354.053	1820-0354L053
1.00	1.50	3	38	1820-0394.059	1820-0394L059
1.10	1.50	3	38	1820-0433.059	1820-0433L059
1.20	1.50	3	38	1820-0472.059	1820-0472L059
1.30	2.25	3	38	1820-0512.089	1820-0512L089
1.40	2.25	3	38	1820-0551.089	1820-0551L089
1.50	2.25	3	38	1820-0591.089	1820-0591L089
1.60	2.25	3	38	1820-0630.089	1820-0630L089
1.70	2.25	3	38	1820-0669.089	1820-0669L089
1.80	3.00	3	38	1820-0709.118	1820-0709L118
1.90	3.00	3	38	1820-0748.118	1820-0748L118
2.00	3.00	3	38	1820-0787.118	1820-0787L118
2.50	3.75	3	38	1820-0984.148	1820-0984L148
2.80	4.50	3	38	1820-1102.177	1820-1102L177
3.00	4.50	3	38	1820-1181.177	1820-1181L177
3.50	5.25	4	50	1820-1378.207	1820-1378L207
3.80	6.00	5	50	1820-1496.236	1820-1496L236
4.00	6.00	5	50	1820-1575.236	1820-1575L236
4.50	6.75	5	50	1820-1772.266	1820-1772L266
4.80	7.50	5	50	1820-1890.295	1820-1890L295
5.00	7.50	5	50	1820-1968.295	1820-1968L295
5.50	8.25	6	50	1820-2165.325	1820-2165L325
5.80	9.00	6	50	1820-2283.354	1820-2283L354
6.00	9.00	6	50	1820-2362.354	1820-2362L354

SERIES 1820 WORKPIECE MATERIAL														
Coating	P Steel ~30HRC	P Steel 30-40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt
AlTiN	★	★	★	☆	☆	☆								☆
Uncoated							☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO STIRNRADIUSFRÄSER
MICRO FRAISE HEMISPHERIQUE
MICRO FRESE SFERICA



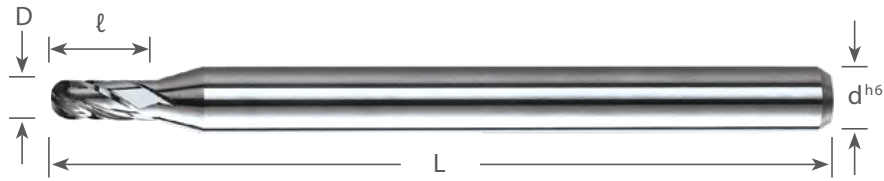
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.02	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.40	1.20	3	38	1825-0157.047	1825-0157L047
0.45	1.35	3	38	1825-0177.053	1825-0177L053
0.50	1.50	3	38	1825-0197.059	1825-0197L059
0.60	1.80	3	38	1825-0236.071	1825-0236L071
0.70	2.10	3	38	1825-0276.083	1825-0276L083
0.80	2.40	3	38	1825-0315.095	1825-0315L095
0.90	2.70	3	38	1825-0354.106	1825-0354L106
1.00	3.00	3	38	1825-0394.118	1825-0394L118
1.10	3.30	3	38	1825-0433.130	1825-0433L130
1.20	3.60	3	38	1825-0472.142	1825-0472L142
1.30	3.90	3	38	1825-0512.154	1825-0512L154
1.40	4.20	3	38	1825-0551.165	1825-0551L165
1.50	4.50	3	38	1825-0591.177	1825-0591L177
1.60	4.80	3	38	1825-0630.189	1825-0630L189
1.70	5.10	3	38	1825-0669.200	1825-0669L200
1.80	5.40	3	38	1825-0709.213	1825-0709L213
1.90	5.70	3	38	1825-0748.224	1825-0748L224
2.00	6.00	3	38	1825-0787.236	1825-0787L236
2.50	7.50	3	38	1825-0984.295	1825-0984L295
3.00	9.00	3	38	1825-1181.354	1825-1181L354
3.50	10.50	4	50	1825-1378.413	1825-1378L413
4.00	12.00	5	50	1825-1575.473	1825-1575L473
4.50	13.50	5	50	1825-1772.532	1825-1772L532
5.00	15.00	5	50	1825-1968.590	1825-1968L590
5.50	16.50	6	50	1825-2165.650	1825-2165L650
6.00	18.00	6	50	1825-2362.709	1825-2362L709

SERIES 1825 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆								☆	☆
Uncoated							☆	☆	☆	☆	☆	☆	☆		☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO STIRNRADIUSFRÄSER
MICRO FRAISE HEMISPHERIQUE
MICRO FRESE SFERICA



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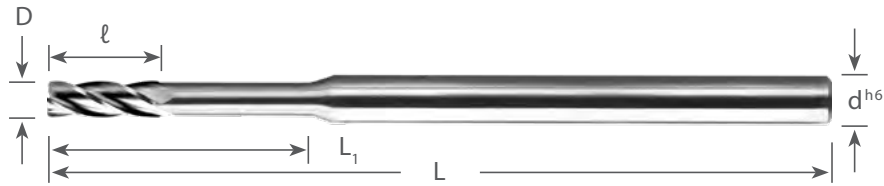
Stub Length | Kurze Ausführung | Exécution Courte | Versione Corta

D (mm) +0/-0.02	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.40	0.60	3	38	1835-0157.024	1835-0157L024
0.45	0.68	3	38	1835-0177.027	1835-0177L027
0.50	0.75	3	38	1835-0197.030	1835-0197L030
0.60	0.90	3	38	1835-0236.035	1835-0236L035
0.70	1.05	3	38	1835-0276.041	1835-0276L041
0.80	1.20	3	38	1835-0315.047	1835-0315L047
0.90	1.35	3	38	1835-0354.053	1835-0354L053
1.00	1.50	3	38	1835-0394.059	1835-0394L059
1.50	2.25	3	38	1835-0591.089	1835-0591L089
2.00	3.00	3	38	1835-0787.118	1835-0787L118
2.50	3.75	3	38	1835-0984.148	1835-0984L148
3.00	4.50	3	38	1835-1181.177	1835-1181L177
3.50	5.25	4	50	1835-1378.207	1835-1378L207
4.00	6.00	5	50	1835-1575.236	1835-1575L236
4.50	6.75	5	50	1835-1772.266	1835-1772L266
5.00	7.50	5	50	1835-1968.295	1835-1968L295
5.50	8.25	6	50	1835-2165.325	1835-2165L325
6.00	9.00	6	50	1835-2362.354	1835-2362L354

SERIES 1835 WORKPIECE MATERIAL														
Coating	P Steel ~30HRC	P Steel 30-40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt
AlTiN	★	★	★	☆	☆	☆								☆
Uncoated							☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER
MICRO FRAISE
MICRO FRESE



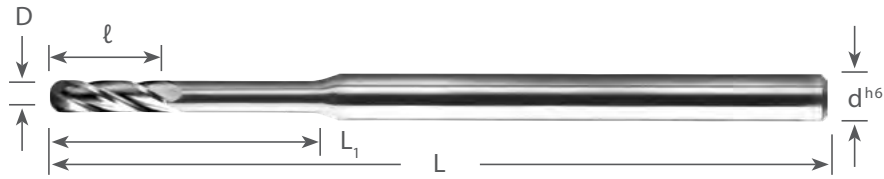
Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

D (mm) +0/-0.02	ℓ (mm)	L1 (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.40	1.20	3	3	38	1840-0157.118	1840-0157L118
0.50	1.50	4	3	38	1840-0197.157	1840-0197L157
0.60	1.80	5	3	38	1840-0236.197	1840-0236L197
0.65	1.95	6	3	38	1840-0256.236	1840-0256L236
0.70	2.10	7	3	38	1840-0276.276	1840-0276L276
0.75	2.25	8	3	38	1840-0295.315	1840-0295L315
0.80	2.40	9	3	50	1840-0315.354	1840-0315L354
0.90	2.70	10	3	50	1840-0354.394	1840-0354L394
1.00	3.00	10	3	50	1840-0394.394	1840-0394L394
1.50	4.50	15	3	50	1840-0591.591	1840-0591L591
2.00	6.00	20	3	50	1840-0787.787	1840-0787L787
2.50	7.50	23	3	50	1840-0984.906	1840-0984L906
3.00	9.00	23	3	50	1840-1181.906	1840-1181L906
3.50	10.5	25	6	75	1840-1378.984	1840-1378L984
4.00	12.0	25	6	75	1840-1575.984	1840-1575L984
4.50	13.5	30	6	75	1840-1772.1181	1840-1772L1181
5.00	15.0	30	6	75	1840-1969.1181	1840-1969L1181
5.50	16.5	30	6	75	1840-2165.1181	1840-2165L1181
6.00	18.0	30	6	75	1840-2362.1181	1840-2362L1181

SERIES 1840 WORKPIECE MATERIAL														
Coating	P Steel ~30HRC	P Steel 30-40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt
AlTiN	★	★	★	☆	☆	☆								☆
Uncoated							☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO STIRNRADIUSFRÄSER
MICRO FRAISE HEMISPHERIQUE
MICRO FRESE SFERICA



END MILLS

Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

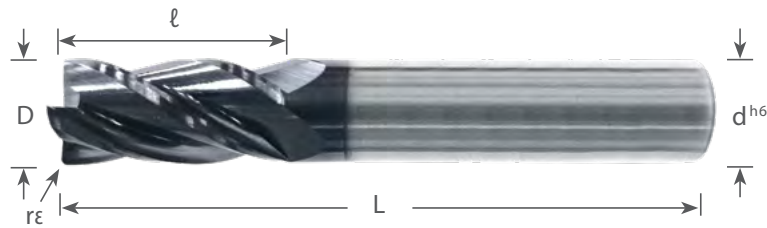
D (mm) +0/-0.02	ℓ (mm)	L1 (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
0.40	1.20	3	3	38	1845-0157.118	1845-0157L118
0.50	1.50	4	3	38	1845-0197.157	1845-0197L157
0.60	1.80	5	3	38	1845-0236.197	1845-0236L197
0.65	1.95	6	3	38	1845-0256.236	1845-0256L236
0.70	2.10	7	3	38	1845-0276.276	1845-0276L276
0.75	2.25	8	3	38	1845-0295.315	1845-0295L315
0.80	2.40	9	3	50	1845-0315.354	1845-0315L354
0.90	2.70	10	3	50	1845-0354.394	1845-0354L394
1.00	3.00	10	3	50	1845-0394.394	1845-0394L394
1.50	4.50	15	3	50	1845-0591.591	1845-0591L591
2.00	6.00	20	3	50	1845-0787.787	1845-0787L787
2.50	7.50	23	3	50	1845-0984.906	1845-0984L906
3.00	9.00	23	3	50	1845-1181.906	1845-1181L906
3.50	10.5	25	6	75	1845-1378.984	1845-1378L984
4.00	12.0	25	6	75	1845-1575.984	1845-1575L984
4.50	13.5	30	6	75	1845-1772.1181	1845-1772L1181
5.00	15.0	30	6	75	1845-1968.1181	1845-1968L1181
5.50	16.5	30	6	75	1845-2165.1181	1845-2165L1181
6.00	18.0	30	6	75	1845-2362.1181	1845-2362L1181

SERIES 1845 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆								☆	☆
Uncoated							☆	☆	☆	☆	☆	☆	☆		☆

★ : Priority Materials ☆ : Applicable Materials

APOLLO SCHAFTFRÄSER / SCHRUPPEN - SCHLICHTEN
MICRO FRAISE / EBAUCHE - FINITION
FRESE SERIE APOLLO / SGROSSATURA - FINITURA



Stub Length | Kurze Ausführung | Exécution Courte | Versione Corta

D (mm) h10	d (mm) h6	ℓ (mm)	L (mm)	rE	Art. No. (ALCrN coated)
3	3	6	38	0.4	AP4M-1181.236
6	6	10	50	0.4	AP4M-2362.394
8	8	12	50	0.4	AP4M-3150.472
10	10	12	50	0.4	AP4M-3937.787
12	12	16	63	0.7	AP4M-4724.630
16	16	20	89	0.7	AP4M-6299.787
20	20	22	101	0.7	AP4M-7874.866

Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) h10	d (mm) h6	ℓ (mm)	L (mm)	rE	Art. No. (ALCrN coated)
4	4	14	51	0.4	AP4M-1575.551
6	6	20	63	0.4	AP4M-2362.787
8	8	20	63	0.4	AP4M-3150.787
10	10	25	70	0.4	AP4M-3937.984
12	12	25	76	0.6	AP4M-4724.984
16	16	32	89	0.7	AP4M-6299.1260
20	20	38	100	0.7	AP4M-7874.1496
25	25	38	100	0.7	AP4M-10000.1496

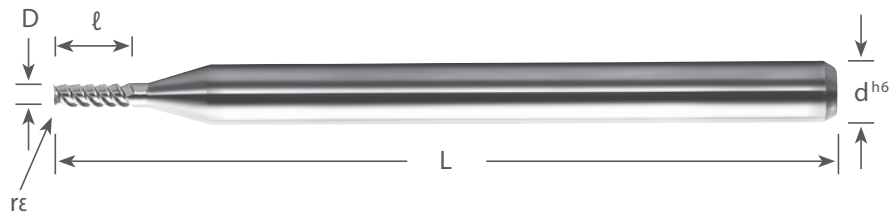
Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

D (mm) h10	d (mm) h6	ℓ (mm)	L (mm)	rE	Art. No. (ALCrN coated)
6	6	25	75	0.4	AP4M-2362.984
8	8	25	75	0.4	AP4M-3150.984
10	10	30	75	0.4	AP4M-3937.1181
12	12	50	100	0.6	AP4M-4724.1969
14	14	50	125	0.6	AP4M-5511.1969
16	16	50	125	0.7	AP4M-6299.1969
18	18	50	125	0.7	AP4M-7087.1969
20	20	50	125	0.8	AP4M-7874.1969
25	25	50	125	0.8	AP4M-10000.1969

SERIES AP4M WORKPIECE MATERIAL													
Coating	P	P	H	H	M	K	N	N	N	N	N	N	S
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic
ALCrN	☆	☆	★	★	★	☆			☆				★

★ : Priority Materials ☆ : Applicable Materials

MIKRO SCHAFTFRÄSER MIT ECKENRADIUS
MICRO FRAISE TORIQUE
MICRO FRESE CON RAGGIO SFERICHE



END MILLS

Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

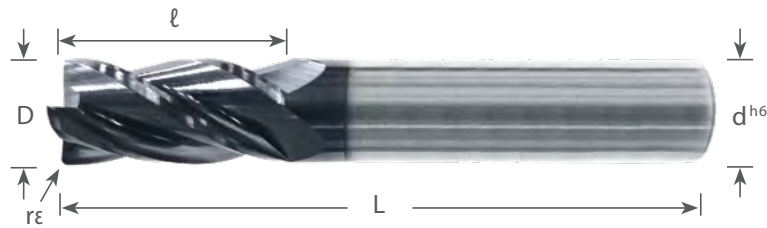
D (mm) +0/-0.02	ℓ (mm)	rε	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
1.00	3	0.10	3	38	1905-0394.118R	1905-0394L118R
1.50	4.5	0.15	3	38	1905-0591.177R	1905-0591L177R
2.00	6	0.20	3	38	1905-0787.236R	1905-0787L236R
2.50	7.5	0.25	3	38	1905-0984.295R	1905-0984L295R
3.00	9	0.30	3	38	1905-1181.354R	1905-1181L354R
3.50	12	0.35	6	50	1905-1378.473R	1905-1378L473R
4.00	12	0.40	5	50	1905-1575.473R	1905-1575L473R
4.50	15	0.45	6	50	1905-1772.590R	1905-1772L590R
5.00	15	0.50	5	50	1905-1968.590R	1905-1968L590R
5.50	15	0.55	6	50	1905-2165.709R	1905-2165L709R
6.00	18	0.60	6	50	1905-2362.709R	1905-2362L709R

SERIES 1905 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆								☆	☆
Uncoated							☆	☆	☆	☆	☆	☆	☆		☆

★ : Priority Materials ☆ : Applicable Materials

APOLLO SCHAFTFRÄSER / SCHRUPPEN - SCHLICHTEN
 MICRO FRAISE / EBAUCHE - FINITION
 MICRO FRESE / SGROSSATURA - FINITURA



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) h10	d (mm) h6	l (mm)	L (mm)	rε	Art. No. (ALCrN coated)
4	4	14	51	0.4	AP5M-1575.551
6	6	20	63	0.4	AP5M-2362.787
8	8	20	63	0.4	AP5M-3150.787
10	10	25	70	0.4	AP5M-3937.984
12	12	25	76	0.6	AP5M-4724.984
16	16	32	89	0.7	AP5M-6299.1260
20	20	38	100	0.7	AP5M-7874.1496
25	25	38	100	0.7	AP5M-10000.1496

SERIES AP5M WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlCrN	☆	☆	★	★	★	☆			☆					☆	☆

★ : Priority Materials ☆ : Applicable Materials

ENTGRATFRÄSER
OUTIL DE RETOUCHE BAVURE
FRESE PER SMUSSI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm)	d (mm) h6	ℓ (mm)	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
3.00	3	2.5	38	CMM-1181.060	CMM-1181L060
6.00	6	5.2	50	CMM-2362.060	CMM-2362L060
8.00	8	6.9	59	CMM-3150.060	CMM-3150L060
10.00	10	8.6	60	CMM-3937.060	CMM-3937L060
12.00	12	10.3	70	CMM-4724.060	CMM-4724L060



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm)	d (mm) h6	ℓ (mm)	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
3.00	3	1.5	38	CMM-1181.090	CMM-1181L090
6.00	6	3.0	50	CMM-2362.090	CMM-2362L090
8.00	8	4.0	59	CMM-3150.090	CMM-3150L090
10.00	10	5.0	60	CMM-3937.090	CMM-3937L090
12.00	12	6.0	70	CMM-4724.090	CMM-4724L090



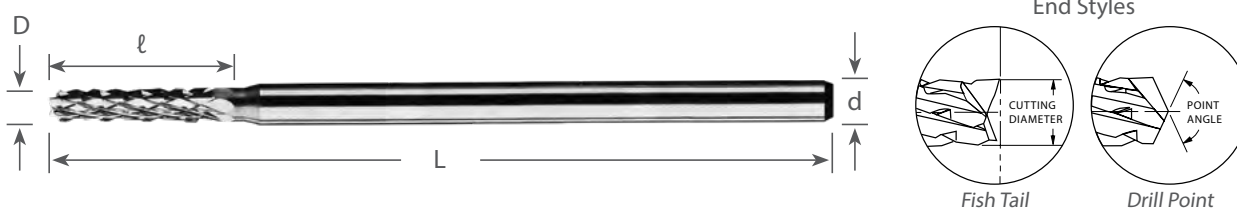
D (mm)	d (mm) h6	ℓ (mm)	L (mm)	Art. No. (uncoated)	Art. No. (AlTiN coated)
3.00	3	0.8	38	CMM-1181.120	CMM-1181L120
6.00	6	1.7	50	CMM-2362.120	CMM-2362L120
8.00	8	2.3	59	CMM-3150.120	CMM-3150L120
10.00	10	2.8	60	CMM-3937.120	CMM-3937L120
12.00	12	3.4	70	CMM-4724.120	CMM-4724L120

SERIES CMM WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆								☆	☆
Uncoated	☆	☆	☆	☆	☆	☆	★		★				☆		☆

★ : Priority Materials ☆ : Applicable Materials

SCHAFTFRÄSER MIT DIAMANTPROFIL / GEGENLAUFFRÄSEN
 FRAISE POUR CARBON / USINAGE EN OPPOSITION
 FRESE PER CARBONIO / TAGLIO CONCORDE



MICRO
GRAIN

D (mm)	ℓ (mm)	d (mm) h6	L (mm)	End Style	Art. No. (uncoated)	Art. No. (DLC coated)	Art. No. (Diamond)
0.8	4	3	38	Fish Tail	2120-0315.157F	2120-0315D157F	2120-0315V157F
0.8	4	3	38	Drill Point	2120-0315.157D	2120-0315D157D	2120-0315V157D
1.0	5	3	38	Fish Tail	2120-0394.197F	2120-0394D197F	2120-0394V197F
1.0	5	3	38	Drill Point	2120-0394.197D	2120-0394D197D	2120-0394V197D
1.5	8	3	38	Fish Tail	2120-0591.315F	2120-0591D315F	2120-0591V315F
1.5	8	3	38	Drill Point	2120-0591.315D	2120-0591D315D	2120-0591V315D
2.0	9	3	38	Fish Tail	2120-0787.354F	2120-0787D354F	2120-0787V354F
2.0	9	3	38	Drill Point	2120-0787.354D	2120-0787D354D	2120-0787V354D
3.0	12	3	38	Fish Tail	2120-1181.472F	2120-1181D472F	2120-1181V472F
3.0	12	3	38	Drill Point	2120-1181.472D	2120-1181D472D	2120-1181V472D
4.0	15	4	40	Fish Tail	2120-1575.591F	2120-1575D591F	2120-1575V591F
4.0	15	4	40	Drill Point	2120-1575.591D	2120-1575D591D	2120-1575V591D
5.0	20	5	50	Fish Tail	2120-1968.787F	2120-1968D787F	2120-1968V787F
5.0	20	5	50	Drill Point	2120-1968.787D	2120-1968D787D	2120-1968V787D
6.0	20	6	50	Fish Tail	2120-2362.787F	2120-2362D787F	2120-2362V787F
6.0	20	6	50	Drill Point	2120-2362.787D	2120-2362D787D	2120-2362V787D
8.0	25	8	63	Fish Tail	2120-3150.984F	2120-3150D984F	2120-3150V984F
8.0	25	8	63	Drill Point	2120-3150.984D	2120-3150D984D	2120-3150V984D

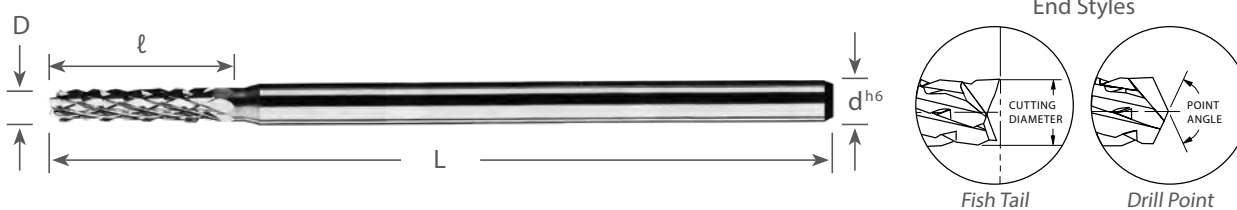
ROUTERS

SERIES 2120 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
CVD Diamond							☆	★		★					
DLC							☆	☆		☆					
Uncoated							☆		★	★	☆	☆	☆		

★ : Priority Materials ☆ : Applicable Materials

SCHAFTFRÄSER MIT DIAMANTPROFIL / GLEICHLAUFRÄSEN
 FRAISE POUR CARBON / USINAGE EN AVALANT
 FRESE PER CARBONIO / TAGLIO DISCORDE



MICRO
GRAIN

ROUTERS

D (mm)	ℓ (mm)	d (mm) h6	L (mm)	End Style	Art. No. (uncoated)	Art. No. (DLC coated)	Art. No. (Diamond)
0.8	4	3	38	Fish Tail	2121-0315.157F	2121-0315D157F	2121-0315V157F
0.8	4	3	38	Drill Point	2121-0315.157D	2121-0315D157D	2121-0315V157D
1.0	5	3	38	Fish Tail	2121-0394.197F	2121-0394D197F	2121-0394V197F
1.0	5	3	38	Drill Point	2121-0394.197D	2121-0394D197D	2121-0394V197D
1.5	8	3	38	Fish Tail	2121-0591.315F	2121-0591D315F	2121-0591V315F
1.5	8	3	38	Drill Point	2121-0591.315D	2121-0591D315D	2121-0591V315D
2.0	9	3	38	Fish Tail	2121-0787.354F	2121-0787D354F	2121-0787V354F
2.0	9	3	38	Drill Point	2121-0787.354D	2121-0787D354D	2121-0787V354D
3.0	12	3	38	Fish Tail	2121-1181.472F	2121-1181D472F	2121-1181V472F
3.0	12	3	38	Drill Point	2121-1181.472D	2121-1181D472D	2121-1181V472D
4.0	15	4	40	Fish Tail	2121-1575.591F	2121-1575D591F	2121-1575V591F
4.0	15	4	40	Drill Point	2121-1575.591D	2121-1575D591D	2121-1575V591D
5.0	20	5	50	Fish Tail	2121-1968.787F	2121-1968D787F	2121-1968V787F
5.0	20	5	50	Drill Point	2121-1968.787D	2121-1968D787D	2121-1968V787D
6.0	20	6	50	Fish Tail	2121-2362.787F	2121-2362D787F	2121-2362V787F
6.0	20	6	50	Drill Point	2121-2362.787D	2121-2362D787D	2121-2362V787D
8.0	25	8	63	Fish Tail	2121-3150.984F	2121-3150D984F	2121-3150V984F
8.0	25	8	63	Drill Point	2121-3150.984D	2121-3150D984D	2121-3150V984D

SERIES 2121 WORKPIECE MATERIAL

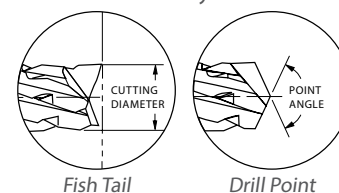
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
CVD Diamond							☆	★		★					
DLC							☆	☆		☆					
Uncoated							☆		★	★	☆	☆	☆		

★ : Priority Materials ☆ : Applicable Materials

SCHAFTFRÄSER MIT DIAMANTPROFIL / GEGENLAUFFRÄSEN
 FRAISE POUR CARBON / USINAGE EN AVALANT
 FRESE PER CARBONIO / TAGLIO DISCORDE



End Styles

MICRO
GRAIN

with chipbreaker | mit Spanbrecher | avec brise-copeaux | con rompitrucciolo

D (mm)	ℓ (mm)	d (mm) h6	L (mm)	End Style	Art. No. (uncoated)	Art. No. (DLC coated)	Art. No. (Diamond)
0.8	4	3	38	Fish Tail	2320-0315.157F	2320-0315D157F	2320-0315V157F
0.8	4	3	38	Drill Point	2320-0315.157D	2320-0315D157D	2320-0315V157D
1.0	5	3	38	Fish Tail	2320-0394.197F	2320-0394D197F	2320-0394V197F
1.0	5	3	38	Drill Point	2320-0394.197D	2320-0394D197D	2320-0394V197D
1.5	8	3	38	Fish Tail	2320-0591.315F	2320-0591D315F	2320-0591V315F
1.5	8	3	38	Drill Point	2320-0591.315D	2320-0591D315D	2320-0591V315D
2.0	9	3	38	Fish Tail	2320-0787.354F	2320-0787D354F	2320-0787V354F
2.0	9	3	38	Drill Point	2320-0787.354D	2320-0787D354D	2320-0787V354D
3.0	12	3	38	Fish Tail	2320-1181.472F	2320-1181D472F	2320-1181V472F
3.0	12	3	38	Drill Point	2320-1181.472D	2320-1181D472D	2320-1181V472D
4.0	15	4	40	Fish Tail	2320-1575.591F	2320-1575D591F	2320-1575V591F
4.0	15	4	40	Drill Point	2320-1575.591D	2320-1575D591D	2320-1575V591D
5.0	20	5	50	Fish Tail	2320-1968.787F	2320-1968D787F	2320-1968V787F
5.0	20	5	50	Drill Point	2320-1968.787D	2320-1968D787D	2320-1968V787D
6.0	20	6	50	Fish Tail	2320-2362.787F	2320-2362D787F	2320-2362V787F
6.0	20	6	50	Drill Point	2320-2362.787D	2320-2362D787D	2320-2362V787D
8.0	25	8	63	Fish Tail	2320-3150.984F	2320-3150D984F	2320-3150V984F
8.0	25	8	63	Drill Point	2320-3150.984D	2320-3150D984D	2320-3150V984D

ROUTERS

SERIES 2320 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
CVD Diamond							☆	★		★					
DLC							☆	☆		☆					
Uncoated							☆		★	★	☆	☆	☆		

★ : Priority Materials ☆ : Applicable Materials

MIKRO GEWINDEFÄSER
MICRO FRAISE A TOURBILLONNEURS
MICRO FRESE A FILETTARE



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

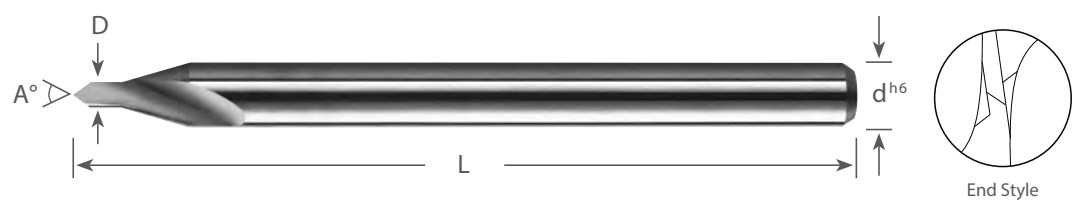
Metric Thread	D (mm)	No. of Flutes	d (mm) h6	L (mm)	l (mm)	Art. No. (uncoated)	Art. No. (ALTiN coated)
M0.5x0.125	0.30	2	3	38	1.0	98M05-0125.2FA1	98M05-0125L2FA1
M0.6x0.15	0.37	2	3	38	1.0	98M06-0150.2FA1	98M06-0150L2FA1
M0.7x0.175	0.45	2	3	38	2.0	98M07-0175.2FA1	98M07-0175L2FA1
M0.8x0.20	0.51	2	3	38	2.0	98M08-0200.2FA1	98M08-0200L2FA1
M0.9x0.25	0.58	2	3	38	2.0	98M09-0225.2FA1	98M09-0225L2FA1
M1.0x0.25	0.65	2	3	38	5.0	98M10-0250.2FA1	98M10-0250L2FA1
M1.1x0.25	0.75	4	3	38	5.0	98M11-0250.4FA1	98M11-0250L4FA1
M1.2x0.25	0.85	4	3	38	5.0	98M12-0250.4FA1	98M12-0250L4FA1
M1.4x0.30	1.00	4	3	38	5.0	98M14-0300.4FA1	98M14-0300L4FA1
M1.6x0.35	1.15	4	3	38	7.0	98M16-0350.4FA1	98M16-0350L4FA1
M1.8x0.35	1.35	4	3	38	7.0	98M18-0350.4FA1	98M18-0350L4FA1
M2.0x0.40	1.50	4	3	38	7.0	98M20-0400.4FA1	98M20-0400L4FA1
M2.5x0.45	1.95	4	4	50	9.4	98M25-0450.4FB1	98M25-0450L4FB1
M3x0.5	2.40	4	4	50	9.4	98M30-0500.4FB1	98M30-0500L4FB1
M3.5x0.6	2.80	4	4	50	9.4	98M35-0600.4FB1	98M35-0600L4FB1
M4x0.7	3.10	4	6	64	12.7	98M40-0700.4FB1	98M40-0700L4FB1
M5x0.8	3.85	4	6	64	12.7	98M50-0800.4FB1	98M50-0800L4FB1
M6x1	4.65	4	6	64	12.7	98M60-1000.4FB1	98M60-1000L4FB1
M8x1.25	5.95	4	6	64	12.7	98M80-1250.4FB1	98M80-1250L4FB1

SERIES 98M WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
ALTiN	★	★	★	☆	☆	☆			☆						
Uncoated							☆		★	★	☆	☆	☆		★

★ : Priority Materials ☆ : Applicable Materials

MIKRO GRAVIERFRÄSER
MICRO FRAISE A GRAVER
MICRO UTENSILI PER INICISIONE



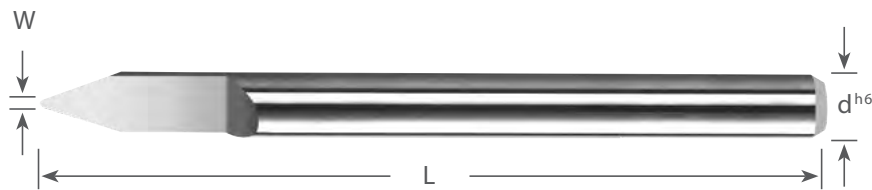
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

A (°)	D (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)
30	1.27	3	38	EGR1181-030
60	1.27	3	38	EGR1181-060
90	1.27	3	38	EGR1181-090

ENGRAVERS

SERIES EGR WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
Uncoated	★	★	☆	☆	☆		☆	☆	☆	☆				☆	☆
★ : Priority Materials ☆ : Applicable Materials															

MIKRO GRAVIERSTICHEL
MICRO FRAISE A GRAVER
MICRO UTENSILI PER INICISIONE



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

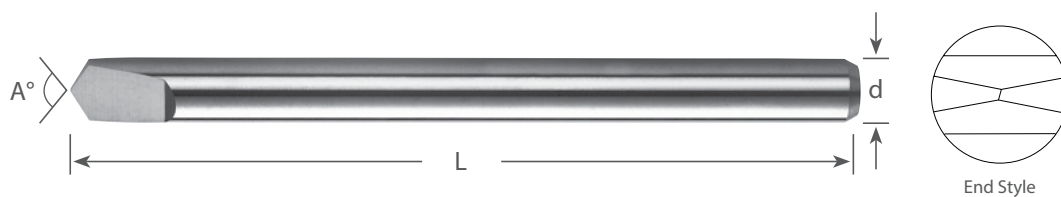
W (mm)	Letter Height (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)
0.25	2.40	3	38	HR118SSS025A
0.30	2.75	3	38	HR118SSS030A
0.35	3.10	3	38	HR118SSS035A
0.40	3.45	3	38	HR118SSS040A
0.45	3.80	3	38	HR118SSS045A
0.50	4.75	3	38	HR118SSS050A
0.60	5.50	3	38	HR118SSS060A
0.70	6.25	3	38	HR118SSS070A
0.80	7.00	3	38	HR118SSS080A

ENGRAVERS

SERIES HR WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
Uncoated	★	★	☆	☆	☆		☆	☆	☆	☆				☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO GRAVIERFRÄSER
 MICRO FRAISE A GRAVER
 MICRO UTENSILI PER CENTRATURE A SMUSSO



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

A (°)	d (mm) h6	L (mm)	Art. No. (uncoated)
30	3	38	SPD1181-030
45	3	38	SPD1181-045
60	3	38	SPD1181-060
90	3	38	SPD1181-090
118	3	38	SPD1181-118

SERIES SPD WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
Uncoated	★	★	☆	☆	☆		☆	☆	☆	☆				☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO AUSDREHWERKZEUGE
MICRO BURINS D ALESAGE
MICRO BARRE DI ALESATURA



MICRO
GRAIN

Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) +0/-0.06	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (ALTIN coated)
0.40	1.0	3	38	MBS-0157.039	MBS-0157L039
0.50	1.0	3	38	MBS-0197.039	MBS-0197L039
0.60	1.3	3	38	MBS-0236.051	MBS-0236L051
0.70	1.3	3	38	MBS-0276.051	MBS-0276L051
0.80	1.3	3	38	MBS-0315.051	MBS-0315L051
0.90	1.3	3	38	MBS-0354.051	MBS-0354L051
1.00	2.5	3	38	MBS-0394.098	MBS-0394L098
1.10	2.5	3	38	MBS-0433.098	MBS-0433L098
1.20	2.5	3	38	MBS-0472.098	MBS-0472L098
1.30	2.5	3	38	MBS-0512.098	MBS-0512L098
1.50	6.0	3	38	MBS-0591.236	MBS-0591L236
1.70	7.0	3	38	MBS-0669.276	MBS-0669L276
2.00	8.0	3	38	MBS-0787.315	MBS-0787L315
3.00	15	5	50	MBS-1181.591	MBS-1181L591
3.50	20	5	50	MBS-1378.787	MBS-1378L787
4.00	22	5	50	MBS-1575.866	MBS-1575L866
4.50	23	8	65	MBS-1772.906	MBS-1772L906
5.00	25	8	65	MBS-1969.984	MBS-1969L984
5.50	27	8	65	MBS-2165.1063	MBS-2165L1063
6.00	29	8	65	MBS-2362.1142	MBS-2362L1142

SERIES MBS WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	☆	☆	☆			☆					☆	☆
Uncoated	★	★	★	☆	☆		☆		☆				☆		

★ : Priority Materials ☆ : Applicable Materials

MIKRO AUSDREHWERKZEUGE
MICRO BURINS D ALESAGE
MICRO BARRE DI ALESATURA



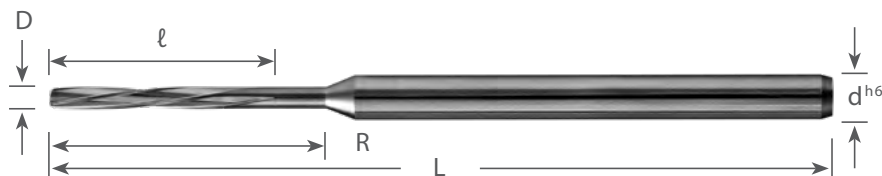
Extended Reach | Lange Ausführung | Exécution Longue | Versione Lunga

D (mm) +0/-0.06	ℓ (mm)	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (ALTIN coated)
0.40	2	3	38	MBE-0157.079	MBE-0157L079
0.50	2	3	38	MBE-0197.079	MBE-0197L079
0.60	3	3	38	MBE-0236.118	MBE-0236L118
0.70	3	3	38	MBE-0276.118	MBE-0276L118
0.80	3	3	38	MBE-0315.118	MBE-0315L118
0.90	3	3	38	MBE-0354.118	MBE-0354L118
1.00	5	3	38	MBE-0394.197	MBE-0394L197
1.10	5	3	38	MBE-0433.197	MBE-0433L197
1.20	5	3	38	MBE-0472.197	MBE-0472L197
1.30	5	3	38	MBE-0512.197	MBE-0512L197
1.50	10	3	38	MBE-0591.394	MBE-0591L394
1.70	10	3	38	MBE-0669.394	MBE-0669L394
2.00	10	3	38	MBE-0787.394	MBE-0787L394
3.00	20	5	50	MBE-1181.787	MBE-1181L787
3.50	25	5	50	MBE-1378.984	MBE-1378L984
4.00	27	5	50	MBE-1575.1063	MBE-1575L1063
4.50	32	8	65	MBE-1772.1260	MBE-1772L1260
5.00	32	8	65	MBE-1969.1260	MBE-1969L1260
5.50	32	8	65	MBE-2165.1260	MBE-2165L1260
6.00	35	8	65	MBE-2362.1378	MBE-2362L1378

SERIES MBE WORKPIECE MATERIAL														
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt
AlTiN	★	★	★	☆	☆	☆			☆					☆
Uncoated	★	★	★	☆	☆		☆		☆				☆	

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)
0.20	1.5	3	3	50	MR34-0079.059
0.21	1.5	3	3	50	MR34-0083.059
0.22	1.5	3	3	50	MR34-0087.059
0.23	1.5	3	3	50	MR34-0091.059
0.24	1.5	3	3	50	MR34-0094.059
0.25	1.5	3	3	50	MR34-0098.059
0.26	1.5	3	3	50	MR34-0102.059
0.27	1.5	3	3	50	MR34-0106.059
0.28	1.5	3	3	50	MR34-0110.059
0.29	1.5	3	3	50	MR34-0114.059
0.30	2.0	4	3	50	MR34-0118.079
0.31	2.0	4	3	50	MR34-0122.079
0.32	2.0	4	3	50	MR34-0126.079
0.33	2.0	4	3	50	MR34-0130.079
0.34	2.0	4	3	50	MR34-0134.079
0.35	2.0	4	3	50	MR34-0138.079
0.36	2.0	4	3	50	MR34-0142.079
0.37	2.0	4	3	50	MR34-0146.079
0.38	2.0	4	3	50	MR34-0150.079
0.39	2.0	4	3	50	MR34-0154.079
0.40	2.5	5	3	50	MR34-0157.099
0.41	2.5	5	3	50	MR34-0161.099
0.42	2.5	5	3	50	MR34-0165.099
0.43	2.5	5	3	50	MR34-0169.099
0.44	2.5	5	3	50	MR34-0173.099
0.45	2.5	5	3	50	MR34-0177.099
0.46	2.5	5	3	50	MR34-0181.099
0.47	2.5	5	3	50	MR34-0185.099
0.48	2.5	5	3	50	MR34-0189.099
0.49	2.5	5	3	50	MR34-0193.099
0.50	3	6	3	50	MR34-0197.118
0.51	3	6	3	50	MR34-0201.118
0.52	3	6	3	50	MR34-0205.118
0.53	3	6	3	50	MR34-0209.118
0.54	3	6	3	50	MR34-0213.118
0.55	3	6	3	50	MR34-0216.118
0.56	3	6	3	50	MR34-0220.118
0.57	3	6	3	50	MR34-0224.118
0.58	3	6	3	50	MR34-0228.118

SERIES MR34 WORKPIECE MATERIAL

Coating	P	P	H	H	M	K	N	N	N	N	N	N	N	S	S
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic	Nickel / Cobalt	Titanium Alloy
Uncoated	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



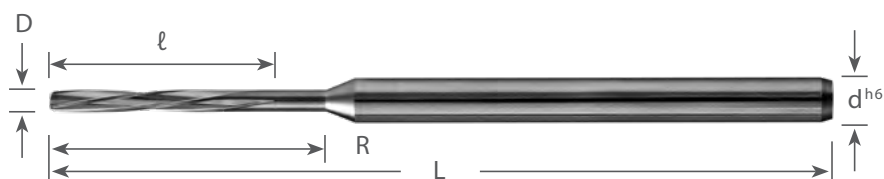
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)
0.59	3	6	3	50	MR34-0232.118
0.60	7	18	3	50	MR34-0236.281
0.61	7	18	3	50	MR34-0240.281
0.62	7	18	3	50	MR34-0244.281
0.63	7	18	3	50	MR34-0248.281
0.64	7	18	3	50	MR34-0252.281
0.65	7	18	3	50	MR34-0256.281
0.66	7	18	3	50	MR34-0260.281
0.67	7	18	3	50	MR34-0264.281
0.68	7	18	3	50	MR34-0268.281
0.69	7	18	3	50	MR34-0272.281
0.70	7	18	3	50	MR34-0276.281
0.71	7	18	3	50	MR34-0279.281
0.72	7	18	3	50	MR34-0283.281
0.73	7	18	3	50	MR34-0287.281
0.74	7	18	3	50	MR34-0291.281
0.75	7	18	3	50	MR34-0295.281
0.76	7	18	3	50	MR34-0299.281
0.77	7	18	3	50	MR34-0303.281
0.78	7	18	3	50	MR34-0307.281
0.79	7	18	3	50	MR34-0311.281
0.80	7	18	3	50	MR34-0315.281
0.81	7	18	3	50	MR34-0319.281
0.82	7	18	3	50	MR34-0323.281
0.83	7	18	3	50	MR34-0327.281
0.84	7	18	3	50	MR34-0331.281
0.85	7	18	3	50	MR34-0335.281
0.86	7	18	3	50	MR34-0338.281
0.87	7	18	3	50	MR34-0342.281
0.88	7	18	3	50	MR34-0346.281
0.89	7	18	3	50	MR34-0350.281
0.90	7	18	3	50	MR34-0354.281
0.91	7	18	3	50	MR34-0358.281
0.92	7	18	3	50	MR34-0362.281
0.93	7	18	3	50	MR34-0366.281
0.94	7	18	3	50	MR34-0370.281
0.95	7	18	3	50	MR34-0374.281
0.96	7	18	3	50	MR34-0378.281
0.97	7	18	3	50	MR34-0382.281

SERIES MR34 WORKPIECE MATERIAL															
Coating	P	P	H	H	M	K	N	N	N	N	N	N	N	S	S
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic	Nickel / Cobalt	Titanium Alloy
Uncoated	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

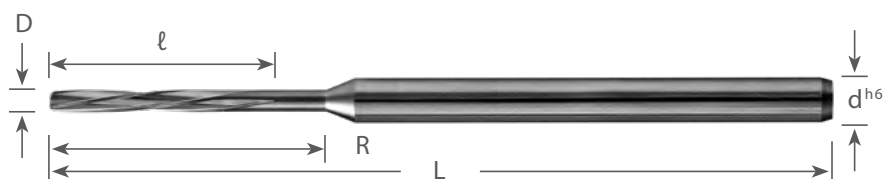
D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)
0.98	7	18	3	50	MR34-0386.281
0.99	7	18	3	50	MR34-0390.281
1.00	7	18	3	50	MR34-0394.281
1.01	7	18	3	50	MR34-0398.281
1.02	7	18	3	50	MR34-0401.281
1.03	7	18	3	50	MR34-0405.281
1.04	7	18	3	50	MR34-0409.281
1.05	7	18	3	50	MR34-0413.281
1.06	10	18	3	50	MR34-0417.406
1.07	10	18	3	50	MR34-0421.406
1.08	10	18	3	50	MR34-0425.406
1.09	10	18	3	50	MR34-0429.406
1.10	10	18	3	50	MR34-0433.406
1.11	10	18	3	50	MR34-0437.406
1.12	10	18	3	50	MR34-0441.406
1.13	10	18	3	50	MR34-0445.406
1.14	10	18	3	50	MR34-0449.406
1.15	10	18	3	50	MR34-0453.406
1.16	10	18	3	50	MR34-0457.406
1.17	10	18	3	50	MR34-0461.406
1.18	10	18	3	50	MR34-0464.406
1.19	10	18	3	50	MR34-0468.406
1.20	10	18	3	50	MR34-0472.406
1.21	10	18	3	50	MR34-0476.406
1.22	10	18	3	50	MR34-0480.406
1.23	10	18	3	50	MR34-0484.406
1.24	10	18	3	50	MR34-0488.406
1.25	10	18	3	50	MR34-0492.406
1.26	10	18	3	50	MR34-0496.406
1.27	10	18	3	50	MR34-0500.406
1.28	10	18	3	50	MR34-0504.406
1.29	10	18	3	50	MR34-0508.406
1.30	10	18	3	50	MR34-0512.406
1.31	10	18	3	50	MR34-0516.406
1.32	10	18	3	50	MR34-0520.406
1.33	10	18	3	50	MR34-0523.406
1.34	10	18	3	50	MR34-0527.406
1.35	10	18	3	50	MR34-0531.406
1.36	10	18	3	50	MR34-0535.406

SERIES MR34 WORKPIECE MATERIAL

Coating	P	P	H	H	M	K	N	N	N	N	N	N	N	S	S
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic	Nickel / Cobalt	Titanium Alloy
Uncoated	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)
1.37	10	18	3	50	MR34-0539.406
1.38	10	18	3	50	MR34-0543.406
1.39	10	18	3	50	MR34-0547.406
1.40	10	18	3	50	MR34-0551.406
1.41	10	18	3	50	MR34-0555.406
1.42	10	18	3	50	MR34-0559.406
1.43	10	18	3	50	MR34-0563.406
1.44	10	18	3	50	MR34-0567.406
1.45	10	18	3	50	MR34-0571.406
1.46	10	18	3	50	MR34-0575.406
1.47	10	18	3	50	MR34-0579.406
1.48	10	18	3	50	MR34-0583.406
1.49	10	18	3	50	MR34-0586.406
1.50	10	18	3	50	MR34-0590.406
1.51	10	18	3	50	MR34-0594.406
1.52	10	18	3	50	MR34-0598.406
1.53	10	18	3	50	MR34-0602.406
1.54	10	18	3	50	MR34-0606.406
1.55	10	18	3	50	MR34-0610.406
1.56	10	18	3	50	MR34-0614.406
1.57	10	18	3	50	MR34-0618.406
1.58	10	18	3	50	MR34-0622.406
1.59	10	18	3	50	MR34-0626.406
1.60	10	18	3	50	MR34-0630.406
1.61	10	18	3	50	MR34-0634.406
1.62	10	18	3	50	MR34-0638.406
1.63	10	18	3	50	MR34-0642.406
1.64	10	18	3	50	MR34-0646.406
1.65	10	18	3	50	MR34-0649.406
1.66	10	18	3	50	MR34-0653.406
1.67	10	18	3	50	MR34-0657.406
1.68	10	18	3	50	MR34-0661.406
1.69	10	18	3	50	MR34-0665.406
1.70	10	18	3	50	MR34-0669.406
1.71	10	18	3	50	MR34-0673.406
1.72	10	18	3	50	MR34-0677.406
1.73	10	18	3	50	MR34-0681.406
1.74	10	18	3	50	MR34-0685.406
1.75	10	18	3	50	MR34-0689.406

SERIES MR34 WORKPIECE MATERIAL															
Coating	P	P	H	H	M	K	N	N	N	N	N	N	S	S	
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic	Nickel / Cobalt	Titanium Alloy
Uncoated	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)
1.76	10	18	3	50	MR34-0693.406
1.77	10	18	3	50	MR34-0697.406
1.78	10	18	3	50	MR34-0701.406
1.79	10	18	3	50	MR34-0705.406
1.80	10	18	3	50	MR34-0708.406
1.81	10	18	3	50	MR34-0712.406
1.82	10	18	3	50	MR34-0716.406
1.83	10	18	3	50	MR34-0720.406
1.84	10	18	3	50	MR34-0724.406
1.85	10	18	3	50	MR34-0728.406
1.86	10	18	3	50	MR34-0732.406
1.87	10	18	3	50	MR34-0736.406
1.88	10	18	3	50	MR34-0740.406
1.89	10	18	3	50	MR34-0744.406
1.90	10	18	3	50	MR34-0748.406
1.91	10	18	3	50	MR34-0752.406
1.92	10	18	3	50	MR34-0756.406
1.93	10	18	3	50	MR34-0760.406
1.94	10	18	3	50	MR34-0764.406
1.95	10	18	3	50	MR34-0768.406
1.96	11	20.5	3	50	MR34-0771.438
1.97	11	20.5	3	50	MR34-0775.438
1.98	11	20.5	3	50	MR34-0779.438
1.99	11	20.5	3	50	MR34-0783.438
2.00	11	20.5	3	50	MR34-0787.438
2.01	11	20.5	3	50	MR34-0791.438
2.02	11	20.5	3	50	MR34-0795.438
2.03	11	20.5	3	50	MR34-0799.438
2.04	11	20.5	3	50	MR34-0803.438
2.05	11	20.5	3	50	MR34-0807.438
2.06	11	20.5	3	50	MR34-0811.438
2.07	11	20.5	3	50	MR34-0815.438
2.08	11	20.5	3	50	MR34-0819.438
2.09	11	20.5	3	50	MR34-0823.438
2.10	11	20.5	3	50	MR34-0827.438
2.11	11	20.5	3	50	MR34-0830.438
2.12	11	20.5	3	50	MR34-0835.438
2.13	11	20.5	3	50	MR34-0838.438
2.14	11	20.5	3	50	MR34-0843.438

SERIES MR34 WORKPIECE MATERIAL

Coating	P	P	H	H	M	K	N	N	N	N	N	N	N	S	S
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic	Nickel / Cobalt	Titanium Alloy
Uncoated	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



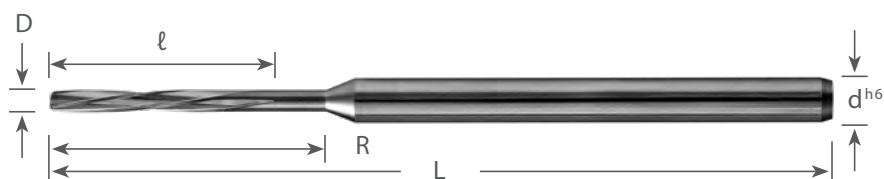
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)
2.15	11	20.5	3	50	MR34-0846.438
2.16	11	20.5	3	50	MR34-0850.438
2.17	11	20.5	3	50	MR34-0854.438
2.18	11	20.5	3	50	MR34-0858.438
2.19	11	20.5	3	50	MR34-0862.438
2.20	11	20.5	3	50	MR34-0866.438
2.21	11	20.5	3	50	MR34-0870.438
2.22	11	20.5	3	50	MR34-0874.438
2.23	11	20.5	3	50	MR34-0878.438
2.24	11	20.5	3	50	MR34-0882.438
2.25	11	20.5	3	50	MR34-0886.438
2.26	11	20.5	3	50	MR34-0890.438
2.27	11	20.5	3	50	MR34-0894.438
2.28	11	20.5	3	50	MR34-0896.438
2.29	11	20.5	3	50	MR34-0901.438
2.30	11	20.5	3	50	MR34-0906.438
2.31	11	20.5	3	50	MR34-0909.438
2.32	11	20.5	3	50	MR34-0913.438
2.33	11	20.5	3	50	MR34-0917.438
2.34	11	20.5	3	50	MR34-0921.438
2.35	11	20.5	3	50	MR34-0925.438
2.36	11	20.5	3	50	MR34-0929.438
2.37	11	20.5	3	50	MR34-0933.438
2.38	11	20.5	3	50	MR34-0937.438
2.39	11	20.5	3	50	MR34-0941.438
2.40	11	20.5	3	50	MR34-0945.438

SERIES MR34 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
Uncoated	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)
2.41	14	51	4	75	MR46-0949.563
2.42	14	51	4	75	MR46-0953.563
2.43	14	51	4	75	MR46-0957.563
2.44	14	51	4	75	MR46-0960.563
2.45	14	51	4	75	MR46-0965.563
2.46	14	51	4	75	MR46-0968.563
2.47	14	51	4	75	MR46-0972.563
2.48	14	51	4	75	MR46-0976.563
2.49	14	51	4	75	MR46-0980.563
2.50	14	51	4	75	MR46-0984.563
2.51	14	51	4	75	MR46-0988.563
2.52	14	51	4	75	MR46-0992.563
2.53	14	51	4	75	MR46-0996.563
2.54	14	51	4	75	MR46-1000.563
2.55	14	51	4	75	MR46-1004.563
2.56	14	51	4	75	MR46-1008.563
2.57	14	51	4	75	MR46-1012.563
2.58	14	51	4	75	MR46-1015.563
2.59	14	51	4	75	MR46-1019.563
2.60	14	51	4	75	MR46-1024.563
2.61	14	51	4	75	MR46-1028.563
2.62	14	51	4	75	MR46-1031.563
2.63	14	51	4	75	MR46-1035.563
2.64	14	51	4	75	MR46-1039.563
2.65	14	51	4	75	MR46-1043.563
2.66	14	51	4	75	MR46-1047.563
2.67	14	51	4	75	MR46-1051.563
2.68	14	51	4	75	MR46-1055.538
2.69	14	51	4	75	MR46-1059.563
2.70	14	51	4	75	MR46-1063.563
2.71	14	51	4	75	MR46-1067.563
2.72	14	51	4	75	MR46-1071.563
2.73	14	51	4	75	MR46-1075.563
2.74	14	51	4	75	MR46-1078.563
2.75	14	51	4	75	MR46-1083.563
2.76	14	51	4	75	MR46-1087.563
2.77	14	51	4	75	MR46-1090.563
2.78	14	51	4	75	MR46-1094.563
2.79	14	51	4	75	MR46-1098.563

SERIES MR46 WORKPIECE MATERIAL

Coating	P	P	H	H	M	K	N	N	N	N	N	N	N	S	S
	Steel ~30HRC	Steel 30~40HRC	Hardened Steel ~55HRC	Hardened Steel ~68HRC	Stainless Steel	Cast Iron	Aluminum	Graphite	Copper Alloy	CFRP	Plastic	Thermoset Plastic	High Density Plastic	Nickel / Cobalt	Titanium Alloy
Uncoated	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)
2.80	14	51	4	75	MR46-1102.563
2.81	14	51	4	75	MR46-1106.538
2.82	14	51	4	75	MR46-1110.563
2.83	14	51	4	75	MR46-1114.563
2.84	14	51	4	75	MR46-1118.563
2.85	14	51	4	75	MR46-1122.563
2.87	14	51	4	75	MR46-1130.563
2.88	14	51	4	75	MR46-1134.563
2.89	14	51	4	75	MR46-1138.563
2.90	14	51	4	75	MR46-1141.563
2.91	14	51	4	75	MR46-1146.563
2.92	14	51	4	75	MR46-1149.563
2.93	14	51	4	75	MR46-1154.563
2.94	14	51	4	75	MR46-1157.563
2.95	16	51	4	75	MR46-1161.625
2.96	14	51	4	75	MR46-1164.625
2.97	16	51	4	75	MR46-1169.625
2.98	16	51	4	75	MR46-1173.625
2.99	16	51	4	75	MR46-1177.625
3.00	16	51	4	75	MR46-1181.625
3.01	16	51	4	75	MR46-1185.625
3.02	16	51	4	75	MR46-1189.625
3.03	16	51	4	75	MR46-1193.625
3.05	16	51	4	75	MR46-1200.625
3.10	16	51	4	75	MR46-1220.625

SERIES MR46 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
Uncoated	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	★	★

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

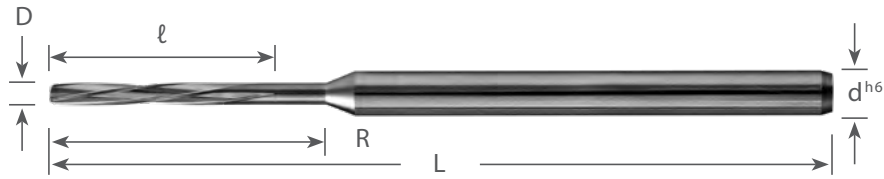
D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (ALTiN coated)
3.20	17.00	36.00	4	64.00	MR46-1260.669	MR46-1260L669
3.30	17.00	36.00	4	64.00	MR46-1299.669	MR46-1299L669
3.40	17.00	36.00	4	64.00	MR46-1339.669	MR46-1339L669
3.50	17.00	36.00	4	64.00	MR46-1378.669	MR46-1378L669
3.60	17.00	36.00	4	64.00	MR46-1417.669	MR46-1417L669
3.70	17.00	36.00	4	64.00	MR46-1457.669	MR46-1457L669
3.80	17.00	36.00	4	64.00	MR46-1496.669	MR46-1496L669
3.90	17.00	36.00	4	64.00	MR46-1535.669	MR46-1535L669

SERIES MR46 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
ALTiN	★	★	★	★	★	☆								☆	☆
Uncoated	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



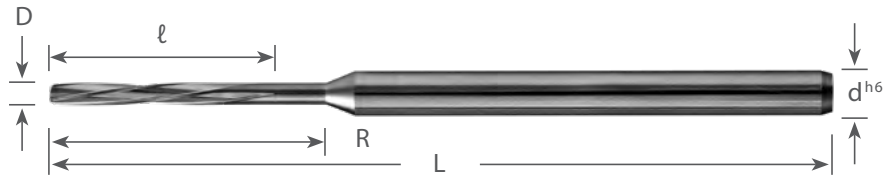
Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (ALTiN coated)
3.97	21.00	45.00	4	77.00	MR66-1563.827	MR66-1563L827
3.98	21.00	45.00	4	77.00	MR66-1567.827	MR66-1567L827
3.99	21.00	45.00	4	77.00	MR66-1571.827	MR66-1571L827
4.00	21.00	45.00	4	77.00	MR66-1575.827	MR66-1575L827
4.01	21.00	45.00	4	77.00	MR66-1579.827	MR66-1579L827
4.02	21.00	45.00	4	77.00	MR66-1583.827	MR66-1583L827
4.03	21.00	45.00	4	77.00	MR66-1587.827	MR66-1587L827
4.10	21.00	45.00	6	77.00	MR66-1614.827	MR66-1614L827
4.20	21.00	45.00	6	77.00	MR66-1654.827	MR66-1654L827
4.30	21.00	45.00	6	77.00	MR66-1693.827	MR66-1693L827
4.40	21.00	45.00	6	77.00	MR66-1732.827	MR66-1732L827
4.50	21.00	45.00	6	77.00	MR66-1772.827	MR66-1772L827
4.60	21.00	45.00	6	77.00	MR66-1811.827	MR66-1811L827
4.70	21.00	45.00	6	77.00	MR66-1850.827	MR66-1850L827
4.80	21.00	45.00	6	77.00	MR66-1890.827	MR66-1890L827
4.90	21.00	45.00	6	77.00	MR66-1929.827	MR66-1929L827
4.97	26.00	59.00	6	93.00	MR66-1957.1024	MR66-1957L1024
4.98	26.00	59.00	6	93.00	MR66-1961.1024	MR66-1961L1024
4.99	26.00	59.00	6	93.00	MR66-1965.1024	MR66-1965L1024
5.00	26.00	59.00	6	93.00	MR66-1968.1024	MR66-1968L1024
5.01	26.00	59.00	6	93.00	MR66-1972.1024	MR66-1972L1024
5.02	26.00	59.00	6	93.00	MR66-1976.1024	MR66-1976L1024
5.03	26.00	59.00	6	93.00	MR66-1980.1024	MR66-1980L1024
5.10	26.00	59.00	6	93.00	MR66-2008.1024	MR66-2008L1024
5.20	26.00	59.00	6	93.00	MR66-2047.1024	MR66-2047L1024
5.30	26.00	59.00	6	93.00	MR66-2087.1024	MR66-2087L1024
5.40	26.00	59.00	6	93.00	MR66-2126.1024	MR66-2126L1024
5.50	26.00	59.00	6	93.00	MR66-2165.1024	MR66-2165L1024
5.60	26.00	59.00	6	93.00	MR66-2205.1024	MR66-2205L1024
5.70	26.00	59.00	6	93.00	MR66-2244.1024	MR66-2244L1024
5.80	26.00	59.00	6	93.00	MR66-2283.1024	MR66-2283L1024
5.90	26.00	59.00	6	93.00	MR66-2323.1024	MR66-2323L1024

SERIES MR66 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆								☆	☆
Uncoated	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

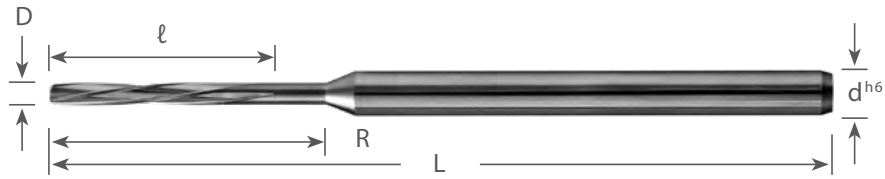
D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (ALTiN coated)
5.97	26.00	59.00	6	93.00	MR66-2350.1024	MR66-2350L1024
5.98	26.00	59.00	6	93.00	MR66-2354.1024	MR66-2354L1024
5.99	26.00	59.00	6	93.00	MR66-2358.1024	MR66-2358L1024
6.00	26.00	59.00	6	93.00	MR66-2362.1024	MR66-2362L1024
6.01	26.00	59.00	6	93.00	MR66-2366.1024	MR66-2366L1024
6.02	26.00	59.00	6	93.00	MR66-2370.1024	MR66-2370L1024
6.03	26.00	59.00	6	93.00	MR66-2374.1024	MR66-2374L1024
6.10	26.00	59.00	8	93.00	MR86-2402.1024	MR86-2402L1024
6.20	26.00	59.00	8	93.00	MR86-2441.1024	MR86-2441L1024
6.30	26.00	59.00	8	93.00	MR86-2480.1024	MR86-2480L1024
6.40	26.00	59.00	8	93.00	MR86-2520.1024	MR86-2520L1024
6.50	26.00	59.00	8	93.00	MR86-2559.1024	MR86-2559L1024
6.60	26.00	59.00	8	93.00	MR86-2598.1024	MR86-2598L1024
6.70	26.00	59.00	8	93.00	MR86-2638.1024	MR86-2638L1024
6.80	26.00	59.00	8	93.00	MR86-2677.1024	MR86-2677L1024
6.90	26.00	59.00	8	93.00	MR86-2717.1024	MR86-2717L1024
6.97	31.00	69.00	8	109.00	MR86-2744.1220	MR86-2744L1220
6.98	31.00	69.00	8	109.00	MR86-2748.1220	MR86-2748L1220
6.99	31.00	69.00	8	109.00	MR86-2752.1220	MR86-2752L1220
7.00	31.00	69.00	8	109.00	MR86-2756.1220	MR86-2756L1220
7.01	31.00	69.00	8	109.00	MR86-2760.1220	MR86-2760L1220
7.02	31.00	69.00	8	109.00	MR86-2764.1220	MR86-2764L1220
7.03	31.00	69.00	8	109.00	MR86-2768.1220	MR86-2768L1220
7.10	31.00	69.00	8	109.00	MR86-2795.1220	MR86-2795L1220
7.20	31.00	69.00	8	109.00	MR86-2835.1220	MR86-2835L1220
7.30	31.00	69.00	8	109.00	MR86-2874.1220	MR86-2874L1220
7.40	31.00	69.00	8	109.00	MR86-2913.1220	MR86-2913L1220
7.50	31.00	69.00	8	109.00	MR86-2953.1220	MR86-2953L1220
7.60	31.00	69.00	8	109.00	MR86-2992.1220	MR86-2992L1220
7.70	31.00	69.00	8	109.00	MR86-3031.1220	MR86-3031L1220
7.80	31.00	69.00	8	109.00	MR86-3071.1220	MR86-3071L1220
7.90	31.00	69.00	8	109.00	MR86-3110.1220	MR86-3110L1220

SERIES MR86 WORKPIECE MATERIAL

Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
ALTiN	★	★	★	★	★	☆								☆	☆
Uncoated	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

MIKRO REIBAHLEN
MICRO ALESOIRS
MICRO ALESATORI



Standard Length | Standardlänge | Longueur Standard | Lunghezza Standard

D (mm) 0/+0.003	ℓ (mm)	R	d (mm) h6	L (mm)	Art. No. (uncoated)	Art. No. (ALTiN coated)
7.97	33	75	10	133	MR106-3138.1299	MR106-3138L1299
7.98	33	75	10	133	MR106-3142.1299	MR106-3142L1299
7.99	33	75	10	133	MR106-3146.1299	MR106-3146L1299
8.00	33	75	10	133	MR106-3150.1299	MR106-3150L1299
8.01	33	75	10	133	MR106-3154.1299	MR106-3154L1299
8.02	33	75	10	133	MR106-3157.1299	MR106-3157L1299
8.03	33	75	10	133	MR106-3161.1299	MR106-3161L1299

SERIES MR106 WORKPIECE MATERIAL															
Coating	P Steel ~30HRC	P Steel 30~40HRC	H Hardened Steel ~55HRC	H Hardened Steel ~68HRC	M Stainless Steel	K Cast Iron	N Aluminum	N Graphite	N Copper Alloy	N CFRP	N Plastic	N Thermoset Plastic	N High Density Plastic	S Nickel / Cobalt	S Titanium Alloy
AlTiN	★	★	★	★	★	☆								☆	☆
Uncoated	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

★ : Priority Materials ☆ : Applicable Materials

EMPFOHLENE SCHNITTBEDINGUNGEN
 CONDITIONS DE COUPE RECOMMANDEES
 CONDIZIONI DI TAGLIO CONSIGLIATE

REAMERS | REIBAHLEN | ALESOIRS | ALESATORE

Material	Property	Vc (m/min) uncoated	Vc (m/min) ALTiN	f = mm/rev.				
				ø < 1	ø < 1.5	ø < 3	ø < 6	ø < 10
	<500 N/mm²	30 - 45	40 - 60	0.018	0.036	0.076	0.15	0.25
	<800 N/mm²	20 - 30	26 - 40	0.015	0.030	0.066	0.12	0.18
	<1,200 N/mm²	15 - 25	20 - 33	0.013	0.025	0.061	0.09	0.15
		20 - 30	26 - 40	0.013	0.025	0.071	0.1	0.12
		10 - 15	13 - 20	0.018	0.036	0.081	0.1	0.12
		15 - 20	20 - 26	0.015	0.030	0.066	0.1	0.12
		25 - 55	33 - 72	0.05	0.041	0.090	0.12	0.15
		40 - 65	52 - 85	0.015	0.030	0.080	0.18	0.22
		70 - 100	91 - 130	0.020	0.041	0.102	0.2	0.3

PRE-DRILL DIAMETERS FOR REAMERS | VORBOHRDURCHMESSER REIBAHLEN
 DIAMETRE DE PERCEGE AVANT ALESOIR | DIAMETRI PER PRE-FORI DI ALESATURA

ø of drill hole	Pre-Drill Diameter (mm)									
										
0.3	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
0.4	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
0.5	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
0.6	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
0.8	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
1.0	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
2.0	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
3.0	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
4.0	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80
5.0	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80	4.80
6.0	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80	5.80
8.0	7.80	7.80	7.80	7.80	7.80	7.80	7.70	7.70	7.80	7.80

*All recommendations should be considered starting points. Parameters should be adjusted based on quality, throughput, material hardness.

EMPFOHLENE SCHNITTBEDINGUNGEN
CONDITIONS DE COUPE RECOMMANDEES
CONDIZIONI DI TAGLIO CONSIGLIATE

HYDROS DEEP DRILLS

Workpiece material	Hardness	Vc (m/min)	Ø (mm) / f (mm/rev)			
			Ø 3.00 - Ø 5.90	Ø 6.00 - Ø 9.90	Ø 10.00 - Ø 11.90	Ø 12.00
Low carbon steel	<24 HRc	100	0.15	0.25	0.30	0.36
Alloy steel	24 - 30 HRc	80	0.15	0.20	0.25	0.30
Stainless steel	< 30HRc	60	0.09	0.18	0.25	0.30
Gray cast iron	<50 kpsi	100	0.18	0.25	0.30	0.36
Nodular cast iron	<60 kpsi	70	0.15	0.20	0.25	0.30
Aluminum	-	120	0.18	0.30	0.41	0.46
Copper	-	80	0.13	0.20	0.25	0.30
Heat resistant alloy	-	25	0.05	0.10	0.13	0.15
Titanium alloy	-	45	0.06	0.13	0.18	0.23
Hardended steel	30 - 50 HRc	43	0.10	0.18	0.25	0.30
Tool steel	> 50 HRc	30	0.08	0.13	0.15	0.20

- Above recommendations are suggested starting parameters. Cutting speeds and feed rates may vary according to machining application.

ORION DRILLS

Workpiece material	Hardness	Vc (m/min)	ø (mm) / f (mm/rev)									
			3xD					5xD				
			ø1.50 - 2.90	ø3.00 - 5.90	ø6.00 - 9.90	ø10.00 - 11.90	ø12.00	ø1.50 - 2.90	ø3.00 - 5.90	ø6.00 - 9.90	ø10.00 - 11.90	ø12.00
Low carbon steel	< 24 HRc	105	0.04	0.09	0.20	0.28	0.38	0.04	0.08	0.18	0.25	0.34
Alloy steel	24 - 30 HRc	75	0.03	0.08	0.20	0.25	0.30	0.03	0.07	0.18	0.23	0.27
Stainless steel	< 30HRc	45	0.03	0.08	0.13	0.18	0.20	0.03	0.07	0.11	0.16	0.18
Gray cast iron	< 50 kpsi	115	0.04	0.13	0.25	0.38	0.46	0.03	0.11	0.23	0.34	0.41
Nodular cast iron	< 60 kpsi	85	0.04	0.13	0.23	0.30	0.41	0.03	0.11	0.21	0.27	0.37
Aluminum	-	230	0.04	0.18	0.30	0.41	0.56	0.04	0.16	0.27	0.37	0.50
Copper	-	120	0.03	0.10	0.15	0.20	0.30	0.03	0.09	0.14	0.18	0.27
Heat-Resistant alloy	-	20	0.02	0.05	0.09	0.13	0.15	0.02	0.05	0.08	0.11	0.14
Titanium alloy	-	34	0.02	0.06	0.10	0.14	0.17	0.02	0.06	0.09	0.13	0.15
Hardened steel	30 - 50 HRc	45	0.02	0.05	0.11	0.15	0.18	0.01	0.05	0.10	0.14	0.16
Tool steel	> 50 HRc	20	0.02	0.05	0.08	0.10	0.13	0.01	0.05	0.07	0.09	0.11

- Above recommendations are suggested starting parameters. Cutting speeds and feed rates may vary according to machining application.

EMPFOHLENE SCHNITTBEDINGUNGEN
CONDITIONS DE COUPE RECOMMANDEES
CONDIZIONI DI TAGLIO CONSIGLIATE

MICRO DRILLS | MIKRO BOHRER | MICRO FORET | MICRO PUNTE

Material	Property	Vc (m/min) uncoated	Vc (m/min) coated	f = mm/rev.				
				ø < 1.0	ø < 1.5	ø < 2.0	ø < 2.5	ø < 3.0
	<500 N/mm ²	15 - 45	20 - 50	0.035 - 0.045	0.040 - 0.055	0.050 - 0.065	0.060 - 0.075	0.065 - 0.080
	<800 N/mm ²	15 - 45	20 - 50	0.030 - 0.035	0.035 - 0.045	0.040 - 0.055	0.050 - 0.065	0.055 - 0.070
	<1,000 N/mm ²	10 - 30	15 - 35	0.020 - 0.025	0.025 - 0.035	0.030 - 0.040	0.035 - 0.045	0.040 - 0.050
	<1,300 N/mm ²	8 - 20	10 - 25	0.010 - 0.015	0.010 - 0.015	0.015 - 0.020	0.015 - 0.025	0.020 - 0.025
	55 HRC	15 - 45	20 - 50	0.015 - 0.020	0.020 - 0.030	0.025 - 0.035	0.030 - 0.040	0.035 - 0.045
	austenitic	10 - 35	15 - 40	0.020 - 0.025	0.025 - 0.035	0.030 - 0.040	0.035 - 0.045	0.040 - 0.050
	martensitic	8 - 20	10 - 25	0.005 - 0.010	0.005 - 0.010	0.010 - 0.015	0.010 - 0.015	0.015 - 0.020
	-	3 - 8	5 - 10	0.010 - 0.015	0.010 - 0.015	0.015 - 0.020	0.020 - 0.025	0.020 - 0.025
	<900 N/mm ²	3 - 8	5 - 10	0.005 - 0.010	0.005 - 0.010	0.010 - 0.015	0.010 - 0.015	0.015 - 0.020
	<180 HB	20 - 60	25 - 65	0.040 - 0.050	0.045 - 0.065	0.060 - 0.075	0.070 - 0.090	0.080 - 0.095
	>180 HB	20 - 55	25 - 60	0.040 - 0.050	0.045 - 0.065	0.060 - 0.075	0.070 - 0.090	0.080 - 0.095
	Aluminum	40 - 140	50 - 150	0.040 - 0.050	0.045 - 0.065	0.060 - 0.075	0.070 - 0.090	0.080 - 0.095
	Silicon <6%	40 - 100	45 - 110	0.040 - 0.050	0.045 - 0.065	0.060 - 0.075	0.070 - 0.090	0.080 - 0.095
	Silicon >6%	40 - 100	45 - 110	0.045 - 0.060	0.055 - 0.075	0.070 - 0.090	0.080 - 0.100	0.090 - 0.120
	Brass	40 - 80	50 - 90	0.030 - 0.060	0.060 - 0.100	0.100 - 0.150	0.150 - 0.180	0.180 - 0.200
	-	70 - 110	80 - 120	0.030 - 0.060	0.030 - 0.060	0.030 - 0.060	0.030 - 0.060	0.030 - 0.060

CARBIDE COOLANT MICRO DRILLS | HM BORHER MIT KÜHLUNG
FORET AVEC ARROSAGE (CARBURE) | PUNTE CON ADDUZIONE REFRIGERANTE (METALLO DURO)

Material	Property	Vc (m/min) uncoated	Vc (m/min) ALTiN	f = mm/rev.				
				ø < 1.0 mm	ø < 1.5 mm	ø < 2.0 mm	ø < 2.5 mm	ø < 3.0 mm
	<500 N/mm ²	30 - 60	35 - 90	0.02 - 0.04	0.02 - 0.04	0.03 - 0.06	0.04 - 0.08	0.04 - 0.08
	<800 N/mm ²	20 - 50	25 - 80	0.02 - 0.04	0.02 - 0.04	0.03 - 0.06	0.04 - 0.08	0.04 - 0.08
	<1,000 N/mm ²	15 - 35	25 - 80	0.02 - 0.04	0.02 - 0.04	0.03 - 0.06	0.04 - 0.08	0.04 - 0.08
	<1,300 N/mm ²	10 - 25	20 - 45	0.02 - 0.04	0.02 - 0.04	0.03 - 0.05	0.04 - 0.06	0.04 - 0.06
	ferritic	15 - 40	15 - 35	0.01 - 0.02	0.01 - 0.02	0.02 - 0.04	0.03 - 0.06	0.03 - 0.06
	austenitic	10 - 25	20 - 30	0.01 - 0.02	0.01 - 0.02	0.02 - 0.04	0.03 - 0.06	0.03 - 0.06
	<900 N/mm ²	5 - 10	15 - 35	0.01 - 0.02	0.01 - 0.02	0.02 - 0.04	0.03 - 0.06	0.03 - 0.06
	<180 HB	25 - 65	30 - 90	0.02 - 0.05	0.02 - 0.05	0.03 - 0.06	0.04 - 0.09	0.04 - 0.09
	>180 HB	25 - 60	25 - 80	0.10 - 0.20	0.10 - 0.20	0.15 - 0.25	0.20 - 0.30	0.02 - 0.30
	Silicon <12%	45 - 110	50 - 200	0.03 - 0.06	0.03 - 0.06	0.04 - 0.07	0.07 - 0.12	0.07 - 0.12
	Silicon >12%	45 - 110	50 - 200	0.02 - 0.06	0.02 - 0.06	0.03 - 0.07	0.04 - 0.10	0.04 - 0.10

EMPFOHLENE SCHNITTBEDINGUNGEN
CONDITIONS DE COUPE RECOMMANDEES
CONDIZIONI DI TAGLIO CONSIGLIATE

CARBIDE DRILLS | HARTMETALL BOHRER | CARBURE FORETS | PUNTE IN METALLO DURO

Material	Property	Vc (m/min) uncoated	Vc (m/min) coated	f = mm/rev.				
				ø2	ø4	ø8	ø12	ø16
	<500 N/mm ²	80	100	0.04	0.06	0.12	0.17	0.23
	<800 N/mm ²	80	100	0.04	0.06	0.12	0.17	0.23
	<1,000 N/mm ²	65	80	0.03	0.04	0.08	0.13	0.16
	<1,300 N/mm ²	40	60	0.02	0.04	0.07	0.11	0.16
	55 HRC	6 - 10	8 - 12	0.02	0.03	0.06	0.07	0.08
	68 HRC	6 - 10	8 - 12	0.02	0.03	0.06	0.07	0.08
	ferritic	70	80	0.03	0.04	0.08	0.13	0.16
	martensitic	50	60	0.03	0.04	0.08	0.13	0.16
	austenitic	35	40	0.03	0.04	0.08	0.13	0.16
	-	35	50	0.02	0.04	0.07	0.11	0.16
	-	25	40	0.02	0.03	0.06	0.07	0.08
	<900 N/mm ²	35	50	0.03	0.04	0.08	0.13	0.16
	>900 N/mm ²	25	40	0.04	0.06	0.12	0.17	0.23
	<180 HB	70	80	0.06	0.09	0.20	0.25	0.35
	>180 HB	35	50	0.05	0.08	0.12	0.24	0.28
	Silicon <10%	130	150	0.05	0.08	0.12	0.24	0.28
	Silicon >10%	70	80	0.05	0.08	0.12	0.24	0.28
	Brass	80	100	0.06	0.09	0.20	0.25	0.35
	thermoplastic	100	100 - 120	0.02	0.04	0.07	0.11	0.16
	thermoset	100	100 - 120	0.02	0.04	0.07	0.11	0.16
	-	80	100 - 150	0.02	0.04	0.07	0.11	0.16

CARBIDE CENTERING DRILLS | HM ZENTRIERBOHRER | FORETS A CENTRER CARBURE | PUNTE DA CENTRO IN METALLO DURO

Material	Property	Vc (m/min) uncoated	Vc (m/min) coated	f = mm/rev.				
				ø2	ø3	ø6	ø10	ø16
	<500 N/mm ²	70 - 80	80 - 90	0.10	0.12	0.22	0.33	0.45
	<800 N/mm ²	60 - 70	70 - 90	0.10	0.12	0.22	0.33	0.45
	<1,000 N/mm ²	50 - 60	60 - 70	0.07	0.08	0.15	0.23	0.31
	<1,300 N/mm ²	25 - 30	30 - 50	0.06	0.07	0.13	0.20	0.27
	-	20 - 30	30 - 40	0.06	0.08	0.15	0.20	0.30
	-	20 - 30	30 - 40	0.50	0.70	0.13	0.18	0.27
	<900 N/mm ²	20 - 30	30 - 40	0.06	0.08	0.15	0.20	0.30
	<180 HB	50 - 60	60 - 70	0.10	0.12	0.22	0.33	0.45
	>180 HB	35 - 40	40 - 60	0.08	0.10	0.17	0.30	0.40
	Silicon <10%	100	100 - 150	0.05	0.08	0.12	0.24	0.28
	Silicon >10%	70	70 - 90	0.12	0.15	0.20	0.25	0.40
	-	70	70 - 90	0.12	0.15	0.20	0.25	0.40
	-	150	150 - 200	0.13	0.15	0.25	0.40	0.50

EMPFOHLENE SCHNITTBEDINGUNGEN
CONDITIONS DE COUPE RECOMMANDEES
CONDIZIONI DI TAGLIO CONSIGLIATE

CARBIDE SPOTTING DRILLS | NC HM-ANBOHRER | FORET A POINTER NC (CARBURE) | PUNTE DA CENTRO (METALLO DURO)

Material	Property	Vc (m/min) uncoated	Vc (m/min) ALTiN	f=mm/rev.				
				ø2	ø3	ø6	ø10	ø16
	<500 N/mm ²	80 - 100	100 - 120	0.10	0.12	0.22	0.33	0.45
	<800 N/mm ²	60 - 90	80 - 110	0.10	0.12	0.22	0.33	0.45
	<1,000 N/mm ²	55 - 75	60 - 80	0.07	0.08	0.15	0.23	0.31
	<1,300 N/mm ²	30 - 50	40 - 60	0.06	0.07	0.13	0.20	0.27
		25 - 50	30 - 60	0.06	0.08	0.15	0.20	0.30
		25 - 35	30 - 40	0.50	0.70	0.13	0.18	0.27
	<900 N/mm ²	35 - 35	30 - 40	0.06	0.06	0.15	0.20	0.30
	<180 HB	80 - 100	80 - 90	0.10	0.12	0.22	0.33	0.45
	>180 HB	60 - 90	70 - 90	0.08	0.10	0.17	0.30	0.40
		100 - 180	150 - 200	0.12	0.15	0.20	0.25	0.40
		90 - 120	110 - 140	0.12	0.15	0.20	0.25	0.40
		100 - 180	150 - 200	0.12	0.15	0.20	0.25	0.40

CARBIDE CHAMFERING DRILLS | HM ENTRGRATFRÄSER
OUTIL DE RETOUCHE BAVURE (CARBURE) | FRESE PER SMUSSI (METALLO DURO)

Material	Property	Vc (m/min) uncoated	Vc (m/min) ALTiN	f=mm/rev.							
				ø2	ø4	ø6	ø8	ø10	ø12	ø16	ø20
	<500 N/mm ²	70	75	0.025	0.050	0.080	0.140	0.140	0.190	0.240	0.280
	<800 N/mm ²	40	60	0.025	0.050	0.080	0.140	0.140	0.190	0.240	0.280
	<1,000 N/mm ²	35	40	0.023	0.045	0.070	0.120	0.120	0.180	0.220	0.280
	<1,300 N/mm ²	30	35	0.023	0.045	0.070	0.120	0.170	0.170	0.220	0.260
	55 HRC	25	30	0.020	0.040	0.060	0.110	0.110	0.160	0.220	0.250
	68 HRC	25	30	0.020	0.040	0.060	0.110	0.110	0.160	0.220	0.250
	ferritic	25	30	0.023	0.045	0.070	0.120	0.170	0.170	0.220	0.260
	austenitic	25	30	0.020	0.040	0.060	0.110	0.110	0.160	0.220	0.250
		20	25	0.020	0.040	0.060	0.110	0.110	0.160	0.220	0.250
	<900 N/mm ²	25	30	0.020	0.040	0.060	0.110	0.110	0.160	0.220	0.250
	<180 HB	35	40	0.023	0.045	0.070	0.120	0.120	0.180	0.220	0.280
	>180 HB	30	35	0.023	0.045	0.070	0.120	0.120	0.180	0.220	0.280
		150	200	0.025	0.050	0.090	0.150	0.200	0.200	0.270	0.350
		80	120	0.050	0.100	0.150	0.250	0.300	0.300	0.350	0.450
		150	-	0.025	0.050	0.090	0.150	0.200	0.200	0.270	0.350

EMPFOHLENE SCHNITTBEDINGUNGEN
 CONDITIONS DE COUPE RECOMMANDEES
 CONDIZIONI DI TAGLIO CONSIGLIATE

HIGH PERFORMANCE COOLANT FED DRILL | MIKRO BOHRER MIT INNENKÜHLUNG |
 MICRO FORET AVEC ARROSAGE INTERNE | MICRO PUNTE CON ADDUZIONE REFRIGERANTE

Material	Property	Vc (m/min) ALTiN	f= mm/rev.				
			ø4	ø8	ø12	ø16	ø20
	<500 N/mm ²	110	0.12	0.15	0.28	0.34	0.41
	<800 N/mm ²	100	0.18	0.25	0.35	0.38	0.41
	<1,000 N/mm ²	80	0.16	0.22	0.31	0.34	0.37
	<1,300 N/mm ²	65	0.16	0.22	0.31	0.34	0.37
	-	40	0.10	0.13	0.19	0.22	0.25
	-	25	0.10	0.13	0.19	0.22	0.25
	<900 N/mm ²	30	0.08	0.11	0.16	0.18	0.20
	>900 N/mm ²						
	<180 HB	90	0.18	0.22	0.35	0.38	0.41
	>180 HB	80	0.16	0.25	0.31	0.34	0.37
	Silicon <10%	220	0.18	0.25	0.38	0.45	0.52
	Silicon >10%	200	0.18	0.25	0.38	0.45	0.52
	Brass	150	0.16	0.22	0.35	0.42	0.49
	Bronze	80	0.16	0.22	0.35	0.42	0.49

EMPFOLHENE SCHNITTBEDINGUNGEN
 CONDITIONS DE COUPE RECOMMANDEES
 CONDIZIONI DI TAGLIO CONSIGLIATE

CARBIDE MICRO END MILLS | HM MIKRO SCHAFTFRÄSER | MICRO FRAISE (CARBURE) | MICRO FRESE (METALLO DURO)

Material	Property	Vc (m/min) uncoated	Vc (m/min) ALTiN	Application	f = mm/tooth						
					ø0.2	ø0.5	ø0.8	ø1.0	ø1.5	ø2.0	ø3.0
	<500 N/mm ²	60	80	Slotting ap = 1.0; ae = 1.0	0.001	0.001	0.002	0.002	0.003	0.004	0.006
				Finishing ap = 1.0; ae = 0.3	0.000	0.000	0.000	0.000	0.000	0.000	0.001
	<800 N/mm ²	60	80	Slotting ap = 1.0; ae = 1.0	0.001	0.001	0.002	0.002	0.003	0.004	0.006
				Finishing ap = 1.0; ae = 0.3	0.000	0.000	0.000	0.000	0.000	0.000	0.001
				Slotting ap = 1.0; ae = 1.0	0.001	0.001	0.002	0.002	0.003	0.004	0.006
				Finishing ap = 1.0; ae = 0.3	0.000	0.000	0.000	0.000	0.000	0.000	0.001
	<1,000 N/mm ²	60	80	Slotting ap = 1.0; ae = 1.0	0.001	0.001	0.002	0.002	0.003	0.004	0.006
	<1,300 N/mm ²	40	60	Finishing ap = 1.0; ae = 0.3	0.000	0.000	0.000	0.000	0.000	0.000	0.001
	-	40	60	Slotting ap = 1.0; ae = 1.0	0.001	0.001	0.002	0.002	0.003	0.004	0.006
				Finishing ap = 1.0; ae = 0.3	0.000	0.000	0.000	0.000	0.000	0.000	0.001
	-	25	45	Slotting ap = 1.0; ae = 1.0	0.001	0.001	0.002	0.002	0.003	0.004	0.006
				Finishing ap = 1.0; ae = 0.3	0.000	0.000	0.000	0.000	0.000	0.000	0.001
	-	60	80	Slotting ap = 1.0; ae = 1.0	0.001	0.001	0.002	0.002	0.003	0.004	0.006
				Finishing ap = 1.0; ae = 0.3	0.000	0.000	0.000	0.000	0.000	0.000	0.001
	-	100	120	Slotting ap = 1.0; ae = 1.0	0.002	0.005	0.009	0.012	0.018	0.024	0.036
				Finishing ap = 1.0; ae = 0.3	0.000	0.001	0.001	0.001	0.002	0.002	0.004
	-	150	200	Slotting ap = 1.0; ae = 1.0	0.001	0.001	0.002	0.002	0.003	0.004	0.006
				Finishing ap = 1.0; ae = 0.3	0.000	0.000	0.000	0.000	0.000	0.000	0.001
	-	150	-	Slotting ap = 1.0; ae = 1.0	0.002	0.006	0.008	0.012	0.018	0.024	0.036
				Finishing ap = 1.0; ae = 0.3	0.000	0.001	0.001	0.001	0.002	0.002	0.004
	-	200	-	Slotting ap = 1.0; ae = 1.0	0.002	0.005	0.008	0.010	0.015	0.020	0.030
				Finishing ap = 1.0; ae = 0.3	0.000	0.001	0.001	0.001	0.002	0.002	0.003
	-	80	-	Slotting ap = 1.0; ae = 1.0	0.002	0.005	0.008	0.010	0.015	0.020	0.030
				Finishing ap = 1.0; ae = 0.3	0.001	0.001	0.001	0.001	0.002	0.002	0.003

EMPFOLHENE SCHNITTBEDINGUNGEN
CONDITIONS DE COUPE RECOMMANDEES
CONDIZIONI DI TAGLIO CONSIGLIATE

TITAN-AXM, 16 HMS, 16 HMR, 16 RB

MOLD AND DIE MATERIALS | MATERIAL FÜR FORM UND GESENKBAU | MATÉRIAUX MOULISTES | MATERIALI PER STAMPI

Material	Property	Vc (m/min) ALTiN	Application	f = mm/tooth						
				ø0.2	ø0.5	ø0.8	ø1.0	ø1.5	ø2.0	ø3.0
	<500 N/mm ²	200	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.002	0.002	0.004	0.005	0.005	0.006	0.007
			Copy Milling	0.001	0.002	0.003	0.004	0.004	0.005	0.006
	<800 N/mm ²	200	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.002	0.002	0.004	0.005	0.005	0.006	0.007
			Copy Milling	0.001	0.002	0.003	0.004	0.004	0.005	0.006
	<1,000 N/mm ²	200	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.002	0.002	0.004	0.005	0.005	0.006	0.007
			Copy Milling	0.001	0.002	0.003	0.004	0.004	0.005	0.006
	<1,300 N/mm ²	120	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.002	0.002	0.004	0.005	0.005	0.006	0.007
			Copy Milling	0.001	0.002	0.003	0.004	0.004	0.005	0.006
	< 55 HRC	80	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.002	0.002	0.004	0.005	0.005	0.006	0.007
				0.001	0.002	0.003	0.004	0.004	0.005	0.006
	< 68 HRC	60	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.002	0.002	0.004	0.005	0.005	0.006	0.007
				0.001	0.002	0.003	0.004	0.004	0.005	0.006
		100	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.002	0.002	0.004	0.005	0.005	0.006	0.007
			Copy Milling	0.001	0.002	0.003	0.004	0.004	0.005	0.006
		80	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.002	0.002	0.004	0.005	0.005	0.006	0.007
			Copy Milling	0.001	0.002	0.003	0.004	0.004	0.005	0.006
		80	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.002	0.002	0.004	0.005	0.005	0.006	0.007
			Copy Milling	0.001	0.002	0.003	0.004	0.004	0.005	0.006
		200	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.002	0.002	0.004	0.005	0.005	0.006	0.007
			Copy Milling	0.001	0.002	0.003	0.004	0.004	0.005	0.006
		300	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.001	0.003	0.004	0.005	0.006	0.008	0.009
			Copy Milling	0.001	0.002	0.003	0.004	0.005	0.006	0.007
		200	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.001	0.003	0.004	0.005	0.006	0.008	0.009
			Copy Milling	0.001	0.002	0.003	0.004	0.005	0.006	0.007
		120	High Speed ap = 0.1 x Ø; ae = 1.0 x Ø	0.001	0.003	0.004	0.005	0.006	0.008	0.009
			Copy Milling	0.001	0.002	0.003	0.004	0.005	0.006	0.007

EMPFOHLENE SCHNITTBEDINGUNGEN
CONDITIONS DE COUPE RECOMMANDEES
CONDIZIONI DI TAGLIO CONSIGLIATE

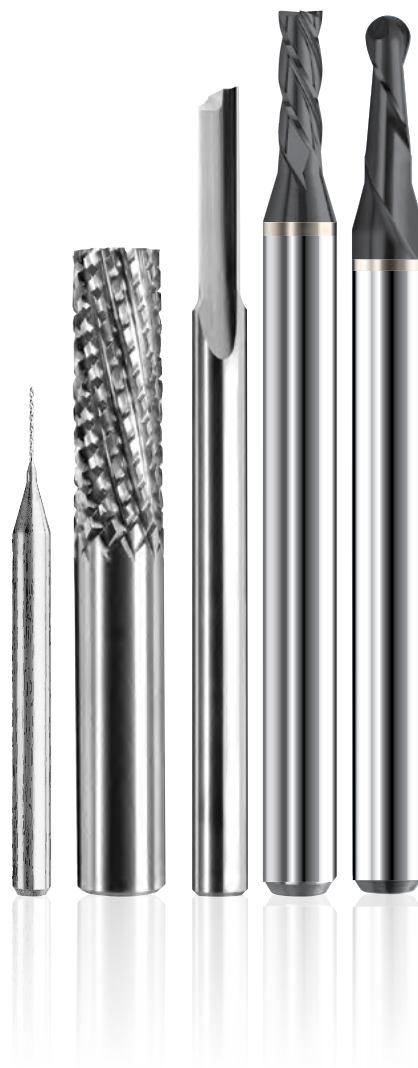
CARBIDE END MILLS | HM SCHAFTFRÄSER | FRAISE (CARBURE) | FRESE (METALLO DURO)

Material	Property	Vc (m/min) uncoated	Vc (m/min) ALTiN	Application	$f_z = \text{mm/Z}$							
					ø4	ø6	ø8	ø10	ø12	ø16	ø20	ø25
	<400 N/mm ²	100	150	Roughing	0.017	0.035	0.046	0.057	0.071	0.088	0.102	0.113
				Finishing	0.024	0.048	0.064	0.080	0.099	0.123	0.143	0.159
				Slotting	0.012	0.024	0.032	0.040	0.050	0.062	0.072	0.079
	<700 N/mm ²	100	150	Roughing	0.016	0.032	0.042	0.052	0.065	0.081	0.094	0.104
				Finishing	0.022	0.044	0.059	0.073	0.091	0.113	0.132	0.146
				Slotting	0.011	0.022	0.029	0.037	0.046	0.057	0.066	0.073
	<1,000 N/mm ²	70	110	Roughing	0.013	0.026	0.034	0.043	0.053	0.066	0.077	0.085
				Finishing	0.018	0.036	0.048	0.060	0.075	0.093	0.108	0.119
				Slotting	0.009	0.018	0.024	0.030	0.037	0.046	0.054	0.060
	<1,300 N/mm ²	60	100	Roughing	0.012	0.023	0.031	0.038	0.047	0.059	0.068	0.076
				Finishing	0.016	0.032	0.043	0.053	0.066	0.082	0.096	0.106
				Slotting	0.008	0.016	0.021	0.027	0.033	0.041	0.048	0.053
	55 HRC	30	60	Roughing	0.010	0.020	0.027	0.033	0.041	0.051	0.060	0.066
				Finishing	0.014	0.028	0.037	0.047	0.058	0.072	0.084	0.093
				Slotting	0.007	0.014	0.019	0.023	0.029	0.036	0.042	0.046
	68 HRC	20	40	Roughing	0.009	0.017	0.023	0.029	0.036	0.044	0.051	0.057
				Finishing	0.012	0.024	0.032	0.040	0.050	0.062	0.072	0.079
				Slotting	0.006	0.012	0.016	0.020	0.025	0.031	0.036	0.040
	<900 N/mm ²	60	90	Roughing	0.013	0.026	0.034	0.043	0.053	0.066	0.077	0.085
				Finishing	0.018	0.036	0.048	0.060	0.075	0.093	0.108	0.119
				Slotting	0.009	0.018	0.024	0.030	0.037	0.046	0.054	0.060
	>900 N/mm ²	50	80	Roughing	0.012	0.023	0.031	0.038	0.047	0.059	0.068	0.076
				Finishing	0.016	0.032	0.043	0.053	0.066	0.082	0.096	0.106
				Slotting	0.008	0.016	0.021	0.027	0.033	0.041	0.048	0.053
	<900 N/mm ²	40	60	Roughing	0.010	0.020	0.027	0.033	0.041	0.051	0.060	0.066
				Finishing	0.014	0.028	0.037	0.047	0.058	0.072	0.084	0.093
				Slotting	0.007	0.014	0.019	0.023	0.029	0.036	0.042	0.046
	>900 N/mm ²	30	50	Roughing	0.009	0.017	0.023	0.029	0.036	0.044	0.051	0.057
				Finishing	0.012	0.024	0.032	0.040	0.050	0.062	0.072	0.079
				Slotting	0.006	0.012	0.016	0.020	0.025	0.031	0.036	0.040
	<900 N/mm ²	30	50	Roughing	0.010	0.020	0.027	0.033	0.041	0.051	0.060	0.066
				Finishing	0.014	0.028	0.037	0.047	0.058	0.072	0.084	0.093
				Slotting	0.007	0.014	0.019	0.023	0.029	0.036	0.042	0.046
	>900 N/mm ²	20	40	Roughing	0.009	0.017	0.023	0.029	0.036	0.044	0.051	0.057
				Finishing	0.012	0.024	0.032	0.040	0.050	0.062	0.072	0.079
				Slotting	0.006	0.012	0.016	0.020	0.025	0.031	0.036	0.040
	<180 HB	100	150	Roughing	0.016	0.032	0.042	0.052	0.065	0.081	0.094	0.104
				Finishing	0.022	0.044	0.059	0.073	0.091	0.113	0.132	0.146
				Slotting	0.011	0.022	0.029	0.037	0.046	0.057	0.066	0.073
	>180 HB	80	120	Roughing	0.014	0.029	0.038	0.048	0.059	0.074	0.085	0.095
				Finishing	0.020	0.040	0.054	0.067	0.083	0.103	0.120	0.132
				Slotting	0.010	0.020	0.027	0.033	0.041	0.051	0.060	0.066
	Silicon <10%	300	500	Roughing	0.017	0.035	0.046	0.057	0.071	0.088	0.102	0.113
				Finishing	0.024	0.048	0.064	0.080	0.099	0.123	0.143	0.159
				Slotting	0.012	0.024	0.032	0.040	0.050	0.062	0.072	0.079
	Silicon >10%	200	400	Roughing	0.016	0.032	0.042	0.052	0.065	0.081	0.094	0.104
				Finishing	0.022	0.044	0.059	0.073	0.091	0.113	0.132	0.146
				Slotting	0.011	0.022	0.029	0.037	0.046	0.057	0.066	0.073
	Bronze	100	150	Roughing	0.014	0.029	0.038	0.048	0.059	0.074	0.085	0.095
				Finishing	0.020	0.040	0.054	0.067	0.083	0.103	0.120	0.132
				Slotting	0.010	0.020	0.027	0.033	0.041	0.051	0.060	0.066
	Brass	80	120	Roughing	0.014	0.029	0.038	0.048	0.059	0.074	0.085	0.095
				Finishing	0.020	0.040	0.054	0.067	0.083	0.103	0.120	0.132
				Slotting	0.010	0.020	0.027	0.033	0.041	0.051	0.060	0.066
	-	300	500	Roughing	0.014	0.029	0.038	0.048	0.059	0.074	0.085	0.095
				Finishing	0.020	0.040	0.054	0.067	0.083	0.103	0.120	0.132
				Slotting	0.010	0.020	0.027	0.033	0.051	0.051	0.060	0.066

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THREAD MILLS | GEWINDEFÄSER | FRAISE A TOURBILLONNEURS | FRESE A FILETTARE

Material	Property	V _c m/min uncoated	V _c m/min AlTiN	f = mm/tooth			
				Ø 0.5 - 1.5	Ø 1.5 - 2.5	Ø 2.5 - 5.0	Ø 5.0 - 8.0
	< 500 N/mm ²	65 - 80	70 - 100	0.004 - 0.01	0.010 - 0.030	0.020 - 0.040	0.040 - 0.070
	< 800 N/mm ²	25 - 60	40 - 60	0.004 - 0.01	0.010 - 0.030	0.020 - 0.040	0.040 - 0.070
	< 1200 N/mm ²	10 - 20	25 - 50	0.004 - 0.01	0.010 - 0.030	0.020 - 0.040	0.040 - 0.070
		35 - 40	40 - 60	0.004 - 0.01	0.010 - 0.030	0.020 - 0.040	0.040 - 0.070
		10 - 20	25 - 50	0.004 - 0.01	0.010 - 0.030	0.020 - 0.040	0.040 - 0.070
		15 - 35		0.004 - 0.01	0.010 - 0.030	0.020 - 0.040	0.040 - 0.070
		35 - 50	50 - 100	0.004 - 0.01	0.010 - 0.030	0.020 - 0.040	0.040 - 0.070
		60 - 150		0.004 - 0.01	0.010 - 0.030	0.020 - 0.040	0.040 - 0.070
		100 - 200		0.004 - 0.01	0.010 - 0.030	0.020 - 0.040	0.040 - 0.070



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