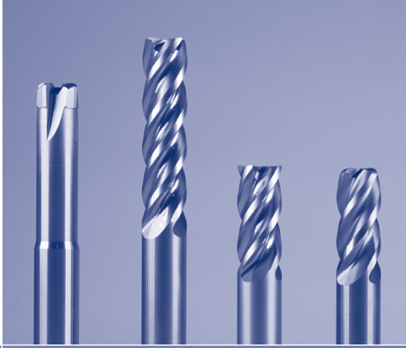
LAMINA
TECHNOLOGIES



PRODUCT LINE

SWISS MANUFACTURER OF CARBIDE CUTTING TOOLS

LAMINA TECHNOLOGIES

PRODUCT CATALOG 2019 - 2020

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SWISS MANUFACTURER OF CARBIDE CUTTING TOOLS

Lamina Technologies is a manufacturer of carbide cutting tools established in Switzerland.

From its inception, Lamina has been focused on understanding customers' needs and striving to exceed their expectations.

Since as early as 2003, we have been the global pioneers of the ground-breaking MULTI-MAT™ concept that, through innovative technologies, allows cutting tools to work on a multitude of materials. This reduces our customers' stock of unused and obsolete cutting tools, increases production flexibility and improves efficiency.

Our original ALPHA line of multi material cutting tools perform as good as or better than dedicated cutting tools from our competitors, on most materials.

Since 2012, we have complemented our offering by adding our MAGIA line, the highest performance cutting tools available.

Based on innovative tungsten carbide, CVD coating and our globally patented ultra thick hyper pulsed PVD coatings, we reach unparalleled performance.

Lamina continues its fast paced expansion with 7 subsidiaries and representation in over 50 countries.

PROUD SPONSOR OF JUNIOR NATIONAL TEAM OF

SWISS TRIATHLON

LAMINA'S DUAL PRODUCT LINE APPROACH

MAGIA

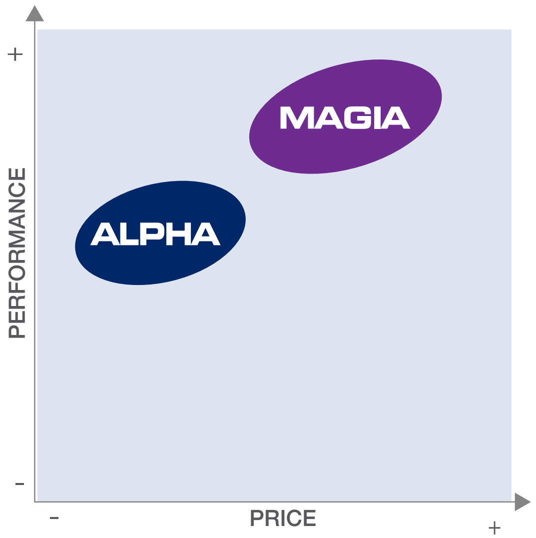
PREMIUM PRODUCT LINE
MAGIA MULTI-MAT™ LT 1000, LT 3000 AND LT 4000
MAGIA PRO LT 1110S, LT 1120M, LT 1125P, LT 3130

- Highest performance grades for top level machining
- Capable of outperforming the best on the market
- For customers that need ultimate performance

ALPHA

STANDARD PRODUCT LINE
MULTI-MAT™ LT 10, LT 30 AND LT 40

- Lamina's original, pioneering universal grades
- Excellent performance at attractive price
- Best choice for machine shops with many short product runs and constant changes in workpiece material requiring the highest value for money



LAMINA TECHNOLOGIES INTRODUCTION

THE MULTI-MAT™ CONCEPT

The MULTI-MAT™ concept was conceived and developed by Lamina Technologies as a consequence of its understanding of the complexities faced by companies in the machining industry.

Through innovative sub-micron grades and advanced coatings, Lamina has developed a line of products that have excellent performance in wide variety of materials.

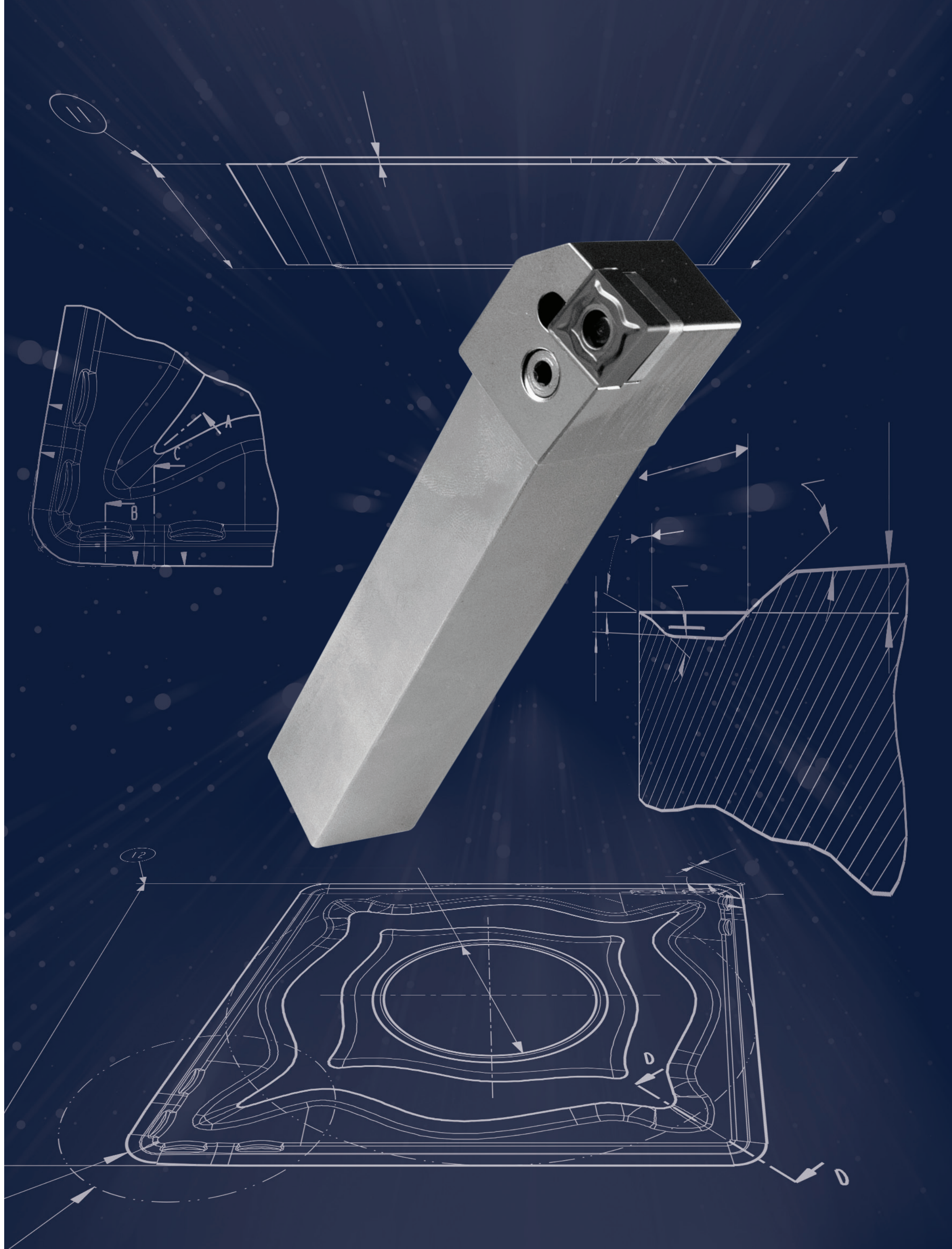
WHAT IS MULTI-MAT™?

- A focused range of multi material inserts
- Few grades required for all your machining needs
- Top quality Swiss manufacturing
- Reasonable price

MULTI-MAT™

Simplify your process

TURNING



MAGIA TURNING GRADES

CHOOSE THE RIGHT PREMIUM TURNING GRADE

LT 1000

- Sub-micron PVD MULTI-MAT™, the most versatile of our MAGIA turning grades
- Excellent combination of hardness and toughness
- The first choice for customers with short production runs, different machining applications and different types of workpiece materials

MAGIA PRO TURNING GRADES

LT 1125P

- First choice, dedicated grade for turning steels
- Increased tool life
- Better reliability for machining all types of work pieces
- High wear resistance under demanding high temperature applications
- Impact resistance

LT 1120M

- First choice, dedicated grade for turning stainless steel
- Optimal balance between hardness and toughness
- Excellent for both stable and unstable conditions
- Works well in moderate to high speeds
- Outstanding wear resistance and extended tool life
- Enhanced built-up edge resistant

LT 1110S

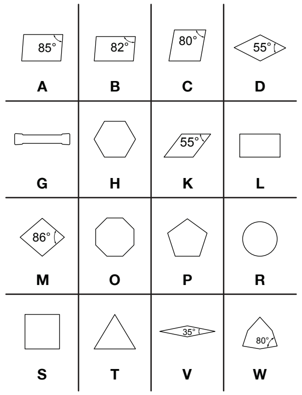
- First choice, dedicated grade for turning high temperature alloys
- Combination of sub-micron substrate, nano-structured PVD coating reduce plastic deformation as well as notch and crater wear
- Innovative chipbreakers and precisely positioned deflectors facilitate chip flow and eliminate heat build up in the work zone
- Highly positive geometries provide better finish

TURNING

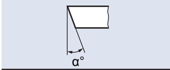
INSERT DESIGNATION (BASED ON ISO 1832)

W	N	M	G	08	04	08			NN
1	2	3	4	5	6	7	8	9	10

1. Insert Shape



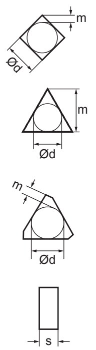
2. Clearance Angle



Letter Symbol	α
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Special

3. Tolerance Class

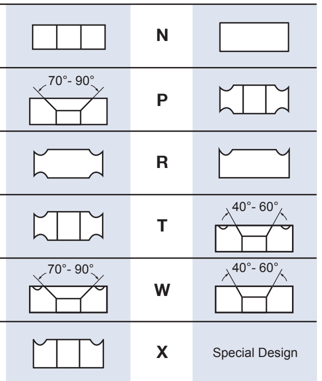
d (mm)
m (mm)
s (mm)



Symbol	D	M	S
A	± 0.025	± 0.005	± 0.025
C	± 0.025	± 0.013	± 0.025
E	± 0.025	± 0.025	± 0.025
F	± 0.013	± 0.005	± 0.025
G	± 0.025	± 0.025	± 0.130
H	± 0.013	± 0.013	± 0.025
J*	± 0.05-0.15	± 0.005	± 0.025
K*	± 0.05-0.15	± 0.013	± 0.025
L*	± 0.05-0.15	± 0.025	± 0.025
M*	± 0.05-0.15	± 0.08-0.20	± 0.130
N*	± 0.05-0.15	± 0.08-0.20	± 0.025
U*	± 0.08-0.25	± 0.13-0.38	± 0.130

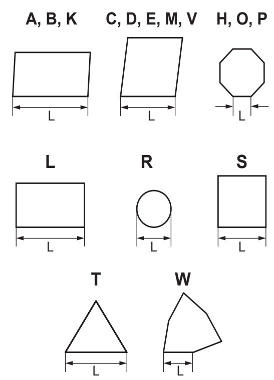
* Depending on the insert size.

4. Fixing and Chipbreaker Types



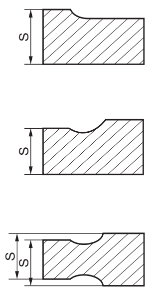
Type	Symbol	Type	Symbol
A		N	
B	70°- 90°	P	
F		R	
G		T	40°- 60°
H	70°- 90°	W	40°- 60°
M		X	Special Design

5. Cutting Edge Length



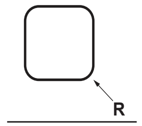
Disregarding any decimals e.g. 12,7 = 12

6. Insert Thickness



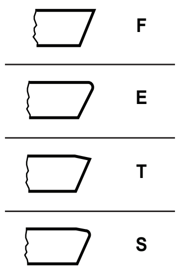
Symbol	mm
01	= 1.59
T1	= 1.98
02	= 2.38
03	= 3.18
T3	= 3.97
04	= 4.76
05	= 5.56
06	= 6.35
07	= 7.94
09	= 9.52

7. Insert Corner Radius



00 = Sharp corner or round insert (inch version)
M0 = Round insert (metric version)
01 = 0.1 mm
02 = 0.2 mm
04 = 0.4 mm
08 = 0.8 mm
12 = 1.2 mm
16 = 1.6 mm
etc

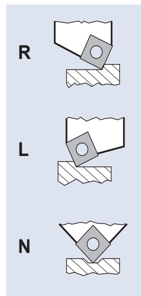
8. Edge Preparation



Optional information

9. Cutting Direction

Turning



Optional information

10. Internal Designation

e.g. Chipbreaker (Turning)

NN = General purpose
NM = Roughing operations
NX = General purpose Magia
PP = All purpose grooving
NS = Non-ferrous materials
MP = Steel materials

Optional information

TURNING CHIPBREAKER RECOMMENDATIONS

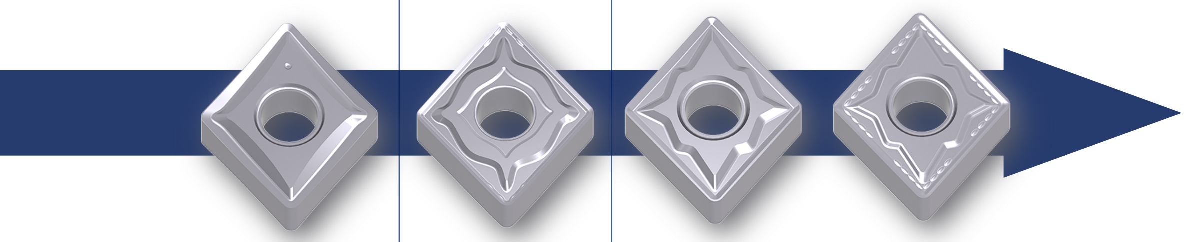
NEGATIVE TURNING CHIPBREAKERS OVERVIEW

FINISHING — LIGHT CUT, STABLE CONDITIONS — ROUGHING, UNSTABLE CONDITIONS

P	MP	MP	MP	MP
M	_NMP NN	NX	NX	
K	NN	NM		
S	NS	NX	_NMG NN	
H	NN	NM		
N (>8%SI)	_NMP NN	NX	_NMG NN	
N (<8%SI)	NS			

MULTI-MAT™ CHIPBREAKERS

_NMP NN | NX* | _NMG NN | NM



Light Cut,
Stable Conditions

* First choice for most turning applications

Roughing,
Unstable Conditions

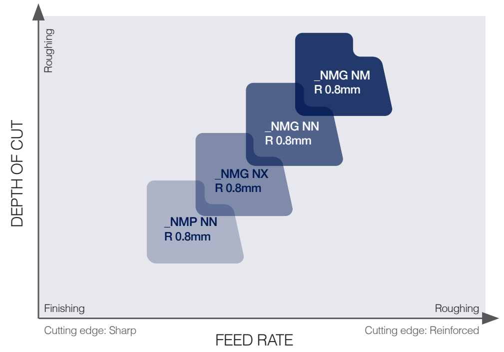
DEDICATED GEOMETRIES

NS | _CGT | MP

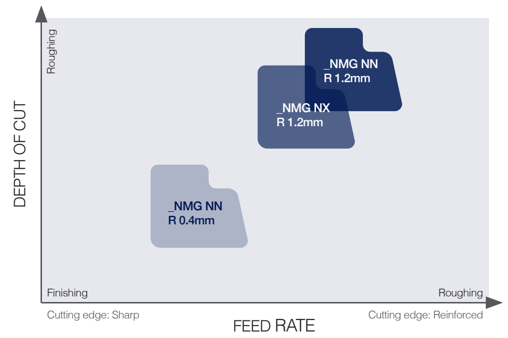
S + N | N (>8%SI) | P

TURNING CHIPBREAKER FRAGMENTATION CHARTS

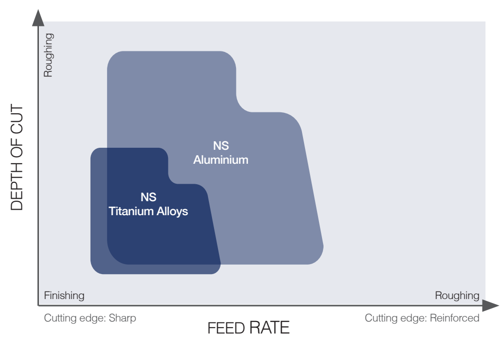
INSERT CORNER RADIUS = 0.8MM



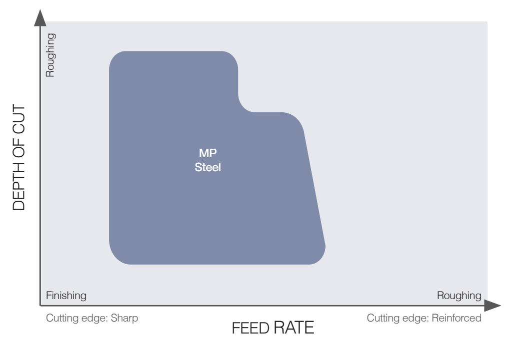
INSERT CORNER RADIUS = 0.4 AND 1.2



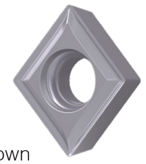
NS CHIPBREAKER



MP CHIPBREAKER



C C G T



NS Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CCGT 060204 NS	LT 1110S	●	◐		p. 244		T0004671
CCGT 09T304 NS	LT 1110S	●	◐		p. 244		T0004672

C C M T

NN Shown

MAGIA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CCMT 060204 NN	LT 1000	●	◐		p. 223		T0001888
CCMT 09T304 NN	LT 1000	●	◐		p. 220		T0001889
CCMT 09T308 NN	LT 1000	●	◐		p. 221		T0001890
CCMT 120404 NN	LT 1000	●	◐		p. 220		T0001891
CCMT 120408 NN	LT 1000	●	◐		p. 238		T0001892
CCMT 120412 NN	LT 1000	●	◐		p. 222		T0001893

ALPHA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CCMT 060204 NN	LT 10	●	◐		p. 223		T0000055
CCMT 09T304 NN	LT 10	●	◐		p. 220		T0000056
CCMT 09T308 NN	LT 10	●	◐		p. 221		T0000117
CCMT 120404 NN	LT 10	●	◐		p. 220		T0001456
CCMT 120408 NN	LT 10	●	◐		p. 238		T0001457
CCMT 120412 NN	LT 10	●	◐		p. 222		T0001776

C

C N G G

NS Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CNGG 09T304 NS	LT 1110S	●	◐		p. 244		T0004581
CNGG 120404 NS	LT 1110S	●	◐		p. 244		T0004579
CNGG 120408 NS	LT 1110S	●	◐		p. 244		T0004580

C N M G

MP Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CNMG 120404 MP	LT 1125P	●	●		p. 249		T0004963
CNMG 120408 MP	LT 1125P	●	●		p. 249		T0004964
CNMG 120412 MP	LT 1125P	●	●		p. 250		T0004965
CNMG 160616 MP	LT 1125P	●	●		p. 250		T0005030
CNMG 120408 NX	LT 1120M	●	●		p. 247		T0004711
CNMG 120412 NX	LT 1120M	●	●		p. 247		T0004855
CNMG 120404 NN	LT 1110S	●	◐		p. 248		T0004714
CNMG 120408 NX	LT 1110S	●	◐		p. 247		T0004694
CNMG 120412 NX	LT 1110S	●	◐		p. 247		T0004858

MAGIA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CNMG 120404 NN	LT 1000	●	◐		p. 220		T0001895
CNMG 120408 NX	LT 1000	●	◐		p. 224		T0002741
CNMG 120408 NN	LT 1000	●	◐		p. 225		T0001896
CNMG 120408 NM	LT 1000	●	◐		p. 228		T0001968
CNMG 120412 NN	LT 1000	●	◐		p. 226		T0001897
CNMG 120412 NX	LT 1000	●	◐		p. 227		T0004859

STABLE CONDITIONS
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

INTERRUPTED CUT
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

Vc

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CHIPBREAKER
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TECHNICAL SECTION
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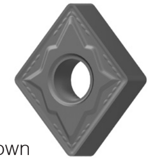
MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

C N M G



NM Shown

ALPHA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CNMG 120404 NN	LT 10	●	◐		p. 220		T0000491
CNMG 120408 NN	LT 10	●	◐		p. 225		T0000059
CNMG 120408 NM	LT 10	●	◐		p. 228		T0001966
CNMG 120412 NN	LT 10	●	◐		p. 226		T0000061

C N M M

NR Shown

MAGIA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CNMM 120412 NR	LT 1000	●	◐		p. 237		T0001899

ALPHA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CNMM 120408 NR	LT 10	●	◐		p. 236		T0000669
CNMM 120412 NR	LT 10	●	◐		p. 237		T0000671

C N M P

NN Shown

MAGIA PRO

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CNMP 120408 NN	LT 1120M	●	◐		p. 248		T0004732
CNMP 120412 NN	LT 1120M	●	◐		p. 248		T0004734

MAGIA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CNMP 120408 NN	LT 1000	●	○		p. 238		T0001900
CNMP 120412 NN	LT 1000	●	○		p. 222		T0001901

C P M T

NN Shown

MAGIA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
CPMT 060204 NN	LT 1000	●	◐		p. 223		T0003088
CPMT 060208 NN	LT 1000	●	◐		p. 243		T0003144
CPMT 09T304 NN	LT 1000	●	◐		p. 220		T0003145
CPMT 09T308 NN	LT 1000	●	◐		p. 221		T0003146

STABLE CONDITIONS
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

INTERRUPTED CUT
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

Vc

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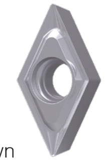
MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

D C G T



NS Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
DCGT 11T304 NS	LT 1110S	●	◐		p. 244		T0004674

D C M T

NN Shown

MAGIA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
DCMT 070204 NN	LT 1000	●	◐		p. 223		T0001902
DCMT 11T304 NN	LT 1000	●	◐		p. 220		T0001903
DCMT 11T308 NN	LT 1000	●	◐		p. 221		T0001904

ALPHA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
DCMT 070204 NN	LT 10	●	◐		p. 223		T0000064
DCMT 11T304 NN	LT 10	●	◐		p. 220		T0000065
DCMT 11T308 NN	LT 10	●	◐		p. 221		T0000721

STABLE CONDITIONS
- ● RECOMMENDED
- ◐ ACCEPTABLE
- ○ NOT RECOMMENDED

INTERRUPTED CUT
- ● RECOMMENDED
- ◐ ACCEPTABLE
- ○ NOT RECOMMENDED

Vc

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TURNING

D N G G

NS Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
DNGG 110404 NS	LT 1110S	●	◐		p. 244		T0004593
DNGG 110408 NS	LT 1110S	●	◐		p. 244		T0004606
DNGG 150604 NS	LT 1110S	●	◐		p. 244		T0004561
DNGG 150608 NS	LT 1110S	●	◐		p. 244		T0004562

D N M G

NX Shown

MAGIA PRO

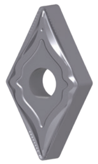
DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
DNMG 110404 MP	LT 1125P	●	◐		p. 249		T0004966
DNMG 110408 MP	LT 1125P	●	●		p. 249		T0004967
DNMG 150404 MP	LT 1125P	●	◐		p. 249		T0004968
DNMG 150408 MP	LT 1125P	●	●		p. 249		T0004969
DNMG 150412 MP	LT 1125P	●	●		p. 250		T0004970
DNMG 150604 MP	LT 1125P	●	◐		p. 249		T0004971
DNMG 150608 MP	LT 1125P	●	●		p. 249		T0004972
DNMG 150612 MP	LT 1125P	●	●		p. 250		T0004973
DNMG 110408 NN	LT 1120M	●	●		p. 248		T0004735
DNMG 150408 NX	LT 1120M	●	●		p. 247		T0004736
DNMG 150412 NN	LT 1120M	●	●		p. 248		T0004738
DNMG 150608 NX	LT 1120M	●	●		p. 247		T0004739
DNMG 150612 NN	LT 1120M	●	●		p. 248		T0004741
DNMG 150404 NN	LT 1110S	●	◐		p. 246		T0004725
DNMG 150408 NX	LT 1110S	●	◐		p. 245		T0004707
DNMG 150604 NN	LT 1110S	●	◐		p. 246		T0004728
DNMG 150608 NX	LT 1110S	●	◐		p. 245		T0004709

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

D N M G



NX Shown

MAGIA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
DNMG 110404 NN	LT 1000	●	◐		p. 220		T0001905
DNMG 110408 NN	LT 1000	●	◐		p. 225		T0001906
DNMG 150404 NN	LT 1000	●	◐		p. 220		T0001907
DNMG 150408 NX	LT 1000	●	◐		p. 224		T0003097
DNMG 150408 NN	LT 1000	●	◐		p. 225		T0001908
DNMG 150412 NN	LT 1000	●	◐		p. 226		T0001909
DNMG 150604 NN	LT 1000	●	◐		p. 220		T0001910
DNMG 150608 NX	LT 1000	●	◐		p. 224		T0003220
DNMG 150608 NN	LT 1000	●	◐		p. 225		T0001911
DNMG 150612 NN	LT 1000	●	◐		p. 226		T0001912

ALPHA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
DNMG 110404 NN	LT 10	●	◐		p. 220		T0000066
DNMG 110408 NN	LT 10	●	◐		p. 225		T0000675
DNMG 150404 NN	LT 10	●	◐		p. 220		T0000476
DNMG 150408 NN	LT 10	●	◐		p. 225		T0000475
DNMG 150412 NN	LT 10	●	◐		p. 226		T0001021
DNMG 150604 NN	LT 10	●	◐		p. 220		T0000583
DNMG 150608 NN	LT 10	●	◐		p. 225		T0000067
DNMG 150612 NN	LT 10	●	◐		p. 226		T0000672

STABLE CONDITIONS
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

INTERRUPTED CUT
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

Vc

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D N U X

R Shown

MAGIA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
DNUX 150608 R11	LT 1000	●	◐		p. 224		T0002793

ALPHA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
DNUX 150608 R11	LT 10	●	◐		p. 224		T0002157

MATERIAL GROUP
STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

TURNING

KNUX

R Shown

ALPHA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
KNUX 160405 L	LT 10	●	◐		p. 224		T0003884
KNUX 160405 R	LT 10	●	◐		p. 224		T0000951

K

STABLE CONDITIONS
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

INTERRUPTED CUT
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

Vc

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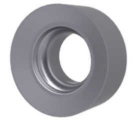
MATERIAL GROUP
STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

R C M T


M0 Shown

MAGIA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
RCMT 0602 M0	LT 1000	●	◐		p. 239		T0001914
RCMT 0803 M0	LT 1000	●	◐		p. 240		T0001915
RCMT 10T3 M0	LT 1000	●	◐		p. 241		T0001916
RCMT 1204 M0	LT 1000	●	◐		p. 242		T0001917

ALPHA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
RCMT 0602 M0	LT 10	●	◐		p. 239		T0000090
RCMT 0803 M0	LT 10	●	◐		p. 240		T0000091
RCMT 10T3 M0	LT 10	●	◐		p. 241		T0000092
RCMT 1204 M0	LT 10	●	◐		p. 242		T0000093

STABLE CONDITIONS
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

INTERRUPTED CUT
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

Vc

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MATERIAL GROUP
STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

S C M T

NN Shown

MAGIA

DESIGNATION	GRADE	Stable	Interrupted	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
SCMT 09T304 NN	LT 1000	●	◐		p. 220		T0001918
SCMT 09T308 NN	LT 1000	●	◐		p. 221		T0001919

ALPHA

DESIGNATION	GRADE	Stable	Interrupted	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
SCMT 09T304 NN	LT 10	●	◐		p. 220		T0001459
SCMT 09T308 NN	LT 10	●	◐		p. 221		T0001458

STABLE CONDITIONS
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

INTERRUPTED CUT
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

Vc

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S N M G

NX Shown

MAGIA PRO

DESIGNATION	GRADE	Stable	Interrupted	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
SNMG 120408 MP	LT 1125P	●	●		p. 249		T0004974
SNMG 120412 MP	LT 1125P	●	●		p. 250		T0004975
SNMG 120408 NX	LT 1120M	●	●		p. 247		T0004742
SNMG 120408 NX	LT 1110S	●	◐		p. 245		T0004698

MAGIA

DESIGNATION	GRADE	Stable	Interrupted	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
SNMG 120408 NX	LT 1000	●	◐		p. 229		T0003011
SNMG 120408 NN	LT 1000	●	◐		p. 230		T0001921
SNMG 120412 NN	LT 1000	●	◐		p. 231		T0001922

ALPHA

DESIGNATION	GRADE	Stable	Interrupted	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
SNMG 120408 NN	LT 10	●	◐		p. 230		T0000322
SNMG 120412 NN	LT 10	●	◐		p. 231		T0000323

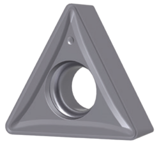
S

MATERIAL GROUP
STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

T C M T


NN Shown

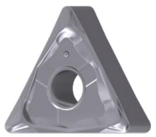
MAGIA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TCMT 110204 NN	LT 1000	●	◐		p. 223		T0001924
TCMT 110208 NN	LT 1000	●	◐		p. 243		T0001925
TCMT 16T304 NN	LT 1000	●	◐		p. 220		T0001927
TCMT 16T308 NN	LT 1000	●	◐		p. 238		T0001928
TCMT 16T312 NN	LT 1000	●	◐		p. 222		T0001929

ALPHA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TCMT 110204 NN	LT 10	●	◐		p. 223		T0000477
TCMT 110208 NN	LT 10	●	◐		p. 243		T0000478
TCMT 16T304 NN	LT 10	●	◐		p. 220		T0000479
TCMT 16T308 NN	LT 10	●	◐		p. 238		T0000068
TCMT 16T312 NN	LT 10	●	◐		p. 222		T0001774

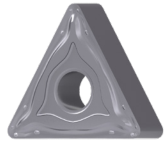
T N G G


NS Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TNGG 160404 NS	LT 1110S	●	◐		p. 244		T0004608
TNGG 160408 NS	LT 1110S	●	◐		p. 244		T0004609

T N M G


NX Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TNMG 160404 MP	LT 1125P	●	◐		p. 249		T0004976
TNMG 160408 MP	LT 1125P	●	●		p. 249		T0004977
TNMG 160412 MP	LT 1125P	●	●		p. 250		T0004978
TNMG 220408 MP	LT 1125P	●	●		p. 249		T0004979
TNMG 220412 MP	LT 1125P	●	●		p. 250		T0004980
TNMG 160408 NX	LT 1120M	●	●		p. 247		T0004746
TNMG 220408 NX	LT 1120M	●	●		p. 247		T0004748
TNMG 160404 NN	LT 1110S	●	◐		p. 246		T0004719
TNMG 160408 NX	LT 1110S	●	◐		p. 247		T0004700
TNMG 220404 NN	LT 1110S	●	◐		p. 246		T0004724
TNMG 220408 NX	LT 1110S	●	◐		p. 247		T0004703

MAGIA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TNMG 160404 NN	LT 1000	●	◐		p. 220		T0001931
TNMG 160408 NX	LT 1000	●	◐		p. 224		T0003012
TNMG 160408 NN	LT 1000	●	◐		p. 225		T0001932
TNMG 160412 NN	LT 1000	●	◐		p. 226		T0001933
TNMG 220404 NN	LT 1000	●	◐		p. 220		T0001934
TNMG 220408 NX	LT 1000	●	◐		p. 224		T0003013
TNMG 220408 NN	LT 1000	●	◐		p. 225		T0001935
TNMG 220412 NN	LT 1000	●	◐		p. 226		T0001936

ALPHA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TNMG 160404 NN	LT 10	●	◐		p. 220		T0000457
TNMG 160408 NN	LT 10	●	◐		p. 225		T0000069
TNMG 160412 NN	LT 10	●	◐		p. 226		T0001734
TNMG 220404 NN	LT 10	●	◐		p. 220		T0001873
TNMG 220408 NN	LT 10	●	◐		p. 225		T0000113
TNMG 220412 NN	LT 10	●	◐		p. 226		T0001735

T

STABLE CONDITIONS
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

INTERRUPTED CUT
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

Vc

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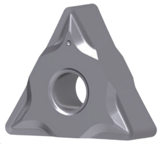
MATERIAL GROUP
STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

T N M P



NN Shown

MAGIA PRO

DESIGNATION	GRADE	Stable conditions	Interrupted cut	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TNMP 160408 NN	LT 1120M	●	◐		p. 248		T0004754

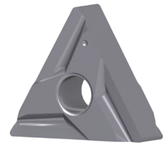
MAGIA

DESIGNATION	GRADE	Stable conditions	Interrupted cut	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TNMP 160408 NN	LT 1000	●	○		p. 238		T0001937

ALPHA

DESIGNATION	GRADE	Stable conditions	Interrupted cut	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TNMP 160408 NN	LT 10	●	○		p. 238		T0000492

T N U X



R Shown

MAGIA

DESIGNATION	GRADE	Stable conditions	Interrupted cut	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TNUX 160404 L	LT 1000	●	○		p. 220		T0002794
TNUX 160404 R	LT 1000	●	○		p. 220		T0001938
TNUX 160408 L	LT 1000	●	◐		p. 224		T0002795
TNUX 160408 R	LT 1000	●	◐		p. 224		T0001939

ALPHA

DESIGNATION	GRADE	Stable conditions	Interrupted cut	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TNUX 160404 L	LT 10	●	○		p. 220		T0001877
TNUX 160404 R	LT 10	●	○		p. 220		T0001125
TNUX 160408 L	LT 10	●	◐		p. 224		T0003385
TNUX 160408 R	LT 10	●	◐		p. 224		T0001137

T P M R

NN Shown

ALPHA

DESIGNATION	GRADE	Stable conditions	Interrupted cut	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
TPMR 160304 NN	LT 10	●	◐		p. 220		T0001638
TPMR 160308 NN	LT 10	●	◐		p. 238		T0001535

STABLE CONDITIONS
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

INTERRUPTED CUT
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

Vc

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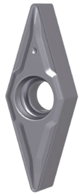
MATERIAL GROUP
STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

V B M T



NN Shown

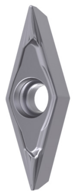
MAGIA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
VBMT 110304 NN	LT 1000	●	◐		p. 223		T0001942
VBMT 160404 NN	LT 1000	●	◐		p. 220		T0001943
VBMT 160408 NN	LT 1000	●	◐		p. 221		T0001944

ALPHA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
VBMT 110304 NN	LT 10	●	◐		p. 223		T0001460
VBMT 160404 NN	LT 10	●	◐		p. 220		T0000070
VBMT 160408 NN	LT 10	●	◐		p. 221		T0000071

V C G T



NS Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
VCGT 160404 NS	LT 1110S	●	◐		p. 244		T0004563
VCGT 160408 NS	LT 1110S	●	◐		p. 244		T0004565

STABLE CONDITIONS
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

INTERRUPTED CUT
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

Vc

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V C M T

NN Shown

MAGIA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
VCMT 160404 NN	LT 1000	●	◐		220		T0001945
VCMT 160408 NN	LT 1000	●	◐		221		T0001946

ALPHA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
VCMT 160404 NN	LT 10	●	◐		p. 220		T0001102
VCMT 160408 NN	LT 10	●	◐		p. 221		T0001103

V N G G

NS Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
VNGG 160404 NS	LT 1110S	●	◐		p. 244		T0004571
VNGG 160408 NS	LT 1110S	●	◐		p. 244		T0004575

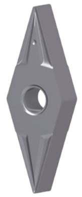
V

MATERIAL GROUP
STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

V N M G


NN Shown

MAGIA PRO

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
VNMG 160408 NN	LT 1120M	●	●		p. 248		T0004756
VNMG 160404 MP	LT 1125P	●	◐		p. 249		T0004981
VNMG 160408 MP	LT 1125P	●	◐		p. 249		T0004982

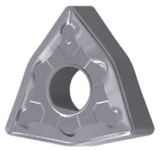
MAGIA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
VNMG 160404 NN	LT 1000	●	◐		p. 220		T0001947
VNMG 160408 NN	LT 1000	●	◐		p. 221		T0001948

ALPHA

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
VNMG 160404 NN	LT 10	●	◐		p. 220		T0000072
VNMG 160408 NN	LT 10	●	◐		p. 221		T0000073

W N G G



MAGIA PRO

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
WNMG 060408 NX	LT 1120M	●	●		CVD		T0004758
WNMG 080408 NX	LT 1120M	●	●		CVD		T0004759
WNMG 080412 NN	LT 1120M	●	●		CVD		T0004761
WNGG 060404 NS	LT 1110S	●	◐		PVD		T0004610
WNGG 060408 NS	LT 1110S	●	◐		PVD		T0004611
WNGG 080404 NS	LT 1110S	●	◐		PVD		T0004612
WNGG 080408 NS	LT 1110S	●	◐		PVD		T0004613
WNMG 060404 NN	LT 1110S	●	◐		PVD		T0004716
WNMG 060408 NX	LT 1110S	●	◐		PVD		T0004695
WNMG 080404 NN	LT 1110S	●	◐		PVD		T0004717
WNMG 080408 NX	LT 1110S	●	◐		PVD		T0004696
WNMG 080412 NN	LT 1110S	●	◐		PVD		T0004718

STABLE CONDITIONS
- ● RECOMMENDED
- ◐ ACCEPTABLE
- ○ NOT RECOMMENDED

INTERRUPTED CUT
- ● RECOMMENDED
- ◐ ACCEPTABLE
- ○ NOT RECOMMENDED

Vc

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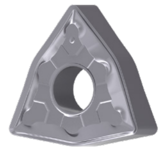
W N G G


NS Shown

MAGIA PRO

DESIGNATION	GRADE	STABLE CONDITIONS	INTERRUPTED CUT	Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
WNGG 060404 NS	LT 1110S	●	◐		p. 244		T0004610
WNGG 060408 NS	LT 1110S	●	◐		p. 244		T0004611
WNGG 080404 NS	LT 1110S	●	◐		p. 244		T0004612
WNGG 080408 NS	LT 1110S	●	◐		p. 244		T0004613

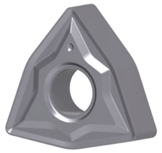
MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888

W

W N M G



NN Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
WNMG 060408 MP	LT 1125P	●	●		p. 250		T0004983
WNMG 080404 MP	LT 1125P	●	◐		p. 249		T0004984
WNMG 080408 MP	LT 1125P	●	●		p. 250		T0004990
WNMG 080412 MP	LT 1125P	●	●		p. 250		T0004989
WNMG 060408 NX	LT 1120M	●	●		p. 247		T0004758
WNMG 080408 NX	LT 1120M	●	●		p. 247		T0004759
WNMG 060404 NN	LT 1110S	●	◐		p. 246		T0004716
WNMG 060408 NX	LT 1110S	●	◐		p. 245		T0004695
WNMG 080404 NN	LT 1110S	●	◐		p. 246		T0004717
WNMG 080408 NX	LT 1110S	●	◐		p. 245		T0004696
WNMG 080412 NN	LT1110S	●	◐		p. 246		T0004718

MAGIA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
WNMG 060404 NN	LT 1000	●	◐		p. 220		T0001949
WNMG 060408 NX	LT 1000	●	◐		p. 232		T0003014
WNMG 060408 NN	LT 1000	●	◐		p. 233		T0001950
WNMG 080404 NN	LT 1000	●	◐		p. 220		T0001951
WNMG 080408 NX	LT 1000	●	◐		p. 232		T0002742
WNMG 080408 NN	LT 1000	●	◐		p. 233		T0001952
WNMG 080408 NM	LT 1000	●	◐		p. 235		T0001969
WNMG 080412 NN	LT 1000	●	◐		p. 234		T0001953

ALPHA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
WNMG 060404 NN	LT 10	●	◐		p. 220		T0000133
WNMG 060408 NN	LT 10	●	◐		p. 233		T0000137
WNMG 080404 NN	LT 10	●	◐		p. 220		T0000584
WNMG 080408 NN	LT 10	●	◐		p. 233		T0000075
WNMG 080408 NM	LT 10	●	◐		p. 235		T0001967
WNMG 080412 NN	LT 10	●	◐		p. 234		T0000077

STABLE CONDITIONS
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

INTERRUPTED CUT
● RECOMMENDED
◐ ACCEPTABLE
○ NOT RECOMMENDED

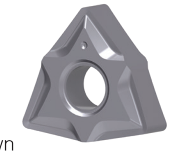
Vc

COOLANT
p. 357

CHIPBREAKER
p. 12 - 13

TECHNICAL SECTION
p. 352 - 359

W N M P



NN Shown

MAGIA PRO

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
WNMP 080408 NN	LT 1120M	●	◐		p. 248		T0004762

MAGIA

DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
WNMP 060404 NN	LT 1000	●	○		p. 220		T0001954
WNMP 060408 NN	LT 1000	●	○		p. 233		T0001955
WNMP 080408 NN	LT 1000	●	○		p. 233		T0001956

ALPHA

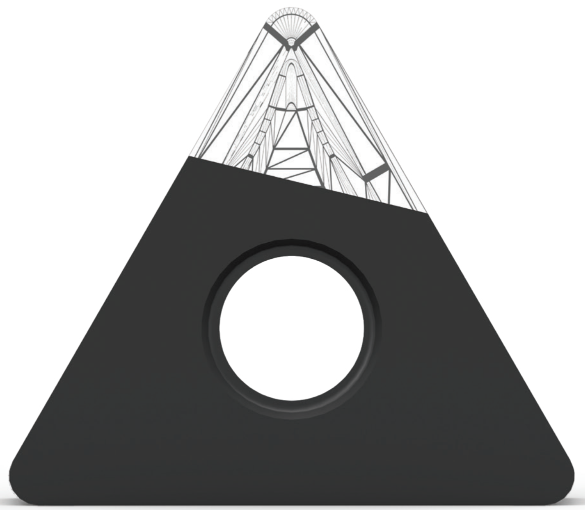
DESIGNATION	GRADE			Vc	CUTTING DATA	MATERIAL RECOMMENDATION	CATALOG #
WNMP 060404 NN	LT 10	●	○		p. 220		T0000306
WNMP 060408 NN	LT 10	●	○		p. 233		T0000307
WNMP 080408 NN	LT 10	●	○		p. 233		T0000308

MATERIAL GROUP

- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

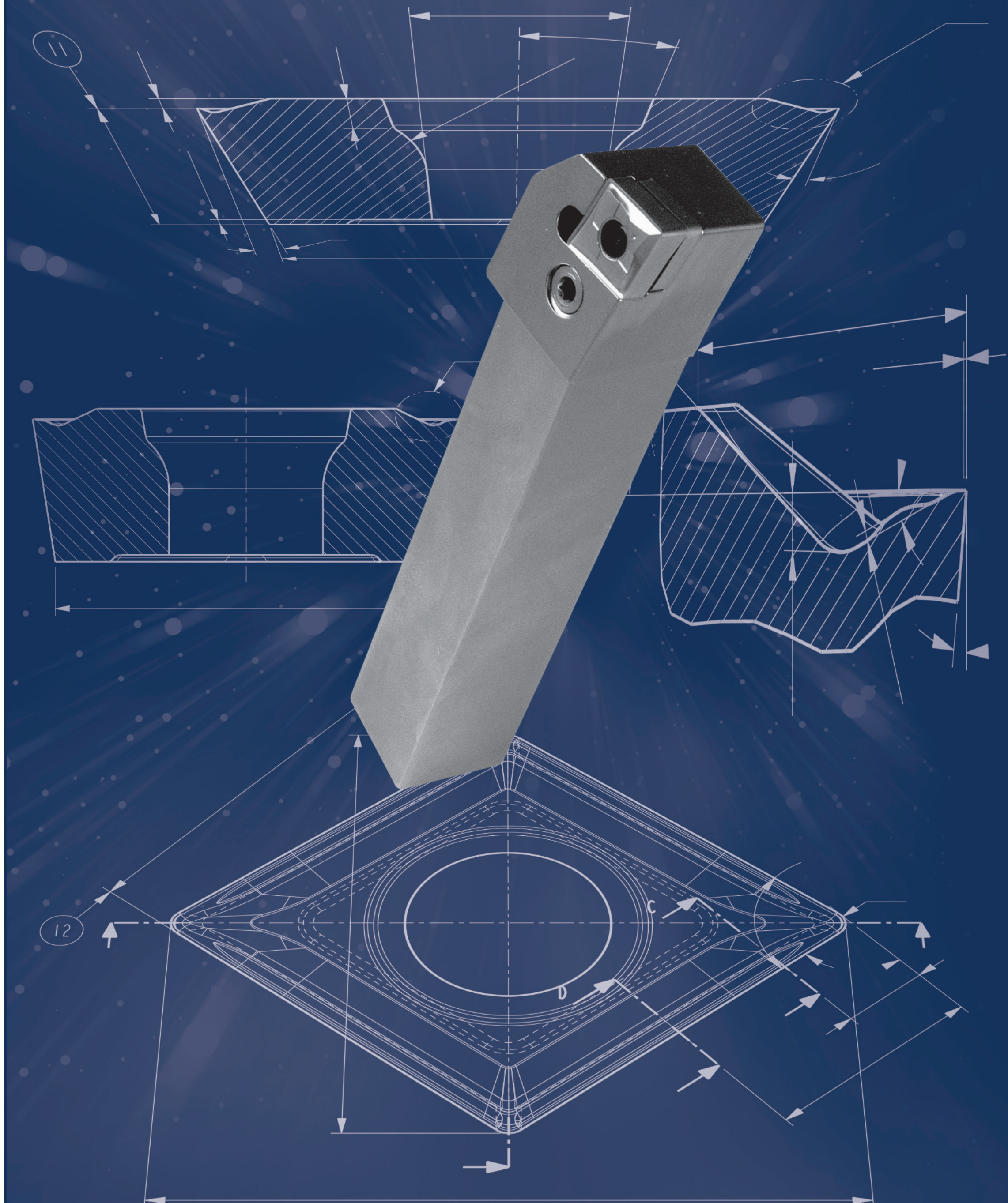
ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	CCMT 060204 NN LT 1000
CATALOG NUMBER	T0001888



MADE IN SWITZERLAND

ALU
TURNING



LT 05

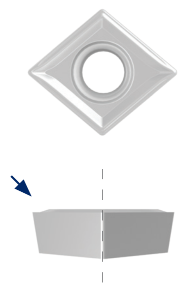
IMPROVED TURNING INSERTS FOR ALUMINIUM AND OTHER NON FERROUS MATERIALS

Our long lasting aluminium line has been improved by combining our unique PVD coating and sub-micron substrate with the newly designed NS chipbreaker for flawless aluminium turning.

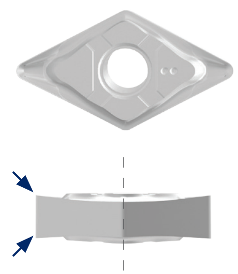
The new NS chipbreaker has a larger supporting area in the pocket seat which provides greater stability and thus a better surface finish.

Lamina aluminium _CGT turning geometries are single sided positive inserts while our economic _NGG geometries are doubled sided and fit all standard ISO tool holders.

- Specially designed deflectors facilitate chip breaking and enhancing chip evacuation
- Larger supporting area in the pocket seat for greater stability and better surface finish
- Our unique PVD coating has low affinity for aluminium, eliminates built-up edge
- Sharp edges slide through aluminium without sticking



STANDARD SINGLE POSITIVE INSERTS _CGT



LAMINA DOUBLE SIDED ALTERNATIVE _NGG

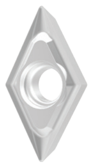
C C G T

DESIGNATION	GRADE	MATERIAL RECOMMENDATION	CATALOG #
CCGT 060204 NS	LT 05	■	T0004773
CCGT 09T304 NS	LT 05	■	T0004774

C N G G

DESIGNATION	GRADE	MATERIAL RECOMMENDATION	CATALOG #
CNGG 09T304 NS	LT 05	■	T0004578
CNGG 120404 NS	LT 05	■	T0004576
CNGG 120408 NS	LT 05	■	T0004577

D C G T

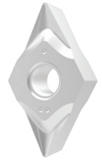


DESIGNATION	GRADE	MATERIAL RECOMMENDATION	CATALOG #
DCGT 11T304 NS	LT 05	■	T0004775

CUTTING DATA
p. 251 - 252
TECHNICAL SECTION
p. 352 - 359

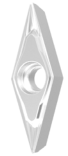
ALU TURNING

D N G G



DESIGNATION	GRADE	MATERIAL RECOMMENDATION	CATALOG #
DNGG 110404 NS	LT 05	■	T0004589
DNGG 110408 NS	LT 05	■	T0004601
DNGG 150604 NS	LT 05	■	T0004403
DNGG 150608 NS	LT 05	■	T0004404

V C G T



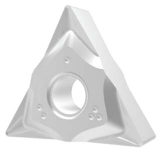
DESIGNATION	GRADE	MATERIAL RECOMMENDATION	CATALOG #
VCGT 160404 NS	LT 05	■	T0004564
VCGT 160408 NS	LT 05	■	T0004566

V N G G

DESIGNATION	GRADE	MATERIAL RECOMMENDATION	CATALOG #
VNGG 160404 NS	LT 05	■	T0002830
VNGG 160408 NS	LT 05	■	T0002831

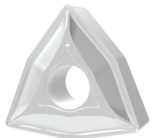
CUTTING DATA
p. 251 - 252
TECHNICAL SECTION
p. 352 - 359

T N G G



DESIGNATION	GRADE	MATERIAL RECOMMENDATION	CATALOG #
TNGG 160404 NS	LT 05	■	T0004602
TNGG 160408 NS	LT 05	■	T0004603

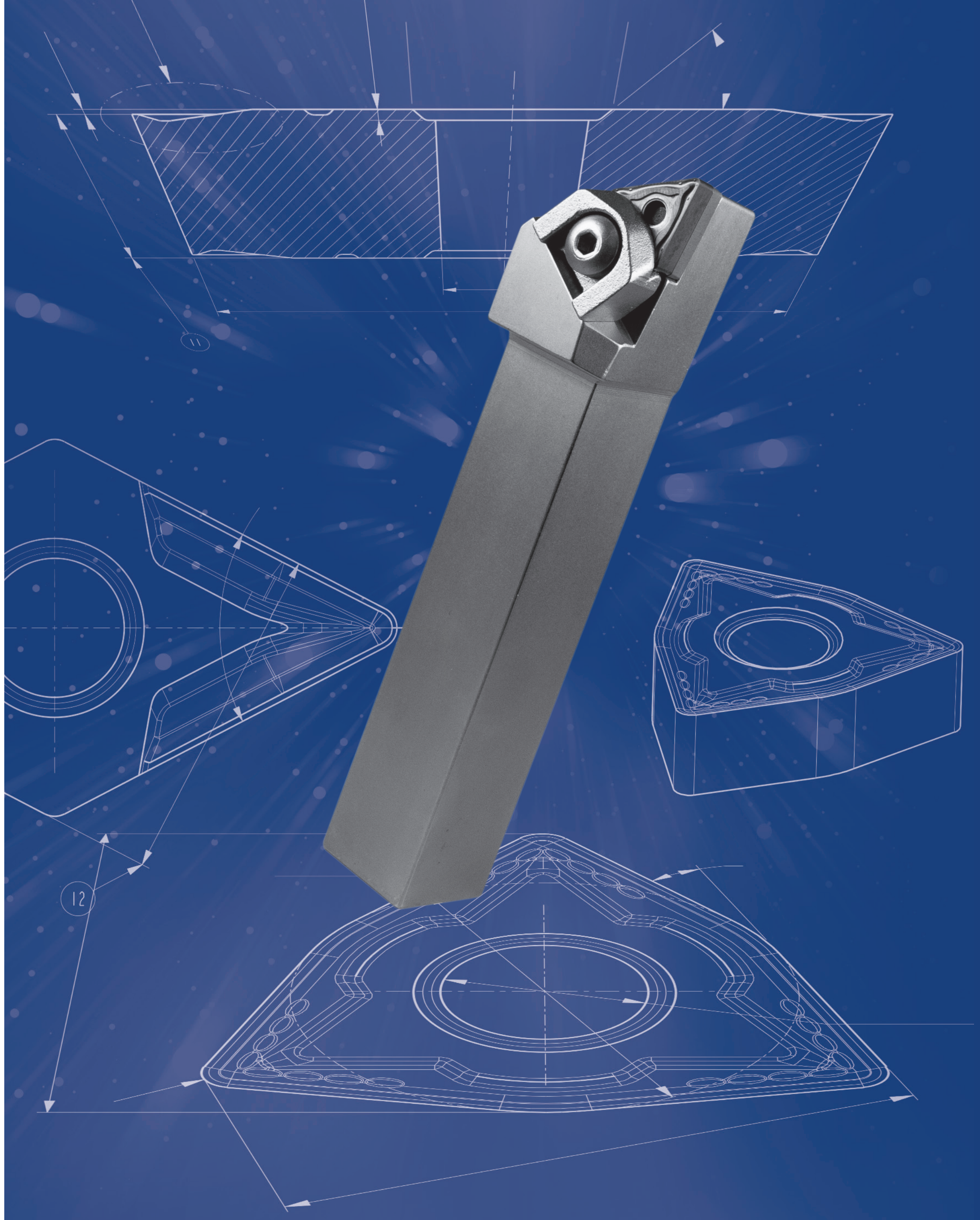
W N G G

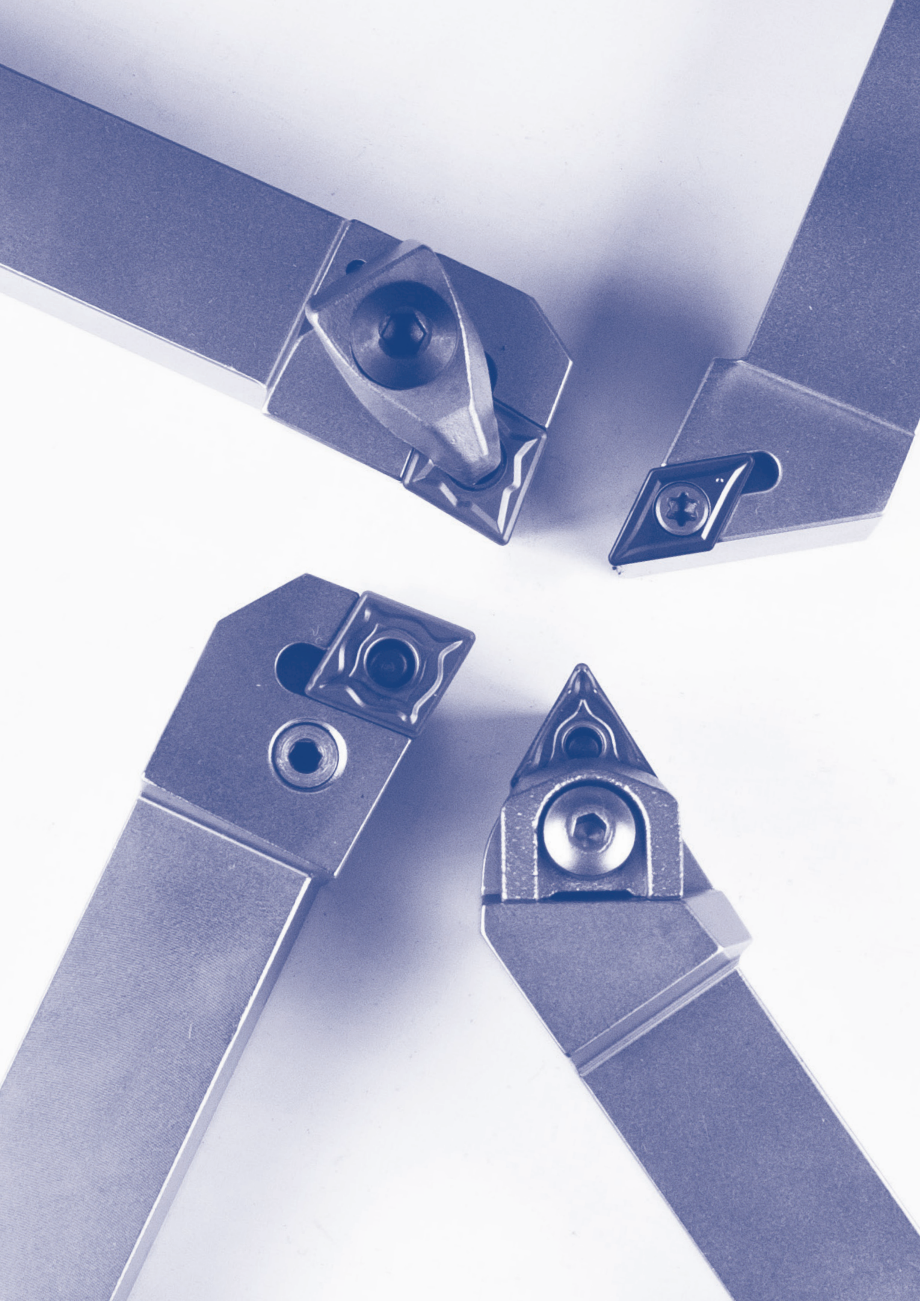


DESIGNATION	GRADE	MATERIAL RECOMMENDATION	CATALOG #
WNGG 060404 NS	LT 05	■	T0004605
WNGG 060408 NS	LT 05	■	T0004551
WNGG 080404 NS	LT 05	■	T0004598
WNGG 080408 NS	LT 05	■	T0004552

CUTTING DATA
p. 251 - 252
TECHNICAL SECTION
p. 352 - 359

TURNING TOOL HOLDERS





High quality tool holders for Turning operations.

- Available for all Lamina inserts geometries
- Internal and external operations
- Options with internal coolant

P	C	L	N	L	25	25	M	12
4	5	6	7	8	9	10	3	11

A	25	S	P	C	L	N	L	12
1	2	3	4	5	6	7	8	11

1. Boring Bar

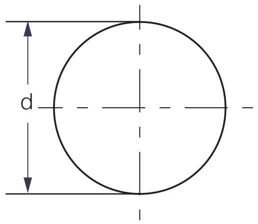
S — **Steel Shank**

A — **Coolant through Steel Shank**

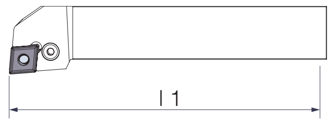
C — **Solid Carbide Shank**

E — **Coolant through Carbide Shank**

2. Bar Diameter

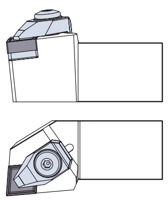


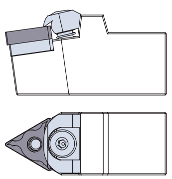
3. Tool Lenght

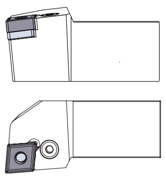


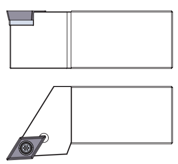
		Q = 180
		R = 200
A = 32	H = 100	S = 250
B = 40	J = 110	T = 300
C = 50	K = 125	U = 350
D = 60	L = 140	V = 400
E = 70	M = 150	W = 450
F = 80	N = 160	Y = 500
G = 90	P = 170	X = Special

4. Clamping System

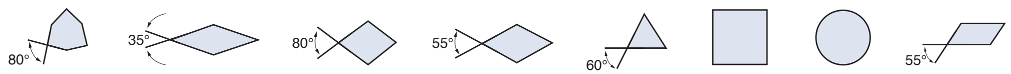
D

Rigit clamp

M

Top clamp

P

Lever clamp

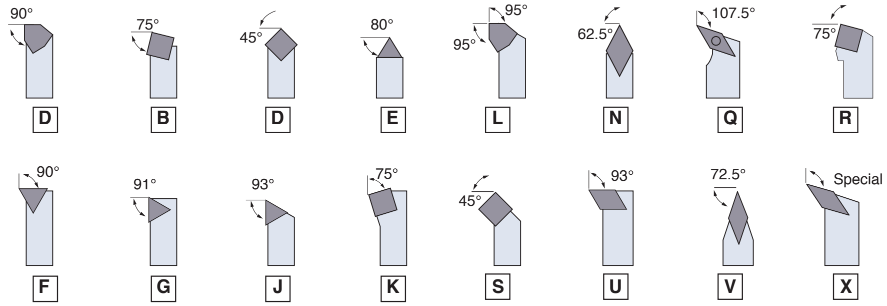
S

Screw clamp

5. Insert shape

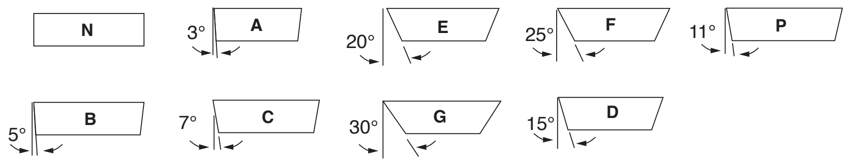


D V C D T S R K

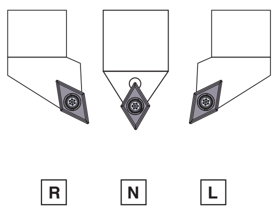
6. Approach Angle



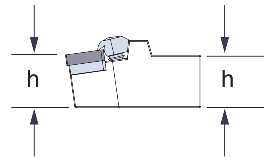
7. Insert Clearance Angle



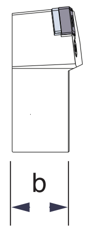
8. Hand of tool



9. Shank Height

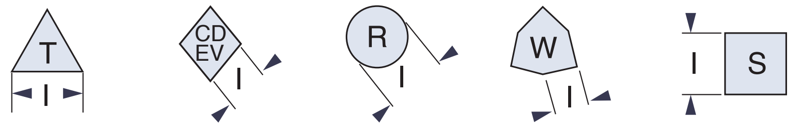


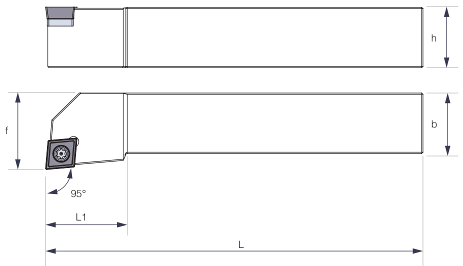
9. Shank Width

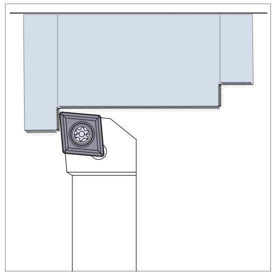


11. Insert Size

Cutting edge lenght







DESIGNATION	L	H	B	F	INSERT	CATALOG #
SCLCR 1010 J06	110	10	10	12	CC.. 0602	T2002910
SCLCL 1010 J06	110	10	10	12		T2005138

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* Tool holders and accessories on request

DESIGNATION	L	H	B	F	INSERT	CATALOG #
SCLCR 1212 J09	110	12	12	16	CC.. 09T3	T2005139
SCLCL 1212 J09	110	12	12	16		T2005140
SCLCR 1616 H09	100	16	16	20		T2005141
SCLCL 1616 H09	100	16	16	20		T2005142
SCLCR 2020 K09	125	20	20	25		T2005120
SCLCL 2020 K09	125	20	20	25		T2005098
SCLCR 2020 K12	125	20	20	25	CC.. 1204	T2005069
SCLCL 2020 K12	125	20	20	25		T2005070
SCLCR 2525 M12	150	25	25	32		T2002920
SCLCL 2525 M12	150	25	25	32		T2005298

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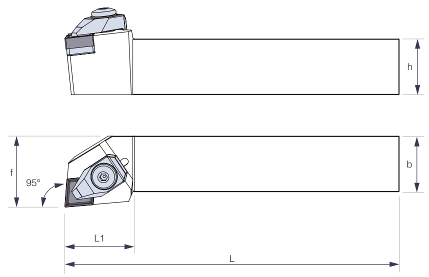
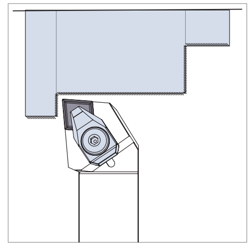
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
DCLNR 2020 K12	125	20	20	25	CN.. 1204	T2005072
DCLNL 2020 K12	125	20	20	25		T2005073
DCLNR 2525 M12	150	25	25	32		T2005299
DCLNL 2525 M12	150	25	25	32		T2005313
DCLNR 3232 P12	170	32	32	40		T2005314
DCLNL 3232 P12	170	32	32	40		T2005315

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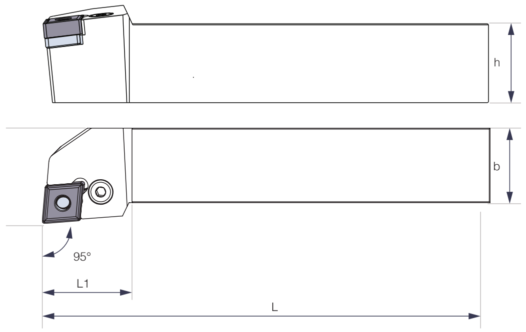
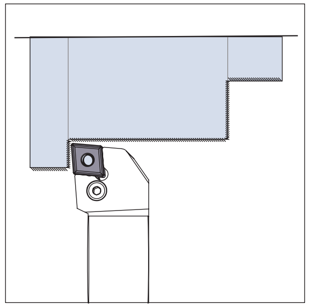
* Tool holders and accessories on request



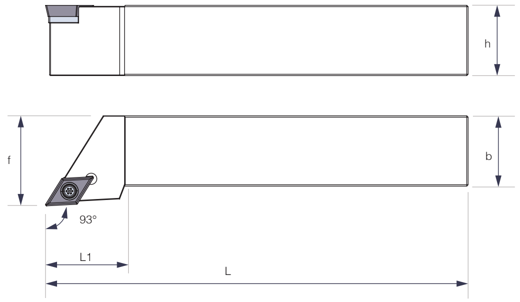


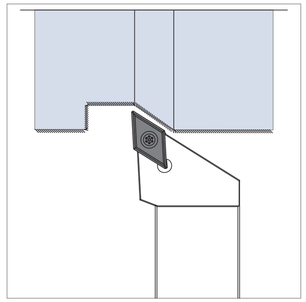
DESIGNATION	L	H	B	F	INSERT	CATALOG #
PCLNR 1616 H12	100	16	16	20	CN.. 1204	T2005063
PCLNL 1616 H12	100	16	16	20		T2005064
PCLNR 2020 K12	125	20	20	25		T2005065
PCLNL 2020 K12	125	20	20	25		T2005066
PCLNR 2525 M12	150	25	25	32		T2005306
PCLNL 2525 M12	150	25	25	32		T2005307

ACCESSORIES PAGE 74 - 79

* Tool holders and accessories on request

EXTERNAL TURNING TOOL HOLDERS





DESIGNATION	L	H	B	F	INSERT	CATALOG #
SDJCR 1010 J07	110	10	10	10	DC.. 0702	T2005067
SDJCL 1010 J07	110	10	10	10		T2005068
SDJCR 1212 J07	110	12	12	12		T2005076
SDJCL 1212 J07	110	12	12	12		T2005084
SDJCR 1616 H07	100	16	16	16		T2005085
SDJCL 1616 H07	100	16	16	16		T2005086

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* Tool holders and accessories on request

DESIGNATION	L	H	B	F	INSERT	CATALOG #
SDJCR 1616 H11	110	16	16	20	DC.. 11T3	T2005087
SDJCL 1616 H11	110	16	16	20		T2005088
SDJCR 2020 K11	125	20	20	25		T2005089
SDJCL 2020 K11	125	20	20	25		T2005090
SDJCR 2525 M11	150	25	25	32		T2005308
SDJCL 2525 M11	150	25	25	32		T2005309

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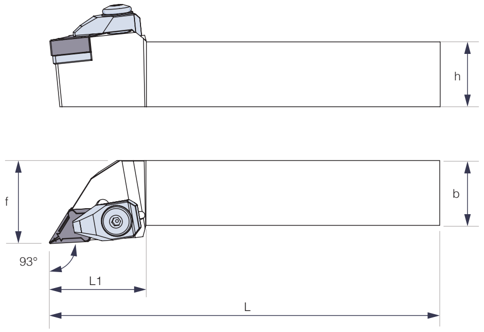
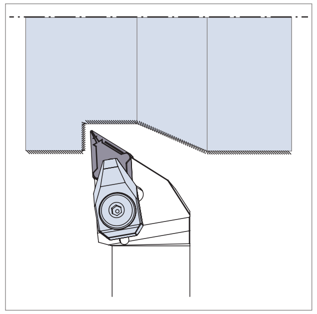
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
DDJNR 2020 K11	125	20	20	25	DN.. 1104	T2005077
DDJNL 2020 K11	125	20	20	25		T2005078
DDJNR 2525 M11	150	25	25	32		T2005310
DDJNL 2525 M11	150	25	25	32		T2005321

ACCESSORIES PAGE 74 - 79

* Tool holders and accessories on request

DESIGNATION	L	H	B	F	INSERT	CATALOG #
DDJNR 2020 K15	125	20	20	25	DN.. 1506	T2005061
DDJNL 2020 K15	125	20	20	25		T2005039
DDJNR 2525 M15	150	25	25	32		T2005255
DDJNL 2525 M15	150	25	25	32		T2005254
DDJNR 2020 K1504	125	20	20	25	DN.. 1504	T2005080
DDJNL 2020 K1504	125	20	20	25		T2005081
DDJNR 2525 M1504	150	25	25	32		T2005322
DDJNL 2525 M1504	150	25	25	32		T2005284

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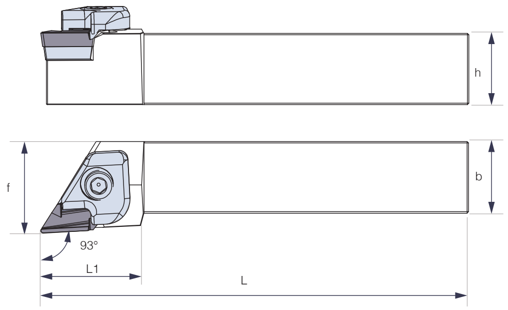
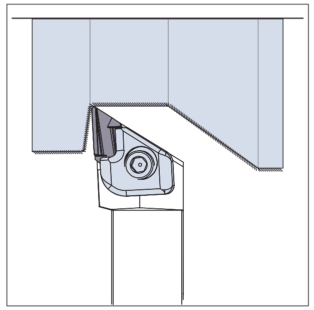
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
CKJNR 2020 K16	125	20	20	26.5	KNUX 1604	T2005042
CKJNL 2020 K16	125	20	20	26.5		T2005043
CKJNR 2525 M16	150	25	25	30		T2005251
CKJNL 2525 M16	150	25	25	30		T2005276

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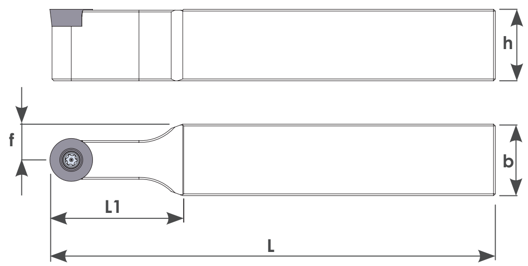
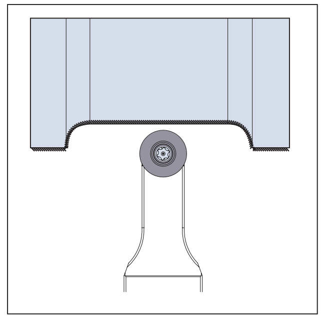
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
SRDCN 2020 K06	125	20	20	10	RC.. 0602	T2005032
SRDCN 2525 M06	150	25	25	12.5		T2005275

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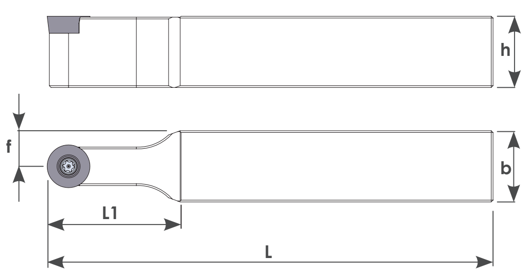
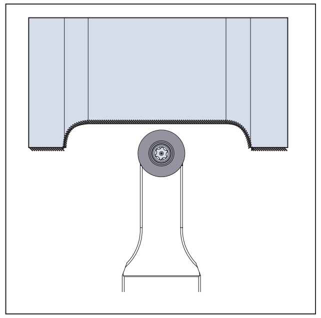
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
SRDCN 2020 K08	125	20	20	10	RC.. 0803	T2005034
SRDCN 2525 M08	150	25	25	12.5		T2005273

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* Tool holders and accessories on request

DESIGNATION	L	H	B	F	INSERT	CATALOG #
SRDCN 2020 K10	125	20	20	10	RC.. 10T3	T2005036
SRDCN 2525 M10	150	25	25	12.5		T2005279

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* Tool holders and accessories on request

DESIGNATION	L	H	B	F	INSERT	CATALOG #
SRDCN 2020 K12	125	20	20	10	RC.. 1204	T2005038
SRDCN 2525 M12	150	25	25	12.5		T2005264

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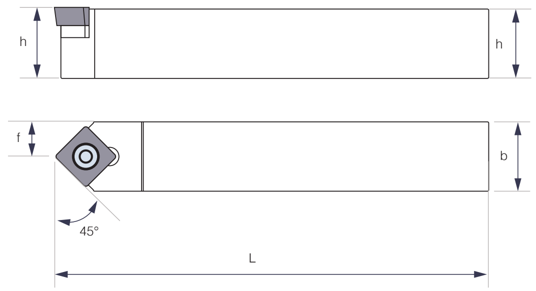
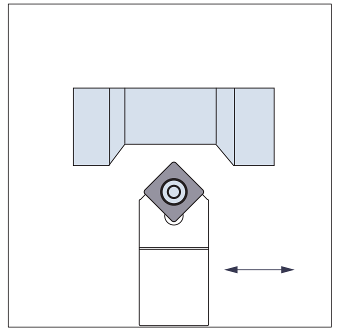
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
SSDCN 1616 H09	100	16	16	6	SC.. 09T3	T2005054
SSDCN 2020 K09	125	20	20	10		T2005055

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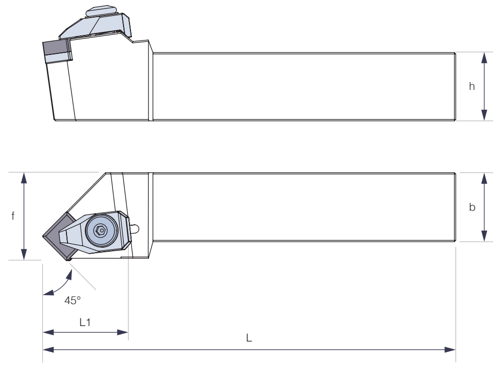
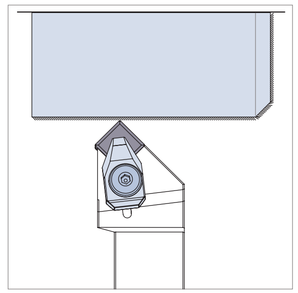
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
DSSNR 2020 K12	100	20	20	25	SN.. 1204	T2005056
DSSNR 2525 M12	125	25	25	32		T2005271

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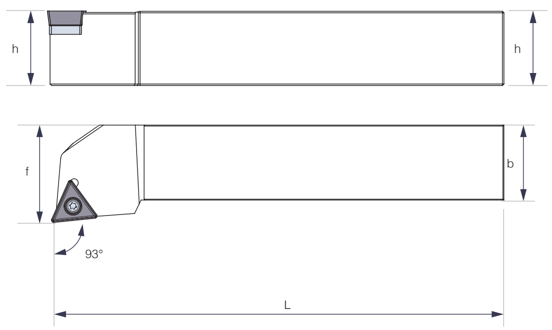
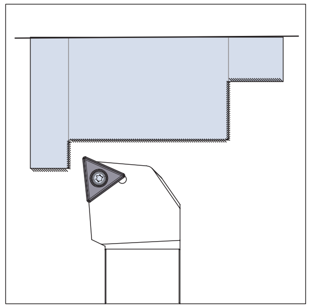
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
STJCR 1212 F11	80	12	12	16	TC.. 1102	T2005058
STJCL 1212 F11	80	12	12	16		T2005059
STJCR 1616 H11	100	16	16	20		T2005057
STJCL 1616 H11	100	16	16	20		T2005046

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* Tool holders and accessories on request

DESIGNATION	L	H	B	F	INSERT	CATALOG #
STJCR 1616 H16	100	16	16	20	TC.. 16T3	T2005037
STJCL 1616 H16	100	16	16	20		T2005035
STJCR 2020 K16	125	20	20	25		T2005033
STJCL 2020 K16	125	20	20	25		T2005045
STJCR 2525 M16	150	25	25	32		T2005041
STJCL 2525 M16	150	25	25	32		T2005044

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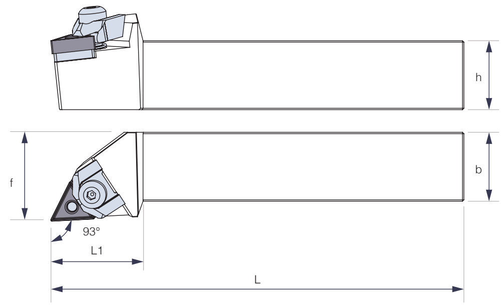
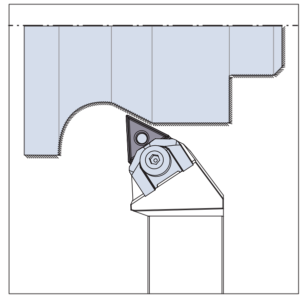
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
MTJNR 2020 K16	125	20	20	25	TN.. 1604	T2005040
MTJNL 2020 K16	125	20	20	25		T2005083
MTJNR 2525 M16	150	25	25	32		T2005082
MTJNL 2525 M16	150	25	25	32		T2005079
MTJNR 3232 P16	170	32	32	40		T2005280
MTJNL 3232 P16	170	32	32	40		T2005282

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* Tool holders and accessories on request

DESIGNATION	L	H	B	F	INSERT	CATALOG #
MTJNR 2525 M22	150	25	25	32	TN.. 2204	T2005283
MTJNL 2525 M22	150	25	25	32		T2005252
MTJNR 3232 P22	170	32	32	40		T2005253
MTJNL 3232 P22	170	32	32	40		T2005256

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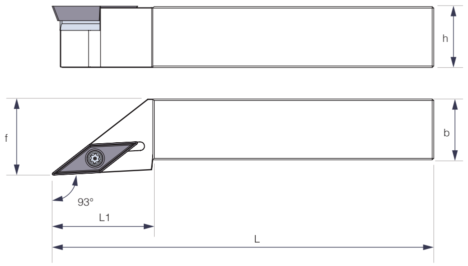
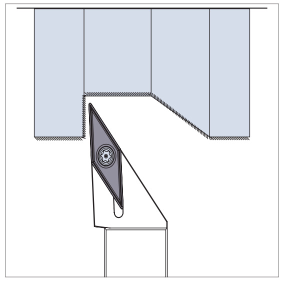
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
SVJBR 1212 J11	110	12	12	12		T2005062
SVJBL 1212 J11	110	12	12	12		T2005075
SVJBR 1616 H11	100	16	16	16	VB.. 1103	T2005074
SVJBL 1616 H11	100	16	16	16		T2005071
SVJBR 2020 K11	125	20	20	25		T2005127
SVJBL 2020 K11	125	20	20	25		T2005135

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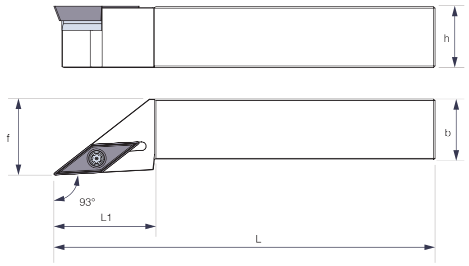
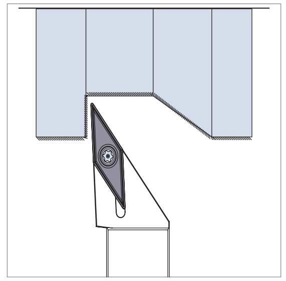
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
SVJBR 1616 H16	100	16	16	20		T2005143
SVJBL 1616 H16	100	16	16	20		T2005144
SVJBR 2020 K16	125	20	20	25	VB.. 1604	T2005145
SVJBL 2020 K16	125	20	20	25		T2005146
SVJBR 2525 M16	150	25	25	32		T2005274
SVJBL 2525 M16	150	25	25	32		T2005278

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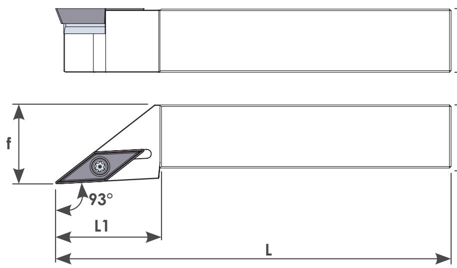
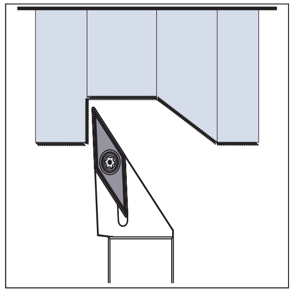
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
SVJCR 2020 K16	125	20	20	25	VC.. 1604	T2005148
SVJCL 2020 K16	125	20	20	25		T2005149
SVJCR 2525 M16	150	25	25	32		T2005265
SVJCL 2525 M16	150	25	25	32		T2005270

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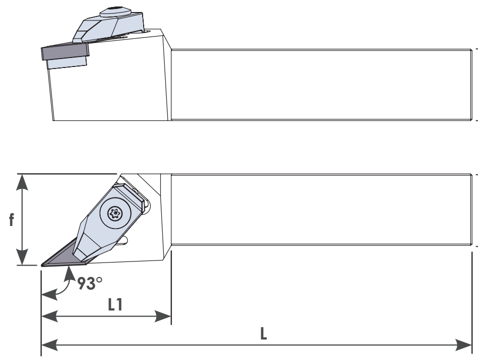
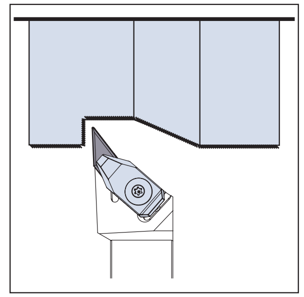
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
DVJNR 2020 K16	125	20	20	25	VN.. 1604	T2005137
DVJNL 2020 K16	125	20	20	25		T2005157
DVJNR 2525 M16	150	25	25	32		T2005163
DVJNL 2525 M16	150	25	25	32		T2005267

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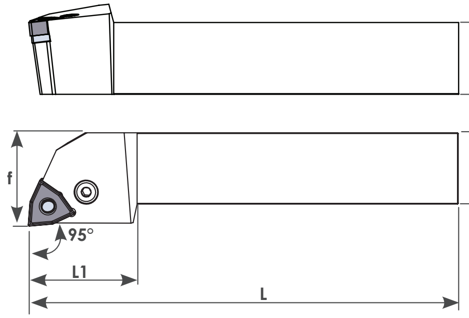
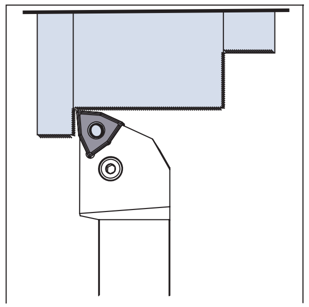
* Tool holders and accessories on request





DESIGNATION	L	H	B	F	INSERT	CATALOG #
PWLNR 2020 K06	125	20	20	25	WN.. 0604	T2005160
PWLNL 2020 K06	125	20	20	25		T2005171
PWLNR 2525 M06	150	25	25	32		T2005268
PWLNL 2525 M06	150	25	25	32		T2005269

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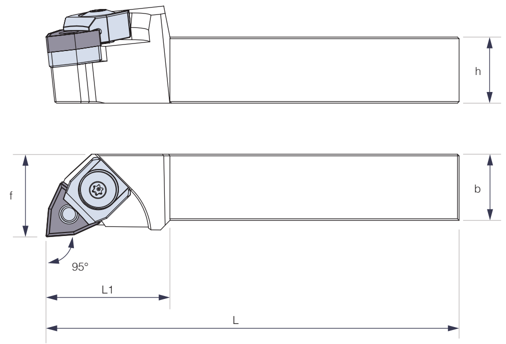
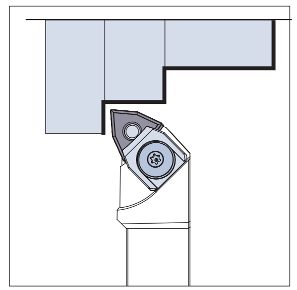
* Tool holders and accessories on request

EXTERNAL TURNING TOOL HOLDERS





DESIGNATION	L	H	B	F	INSERT	CATALOG #
MWLNR 2020 K08	125	20	20	25	WN.. 0804	T2005172
MWLNL 2020 K08	125	20	20	25		T2005156
MWLNR 2525 M08	150	25	25	32		T2005260
MWLNL 2525 M08	150	25	25	32		T2005259
MWLNR 3232 P08	170	32	32	40		T2005258
MWLNL 3232 P08	170	32	32	40		T2005257

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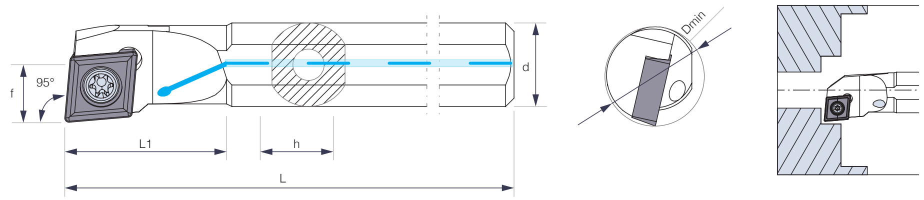
* Tool holders and accessories on request



DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A08H SCLCR 06	11	8	100	17	5	7	CC.. 0602	T2005368
A08H SCLCL 06	11	8	100	17	5	7		T2005369
A10J SCLCR 06	14	10	110	20	6	7		T2005370
A10J SCLCL 06	14	10	110	20	6	7		T2005371
A12K SCLCR 06	17	12	125	22	9	11		T2005372
A12K SCLCL 06	17	12	125	22	9	11		T2005373

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* Tool holders and accessories on request

DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A16Q SCLCR 09	20	16	180	30	11	15	CC.. 09T3	T2005374
A16Q SCLCL 09	20	16	180	30	11	15		T2005375
A20Q SCLCR 09	25	20	180	38	13	19		T2005376
A20Q SCLCL 09	25	20	180	38	13	19		T2005377

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* Tool holders and accessories on request

DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A25R SCLCR 12	32	25	250	50	17	23	CC.. 1204	T2005378
A25R SCLCL 12	32	25	250	50	17	23		T2005379

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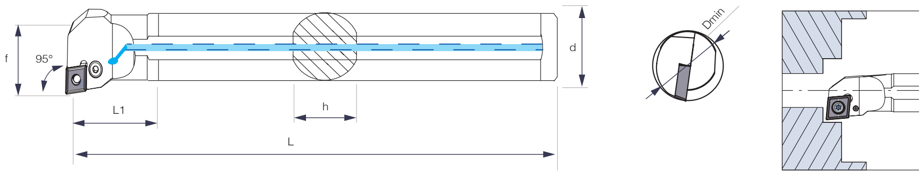
* Tool holders and accessories on request



DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A25S PCLNR 12	32	25	250	50	17	23	CN.. 1204	T2005380
A25S PCLNL 12	32	25	250	50	17	23		T2005381
A32T PCLNR 12	40	32	300	50	22	30		T2005382
A32T PCLNL 12	40	32	300	50	22	30		T2005383

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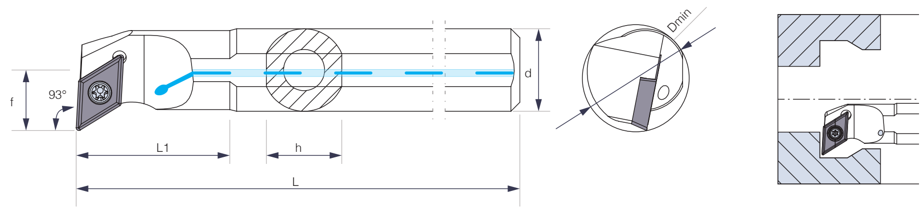
* Tool holders and accessories on request



DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A10J SDUCR 07	14	10	110	20	7	9	DC.. 0702	T2005384
A10J SDUCL 07	14	10	110	20	7	9		T2005385
A12K SDUCR 07	17	12	125	24	9	11		T2005386
A12K SDUCL 07	17	12	125	24	9	11		T2005387

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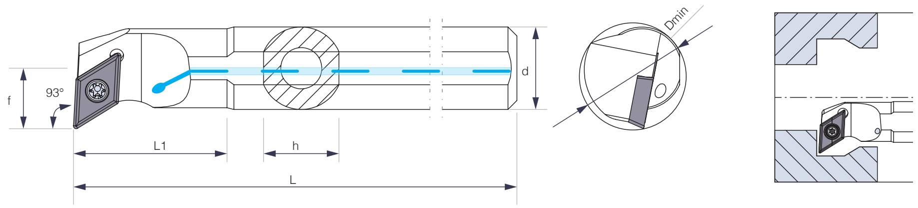
* Tool holders and accessories on request



DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A16Q SDUCR 11	21	16	180	30	11	15	DC.. 11T3	T2005388
A16Q SDUCL 11	21	16	180	30	11	15		T2005389
A20Q SDUCR 11	25	20	180	32	13	18		T2005390
A20Q SDUCL 11	25	20	180	32	13	18		T2005391
A25R SDUCR 11	32	25	200	40	17	23		T2005392
A25R SDUCL 11	32	25	200	40	17	23		T2005393

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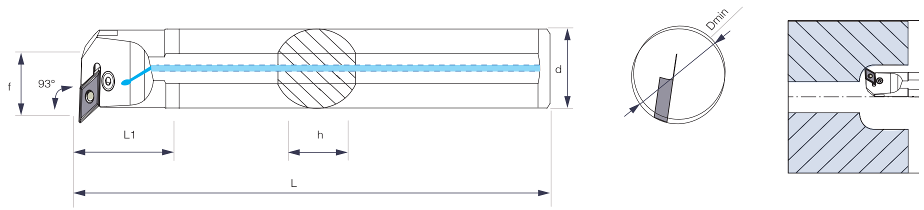
* Tool holders and accessories on request



DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A25S PDUNR 15	32	25	250	50	17	23	DN.. 1506	T2005394
A25S PDUNL 15	32	25	250	50	17	23		T2005395
A32T PDUNR 15	40	32	300	55	22	30		T2005396
A32T PDUNL 15	40	32	300	55	22	30		T2005397

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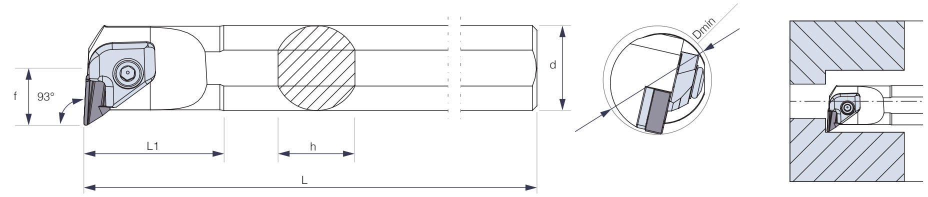
* Tool holders and accessories on request



DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
S25S CKUNR 16	32	25	300	52	20	23	KNUX 1604	T2005398
S32U CKUNR 16	32	25	300	52	20	23		T2005399

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* Tool holders and accessories on request

DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
S25S PSKNR 12	32	25	250	52	17	23	SN.. 1204	T2005400
S25S PSKNL 12	32	25	250	52	17	23		T2005401
S32T PSKNR 12	40	32	300	64	22	30		T2005402
S32T PSKNL 12	40	32	300	64	22	30		T2005403

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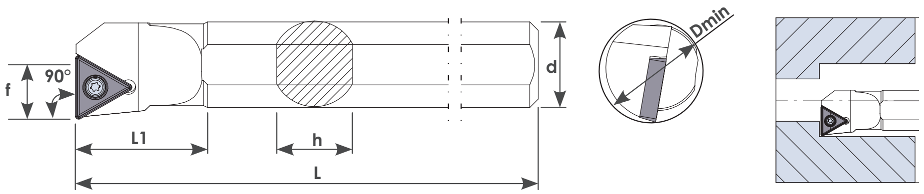
* Tool holders and accessories on request



DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
S12K STFCR 11	17	12	125	24	9	11	TC.. 1102	T2005404
S12Q STFCL 11	17	12	125	24	9	11		T2005405
S16Q STFCR 11	21	16	180	30	11	15		T2005406
S16Q STFCL 11	21	16	180	30	11	15		T2005407

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* Tool holders and accessories on request

DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
S16Q STFCR 16	21	16	180	30	11	15	TC.. 16T3	T2005408
S16Q STFCL 16	21	16	180	30	11	15		T2005409
S20Q STFCR 16	25	20	180	30	13	18		T2005410
S20Q STFCL 16	25	20	180	30	13	18		T2005411
S25R STFCR 16	32	25	200	37	16	23		T2005412
S25R STFCL 16	32	25	200	37	16	23		T2005413

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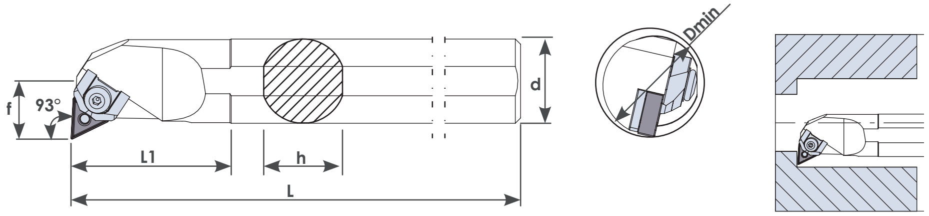
INTERNAL TURNING TOOL HOLDERS



DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
S20R MTUNR 16	26	20	200	30	13	18	TN.. 1604	T2005414
S20R MTUNL 16	26	20	200	30	13	18		T2005415
S25S MTUNR 16	32	25	250	50	17	23		T2005416
S25S MTUNL 16	32	25	250	50	17	23		T2005417
S32T MTUNR 16	40	32	300	60	22	30		T2005418
S32T MTUNL 16	40	32	300	60	22	30		T2005419

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DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
S32T MTUNR 22	40	32	300	60	22	30	TN.. 2204	T2005420
S32T MTUNL 22	40	32	300	60	22	30		T2005421
S40T MTUNR 22	50	40	300	60	27	38		T2005422
S40T MTUNL 22	50	40	300	60	27	38		T2005423

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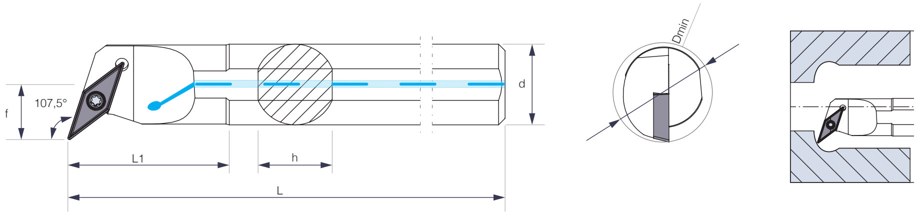

DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A16Q SVQBR 11	21	16	180	30	11	15	VB.. 1103	T2005424
A16Q SVQBL 11	21	16	180	30	11	15		T2005425
A20Q SVQBR 11	25	20	180	30	13	18		T2005426
A20Q SVQBL 11	25	20	180	30	13	18		T2005427

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DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A25R SVQBR 16	32	25	250	64	17	23	VB.. 1604	T2005428
A25R SVQBL 16	32	25	250	64	17	23		T2005429

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DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A25R SVQCR 16	32	25	250	64	17	23	VC.. 1604	T2005430
A25R SVQCL 16	32	25	250	64	17	23		T2005431

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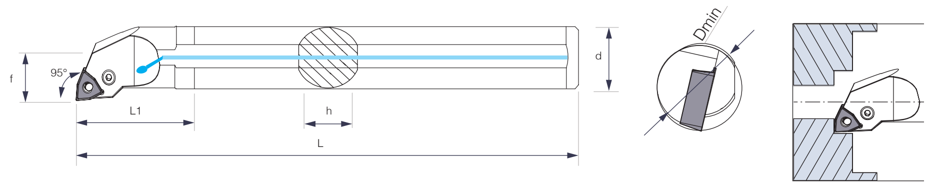
* Tool holders and accessories on request



DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A20R PWLNR 06	25	20	180	40	13	18	WN.. 0604	T2005432
A20R PWLNL 06	25	20	180	40	13	18		T2005433
A25R PWLNR 06	32	25	250	50	17	23		T2005434
A25R PWLNL 06	32	25	250	50	17	23		T2005435

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* Tool holders and accessories on request

DESIGNATION	Dmin	d (mm)	L (mm)	L1 (mm)	f (mm)	h (mm)	INSERT	CATALOG #
A25S PWLNR 08	32	25	250	50	17	23	WN.. 0804	T2005436
A25S PWLNL 08	32	25	250	50	17	23		T2005437
A32T PWLNR 08	40	32	300	60	22	30		T2005438
A32T PWLNL 08	40	32	300	60	22	30		T2005439

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* Tool holders and accessories on request

* Tool holders and accessories on request

DESIGNATION	ACCESSORIES												
	SHIM	CLAMP SCREW	LEVER PLATE	LEVER	SHIM SCREW	CLAMP	PIN	LOCKING SCREW	ALLEN KEY	TORKX KEY	LOCKING SCREW	SPRING	WASHER
SCLCR 1010 J06		T2005533								M2002915			
SCLCL 1010 J06		T2005533								M2002915			
SCLCR 1212 J09	T2005440	T2005535								M2000602			
SCLCL 1212 J09	T2005440	T2005535								M2000602			
SCLCR 1616 H09	T2005440	T2005535								M2000602	T2005493		
SCLCL 1616 H09	T2005440	T2005535								M2000602	T2005493		
SCLCR 2020 K09	T2005440	T2005535								M2000602	T2005493		
SCLCL 2020 K09	T2005440	T2005535								M2000602	T2005493		
SCLCR 2020 K12		T2005494								M2000602	T2005523		
SCLCL 2020 K12		T2005494								M2000602	T2005523		
SCLCR 2525 M12		T2005494								M2000602	T2005523		
SCLCL 2525 M12		T2005494								M2000602	T2005523		
DCLNR 2020 K12	T2005476				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DCLNL 2020 K12	T2005476				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DCLNR 2525 M12	T2005476				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DCLNL 2525 M12	T2005476				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DCLNR 3232 P12	T2005476				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DCLNL 3232 P12	T2005476				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
PCLNR 1616 H12	T2005484	T2005527	T2005529	T2005511					M2002913				
PCLNL 1616 H12	T2005484	T2005527	T2005529	T2005511					M2002913				
PCLNR 2020 K12	T2005484	T2005528	T2005529	T2005511					M2002913				
PCLNL 2020 K12	T2005484	T2005528	T2005529	T2005511					M2002913				
PCLNR 2525 M12	T2005484	T2005528	T2005529	T2005511					M2002913				
PCLNL 2525 M12	T2005484	T2005528	T2005529	T2005511					M2002913				
SDJCR 1010 J07		T2005533								M2002915			
SDJCL 1010 J07		T2005533								M2002915			
SDJCR 1212 J07		T2005533								M2002915			
SDJCL 1212 J07		T2005533								M2002915			
SDJCR 1616 H07		T2005533								M2002915			
SDJCR 1616 H07		T2005533								M2002915			
SDJCR 1616 H11	T2005485	T2005535								M2000602	T2005493		
SDJCL 1616 H11	T2005485	T2005535								M2000602	T2005493		
SDJCR 2020 K11	T2005485	T2005535								M2000602	T2005493		
SDJCL 2020 K11	T2005485	T2005535								M2000602	T2005493		
SDJCR 2525 M11	T2005485	T2005535								M2000602	T2005493		
SDJCL 2525 M11	T2005485	T2005535								M2000602	T2005493		

* Tool holders and accessories on request

DESIGNATION	ACCESSORIES												
	SHIM	CLAMP SCREW	LEVER PLATE	LEVER	SHIM SCREW	CLAMP	PIN	LOCKING SCREW	ALLEN KEY	TORKX KEY	LOCKING SCREW	SPRING	WASHER
DDJNR 2020 K11	T2005485				T2005504	T2005514		T2005492	M2002913			T2005481	T2005497
DDJNL 2020 K11	T2005485				T2005504	T2005514		T2005492	M2002913			T2005481	T2005497
DDJNR 2525 M11	T2005485				T2005504	T2005514		T2005492	M2002913			T2005481	T2005497
DDJNL 2525 M11	T2005485				T2005504	T2005514		T2005492	M2002913			T2005481	T2005497
DDJNR 2020 K1504	T2005486				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DDJNL 2020 K1504	T2005486				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DDJNR 2525 M1504	T2005486				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DDJNL 2525 M1504	T2005486				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DDJNR 2020 K15	T2005486				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DDJNL 2020 K15	T2005486				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DDJNR 2525 M15	T2005486				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
DDJNL 2525 M15	T2005486				T2005536	T2005515		T2005495	M2000609			T2005483	T2005496
CKJNR 2020 K16	T2005488					T2005516		T2005501	M2000609			T2005491	T2005496
CKJNL 2020 K16	T2005487					T2005516		T2005501	M2000609			T2005491	T2005496
CKJNR 2525 M16	T2005488					T2005516		T2005501	M2000609			T2005491	T2005496
CKJNL 2525 M16	T2005487					T2005516		T2005501	M2000609			T2005491	T2005496
SRDCN 2020 K06		T2005500								M2002915			
SRDCN 2525 M06		T2005500								M2002915			
SRDCN 2020 K08		T2005500								M2002915			
SRDCN 2525 M08		T2005500								M2002915			
SRDCN 2020 K10		T2005503								M2000602			
SRDCN 2525 M10		T2005503								M2000602			
SRDCN 2020 K12		T2005503								M2000602			
SRDCN 2525 M12		T2005503								M2000602			
SSDCN 1616 H09		T2005533								M2002915			
SSDCN 2020 K09		T2005533								M2002915			
DSSNR 2020 K12		T2005495				T2005515			M2000609			T2005483	T2005496
DSSNR 2525 M12		T2005495				T2005515			M2000609			T2005483	T2005496
STJCR 1212 F11		T2005533								M2002915			
STJCL 1212 F11		T2005533								M2002915			
STJCR 1616 H11		T2005533								M2002915			
STJCL 1616 H11		T2005533								M2002915			

* Tool holders and accessories on request

DESIGNATION	SHIM	CLAMP SCREW	LEVER PLATE	LEVER	SHIM SCREW	CLAMP	PIN	LOCKING SCREW	ALLEN KEY	TORKX KEY	LOCKING SCREW	SPRING	WASHER
STJCR 1616 H16		T2005533								M2002915			
STJCL 1616 H16		T2005533								M2002915			
STJCR 2020 K16		T2005533								M2002915			
STJCL 2020 K16		T2005533								M2002915			
STJCR 2525 M16		T2005533								M2002915			
STJCR 2525 M16		T2005533								M2002915			
MTJNR 2020 K16						T2005517	T2005530	T2005492	M2002913			T2005482	T2005497
MTJNL 2020 K16						T2005517	T2005530	T2005492	M2002913			T2005482	T2005497
MTJNR 2525 M16						T2005517	T2005530	T2005492	M2002913			T2005482	T2005497
MTJNL 2525 M16						T2005517	T2005530	T2005492	M2002913			T2005482	T2005497
MTJNR 3232 P16						T2005517	T2005530	T2005492	M2002913			T2005482	T2005497
MTJNL 3232 P16						T2005517	T2005530	T2005492	M2002913			T2005482	T2005497
MTJNR 2525 M22						T2005518	T2005531	T2005495	M2000609			T2005483	T2005496
MTJNL 2525 M22						T2005518	T2005531	T2005495	M2000609			T2005483	T2005496
MTJNR 3232 P22						T2005518	T2005531	T2005495	M2000609			T2005483	T2005496
MTJNL 3232 P22						T2005518	T2005531	T2005495	M2000609			T2005483	T2005496
SVJBR 1212 J11		T2005499							M2002915				
SVJBL 1212 J11		T2005499							M2002915				
SVJBR 1616 H11		T2005499							M2002915				
SVJBL 1616 H11		T2005499							M2002915				
SVJBR 2020 K11		T2005499							M2002915				
SVJBL 2020 K11		T2005499							M2002915				
SVJBR 1616 H16		T2005502			T2005505					M2000602			
SVJBL 1616 H16		T2005502			T2005505					M2000602			
SVJBR 2020 K16		T2005502			T2005505					M2000602			
SVJBL 2020 K16		T2005502			T2005505					M2000602			
SVJBR 2525 M16		T2005502			T2005505					M2000602			
SVJBL 2525 M16		T2005502			T2005505					M2000602			
SVJCR 2020 K16		T2005502			T2005505					M2000602			
SVJCL 2020 K16		T2005502			T2005505					M2000602			
SVJCR 2525 M16		T2005502			T2005505					M2000602			
SVJCL 2525 M16		T2005502			T2005505					M2000602			
DVJNR 2020 K16					T2005504	T2005519		T2005492	M2002913			T2005482	T2005498
DVJNL 2020 K16					T2005504	T2005519		T2005492	M2002913			T2005482	T2005498
DVJNR 2525 M16					T2005504	T2005519		T2005492	M2002913			T2005482	T2005498
DVJNL 2525 M16					T2005504	T2005519		T2005492	M2002913			T2005482	T2005498

ACCESSORIES - EXTERNAL TURNING TOOL HOLDERS

* Tool holders and accessories on request

DESIGNATION	SHIM	CLAMP SCREW	LEVER PLATE	LEVER	SHIM SCREW	CLAMP	PIN	LOCKING SCREW	ALLEN KEY	TORKX KEY	LOCKING SCREW	SPRING	WASHER
PWLNR 2020 K06		T2005526	T2005521	T2005510					M2002914				
PWLNL 2020 K06		T2005526	T2005521	T2005510					M2002914				
PWLNR 2525 M06		T2005526	T2005521	T2005510					M2002914				
PWLNL 2525 M06		T2005526	T2005521	T2005510					M2002914				
MWLNR 2020 K08						T2005520	T2005531	T2005495	M2000609				
MWLNL 2020 K08						T2005520	T2005531	T2005495	M2000609				
MWLNR 2525 M08						T2005520	T2005531	T2005495	M2000609				
MWLNL 2525 M08						T2005520	T2005531	T2005495	M2000609				
MWLNR 3232 P08						T2005520	T2005531	T2005495	M2000609				
MWLNL 3232 P08						T2005520	T2005531	T2005495	M2000609				

* Tool holders and accessories on request

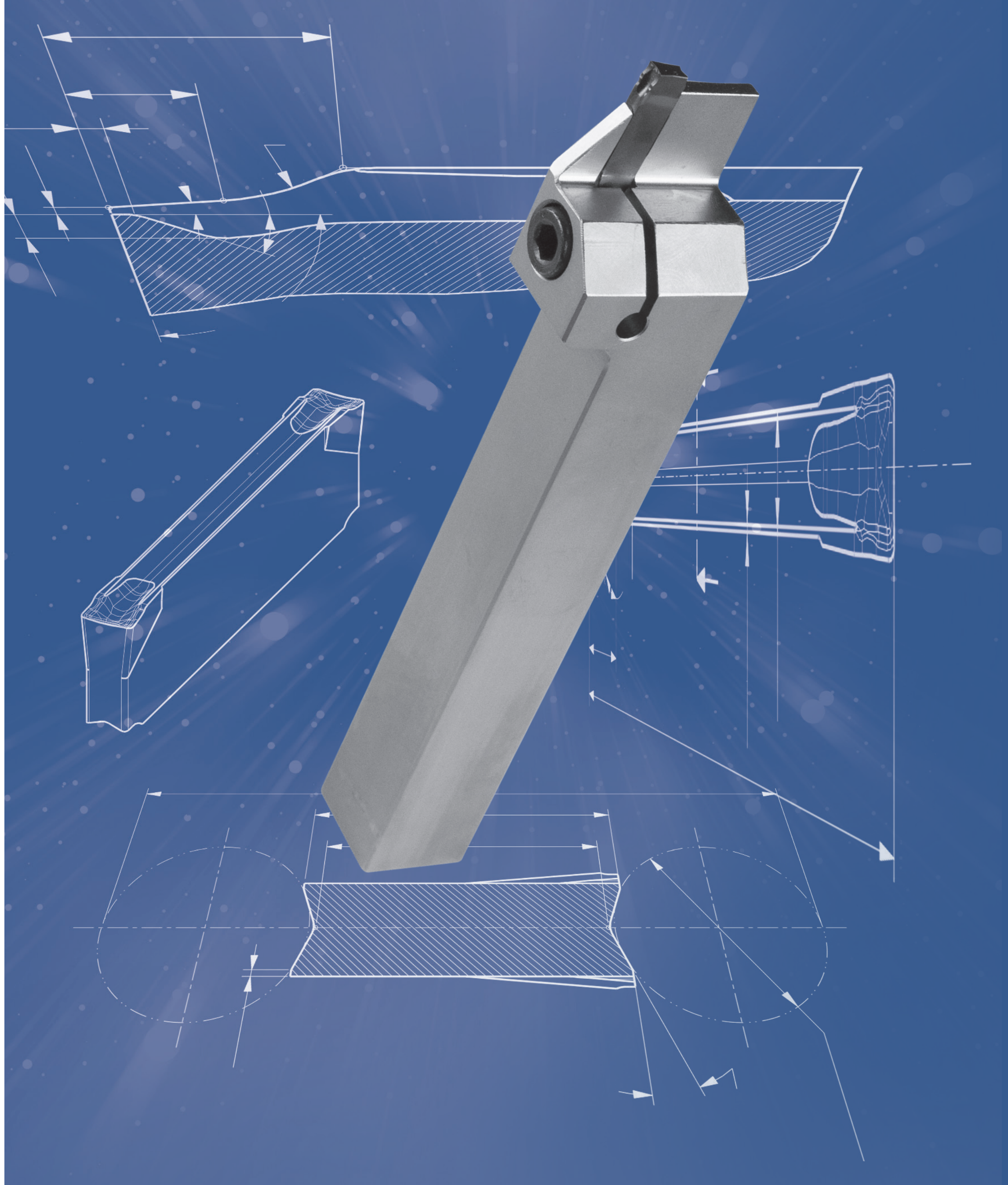
DESIGNATION	ACCESSORIES										
	TORKX SCREW	SHIM	CLAMP SCREW	LEVER	PIN	PLATE	SHIM SCREW	KEY	CLAMP	SPRING	WASHER
A08H SCLCR 06	T2005533							M2002915			
A08H SCLCL 06	T2005533							M2002915			
A10J SCLCR 06	T2005533							M2002915			
A10J SCLCL 06	T2005533							M2002915			
A12K SCLCR 06	T2005533							M2002915			
A12K SCLCL 06	T2005533							M2002915			
A16Q SCLCR 09	T2005534							M2000602			
A16Q SCLCL 09	T2005534							M2000602			
A20Q SCLCR 09	T2005534							M2000602			
A20Q SCLCL 09	T2005534							M2000602			
A25R SCLCR 12	T2005534							M2000602			
A25R SCLCL 12	T2005534							M2000602			
A25S PCLNR 12			T2005525	T2005512				M2002914			
A25S PCLNL 12			T2005525	T2005512				M2002914			
A32T PCLNR 12		T2005484	T2005525	T2005512		T2005529		M2002913			
A32T PCLNL 12		T2005484	T2005525	T2005512		T2005529		M2002913			
A10J SDUCR 07	T2005533							M2002915			
A10J SDUCL 07	T2005533							M2002915			
A12K SDUCR 07	T2005533							M2002915			
A12K SDUCL 07	T2005533							M2002915			
A16Q SDUCR 11	T2005534							M2000602			
A16Q SDUCL 11	T2005534							M2000602			
A20Q SDUCR 11	T2005534							M2000602			
A20Q SDUCL 11	T2005534							M2000602			
A25R SDUCR 11	T2005534							M2000602			
A25R SDUCL 11	T2005534							M2000602			
A25S PDUNR 15			T2005525	T2005512				M2002914			
A25S PDUNL 15			T2005525	T2005512				M2002914			
A32T PDUNR 15		T2005484	T2005506	T2005513		T2005529		M2002913			
A32T PDUNL 15		T2005484	T2005506	T2005513		T2005529		M2002913			
S25S CKUNR 16		T2005487							T2005516		
S32U CKUNR 16		T2005487							T2005516		
S25S PSKNR 12			T2005525	T2005512				M2002914			
S25S PSKNL 12			T2005525	T2005512				M2002914			
S32T PSKNR 12			T2005528	T2005511		T2005529		M2002913			
S32T PSKNL 12			T2005528	T2005511		T2005529		M2002913			

* Tool holders and accessories on request

DESIGNATION	ACCESSORIES										
	TORKX SCREW	SHIM	CLAMP SCREW	LEVER	PIN	PLATE	SHIM SCREW	KEY	CLAMP	SPRING	WASHER
S12K STFCR 11	T2005533							M2002915			
S12Q STFCL 11	T2005533							M2002915			
S16Q STFCR 11	T2005533							M2002915			
S16Q STFCL 11	T2005533							M2002915			
S16Q STFCR 16	T2005533							M2000602			
S16Q STFCL 16	T2005533							M2000602			
S20Q STFCR 16	T2005533							M2000602			
S20Q STFCL 16	T2005533							M2000602			
S25R STFCR 16	T2005533							M2000602			
S25R STFCL 16	T2005533							M2000602			
S20R MTUNR 16	T2005492	T2005489			T2005530			M2002913	T2005517	T2005482	T2005497
S20R MTUNL 16	T2005492	T2005489			T2005530			M2002913	T2005517	T2005482	T2005497
S25S MTUNR 16	T2005492	T2005489			T2005530			M2002913	T2005517	T2005482	T2005497
S25S MTUNL 16	T2005492	T2005489			T2005530			M2002913	T2005517	T2005482	T2005497
S32T MTUNR 16	T2005492	T2005489			T2005530			M2002913	T2005517	T2005482	T2005497
S32T MTUNL 16	T2005492	T2005489			T2005530			M2002913	T2005517	T2005482	T2005497
S32T MTUNR 22	T2005495	T2005490			T2005531			M2000609	T2005518	T2005483	T2005497
S32T MTUNL 22	T2005495	T2005490			T2005531			M2000609	T2005518	T2005483	T2005497
S40T MTUNR 22	T2005495	T2005490			T2005531			M2000609	T2005518	T2005483	T2005497
S40T MTUNL 22	T2005495	T2005490			T2005531			M2000609	T2005518	T2005483	T2005497
A16Q SVQBR 11	T2005532							M2002915			
A16Q SVQBL 11	T2005532							M2002915			
A20Q SVQBR 11	T2005532							M2002915			
A20Q SVQBL 11	T2005532							M2002915			
A25R SVQBR 16	T2005522							M2000602			
A25R SVQBL 16	T2005522							M2000602			
A25R SVQCR 16	T2005522							M2000602			
A25R SVQCL 16	T2005522							M2000602			
A20R PWLNR 06			T2005524	T2005509				M2002916			
A20R PWLNL 06			T2005524	T2005509				M2002916			
A25R PWLNR 06			T2005524	T2005509				M2002916			
A25R PWLNL 06			T2005524	T2005509				M2002916			
A25S PWLNR 08			T2005525	T2005512				M2002914			
A25S PWLNL 08			T2005525	T2005512				M2002914			
A32T PWLNR 08		T2005480	T2005528	T2005511		T2005529		M2002913			
A32T PWLNL 08		T2005480	T2005528	T2005511		T2005529		M2002913			

With Lamina you have the right tool, at the right time, all the time

PARTING & GROOVING



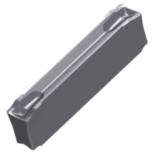
PARTING AND GROOVING

MULTI-MAT™ PARTING INSERTS AND TOOLS FOR MULTIPLE APPLICATIONS

Our Swiss quality, precision made parting and grooving inserts are designed for efficient and trouble free application in a wide variety of materials.

- Universal grade for long tool life in numerous workpiece materials
- ISO standard blocks and blades

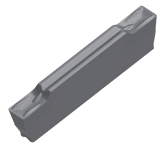
GCTX



MAGIA

DESIGNATION	GRADE	W	R	MATERIAL RECOMMENDATION	CATALOG #
GCTX 2002 NN	LT 1000	2.00	0.18		T0002825
GCTX 3003 NN	LT 1000	3.00	0.25		T0002826
GCTX 3003 PP	LT 1000	3.00	0.25		T0002828

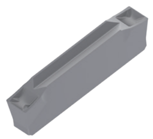
M G M N



ALPHA

DESIGNATION	GRADE	W	R	MATERIAL RECOMMENDATION	CATALOG #
MGMN 200 G	LT 10	2.00	0.2		T0003909
MGMN 300 M	LT 10	3.00	0.4		T0003910
MGMN 400 M	LT 10	4.00	0.4		T0003911
MGMN 500 M	LT 10	5.00	0.8		T0003921

W G E



ALPHA

DESIGNATION	GRADE	W	R	MATERIAL RECOMMENDATION	CATALOG #
WGE 2000	LT 10	2.00	0.2		T0003932
WGE 3000	LT 10	3.00	0.2		T0003933
WGE 4000	LT 10	4.00	0.2		T0003934
WGE 5000	LT 10	5.00	0.2		T0003935

CUTTING DATA
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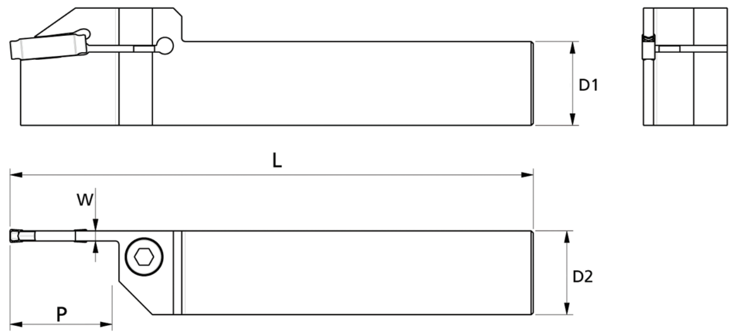
PARTING AND GROOVING TOOL HOLDERS



GCTX 2002

DESIGNATION	D	D2	L	W	Pmax	HAND	CATALOG #
LT PNG-L 12-2.0	12	12	120	1.6	15	LEFT	T2001164
LT PNG-R 12-2.0	12	12	120	1.6	15	RIGHT	T2001165
LT PNG-L 16-2.0	16	16	120	1.6	15	LEFT	T2001166
LT PNG-R 16-2.0	16	16	120	1.6	15	RIGHT	T2001167
LT PNG-L 20-2.0	20	20	120	1.6	15	LEFT	T2001484
LT PNG-R 20-2.0	20	20	120	1.6	15	RIGHT	T2001485
LT PNG-L 25-2.0	25	25	120	1.6	15	LEFT	T2001482
LT PNG-R 25-2.0	25	25	120	1.6	15	RIGHT	T2001483

SCREW M2001797
KEY M2000609

GCTX 3003

DESIGNATION	D	Dmin	L	W	Pmax	HAND	CATALOG #
LT PNG-L 16-3.0	16	16	120	2.4	15	LEFT	T2001168
LT PNG-R 16-3.0	16	16	120	2.4	15	RIGHT	T2001169
LT PNG-L 20-3.0	20	20	125	2.4	15	LEFT	T2001170
LT PNG-R 20-3.0	20	20	125	2.4	15	RIGHT	T2001171
LT PNG-L 25-3.0	25	25	125	2.4	15	LEFT	T2001197
LT PNG-R 25-3.0	25	25	125	2.4	15	RIGHT	T2001198

SCREW M2001797
KEY M2000609

CUTTING DATA
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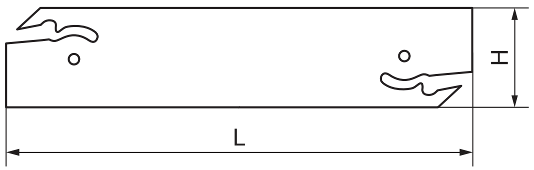
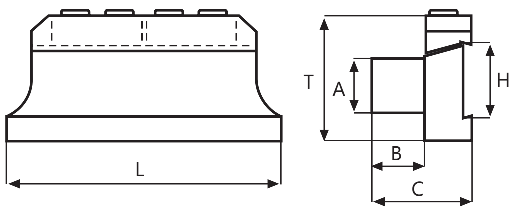
BLADES AND BLOCKS



GCTX 3003

DESIGNATION	L	H	-	-	-	-	CATALOG #
LT BNG-32-3	32	32	-	-	-	-	T2002751
						KEY	T2002761



BLOCKS

DESIGNATION	H	A	B	C	L	T	CATALOG #
LT PNB-N 2020-32	32	20	19	38	120	48	T2002762
LT PNB-N 2525-32	32	25	23	42	120	48	T2002763
						SCREW	T2002785
						KEY	T2002786

CUTTING DATA

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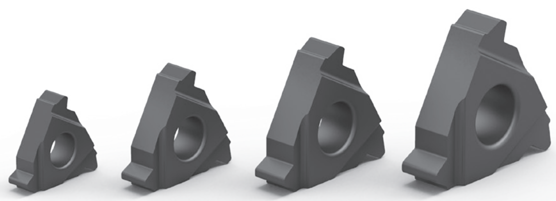
THREAD TURNING

THREAD TURNING

MULTI-MAT^{TM} INTERNAL AND EXTERNAL THREADING INSERTS

Our threading inserts offer superior tool life and versatility in a range of materials.

We offer a broad selection of triangular thread turning inserts and tool-holders for external and internal threads and a variety of thread standards.



CUTTING DATA
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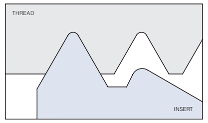
TECHNICAL SECTION
p. 360 - 365

INSERT ORDERING CODE

ISO	0.5	ER	16

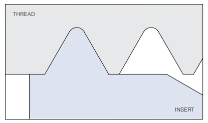
PROFILE	PITCH			TYPE OF INSERT	INSERT SIZE	
	SHAPE	mm	TPI		L	I.C.
PARTIAL PROFILE 60°, 55°	A	0.5 - 1.5	48 - 16	**ER** External right handed	06	4.0
	G	1.75 - 3.0	14 - 8		08	5.0
FULL PROFILE	AG	0.5 - 3.0	48 - 8	**EL** External left handed	11	6.3
ISO METRIC, BSPT,	N	3.5 - 5.0	7 - 5	**IR** Internal right handed	16	9.5
NPT, UN, TRAPEZ,	Q	5.5 - 6.0	4.5 - 4		22	12.7
WITHWORTH				**IL** Internal left handed	27	15.8
	Full Profile					
	-	3.5 - 6.0	72 - 4			

PARTIAL
(A,G,AG,N,Q)



- Most economical solution
- Used for wide range of pitches
- It is partial because the exterior major or internal minor diameter is not machined

FULL



- Cuts all thread shapes according to the requirements
- Wide range of inserts needed in order to fit each standard and range of pitches

TOOL HOLDER ORDERING CODE

HER	2525	M	16

HOLDER TYPE	SHANK	TOOL LENGTH		INSERT SIZE	
		H	100	L	I.C.
HER External right handed	**External Tool holders Square Shank:**	K	125	06	4.0
	8, 10, 12, 16,	L	140	08	5.0
HEL External left handed	20, 25, 32	M	150	11	6.3
HIR Internal right handed	**Internal Tool holders Round Shank:**	P	170	16	9.5
		R	200	22	12.7
HIL Internal left handed	10, 12, 16, 20,	S	250	27	15.8
	25, 32, 40	T	300		

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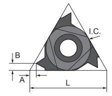
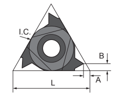
TECHNICAL SECTION p. 360 - 365

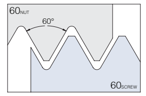
PARTIAL PROFILE 60°



EXTERNAL RIGHT

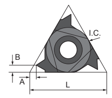


INTERNAL RIGHT

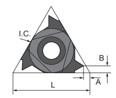


DESIGNATION	GRADE	PITCH RANGE mm	PITCH RANGE TPI	DIMENSIONS L mm	I.C.	A	B	CATALOG #
EXTERNAL								
A60 ER16	LT 10	0.5 - 1.5	48 - 16	16	9.5	0.8	0.9	TH000004
G60 ER16	LT 10	1.75 - 3.0	14 - 8	16	9.5	1.2	1.7	TH000010
AG60 ER16	LT 10	0.5 - 3.0	48 - 8	16	9.5	1.2	1.7	TH000016
N60 ER 22	LT 10	3.5 - 5.0	7 - 5	22	12.7	1.7	2.5	TH000116
INTERNAL								
A60 IR11	LT 10	0.5 - 1.5	48 - 16	11	6.3	0.8	0.9	TH000001
A60 IR16	LT 10	0.5 - 1.5	48 - 16	16	9.5	0.8	0.9	TH000007
G60 IR16	LT 10	1.75 - 3.0	14 - 8	16	9.5	1.2	1.7	TH000013
AG60 IR16	LT 10	0.5 - 3.0	48 - 8	16	9.5	1.2	1.7	TH000019
N60 IR 22	LT 10	3.5 - 5.0	7 - 5	22	12.7	1.7	2.5	TH000119

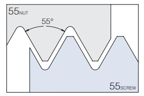
PARTIAL PROFILE 55°



EXTERNAL RIGHT



INTERNAL RIGHT



DESIGNATION	GRADE	PITCH RANGE mm	PITCH RANGE TPI	DIMENSIONS L mm	I.C.	A	B	CATALOG #
EXTERNAL								
A55 ER16	LT 10	0.5 - 1.5	48 - 8	16	9.5	0.8	0.9	TH000167
AG55 ER16	LT 10	0.5 - 3.0	48 - 8	16	9.5	1.2	1.7	TH000022
G55 ER16	LT 10	1.75 - 3.0	7 - 5	16	9.5	1.2	1.7	TH000168
N55 ER22	LT 10	3.5 - 5.0	7 - 5	22	12.7	1.7	2.5	TH000120
INTERNAL								
A55 IR16	LT 10	0.5 - 1.5	48 - 8	16	9.5	0.8	0.9	TH000183
AG55 IR16	LT 10	0.5 - 3.0	48 - 8	16	9.5	1.2	1.7	TH000025
G55 IR16	LT 10	1.75 - 3.0	7 - 5	16	9.5	1.2	1.7	TH000184
N55 IR22	LT 10	3.5 - 5.0	7 - 5	22	12.7	1.7	2.5	TH000121

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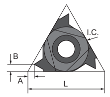
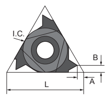
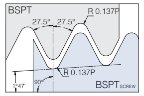
BSPT



EXTERNAL RIGHT



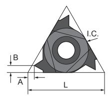
INTERNAL RIGHT



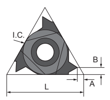
B.S. 21: 1985

DESIGNATION	GRADE	TPI	DIMENSIONS L mm	I.C.	A	B	CATALOG #
EXTERNAL							
BSPT11 ER16	LT 10	11	16	9.525	1.1	1.5	TH000138
BSPT14 ER16	LT 10	14	16	9.525	1.0	1.2	TH000137
BSPT19 ER16	LT 10	19	16	9.525	0.8	0.9	TH000136
INTERNAL							
BSPT11 IR16	LT 10	11	16	9.525	1.1	1.5	TH000141
BSPT14 IR16	LT 10	14	16	9.525	1.0	1.2	TH000140
BSPT19 IR16	LT 10	19	16	9.525	0.8	0.9	TH000139

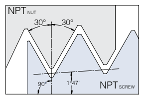
NPT



EXTERNAL RIGHT



INTERNAL RIGHT



ANSI/ASME B 1.20.1-1983

DESIGNATION	GRADE	TPI	DIMENSIONS L mm	I.C.	A	B	CATALOG #
EXTERNAL							
NPT 8 ER16	LT 10	8	16	9.525	1.3	1.8	TH000145
NPT 11.5 ER16	LT 10	11.5	16	9.525	1.1	1.5	TH000144
NPT 14 ER16	LT 10	14	16	9.525	0.9	1.2	TH000143
NPT 18 ER16	LT 10	18	16	9.525	0.8	1.0	TH000142
INTERNAL							
NPT 8 IR16	LT 10	8	16	9.525	1.3	1.8	TH000148
NPT 11.5 IR16	LT 10	11.5	16	9.525	1.1	1.5	TH000147
NPT 14 IR16	LT 10	14	16	9.525	0.9	1.2	TH000146
NPT 27 IR16	LT 10	27	16	9.525	0.7	0.8	TH000181

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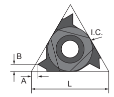
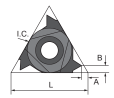
THREAD TURNING

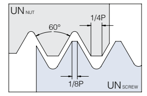
UN



EXTERNAL RIGHT



INTERNAL RIGHT



ANSI B1.1-1982

DESIGNATION	GRADE	TPI	DIMENSIONS L mm	I.C.	A	B	CATALOG #
EXTERNAL							
UN 10 ER16	LT 10	10	16	9.525	1.1	1.5	TH000161
UN 12 ER16	LT 10	12	16	9.525	1.1	1.4	TH000088
UN 13 ER16	LT 10	13	16	9.525	1.0	1.3	TH000163
UN 16 ER16	LT 10	16	16	9.525	0.9	1.1	TH000082
UN 20 ER16	LT 10	20	16	9.525	0.8	0.9	TH000076
UN 24 ER16	LT 10	24	16	9.525	0.7	0.8	TH000165
UN 32 ER16	LT 10	32	16	9.525	0.6	0.6	TH000166
UN 5 ER22	LT 10	5	22	12.70	1.7	2.4	TH000186
UN 6 ER22	LT 10	6	22	12.70	1.6	2.3	TH000189
UN 7 ER22	LT 10	7	22	12.70	1.6	2.3	TH000190
INTERNAL							
UN 8 IR16	LT 10	8	16	9.525	1.2	1.6	TH000170
UN 9 IR16	LT 10	9	16	9.525	1.2	1.7	TH000171
UN 10 IR16	LT 10	10	16	9.525	1.1	1.5	TH000172
UN 11 IR16	LT 10	11	16	9.525	1.1	1.5	TH000173
UN 11.5 IR16	LT 10	11.5	16	9.525	1.1	1.5	TH000174
UN 12 IR16	LT 10	12	16	9.525	0.8	0.9	TH000091
UN 13 IR16	LT 10	13	16	9.525	1.0	1.3	TH000175
UN 16 IR16	LT 10	16	16	9.525	0.9	1.1	TH000085
UN 20 IR16	LT 10	20	16	9.525	1.1	1.4	TH000079
UN 32 IR16	LT 10	32	16	9.525	0.6	0.6	TH000182
UN 6 IR22	LT 10	6	22	12.70	1.6	2.3	TH000196
UN 7 IR22	LT 10	7	22	12.70	1.6	2.3	TH000198

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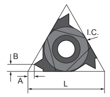
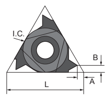
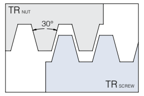
TRAPEZ



EXTERNAL RIGHT



INTERNAL RIGHT



DIN 103:1977
ISO 2901:1993

DESIGNATION	GRADE	PITCH mm	DIMENSIONS L mm	I.C.	A	B	CATALOG #
EXTERNAL							
TR 2.0 ER16	LT 10	2.00	16	9.525	1.0	1.3	TH000160
TR 3.0 ER16	LT 10	3.00	16	9.525	1.3	1.5	TH000149
TR 5.0 ER22	LT 10	5.00	22	12.70	2.0	2.4	TH000185
TR 6.0 ER22	LT 10	6.00	22	12.70	2.0	2.4	TH000188
TR 4.0 ER22	LT 10	4.00	22	12.70	1.7	1.9	TH000150
INTERNAL							
TR 2.0 IR16	LT 10	2.00	16	9.525	1.0	1.3	TH000169
TR 3.0 IR16	LT 10	3.00	16	9.525	1.3	1.5	TH000151
TR 4.0 IR22	LT 10	4.00	22	12.70	1.7	1.9	TH000152
TR 5.0 IR22	LT 10	5.00	22	12.70	2.0	2.4	TH000194
TR 6.0 IR22	LT 10	6.00	22	12.70	2.0	2.4	TH000195

CUTTING DATA
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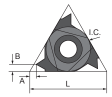
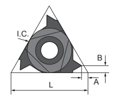
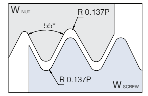
WHITWORTH



EXTERNAL RIGHT



INTERNAL RIGHT



B.S.84: 1956
ISO228-1: 1994

DESIGNATION	GRADE	TPI	DIMENSIONS L mm	I.C.	A	B	CATALOG #
EXTERNAL							
W 10 ER16	LT 10	10	16	9.525	1.1	1.5	TH000162
W 11 ER16	LT 10	11	16	9.525	1.1	1.5	TH000100
W 14 ER16	LT 10	14	16	9.525	1.0	1.2	TH000094
W 16 ER16	LT 10	16	16	9.525	0.9	1.1	TH000164
W 19 ER16	LT 10	19	16	9.525	0.8	1.0	TH000134
W 5 ER22	LT 10	5	22	12.70	1.7	2.4	TH000187
W 7 ER22	LT 10	7	22	12.70	1.6	2.3	TH000191
INTERNAL							
W 11 IR16	LT 10	11	16	9.525	1.1	1.5	TH000103
W 14 IR16	LT 10	14	16	9.525	1.0	1.2	TH000097
W 16 IR16	LT 10	16	16	9.525	0.9	1.1	TH000176
W 18 IR16	LT 10	18	16	9.525	0.8	1.0	TH000177
W 19 IR16	LT 10	19	16	9.525	0.8	1.0	TH000135
W 20 IR16	LT 10	20	16	9.525	0.8	0.9	TH000178
W 24 IR16	LT 10	24	16	9.525	0.7	0.8	TH000179
W 26 IR16	LT 10	26	16	9.525	0.7	0.7	TH000180
W 6 IR22	LT 10	6	22	12.70	1.6	2.3	TH000197
W 7 IR22	LT 10	7	22	12.70	1.6	2.3	TH000199

CUTTING DATA
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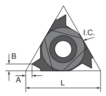
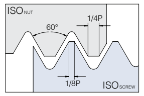
ISO



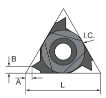


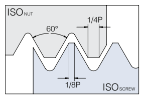
EXTERNAL RIGHT

ISO 965-1: 1999-11
DIN13: 2005-08

DESIGNATION	GRADE	PITCH mm	DIMENSIONS L mm	I.C.	A	B	CATALOG #
EXTERNAL							
ISO 0.5 ER16	LT 10	0.5	16	9.525	0.6	0.6	TH000122
ISO 0.6 ER16	LT 10	0.6	16	9.525	0.6	0.6	TH000123
ISO 0.7 ER16	LT 10	0.7	16	9.525	0.6	0.6	TH000124
ISO 0.75 ER16	LT 10	0.75	16	9.525	0.6	0.6	TH000125
ISO 0.8 ER16	LT 10	0.8	16	9.525	0.6	0.6	TH000036
ISO 1.0 ER16	LT 10	1.0	16	9.525	0.6	0.7	TH000037
ISO 1.25 ER16	LT 10	1.25	16	9.525	0.8	0.9	TH000043
ISO 1.5 ER16	LT 10	1.5	16	9.525	0.8	1.0	TH000049
ISO 1.75 ER16	LT 10	1.75	16	9.525	0.9	1.2	TH000055
ISO 2.0 ER16	LT 10	2.0	16	9.525	1.0	1.3	TH000058
ISO 2.5 ER16	LT 10	2.5	16	9.525	1.1	1.5	TH000064
ISO 3.0 ER16	LT 10	3.0	16	9.525	1.1	1.5	TH000070
ISO 3.5 ER22	LT 10	3.5	22	12.70	1.6	2.3	TH000126
ISO 4.0 ER22	LT 10	4.0	22	12.70	1.6	1.5	TH000127
ISO 5.0 ER22	LT 10	5.0	22	12.70	1.6	1.3	TH000192
ISO 6.0 ER22	LT 10	6.0	22	12.70	1.6	2.4	TH000193

ISO





EXTERNAL LEFT

ISO 965-1: 1999-11
DIN13: 2005-08

DESIGNATION	GRADE	PITCH mm	DIMENSIONS L mm	I.C.	A	B	CATALOG #
EXTERNAL							
ISO 1.0 EL16	LT 10	1.0	16	9.525	0.7	0.7	TH000210
ISO 1.25 EL16	LT 10	1.25	16	9.525	0.8	0.9	TH000212
ISO 1.5 EL16	LT 10	1.5	16	9.525	0.8	1.0	TH000158
ISO 2.0 EL16	LT 10	2.0	16	9.525	1.0	1.3	TH000206
ISO 2.5 EL16	LT 10	2.5	16	9.525	1.1	1.5	TH000208

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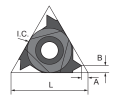
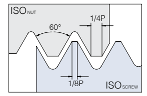
TECHNICAL SECTION p. 360 - 365

THREAD TURNING

ISO





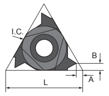
INTERNAL RIGHT

ISO 965-1: 1999-11
DIN13: 2005-08

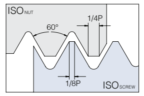
DESIGNATION	GRADE	PITCH mm	DIMENSIONS L mm	I.C.	A	B	CATALOG #
INTERNAL							
ISO 1.0 IR11	LT 10	1.0	11	6.35	0.6	0.7	TH000028
ISO 1.5 IR11	LT 10	1.5	11	6.35	0.8	1.0	TH000031
ISO 2.0 IR11	LT 10	2.0	11	6.35	0.8	0.9	TH000034
ISO 0.5 IR16	LT 10	0.5	16	9.525	0.6	0.4	TH000128
ISO 0.6 IR16	LT 10	0.6	16	9.525	0.6	0.6	TH000129
ISO 0.7 IR16	LT 10	0.7	16	9.525	0.6	0.6	TH000130
ISO 0.75 IR16	LT 10	0.75	16	9.525	0.6	0.6	TH000131
ISO 0.8 IR16	LT 10	0.8	16	9.525	0.6	0.6	TH000132
ISO 1.0 IR16	LT 10	1.0	16	9.525	0.7	0.7	TH000040
ISO 1.25 IR16	LT 10	1.25	16	9.525	0.8	0.9	TH000046
ISO 1.5 IR16	LT 10	1.5	16	9.525	0.8	1.8	TH000052
ISO 1.75 IR16	LT 10	1.75	16	9.525	0.9	1.2	TH000056
ISO 2.0 IR16	LT 10	2.0	16	9.525	1.0	1.3	TH000061
ISO 2.5 IR16	LT 10	2.5	16	9.525	1.1	1.5	TH000067
ISO 3.0 IR16	LT 10	3.0	16	9.525	1.1	1.5	TH000073
ISO 3.5 IR22	LT 10	3.5	16	9.525	1.6	2.3	TH000200
ISO 4.0 IR22	LT 10	4.0	22	12.70	1.6	2.3	TH000133
ISO 4.5 IR22	LT 10	4.5	22	12.70	1.6	2.4	TH000201
ISO 5.0 IR22	LT 10	5.0	22	12.70	1.6	2.3	TH000202
ISO 5.5 IR22	LT 10	5.5	22	12.70	1.6	2.3	TH000203
ISO 6.0 IR22	LT 10	6.0	22	12.70	1.6	2.4	TH000204

CUTTING DATA p. 339 - 342
TECHNICAL SECTION p. 360 - 365

ISO



INTERNAL LEFT



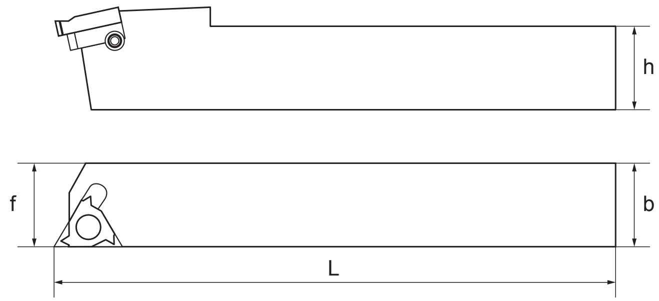
ISO 965-1: 1999-11
DIN13: 2005-08

DESIGNATION	GRADE	PITCH mm	DIMENSIONS				CATALOG #
			L mm	I.C.	A	B	
INTERNAL							
ISO 1.0 IL11	LT 10	1.0	11	6.35	0.6	0.7	TH000211
ISO 1.25 IL11	LT 10	1.5	11	6.35	0.8	0.8	TH000213
ISO 1.5 IL16	LT 10	1.5	16	9.525	0.8	1.0	TH000159
ISO 1.75 IL16	LT 10	1.75	16	9.525	0.9	1.2	TH000205
ISO 2.0 IL16	LT 10	2.0	16	9.525	1.0	1.3	TH000207
ISO 2.5 IL16	LT 10	2.5	16	9.525	1.1	1.5	TH000209

CUTTING DATA
p. 339 - 342
TECHNICAL SECTION
p. 360 - 365

THREADING TOOL HOLDERS

EXTERNAL RIGHT HANDED TOOL HOLDERS



DESIGNATION	TYPE	H	B	F	L	CATALOG #
HEL2020K16	EL16	20	20	20	125	TH200005
HEL2525M16	EL16	25	25	25	150	TH200008
HER1616H16	ER16	16	16	16	100	TH200001
HER2020K16	ER16	20	20	20	125	TH200004
HER2525M16	ER16	25	25	25	150	TH200007

* Accessories on request

INSERT SCREW TH290008
SHIM SCREW TH290021
KEY M2002911

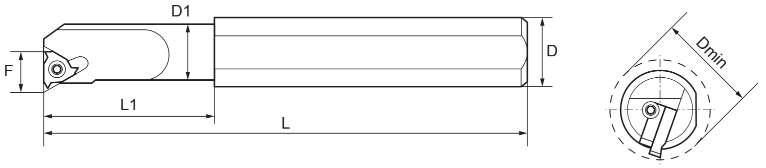
DESIGNATION	TYPE	H	B	F	L	CATALOG #
HEL2525M22	EL22	25	25	25	150	TH200018
HEL3232M22	EL22	32	32	32	170	TH200021
HER2525M22	ER22	25	25	25	150	TH200017
HER3232M22	ER22	32	32	32	170	TH200020

* Accessories on request

INSERT SCREW TH290022
SHIM SCREW TH290023
KEY M2000603

CUTTING DATA
p. 339 - 342
TECHNICAL SECTION
p. 360 - 365

INTERNAL RIGHT HANDED TOOL HOLDERS



DESIGNATION	TYPE	D	D1	D min	L	L1	F	CATALOG #
HIR0010H11	IR11	10	10	12.5	100	-	7.3	TH200010
HIR0010K11	IR11	16	10	12.5	125	25	7.3	TH200013

* Accessories on request

INSERT SCREW M2001549
KEY M2000601

DESIGNATION	TYPE	D	D1	D min	L	L1	F	CATALOG #
HIR0013M16	IR16	16	13	16.5	150	32	10.4	TH200016
HIR0016P16	IR16	20	16	19.5	170	40	11.6	TH200019
HIR0020P16	IR16	20	20	23.5	170	-	13.6	TH200022
HIR0025R16	IR16	25	25	28.5	200	-	16.3	TH200025

* Accessories on request

INSERT SCREW TH290008
SHIM SCREW TH290021
KEY M2002911

CUTTING DATA p. 339 - 342
TECHNICAL SECTION p. 360 - 365

MILLING

MAGIA MILLING GRADES

High performance grades for top level machining

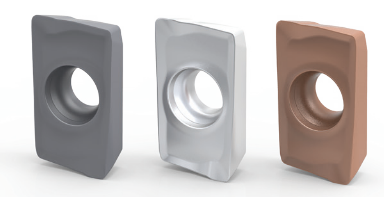
CHOOSE THE RIGHT PREMIUM MILLING GRADE

LT 3000 - RECOMMENDED FOR GENERAL USE

- Progressive and predictable wear. The silver top layer of our MULTI-MAT™ LT 3000 shows higher contrast on worn edges making it easy to identify which edges have been used and the level of wear development.
- More flexibility and extended application range. With a more tolerant coating, LT 3000 permits added flexibility and a wider application range as it can be applied at higher and lower cutting speeds than LT 30.

LT 3130 - RECOMMENDED FOR STEELS & STAINLESS STEELS

- MAGIA PRO LT 3130 has been specifically designed for remarkable performance in steels and stainless steels
- Low friction coefficient reduces heat generation and provides excellent thermal stability for milling at high speeds
- Higher hardness delivers substantial improvement in tool life and exceptional wear resistance leading to fewer production stops

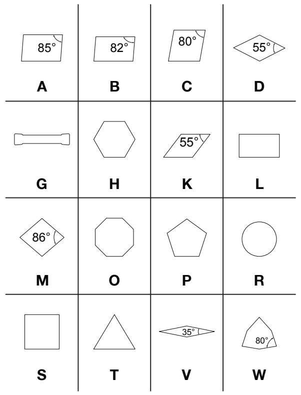


MILLING GRADES - LT 30, LT 3000, LT 3130

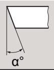
INSERT DESIGNATION (BASED ON ISO NORMS)

A	P	K	T	16	04	PD	T	R	
1	2	3	4	5	6	7	8	9	10

1. Insert Shape



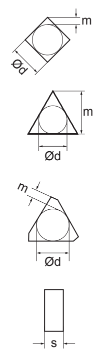
2. Clearance Angle



Letter Symbol	α
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Special

3. Tolerance Class

d (mm)
m (mm)
s (mm)



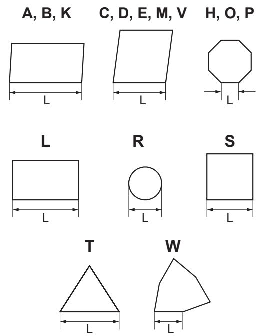
Symbol	D	M	S
A	± 0.025	± 0.005	± 0.025
C	± 0.025	± 0.013	± 0.025
E	± 0.025	± 0.025	± 0.025
F	± 0.013	± 0.005	± 0.025
G	± 0.025	± 0.025	± 0.130
H	± 0.013	± 0.013	± 0.025
J*	± 0.05-0.15	± 0.005	± 0.025
K*	± 0.05-0.15	± 0.013	± 0.025
L*	± 0.05-0.15	± 0.025	± 0.025
M*	± 0.05-0.15	± 0.08-0.20	± 0.130
N*	± 0.05-0.15	± 0.08-0.20	± 0.025
U*	± 0.08-0.25	± 0.13-0.38	± 0.130

* Depending on the insert size.

4. Fixing and Chipbreaker Types

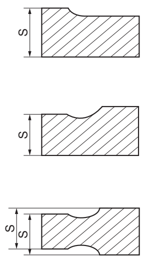
Type	Symbol	Type	Symbol
A		N	
B	70°- 90°	P	
F		R	
G		T	40°- 60°
H	70°- 90°	W	40°- 60°
M		X	Special Design

5. Cutting Edge Length



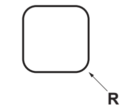
Disregarding any decimals e.g. 12,7 = 12

6. Insert Thickness



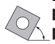
Symbol	mm
01	= 1.59
T1	= 1.98
02	= 2.38
03	= 3.18
T3	= 3.97
04	= 4.76
05	= 5.56
06	= 6.35
07	= 7.94
09	= 9.52

7. Insert Corner Radius



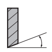
00 = Sharp corner or round insert (inch version)
M0 = Round insert (metric version)
01 = 0.1 mm
02 = 0.2 mm
04 = 0.4 mm
08 = 0.8 mm
12 = 1.2 mm
16 = 1.6 mm
etc

1st letter (Milling)



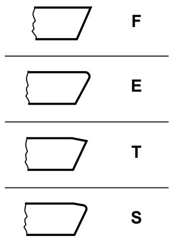
A = 45°
D = 60°
E = 75°
F = 85°
P = 90°
Z = other

2nd letter (Milling)



A = 3°
B = 5°
C = 7°
D = 15°
E = 20°
F = 25°
G = 30°
N = 0°
P = 11°
Z = other

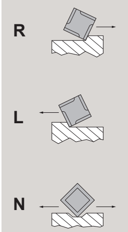
8. Edge Preparation



Optional information

9. Cutting Direction

Milling



Optional information

10. Internal Designation

e.g. Application (Milling)

- **45** = 45° Approach Angle
- **90** = 90° Approach Angle
- **HF** = High Feed

Optional information

MILLING

LAMINA TECHNOLOGIES CUTTER DESIGNATION

LT 741 C - W - D016 / 2

1	2	3	4	5	6
1. Standard	2. Lamina Cutter Family Number	3. Coupling	4. Internal Coolant	5. Diameter	6. # of Teeth
LT - Metric RILT - Imperial		C - Cylindrical CL - Cylindrical Long W - Weldon WL - Weldon Long M - Shell Mill S - Screw Coupling FW - Long Edge	D - No Internal Coolant W - Internal Coolant	D016 = 16 mm D1000 = 1"	2 = 2 teeth

LT EXT C - W - M10

1	2	3	4	5
LT - Metric RILT - Imperial	Screw-on Coupling Extension	C - Cylindric W - Weldon S - Screw Coupling	D - No Internal Coolant W - Internal Coolant	Coupling Dimension

D19 (19) L150 (30) - ST

6	7	8	9	10
Shank Diameter	Neck Diameter	Total Length	Neck Length	ST - Steel CC - Cemented Carbide

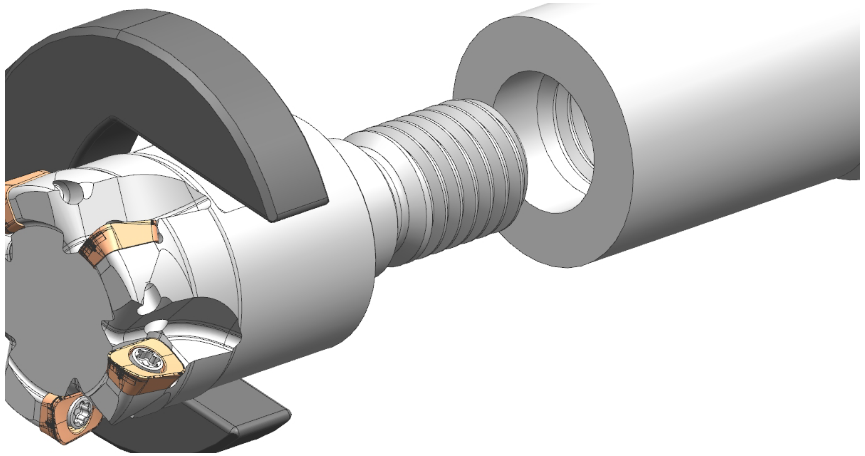
LAMINA MILLING CUTTER LINES

CUTTER LINE	FITS INSERT
LT 060	RD.. 0602 M0
LT 070	RD.. 0702 M0
LT 080	RD.. 0803 M0
LT 100	RD.. 10T3 M0
LT 101	RX.. 10T3 M0
LT 120	RD.. 1204 M0
LT 121	RX.. 1204 M0
LT 160	RD.. 1604 M0
LT 400	SPMT 060304 TN SPMT 09T308 FN/TN SPMT 120408 TN
LT 600	SEKT 1204 AFTN
LT 610	SEKT 12T3 AGSN
LT 645	HNKX 0604-45
LT 731	APKT 160408 PDTR

CUTTER LINE	FITS INSERT
LT 737	APKT 1705 PETR
LT 741	APKT 100308 PDTR
LT 745	APKT 100332/40 PDTR
LT 752	APKT 060204 PDTR
LT 770	LDMT 1504 PDSR
LT 790	ADKT 1505 PDTR
LT 800	OFMT 05T305 TN
LT 902	SDKX 0904-HF
LT 903	SDKX 1205-HF
LT 910	XPKT 0602-HF XPKW 0602-HF
LT 946	SNKX 1205-45
LT 947	SNKX 1607-45
LT 987	ONKX 0806-45

RECOMMENDED SCREW COUPLING TIGHTENING TORQUES

CONNECTING THREAD SIZE	TIGHTENING TORQUE	MOUNTING KEY SIZE (MM)
M6	10 NM	9
M8	25 NM	11
M10	40 NM	15
M12	60 NM	19
M16	80 NM	26

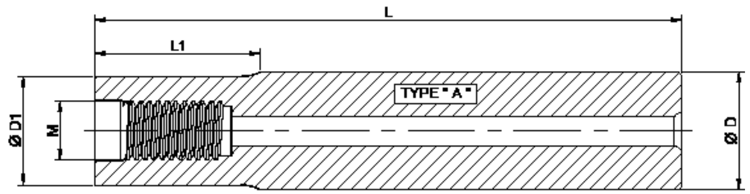


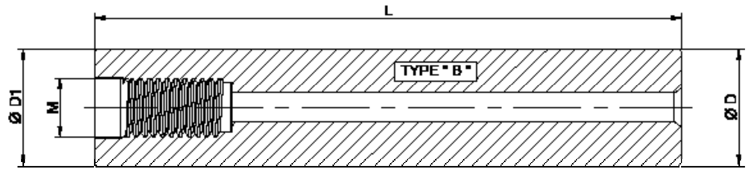
EXTENSIONS FOR SCREW COUPLING

CATALOG	LAMINA DESIGNATION	D	D1	L	L1	M	TYPE	MATERIAL
M2004932	LT EXT C-W-M08-D15(14) L150(30)-ST	15	14	150	30	M08	A	STEEL
M2004933	LT EXT C-W-M08-D16(14) L100(30)-ST*	16	14	100	30	M08	A	STEEL
M2004934	LT EXT C-W-M08-D16(14) L150(30)-ST	16	14	150	30	M08	A	STEEL
M2004935	LT EXT C-W-M10-D19(19) L150(30)-ST	19	18.7	150	30	M10	A	STEEL
M2004936	LT EXT C-W-M10-D20(19) L100(30)-ST*	20	18.7	100	30	M10	A	STEEL
M2004937	LT EXT C-W-M10-D20(19) L150(40)-ST	20	18.7	150	40	M10	A	STEEL
M2004938	LT EXT C-W-M12-D24(22) L150(40)-ST	24	22	150	40	M12	A	STEEL
M2004939	LT EXT C-W-M12-D25(22) L150(40)-ST*	25	22	150	40	M12	A	STEEL
M2004940	LT EXT C-W-M12-D25(22) L200(40)-ST	25	22	200	40	M12	A	STEEL
M2004941	LT EXT C-W-M12-D25(22) L250(40)-ST	25	22	250	40	M12	A	STEEL
M2004942	LT EXT C-W-M16-D32(30) L170(40)-ST	32	30	170	40	M16	A	STEEL
M2004943	LT EXT C-W-M16-D32(30) L220(40)-ST	32	30	220	40	M16	A	STEEL
M2004944	LT EXT C-W-M16-D32(30) L300(40)-ST	32	30	300	40	M16	A	STEEL
M2004949	LT EXT C-W-M06-D12(12) L100(24)-CC*	12	11.8	100	24	M06	A	CARBIDE**
M2004957	LT EXT C-W-M06-D12(12) L200(00)-CC*	12	12	200	00	M06	B	CARBIDE**
M2004968	LT EXT C-W-M06-D16(12) L150(70)-CC*	16	11.8	150	70	M06	A	CARBIDE**
M2004951	LT EXT C-W-M08-D16(15) L150(30)-CC*	16	15	150	30	M08	A	CARBIDE**
M2004952	LT EXT C-W-M08-D16(15) L200(40)-CC*	16	15	200	40	M08	A	CARBIDE**
M2004958	LT EXT C-W-M08-D16(16) L250(00)-CC*	16	16	250	00	M08	B	CARBIDE**
M2004945	LT EXT C-W-M08-D20(16) L200(90)-CC*	20	16	200	90	M08	A	CARBIDE**
M2004950	LT EXT C-W-M10-D20(19) L150(40)-CC*	20	19	150	40	M10	A	CARBIDE**
M2004953	LT EXT C-W-M10-D20(19) L150(40)-CC*	20	19	150	40	M10	A	CARBIDE**
M2004954	LT EXT C-W-M10-D20(19) L200(40)-CC*	20	19	200	40	M10	A	CARBIDE**
M2004959	LT EXT C-W-M10-D20(20) L250(00)-CC*	20	20	250	00	M10	B	CARBIDE**
M2004960	LT EXT C-W-M10-D20(20) L300(00)-CC*	20	20	300	00	M10	B	CARBIDE**
M2004946	LT EXT C-W-M10-D25(20) L200(90)-CC*	25	20	200	90	M10	A	CARBIDE**
M2004955	LT EXT C-W-M12-D25(24) L150(48)-CC*	25	24	150	48	M12	A	CARBIDE**
M2004956	LT EXT C-W-M12-D25(24) L200(48)-CC*	25	24	200	48	M12	A	CARBIDE**
M2004947	LT EXT C-W-M12-D32(25) L200(90)-CC*	32	25	200	90	M12	A	CARBIDE**

* On request.

**CC = Cemented Carbide shanks decrease vibration risks





FACE MILLING

FACE MILLING

FEATURED GEOMETRIES

SNKX

- Square positive insert with 8 cutting edges
- Full MULTI-MAT™ flexibility in a thick and strong insert
- Positive edges provide soft and stable cut

ONKX

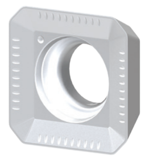
- Double-sided octagonal milling insert for face milling
- Economical solution with 16 cutting edges!
- Roughing and Semi-Finishing
- Mostly recommended for use on steel and cast Iron - up to 4.5mm d.o.c.

HNKX

- Double-sided hexagonal insert with 12 cutting edges
- MAGIA LT 3000 and MAGIA PRO LT 3130 for steels and stainless steels
- Positive edges provide soft and stable cut

MILLING

S E K T



MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SEKT 1204 AFTN	LT 3130	-	4	LT 600		p. 322	M0004486
SEKT 12T3 AGSN	LT 3130	-	4	LT 610		p. 322	M0004487

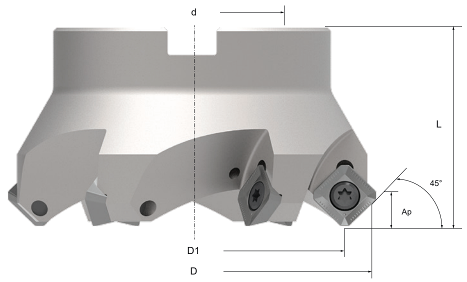
MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SEKT 1204 AFTN	LT 3000	-	4	LT 600		p. 296	M0002230
SEKT 12T3 AGSN	LT 3000	-	4	LT 610		p. 296	M0002231

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SEKT 1204 AFTN	LT 30	-	4	LT 600		p. 296	M0000045
SEKT 12T3 AGSN	LT 30	-	4	LT 610		p. 296	M0000455

CUTTERS SEKT



SHELL MILL - SEKT 1204

DESIGNATION	D	D1	d	L	Ap	Z	α	CATALOG #
LT 600 M-W-D040/3	53	40	16	40	6	3	10	M2000546
LT 600 M-W-D050/4	63	50	22	48	6	4	8	M2000547
LT 600 M-W-D063/5	76	63	22	48	6	5	6	M2000548
LT 600 M-W-D080/6	93	80	27	50	6	6	4.5	M2000549
LT 600 M-W-D100/6	113	100	32	50	6	6	3.5	M2000550

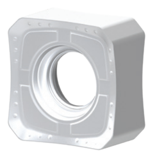
SCREW M2000599
KEY M2000603

SHELL MILL - SEKT 12T3

DESIGNATION	D	D1	d	L	Ap	Z	α	CATALOG #
LT 610 M-W-D040/3	53	40	16	40	6	3	10	M2001431
LT 610 M-W-D050/4	63	50	22	48	6	4	8	M2001382
LT 610 M-W-D063/5	76	63	22	48	6	5	6	M2001383
LT 610 M-W-D080/6	93	80	27	50	6	6	4.5	M2001384
LT 610 M-W-D100/6	113	100	32	50	6	6	3.5	M2001432

SCREW M2001418
KEY M2000602

S N K X



MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SNKX 1205-45	LT 3130	-	8	LT 946		p. 323	M0004490
SNKX 1607-45	LT 3130	-	8	LT 947		p. 323	M0004491

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SNKX 1205-45	LT 3000	-	8	LT 946		p. 297	M0003415
SNKX 1607-45	LT 3000	-	8	LT 947		p. 298	M0002237

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SNKX 1205-45	LT 30	-	8	LT 946		p. 297	M0003221
SNKX 1607-45	LT 30	-	8	LT 947		p. 298	M0002205

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

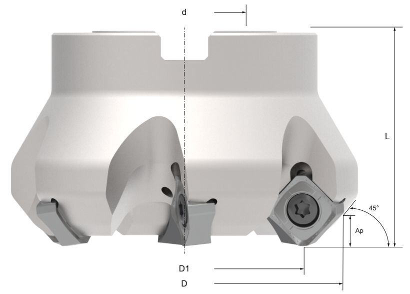
COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

CUTTERS SNKX - 45



SHELL MILL - SNKX 1205-45

DESIGNATION	D	D1	d	L	Ap	Z	CATALOG #
LT 946 M-W-D050/4	64	50	22	48	6	4	M2003223
LT 946 M-W-D063/6	77	63	22	48	6	6	M2003224
LT 946 M-W-D080/7	94	80	27	50	6	7	M2003225
LT 946 M-W-D100/8	114	100	32	50	6	8	M2003226
LT 946 M-W-D125/10	139	125	40	63	6	10	M2003227
LT 946 M-D-D160/12*	174	160	40	63	6	12	M2003228

*On Request

SCREW	M2003295
KEY	M2003296

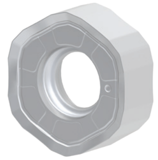
SHELL MILL - SNKX 1607-45

DESIGNATION	D	D1	d	L	Ap	Z	CATALOG #
LT 947 M-W-D050/4	69	50	22	50	7	4	M2002200
LT 947 M-W-D063/5	82	63	22	50	7	5	M2002201
LT 947 M-W-D080/6	99	80	27	50	7	6	M2002202
LT 947 M-W-D100/7	119	100	32	63	7	7	M2002203
LT 947 M-W-D125/8	144	125	40	63	7	8	M2002204
LT 947 M-D-D160/10	179	160	40	63	7	10	M2003670
LT 947 M-D-D200/12*	219	200	60	63	7	12	M2003671
LT 947 M-D-D250/14*	269	250	60	63	7	14	M2003672

*On Request

SCREW	M2002733
KEY	M2000603

H N K X



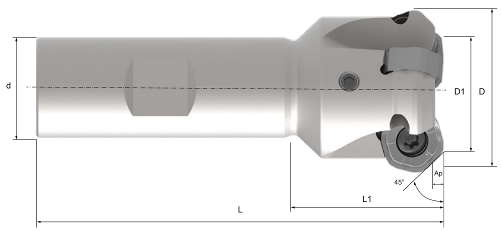
MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
HNKX 0604-45	LT 3130	-	12	LT 645		p. 314	M0004473

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
HNKX 0604-45	LT 3000	-	12	LT 645		p. 276	M0004364

CUTTERS HNKX

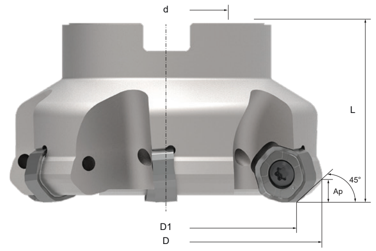


END MILL - HNKX 0604-45

DESIGNATION	D	D1	d	L	L1	Ap	Z	CATALOG #
LT 645 W-W-D025/3	34	25	20	32	82	3.2	3	M2001440
LT 645 W-W-D032/4	41	32	25	40	97	3.2	4	M2001441
LT 645 W-W-D040/5	49	40	32	40	115	3.2	5	M2001442

SCREW M2000597
KEY M2000602

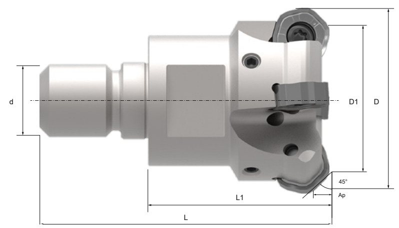
CUTTERS HNKX - 45



SHELL MILL - HNKX 0604-45

DESIGNATION	D	D1	d	L1	Ap	Z	CATALOG #
LT 645 M-W-D050/5	59	50	22	40	3.2	5	M2001435
LT 645 M-W-D063/6	72	63	22	40	3.2	6	M2001436
LT 645 M-W-D080/8	89	80	27	50	3.2	8	M2001437
LT 645 M-W-D100/9	109	100	32	50	3.2	9	M2001438
LT 645 M-W-D125/12	134	125	40	63	3.2	12	M2001439

SCREW M2000597
KEY M2000602



SCREW COUPLING - HNKX 0604-45

DESIGNATION	D	D1	d	L	Ap	Z	CATALOG #
LT 645 S-W-D025/3	34	25	M16	32	3.2	3	M2001443
LT 645 S-W-D032/4	41	32	M16	40	3.2	4	M2001444
LT 645 S-W-D040/5	49	40	M16	40	3.2	5	M2001445

SCREW M2000597
KEY M2000602

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

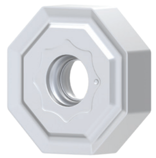
COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

O N K X



MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ONKX 0806-45	LT 3130	0.8	16	LT 987		p. 315	M0004475

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ONKX 0806-45	LT 3000	0.8	16	LT 987		p. 282	M0002211

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ONKX 0806-45	LT 30	0.8	16	LT 987		p. 282	M0003673

MATERIAL GROUP

- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT

p. 357

ORDERING EXAMPLE

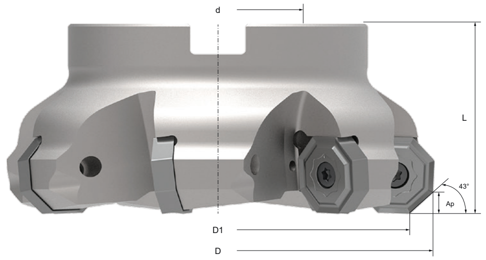
QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION

p. 366 - 376

MILLING

CUTTERS ONKX



SHELL MILL - ONKX 0806

DESIGNATION	D	D1	d	L	Ap	Z	CATALOG #
LT 987 M-W-D063/5	75.7	63	22	50	5	5	M2003631
LT 987 M-W-D080/6	92.7	80	27	50	5	6	M2003632
LT 987 M-W-D100/7	112.7	100	32	50	5	7	M2003633
LT 987 M-W-D125/8	137.7	125	40	63	5	8	M2003634
LT 987 M-D-D160/10 [1]	172.7	160	40	63	5	10	M2003635
LT 987 M-D-D200/12* [1]	212.7	200	60	63	5	12	M2003636
LT 987 M-D-D250/14* [1]	262.7	250	60	63	5	14	M2003637

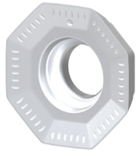
*On Request

SCREW	M2000599
KEY	M2000603

[1] Accessories for coolant available

CUTTER	ACCESSORY
M2003635	M2004024
M2003636	M2001847
M2003637	M2001847

O F M T

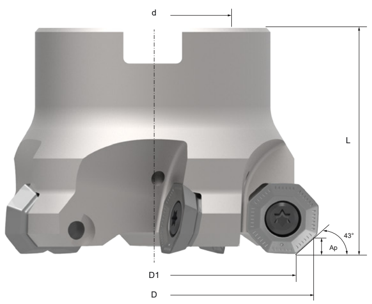


MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
OFMT 050405 TR	LT 3000	0.8	8	-		p. 278	M0002220
OFMT 05T305 TN	LT 3000	0.8	8	LT 800		p. 278	M0002221
OFMT 070405 TN	LT 3000	0.5	8	-		p. 281	M0002222

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
OFMT 050405 TR	LT 30	0.8	8	-		p. 278	M0000034
OFMT 05T305 TN	LT 30	0.8	8	LT 800		p. 278	M0000591
OFMT 070405 TN	LT 30	0.5	8	-		p. 281	M0000592



SHELL MILL - OFMT 05T305 TN

DESIGNATION	D	D1	d	L	Ap	Z	CATALOG #
LT 800 M-W-D040/3	47	40	16	40	3	3	M2000502
LT 800 M-W-D050/4	57	50	22	40	3	4	M2000503
LT 800 M-W-D063/5	70	63	22	40	3	5	M2000504
LT 800 M-W-D080/6	87	80	27	50	3	6	M2000505
LT 800 M-W-D100/7	107	100	32	50	3	7	M2000506
LT 800 M-W-D125/8	132	125	40	63	3	8	M2000507

SCREW M2000597
KEY M2000602

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

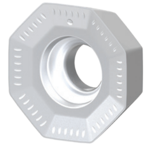
ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

MILLING

O D M T



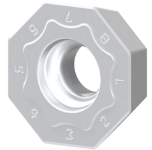
MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ODMT 0504 ZZTR	LT 3000	0.80	8	-		p. 278	M0003399
ODMT 060508 TN	LT 3000	0.80	8	-		p. 279	M0002219

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ODMT 0504 ZZTR	LT 30	0.80	8	-		p. 278	M0000664
ODMT 060508 TN	LT 30	0.80	8	-		p. 279	M0001104

O D M W



MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ODMW 060508 TN	LT 3000	0.80	8	-		p. 280	M0003400

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ODMW 060508 TN	LT 30	0.80	8	-		p. 280	M0000451

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
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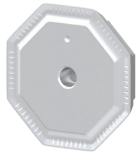
O F E R



MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
OFER 070405 TN	LT 3000	0.80	8	-		p. 281	M0003401

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
OFER 070405 TN	LT 30	0.80	8	-		p. 281	M0000033

S E K N

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SEKN 1203 AFTN	LT 3000	-	4	-		p. 294	M0004031
SEKN 1204 AFTN	LT 3000	-	4	-		p. 294	M0004032
SEKN 1504 AFTN	LT 3000	-	4	-		p. 295	M0004033

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SEKN 1203 AFTN	LT 30	-	4	-		p. 294	M0000041
SEKN 1204 AFTN	LT 30	-	4	-		p. 294	M0000042
SEKN 1504 AFTN	LT 30	-	4	-		p. 295	M0000450

MATERIAL GROUP

- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT

p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION

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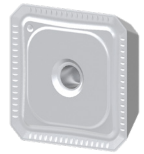
S E K R



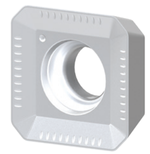
MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SEKR 1203 AFTN	LT 3000	-	4	-		p. 294	M0004034
SEKR 1204 AFTN	LT 3000	-	4	-		p. 294	M0004035

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SEKR 1203 AFTN	LT 30	-	4	-		p. 294	M0000043
SEKR 1204 AFTN	LT 30	-	4	-		p. 294	M0000044

S D K T



MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SDKT 1204 AETN	LT 3000	-	4	-		p. 290	M0003411

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SDKT 1204 AETN	LT 30	-	4	-		p. 290	M0000171

MATERIAL GROUP

- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT

p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION

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S P U N

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SPUN 120308	LT 3000	0.80	4	-		p. 306	M0004039

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SPUN 120308	LT 30	0.80	4	-		p. 306	M0000050

S P K N

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SPKN 1203 EDTR	LT 3000	-	4	-		p. 299	M0004036
SPKN 1204 EDTR	LT 3000	-	4	-		p. 299	M0004181
SPKN 1504 EDTR	LT 3000	-	4	-		p. 299	M0004037

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SPKN 1203 EDTR	LT 30	-	4	-		p. 299	M0000046
SPKN 1204 EDTR	LT 30	-	4	-		p. 299	M0000047
SPKN 1504 EDTR	LT 30	-	4	-		p. 299	M0001673

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
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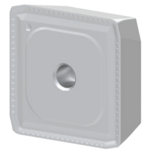


MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SPKR 1203 EDTR	LT 3000	-	4	-		p. 300	M0004038
SPKR 1204 EDTR	LT 3000	-	4	-		p. 300	M0004182

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SPKR 1203 EDTR	LT 30	-	4	-		p. 300	M0000048
SPKR 1204 EDTR	LT 30	-	4	-		p. 300	M0000049

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

Decrease your tooling costs

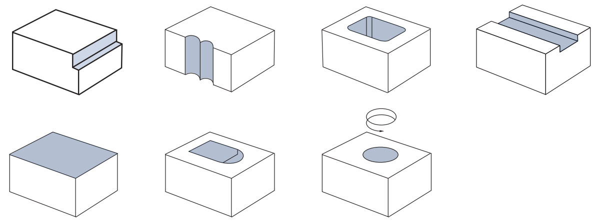
SHOULDER MILLING

90° SHOULDER MILLING

MAXIMUM VERSATILITY

90° inserts can be used in a wide ranges of applications including

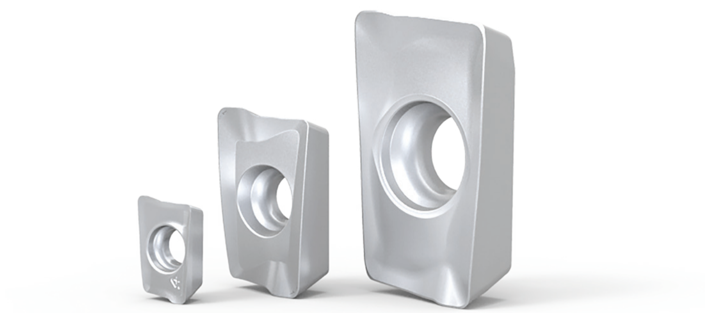
- Shoulder milling
- Plunging
- Pocket milling
- Surfacing
- Ramping down
- Helical interpolation
- Slotting milling



FEATURED GEOMETRY

APKT

- MULTI-MAT™ geometry for maximum versatility
- Accurate 90° wall finishing
- Excellent ramping down ability



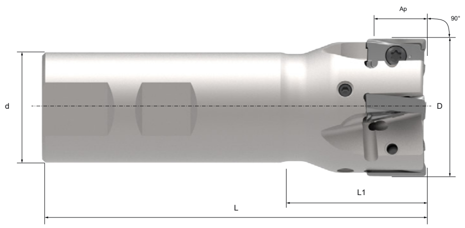
A N K X

MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ANKX 170608 PNTR	LT 3130	0.8	4	LT 787		P. 312	M0004025

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ANKX 170608 PNTR	LT 3000	0.8	4	LT 787		p. 268	M0004467



END MILL - ANKX 170608 PNTR

DESIGNATION	D	d	L	L1	Ap	Z	CATALOG #
LT 787 W-D-D025/2	25	25	44	100	12	2	M2001787
LT 787 W-W-D032/3	32	32	50	110	12	3	M2001789
LT 787 W-W-D040/4	40	32	50	115	12	4	M2001792

SCREW M2000597
KEY M2000602

ANKX and cutter family LT 787 Available Q4 2019

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

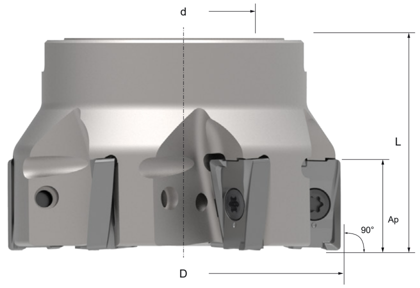
ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

MILLING

CUTTERS ANKX



SHELL MILL - ANKX 170608 PNTR

DESIGNATION	D	d	L	Ap	Z	CATALOG #
LT 787 M-W-D040/4	40	16	40	12	4	M2001790
LT 787 M-W-D050/5	50	22	40	12	5	M2001793
LT 787 M-W-D063/6	63	22	40	12	6	M2001794
LT 787 M-W-D080/7	80	27	50	12	7	M2001795
LT 787 M-W-D100/8	100	32	50	12	8	M2003825
LT 787 M-W-D125/9	125	40	63	12	9	M2003826
LT 787 M-D-D160/10*	160	40	63	12	10	M2003827

SCREW M2000597
KEY M2000602

ANKX and cutter family LT 787 Available Q4 2019

* On Request.

A P K T

MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
APKT 060204 PDTR	LT 3130	0.40	2	LT 752		p. 310	M0004468
APKT 100308 PDTR†	LT 3130	0.80	2	LT 741		p. 312	M0004470
APKT 160408 PDTR†	LT 3130	0.80	2	LT 731		p. 312	M0004471

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
APKT 060204 PDTR	LT 3000	0.40	2	LT 752		p. 260	M0004026
APKT 100304 PDTR	LT 3000	0.40	2	LT 741		p. 262	M0003389
APKT 100308 PDTR†	LT 3000	0.80	2	LT 741		p. 263	M0003388
APKT 100312 PDTR	LT 3000	1.20	2	LT 741		p. 264	M0003391
APKT 100316 PDTR	LT 3000	1.60	2	LT 741		p. 265	M0003392
APKT 100332 PDTR	LT 3000	3.20	2	LT 745		p. 266	M0003394
APKT 100340 PDTR	LT 3000	4.00	2	LT 745		p. 267	M0003395
APKT 160408 PDTR†	LT 3000	0.80	2	LT 731		p. 268	M0002182
APKT 160416 PDTR	LT 3000	1.60	2	LT 731		p. 269	M0004027
APKT 160424 PDTR†	LT 3000	2.40	2	LT 731		p. 270	M0004029
APKT 160432 PDTR	LT 3000	3.20	2	LT 731		p. 271	M0004030
APKT 1705 PETR	LT 3000	0.80	2	LT 737		p. 272	M0002212

MATERIAL GROUP
STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE
QUANTITY 10 PIECES
DESIGNATION + GRADE APKT 060204 PDTR LT 3000
CATALOG NUMBER M0004026

TECHNICAL SECTION
p. 366 - 376

MILLING

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
APKT 100304 PDTR	LT 30	0.40	2	LT 741		p. 262	M0002920
APKT 100308 PDTR†	LT 30	0.80	2	LT 741		p. 263	M0002918
APKT 100312 PDTR	LT 30	1.20	2	LT 741		p. 264	M0002921
APKT 100316 PDTR	LT 30	1.60	2	LT 741		p. 265	M0003094
APKT 100332 PDTR	LT 30	3.20	2	LT 745		p. 266	M0002922
APKT 100340 PDTR	LT 30	4.00	2	LT 745		p. 267	M0002923
APKT 1604 PDTR	LT 30	0.95	2	-		p. 268	M0000021
APKT 160408 PDTR†	LT 30	0.80	2	LT 731		p. 268	M0000022
APKT 160416 PDTR	LT 30	1.60	2	LT 731		p. 269	M0000172
APKT 160424 PDTR†	LT 30	2.40	2	LT 731		p. 270	M0003833
APKT 160432 PDTR	LT 30	3.20	2	LT 731		p. 271	M0001569
APKT 1705 PETR	LT 30	0.80	2	LT 737		p. 272	M0001810

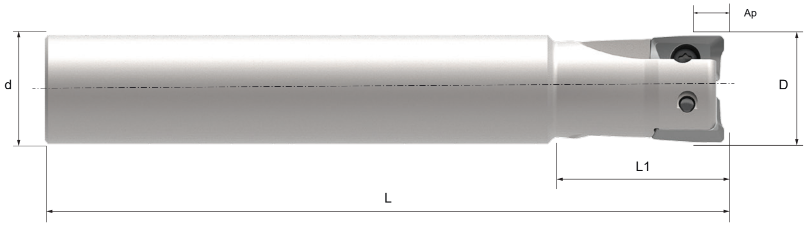
MATERIAL GROUP
STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE
QUANTITY 10 PIECES
DESIGNATION + GRADE APKT 060204 PDTR LT 3000
CATALOG NUMBER M0004026

TECHNICAL SECTION
p. 366 - 376

CUTTERS APKT



END MILL - APKT 060204 PDTR**

DESIGNATION	D	d	L	L1	Ap	Z	α°	CATALOG #
LT 752 C-W-D010/2	10	10	72	16	5.2	2	3.00	M2003098
LT 752 C-W-D012/3	12	12	80	26	5.2	3	2.20	M2003099
LT 752 CL-W-D012/3*	12	10	120	13.5	5.2	3	2.20	M2003078
LT 752 C-W-D016/4	16	16	90	32	5.2	4	1.50	M2003100
LT 752 CL-W-D016/3*	16	14	160	13.5	5.2	3	1.50	M2003105
LT 752 C-W-D020/5	20	20	100	40	5.2	5	1.15	M2003101
LT 752 CL-W-D020/4*	20	18	200	13.5	5.2	4	1.15	M2003080
LT 752 C-W-D025/7	25	20	120	40	5.2	4	0.90	M2003102
LT 752 CL-W-D025/6*	25	20	220	15	5.2	4	0.90	M2003081

*Available Q3 2017

SCREW	M2001640
SCREW DRIVER HANDLE	M2002922
PRESET ADAPTER 0.4NM	M2002923
TORX PLUS BIT	M2003064

END MILL - APKT 100308 PDTR / APKT 100304 PDTR / APKT 100312 PDTR / APKT 100316 PDTR

DESIGNATION	D	d	L	L1	Ap	Z	α	CATALOG #
LT 741 C-W-D016/2	16	16	100	25	9	2	7.50	M2002806
LT 741 CL-W-D016/2	16	16	150	35	9	2	7.50	M2002817
LT 741 C-W-D018/2	18	20	100	30	9	2	6.00	M2002807
LT 741 C-W-D020/3	20	20	100	30	9	3	5.00	M2002808
LT 741 CL-W-D020/3	20	20	150	35	9	3	5.00	M2002818
LT 741 C-W-D022/3	22	20	100	30	9	3	4.00	M2002809
LT 741 C-W-D025/3	25	25	120	30	9	3	3.30	M2002810
LT 741 C-W-D025/4	25	25	120	30	9	4	3.30	M2002811
LT 741 CL-W-D025/4	25	25	200	40	9	4	3.30	M2002819
LT 741 C-W-D028/4	28	25	120	30	9	4	2.70	M2002812
LT 741 C-W-D030/4	30	25	120	30	9	4	2.30	M2002813
LT 741 W-W-D032/5	32	32	120	30	9	5	2.00	M2002814
LT 741 WL-W-D032/4	32	32	200	40	9	4	2.00	M2002820

SCREW	M2002181
KEY	M2000601

** Due to the small size of these inserts, using a pre-set torque screw driver (0.4Nm) at all times is recommended. It is also recommended that during mounting, the insert should be held in place with a finger.

CUTTERS APKT

END MILL - APKT 100332/40

DESIGNATION	D	d	L	L1	Ap	Z	α	CATALOG #
LT 745 W-W-D016/2*	16	16	100	25	9	2	10	M2001587
LT 745 WL-W-D016/2*	16	16	150	35	9	2	10	M2001849
LT 745 W-W-D020/3*	20	20	100	30	9	3	7	M2001589
LT 745 WL-W-D020/3*	20	20	150	35	9	3	7	M2001850
LT 745 W-W-D025/3*	25	25	120	30	9	3	5	M2001591
LT 745 WL-W-D025/4*	25	25	200	40	9	4	5	M2001851
LT 745 WL-W-D032/4*	32	32	200	40	9	4	3	M2001852
LT 745 W-W-D032/5*	32	32	120	30	9	5	3	M2001848

*On Request

SCREW	M2002181
KEY	M2000601

END MILL - APKT 160408 PDTR

DESIGNATION	D	d	L	L1	Ap	Z	α	CATALOG #
LT 731 W-W-D025/2	25	25	100	44	15	2	5	M2002966
LT 731 WL-W-D025/2	25	25	220	90	15	2	5	M2002965
LT 731 W-W-D032/3	32	32	110	50	15	3	3	M2002968
LT 731 WL-W-D032/3	32	32	220	90	15	3	3	M2002967
LT 731 W-W-D040/4	40	32	115	50	15	4	2.5	M2002970
LT 731 WL-W-D040/4	40	32	220	90	15	4	2.5	M2002969

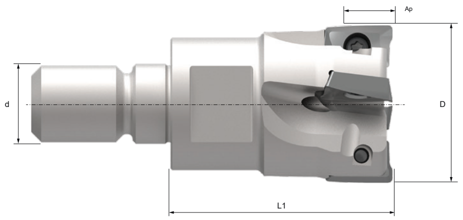
SCREW	M2000597
KEY	M2000602

END MILL - APKT 1705

DESIGNATION	D	d	L	L1	Ap	Z	α	CATALOG #
LT 737 W-W-D025/2	25	20	100	32	16	2	5	M2001833
LT 737 WL-W-D025/2	25	25	210	40	16	2	5	M2001836
LT 737 W-W-D032/3	32	32	110	40	16	3	3	M2001834
LT 737 WL-W-D032/3	32	32	200	65	16	3	3	M2001837
LT 737 W-W-D040/4	40	32	115	45	16	4	2.5	M2001835
LT 737 WL-W-D040/4	40	32	200	45	16	4	2.5	M2001982

SCREW	M2000597
KEY	M2000602

CUTTERS APKT



SCREW COUPLING - APKT 060204 PDTR**

DESIGNATION	D	d	L1	Ap	Z	α°	CATALOG #
LT 752 S-W-D010/2*	10	M6	19	0.5	2	3.00	M2003087
LT 752 S-W-D012/3*	12	M6	19	0.5	3	2.20	M2003088
LT 752 S-W-D016/4*	16	M8	22	0.5	4	1.50	M2003089
LT 752 S-W-D020/5*	20	M10	25	0.5	5	1.15	M2003090
LT 752 S-W-D025/7*	25	M12	25	0.5	7	0.90	M2003091
LT 752 S-W-D032/8*	32	M16	30	0.5	8	0.70	M2003094

*Available Q3 2017

SCREW	M2001640
SCREW DRIVER HANDLE	M2002922
PRESET ADAPTER 0.4NM	M2002923
TORX PLUS BIT	M2003064

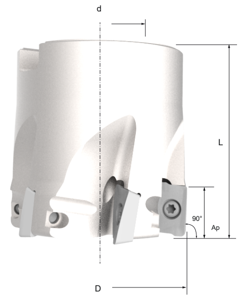
SCREW COUPLING - APKT 100308 PDTR / 100304 PDTR / 100312 PDTR / 100316 PDTR

DESIGNATION	D	d	L1	Ap	Z	α	CATALOG #
LT 741 S-W-D016/2	16	M8	25	9	2	7.50	M2002962
LT 741 S-W-D020/3	20	M10	30	9	3	5.00	M2002963
LT 741 S-W-D025/4	25	M12	35	9	4	3.30	M2002964

SCREW	M2002181
KEY	M2000601

** Due to the small size of these inserts, using a pre-set torque screw driver (0.4Nm) at all times is recommended. It is also recommended that during mounting, the insert should be held in place with a finger.

CUTTERS APKT



SHELL MILL - APKT 100308 PDTR / 100304 PDTR / 100312 PDTR / 100316 PDTR

DESIGNATION	D	d	L	Ap	Z	α	CATALOG #
LT 741 M-W-D040/6	40	16	40	9	6	1.5	M2002798
LT 741 M-W-D050/7	50	22	40	9	7	1.1	M2002799
LT 741 M-W-D063/8	63	22	40	9	8	0.9	M2002800
LT 741 M-W-D080/11*	80	27	50	9	11	0.7	M2002801

*On Request

SCREW	M2002181
KEY	M2000601

SHELL MILL - APKT 100332/40

DESIGNATION	D	d	L	Ap	Z	α	CATALOG #
LT 745 M-W-D040/6*	40	16	40	9	6	2.0	M2001580
LT 745 M-W-D050/7*	50	22	40	9	7	1.8	M2001581

*On Request

SCREW	M2002181
KEY	M2000601

SHELL MILL - APKT 160408 PDTR

DESIGNATION	D	d	L	Ap	Z	α	CATALOG #
LT 731 M-W-D040/4	40	16	40	15	4	2.5	M2002971
LT 731 M-W-D050/5	50	22	40	15	5	2.2	M2002972
LT 731 M-W-D063/6	63	22	40	15	6	1.8	M2002973
LT 731 M-W-D080/7	80	27	50	15	7	1.4	M2002974
LT 731 M-W-D100/8	100	32	50	15	8	1.1	M2002975
LT 731 M-W-D125/9	125	40	63	15	9	0.8	M2002976
LT 731 M-D-D160/10*	160	40	63	15	10	N/A	M2002977

*On Request

SCREW	M2000597
KEY	M2000602

SHELL MILL - APKT 1705

DESIGNATION	D	d	L	Ap	Z	α	CATALOG #
LT 737 M-W-D040/4	40	16	40	16	4	2.5	M2001838
LT 737 M-W-D050/5	50	22	40	16	5	2.2	M2001839
LT 737 M-W-D063/6	63	22	40	16	6	1.8	M2001841
LT 737 M-W-D080/7	80	27	50	16	7	1.4	M2001842
LT 737 M-W-D100/7	100	32	50	16	7	1.1	M2001843
LT 737 M-W-D125/9	125	40	63	16	9	0.8	M2001844

SCREW	M2000597
KEY	M2000602

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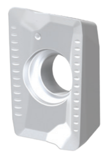


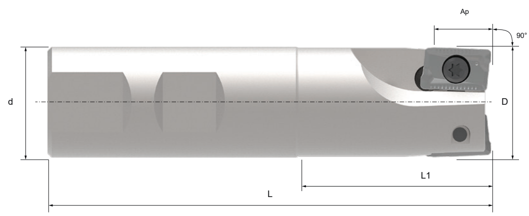
MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ADKT 1505 PDTR	LT 3000	0.96	2	LT 790		p. 258	M0002209

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
ADKT 1505 PDTR	LT 30	0.96	2	LT 790		p. 258	M0001573

CUTTERS ADKT

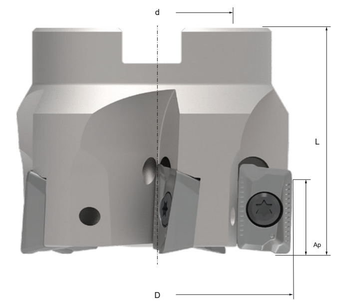


END MILL - ADKT 1505

DESIGNATION	D	d	L	L1	Ap	Z	α	CATALOG #
LT 790 W-W-D025/2*	25	25	100	44	15	2	5.0	M2001613
LT 790 W-W-D032/3*	32	32	110	50	15	3	3.0	M2001503

*On Request

SCREW M2000597
KEY M2000602



SHELL MILL - ADKT 1505

DESIGNATION	D	d	L	Ap	Z	α	CATALOG #
LT 790 M-W-D040/4*	40	16	40	15	4	2.5	M2001615
LT 790 M-W-D050/5*	50	22	40	15	5	2.2	M2001504
LT 790 M-W-D063/6*	63	22	40	15	6	1.8	M2001616
LT 790 M-W-D080/7*	80	27	50	15	7	1.4	M2001617

*On Request

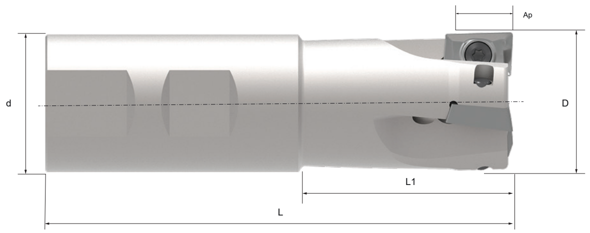
SCREW M2000597
KEY M2000602

L D M T

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
LDMT 1504 PDSR	LT 30	0.74	2	LT 770		p. 277	M0001772

CUTTERS LDMT



END MILL - LDMT 1504

DESIGNATION	D	d	L	L1	Ap	Z	α	CATALOG #
LT 770 W-W-D025/2*	25	25	100	44	15	2	5	M2001822
LT 770 W-W-D032/3*	32	35	110	50	15	3	3	M2001823
LT 770 W-W-D040/4*	40	32	115	45	15	4	2.5	M2001824

*On Request

SCREW M2001418
KEY M2000602

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

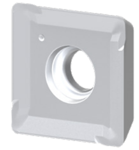
COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

S P M T

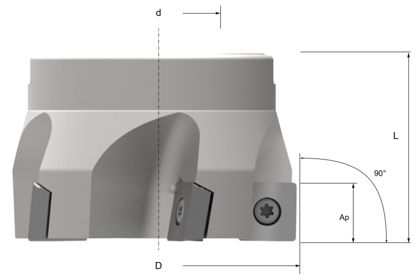


MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SPMT 12T308	LT 3000	0.80	4	LT 710		p. 304	M0003420

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SPMT 12T308	LT 30	0.80	4	LT 710		p. 304	M0001226



SHELL MILL - SPMT 12T308

DESIGNATION	D	d	L	Ap	Z	CATALOG #
LT 710 M-W-D050/4	50	22	40	10.7	4	M2004927
LT 710 M-W-D063/5	63	22	40	10.7	5	M2004928
LT 710 M-W-D080/7	80	27	50	10.7	7	M2004929
LT 710 M-W-D100/9	100	32	50	10.7	9	M2004930
LT 710 M-W-D125/11	125	40	63	10.7	11	M2004931

SCREW M2001418
KEY M2000602

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

T P K N

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
TPKN 1603 PDTR	LT 3000	1.2	3	-		p. 306	M0004040
TPKN 2204 PDTR	LT 3000	1.2	3	-		p. 306	M0004041

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
TPKN 1603 PDTR	LT 30	1.2	3	-		p. 306	M0000051
TPKN 2204 PDTR	LT 30	1.2	3	-		p. 306	M0000052

T P K R

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
TPKR 1603 PDTR	LT 3000	1.20	3	-		p. 307	M0004042
TPKR 2204 PDTR	LT 3000	1.20	3	-		p. 308	M0004043

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
TPKR 1603 PDTR	LT 30	1.20	3	-		p. 307	M0000053
TPKR 2204 PDTR	LT 30	1.20	3	-		p. 308	M0000983

MATERIAL GROUP

STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

COOLANT

p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION

p. 366 - 376

MILLING

T P U N

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
TPUN 160308	LT 3000	0.80	3	-		p. 309	M0004044

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
TPUN 160308	LT 30	0.80	3	-		p. 309	M0000054

MATERIAL GROUP

STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

COOLANT

p. 357

ORDERING EXAMPLE

QUANTITY 10 PIECES
DESIGNATION + GRADE APKT 060204 PDTR LT 3000
CATALOG NUMBER M0004026

TECHNICAL SECTION

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A O M T

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
AOMT 123608 PETR	LT 3000	0.70	2	-		p. 259	M0002210

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
AOMT 123608 PETR	LT 30	0.70	2	-		p. 259	M0001640

A P M T

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
APMT 0903 PDTR	LT 3000	0.40	2	-		p. 263	M0004161
APMT 1135 PDTR	LT 3000	0.70	2	-		p. 274	M0002216
APMT 1604 PDTR	LT 3000	0.66	2	-		p. 275	M0002183
APMT 160408 PDTR	LT 3000	0.70	2	-		p. 275	M0002218

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
APMT 0903 PDTR	LT 30	0.40	2	-		p. 263	M0000663
APMT 1135 PDTR	LT 30	0.70	2	-		p. 274	M0001133
APMT 1604 PDTR	LT 30	0.66	2	-		p. 275	M0001134
APMT 160408 PDTR	LT 30	0.70	2	-		p. 275	M0001733

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

HIGH FEED MILLING

SOLUTIONS FOR RAPID MATERIAL REMOVAL

BOOST PRODUCTIVITY, CUT COSTS

Using a shallow depth of cut with a small approach angle ensures the cutting forces are directed towards the machine spindle in the axial direction, which results in greater tool stability.

- More stable cut (less vibrations)
- Excellent metal removal rate
- Potential increase in feed rates up to 10 times the normal rates

As a leading company in milling operations, Lamina is continually expanding its High Feed line. From diameter 3mm to 80mm, we offer the solution to increase productivity in a wide variety of milling applications and workpiece materials.

HIGH FEED SOLID CARBIDE END MILLS AVAILABLE. SEE PAGE 197

S D K W

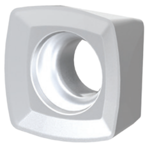
MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SDKW 0904-HF	LT 3130	2.0	4	LT 902		p. 321	M0004482
SDKW 1205-HF	LT 3130	2.5	4	LT 903		p. 321	M0004483

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SDKW 0904-HF	LT 3000	2.0	4	LT 902		p. 291	M0004263
SDKW 1205-HF	LT 3000	2.5	4	LT 903		p. 291	M0004224

S D K X



MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SDKX 0904-HF	LT 3130	2.0	4	LT 902		p. 320	M0004484
SDKX 1205-HF	LT 3130	2.5	4	LT 903		p. 320	M0004485

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SDKX 0904-HF	LT 3000	2.0	4	LT 902		p. 292	M0003412
SDKX 1205-HF	LT 3000	2.5	4	LT 903		p. 293	M0003413

MATERIAL GROUP

- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT

p. 357

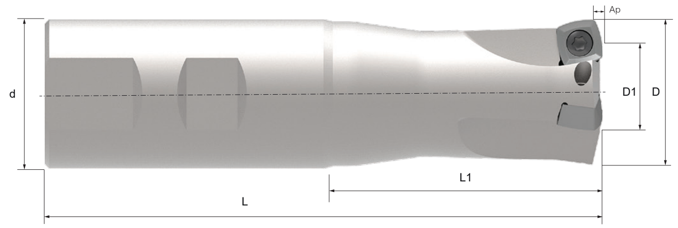
ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION

p. 366 - 376

CUTTERS SDKX / SDKW



END MILL - SDKW 0904-HF / SDKX 0904-HF

DESIGNATION	D	D1	d	L	L1	Ap	Z	α	CATALOG #
LT 902 W-W-D025/2	25	9.6	25	120	60	1.5	2	2	M2003351
LT 902 WL-W-D025/2	25	9.6	25	200	60	1.5	2	2	M2003350
LT 902 W-W-D032/3	32	16.6	32	120	60	1.5	3	2	M2003353
LT 902 WL-W-D032/3	32	16.6	32	200	60	1.5	3	2	M2003352

SCREW	M2001420
KEY	M2000602

END MILL - SDKW 1205-HF / SDKX 1205 HF

DESIGNATION	D	D1	d	L	L1	Ap	Z	α	CATALOG #
LT 903 W-W-D032/2	32	11.0	32	120	60	2	2	2	M2003366
LT 903 WL-W-D032/2	32	11.0	32	200	60	2	2	2	M2003365

SCREW	M2000597
KEY	M2000602

XPKT

MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
XPKT 0602-HF	LT 3130	1.20	2	LT 910		p. 310	M0005548

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
XPKT 0602-HF	LT 3000	1.20	2	LT 910		p. 261	M0005549

XPKW

MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
XPKW 0602-HF	LT 3130	1.20*	2	LT 910		p. 311	M0005544

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
XPKW 0602-HF	LT 3000	1.20	2	LT 910		p. 273	M0005545

* XPKT, XPKW and cutter family LT 910 Available Q4 2019

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

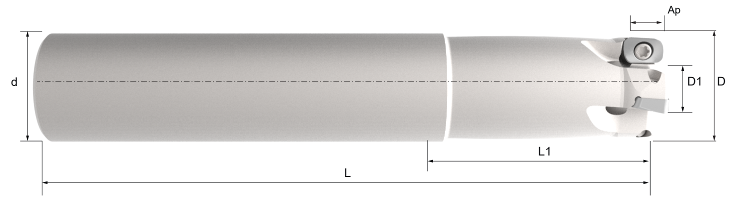
COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

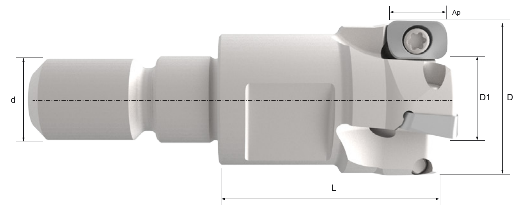
CUTTERS XPKT / XPKW



END MILL - XPKT 0602-HF** / XPKW 0602-HF**

DESIGNATION	D	D1	d	L	L1	Ap	Z	α°	CATALOG #
LT 910 C-W-D010/2	10	4.7	10	72	16	0.5	2	3.25	M2005574
LT 910 C-W-D012/3	12	6.7	12	80	26	0.5	3	2.50	M2005573
LT 910 CL-W-D012/3	12	6.7	10	120	13.5	0.5	3	2.50	M2005568
LT 910 C-W-D016/4	16	10.7	16	90	32	0.5	4	2.00	M2005572
LT 910 CL-W-D016/3	16	10.7	14	160	13.5	0.5	3	2.00	M2005583
LT 910 C-W-D020/5	20	14.7	20	100	40	0.5	5	1.25	M2005571
LT 910 CL-W-D020/4	20	14.7	18	200	13.5	0.5	4	1.25	M2005581
LT 910 C-W-D025/7	25	19.7	20	120	40	0.5	4	0.90	M2005570
LT 910 CL-W-D025/6	25	19.7	20	220	15	0.5	4	0.90	M2005580

SCREW	M2001640
SCREW DRIVER HANDLE	M2002922
PRESET ADAPTER 0.4NM	M2002923
TORX PLUS BIT	M2003064



SCREW COUPLING - XPKT 0602-HF** / XPKW 0602-HF**

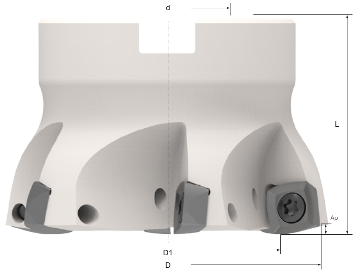
DESIGNATION	D	D1	d	L1	Ap	Z	α HF	CATALOG #
LT 910 S-W-D010/2	10	4.7	M6	19	0.5	2	3.250	M2005578
LT 910 S-W-D012/3	12	6.7	M6	19	0.5	3	2.50	M2005577
LT 910 S-W-D016/4	16	10.7	M8	22	0.5	4	2.00	M2005576
LT 910 S-W-D020/5	20	14.7	M10	25	0.5	5	1.25	M2005559
LT 910 S-W-D025/7	25	19.7	M12	25	0.5	7	0.90	M2005558
LT 910 S-W-D032/8	32	26.7	M16	30	0.5	8	0.70	M2005556

SCREW	M2001640
SCREW DRIVER HANDLE	M2002922
PRESET ADAPTER 0.4NM	M2002923
TORX PLUS BIT	M2003064

* XPKT, XPKW and cutter family LT 910 Available Q4 2019

** Due to the small size of these inserts, using a pre-set torque screw driver (0.4Nm) at all times is recommended. It is also recommended that during mounting, the insert should be held in place with a finger.

CUTTERS SDKX / SDKW



SHELL MILL - SDKX 0904-HF / SDKW 0904-HF

DESIGNATION	D	D1	d	L	Ap	Z	α	CATALOG #
LT 902 M-W-D040/5	40	24.6	16	40	1.5	5	0.8	M2003341
LT 902 M-W-D042/5	42	26.6	16	40	1.5	5	0.8	M2003342
LT 902 M-W-D050/6	50	34.6	22	40	1.5	6	0.7	M2003343
LT 902 M-W-D052/6	52	36.6	22	40	1.5	6	0.7	M2003344
LT 902 M-W-D063/6	63	47.6	22	40	1.5	6	0.6	M2003345
LT 902 M-W-D066/6	66	50.6	22	40	1.5	6	0.6	M2003346

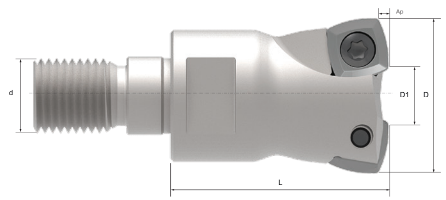
SCREW M2001420
KEY M2000602

SHELL MILL - SDKX 1205-HF / SDKW 1205-HF

DESIGNATION	D	D1	d	L	Ap	Z	α	CATALOG #
LT 903 M-W-D050/4	50	29.0	22	40	2	4	0.8	M2003661
LT 903 M-W-D050/5	50	29.0	22	40	2	5	0.8	M2003357
LT 903 M-W-D052/5	52	31.0	22	40	2	5	0.8	M2003358
LT 903 M-W-D063/5	63	42.0	22	40	2	5	0.6	M2003662
LT 903 M-W-D063/6	63	42.0	22	40	2	6	0.6	M2003360
LT 903 M-W-D066/6	66	45.0	22	40	2	6	0.6	M2003361
LT 903 M-W-D066/6-D27	66	45.0	27	40	2	6	0.6	M2004168
LT 903 M-W-D080/6	80	59.0	27	50	2	6	0.4	M2003663
LT 903 M-W-D080/8	80	59.0	27	50	2	8	0.4	M2003452

SCREW M2000597
KEY M2000602

CUTTERS SDKX / SDKW



SCREW COUPLING - SDKX 0904-HF / SDKW 0904-HF

DESIGNATION	D	D1	d	L1	Ap	Z	α	CATALOG #
LT 902 S-W-D025/2	25	9.6	M12	35	1.5	2	2.0	M2003347
LT 902 S-W-D032/3	32	16.6	M16	35	1.5	3	1.5	M2003348
LT 902 S-W-D035/4	35	19.6	M16	35	1.5	4	0.8	M2003349

SCREW M2001420
KEY M2000602

SCREW COUPLING - SDKX 1205-HF / SDKW 1205-HF

DESIGNATION	D	D1	d	L1	Ap	Z	α	CATALOG #
LT 903 S-W-D032/2	32	11.0	M16	35	2	2	2.0	M2003362
LT 903 S-W-D035/2	35	14.0	M16	35	2	2	1.5	M2003364
LT 903 S-W-D040/4	40	19	M16	40	2	4	0.8	M2003354
LT 903 S-W-D042/4*	42	21	M16	35	2	4	0.8	M2003356

*On Request

SCREW M2000597
KEY M2000602

With Lamina you have the right tool, at the right time, all the time

COPY MILLING

COPY MILLING SOLUTIONS

ADVANTAGES OF ROUND INSERTS

Versatile, used for copying, face milling, ramping, plunging, pocket milling and helical interpolation

STRONGEST INSERT SHAPE

- Reliable even in difficult operations
- Strongest insert shape, no corners to break

ECONOMICAL SOLUTION

- Multiple edges per insert
- 4-8 effective indexes depending on depth of cut

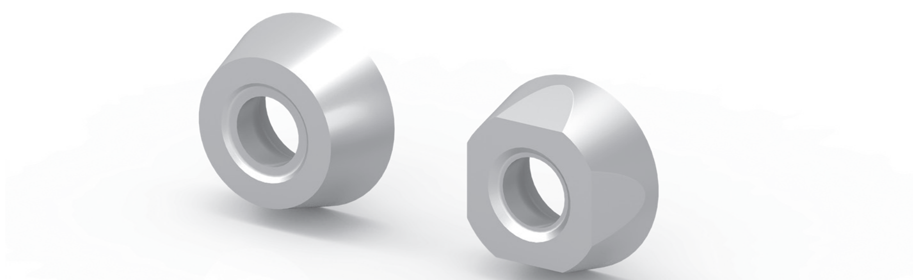
SMOOTH AND STABLE CUT

- Even with long overhangs
- Good distribution of cutting forces

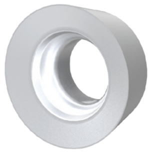
NEW PRODUCTS - RX.. INSERTS WITH LOCATION FLATS

Lamina Technologies introduces three new round insert geometries with indexing flats: RXMT, RXMW and RXMX

- Indexing flats provide for
    - Stable insert mounting
    - Reliable machining of difficult materials in challenging conditions
    - Higher feeds and depths of cut
    - Anti-rotation insert



R D M T



MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RDMT 0602 M0	LT 3000	3	-	LT 060		p. 283	M0003403
RDMT 0702 M0	LT 3000	3.5	-	LT 070		p. 284	M0003404
RDMT 0803 M0	LT 3000	4	-	LT 080		p. 285	M0003405
RDMT 1003 M0	LT 3000	5	-	-		p. 286	M0002224
RDMT 10T3 M0	LT 3000	5	-	LT 100		p. 286	M0002225
RDMT 1204 M0	LT 3000	6	-	LT 120		p. 287	M0002226
RDMT 12T3 M0	LT 3000	6	-	-		p. 287	M0002227
RDMT 1604 M0	LT 3000	8	-	LT 160		p. 288	M0003407

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RDMT 0602 M0	LT 30	3	-	LT 060		p. 283	M0000035
RDMT 0702 M0	LT 30	3.5	-	LT 070		p. 284	M0001882
RDMT 0803 M0	LT 30	4	-	LT 080		p. 285	M0000037
RDMT 1003 M0	LT 30	5	-	-		p. 286	M0001875
RDMT 10T3 M0	LT 30	5	-	LT 100		p. 286	M0000038
RDMT 1204 M0	LT 30	6	-	LT 120		p. 287	M0000039
RDMT 12T3 M0	LT 30	6	-	-		p. 287	M0001876
RDMT 1604 M0	LT 30	8	-	LT 160		p. 288	M0001881

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
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R D M W

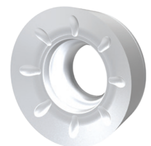
MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RDMW 1003 M0	LT 3000	5	-	-		p. 289	M0004424
RDMW 10T3 M0	LT 3000	5	-	LT 100		p. 289	M0002228
RDMW 1204 M0	LT 3000	6	-	LT 120		p. 289	M0003408
RDMW 12T3 M0	LT 3000	6	-	-		p. 289	M0004425

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RDMW 1003 M0	LT 30	5	-	-		p. 289	M0004452
RDMW 10T3 M0	LT 30	5	-	LT 100		p. 289	M0001550
RDMW 1204 M0	LT 30	6	-	LT 120		p. 289	M0001551
RDMW 12T3 M0	LT 30	6	-	-		p. 289	M0004453

R D M X



MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RDMX 1003 M0	LT 3000	5	-	-		p. 286	M0004426
RDMX 10T3 M0	LT 3000	5	-	LT 100		p. 286	M0003409
RDMX 1204 M0	LT 3000	6	-	LT 120		p. 287	M0003410
RDMX 12T3 M0	LT 3000	6	-	-		p. 287	M0004427

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RDMX 1003 M0	LT 30	5	-	-		p. 286	M0004454
RDMX 10T3 M0	LT 30	5	-	LT 100		p. 286	M0001552
RDMX 1204 M0	LT 30	6	-	LT 120		p. 287	M0001553
RDMX 12T3 M0	LT 30	6	-	-		p. 287	M0004455

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

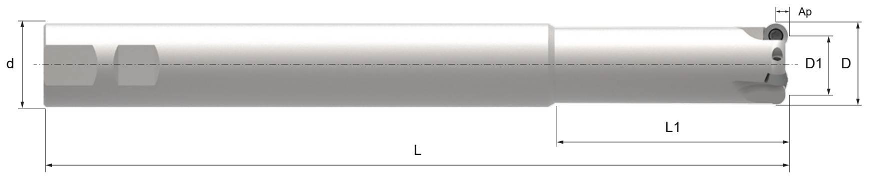
COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

CUTTERS RD..



END MILL - RD.. 0602 M0

DESIGNATION	D	D1	d	L	L1	Ap	Z	α	CATALOG #
LT 060 WL-W D012/2	12	6	16	150	25	3	2	7	M2003321
LT 060 WL-W-D016/2	16	10	16	150	25	3	2	6	M2000676
LT 060 WL-W-D020/3	20	14	20	180	60	3	3	4.5	M2000677
LT 060 WL-W-D025/3	25	19	25	180	80	3	3	4	M2000678

SCREW M2001416
KEY M2002912

END MILL - RD.. 0702 M0

DESIGNATION	D	D1	d	L	L1	Ap	Z	α	CATALOG #
LT 070 WL-W-D016/2	16	9	16	150	25	3.5	2	6	M2003336
LT 070 WL-W-D020/3	20	13	20	180	60	3.5	3	4.5	M2003337
LT 070 WL-W-D025/4	25	18	25	180	60	3.5	4	4	M2003339

SCREW M2001416
KEY M2002912

END MILL - RD.. 0803 M0

DESIGNATION	D	D1	d	L	L1	Ap	Z	α	CATALOG #
LT 080 WL-W D016/2	16	8	16	150	25	4	2	12	M2003322
LT 080 WL-W-D020/2	20	12	20	180	42	5	2	12	M2000679
LT 080 WL-W-D025/3	25	17	25	180	60	5	3	8	M2000680
LT 080 WL-W-D032/3	32	24	32	180	80	5	3	5	M2000681

SCREW M2004402
KEY M2000601

END MILL - RD.. 10T3 M0

DESIGNATION	D	D1	d	L	L1	Ap	Z	α	CATALOG #
LT 100 WL-W-D020/2	20	10	20	180	25	5	2	12	M2000683
LT 100 WL-W-D025/3	25	15	25	180	60	5	3	8	M2000684
LT 100 WL-W-D032/3	32	22	32	180	80	5	3	5	M2000685

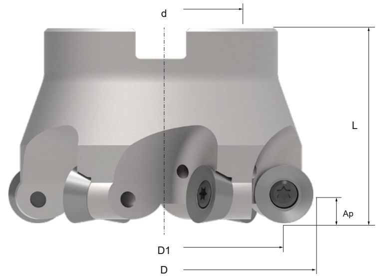
SCREW M2000597
KEY M2000602

END MILL - RD.. 1204 M0

DESIGNATION	D	D1	d	L	L1	Ap	Z	α	CATALOG #
LT 120 WL-W-D032/3	32	20	32	170	60	6	3	5	M2003323
LT 120 WL-W-D040/4	40	28	32	170	110	6	4	7	M2000687

SCREW M2000597
KEY M2000602

CUTTERS RD..



SHELL MILL - RD.. 1204 M0

DESIGNATION	D	D1	d	L	Ap	Z	α	CATALOG #
LT 120 M-W-D040/4	40	28	16	40	6	4	7	M2000691
LT 120 M-W-D050/4	50	38	22	50	6	4	5	M2001780
LT 120 M-W-D063/5	63	51	22	50	6	5	3.5	M2000689
LT 120 M-W-D080/6	80	68	27	50	6	6	2.5	M2000690
LT 120 M-W-D100/7	100	88	32	50	6	7	2	M2000688

SCREW M2000597
KEY M2000602

SHELL MILL - RD.. 1604 M0

DESIGNATION	D	D1	d	L	Ap	Z	α	CATALOG #
LT 160 M-W-D050/4	50	34	22	50	8	4	5	M2003331
LT 160 M-W-D063/5	63	47	22	50	8	5	3.5	M2003332
LT 160 M-W-D080/6	80	64	27	50	8	6	2.5	M2003333
LT 160 M-W-D100/7	100	84	32	50	8	7	2	M2003334
LT 160 M-W-D125/8	125	109	40	63	8	8	1	M2003335

SCREW M2000599
KEY M2000603

R X M T

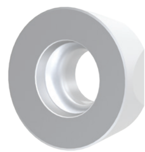
MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RXMT 10T3 M0	LT 3130	5	4	LT 101		p. 317	M0004476
RXMT 1204 M0	LT 3130	6	4	LT 121		p. 317	M0004477

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RXMT 10T3 M0	LT 3000	5	4	LT 101		p. 286	M0004171
RXMT 1204 M0	LT 3000	6	4	LT 121		p. 287	M0004366

R X M W



MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RXMW 10T3 M0	LT 3130	5	4	LT 101		p. 318	M0004478
RXMW 1204 M0	LT 3130	6	4	LT 121		p. 318	M0004479

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RXMW 10T3 M0	LT 3000	5	4	LT 101		p. 289	M0004371
RXMW 1204 M0	LT 3000	6	4	LT 121		p. 289	M0004375

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

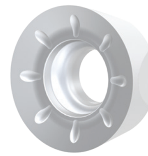
ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

MILLING

R X M X



MAGIA PRO

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RXMX 10T3 M0	LT 3130	5	4	LT 101		p. 319	M0004480
RXMX1204 M0	LT 3130	6	4	LT 121		p. 319	M0004481

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
RXMX 10T3 M0	LT 3000	5	4	LT 101		p. 286	M0004373
RXMX1204 M0	LT 3000	6	4	LT 121		p. 287	M0004377

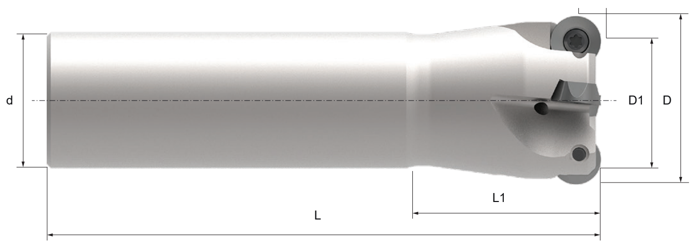
MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE
QUANTITY 10 PIECES
DESIGNATION + GRADE APKT 060204 PDTR LT 3000
CATALOG NUMBER M0004026

TECHNICAL SECTION
p. 366 - 376

CUTTERS RX..



END MILL RX.. - 10T3 M0

DESIGNATION	D	D1	d	L	L1	Ap	Z	α	CATALOG #
LT 101 C-W-D025/3	25	15	25	117	60	5	3	10.0	M2001562
LT 101 C-W-D032/4	32	22	32	131	70	5	4	8.5	M2001563
LT 101 CL-W-D032/3	32	22	32	181	70	5	3	8.5	M2001564
LT 101 W-W-D025/3	25	15	25	92	35	5	3	10.0	M2001565
LT 101 W-W-D032/4	32	22	32	101	40	5	4	8.5	M2001566
LT 101 WL-W-D032/3	32	22	32	181	120	5	3	8.5	M2001567

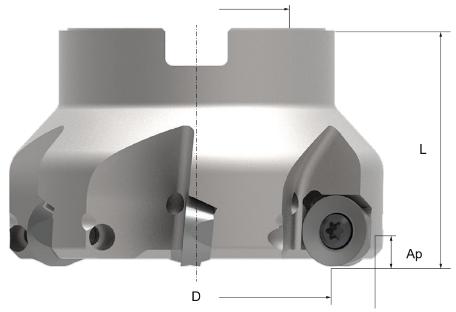
SCREW M2003786
KEY M2000602

END MILL RX.. - 1204 M0

DESIGNATION	D	D1	d	L	L1	Ap	Z	α	CATALOG #
LT 121 C-W-D040/4	40	28.0	40	141	70	6	4	7.5	M2001853
LT 121 W-W-D040/4	40	28.0	40	111	40	6	4	7.5	M2001854

SCREW M2000597
KEY M2000602

CUTTERS RX..



SHELL MILL - RX.. 10T3 M0

DESIGNATION	D	D1	d	L	Ap	Z	α	CATALOG #
LT 101 M-W-D040/5	40	30	16	40	5	5	5.5	M2003442
LT 101 M-W-D050/6	50	40	22	40	5	6	4.0	M2001568
LT 101 M-W-D052/5	52	42	22	40	5	5	4.0	M2001569
LT 101 M-W-D052/6	52	42	22	40	5	6	4.0	M2001570
LT 101 M-W-D063/7	63	53	22	40	5	7	3.0	M2001571
LT 101 M-W-D066/6	66	56	22	40	5	6	2.6	M2001572
LT 101 M-W-D066/7	66	56	22	40	5	7	2.6	M2001573

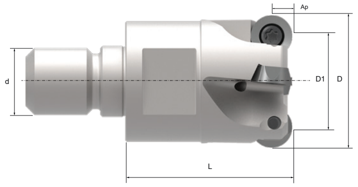
SCREW M2003786
KEY M2000602

SHELL MILL - RX.. 1204 M0

DESIGNATION	D	D1	d	L	Ap	Z	α	CATALOG #
LT 121 M-W-D040/4	40	28.0	16	40	6	4	7.5	M2001855
LT 121 M-W-D050/5	50	38.0	22	40	6	5	5.0	M2001856
LT 121 M-W-D052/5	52	40.0	22	40	6	5	5.0	M2001857
LT 121 M-W-D063/7	63	51.0	22	40	6	7	3.0	M2001858
LT 121 M-W-D066/6	66	54.0	22	40	6	6	3.0	M2001859
LT 121 M-W-D066/7	66	54.0	22	40	6	7	3.0	M2001860
LT 121 M-W-D080/7	80	68.0	27	50	6	7	2.5	M2001861
LT 121 M-W-D080/9	80	68.0	27	50	6	9	2.5	M2001862

SCREW M2000597
KEY M2000602

CUTTERS RX..



SCREW COUPLING - RX.. 10T3 M0

DESIGNATION	D	D1	d	L1	Ap	Z	α	CATALOG #
LT 101 S-W-D025/3	25	15	M12	35	5	3	10.0	M2001574
LT 101 S-W-D032/3	32	22	M16	35	5	3	8.5	M2001575
LT 101 S-W-D032/4	32	22	M16	35	5	4	8.5	M2001576

SCREW M2003786
KEY M2000602

SCREW COUPLING - RX.. 1204 M0

DESIGNATION	D	D1	d	L1	Ap	Z	α	CATALOG #
LT 121 S-W-D040/4	40	28.0	M16	40	6	4	7.5	M2001863

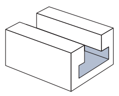
SCREW M2000597
KEY M2000602

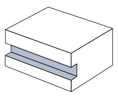
SLOT MILLING

T-SLOTTING WITH MULTI-MAT™

High quality cutters for T-slot milling operations combined with our winning MULTI-MAT™ grade inserts.

- Reduce costs of cutting tools with our SPMT MULTI-MAT™ inserts with four cutting edges per insert
- Approach angle k = 90°
- Soft cutting due to the positive geometry
- Internal coolant supply
- For slotting according to DIN 650 norms





S P M T

MAGIA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SPMT 060304 TN	LT 3000	0.40	4	LT 400		p. 301	M0003416
SPMT 09T308 TN	LT 3000	0.80	4	LT 400		p. 302	M0003417
SPMT 120408 TN	LT 3000	0.80	4	LT 400		p. 303	M0003419

ALPHA

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SPMT 060304 TN	LT 30	0.40	4	LT 400		p. 301	M0003100
SPMT 09T308 TN	LT 30	0.80	4	LT 400		p. 302	M0003063
SPMT 120408 TN	LT 30	0.80	4	LT 400		p. 303	M0003105

MATERIAL GROUP

- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT

p. 357

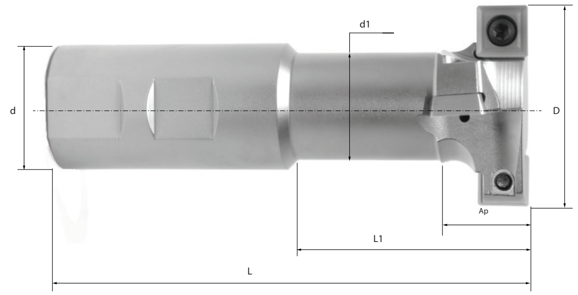
ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION

p. 366 - 376

CUTTERS SPMT - SLOT MILLING



END MILL - SPMT 060304

DESIGNATION	D	d1	d	L	L1	Ap	Z	Z (EFF)	CATALOG #
LT 400-06 W-W-D021/1	21	11 - 12	16	76	26	9	2	1	M2004218
LT 400-06 W-W-D025/2	25	12 - 13	16	82	31	11	4	2	M2004219

SCREW M2002181
KEY M2000601

END MILL - SPMT 09T308

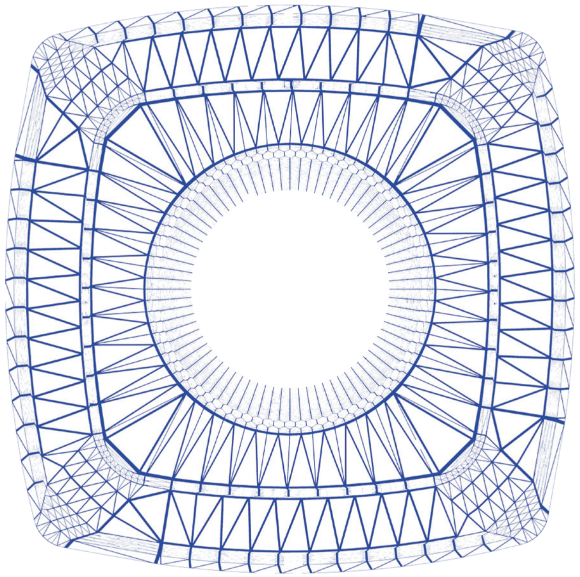
DESIGNATION	D	d1	d	L	L1	Ap	Z	Z (EFF)	CATALOG #
LT 400-09 W-W-D032/2	32	17 - 18	20	88	38	14	4	2	M2004220
LT 400-09 W-W-D040/2	40	21 - 22	25	108	50	17	4	2	M2004221

SCREW M2001418
KEY M2000602

END MILL - SPMT 120408

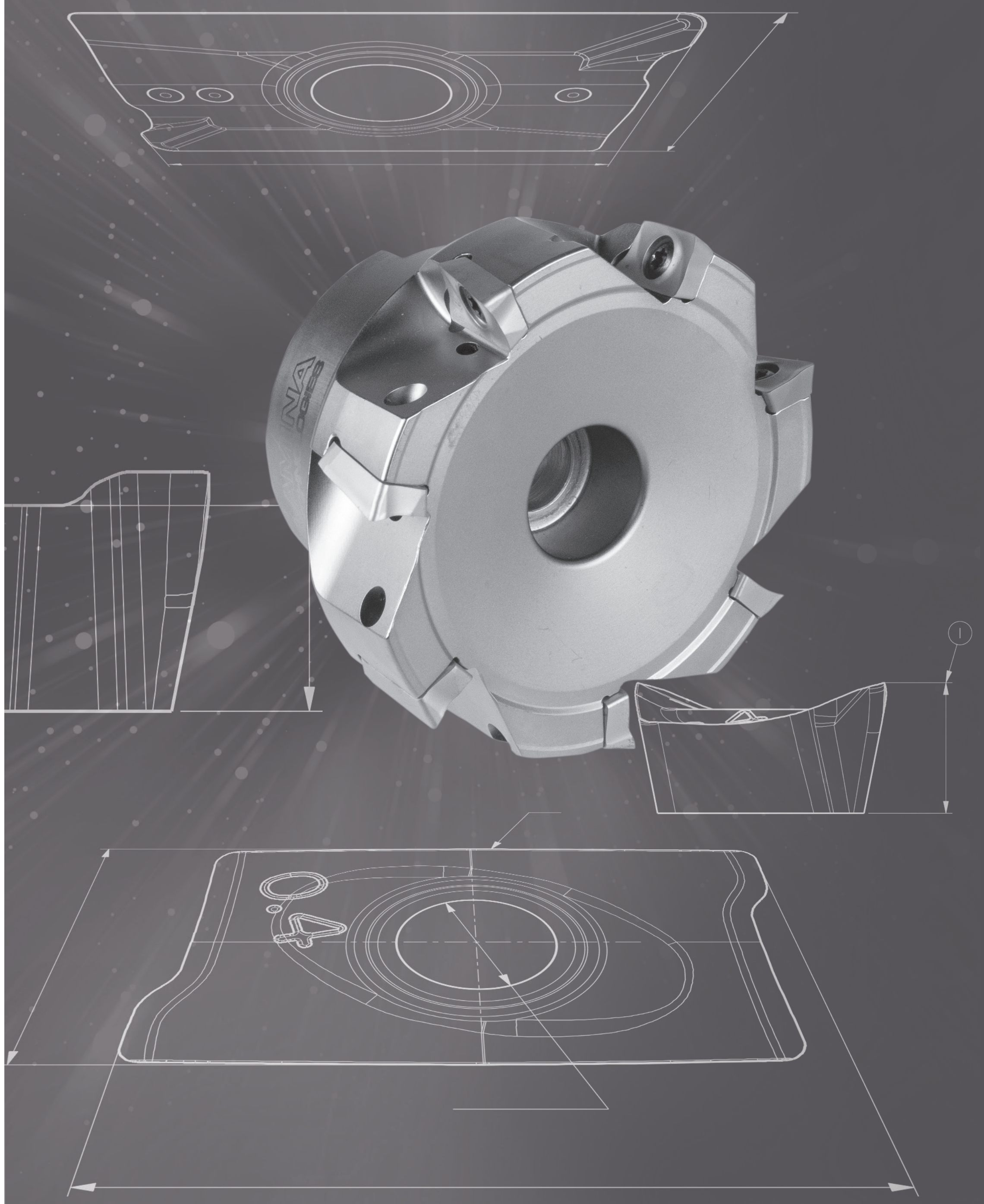
DESIGNATION	D	d1	d	L	L1	Ap	Z	Z (EFF)	CATALOG #
LT 400-12 W-W-D050/2	50	27 - 28	32	120	56	22	4	2	M2004222

SCREW M2000599
KEY M2000603



EFFICIENCY

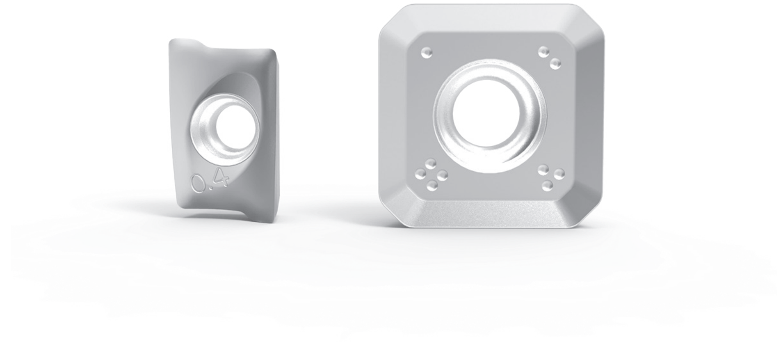
ALU MILLING



LT 05 ALUMINIUM GRADE

Highly positive inserts with a unique coating. Ideal for 90° shoulder milling and 45° face milling of aluminium.

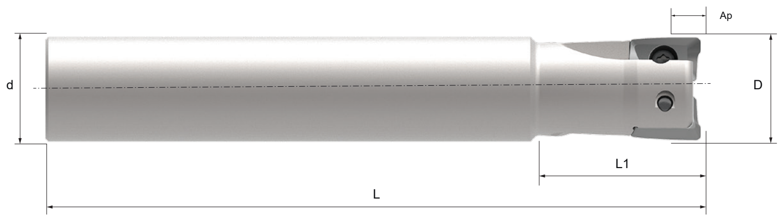
- Dedicated for aluminum and other non-ferrous materials
- Low friction
- High resistance to built up edge
- Extremely long tool life



A P G T

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
APGT 100304 PDER - ALU	LT 05	0.4	2	LT 741		p. 324	M0003089
APGT 160408 PDER - ALU	LT 05	0.8	2	LT 731		P. 324	M0001010

CUTTERS APGT



END MILL - APGT 100304 PDER

DESIGNATION	D	d	L	L1	Ap	Z	α	CATALOG #
LT 741 C-W-D016/2	16	16	100	25	9	2	12	M2002806
LT 741 CL-W-D016/2	16	16	150	35	9	2	12	M2002817
LT 741 C-W-D018/2	18	20	100	30	9	2	12	M2002807
LT 741 C-W-D020/3	20	20	100	30	9	3	7	M2002808
LT 741 CL-W-D020/3	20	20	150	35	9	3	7	M2002818
LT 741 C-W-D022/3	22	20	100	30	9	3	7	M2002809
LT 741 C-W-D025/3	25	25	120	30	9	3	5	M2002810
LT 741 CL-W-D025/4	25	25	200	40	9	4	5	M2002819
LT 741 C-W-D025/4	25	25	120	30	9	4	5	M2002811
LT 741 C-W-D028/4	28	25	120	30	9	4	2	M2002812
LT 741 C-W-D030/4	30	25	120	30	9	4	2	M2002813
LT 741 W-W-D032/5	32	32	120	30	9	5	3	M2002814
LT 741 WL-W-D032/4	32	32	200	40	9	4	3	M2002820

SCREW M2002181
KEY M2000601

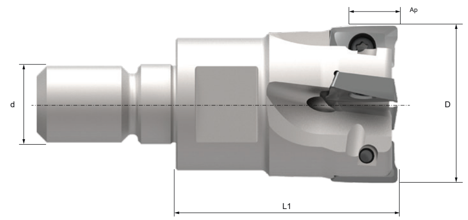
MATERIAL GROUP
STEEL
STAINLESS STEEL
CAST IRON
HIGH TEMP ALLOYS
HARDENED MATERIAL
ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE
QUANTITY 10 PIECES
DESIGNATION + GRADE APKT 060204 PDTR LT 3000
CATALOG NUMBER M0004026

TECHNICAL SECTION
p. 366 - 376

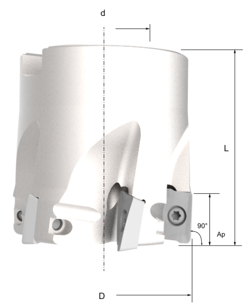
CUTTERS APGT



SCREW COUPLING - APGT 100304 PDER

DESIGNATION	D	d	L1	Ap	Z	α	CATALOG #
LT 741 S-W-D016/2	16	M8	25	9	2	10	M2002962
LT 741 S-W-D020/3	20	M10	30	9	3	7	M2002963
LT 741 S-W-D025/4	25	M12	35	9	4	5	M2002964

SCREW M2002181
KEY M2000601



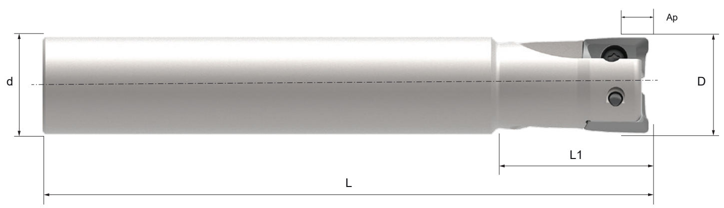
SHELL MILL - APGT 100304 PDER

DESIGNATION	D	d	L	Ap	Z	α	CATALOG #
LT 741 M-W-D040/6	40	16	40	9	6	2.5	M2002798
LT 741 M-W-D050/7	50	22	40	9	7	2.2	M2002799
LT 741 M-W-D063/8	63	22	40	9	8	1.8	M2002800
LT 741 M-W-D080/11*	80	27	50	9	11	1.4	M2002801

*On Request

SCREW M2002181
KEY M2000601

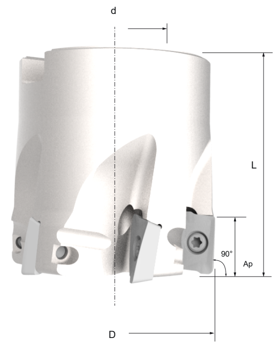
CUTTERS APGT



END MILL - APGT 1604

DESIGNATION	D	d	L	L1	Ap	Z	α	CATALOG #
LT 731 W-W-D025/2	25	25	100	44	15	2	5	M2002966
LT 731 WL-W-D025/2	25	25	220	90	15	2	5	M2002965
LT 731 W-W-D032/3	32	32	110	50	15	3	3	M2002968
LT 731 WL-W-D032/3	32	32	220	90	15	3	3	M2002967
LT 731 W-W-D040/4	40	32	115	50	15	4	2.5	M2002970
LT 731 WL-W-D040/4	40	32	220	90	15	4	2.5	M2002969

SCREW M2000597
KEY M2000602



SHELL MILL - APGT 160408 PDTR

DESIGNATION	D	d	L	Ap	Z	α	CATALOG #
LT 731 M-W-D040/4	40	16	40	15	4	2.5	M2002971
LT 731 M-W-D050/5	50	22	40	15	5	2.2	M2002972
LT 731 M-W-D063/6	63	22	40	15	6	1.8	M2002973
LT 731 M-W-D080/7	80	27	50	15	7	1.4	M2002974
LT 731 M-W-D100/8	100	32	50	15	8	1.1	M2002975
LT 731 M-W-D125/9	125	40	63	15	9	0.8	M2002976
LT 731 M-D-D160/10*	160	40	63	15	10	N/A	M2002977

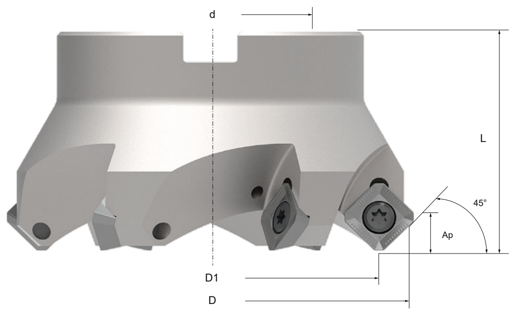
*On Request

SCREW M2000597
KEY M2000602

S E G T

DESIGNATION	GRADE	RADIUS (mm)	CUTTING EDGES	CUTTER LINE	MATERIAL RECOMMENDATION	CUTTING DATA	CATALOG #
SEGT 1204 AFEN - ALU	LT 05	0.84	4	LT 600		p. 324	M0001008

CUTTERS SEGT



SHELL MILL - SEGT 1204 AFEN-ALU

DESIGNATION	D	D1	d	L	Ap	Z	α	CATALOG #
LT 600 M-W-D040/3	53	40	16	40	6	3	10	M2000546
LT 600 M-W-D050/4	63	50	22	48	6	4	8	M2000547
LT 600 M-W-D063/5	76	63	22	48	6	5	6	M2000548
LT 600 M-W-D080/6	93	80	27	50	6	6	4.5	M2000549
LT 600 M-W-D100/6	113	100	32	50	6	6	3.5	M2000550
LT 600 M-W-D125/7	138	125	40	63	6	7	3	M2000551
LT 600 M-D-D160/8	173	160	40	63	6	8	2.2	M2000552

SCREW M2000599
KEY M2000603

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

ORDERING EXAMPLE

QUANTITY	10 PIECES
DESIGNATION + GRADE	APKT 060204 PDTR LT 3000
CATALOG NUMBER	M0004026

TECHNICAL SECTION
p. 366 - 376

MULTI-MAT™
... and life becomes easy

SOLID CARBIDE END MILLS

MAGIA

LT 4000 PREMIUM MULTI-MAT™ GRADE FOR SOLID CARBIDE END MILLS

MAGIA LT 4000 is the latest, state-of-the-art PVD grade using high density plasma to create nano-structured PVD coatings with incredible properties.

With this new PVD technology in combination with our exclusive substrate and edge preparation, MAGIA Solid Carbide delivers increased toughness for the most extreme applications, higher reliability in lower cutting speeds with coolant which results in an extended application range.

Increased tool life due to reduced friction between the coating and the chips, and a harder coating composite that better resists abrasion.

We have achieved unprecedented tool life.

- Next generation MULTI-MAT™ Solid End Mills
- Increased toughness for extended application range
- Longer tool life through new and unique coating composition.
- New and exclusive ultra fine grained coating
- Exclusive edge preparation and pre-coating surface treatment
- Unique substrate

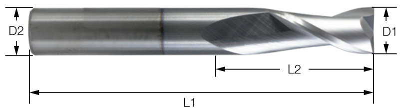
ALPHA

LT 40 EXCELLENT PERFORMANCE AT AN AFFORDABLE PRICE

Our general purpose Alpha line provide value and versatility at an attractive price.

Alpha Line is our standard, general usage product line. Our Alpha LT 40 grade for solid carbide end mills is designed to work in a wide variety of applications and workpiece materials. It is ideal for customers with pricing considerations while also expecting high level performance.

90° Z2



FACE MILLING | SLOTTING | PLUNGING | 2fl EQUAL | 30°

MAGIA 90° 2 FLUTE

DESIGNATION	GRADE	D1	D2	L1	L2	CATALOG #
E90 Z2 D00.2(03) L0.5(038)	LT 4000	0.2	3	38	0.5	M5003531
E90 Z2 D00.3(03) L0.8(038)	LT 4000	0.3	3	38	0.8	M5003532
E90 Z2 D00.4(03) L1.0(038)	LT 4000	0.4	3	38	1.0	M5003533
E90 Z2 D00.5(03) L1.2(038)	LT 4000	0.5	3	38	1.2	M5003534
E90 Z2 D00.6(03) L1.5(038)	LT 4000	0.6	3	38	1.5	M5003535
E90 Z2 D00.8(03) L2.0(038)	LT 4000	0.8	3	38	2	M5003536
E90 Z2 D01.0(03) L3.0(038)	LT 4000	1.0	3	38	3	M5003520
E90 Z2 D01.5(03) L5.0(038)	LT 4000	1.5	3	38	5	M5003537
E90 Z2 D02.0(03) L6.0(038)	LT 4000	2.0	3	38	6	M5003538
E90 Z2 D02.5(03) L7.0(038)	LT 4000	2.5	3	38	7	M5003539
E90 Z2 D03.0(03) L9.0(038)	LT 4000	3.0	3	38	9	M5003540
E90 Z2 D04.0(04) L14.0(050)	LT 4000	4.0	4	50	14	M5003541
E90 Z2 D05.0(05) L16.0(050)	LT 4000	5.0	5	50	16	M5003542
E90 Z2 D06.0(06) L20.0(063)	LT 4000	6.0	6	63	20	M5003543
E90 Z2 D08.0(08) L20.0(063)	LT 4000	8.0	8	63	20	M5003544
E90 Z2 D10.0(10) L22.0(072)	LT 4000	10.0	10	72	22	M5003545
E90 Z2 D12.0(12) L26.0(075)	LT 4000	12.0	12	75	26	M5003546

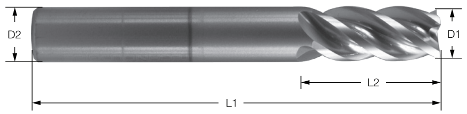
CUTTING SPEED p. 326 | DOC / FEED p. 327 - 338 | TECHNICAL SECTION p. 366 - 376

FACE MILLING | SHOULDER MILLING | SLOTTING | PLUNGING | 2fl EQUAL | 35°

ALPHA 90° 2 FLUTE

DESIGNATION	GRADE	D1	D2	L1	L2	CATALOG #
E90 Z2 D01.0(04) L03.0(050)	LT 40	1	4	50	3	M5005500
E90 Z2 D01.5(04) L05.0(050)	LT 40	1.5	4	50	5	M5005501
E90 Z2 D02.0(04) L05.0(050)	LT 40	2	4	50	5	M5005502
E90 Z2 D02.5(04) L08.0(050)	LT 40	2.5	4	50	8	M5005503
E90 Z2 D03.0(04) L08.0(050)	LT 40	3	4	50	8	M5005504
E90 Z2 D04.0(04) L11.0(050)	LT 40	4	4	50	11	M5005505
E90 Z2 D05.0(06) L13.0(050)	LT 40	5	6	50	13	M5005506
E90 Z2 D06.0(06) L16.0(050)	LT 40	6	6	50	16	M5005507
E90 Z2 D08.0(08) L20.0(060)	LT 40	8	8	60	20	M5005508
E90 Z2 D10.0(10) L25.0(072)	LT 40	10	10	72	25	M5005509
E90 Z2 D12.0(12) L30.0(075)	LT 40	12	12	75	30	M5005510
E90 Z2 D16.0(16) L40.0(100)	LT 40	16	16	100	40	M5005511

90° Z3



FACE MILLING | SHOULDER MILLING | SLOTTING | PLUNGING | 3fl EQUAL | 40°

MAGIA 90° 3 FLUTE

DESIGNATION	GRADES	D1	D2	L1	L2	CATALOG #
E90 Z3 D03.0(06) L8.0(050)	LT 4000	3.0	6	50	8	M5003548
E90 Z3 D04.0(06) L11.0(050)	LT 4000	4.0	6	50	11	M5003549
E90 Z3 D05.0(06) L13.0(050)	LT 4000	5.0	6	50	13	M5003550
E90 Z3 D06.0(06) L16.0(050)	LT 4000	6.0	6	50	16	M5003551
E90 Z3 D08.0(08) L20.0(060)	LT 4000	8.0	8	60	20	M5003552
E90 Z3 D10.0(10) L25.0(072)	LT 4000	10.0	10	72	25	M5003553
E90 Z3 D12.0(12) L30.0(075)	LT 4000	12.0	12	75	30	M5003554

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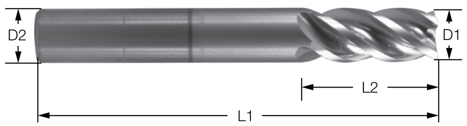
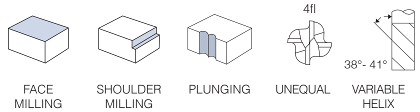
90° Z4



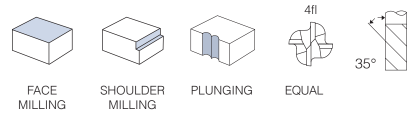


MAGIA

90° 4 FLUTE

DESIGNATION	GRADE	D1	D2	L1	L2	CATALOG #
E90 Z4 D01.0(04) L03.0(050)	LT 4000	1.0	4	50	3	M5003568
E90 Z4 D01.5(04) L05.0(050)	LT 4000	1.5	4	50	5	M5003569
E90 Z4 D02.0(04) L06.0(050)	LT 4000	2.0	4	50	6	M5003570
E90 Z4 D02.5(04) L08.0(050)	LT 4000	2.5	4	50	8	M5003571
E90 Z4 D03.0(06) L08.0(050)	LT 4000	3.0	6	50	8	M5003572
E90 Z4 D04.0(06) L11.0(050)	LT 4000	4.0	6	50	11	M5003573
E90 Z4 D05.0(06) L13.0(050)	LT 4000	5.0	6	50	13	M5003574
E90 Z4 D06.0(06) L16.0(050)	LT 4000	6.0	6	50	16	M5003575
E90 Z4 D08.0(08) L20.0(060)	LT 4000	8.0	8	60	20	M5003576
E90 Z4 D10.0(10) L22.0(072)	LT 4000	10.0	10	72	22	M5003577
E90 Z4 D12.0(12) L26.0(075)	LT 4000	12.0	12	75	26	M5003578
E90 Z4 D16.0(16) L38.0(100)	LT 4000	16.0	16	100	38	M5003579

CUTTING SPEED p. 326 | DOC / FEED p. 327 - 338 | TECHNICAL SECTION p. 366 - 376



ALPHA

90° 4 FLUTE, SHORT

DESIGNATION	GRADE	D1	D2	L1	L2	CATALOG #
E90 Z4 D01.0(04) L03.0(050)	LT 40	1	4	50	3	M5005512
E90 Z4 D01.5(04) L05.0(050)	LT 40	1.5	4	50	5	M5005513
E90 Z4 D02.0(04) L06.0(050)	LT 40	2	4	50	6	M5005514
E90 Z4 D02.5(04) L08.0(050)	LT 40	2.5	4	50	8	M5005515
E90 Z4 D03.0(04) L08.0(050)	LT 40	3	4	50	8	M5005516
E90 Z4 D04.0(04) L11.0(050)	LT 40	4	4	50	11	M5005517
E90 Z4 D05.0(06) L13.0(050)	LT 40	5	6	50	13	M5005518
E90 Z4 D06.0(06) L16.0(050)	LT 40	6	6	50	16	M5005519
E90 Z4 D08.0(08) L20.0(060)	LT 40	8	8	60	20	M5005520
E90 Z4 D10.0(10) L25.0(072)	LT 40	10	10	72	25	M5005521
E90 Z4 D12.0(12) L30.0(075)	LT 40	12	12	75	30	M5005522
E90 Z4 D16.0(16) L40.0(100)	LT 40	16	16	100	40	M5005523

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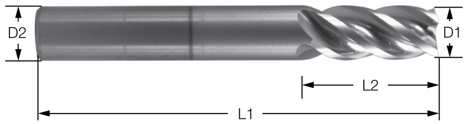
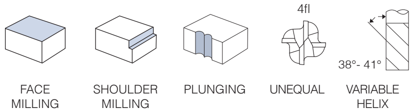
90° Z4 L





MAGIA

90° 4 FLUTE, LONG

DESIGNATION	GRADE	D1	D2	L1	L2	CATALOG #
E90 Z4 D03.0(06) L12.0(050)	LT 4000	3.0	6	50	12	M5003559
E90 Z4 D04.0(06) L16.0(055)	LT 4000	4.0	6	55	16	M5003560
E90 Z4 D05.0(06) L20.0(060)	LT 4000	5.0	6	60	20	M5003561
E90 Z4 D06.0(06) L24.0(065)	LT 4000	6.0	6	65	24	M5003562
E90 Z4 D08.0(08) L32.0(090)	LT 4000	8.0	8	90	32	M5003563
E90 Z4 D10.0(10) L40.0(100)	LT 4000	10.0	10	100	40	M5003564
E90 Z4 D12.0(12) L48.0(110)	LT 4000	12.0	12	110	48	M5003565
E90 Z4 D16.0(16) L64.0(160)	LT 4000	16.0	16	160	64	M5003566

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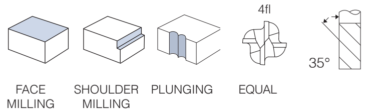

ALPHA

90° 4 FLUTE, LONG

DESIGNATION	GRADE	D1	D2	L1	L2	CATALOG #
E90 Z4 D03.0(06) L12.0(070)	LT 40	3	6	70	12	M5005524
E90 Z4 D04.0(06) L15.0(070)	LT 40	4	6	70	15	M5005525
E90 Z4 D05.0(06) L20.0(080)	LT 40	5	6	80	20	M5005526
E90 Z4 D06.0(06) L20.0(080)	LT 40	6	6	80	20	M5005527
E90 Z4 D08.0(08) L25.0(100)	LT 40	8	8	100	25	M5005528
E90 Z4 D10.0(10) L30.0(100)	LT 40	10	10	100	30	M5005529
E90 Z4 D12.0(12) L40.0(110)	LT 40	12	12	110	40	M5005530
E90 Z4 D16.0(16) L50.0(140)	LT 40	16	16	140	50	M5005531

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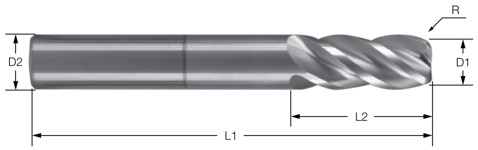
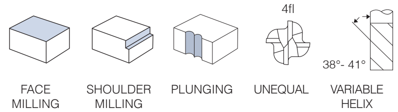
90° Z4 R





MAGIA

90° 4 FLUTE WITH RADIUS

DESIGNATION	GRADE	D1	D2	L1	L2	R	CATALOG #
E90 Z4 D03.0(06) L08.0(050) R0.5	LT 4000	3	6	50	8	0.5	M5003614
E90 Z4 D04.0(06) L11.0(050) R0.5	LT 4000	4	6	50	11	0.5	M5003615
E90 Z4 D05.0(06) L13.0(050) R0.5	LT 4000	5	6	50	13	0.5	M5003616
E90 Z4 D06.0(06) L16.0(050) R0.5	LT 4000	6	6	50	16	0.5	M5003617
E90 Z4 D08.0(08) L20.0(060) R0.5	LT 4000	8	8	60	20	0.5	M5003618
E90 Z4 D10.0(10) L22.0(072) R0.5	LT 4000	10	10	72	22	0.5	M5003619
E90 Z4 D12.0(12) L26.0(075) R0.5	LT 4000	12	12	75	26	0.5	M5003620
E90 Z4 D03.0(06) L08.0(050) R1.0	LT 4000	3	6	50	8	1.0	M5003623
E90 Z4 D04.0(06) L11.0(050) R1.0	LT 4000	4	6	50	11	1.0	M5003624
E90 Z4 D05.0(06) L13.0(050) R1.0	LT 4000	5	6	50	13	1.0	M5003625
E90 Z4 D06.0(06) L16.0(050) R1.0	LT 4000	6	6	50	16	1.0	M5003626
E90 Z4 D08.0(08) L20.0(060) R1.0	LT 4000	8	8	60	20	1.0	M5003627
E90 Z4 D10.0(10) L22.0(072) R1.0	LT 4000	10	10	72	22	1.0	M5003628
E90 Z4 D12.0(12) L26.0(075) R1.0	LT 4000	12	12	75	26	1.0	M5003629
E90 Z4 D06.0(06) L16.0(050) R2.0	LT 4000	6	6	50	16	2.0	M5003632
E90 Z4 D08.0(08) L20.0(060) R2.0	LT 4000	8	8	60	20	2.0	M5003633
E90 Z4 D10.0(10) L22.0(072) R2.0	LT 4000	10	10	72	22	2.0	M5003634
E90 Z4 D12.0(12) L26.0(075) R2.0	LT 4000	12	12	75	26	2.0	M5003635

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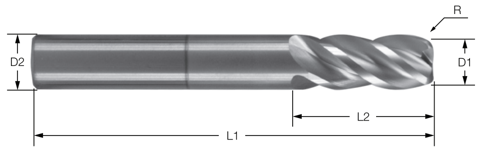
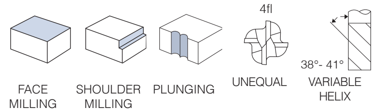
90° Z4 RL





MAGIA

90° 4 FLUTE WITH RADIUS, LONG

DESIGNATION	GRADE	D1	D2	L1	L2	R	CATALOG #
E90 Z4 D08.0(08) L32.0(090) R0.5	LT 4000	8	8	90	32	0.5	M5003638
E90 Z4 D10.0(10) L40.0(100) R0.5	LT 4000	10	10	100	40	0.5	M5003639
E90 Z4 D12.0(12) L48.0(110) R0.5	LT 4000	12	12	110	48	0.5	M5003640

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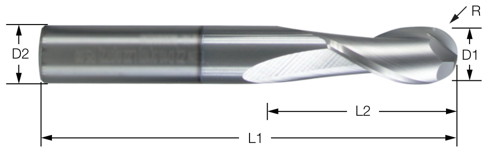
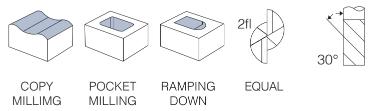
SOLID END MILLS

EBN





MAGIA

BALL NOSE, 2 FLUTE

DESIGNATION	GRADE	D1	D2	L1	L2	R	CATALOG #
EBN Z2 D01.0(03) L03.0(038) R0.50	LT 4000	1	3	38	3	0.50	M5003587
EBN Z2 D01.5(03) L05.0(038) R0.75	LT 4000	1.5	3	38	5	0.75	M5003588
EBN Z2 D02.0(03) L06.0(038) R1.00	LT 4000	2	3	38	6	1.00	M5003589
EBN Z2 D02.5(03) L07.0(038) R1.25	LT 4000	2.5	3	38	7	1.25	M5003590
EBN Z2 D03.0(03) L09.0(038) R1.50	LT 4000	3	3	38	9	1.50	M5003591
EBN Z2 D04.0(04) L14.0(050) R2.00	LT 4000	4	4	50	14	2.00	M5003592
EBN Z2 D05.0(05) L16.0(050) R2.50	LT 4000	5	5	50	16	2.50	M5003593
EBN Z2 D06.0(06) L20.0(063) R3.00	LT 4000	6	6	63	20	3.00	M5003594
EBN Z2 D08.0(08) L20.0(063) R4.00	LT 4000	8	8	63	20	4.00	M5003595
EBN Z2 D10.0(10) L22.0(072) R5.00	LT 4000	10	10	72	22	5.00	M5003596
EBN Z2 D12.0(12) L26.0(075) R6.00	LT 4000	12	12	75	26	6.00	M5003597

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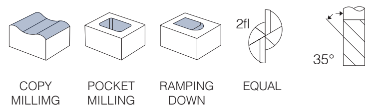

ALPHA

BALL NOSE, 2 FLUTE

DESIGNATION	GRADE	D1	D2	L1	L2	R	CATALOG #
EBN Z2 D01.0(04) L02.0(050)	LT 40	1	4	50	2	0.50	M5005532
EBN Z2 D01.5(04) L03.0(050)	LT 40	1.5	4	50	3	0.75	M5005533
EBN Z2 D02.0(04) L04.0(050)	LT 40	2	4	50	4	1.00	M5005534
EBN Z2 D02.5(04) L05.0(050)	LT 40	2.5	4	50	5	1.25	M5005535
EBN Z2 D03.0(04) L06.0(050)	LT 40	3	4	50	6	1.50	M5005536
EBN Z2 D04.0(04) L08.0(050)	LT 40	4	4	50	8	2.00	M5005537
EBN Z2 D05.0(06) L10.0(050)	LT 40	5	6	50	10	2.50	M5005538
EBN Z2 D06.0(06) L12.0(050)	LT 40	6	6	50	12	3.00	M5005539
EBN Z2 D08.0(08) L14.0(060)	LT 40	8	8	60	14	4.00	M5005540
EBN Z2 D10.0(10) L18.0(072)	LT 40	10	10	72	18	5.00	M5005541
EBN Z2 D12.0(12) L22.0(075)	LT 40	12	12	75	22	6.00	M5005542
EBN Z2 D16.0(16) L30.0(100)	LT 40	16	16	100	30	8.00	M5005543

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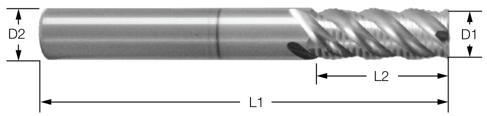
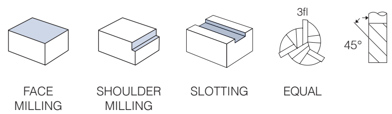
ERO Z3



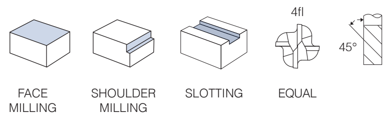


MAGIA

ROUGHER, 3 FLUTE

DESIGNATION	GRADE	D1	D2	L1	L2	CATALOG #
ERO Z3 D04.0(06) L11.0(057)	LT 4000	4	6	57	11	M5003607

ERO Z4



MAGIA

ROUGHER, 4 FLUTE

DESIGNATION	GRADE	D1	D2	L1	L2	CATALOG #
ERO Z4 D05.0(06) L13.0(057)	LT 4000	5	6	57	13	M5003608
ERO Z4 D06.0(06) L13.0(057)	LT 4000	6	6	57	13	M5003609
ERO Z4 D08.0(08) L19.0(063)	LT 4000	8	8	63	19	M5003610
ERO Z4 D10.0(10) L22.0(072)	LT 4000	10	10	72	22	M5003611
ERO Z4 D12.0(12) L26.0(083)	LT 4000	12	12	83	26	M5003612

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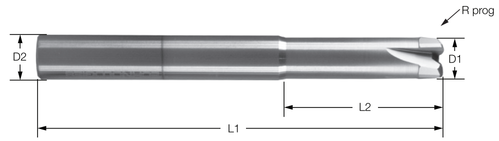
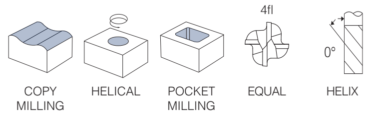
EHF Z4





MAGIA

HIGH FEED, 4 FLUTE

DESIGNATION	GRADE	D1	D2	L1	L2	CATALOG #
EHF Z4 D03.0(06) L02.0(070) R0.37	LT 4000	3	6	70	12	M5003600
EHF Z4 D04.0(06) L02.0(070) R0.47	LT 4000	4	6	70	16	M5003601
EHF Z4 D05.0(06) L02.5(070) R0.60	LT 4000	5	6	70	20	M5003602
EHF Z4 D06.0(06) L03.0(070) R0.73	LT 4000	6	6	70	25	M5003603
EHF Z4 D08.0(08) L04.0(080) R0.98	LT 4000	8	8	80	30	M5003604
EHF Z4 D10.0(10) L05.0(090) R1.23	LT 4000	10	10	90	35	M5003605
EHF Z4 D12.0(12) L06.0(100) R1.65	LT 4000	12	12	100	40	M5003606

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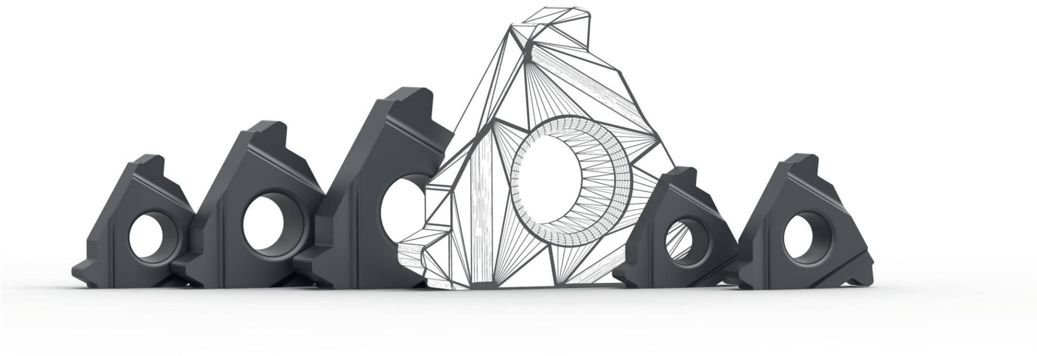


MADE IN SWITZERLAND

THREAD MILLING

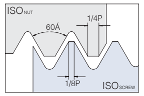
THREAD MILLING

Thread milling is the recommended method anytime producing threads involves variation of dimensions, difficult materials, weak set-ups, slim walls, tap breakage risks, expensive components, tiny tolerances, good surface finishing, long overhangs, right or left hand threads and eventual other obstacles.

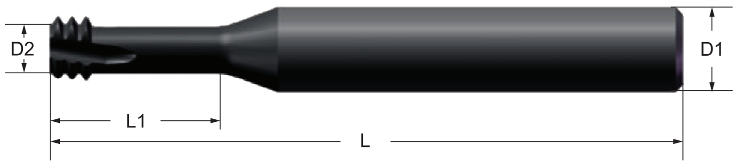
ADVANTAGES OF THREAD MILLING

- Continuous spindle rotation – no need to stop and reverse the spindle when coming out of the hole
- Less spindle maintenance and no need of expensive synchronized tap holders
- Easy machining of difficult materials that produces short and controllable chips and much less cutting forces
- Full bottom threading with precise thread depth control and start position
- Less cutting pressure for thin-walled workpieces - less breakage and deformation risks
- One tool for a variety of thread diameters with the same thread pitch
- One tool for both right and left-hand threads as well as through or blind holes
- Minimized tool inventory, less tooling costs

ISO



ISO 965-1:1999-11
DIN13 : 2005-08



ISO METRIC - INTERNAL MINIATURE TOOL

DESIGNATION	THREAD SIZE	PITCH mm	L	L1	D1	D2	Z	CATALOG #
TMC03012L5 0.35 ISO	M1.6X0.35	0.35	39	5.1	3	1.20	3	TH400001
TMC06015L6 0.4 ISO	M2.0X0.40	0.40	39	6.1	6	1.54	3	TH400019
TMC06019L7 0.45 ISO	M2.5X0.45	0.45	39	7.6	6	1.96	3	TH400016
TMC06024L9 0.5 ISO	M3.0X0.50	0.50	51	9.3	6	2.40	3	TH400013
TMC06031L12 0.7 ISO	M4.0X0.70	0.70	51	12.4	6	3.15	3	TH400004
TMC06040L15 0.8 ISO	M5.0X0.80	0.80	57	15.6	6	4.00	3	TH400010
TMC06047L19 1.0 ISO	M6.0X1.00	1.00	57	19.0	6	4.75	3	TH400007
TMC06059L24 1.25 ISO	M8.0X1.25	1.25	57	24.3	6	5.95	3	TH400022
TMC08079L31 1.5 ISO	M10X1.50	1.50	63	31.0	8	7.90	3	TH400025

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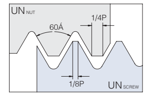
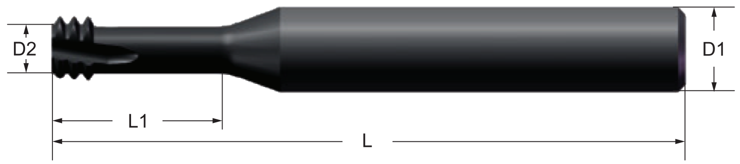
THREAD MILLING

UN



ANSI B1.1-1982



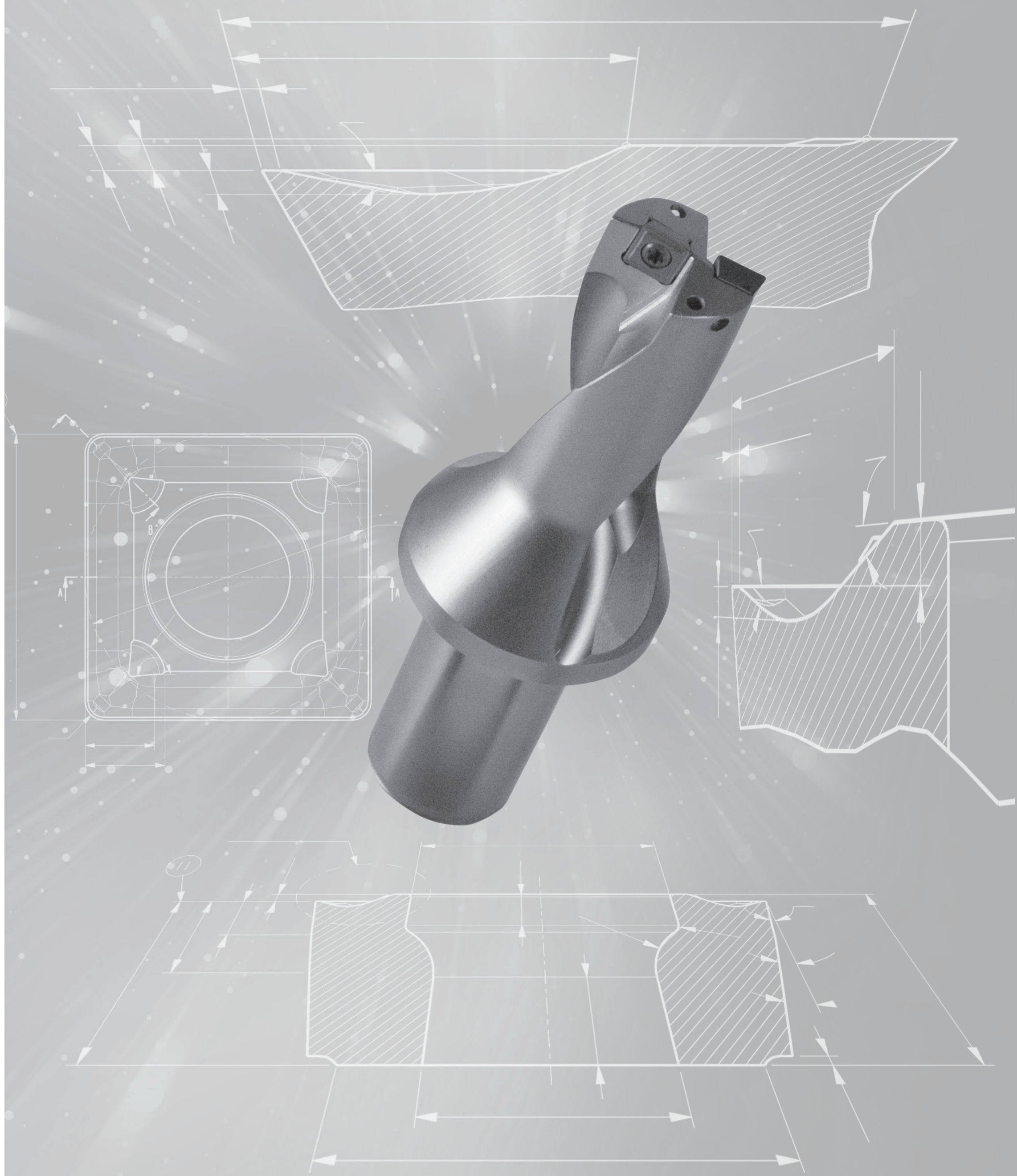
UN - INTERNAL MINIATURE TOOL

DESIGNATION	THREAD SIZE		TPI	L	L1	D1	D2	Z	CATALOG #
	UNC	UNF							
TMC03011L3 80 UN	-	0-80UNF	80	39	3.9	3	1.18	3	TH400052
TMC03014L5 72 UN	-	1-72UNF	72	39	5.8	3	1.44	3	TH400040
TMC03016L6 56 UN	2-56UNC	3-56UNF	56	39	6.8	3	1.66	3	TH400034
TMC06021L8 40 UN	4-40UNC	-	40	51	8.1	6	2.12	3	TH400028
TMC06024L9 40 UN	5-40UNC	6-40UNF	40	51	9.8	6	2.46	3	TH400055
TMC06025L10 32 UN	6-32UNC	-	32	51	10.7	6	2.57	3	TH400031
TMC06032L12 32 UN	8-32UNC	10-32UNF	32	57	12.7	6	3.22	3	TH400037
TMC06048L19 20 UN	1/4-20UNC	7/16-20UNF	20	57	19.4	6	4.85	3	TH400046
TMC06052L19 28 UN	-	1/4-28UNF	28	57	19.3	6	5.20	3	TH400043
TMC08066L24 24 UN	-	5/16-24UNF	24	63	24.2	8	6.65	3	TH400049

CUTTING DATA p. 343 - 344
TECHNICAL SECTION p. 351

We keep your machine with the green light on

DRILLING

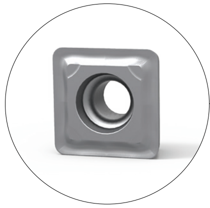


INDEXABLE DRILLING

MULTI-MAT™ indexable drilling solutions for general drilling in a variety of materials.

SPMG MULTI-MAT™ drilling inserts are designed with optimized grade and geometry for high performance in steel, stainless steel, cast iron and hardened metals. They are also suitable for super alloys and aluminum.

MULTI-MAT™ SPMG DRILLING INSERTS

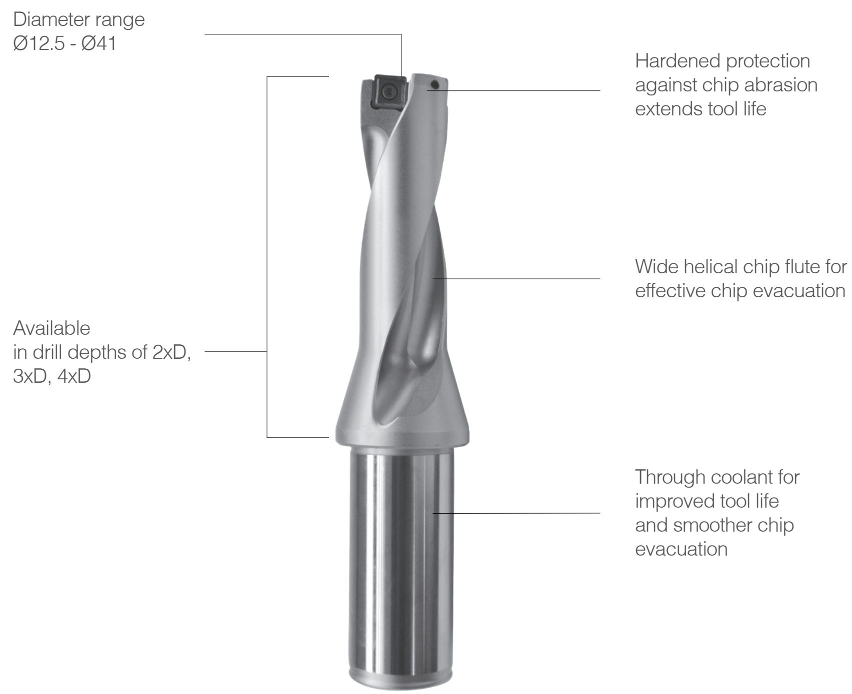


Same insert for both inner and outer pocket

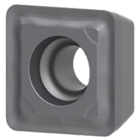
MULTI-MAT™ grade and geometry provide more versatility and reduced stock of unused inserts.

4 cutting edges

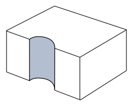
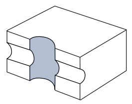
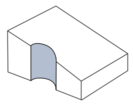
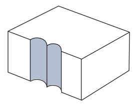
FULL RANGE OF 2X, 3X, & 4X D DRILL BODIES



S P M G



DESIGNATION	GRADE	MATERIAL RECOMMENDATION	L	S	R	CUTTING DATA	CATALOG #
SPMG 050204 NN	LT 30		5.0	2.38	0.40	p.346 - 349	M3003882
SPMG 060204 NN	LT 30		6.0	2.38	0.40	p.346 - 349	M3002913
SPMG 07T308 NN	LT 30		7.94	3.97	0.80	p.346 - 349	M3002914
SPMG 090408 NN	LT 30		9.80	4.30	0.80	p.346 - 349	M3002915
SPMG 110408 NN	LT 30		11.50	4.80	0.80	p. 346 - 349	M3003883

APPLICATION GUIDE			
RECOMMENDED		SUITABLE	
 Interrupted Drilling	 Cross Drilling	 Irregular Surface Drilling	 Interrupted Drilling

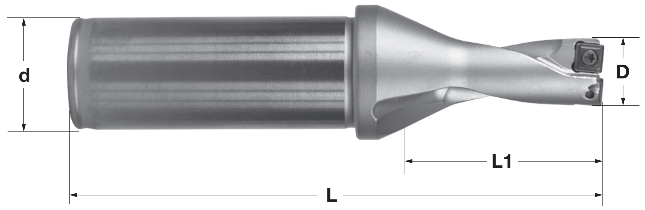
MATERIAL GUIDE	
RECOMMENDED	SUITABLE

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT
p. 357

TECHNICAL SECTION
p. 370

2 X D DRILL BODIES - SPMG



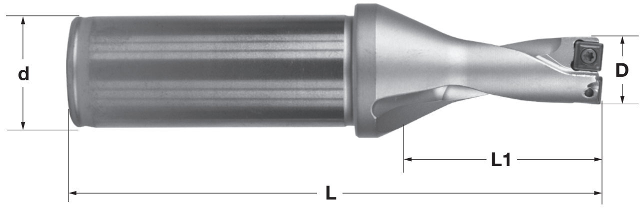
2XD DRILL BODIES - SPMG 050204

DESIGNATION	D	d	L	L1	CATALOG #
LT DR125 S05-2D	12.5	20	94	26	M2003704
LT DR130 S05-2D	13.0	20	94	26	M2003705
LT DR135 S05-2D	13.5	20	96	28	M2003706
LT DR140 S05-2D	14.0	20	96	28	M2003707
LT DR145 S05-2D	14.5	20	99	30	M2003708
LT DR150 S05-2D	15.0	20	99	30	M2003709

2XD DRILL BODIES - SPMG 060204

DESIGNATION	D	d	L	L1	CATALOG #
LT DR160 S06-2D	16.0	25	108	32	M2003247
LT DR170 S06-2D	17.0	25	110	34	M2003248
LT DR175 S06-2D	17.5	25	113	36	M2003695
LT DR180 S06-2D	18.0	25	113	36	M2003249
LT DR185 S06-2D	18.5	25	115	38	M2003696
LT DR190 S06-2D	19.0	25	115	38	M2003250
LT DR200 S06-2D	20.0	25	119	40	M2003251
LT DR210 S06-2D	21.0	25	121	42	M2003252

2 X D DRILL BODIES - SPMG



2XD DRILL BODIES - SPMG 07T308

DESIGNATION	D	d	L	L1	CATALOG #
LT DR220 S07-2D	22.0	25	123	44	M2003253
LT DR230 S07-2D	23.0	32	131	46	M2003255
LT DR240 S07-2D	24.0	32	134	48	M2003256
LT DR250 S07-2D	25.0	32	137	50	M2003257
LT DR260 S07-2D	26.0	32	139	52	M2003258
LT DR265 S07-2D	26.5	32	141	54	M2003698
LT DR270 S07-2D	27.0	32	141	54	M2003259

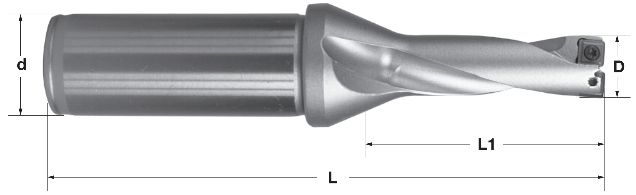
2XD DRILL BODIES - SPMG 090408

DESIGNATION	D	d	L	L1	CATALOG #
LT DR280 S09-2D	28.0	32	144	56	M2003260
LT DR290 S09-2D	29.0	32	146	58	M2003261
LT DR295 S09-2D	29.5	32	151	60	M2003699
LT DR300 S09-2D	30.0	32	151	60	M2003262
LT DR310 S09-2D	31.0	32	154	62	M2003263
LT DR320 S09-2D	32.0	32	156	64	M2003264
LT DR330 S09-2D	33.0	32	159	66	M2003265

2XD DRILL BODIES - SPMG 110408

DESIGNATION	D	d	L	L1	CATALOG #
LT DR340 S11-2D	34.0	40	171	68	M2003710
LT DR350 S11-2D	35.0	40	174	70	M2003711
LT DR360 S11-2D	36.0	40	177	72	M2003712
LT DR370 S11-2D	37.0	40	180	74	M2003713
LT DR380 S11-2D	38.0	40	183	76	M2003714
LT DR390 S11-2D	39.0	40	185	78	M2003715
LT DR400 S11-2D	40.0	40	188	80	M2003716
LT DR410 S11-2D	41.0	40	191	82	M2003717

3 X D DRILL BODIES - SPMG



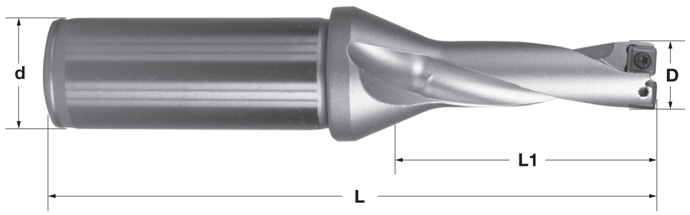
3XD DRILL BODIES - SPMG 050204

DESIGNATION	D	d	L	L1	CATALOG #
LT DR125 S05-3D	12.5	20	107	39	M2003718
LT DR130 S05-3D	13.0	20	107	39	M2003719
LT DR135 S05-3D	13.5	20	110	42	M2003720
LT DR140 S05-3D	14.0	20	110	42	M2003721
LT DR145 S05-3D	14.5	20	114	45	M2003722
LT DR150 S05-3D	15.0	20	114	45	M2003723

3XD DRILL BODIES - SPMG 060204

DESIGNATION	D	d	L	L1	CATALOG #
LT DR160 S06-3D	16.0	25	124	48	M2003266
LT DR170 S06-3D	17.0	25	127	51	M2003267
LT DR175 S06-3D	17.5	25	131	54	M2003700
LT DR180 S06-3D	18.0	25	131	54	M2003268
LT DR185 S06-3D	18.5	25	134	57	M2003701
LT DR190 S06-3D	19.0	25	134	57	M2003269
LT DR200 S06-3D	20.0	25	139	60	M2003270
LT DR210 S06-3D	21.0	25	142	63	M2003271

3 X D DRILL BODIES - SPMG



3XD DRILL BODIES - SPMG 07T308

DESIGNATION	D	d	L	L1	CATALOG #
LT DR220 S07-3D	22.0	25	145	66	M2003272
LT DR230 S07-3D	23.0	32	154	69	M2003273
LT DR240 S07-3D	24.0	32	158	72	M2003274
LT DR250 S07-3D	25.0	32	162	75	M2003275
LT DR260 S07-3D	26.0	32	165	78	M2003276
LT DR265 S07-3D	26.5	32	168	81	M2003702
LT DR270 S07-3D	27.0	32	168	81	M2003277

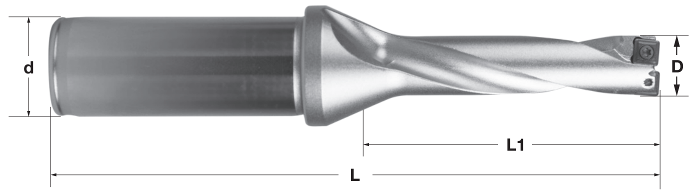
3XD DRILL BODIES - SPMG 090408

DESIGNATION	D	d	L	L1	CATALOG #
LT DR280 S09-3D	28.0	32	172	84	M2003278
LT DR290 S09-3D	29.0	32	175	87	M2003280
LT DR295 S09-3D	29.5	32	181	90	M2003703
LT DR300 S09-3D	30.0	32	181	90	M2003281
LT DR310 S09-3D	31.0	32	185	93	M2003282
LT DR320 S09-3D	32.0	32	188	96	M2003283
LT DR330 S09-3D	33.0	32	192	99	M2003284

3XD DRILL BODIES - SPMG 110408

DESIGNATION	D	d	L	L1	CATALOG #
LT DR340 S11-3D	34.0	40	205	102	M2003724
LT DR350 S11-3D	35.0	40	209	105	M2003725
LT DR360 S11-3D	36.0	40	213	108	M2003726
LT DR370 S11-3D	37.0	40	217	111	M2003727
LT DR380 S11-3D	38.0	40	221	114	M2003728
LT DR390 S11-3D	39.0	40	224	117	M2003729
LT DR400 S11-3D	40.0	40	228	120	M2003730
LT DR410 S11-3D	41.0	40	232	123	M2003731

4 X D DRILL BODIES - SPMG



4XD DRILL BODIES* - SPMG 050204

DESIGNATION	D	d	L	L1	CATALOG #
LT DR125 S05-4D	12.5	20	120	52	M2003732
LT DR130 S05-4D	13.0	20	120	52	M2003733
LT DR135 S05-4D	13.5	20	124	56	M2003434
LT DR140 S05-4D	14.0	20	124	56	M2003735
LT DR145 S05-4D	14.5	20	129	60	M2003736
LT DR150 S05-4D	15.0	20	129	60	M2003737

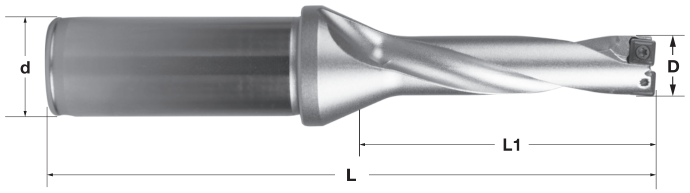
* On Request

4XD DRILL BODIES* - SPMG 060204

DESIGNATION	D	d	L	L1	CATALOG #
LT DR155 S06-4D	15.5	25	140	64	M2003746
LT DR160 S06-4D	16.0	25	140	64	M2003747
LT DR165 S06-4D	16.5	25	144	68	M2003748
LT DR170 S06-4D	17.0	25	144	68	M2003749
LT DR175 S06-4D	17.5	25	149	72	M2003750
LT DR180 S06-4D	18.0	25	149	72	M2003751
LT DR185 S06-4D	18.5	25	153	76	M2003752
LT DR190 S06-4D	19.0	25	153	76	M2004380
LT DR195 S06-4D	19.5	25	159	80	M2003753
LT DR200 S06-4D	20.0	25	159	80	M2003754
LT DR205 S06-4D	20.5	25	163	84	M2003755
LT DR210 S06-4D	21.0	25	163	84	M2003756
LT DR215 S06-4D	21.5	25	167	88	M2003757

* On Request

4 X D DRILL BODIES - SPMG



4XD DRILL BODIES* - SPMG 07T308

DESIGNATION	D	d	L	L1	CATALOG #
LT DR220 S07-4D	22.0	25	167	88	M2003758
LT DR225 S07-4D	22.5	32	177	92	M2003759
LT DR230 S07-4D	23.0	32	177	92	M2003760
LT DR235 S07-4D	23.5	32	182	96	M2003761
LT DR240 S07-4D	24.0	32	182	96	M2004381
LT DR245 S07-4D	24.5	32	187	100	M2003762
LT DR250 S07-4D	25.0	32	187	100	M2003763
LT DR255 S07-4D	25.5	32	191	104	M2003764
LT DR260 S07-4D	26.0	32	191	104	M2003765
LT DR265 S07-4D	26.5	32	195	108	M2003766
LT DR270 S07-4D	27.0	32	195	108	M2003767
LT DR275 S07-4D	27.5	32	200	112	M2003768

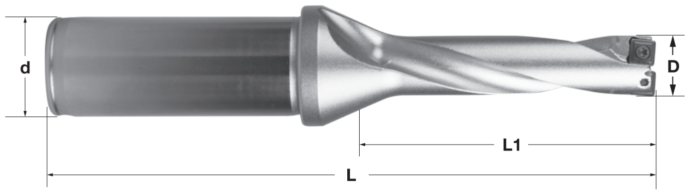
* On Request

4XD DRILL BODIES* - SPMG 090408

DESIGNATION	D	d	L	L1	CATALOG #
LT DR280 S09-4D	28.0	32	200	112	M2003769
LT DR285 S09-4D	28.5	32	204	116	M2003770
LT DR290 S09-4D	29.0	32	204	116	M2003771
LT DR295 S09-4D	29.5	32	211	120	M2003772
LT DR300 S09-4D	30.0	32	211	120	M2003773
LT DR310 S09-4D	31.0	32	216	124	M2003774
LT DR320 S09-4D	32.0	32	220	128	M2003775
LT DR330 S09-4D	33.0	32	225	132	M2003776

* On Request

4 X D DRILL BODIES - SPMG



4XD DRILL BODIES* - SPMG 110408

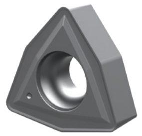
DESIGNATION	D	d	L	L1	CATALOG #
LT DR340 S11-4D	34.0	40	239	136	M2003738
LT DR350 S11-4D	35.0	40	244	140	M2003739
LT DR360 S11-4D	36.0	40	249	144	M2003740
LT DR370 S11-4D	37.0	40	254	148	M2003741
LT DR380 S11-4D	38.0	40	259	152	M2003742
LT DR390 S11-4D	39.0	40	263	156	M2003743
LT DR400 S11-4D	40.0	40	268	160	M2003744
LT DR410 S11-4D	41.0	40	273	164	M2003745

* On Request

DRILL BODY SPARE PARTS

SPARE PARTS PER INSERT	KEY	SCREW
SPMG 050204 NN LT 30	M2004169	M2003820
SPMG 060204 NN LT 30	M2004169	M2003823
SPMG 07T308 NN LT 30	M2002912	M2003824
SPMG 090408 NN LT 30	M2000602	M2003821
SPMG 110408 NN LT 30	M2000602	M2003822

W C M X



ALPHA

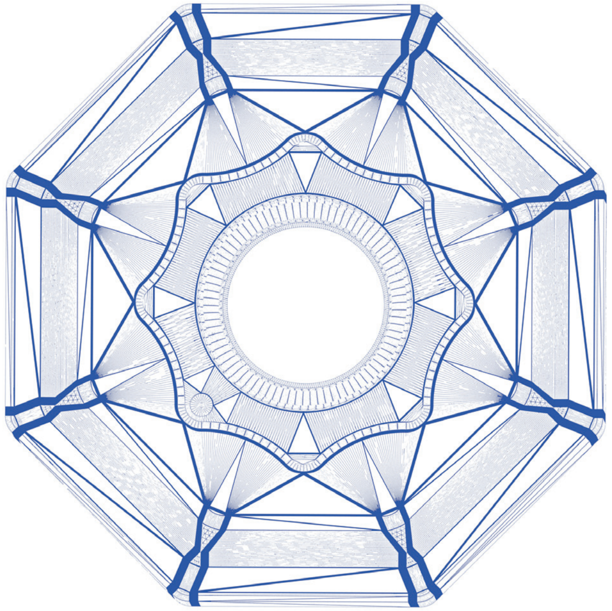
DESIGNATION	GRADE	MATERIAL RECOMMENDATION	L	S	R	CUTTING DATA	CATALOG #
WCMX 040208 NN	LT 30		4.0	2.38	0.8	p.346 - 349	M3001122
WCMX 050308 NN	LT 30		5.0	3.18	0.8	p.346 - 349	M3001121
WCMX 06T308 NN	LT 30		6.0	3.97	0.8	p.346 - 349	M3000953
WCMX 080412 NN	LT 30		8.0	4.76	1.2	p.346 - 349	M3000954

MATERIAL GROUP
- STEEL
- STAINLESS STEEL
- CAST IRON
- HIGH TEMP ALLOYS
- HARDENED MATERIAL
- ALU(>8%Si)

COOLANT p. 357

TECHNICAL SECTION p. 370

TECHNICAL INFORMATION



HIGH TECHNOLOGY

MACHINING CONDITIONS

TURNING

CCMT 09T304 NN
CCMT 120404 NN
CNMG 120404 NN
CPMT 09T304 NN
DCMT 11T304 NN
DNMG 110404 NN
DNMG 150404 NN
DNMG 150604 NN

SCMT 09T304 NN
TCMT 16T304 NN
TNMG 160404 NN
TNMG 220404 NN
TNUX 160404 L
TNUX 160404 R
TPMR 160304 NN
VBMT 160404 NN

VCMT 160404 NN
VNMG 160404 NN
WNMG 060404 NN
WNMG 080404 NN
WNMP 060404 NN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	3.0	0.11	0.23	180	330	0.60	2.00	0.18	300
				190 HB		2.5		0.22		280	0.52			260
				250 HB				0.20		250	0.48			240
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	2.50	0.10	0.20	120	280	0.50	2.00	0.14	260
				230 HB						250	0.48			240
				280 HB		2.00		0.18		210	0.40		0.13	200
				350 HB						180	0.36			180
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	2.50	0.09	0.18	70	190	0.40	1.70	0.10	180
				280 HB				0.16		150				140
				320 HB		2.00		0.14		130	0.32			120
				350 HB						110	0.26			110
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.30	2.50	0.08	0.18	170	270	0.32	2.00	0.09	260
				240 HB					160	220	0.26		0.08	210
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.30	2.00	0.08	0.14	80	150	0.20	1.70	0.08	140
				310 HB					70	140				140
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.30	2.50	0.08	0.18	170	250	0.32	1.70	0.09	240
				42 HRc		2.00		0.16	120	190	0.26	1.50	0.08	180
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.30	3.00	0.08	0.20	170	250	0.64	2.00	0.18	240
				200 HB					160	230	0.60			220
				250 HB					150	210				200
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.30	2.50	0.08	0.18	120	250	0.48	2.00	0.13	240
				200 HB						230	0.40			220
				250 HB						190	0.40			180
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.30	2.00	0.09	0.15	25	50	0.26	1.30	0.10	40
			Inconel 700	250 HB										
			Stellite 21	350 HB					23	45				35
	Ti based	10	T40	-	0.30	2.00	0.09	0.16	35	60	0.32	1.30	0.14	50
			TiAl6V4	-				0.14	45	65	0.26		0.10	60
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	1.80	0.05	0.12	50	100	0.20	1.40	0.10	90
				50 HRc		1.50		0.10	40	90	0.17	1.10	0.08	80
				55 HRc		1.40		0.09		80	0.13	0.90	0.06	70
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.60		0.12		60	0.17	1.10	0.10	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.40		0.09	30	50	0.13	0.90	0.06	40
NF	Aluminium	12	AlSi12	130 HB	0.30	4.00	0.10	0.30	200	400	0.70	2.00	0.23	350

CCMT 09T308 NN
CPMT 09T308 NN
DCMT 11T308 NN
SCMT 09T308 NN
VBMT 160408 NN
VCMT 160408 NN
VNMG 160408 NN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.21	0.50	180	330	1.62	2.70	0.32	240
				190 HB						280				220
				250 HB				0.45		250	1.35			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.21	0.45	120	280	1.08	2.70	0.29	200
				230 HB		3.20				250				180
				280 HB			0.18	0.40		210	1.08		0.27	150
				350 HB		2.80				180	0.90			130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	3.20	0.18	0.40	70	190	1.08	2.30	0.27	140
				280 HB						150				120
				320 HB		2.40		0.35		130	0.72		0.25	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	4.00	0.20	0.40	170	270	1.08	2.70	0.23	190
				240 HB					160	220	0.90		0.20	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	3.20	0.18	0.35	80	150	0.72	2.30	0.22	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	4.00	0.18	0.40	170	250	0.63	2.30	0.18	190
				42 HRc		3.20			120	190		2.00		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	4.00	0.15	0.60	170	250	1.80	2.70	0.32	200
				200 HB					160	230	1.62			180
				250 HB				0.55	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	4.00	0.15	0.50	120	250	1.35	2.70	0.27	180
				200 HB						230	1.17			160
				250 HB						190	1.08			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	2.40	0.20	0.35	25	45	0.63	1.80	0.25	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	3.20	0.20	0.40	35	55	0.72	1.80	0.30	45
			TiAl6V4	-		2.40		0.35	45	65	0.63		0.27	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.00	0.11	0.30	50	100	0.54	1.80	0.23	80
				50 HRc		1.60		0.25	40	90	0.36	1.40	0.18	70
				55 HRc		1.20		0.20		80	0.27	0.90	0.16	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.60		0.25		60	0.36	1.40		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.20		0.20	30	50	0.27	0.90	0.14	40
NF	Aluminium	12	AlSi12	130 HB	0.50	4.80	0.20	0.60	200	400	1.62	2.70	0.36	280

MACHINING CONDITIONS | TURNING - LT 10 - LT 1000

CCMT 120412 NN
CNMP 120412 NN
TCMT 16T312 NN

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/rev] min	Feed [mm/rev] max	Vc min	Vc max	Amax [mm²]	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	5.00	0.21	0.60	180	330	2.16	3.00	0.42	240
				190 HB						280				220
				250 HB				0.54		250	1.80			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	5.00	0.21	0.54	120	280	1.44	3.00	0.38	200
				230 HB		4.00				250				180
				280 HB			0.18	0.48		210			0.36	150
				350 HB		3.50				180	1.20			130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	4.00	0.18	0.48	70	190	1.44	2.50	0.36	140
				280 HB						150				120
				320 HB		3.00	0.18	0.42		130	0.96	2.50	0.34	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	5.00	0.20	0.48	170	270	1.44	3.00	0.30	190
				240 HB					160	220	1.20		0.26	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	4.00	0.18	0.42	80	150	0.96	2.50	0.29	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	5.00	0.18	0.48	170	250	0.84	2.50	0.24	190
				42 HRc		4.00			120	190		2.20		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	5.00	0.15	0.72	170	250	2.40	3.00	0.42	200
				200 HB					160	230	2.16			180
				250 HB				0.66	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	5.00	0.15	0.60	120	250	1.80	3.00	0.36	180
				200 HB						230	1.56			160
				250 HB						190	1.44			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	3.00	0.20	0.42	25	45	0.84	2.00	0.34	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	4.00	0.20	0.48	35	55	0.96	2.00	0.40	45
			TiAl6V4	-		3.00		0.42	45	65	0.84		0.36	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.11	0.36	50	100	0.72	2.00	0.30	80
				50 HRc		2.00		0.30	40	90	0.48	1.50	0.24	70
				55 HRc		1.50		0.24		80	0.36	1.00	0.22	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.30		60	0.48	1.50		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.24	30	50	0.36	1.00	0.18	40
NF	Aluminium	12	AlSi12	130 HB	0.50	6.00	0.20	0.72	200	400	2.16	3.00	0.48	280

CCMT 060204 NN
CPMT 060204 NN
DCMT 070204 NN

TCMT 110204 NN
VBMT 110304 NN

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/rev] min	Feed [mm/rev] max	Vc min	Vc max	Amax [mm²]	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.3	2.1	0.08	0.20	180	330	0.32	1.0	0.14	300
				190 HB		1.8		0.17		280	0.30			260
				250 HB						250				240
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.3	1.8	0.08	0.17	120	280	0.30	1.0	0.11	260
				230 HB						250				240
				280 HB		1.4		0.15		210	0.25		0.10	200
				350 HB						180	0.22			180
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.3	1.8	0.07	0.15	70	190	0.25	0.9	0.08	180
				280 HB				0.14		150				140
				320 HB		1.4		0.12		130	0.20	0.85		120
				350 HB						110	0.16			110
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.3	1.8	0.06	0.15	170	270	0.20	1.0	0.07	260
				240 HB					160	220	0.16		0.06	210
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.3	1.4	0.06	0.12	80	150	0.12	0.85	0.06	140
				310 HB					70	140				140
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.3	1.8	0.06	0.15	170	250	0.20	0.9	0.08	240
				42 HRc		1.4		0.14	120	190	0.16		0.07	180
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.3	2.1	0.06	0.17	170	250	0.40	1.0	0.16	240
				200 HB					160	230	0.37			220
				250 HB					150	210				200
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.3	1.8	0.06	0.15	120	250	0.30	1.0	0.14	240
				200 HB						230	0.25			220
				250 HB						190				180
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.3	1.4	0.08	0.13	25	50	0.16	0.7	0.08	40
			Inconel 700	250 HB										
			Stellite 21	350 HB					23	45				35
	Ti based	10	T40	-	0.3	1.4	0.07	0.12	35	60	0.16	0.7	0.08	50
			TiAl6V4	-				0.14	45	65	0.2		0.11	60
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.3	1.3	0.04	0.1	50	100	0.12	0.7	0.08	90
				50 HRc		1.1		0.09	40	90	0.10	0.6	0.06	80
				55 HRc	0.2	1.0		0.08		80	0.08	0.5	0.05	70
	Chilled Cast Iron		Ni-Hard 2	400 HB	0.3	1.1		0.1		60	0.11	0.6	0.08	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.0		0.08	30	50	0.08	0.5	0.05	40
NF	Aluminium	12	AlSi12	130 HB	0.3	2.8	0.08	0.26	200	400	0.44	1.0	0.18	350

CNMG 120408 NX
DNMG 150408 NX
DNMG 150608 NX
DNUX 150608 R11
KNUX 160405 L / R

TNMG 160408 NX
TNMG 220408 NX
TNUX 160408 L
TNUX 160408 R

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	5.00	0.18	0.50	180	330	1.71	3.00	0.36	240
				190 HB						280			0.33	220
				250 HB				0.45		250	1.42		0.31	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	5.00	0.18	0.45	120	280	1.14	3.00	0.30	200
				230 HB		4.00				250				180
				280 HB			0.16	0.40		210			0.29	150
				350 HB		3.50				180	0.95	2.70		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	4.00	0.16	0.40	70	190	1.14	2.50	0.29	140
				280 HB						150				120
				320 HB		3.00		0.35		130	0.76		0.27	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	5.00	0.18	0.40	170	270	1.14	3.00	0.24	190
				240 HB					160	220	0.95		0.21	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	4.00	0.16	0.35	80	150	0.76	2.50	0.23	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	5.00	0.16	0.40	170	250	0.67	2.50	0.19	190
				42 HRc		4.00			120	190		2.20		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	5.00	0.13	0.60	170	250	1.90	3.00	0.33	200
				200 HB					160	230	1.71			180
				250 HB				0.55	150	210	1.71			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	5.00	0.13	0.50	120	250	1.42	3.00	0.29	180
				200 HB						230	1.24			160
				250 HB						190	1.14			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	3.00	0.18	0.35	25	45	0.67	2.00	0.27	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	3.50	0.18	0.40	35	55	0.76	2.00	0.31	45
			TiAl6V4	-		3.00		0.35	45	65	0.67		0.29	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.10	0.30	50	100	0.57	2.00	0.24	80
				50 HRc		2.00		0.25	40	90	0.38	1.50	0.19	70
				55 HRc		1.50		0.20		80	0.28	1.00	0.17	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.25		60	0.38	1.50		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.20	30	50	0.28	1.00	0.14	40
NF	Aluminium	12	AlSi12	130 HB	0.50	6.00	0.18	0.60	200	400	1.71	3.00	0.38	280

CNMG 120408 NN
DNMG 110408 NN
DNMG 150408 NN

DNMG 150608 NN
TNMG 160408 NN
TNMG 220408 NN

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	5.00	0.21	0.50	180	330	1.80	3.00	0.38	240
				190 HB						280			0.35	220
				250 HB				0.45		250	1.50		0.33	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	5.00	0.21	0.45	120	280	1.20	3.00	0.32	200
				230 HB		4.00				250				180
				280 HB			0.18	0.40		210			0.30	150
				350 HB		3.50				180	1.00	2.70		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	4.00	0.18	0.40	70	190	1.20	2.50	0.30	140
				280 HB						150				120
				320 HB		3.00		0.35		130	0.80	2.20	0.28	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	5.00	0.20	0.40	170	270	1.20	3.00	0.25	190
				240 HB					160	220	1.00		0.22	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	4.00	0.18	0.35	80	150	0.80	2.50	0.24	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	5.00	0.18	0.40	170	250	0.70	2.50	0.20	190
				42 HRc		4.00			120	190		2.20		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	5.00	0.15	0.60	170	250	2.00	3.00	0.35	200
				200 HB					160	230	1.80			180
				250 HB				0.55	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	5.00	0.15	0.50	120	250	1.50	3.00	0.30	180
				200 HB						230	1.30			160
				250 HB						190	1.20			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	3.00	0.20	0.35	25	45	0.70	2.00	0.28	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	3.50	0.20	0.40	35	55	0.80	2.00	0.33	45
			TiAl6V4	-		3.00		0.35	45	65	0.70		0.30	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.11	0.30	50	100	0.60	2.00	0.25	80
				50 HRc		2.00		0.25	40	90	0.40	1.50	0.20	70
				55 HRc		1.50		0.20		80	0.30	1.00	0.18	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.25		60	0.40	1.50		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.20	30	50	0.30	1.00	0.15	40
NF	Aluminium	12	AlSi12	130 HB	0.50	6.00	0.20	0.60	200	400	1.80	3.00	0.40	280

CNMG 120412 NN
DNMG 150412 NN
DNMG 150612 NN

TNMG 160412 NN
TNMG 220412 NN

ISO	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.70	6.00	0.26	0.68	180	330	3.06	4.00	0.50	240
				190 HB						280			0.46	220
				250 HB				0.61		250	2.55		0.44	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.70	6.00	0.26	0.61	120	280	2.04	4.00	0.42	200
				230 HB		4.80				250				180
				280 HB			0.22	0.54		210			0.40	150
				350 HB		4.20				180	1.70	3.60		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.70	4.80	0.22	0.54	70	190	2.04	3.40	0.40	140
				280 HB						150				120
				320 HB		3.60		0.47		130	1.36		0.37	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.70	6.00	0.25	0.54	170	270	2.04	4.00	0.33	190
				240 HB					160	220	1.70		0.29	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.70	4.80	0.22	0.47	80	150	1.36	3.40	0.32	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.70	6.00	0.22	0.54	170	250	1.19	3.40	0.26	190
				42 HRc		4.80			120	190		2.90		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.70	6.00	0.19	0.81	170	250	3.40	4.00	0.46	200
				200 HB					160	230	3.06			180
				250 HB				0.74	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.70	6.00	0.19	0.68	120	250	2.55	4.00	0.40	180
				200 HB						230	2.21			160
				250 HB						190	2.04			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.70	3.60	0.25	0.47	25	45	1.19	2.70	0.37	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.70	4.20	0.25	0.54	35	55	1.36	2.70	0.44	45
			TiAl6V4	-		3.60		0.47	45	65	1.19		0.40	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.70	3.00	0.14	0.41	50	100	1.02	2.70	0.33	80
				50 HRc		2.40		0.34	40	90	0.68	2.00	0.26	70
				55 HRc		1.80		0.27		80	0.51	1.30	0.24	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.40		0.34		60	0.68	2.00		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.80		0.27	30	50	0.51	1.30	0.20	40
NF	Aluminium	12	AlSi12	130 HB	0.70	7.20	0.25	0.81	200	400	3.06	4.00	0.53	280

MACHINING CONDITIONS | TURNING - LT 10 - LT 1000

CNMG 120412 NX

ISO	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.70	6.00	0.22	0.60	180	330	2.34	4.00	0.50	240
				190 HB						280			0.46	220
				250 HB				0.56		250			0.44	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.70	6.00	0.22	0.54	120	280	1.95	4.00	0.42	200
				230 HB		4.80				250				180
				280 HB			0.19	0.48		210			0.40	150
				350 HB		4.20				180	1.60	3.60		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.70	4.80	0.19	0.48	70	190	1.55	3.40	0.40	140
				280 HB						150				120
				320 HB		3.60		0.42		130	1.10		0.37	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.70	6.00	0.21	0.48	170	270	1.50	4.00	0.33	190
				240 HB					160	220	1.40		0.29	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.70	4.80	0.19	0.42	80	150	1.20	3.40	0.32	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.70	6.00	0.19	0.42	170	250	1.00	3.40	0.26	190
				42 HRc		4.80			120	190		2.90		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.70	6.00	0.16	0.70	170	250	3.20	4.00	0.46	200
				200 HB					160	230	3.00			180
				250 HB				0.65	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.70	6.00	0.16	0.60	120	250	2.80	4.00	0.40	180
				200 HB						230	2.60			160
				250 HB						190	2.40			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.70	3.60	0.20	0.42	25	45	1.10	2.70	0.37	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.70	4.20	0.20	0.44	35	55	1.15	2.70	0.44	45
			TiAl6V4	-		3.60		0.40	45	65	1.00		0.40	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.70	3.00	0.12	0.36	50	100	0.80	2.50	0.29	80
				50 HRc		2.40		0.32	40	90	0.55	2.00	0.23	70
				55 HRc		1.80		0.26		80	0.42	1.50	0.21	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.40		0.28		60	0.55	2.00		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.80		0.26	30	50	0.41	1.40	0.18	40
NF	Aluminium	12	AlSi12	130 HB	0.70	7.20	0.23	0.70	200	400	2.5	4.00	0.53	280

CNMG 120408 NM

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/rev] min	Feed [mm/rev] max	Vc min	Vc max	Amax [mm²]	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	5.00	0.21	0.65	180	330	2.70	3.60	0.42	240
				190 HB						280				220
				250 HB				0.59		250	2.25			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	5.00	0.21	0.59	120	280	1.80	3.60	0.38	200
				230 HB		4.00				250				180
				280 HB			0.18	0.52		210			0.36	150
				350 HB		3.50				180	1.50	3.20		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	4.00	0.18	0.52	70	190	1.80	3.00	0.36	140
				280 HB						150				120
				320 HB		3.00		0.46		130	1.20		0.34	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	5.00	0.20	0.52	170	270	1.80	3.60	0.30	190
				240 HB					160	220	1.50		0.26	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	4.00	0.18	0.46	80	150	1.20	3.00	0.29	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	5.00	0.18	0.52	170	250	1.05	3.00	0.24	190
				42 HRc		4.00			120	190		2.60		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	5.00	0.15	0.78	170	250	3.00	3.60	0.42	200
				200 HB					160	230	2.70			180
				250 HB				0.72	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	5.00	0.15	0.65	120	250	2.25	3.60	0.36	180
				200 HB						230	1.95			160
				250 HB						190	1.80			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	2.10	0.24	0.46	25	45	0.84	1.70	0.35	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	2.50	0.24	0.52	35	55	0.96	1.70	0.41	45
			TiAl6V4	-		2.10		0.46	45	65	0.84		0.38	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	1.80	0.13	0.39	50	100	0.72	1.70	0.31	80
				50 HRc		1.40		0.33	40	90	0.48	1.30	0.25	70
				55 HRc		1.10		0.26		80	0.36	0.90	0.23	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.40		0.33		60	0.48	1.30		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.10		0.26	30	50	0.36	0.90	0.19	40
NF	Aluminium	12	AlSi12	130 HB	0.50	4.20	0.24	0.78	200	400	2.16	2.60	0.50	280

MACHINING CONDITIONS | TURNING - LT 10 - LT 1000

SNMG 120408 NX

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/rev] min	Feed [mm/rev] max	Vc min	Vc max	Amax [mm²]	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	5.00	0.26	0.70	180	330	2.41	3.00	0.51	240
				190 HB						280			0.47	220
				250 HB				0.63		250	2.01		0.45	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	5.00	0.26	0.63	120	280	1.61	3.00	0.43	200
				230 HB		4.00				250				180
				280 HB			0.22	0.56		210			0.41	150
				350 HB		3.50				180	1.34	2.70		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	4.00	0.22	0.56	70	190	1.61	2.50	0.41	140
				280 HB						150				120
				320 HB		3.00		0.49		130	1.07	2.20	0.38	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	5.00	0.25	0.56	170	270	1.61	3.00	0.34	190
				240 HB					160	220	1.34		0.30	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	4.00	0.22	0.49	80	150	1.07	2.50	0.32	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	5.00	0.22	0.56	170	250	0.94	2.50	0.27	190
				42 HRc		4.00			120	190		2.20		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	5.00	0.18	0.84	170	250	2.68	3.00	0.47	200
				200 HB					160	230	2.41			180
				250 HB				0.77	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	5.00	0.18	0.70	120	250	2.01	3.00	0.41	180
				200 HB						230	1.74			160
				250 HB						190	1.61			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	3.00	0.25	0.49	25	45	0.94	2.00	0.38	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	3.50	0.25	0.56	35	55	1.07	2.00	0.45	45
			TiAl6V4	-		3.00		0.49	45	65	0.94		0.41	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.14	0.42	50	100	0.80	2.00	0.34	80
				50 HRc		2.00		0.35	40	90	0.54	1.50	0.27	70
				55 HRc		1.50		0.28		80	0.40	1.00	0.24	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.35		60	0.54	1.50		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.28	30	50	0.40	1.00	0.20	40
NF	Aluminium	12	AlSi12	130 HB	0.50	6.00	0.25	0.84	200	400	2.41	3.00	0.54	280

SNMG 120408 NN

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	5.00	0.30	0.70	180	330	2.54	3.00	0.54	240
				190 HB						280			0.50	220
				250 HB				0.63		250	2.12		0.47	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	5.00	0.30	0.63	120	280	1.69	3.00	0.45	200
				230 HB		4.00				250				180
				280 HB			0.25	0.56		210			0.43	150
				350 HB		3.50				180	1.41	2.70		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	4.00	0.25	0.56	70	190	1.69	2.50	0.43	140
				280 HB						150				120
				320 HB		3.00		0.49		130	1.13	2.20	0.40	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	5.00	0.28	0.56	170	270	1.69	3.00	0.36	190
				240 HB					160	220	1.41		0.31	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	4.00	0.25	0.49	80	150	1.13	2.50	0.34	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	5.00	0.25	0.56	170	250	0.99	2.50	0.28	190
				42 HRc		4.00			120	190		2.20		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	5.00	0.21	0.84	170	250	2.82	3.00	0.50	200
				200 HB					160	230	2.54			180
				250 HB				0.77	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	5.00	0.21	0.70	120	250	2.12	3.00	0.43	180
				200 HB						230	1.83			160
				250 HB						190	1.69			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	3.00	0.28	0.49	25	45	0.99	2.00	0.40	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	3.50	0.28	0.56	35	55	1.13	2.00	0.47	45
			TiAl6V4	-		3.00		0.49	45	65	0.99		0.43	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.16	0.42	50	100	0.85	2.00	0.36	80
				50 HRc		2.00		0.35	40	90	0.56	1.50	0.28	70
				55 HRc		1.50		0.28		80	0.42	1.00	0.26	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.35		60	0.56	1.50		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.28	30	50	0.42	1.00	0.21	40
NF	Aluminium	12	AlSi12	130 HB	0.50	6.00	0.28	0.84	200	400	2.54	3.00	0.57	280

SNMG 120412 NN

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.70	6.00	0.37	0.95	180	330	3.96	4.00	0.71	240
				190 HB						280			0.65	220
				250 HB				0.86		250	3.30		0.61	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.70	6.00	0.37	0.86	120	280	2.64	4.00	0.60	200
				230 HB		4.80				250				180
				280 HB			0.32	0.76		210			0.56	150
				350 HB		4.20				180	2.20	3.60		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.70	4.80	0.32	0.76	70	190	2.64	3.40	0.56	140
				280 HB						150				120
				320 HB		3.60		0.67		130	1.76	2.90	0.52	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.70	6.00	0.35	0.76	170	270	2.64	4.00	0.47	190
				240 HB					160	220	2.20		0.41	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.70	4.80	0.32	0.67	80	150	1.76	3.40	0.45	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.70	6.00	0.32	0.76	170	250	1.54	3.40	0.37	190
				42 HRc		4.80			120	190		2.90		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.70	6.00	0.26	1.14	170	250	4.40	4.00	0.65	200
				200 HB					160	230	3.96			180
				250 HB				1.05	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.70	6.00	0.26	0.95	120	250	3.30	4.00	0.56	180
				200 HB						230	2.86			160
				250 HB						190	2.64			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.70	3.60	0.35	0.67	25	45	1.54	2.70	0.52	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.70	4.20	0.35	0.76	35	55	1.76	2.70	0.61	45
			TiAl6V4	-		3.60		0.67	45	65	1.54		0.56	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.70	3.00	0.19	0.57	50	100	1.32	2.70	0.47	80
				50 HRc		2.40		0.48	40	90	0.88	2.00	0.37	70
				55 HRc		1.80		0.38		80	0.66	1.30	0.33	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.40		0.48		60	0.88	2.00		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.80		0.38	30	50	0.66	1.30	0.28	40
NF	Aluminium	12	AlSi12	130 HB	0.70	7.20	0.35	1.14	200	400	3.96	4.00	0.74	280

WNMG 060408 NX
WNMG 080408 NX

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.50	0.18	0.50	180	330	1.13	1.80	0.36	240
				190 HB						280			0.33	220
				250 HB				0.45		250	0.95		0.31	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.50	0.18	0.45	120	280	0.76	1.80	0.30	200
				230 HB		2.00				250				180
				280 HB			0.16	0.40		210			0.29	150
				350 HB		1.80				180	0.63	1.60		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.00	0.16	0.40	70	190	0.76	1.50	0.29	140
				280 HB						150				120
				320 HB		1.50	0.16	0.35		130	0.50	1.30	0.27	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	2.50	0.18	0.40	170	270	0.76	1.80	0.24	190
				240 HB					160	220	0.63		0.21	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.00	0.16	0.35	80	150	0.50	1.50	0.23	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	2.50	0.16	0.40	170	250	0.44	1.50	0.19	190
				42 HRc		2.00			120	190		1.30		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	2.50	0.13	0.60	170	250	1.26	1.80	0.33	200
				200 HB					160	230	1.13			180
				250 HB				0.55	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	2.50	0.13	0.50	120	250	0.95	1.80	0.29	180
				200 HB						230	0.82			160
				250 HB						190	0.76			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	1.50	0.18	0.35	25	45	0.44	1.20	0.27	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	1.80	0.18	0.40	35	55	0.50	1.20	0.31	45
			TiAl6V4	-		1.50		0.35	45	65	0.44		0.29	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	1.30	0.10	0.30	0.50	100	0.38	1.20	0.24	80
				50 HRc		1.00		0.25	40	90	0.25	0.90	0.19	70
				55 HRc		0.80		0.20		80	0.19	0.60	0.17	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.00		0.25		60	0.25	0.90		50
	White Cast Iron		G-X300CrMo15	55 HRc		0.80		0.20	30	50	0.19	0.60	0.14	40
NF	Aluminium	12	AlSi12	130 HB	0.50	3.00	0.18	0.60	200	400	1.13	1.80	0.38	280

WNMG 060408 NN
WNMG 080408 NN
WNMP 060408 NN
WNMP 080408 NN

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.50	0.21	0.50	180	330	1.17	1.80	0.38	240
				190 HB						280			0.35	220
				250 HB				0.45		250	0.98		0.33	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.50	0.21	0.45	120	280	0.78	1.80	0.32	200
				230 HB		2.00				250				180
				280 HB			0.18	0.40		210			0.30	150
				350 HB		1.80				180	0.65	1.60		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.00	0.18	0.40	70	190	0.78	1.50	0.30	140
				280 HB						150				120
				320 HB		1.50		0.35		130	0.52	1.30	0.28	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	2.50	0.20	0.40	170	270	0.78	1.80	0.25	190
				240 HB					160	220	0.65		0.22	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.00	0.18	0.35	80	150	0.52	1.50	0.24	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	2.50	0.18	0.40	170	250	0.46	1.50	0.20	190
				42 HRc		2.00			120	190		1.30		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	2.50	0.15	0.60	170	250	1.30	1.80	0.35	200
				200 HB					160	230	1.17			180
				250 HB				0.55	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	2.50	0.15	0.50	120	250	0.98	1.80	0.30	180
				200 HB						230	0.85			160
				250 HB						190	0.78			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	1.50	0.20	0.35	25	45	0.46	1.20	0.28	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	1.80	0.20	0.40	35	55	0.52	1.20	0.33	45
			TiAl6V4	-		1.50		0.35	45	65	0.46		0.30	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	1.30	0.11	0.30	50	100	0.39	1.20	0.25	80
				50 HRc		1.00		0.25	40	90	0.26	0.90	0.20	70
				55 HRc		0.80		0.20		80	0.20	0.60	0.18	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.00		0.25		60	0.26	0.90		50
	White Cast Iron		G-X300CrMo15	55 HRc		0.80		0.20	30	50	0.20	0.60	0.15	40
NF	Aluminium	12	AlSi12	130 HB	0.50	3.00	0.20	0.60	200	400	1.17	1.80	0.40	280

WNMG 080412 NN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/rev] min	Feed [mm/rev] max	Vc min	Vc max	Amax [mm²]	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.70	3.50	0.25	0.65	180	330	2.16	2.60	0.48	240
				190 HB						280			0.44	220
				250 HB				0.59		250	1.80		0.41	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.70	3.50	0.25	0.59	120	280	1.44	2.60	0.40	200
				230 HB		2.80				250				180
				280 HB			0.22	0.52		210			0.38	150
				350 HB		2.50				180	1.20	2.30		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.70	2.80	0.22	0.52	70	190	1.44	2.10	0.38	140
				280 HB						150				120
				320 HB		2.10		0.46		130	0.96	1.90	0.35	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.70	3.50	0.24	0.52	170	270	1.44	2.60	0.31	190
				240 HB					160	220	1.20		0.28	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.70	2.80	0.22	0.46	80	150	0.96	2.10	0.30	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.70	3.50	0.22	0.52	170	250	0.84	2.10	0.25	190
				42 HRc		2.80			120	190		1.90		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.70	3.50	0.18	0.78	170	250	2.40	2.60	0.44	200
				200 HB					160	230	2.16			180
				250 HB				0.72	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.70	3.50	0.18	0.65	120	250	1.80	2.60	0.38	180
				200 HB						230	1.56			160
				250 HB						190	1.44			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.70	2.10	0.24	0.46	25	45	0.84	1.70	0.35	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.70	2.50	0.24	0.52	35	55	0.96	1.70	0.41	45
			TiAl6V4	-		2.10		0.46	45	65	0.84		0.38	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.70	1.80	0.13	0.39	50	100	0.72	1.70	0.31	80
				50 HRc		1.40		0.33	40	90	0.48	1.30	0.25	70
				55 HRc		1.10		0.26		80	0.36	0.90	0.23	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.40		0.33		60	0.48	1.30		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.10		0.26	30	50	0.36	0.90	0.19	40
NF	Aluminium	12	AlSi12	130 HB	0.70	4.20	0.24	0.78	200	400	2.16	2.60	0.50	280

MACHINING CONDITIONS | TURNING - LT 10 - LT 1000

WNMG 080408 NM

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/rev] min	Feed [mm/rev] max	Vc min	Vc max	Amax [mm²]	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	3.50	0.25	0.65	180	330	2.16	2.60	0.48	240
				190 HB						280			0.44	220
				250 HB				0.59		250	1.80		0.41	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	3.50	0.25	0.59	120	280	1.44	2.60	0.40	200
				230 HB		2.80				250				180
				280 HB			0.22	0.52		210			0.38	150
				350 HB		2.50				180	1.20	2.30		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.80	0.22	0.52	70	190	1.44	2.10	0.38	140
				280 HB						150				120
				320 HB		2.10		0.46		130	0.96	1.90	0.35	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	3.50	0.24	0.52	170	270	1.44	2.60	0.31	190
				240 HB					160	220	1.20		0.28	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.80	0.22	0.46	80	150	0.96	2.10	0.30	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	3.50	0.22	0.52	170	250	0.84	2.10	0.25	190
				42 HRc		2.80			120	190		1.90		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	3.50	0.18	0.78	170	250	2.40	2.60	0.44	200
				200 HB					160	230	2.16			180
				250 HB				0.72	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	3.50	0.18	0.65	120	250	1.80	2.60	0.38	180
				200 HB						230	1.56			160
				250 HB						190	1.44			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	2.10	0.24	0.46	25	45	0.84	1.70	0.35	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	2.50	0.24	0.52	35	55	0.96	1.70	0.41	45
			TiAl6V4	-		2.10		0.46	45	65	0.84		0.38	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	1.80	0.13	0.39	50	100	0.72	1.70	0.31	80
				50 HRc		1.40		0.33	40	90	0.48	1.30	0.25	70
				55 HRc		1.10		0.26		80	0.36	0.90	0.23	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.40		0.33		60	0.48	1.30		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.10		0.26	30	50	0.36	0.90	0.19	40
NF	Aluminium	12	AlSi12	130 HB	0.50	4.20	0.24	0.78	200	400	2.16	2.60	0.50	280

CNMM 120408 NR

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	7.00	0.21	0.60	180	330	2.88	4.20	0.46	240
				190 HB						280			0.42	220
				250 HB				0.54		250	2.40		0.40	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	7.00	0.21	0.54	120	280	1.92	4.20	0.38	200
				230 HB		5.60				250				180
				280 HB			0.18	0.48		210			0.36	150
				350 HB		4.90				180	1.60	3.80		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	5.60	0.18	0.48	70	190	1.92	3.50	0.36	140
				280 HB						150				120
				320 HB		4.20		0.42		130	1.28	3.10	0.34	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	7.00	0.20	0.48	170	270	1.92	4.20	0.30	190
				240 HB					160	220	1.60		0.26	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	5.60	0.18	0.42	80	150	1.28	3.50	0.29	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	7.00	0.18	0.48	170	250	1.12	3.50	0.24	190
				42 HRc		5.60			120	190		3.10		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	7.00	0.15	0.72	170	250	3.20	4.20	0.42	200
				200 HB					160	230	2.88			180
				250 HB				0.66	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	7.00	0.15	0.60	120	250	2.40	4.20	0.36	180
				200 HB						230	2.08			160
				250 HB						190	1.92			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	4.20	0.20	0.42	25	45	1.12	2.80	0.34	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	4.90	0.20	0.48	35	55	1.28	2.80	0.40	45
			TiAl6V4	-		4.20		0.42	45	65	1.12	2.80	0.36	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	3.50	0.11	0.36	50	100	0.96	2.80	0.30	80
				50 HRc		2.80		0.30	40	90	0.64	2.10	0.24	70
				55 HRc		2.10		0.24		80	0.48	1.40	0.22	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.80		0.30		60	0.64	2.10		50
	White Cast Iron		G-X300CrMo15	55 HRc		2.10		0.24	30	50	0.48	1.40	0.18	40
NF	Aluminium	12	AlSi12	130 HB	0.50	8.40	0.20	0.72	200	400	2.88	4.20	0.48	280

MACHINING CONDITIONS | TURNING - LT 10 - LT 1000

CNMM 120412 NR

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.70	7.00	0.21	0.60	180	330	3.24	5.00	0.46	240
				190 HB						280			0.42	220
				250 HB				0.54		250	2.70		0.40	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.70	7.00	0.21	0.54	120	280	2.16	5.00	0.38	200
				230 HB		5.60				250				180
				280 HB			0.18	0.48		210			0.36	150
				350 HB		4.90				180	1.80	4.50		130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.70	5.60	0.18	0.48	70	190	2.16	4.10	0.36	140
				280 HB						150				120
				320 HB		4.20		0.42		130	1.44	3.60	0.34	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.70	7.00	0.20	0.48	170	270	2.16	5.00	0.30	190
				240 HB					160	220	1.80		0.26	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.70	5.60	0.18	0.42	80	150	1.44	4.10	0.29	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.70	7.00	0.18	0.48	170	250	1.26	4.10	0.24	190
				42 HRc		5.60			120	190		3.60		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.70	7.00	0.15	0.72	170	250	3.60	5.00	0.42	200
				200 HB					160	230	3.24			180
				250 HB				0.66	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.70	7.00	0.15	0.60	120	250	2.70	5.00	0.36	180
				200 HB						230	2.34			160
				250 HB						190	2.16			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.70	4.20	0.20	0.42	25	45	1.26	3.30	0.34	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.70	4.90	0.20	0.48	35	55	1.44	3.30	0.40	45
			TiAl6V4	-		4.20		0.42	45	65	1.26		0.36	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.70	3.50	0.11	0.36	50	100	1.08	3.30	0.30	80
				50 HRc		2.80		0.30	40	90	0.72	2.50	0.24	70
				55 HRc		2.10		0.24		80	0.54	1.70	0.22	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.80		0.30		60	0.72	2.50		50
	White Cast Iron		G-X300CrMo15	55 HRc		2.10		0.24	30	50	0.54	1.70	0.18	40
NF	Aluminium	12	AlSi12	130 HB	0.70	8.40	0.20	0.72	200	400	3.24	5.00	0.48	280

CCMT 120408 NN
CNMP 120408 NN
TCMT 16T308 NN

TNMP 160408 NN
TPMR 160308 NN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/rev] min	Feed [mm/rev] max	Vc min	Vc max	Amax [mm²]	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	5.00	0.21	0.50	180	330	1.80	3.00	0.35	240
				190 HB						280				220
				250 HB				0.45		250	1.50			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	5.00	0.21	0.45	120	280	1.20	3.00	0.32	200
				230 HB		4.00				250				180
				280 HB			0.18	0.40		210			0.30	150
				350 HB		3.50				180	1.00			130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	4.00	0.18	0.40	70	190	1.20	2.50	0.30	140
				280 HB						150				120
				320 HB		3.00		0.35		130	0.80		0.28	100
				350 HB						110				90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	5.00	0.20	0.40	170	270	1.20	3.00	0.35	190
				240 HB					160	220	1.00		0.32	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	4.00	0.18	0.35	80	150	0.80	2.50	0.28	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	5.00	0.22	0.40	170	250	1.00	3.00	0.32	190
				42 HRc		4.00			120	190		2.50		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	5.00	0.15	0.60	170	250	2.00	3.00	0.35	200
				200 HB					160	230	1.80			180
				250 HB				0.55	150	210				160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	5.00	0.15	0.50	120	250	1.50	3.00	0.30	180
				200 HB						230	1.30			160
				250 HB						190	1.20			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	3.00	0.20	0.35	25	45	0.70	2.00	0.28	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	4.00	0.20	0.40	35	55	0.80	2.00	0.33	45
			TiAl6V4	-		3.00		0.35	45	65	0.70		0.30	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.11	0.30	50	100	0.60	2.00	0.25	80
				50 HRc		2.00		0.25	40	90	0.40	1.50	0.20	70
				55 HRc		1.50		0.20		80	0.30	1.00	0.18	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.25		60	0.40	1.50		50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.20	30	50	0.30	1.00	0.15	40
NF	Aluminium	12	AlSi12	130 HB	0.50	6.00	0.20	0.60	200	400	1.80	3.00	0.40	280

MACHINING CONDITIONS | TURNING - LT 10 - LT 1000

RCMT 0602 M0

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/rev] min	Feed [mm/rev] max	Vc min	Vc max	Amax [mm²]	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.00	0.15	0.40	180	330	0.64	1.00	0.35	240
				190 HB						280				220
				250 HB		1.50		0.35		250	0.56		0.30	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.00	0.15	0.35	120	280	0.56	1.00	0.30	200
				230 HB						250	0.48			180
				280 HB						210	0.40			150
				350 HB		1.50				180	0.36			130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.00	0.13	0.35	70	190	0.48	1.00	0.30	140
				280 HB				0.30		150	0.40		0.28	120
				320 HB		1.50				130	0.32		0.28	100
				350 HB						110	0.26		0.24	90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	2.00	0.14	0.35	170	270	0.32	1.00	0.30	190
				240 HB				0.32	160	220			0.29	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	1.50	0.13	0.30	80	150	0.30	1.00	0.28	100
				310 HB					70	140	0.30			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	2.00	0.15	0.35	170	250	0.32	1.00	0.25	190
				42 HRc				0.30	120	190	0.30		0.22	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	2.00	0.11	0.45	170	250	0.70	1.00	0.35	200
				200 HB					160	230	0.65			180
				250 HB					150	210	0.60			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	2.00	0.11	0.35	120	250	0.60	1.00	0.30	180
				200 HB						230	0.50			160
				250 HB						190	0.45			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	1.50	0.13	0.30	25	45	0.30	1.00	0.28	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	1.50	0.13	0.32	35	55	0.32	1.00	0.30	45
			TiAl6V4	-				0.30	45	65	0.30		0.28	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	1.20	0.05	0.22	50	100	0.20	0.90	0.18	80
				50 HRc		1.00		0.18	40	90	0.17	0.70	0.16	70
				55 HRc		0.80		0.14		80	0.12	0.60	0.12	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.20		0.22		60	0.17	0.90	0.18	50
	White Cast Iron		G-X300CrMo15	55 HRc	0.30	0.80	0.05	0.14	30	50	0.10	0.60	0.12	40
NF	Aluminium	12	AlSi12	130 HB	0.50	2.00	0.15	0.40	200	400	0.70	1.00	0.35	280

RCMT 0803 M0

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.40	0.15	0.40	180	330	0.77	1.20	0.35	240
				190 HB						280				220
				250 HB		1.80	0.15	0.35		250	0.67		0.30	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.40	0.15	0.35	120	280	0.67	1.20	0.30	200
				230 HB						250	0.58			180
				280 HB						210	0.48			150
				350 HB		1.80				180	0.43			130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.40	0.13	0.35	70	190	0.58	1.20	0.30	140
				280 HB				0.30		150	0.48		0.28	120
				320 HB		1.80				130	0.38			100
				350 HB						110	0.31		0.24	90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	2.40	0.14	0.35	170	270	0.38	1.20	0.30	190
				240 HB				0.32	160	220			0.29	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	1.80	0.13	0.30	80	150	0.36	1.20	0.28	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	2.40	0.15	0.35	170	250	0.38	1.20	0.25	190
				42 HRc				0.30	120	190	0.36		0.22	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	2.40	0.11	0.45	170	250	0.84	1.20	0.35	200
				200 HB					160	230	0.78			180
				250 HB					150	210	0.72			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	2.40	0.11	0.35	120	250	0.72	1.20	0.30	180
				200 HB						230	0.60			160
				250 HB						190	0.54			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	1.80	0.13	0.30	25	45	0.36	1.20	0.28	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	1.80	0.13	0.32	35	55	0.38	1.20	0.30	45
			TiAl6V4	-				0.30	45	65	0.36		0.28	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	1.40	0.05	0.22	50	100	0.24	1.10	0.18	80
				50 HRc		1.20		0.18	40	90	0.20	0.80	0.16	70
				55 HRc		1.00		0.14		80	0.14	0.70	0.12	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.40		0.22		60	0.20	1.10	0.18	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.14	30	50	0.12	0.70	0.12	40
NF	Aluminium	12	AlSi12	130 HB	0.50	2.40	0.15	0.40	200	400	0.84	1.20	0.35	280

RCMT 10T3 M0

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		Vc		Amax [mm²]	Suggested Starting Parameters		
					min	max	min	max	min	max		DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.80	0.15	0.40	180	330	0.90	1.40	0.35	240
				190 HB						280				220
				250 HB		2.10		0.35		250	0.78		0.30	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.80	0.15	0.35	120	280	0.78	1.40	0.30	200
				230 HB						250	0.67			180
				280 HB						210	0.56			150
				350 HB		2.10				180	0.50			130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.80	0.13	0.35	70	190	0.67	1.40	0.30	140
				280 HB				0.30		150	0.56		0.28	120
				320 HB		2.10				130	0.45			100
				350 HB						110	0.36		0.24	90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	2.80	0.14	0.35	170	270	0.45	1.40	0.30	190
				240 HB				0.32	160	220			0.29	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.10	0.13	0.30	80	150	0.42	1.40	0.28	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	2.80	0.15	0.35	170	250	0.45	1.40	0.25	190
				42 HRc				0.30	120	190	0.42		0.22	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	2.80	0.11	0.45	170	250	0.98	1.40	0.35	200
				200 HB					160	230	0.91			180
				250 HB					150	210	0.84			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	2.80	0.11	0.35	120	250	0.84	1.40	0.30	180
				200 HB						230	0.70			160
				250 HB						190	0.63			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	2.10	0.13	0.30	25	45	0.42	1.40	0.28	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	2.10	0.13	0.32	35	55	0.45	1.40	0.30	45
			TiAl6V4	-				0.30	45	65	0.42		0.28	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	1.70	0.05	0.22	50	100	0.28	1.30	0.18	80
				50 HRc		1.40		0.18	40	90	0.24	1.00	0.16	70
				55 HRc		1.10		0.14		80	0.17	0.80	0.12	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.70		0.22		60	0.24	1.30	0.18	50
	White Cast Iron		G-X300CrMo15	55 HRc	0.30	1.10	0.05	0.14	30	50	0.14	0.80	0.12	40
NF	Aluminium	12	AlSi12	130 HB	0.50	2.80	0.15	0.40	200	400	0.98	1.40	0.35	280

RCMT 1204 M0

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/rev] min	Feed [mm/rev] max	Vc min	Vc max	Amax [mm²]	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	3.20	0.15	0.40	180	330	1.54	2.00	0.37	240
				190 HB						280				220
				250 HB		2.40		0.35		250	1.34		0.32	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	3.20	0.15	0.35	120	280	1.34	2.00	0.32	200
				230 HB						250	1.15			180
				280 HB						210	0.96			150
				350 HB		2.40				180	0.86			130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	3.20	0.13	0.35	70	190	1.15	2.00	0.32	140
				280 HB				0.30		150	0.96		0.29	120
				320 HB		2.40				130	0.77			100
				350 HB						110	0.62		0.25	90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	3.20	0.14	0.35	170	270	0.77	2.00	0.32	190
				240 HB				0.32	160	220			0.30	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.40	0.13	0.30	80	150	0.72	2.00	0.29	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	3.20	0.15	0.35	170	250	0.77	2.00	0.26	190
				42 HRc				0.30	120	190	0.72		0.23	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	3.20	0.11	0.45	170	250	1.68	2.00	0.37	200
				200 HB					160	230	1.56			180
				250 HB					150	210	1.44			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	3.20	0.11	0.35	120	250	1.44	2.00	0.32	180
				200 HB						230	1.20			160
				250 HB						190	1.08			140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	2.40	0.13	0.30	25	45	0.72	2.00	0.29	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.50	2.40	0.13	0.32	35	55	0.77	2.00	0.32	45
			TiAl6V4	-				0.30	45	65	0.72		0.29	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	1.90	0.05	0.22	50	100	0.48	1.80	0.19	80
				50 HRc		1.60		0.18	40	90	0.41	1.40	0.17	70
				55 HRc		1.30		0.14		80	0.29	1.20	0.13	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.90		0.22		60	0.41	1.80	0.19	50
	White Cast Iron		G-X300CrMo15	55 HRc	0.30	1.30		0.14	30	50	0.24	1.20	0.13	40
NF	Aluminium	12	AlSi12	130 HB	0.50	3.20	0.15	0.40	200	400	1.68	2.00	0.37	280

MACHINING CONDITIONS | TURNING - LT 10 - LT 1000

CPMT 060208 NN
TCMT 110208 NN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/rev] min	Feed [mm/rev] max	Vc min	Vc max	Amax [mm²]	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	2.10	0.08	0.20	180	330	0.37	1.00	0.14	240
				190 HB		1.80		0.19		280	0.32			220
				250 HB				0.17		250	0.30			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	1.80	0.08	0.17	120	280	0.31	1.00	0.11	200
				230 HB		1.80				250	0.30			180
				280 HB		1.40		0.15		210	0.25		0.10	150
				350 HB						180	0.22			130
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	1.80	0.07	0.15	70	190	0.25	0.90	0.08	140
				280 HB				0.14		150				120
				320 HB		1.40		0.12		130	0.20			100
				350 HB						110	0.16			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.30	1.80	0.06	0.15	170	270	0.20	1.00	0.07	190
				240 HB					160	220	0.16		0.06	170
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.30	1.40	0.06	0.12	80	150	0.12	0.90	0.06	100
				310 HB					70	140				90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.30	1.80	0.06	0.15	170	250	0.20	0.90	0.07	190
				42 HRc		1.40		0.14	120	190	0.16	0.80	0.06	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.30	2.10	0.06	0.17	170	250	0.40	1.00	0.14	200
				200 HB					160	230	0.37			180
				250 HB					150	210	0.37			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.30	1.80	0.06	0.15	120	250	0.30	1.00	0.10	180
				200 HB						230	0.25			160
				250 HB						190				140
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.30	1.40	0.07	0.13	25	45	0.16	0.70	0.08	32
			Inconel 700	250 HB						45				30
			Stellite 21	350 HB					23	40				28
	Ti based	10	T40	-	0.30	1.40	0.07	0.14	35	55	0.20	0.70	0.11	45
			TiAl6V4	-				0.12	45	65	0.16		0.08	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	1.30	0.04	0.10	50	100	0.12	0.70	0.08	80
				50 HRc		1.10		0.09	40	90	0.11	0.60	0.06	70
				55 HRc		1.00		0.08		80	0.08	0.50	0.05	60
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.10		0.10		60	0.11	0.60	0.08	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.08	30	50	0.08	0.50	0.05	40
NF	Aluminium	12	AlSi12	130 HB	0.30	2.80	0.08	0.26	200	400	0.43	1.00	0.18	280

LT 1110S - NS CHIPBREAKER

MATERIAL GROUP		LAMINA GR. N°	MATERIAL EXAMPLE	HARDNESS
NiTi Alloy	Ti Based	10	TiAl6V4	-
			T40	-

DESIGNATION	MATERIAL EXAMPLE	DOC (mm)		FEED (mm/t)		Vc (m/min)		Amax	SUGGESTED STARTING PARAMETERS		
		min	max	min	max	min	max	(mm^2)	doc (mm)	feed (mm/t)	Vc (m/mm)
CCGT 060204 NS	TiAl6V4	0.30	1.00	0.05	0.10	40	60	0.07	0.50	0.08	50
	T40					50	70				60
CCGT 09T304 NS CNGG 09T304 NS	TiAl6V4	0.30	1.80	0.06	0.12	40	60	0.15	1.30	0.10	50
	T40				0.14	50	70	0.18		0.12	60
CNGG 120404 NS	TiAl6V4	0.30	2.00	0.06	0.14	40	60	0.20	1.50	0.11	50
	T40				0.16	50	70	0.22		0.13	60
CNGG 120408 NS	TiAl6V4	0.50	3.50	0.18	0.40	40	60	0.98	2.50	0.28	45
	T40				0.43	50	70	1.05		0.30	55
DCGT 11T304 NS DNGG 150604 NS	TiAl6V4	0.30	1.50	0.06	0.12	40	60	0.13	1.00	0.10	50
	T40				0.14	50	70	0.15		0.12	60
DNGG 110404 NS	TiAl6V4	0.30	1.70	0.06	0.12	40	60	0.14	1.30	0.10	50
	T40				0.14	50	70	0.17		0.12	60
DNGG 110408 NS	TiAl6V4	0.50	3.00	0.15	0.30	40	60	0.63	2.00	0.20	45
	T40				0.32	50	70	0.67		0.23	55
DNGG 150608 NS	TiAl6V4	0.50	2.30	0.14	0.36	40	60	0.58	1.20	0.25	45
	T40				0.38	50	70	0.61	1.40	0.28	55
TNGG 160404 NS	TiAl6V4	0.30	2.00	0.06	0.14	40	60	0.20	1.50	0.11	50
	T40				0.16	50	70	0.22		0.13	60
TNGG 160408 NS	TiAl6V4	0.50	3.50	0.18	0.40	40	60	0.98	2.50	0.28	45
	T40				0.43	50	70	1.05		0.30	55
VCGT 160404 NS VNGG 160404 NS	TiAl6V4	0.30	1.50	0.06	0.12	40	60	0.13	0.80	0.10	50
	T40				0.14	50	70	0.15		0.11	60
VNGG 160408 NS	TiAl6V4	0.50	2.00	0.14	0.34	40	60	0.48	1.00	0.23	45
	T40				0.36	50	70	0.50	1.20	0.25	55
WNGG 060404 NS	TiAl6V4	0.30	1.70	0.06	0.14	40	60	0.17	1.10	0.10	50
	T40				0.12	50	70	0.14		0.12	60
WNGG 060408 NS WNGG 080408 NS	TiAl6V4	0.50	2.30	0.15	0.30	40	60	0.48	1.60	0.20	45
	T40				0.32	50	70	0.52		0.23	55
WNGG 080404 NS	TiAl6V4	0.30	2.50	0.06	0.14	40	60	0.25	1.60	0.11	50
	T40				0.16	50	70	0.28		0.13	60

LT 1110S - NX CHIPBREAKER

MATERIAL GROUP		LAMINA GR. N°	MATERIAL EXAMPLE	HARDNESS
NiTi Alloy	Fe, Ni & Co Based	9	Incoloy 800	240 HB
			Inconel 700	250 HB
			Stellite 21	350 HB
	Ti Based	10	TiAl6V4	-
			T40	-

DESIGNATION	MATERIAL EXAMPLE	DOC (mm)		FEED (mm/t)		Vc (m/min)		Amax	SUGGESTED STARTING PARAMETERS		
		min	max	min	max	min	max	(mm^2)	doc (mm)	feed (mm/t)	Vc (m/mm)
CNMG 120408 NX DNMG 150408 NX DNMG 150608 NX TNMG 160408 NX	Incoloy 800	0.50	3.00	0.18	0.35	30	50	0.67	2.00	0.27	30
	Inconel 700										
	Stellite 21					20	40				
	TiAl6V4		3.50		0.40	50	70	0.76		0.31	55
	T40		3.00		0.35	40	60	0.67		0.29	45
SNMG 120408 NX	Incoloy 800	0.50	3.00	0.18	0.49	30	50	0.94	2.00	0.38	30
	Inconel 700										
	Stellite 21					20	40				
	TiAl6V4		3.50		0.56	50	70	1.07		0.45	55
	T40		3.00		0.49	40	60	0.94		0.41	45
TNMG 220408 NX	Incoloy 800	0.50	4.20	0.18	0.35	30	50	0.67	2.00	0.27	30
	Inconel 700										
	Stellite 21					20	40				
	TiAl6V4		4.90		0.40	50	70	0.76		0.31	55
	T40		4.20		0.35	40	60	0.67		0.29	45
WNMG 060408 NX	Incoloy 800	0.50	1.50	0.18	0.35	30	50	0.44	1.20	0.27	30
	Inconel 700										
	Stellite 21					20	40				
	TiAl6V4		1.80		0.40	50	70	0.50		0.31	55
	T40		1.50		0.35	40	60	0.44		0.29	45
WNMG 080408 NX	Incoloy 800	0.50	2.10	0.18	0.35	30	50	0.67	1.60	0.27	30
	Inconel 700										
	Stellite 21					20	40				
	TiAl6V4		2.50		0.40	50	70	0.76		0.31	55
	T40		2.10		0.35	40	60	0.67		0.29	45
CNMG 120404 NN DNMG 150404 NN	Incoloy 800	0.30	2.00	0.09	0.15	30	50	0.26	1.30	0.10	40
	Inconel 700										
	Stellite 21					20					35
	TiAl6V4				0.16	50	70	0.32		0.14	60
	T40				0.14	40	60	0.26		0.10	50

LT 1110S - NN CHIPBREAKER

MATERIAL GROUP		LAMINA GR. N°	MATERIAL EXAMPLE	HARDNESS
NiTi Alloy	Fe, Ni & Co Based	9	Incoloy 800	240 HB
			Inconel 700	250 HB
			Stellite 21	350 HB
	Ti Based	10	TiAl6V4	-
			T40	-

DESIGNATION	MATERIAL EXAMPLE	DOC (mm)		FEED (mm/t)		Amax	Vc (m/min)		SUGGESTED STARTING PARAMETERS		
		min	max	min	max	(mm^2)	min	max	doc (mm)	feed (mm/t)	Vc (m/mm)
CNMG 120412 NN DNMG 150412 NN DNMG 150612 NN	Incoloy 800	0.70	3.60	0.25	0.47	30	50	1.19	2.70	0.37	32
	Inconel 700										30
	Stellite 21					20	40				28
	TiAl6V4		4.20		0.54	50	70	1.36		0.44	55
	T40		3.60		0.47	40	60	1.19		0.40	45
DNMG 150604 NN TNMG 160404 NN	Incoloy 800	0.30	2.00	0.09	0.15	30	50	0.26	1.30	0.10	40
	Inconel 700										
	Stellite 21					20					35
	TiAl6V4				0.16	50	70	0.32		0.14	60
	T40				0.14	40	60	0.26		0.10	50
TNMG 160412 NN	Incoloy 800	0.70	3.00	0.25	0.47	30	50	1.19	2.40	0.37	30
	Inconel 700										
	Stellite 21						40				
	TiAl6V4		3.50		0.54	50	70	1.36		0.44	55
	T40		3.00		0.47	40	60	1.19		0.40	45
TNMG 220412 NN	Incoloy 800	0.70	4.20	0.25	0.47	30	50	1.19	2.70	0.37	30
	Inconel 700										
	Stellite 21						40				
	TiAl6V4		4.90		0.54	50	70	1.36		0.44	55
	T40		4.20		0.47	40	60	1.19		0.40	45
TNMG 220404 NN WNMG 060404 NN WNMG 080404 NN	Incoloy 800	0.30	2.00	0.09	0.15	30	50	0.26	1.30	0.10	40
	Inconel 700										
	Stellite 21					20					35
	TiAl6V4				0.16	50	70	0.32		0.14	60
	T40				0.14	40	60	0.26		0.10	50
WNMG 080412 NN	Incoloy 800	0.70	2.10	0.24	0.46	30	50	0.84	1.70	0.35	30
	Inconel 700										
	Stellite 21						40				
	TiAl6V4		2.50		0.52	50	70	0.96		0.41	55
	T40		2.10		0.46	40	60	0.84		0.38	45

LT 1120M - NX CHIPBREAKER

MATERIAL GROUP		LAMINA GROUP	MATERIAL EXAMPLE	HARDNESS
Stainless Steel	Austentic	4	304, 316, X5CrNi18-9	180 HB
				240 HB
	Duplex	5	X2CrNiN23-4, S31500	290 HB
				310 HB
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB
				42 HRc

DESIGNATION	MATERIAL EXAMPLE	DOC (mm)		FEED (mm/t)		Amax	Vc (m/min)		SUGGESTED STARTING PARAMETERS		
		min	max	min	max	(mm^2)	min	max	doc (mm)	feed (mm/t)	Vc (m/mm)
CNMG 120408 NX CNMP 120408 NX DNMG 110408 NX DNMG 150408 NX TNMG 160408 NX TNMG 220408 NX	304, 316, X5CrNi18-9	0.50	5.00	0.18	0.40	1.14	90	270	3.00	0.24	190
						0.95	80	220		0.21	170
	X2CrNiN23-4, S31500		4.00	0.16	0.35	0.76	40	150	2.50	0.23	100
								140			90
	410, X6Cr17, 17-4 PH, 430		5.00	0.16	0.40	0.67	90	250	2.50	0.19	190
			4.00			0.67	60	190	2.20	0.19	130
SNMG 120408 NX	304, 316, X5CrNi18-9	0.50	5.00	0.25	0.56	1.61	90	270	3.00	0.34	190
						1.34	80	220		0.30	170
	X2CrNiN23-4, S31500		4.00		0.49	1.07	40	150	2.50	0.32	100
								140			90
	410, X6Cr17, 17-4 PH, 430		5.00		0.52	0.94	90	250	2.50	0.27	190
			4.00				60	190	2.20		130
WNMG 060408 NX WNMG 080408 NX	304, 316, X5CrNi18-9	0.50	2.50	0.18	0.40	1.14	90	270	1.80	0.24	190
						0.95	80	220		0.21	170
	X2CrNiN23-4, S31500		2.00	0.16	0.35	0.76	40	150	1.50	0.23	100
								140			90
	410, X6Cr17, 17-4 PH, 430		2.50	0.16	0.40	0.67	90	250	1.50	0.19	190
			2.00				60	190	1.30		130

LT 1120M - NN CHIPBREAKER

MATERIAL GROUP		LAMINA GROUP	MATERIAL EXAMPLE	HARDNESS
Stainless Steel	Austentic	4	304, 316, X5CrNi18-9	180 HB
				240 HB
	Duplex	5	X2CrNiN23-4, S31500	290 HB
				310 HB
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB
				42 HRc

DESIGNATION	MATERIAL EXAMPLE	DOC (mm)		FEED (mm/t)		Amax	Vc (m/min)		SUGGESTED STARTING PARAMETERS		
		min	max	min	max	(mm^2)	min	max	doc (mm)	feed (mm/t)	Vc (m/mm)
CNMP 120408 NN DNMG 110408 NN	304, 316, X5CrNi18-9	0.50	5.00	0.20	0.40	1.20	90	270	3.00	0.25	190
						1.00	80	220		0.22	170
	X2CrNiN23-4, S31500		4.00	0.18	0.35	0.80	40	150	2.50	0.24	100
								140			90
	410, X6Cr17, 17-4 PH, 430		5.00	0.18	0.40	0.70	90	250	2.50	0.20	190
			4.00				60	190	2.20		130
CNMG 120412 NN CNMP 120412 NN DNMG 150412 NN DNMG 150612 NN TNMG 160412 NN TNMG 220412 NN	304, 316, X5CrNi18-9	0.70	6.00	0.25	0.54	2.04	90	270	4.00	0.33	190
						1.70	80	220		0.29	170
	X2CrNiN23-4, S31500		4.80	0.23	0.47	1.36	40	150	3.40	0.32	100
							40	140			90
	410, X6Cr17, 17-4 PH, 430		6.00	0.23	0.54	1.30	90	250	3.40	0.26	190
			4.80			1.25	60	190	2.90		130
SNMG 120412 NN	304, 316, X5CrNi18-9	0.70	6.00	0.35	0.76	2.64	90	270	4.00	0.50	190
						2.20	80	220		0.43	170
	X2CrNiN23-4, S31500		4.80	0.34	0.67	1.76	40	150	3.40	0.45	100
								140			90
	410, X6Cr17, 17-4 PH, 430		6.00	0.32	0.70	1.54	90	250	3.40	0.40	190
			4.80				60	190	2.90		130
WNMG 080412 NN	304, 316, X5CrNi18-9	0.70	3.50	0.24	0.52	1.44	90	270	2.60	0.31	190
						1.20	80	220		0.28	170
	X2CrNiN23-4, S31500		2.80	0.22	0.46	0.96	40	150	2.10	0.30	100
								140			90
	410, X6Cr17, 17-4 PH, 430		3.50	0.22	0.50	0.84	90	250	2.10	0.25	190
			2.80				60	190	1.90		130

LT 1125P

MATERIAL GROUP		LAMINA GROUP	MATERIAL EXAMPLE	HARDNESS
Steel	Non-alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB
				190 HB
				250 HB
	Low alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB
				230 HB
				280 HB
				350 HB
	High alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB
				280 HB
				320 HB
				350 HB

DESIGNATION	MATERIAL EXAMPLE	DOC (mm)		FEED (mm/t)		Amax	Vc (m/min)		SUGGESTED STARTING PARAMETERS		
		min	max	min	max	(mm^2)	min	max	doc (mm)	feed (mm/t)	Vc (m/mm)
CNMG 120404 MP DNMG 110404 MP DNMG 150404 MP DNMG 150604 MP TNMG 160404 MP VNMG 160404 MP WNMG 080404 MP	C35, Ck45, 1020, 1045, 1060, 28Mn6	0.30	3.00	0.11	0.23	0.60	90	330	2.00	0.18	240
			2.50		0.22	0.52		280			220
					0.20	0.48		250			200
	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6		2.50	0.10	0.20	0.50	60	280	2.00	0.14	200
						0.48		250			180
			2.00		0.18	0.40		210		0.13	150
						0.36		180			130
	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19		2.50	0.09	0.18	0.40	35	190	1.70	0.10	140
					0.16			150			120
			2.00		0.14	0.32		130			100
						0.26		110			90
CNMG 120408 MP DNMG 110408 MP DNMG 150408 MP DNMG 150608 MP SNMG 120408 MP TNMG 160408 MP TNMG 220408 MP VNMG 160408 MP	C35, Ck45, 1020, 1045, 1060, 28Mn6	0.50	5.00	0.18	0.50	1.71	90	330	3.00	0.36	240
								280		0.33	220
					0.45	1.42		250		0.31	200
	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6		5.00	0.18	0.45	1.14	60	280	3.00	0.30	200
			4.00					250			180
				0.16	0.40			210		0.29	150
			3.50			0.95		180	2.70		130
	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19		4.00	0.16	0.40	1.14	35	190	2.50	0.29	140
								150			120
			3.00		0.35	0.76		130		0.27	100
								110			90

DESIGNATION	MATERIAL EXAMPLE	DOC (mm)		FEED (mm/t)		Amax	Vc (m/min)		SUGGESTED STARTING PARAMETERS		
		min	max	min	max	(mm^2)	min	max	doc (mm)	feed (mm/t)	Vc (m/mm)
WNMG 060408 MP WNMG 080408 MP	C35, Ck45, 1020, 1045, 1060, 28Mn6	0.50	2.50	0.18	0.50	1.13	90	330	1.80	0.36	240
								280		0.33	220
					0.45	0.95		250		0.31	200
	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6		2.50	0.18	0.45	0.76	60	280	1.80	0.30	200
			2.00					250			180
				0.16	0.40			210		0.29	150
			1.80			0.63		180	1.60		130
	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19		2.00	0.16	0.40	0.76	35	190	1.50	0.29	140
								150			120
			1.50		0.35	0.50		130	1.30	0.27	100
								110			90
CNMG 120412 MP DNMG 150412 MP DNMG 150612 MP TNMG 160404 MP SNMG 120412 MP TNMG 160412 MP TNMG 220412 MP	C35, Ck45, 1020, 1045, 1060, 28Mn6	0.70	6.00	0.26	0.68	3.06	90	330	4.00	0.50	240
								280		0.46	220
					0.61	2.55		250		0.44	200
	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6		6.00	0.26	0.61	2.04	60	280	4.00	0.42	200
			4.80					250			180
				0.22	0.54			210		0.40	150
			4.20			1.70		180	3.60		130
	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19		4.80	0.22	0.54	2.04	35	190	3.40	0.40	140
								150			120
			3.60		0.47	1.36		130		0.37	100
								110			90
WNMG 080412 MP	C35, Ck45, 1020, 1045, 1060, 28Mn6	0.70	3.50	0.25	0.65	2.16	90	330	2.60	0.48	240
								280		0.44	220
					0.59	1.80		250		0.41	200
	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6		3.50	0.25	0.59	1.44	60	280	2.60	0.40	200
			2.80					250			180
				0.22	0.52			210		0.38	150
			2.50			1.20		180	2.30		130
	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19		2.80	0.22	0.52	1.44	35	190	2.10	0.38	140
								150			120
			2.10		0.46	0.96		130	1.90	0.35	100
								110			90
CNMG 160616 MP	C35, Ck45, 1020, 1045, 1060, 28Mn6	1.50	7.60	0.44	0.80	4.40	90	330	6.00	0.70	240
								280		0.65	220
					0.78	4.20		250		0.62	200
	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6		7.60	0.42	0.74	4.00	60	280	6.00	0.60	200
			7.40					250			180
				0.40	0.70			210		0.53	150
			7.20			3.40		180	5.50		130
	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19		6.60	0.40	0.72	3.00	35	190	5.00	0.50	140
								150			120
			6.20		0.66	2.60		130	4.50	0.48	100
								110			90

250

LT 05 - NON FERROUS TURNING

MATERIAL GROUP		LAMINA GR. N°	MATERIAL EXAMPLE	HARDNESS
Non Ferrous	Al (< 8%Si)	13	Si < 4%	100 HB
				60 HB
	Copper Alloys	14	CuZn30	100 HB
	Non-Metallic	15	Fiber Plastics	-
			Hard Rubber	-
			Graphite	-

DESIGNATION	MATERIAL EXAMPLE	DOC (mm)		FEED (mm/t)		Amax	Vc (m/min)		SUGGESTED STARTING PARAMETERS		
		min	max	min	max	(mm^2)	min	max	doc (mm)	feed (mm/t)	Vc (m/mm)
CCGT 060204 NS	Si < 4%	0.30	2.50	0.10	0.29	1.02	250	600	1.50	0.23	300
				0.12	0.33	1.28	400	1,200			400
	CuZn30			0.10	0.29	1.02	150	800			250
	Fiber Plastics				0.19	1.02	70	500	1.20	0.15	150
	Hard Rubber						80	300			
	Graphite						100	200			
CCGT 09T304 NS	Si < 4%	0.30	4.50	0.10	0.30	1.20	250	600	2.50	0.23	300
				0.12	0.35	1.50	400	1,200			400
	CuZn30			0.10	0.30	1.20	150	800			250
	Fiber Plastics				0.20		70	500	2.00	0.15	150
	Hard Rubber						80	300			
	Graphite						100	200			
CNGG 120408 NS	Si < 4%	0.50	6.00	0.18	0.50	2.10	400	1,200	4.00	0.36	400
							250	600			300
	CuZn30				0.60	2.52	150	800		0.45	250
	Fiber Plastics		5.50		0.36	1.39	70	500	3.50	0.24	150
	Hard Rubber		6.00		0.40	1.68	100	200	4.00	0.26	
	Graphite		4.00		0.34	0.95	80	300	3.00	0.22	
CNGG 09T304 NS DNGG 110404 NS TNGG 160404 NS VCGT 160404 NS VNGG 160404 NS WNGG 080404 NS	Si < 4%	0.30	4.50	0.10	0.30	0.95	400	1,200	2.30	0.27	400
							250	600			300
	CuZn30				0.35	1.10	150	800		0.25	250
	Fiber Plastics				0.27	0.85	70	500		0.20	150
	Hard Rubber				0.22	0.69	100	200		0.16	
	Graphite		4.00		0.26	0.73	80	300	1.60	0.18	
DCGT 11T304 NS	Si < 4%	0.30	4.50	0.10	0.30	1.20	250	600	2.30	0.23	300
				0.12	0.35	1.50	400	1,200			400
	CuZn30			0.10	0.30	1.20	150	800			250
	Fiber Plastics				0.20		70	500	1.80	0.15	150
	Hard Rubber						80	300			
	Graphite						100	200			

DESIGNATION	MATERIAL EXAMPLE	DOC (mm) min	DOC (mm) max	FEED (mm/t) min	FEED (mm/t) max	Amax (mm^2)	Vc (m/min) min	Vc (m/min) max	SUGGESTED STARTING PARAMETERS doc (mm)	feed (mm/t)	Vc (m/mm)
DNGG 110408 NS	Si < 4%	0.50	5.00	0.18	0.46	1.61	400	1,200	3.00	0.30	400
							250	600			300
	CuZn30				0.60	2.10	150	800		0.35	250
	Fiber Plastics		4.50		0.38	1.20	70	500	2.80	0.24	150
	Hard Rubber		5.00		0.40	1.40	100	200	3.00	0.28	
	Graphite		4.00		0.34	0.95	80	300	2.50	0.22	
DNGG 150604 NS	Si < 4%	0.30	5.50	0.10	0.30	1.40	250	600	2.50	0.23	300
				0.12	0.35	1.80	400	1,200			400
	CuZn30			0.10	0.30	1.40	150	800			250
	Fiber Plastics				0.20		70	500	2.00	0.15	150
	Hard Rubber						80	300			
	Graphite						100	200			
DNGG 150608 NS WNGG 080408 NS	Si < 4%	0.50	5.50	0.18	0.50	1.40	250	600	3.00	0.32	300
					0.60	1.80	400	1,200			400
	CuZn30			0.15	0.40	1.40	150	800		0.25	250
	Fiber Plastics						70	500			150
	Hard Rubber						80	300			
	Graphite						100	200			
TNGG 160408 NS	Si < 4%	0.30	4.50	0.18	0.50	1.58	400	1,200	2.30	0.36	400
							250	600			300
	CuZn30				0.60	1.89	150	800		0.45	250
	Fiber Plastics				0.36	1.13	70	500		0.24	150
	Hard Rubber				0.40	1.26	100	200		0.26	
	Graphite		4.00		0.34	0.95	80	300	1.60	0.22	
WNGG 060404 NS	Si < 4%	0.30	3.00	0.10	0.30	0.95	400	1,200	1.80	0.27	400
							250	600			300
	CuZn30				0.35	1.10	150	800		0.25	250
	Fiber Plastics				0.27	0.85	70	500		0.20	150
	Hard Rubber				0.22	0.69	100	200		0.16	
	Graphite		2.5		0.26	0.73	80	300	1.60	0.18	
WNGG 060408 NS	Si < 4%	0.50	3.00	0.18	0.50	1.40	250	600	1.80	0.32	300
					0.60	1.80	400	1,200			400
	CuZn30			0.15	0.40	1.40	150	800		0.25	250
	Fiber Plastics						70	500			150
	Hard Rubber						80	300			
	Graphite						100	200			

GCTX 2002 NN
GCTX 3003 NN
GCTX 3003 PP

Material Group		Lamina Gr. N°	Material Examples	Hardness	LT 1000 Vc [m/min] min	LT 1000 Vc [m/min] max	GCTX 2002 NN Feed [mm/rev] min	GCTX 2002 NN Feed [mm/rev] max	GCTX 3003 NN Feed [mm/rev] min	GCTX 3003 NN Feed [mm/rev] max	GCTX 3003 PP Feed [mm/rev] min	GCTX 3003 PP Feed [mm/rev] max
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	130	220	0.50	0.17	0.05	0.17	0.05	0.17
				190 HB		220						
				250 HB		200						
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	90	200	0.50	0.15	0.05	0.15	0.05	0.15
				230 HB								
				280 HB		170						
				350 HB		150						
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	60	170	0.50	0.14	0.05	0.14	0.05	0.14
				280 HB		150						
				320 HB		130		0.13		0.13		0.13
				350 HB		100		0.12		0.12		0.12
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	90	150	0.50	0.10	0.05	0.10	0.05	0.10
				240 HB	70	140						
	Duplex	5	X2CrNiN23-4, S31500	290 HB	60	100	0.50	0.09	0.05	0.09	0.05	0.09
				310 HB								
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	60	130	0.50	0.09	0.05	0.09	0.05	0.09
				42 HRc	50	90		0.08		0.08		0.08
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	130	190	0.50	0.16	0.05	0.16	0.05	0.16
				200 HB								
				250 HB								
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	90	150	0.50	0.14	0.05	0.14	0.05	0.14
				200 HB								
				250 HB								
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	30	40	0.50	0.08	0.05	0.08	0.05	0.08
			Inconel 700	250 HB								
			Stellite 21	350 HB								
	Ti based	10	T40	-	40	60	0.50	0.08	0.05	0.08	0.05	0.08
			TiAl6V4	-	30	40						
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	50	90	0.50	0.11	0.05	0.11	0.05	0.11
				50 HRc	40	70		0.10		0.10		0.10
				55 HRc	30	60		0.09		0.09		0.09
	Chilled Cast Iron		Ni-Hard 2	400 HB	40			0.08		0.08		0.08
	White Cast Iron		G-X300CrMo15	55 HRc	30	50				0.08		0.08
NF	Aluminium	12	AlSi12	130 HB	100	300	0.50	0.10	0.05	0.11	0.05	0.11

MGNM 200 G
MGNM 300 M

MGNM 400 M
MGNM 500 M

	Material Group	Lamina Gr. N°	Material Examples	Hardness	LT10 Vc [m/min]		MGNM 200 G Feed [mm/rev]		MGNM 300 M Feed [mm/rev]		MGNM 400 M Feed [mm/rev]		MGNM 500 m Feed [mm/rev]	
					min	max	min	max	min	max	min	max	min	max
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	110	220	0.06	0.21	0.07	0.25	0.13	0.35	0.20	0.41
				190 HB		180		0.20		0.24		0.33		0.40
				250 HB		170		0.18		0.22		0.30		0.36
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	70	180	0.05	0.18	0.06	0.22	0.12	0.30	0.18	0.36
				230 HB		170								0.36
				280 HB		140		0.16		0.20		0.27		0.32
				350 HB		120								0.32
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	40	130	0.05	0.16	0.05	0.20	0.11	0.27	0.16	0.32
				280 HB		100		0.14		0.18		0.24		0.29
				320 HB		90		0.13		0.15		0.21		0.25
				350 HB		70								0.25
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	100	180	0.05	0.16	0.06	0.20	0.12	0.27	0.18	0.32
				240 HB		150								0.32
	Duplex	5	X2CrNiN23-4, S31500	290 HB	50	100	0.05	0.13	0.05	0.15	0.11	0.21	0.16	0.25
				310 HB	40	90								0.25
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	100	170	0.05	0.16	0.06	0.20	0.12	0.27	0.18	0.32
				42 HRc	70	130		0.14		0.18		0.24		0.29
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	100	170	0.04	0.18	0.05	0.22	0.10	0.30	0.14	0.36
				200 HB		150								0.36
				250 HB	90	140								0.36
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	70	170	0.04	0.16	0.05	0.20	0.10	0.27	0.14	0.32
				200 HB		150								0.32
				250 HB		130								0.32
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	20	40	0.05	0.14	0.05	0.17	0.11	0.23	0.16	0.27
			Inconel 700	250 HB		40								0.27
			Stellite 21	350 HB		30								0.27
	Ti based	10	T40	-	30	40	0.05	0.14	0.05	0.18	0.11	0.24	0.16	0.29
			TiAl6V4	-	20			0.13		0.15		0.21		0.25
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	30	70	0.03	0.11	0.03	0.13	0.06	0.18	0.09	0.22
				50 HRc		60		0.09		0.11		0.15		0.18
				55 HRc		50		0.08		0.10		0.14		0.16
	Chilled Cast Iron		Ni-Hard 2	400 HB		40		0.11		0.13		0.18		0.22
	White Cast Iron		G-X300CrMo15	55 HRc	20			0.08		0.10		0.14		0.16
NF	Aluminium	12	AlSi12	130 HB	120	260	0.05	0.27	0.06	0.33	0.12	0.45	0.18	0.54

When using grooving inserts for side turning, the cutting depth is dependent upon the width of insert, the material and the rigidity of the workpiece.

Depth of cut recommendation:

- Max Ap (d.o.c.) is equal to 70% of insert width
- Min Ap (d.o.c.) is equal to the corner radius

MACHINING CONDITIONS | PARTING & GROOVING

WGE 2000
WGE 3000

WGE 4000
WGE 5000

	Material Group	Lamina Gr. N°	Material Examples	Hardness	LT10 Vc [m/min]		WGE 2000 Feed [mm/rev]		WGE 3000 Feed [mm/rev]		WGE 4000 Feed [mm/rev]		WGE 5000 Feed [mm/rev]	
					min	max	min	max	min	max	min	max	min	max
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	110	220	0.04	0.12	0.07	0.24	0.08	0.26	0.08	0.30
				190 HB		180		0.11		0.23		0.25		0.29
				250 HB		170		0.10		0.21		0.23		0.26
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	70	180	0.04	0.10	0.06	0.21	0.07	0.23	0.07	0.26
				230 HB		170								
				280 HB		140		0.09		0.19		0.21		0.23
				350 HB		120								
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	40	130	0.04	0.09	0.05	0.19	0.06	0.21	0.06	0.23
				280 HB		100		0.08		0.17		0.18		0.21
				320 HB		90		0.07		0.15		0.16		0.18
				350 HB		70								
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	100	180	0.04	0.09	0.06	0.19	0.07	0.21	0.07	0.23
				240 HB		150								
	Duplex	5	X2CrNiN23-4, S31500	290 HB	50	100	0.04	0.07	0.05	0.15	0.06	0.16	0.06	0.18
				310 HB	40	90								
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	100	170	0.04	0.09	0.06	0.19	0.07	0.21	0.07	0.23
				42 HRc	70	130		0.08		0.17		0.18		0.21
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	100	170	0.03	0.10	0.05	0.21	0.06	0.23	0.06	0.26
				200 HB		150								
				250 HB	90	140								
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	70	170	0.03	0.09	0.05	0.19	0.06	0.21	0.06	0.23
				200 HB		150								
				250 HB		130								
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	20	40	0.04	0.08	0.05	0.16	0.06	0.17	0.06	0.20
			Inconel 700	250 HB		40								
			Stellite 21	350 HB		30								
	Ti based	10	T40	-	30	40	0.04	0.08	0.05	0.17	0.06	0.18	0.06	0.21
			TiAl6V4	-	20			0.07		0.15		0.16		0.18
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	30	70	0.03	0.06	0.03	0.13	0.04	0.14	0.04	0.16
				50 HRc		60		0.05		0.11		0.12		0.13
				55 HRc		50				0.09		0.10		0.12
	Chilled Cast Iron		Ni-Hard 2	400 HB		40		0.06		0.13		0.14		0.16
	White Cast Iron		G-X300CrMo15	55 HRc	20			0.05		0.09		0.10		0.12
NF	Aluminium	12	AlSi12	130 HB	120	260	0.04	0.15	0.06	0.32	0.07	0.35	0.07	0.39

When using grooving inserts for side turning, the cutting depth is dependent upon the width of insert, the material and the rigidity of the workpiece.

Depth of cut recommendation:

- Max Ap (d.o.c.) is equal to 70% of insert width
- Min Ap (d.o.c.) is equal to the corner radius

Minimize your machining down time

MACHINING CONDITIONS

MILLING

ADKT 1505 PDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	14.00	0.18	0.32	190	250	4.00	0.23	250
				190 HB						220			220
				250 HB						200			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	14.00	0.15	0.25	150	200	4.00	0.20	200
				230 HB						180			180
				280 HB				0.22	130	150		0.18	150
				350 HB						140			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	10.00	0.12	0.22	90	130	3.00	0.18	130
				280 HB						120			120
				320 HB				0.18	60	100		0.16	100
				350 HB						80			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	14.00	0.15	0.25	190	220	4.00	0.20	220
				240 HB			0.12	0.22	160	190			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	10.00	0.12	0.18	70	100	3.00	0.16	100
				310 HB						90			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	14.00	0.15	0.25	150	190	4.00	0.20	190
				42 HRc		10.00		0.20	90	130	3.00	0.16	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	14.00	0.18	0.32	150	200	4.00	0.23	200
				200 HB						180			180
				250 HB						160			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	14.00	0.15	0.28	100	180	4.00	0.20	180
				200 HB						150			150
				250 HB						130			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	10.00	0.12	0.18	25	32	3.00	0.16	32
			Inconel 700	250 HB						30			30
			Stellite 21	350 HB						30			30
	Ti based	10	TiAl6V4	-	0.50	10.00	0.12	0.20	30	40	3.00	0.18	40
			T40	-				0.18	40	55		0.16	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	5.00	0.10	0.18	40	60	2.00	0.14	60
				50 HRc		3.00		0.16		55	1.50	0.13	55
				55 HRc		1.50		0.14		50	1.00	0.12	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		4.00		0.18		50	1.50	0.14	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.14	30	40	1.00	0.12	40
NF	Aluminium	12	AlSi12	130 HB	0.50	14.00	0.18	0.32	200	280	4.00	0.25	280

MACHINING CONDITIONS | MILLING - LT 3000

AOMT 123608 PETR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	11.00	0.13	0.22	190	330	2.00	0.15	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	11.00	0.11	0.18	150	240	2.00	0.13	200
				230 HB						210			180
				280 HB				0.15	130	190		0.12	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	7.90	0.08	0.15	90	150	1.50	0.12	130
				280 HB						130			120
				320 HB				0.13	60	110		0.10	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	11.00	0.11	0.18	190	250	2.00	0.13	220
				240 HB			0.08	0.15	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	7.90	0.08	0.13	70	130	1.50	0.10	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	11.00	0.11	0.18	150	210	2.00	0.13	190
				42 HRc		7.90	0.08	0.14	90	150	1.50	0.10	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	11.00	0.13	0.22	150	240	2.00	0.15	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	11.00	0.11	0.20	100	200	2.00	0.13	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	7.90	0.08	0.13	25	45	1.50	0.10	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	7.90	0.08	0.14	30	55	1.50	0.12	40
			T40	-				0.13	40	65		0.10	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	3.90	0.07	0.13	40	80	1.00	0.09	60
				50 HRc		2.40		0.11		70	0.80	0.08	55
				55 HRc		1.20		0.10		60	0.50		50
	Chilled Cast Iron		Ni-Hard 2	400 HB		3.10		0.13		80	0.80	0.09	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.20		0.10	30	60	0.50	0.08	40
NF	Aluminium	12	AlSi12	130 HB	0.50	11.00	0.13	0.22	200	400	2.00	0.16	280

APKT 060204 PDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	5.50	0.04	0.13	190	330	1.30	0.07	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	5.50	0.03	0.10	150	240	1.30	0.06	200
				230 HB						210			180
				280 HB				0.09	130	190		0.05	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	3.90	0.03	0.09	90	150	1.00	0.05	130
				280 HB						130			120
				320 HB				0.07	60	110			100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.30	5.50	0.03	0.10	190	250	1.30	0.06	220
				240 HB				0.09	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.30	3.90	0.03	0.07	70	130	1.00	0.05	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.30	5.50	0.03	0.10	150	210	1.30	0.06	190
				42 HRc		3.90		0.08	90	150	1.00	0.05	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.30	5.50	0.04	0.13	150	240	1.30	0.07	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.30	5.50	0.03	0.11	100	200	1.30	0.06	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.30	3.90	0.03	0.07	25	45	1.00	0.05	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.30	3.90	0.03	0.08	30	55	1.00	0.05	40
			T40	-				0.07	40	65			55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	2.00	0.02	0.07	40	80	0.70	0.04	60
				50 HRc		1.20		0.06		70	0.50		55
				55 HRc		0.60				60	0.30		50
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.60		0.07		80	0.50		50
	White Cast Iron		G-X300CrMo15	55 HRc		0.60		0.06	30	60	0.30		40
NF	Aluminium	12	AlSi12	130 HB	0.30	5.50	0.04	0.13	200	400	1.30	0.08	280

MACHINING CONDITIONS | MILLING - LT 3000

XPKT 0602-HF

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.20	0.50	0.20	1.40	190	330	0.50	1.00	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.20	0.50	0.20	1.30	150	240	0.40	0.80	200
				230 HB						210			180
				280 HB					130	190		0.70	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.20	0.40	0.20	1.10	90	150	0.40	0.70	130
				280 HB						130			120
				320 HB					60	110		0.60	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.20	0.40	0.20	0.70	190	250	0.40	0.50	220
				240 HB					160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.20	0.40	0.20	0.50	70	130	0.40	0.35	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.20	0.40	0.20	0.50	150	210	0.40	0.40	190
				42 HRc					90	150		0.30	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.20	0.50	0.20	1.40	150	240	0.50	1.00	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.20	0.50	0.20	1.20	100	200	0.50	0.90	180
				200 HB						180			150
				250 HB						150	0.40		130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.20	0.40	0.20	0.50	25	45	0.30	0.30	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.20	0.40	0.20	0.40	30	55	0.30	0.30	40
			T40	-					40	65			55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.20	0.40	0.20	0.70	40	80	0.40	0.40	60
				50 HRc		0.30		0.60		70	0.20	0.30	55
				55 HRc				0.50		60			50
	Chilled Cast Iron		Ni-Hard 2	400 HB						80			50
	White Cast Iron		G-X300CrMo15	55 HRc					30	60			40
NF	Aluminium	12	AlSi12	130 HB	0.20	0.50	0.20	0.70	200	400	0.50	0.60	280

APKT 100304 PDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.11	0.20	190	330	2.00	0.14	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.09	0.16	150	240	2.00	0.12	200
				230 HB						210			180
				280 HB				0.14	130	190		0.11	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.40	0.07	0.14	90	150	1.50	0.11	130
				280 HB						130			120
				320 HB				0.11	60	110		0.10	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.09	0.16	190	250	2.00	0.12	220
				240 HB			0.07	0.14	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	6.40	0.07	0.11	70	130	1.50	0.10	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.09	0.16	150	210	2.00	0.12	190
				42 HRc		6.40		0.12	90	150	1.50	0.10	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	9.00	0.11	0.20	150	240	2.00	0.14	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	9.00	0.09	0.17	100	200	2.00	0.12	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	6.40	0.07	0.11	25	45	1.50	0.10	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	6.40	0.07	0.12	30	55	1.50	0.11	40
			T40	-				0.11	40	65		0.10	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	3.20	0.06	0.11	40	80	1.00	0.09	60
				50 HRc		1.90		0.10		70	0.80	0.08	55
				55 HRc		1.00		0.09		60	0.50	0.07	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.60		0.11		80	0.80	0.09	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.09	30	60	0.50	0.07	40
NF	Aluminium	12	AlSi12	130 HB	0.50	9.00	0.11	0.20	200	400	2.00	0.16	280

MACHINING CONDITIONS | MILLING - LT 30 - LT 3000

APKT 100308 PDTR
APMT 0903 PDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.13	0.26	190	330	2.00	0.17	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.11	0.21	150	240	2.00	0.15	200
				230 HB						210			180
				280 HB				0.18	130	190		0.13	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.40	0.08	0.18	90	150	1.50	0.13	130
				280 HB						130			120
				320 HB				0.15	60	110		0.12	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.11	0.21	190	250	2.00	0.15	220
				240 HB			0.08	0.18	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	6.40	0.08	0.15	70	130	1.50	0.12	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.11	0.21	150	210	2.00	0.15	190
				42 HRc		6.40		0.16	90	150	1.50	0.12	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	9.00	0.13	0.26	150	240	2.00	0.17	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	9.00	0.11	0.23	100	200	2.00	0.15	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	6.40	0.08	0.15	25	45	1.50	0.12	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	6.40	0.08	0.16	30	55	1.50	0.13	40
			T40	-				0.15	40	65		0.12	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	3.20	0.07	0.15	40	80	1.00	0.10	60
				50 HRc		1.90		0.13		70	0.80	0.09	55
				55 HRc		1.00		0.11		60	0.50	0.09	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.60		0.15		80	0.80	0.10	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.11	30	60	0.50	0.09	40
NF	Aluminium	12	AlSi12	130 HB	0.50	9.00	0.13	0.26	200	400	2.00	0.18	280

APKT 100312 PDTR

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.13	0.28	190	330	2.00	0.20	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.10	0.22	150	240	2.00	0.18	200
				230 HB						210			180
				280 HB				0.19	130	190		0.16	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.40	0.08	0.19	90	150	1.50	0.16	130
				280 HB						130			120
				320 HB				0.16	60	110		0.14	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.10	0.22	190	250	2.00	0.18	220
				240 HB			0.08	0.19	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	6.40	0.08	0.16	70	130	1.50	0.14	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.10	0.22	150	210	2.00	0.18	190
				42 HRc		6.40		0.18	90	150	1.50	0.14	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	9.00	0.13	0.28	150	240	2.00	0.20	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	9.00	0.10	0.25	100	200	2.00	0.18	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	6.40	0.08	0.16	25	45	1.50	0.14	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	6.40	0.08	0.18	30	55	1.50	0.16	40
			T40	-				0.16	40	65		0.14	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	3.20	0.07	0.16	40	80	1.00	0.12	60
				50 HRc		1.90		0.14		70	0.80	0.11	55
				55 HRc		1.00		0.12		60	0.50	0.10	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.60		0.16		80	0.80	0.12	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.12	30	60	0.50	0.10	40
NF	Aluminium	12	AlSi12	130 HB	0.50	9.00	0.13	0.28	200	400	2.00	0.22	280

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APKT 100316 PDTR

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.13	0.28	190	330	2.00	0.20	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.10	0.22	150	240	2.00	0.18	200
				230 HB						210			180
				280 HB				0.19	130	190		0.16	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.40	0.08	0.19	90	150	1.50	0.16	130
				280 HB						130			120
				320 HB				0.16	60	110		0.14	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.10	0.22	190	250	2.00	0.18	220
				240 HB			0.08	0.19	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	6.40	0.08	0.16	70	130	1.50	0.14	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.10	0.22	150	210	2.00	0.18	190
				42 HRc		6.40		0.18	90	150	1.50	0.14	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	9.00	0.13	0.28	150	240	2.00	0.20	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	9.00	0.10	0.25	100	200	2.00	0.18	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	6.40	0.08	0.16	25	45	1.50	0.14	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	6.40	0.08	0.18	30	55	1.50	0.16	40
			T40	-				0.16	40	65		0.14	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	3.20	0.07	0.16	40	80	1.00	0.12	60
				50 HRc		1.90		0.14		70	0.80	0.11	55
				55 HRc		1.00		0.12		60	0.50	0.10	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.60		0.16		80	0.80	0.12	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.12	30	60	0.50	0.10	40
NF	Aluminium	12	AlSi12	130 HB	0.50	9.00	0.13	0.28	200	400	2.00	0.22	280

APKT 100332 PDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.13	0.32	190	330	1.00	0.23	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.10	0.25	150	240	1.00	0.20	200
				230 HB						210			180
				280 HB				0.22	130	190		0.18	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.40	0.08	0.22	90	150	1.00	0.18	130
				280 HB						130			120
				320 HB				0.18	60	110		0.16	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.10	0.25	190	250	1.00	0.20	220
				240 HB			0.08	0.22	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	6.40	0.08	0.18	70	130	1.00	0.16	100
				310 HB						120		0.16	90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.10	0.25	150	210	1.00	0.20	190
				42 HRc		6.40		0.20	90	150		0.16	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	9.00	0.13	0.32	150	240	1.00	0.23	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	9.00	0.10	0.28	100	200	1.00	0.20	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	6.40	0.08	0.18	25	45	1.00	0.16	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	6.40	0.08	0.20	30	55	1.00	0.18	40
			T40	-				0.18	40	65		0.16	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.40	3.20	0.07	0.18	40	80	0.70	0.14	60
				50 HRc		1.90		0.16		70		0.13	55
				55 HRc		1.00		0.14		60		0.12	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.60		0.18		80		0.14	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.14	30	60		0.12	40
NF	Aluminium	12	AlSi12	130 HB	0.50	9.00	0.13	0.32	200	400	1.00	0.25	280

APKT 100340 PDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.13	0.32	190	330	1.00	0.25	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.10	0.25	150	240	1.00	0.22	200
				230 HB						210			180
				280 HB				0.22	130	190		0.20	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.40	0.08	0.22	90	150	1.00	0.20	130
				280 HB						130			120
				320 HB				0.18	60	110		0.18	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.10	0.25	190	250	1.00	0.22	220
				240 HB			0.08	0.22	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	6.40	0.08	0.18	70	130	1.00	0.18	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.10	0.25	150	210	1.00	0.22	190
				42 HRc		6.40		0.20	90	150		0.18	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	9.00	0.13	0.32	150	240	1.00	0.25	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	9.00	0.10	0.28	100	200	1.00	0.22	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	6.40	0.08	0.18	25	45	1.00	0.18	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	6.40	0.08	0.20	30	55	1.00	0.20	40
			T40	-				0.18	40	65		0.18	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.40	3.20	0.07	0.18	40	80	0.70	0.15	60
				50 HRc		1.90		0.16		70		0.14	55
				55 HRc		1.00		0.14		60		0.13	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.60		0.18		80		0.15	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.14	30	60		0.13	40
NF	Aluminium	12	AlSi12	130 HB	0.50	9.00	0.13	0.32	200	400	1.00	0.28	280

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ANKX 170608 PNTR*
APKT 1604 PDTR
APKT 160408 PDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	15.00	0.18	0.32	190	330	4.00	0.23	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	15.00	0.15	0.25	150	240	4.00	0.20	200
				230 HB						210			180
				280 HB				0.22	130	190		0.18	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	10.70	0.12	0.22	90	150	3.00	0.18	130
				280 HB						130			120
				320 HB				0.18	60	110		0.16	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	15.00	0.15	0.25	190	250	4.00	0.20	220
				240 HB			0.12	0.22	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	10.70	0.12	0.18	70	130	3.00	0.16	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	15.00	0.15	0.25	150	210	4.00	0.20	190
				42 HRc		10.70		0.20	90	150	3.00	0.16	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	15.00	0.18	0.32	150	240	4.00	0.23	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	15.00	0.15	0.28	100	200	4.00	0.20	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	10.70	0.12	0.18	25	45	3.00	0.16	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	10.70	0.12	0.20	30	55	3.00	0.18	40
			T40	-				0.18	40	65		0.16	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	5.40	0.10	0.18	40	80	2.00	0.14	60
				50 HRc		3.20		0.16		70	1.50	0.13	55
				55 HRc		1.60		0.14		60	1.00	0.12	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		4.30		0.18		80	1.50	0.14	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.60		0.14	30	60	1.00	0.12	40
NF	Aluminium	12	AlSi12	130 HB	0.50	15.00	0.18	0.32	200	400	4.00	0.25	280

*For slot milling : Reduce the feed rate to 60%
Max feed rate after chip thickness compensation = 0.8mm/tooth
Not recommended for Ramping Down operation

APKT 160416 PDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	15.00	0.18	0.32	190	330	5.00	0.23	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	15.00	0.15	0.25	150	240	5.00	0.20	200
				230 HB						210			180
				280 HB				0.22	130	190		0.18	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	10.70	0.12	0.22	90	150	3.80	0.18	130
				280 HB						130			120
				320 HB				0.18	60	110		0.16	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	15.00	0.15	0.25	190	250	5.00	0.20	220
				240 HB			0.12	0.22	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	10.70	0.12	0.18	70	130	3.80	0.16	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	15.00	0.15	0.25	150	210	5.00	0.20	190
				42 HRc		10.70		0.20	90	150	3.80	0.16	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	15.00	0.18	0.32	150	240	5.00	0.23	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	15.00	0.15	0.28	100	200	5.00	0.20	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	10.70	0.12	0.18	25	45	3.80	0.16	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	10.70	0.12	0.20	30	55	3.80	0.18	40
			T40	-				0.18	40	65		0.16	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	5.40	0.10	0.18	40	80	2.50	0.14	60
				50 HRc		3.20		0.16		70	1.90	0.13	55
				55 HRc		1.60		0.14		60	1.30	0.12	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		4.30		0.18		80	1.90	0.14	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.60		0.14	30	60	1.30	0.12	40
NF	Aluminium	12	AlSi12	130 HB	0.50	15.00	0.18	0.32	200	400	5.00	0.25	280

APKT 160424 PDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	15.00	0.18	0.32	190	330	5.00	0.23	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	15.00	0.15	0.25	150	240	5.00	0.20	200
				230 HB						210			180
				280 HB				0.22	130	190		0.18	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	10.70	0.12	0.22	90	150	3.80	0.18	130
				280 HB						130			120
				320 HB				0.18	60	110		0.16	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	15.00	0.15	0.25	190	250	5.00	0.20	220
				240 HB			0.12	0.22	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	10.70	0.12	0.18	70	130	3.80	0.16	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	15.00	0.15	0.25	150	210	5.00	0.20	190
				42 HRc		10.70		0.20	90	150	3.80	0.16	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	15.00	0.18	0.32	150	240	5.00	0.23	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	15.00	0.15	0.28	100	200	5.00	0.20	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	10.70	0.12	0.18	25	45	3.80	0.16	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	10.70	0.12	0.20	30	55	3.80	0.18	40
			T40	-				0.18	40	65		0.16	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	5.40	0.10	0.18	40	80	2.50	0.14	60
				50 HRc		3.20		0.16		70	1.90	0.13	55
				55 HRc		1.60		0.14		60	1.30	0.12	50
	Chilled Cast Iron		Ni-Hard 2	400 HB	0.50	4.30		0.18		80	1.90	0.14	50
	White Cast Iron		G-X300CrMo15	55 HRc	0.50	1.60		0.14	30	60	1.30	0.12	40
NF	Aluminium	12	AlSi12	130 HB	0.50	15.00	0.18	0.32	200	400	5.00	0.25	280

APKT 160432 PDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	15.00	0.18	0.32	190	330	5.00	0.23	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	15.00	0.15	0.25	150	240	5.00	0.20	200
				230 HB						210			180
				280 HB				0.22	130	190		0.18	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	10.70	0.12	0.22	90	150	3.80	0.18	130
				280 HB						130			120
				320 HB				0.18	60	110		0.16	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	15.00	0.15	0.25	190	250	5.00	0.20	220
				240 HB			0.12	0.22	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	10.70	0.12	0.18	70	130	3.80	0.16	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	15.00	0.15	0.25	150	210	5.00	0.20	190
				42 HRc		10.70		0.20	90	150	3.80	0.16	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	15.00	0.18	0.32	150	240	5.00	0.23	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	15.00	0.15	0.28	100	200	5.00	0.20	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	10.70	0.12	0.18	25	45	3.80	0.16	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	10.70	0.12	0.20	30	55	3.80	0.18	40
			T40	-				0.18	40	65		0.16	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	5.40	0.10	0.18	40	80	2.50	0.14	60
				50 HRc		3.20		0.16		70	1.90	0.13	55
				55 HRc		1.60		0.14		60	1.30	0.12	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		4.30		0.18		80	1.90	0.14	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.60		0.14	30	60	1.30	0.12	40
NF	Aluminium	12	AlSi12	130 HB	0.50	15.00	0.18	0.32	200	400	5.00	0.25	280

APKT 1705 PETR

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	15.00	0.18	0.40	190	330	4.00	0.28	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	15.00	0.15	0.31	150	240	4.00	0.24	200
				230 HB						210			180
				280 HB				0.27	130	190		0.22	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	10.70	0.12	0.27	90	150	3.00	0.22	130
				280 HB						130			120
				320 HB				0.22	60	110		0.19	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	15.00	0.15	0.31	190	250	4.00	0.24	220
				240 HB			0.12	0.27	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	10.70	0.12	0.22	70	130	3.00	0.19	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	15.00	0.15	0.31	150	210	4.00	0.24	190
				42 HRc		10.70		0.25	90	150	3.00	0.19	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	15.00	0.18	0.40	150	240	4.00	0.28	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	15.00	0.15	0.35	100	200	4.00	0.24	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	10.70	0.12	0.22	25	45	3.00	0.19	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	10.70	0.12	0.25	30	55	3.00	0.22	40
			T40	-				0.22	40	65		0.19	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	5.40	0.10	0.22	40	80	2.00	0.17	60
				50 HRc		3.20		0.20		70	1.50	0.16	55
				55 HRc		1.60		0.17		60	1.00	0.14	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		4.30		0.22		80	1.50	0.17	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.60		0.17	30	60	1.00	0.14	40
NF	Aluminium	12	AlSi12	130 HB	0.50	15.00	0.18	0.40	200	400	4.00	0.30	280

XPKW 0602-HF

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.20	0.50	0.20	1.40	190	330	0.50	1.00	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.20	0.50	0.20	1.30	150	240	0.40	0.80	200
				230 HB						210			180
				280 HB					130	190	0.40	0.70	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.20	0.40	0.20	1.10	90	150	0.40	0.70	130
				280 HB						130			120
				320 HB					60	110	0.40	0.60	100
				350 HB						90			80
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.20	0.40	0.20	0.50	150	210	0.40	0.40	190
				42 HRc				0.60	90	150			130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.20	0.50	0.20	1.40	150	240	0.50	1.00	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.20	0.50	0.20	1.20	100	200	0.50	0.90	180
				200 HB						180			150
				250 HB						150	0.40		130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.20	0.40	0.20	0.80	40	80	0.40	0.50	60
				50 HRc		0.30		0.70		70	0.30	0.40	55
				55 HRc				0.50		60		0.30	50
	Chilled Cast Iron		Ni-Hard 2	400 HB	0.20	0.30	0.20	0.50		80	0.30	0.40	50
	White Cast Iron		G-X300CrMo15	55 HRc	0.20	0.30	0.20	0.50	30	60	0.30	0.30	40

APMT 1135 PDTR

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	10.00	0.13	0.22	190	330	2.00	0.15	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	10.00	0.10	0.17	150	240	2.00	0.13	200
				230 HB						210			180
P				280 HB				0.15	130	190		0.12	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	7.20	0.08	0.15	90	150	1.50	0.12	130
				280 HB						130			120
				320 HB				0.13	60	110		0.10	100
				350 HB						90			80
	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	10.00	0.10	0.17	190	250	2.00	0.13	220
				240 HB			0.08	0.15	160	210			190
M	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	7.20	0.08	0.13	70	130	1.50	0.10	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	10.00	0.10	0.17	150	210	2.00	0.13	190
				42 HRc		7.20	0.08	0.14	90	150	1.50	0.10	130
	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	10.00	0.13	0.22	150	240	2.00	0.15	200
				200 HB						220			180
K				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	10.00	0.10	0.20	100	200	2.00	0.13	180
				200 HB						180			150
				250 HB						150			130
	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	7.20	0.08	0.13	25	45	1.50	0.10	32
			Inconel 700	250 HB						45			30
S			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	7.20	0.08	0.14	30	55	1.50	0.12	40
			T40	-				0.13	40	65		0.10	55
	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	3.60	0.07	0.13	40	80	1.00	0.09	60
				50 HRc		2.10		0.11		70	0.80	0.08	55
H				55 HRc		1.10		0.10		60	0.50	0.08	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.90		0.13		80	0.80	0.09	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.10		0.10	30	60	0.50	0.08	40
NF	Aluminium	12	AlSi12	130 HB	0.50	10.00	0.13	0.22	200	400	2.00	0.16	280

APMT 1604 PDTR
APMT 160408 PDTR

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	15.00	0.16	0.30	190	330	4.00	0.21	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	15.00	0.14	0.23	150	240	4.00	0.18	200
				230 HB						210			180
P				280 HB				0.20	130	190		0.16	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	10.70	0.11	0.20	90	150	3.00	0.16	130
				280 HB						130			120
				320 HB				0.17	60	110		0.14	100
				350 HB						90			80
	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	15.00	0.14	0.23	190	250	4.00	0.18	220
				240 HB			0.11	0.20	160	210			190
M	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	10.70	0.11	0.17	70	130	3.00	0.14	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	15.00	0.14	0.23	150	210	4.00	0.18	190
				42 HRc		10.70	0.14	0.19	90	150	3.00	0.14	130
	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	15.00	0.16	0.30	150	240	4.00	0.21	200
				200 HB						220			180
K				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	15.00	0.14	0.26	100	200	4.00	0.18	180
				200 HB						180			150
				250 HB						150			130
	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	10.70	0.11	0.17	25	45	3.00	0.14	32
			Inconel 700	250 HB						45			30
S			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	10.70	0.11	0.19	30	55	3.00	0.16	40
			T40	-				0.17	40	65		0.14	55
	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	5.40	0.09	0.17	40	80	2.00	0.13	60
				50 HRc		3.20		0.15		70	1.50	0.12	55
H				55 HRc		1.60		0.13		60	1.00	0.11	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		4.30		0.17		80	1.50	0.13	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.60		0.13	30	60	1.00	0.11	40
NF	Aluminium	12	AlSi12	130 HB	0.50	15.00	0.16	0.30	200	400	4.00	0.22	280

HNKX 0604-45

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	3.50	0.16	0.34	190	330	2.50	0.30	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	3.50	0.14	0.28	150	240	2.50	0.26	200
				230 HB						210			180
				280 HB				0.26	130	190		0.24	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	3.50	0.11	0.28	90	150	2.50	0.26	130
				280 HB						130			120
				320 HB				0.24	60	110		0.22	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	3.50	0.14	0.30	190	250	2.50	0.26	220
				240 HB			0.11		160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	3.00	0.11	0.25	70	130	1.70	0.22	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	3.50	0.14	0.30	150	210	2.00	0.26	190
				42 HRc		3.00		0.25	90	150		0.22	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	3.50	0.17	0.34	150	240	2.00	0.30	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	3.50	0.14	0.30	100	200	2.00	0.27	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	3.00	0.11	0.20	25	45	1.70	0.18	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	3.00	0.11	0.25	30	55	1.70	0.23	40
			T40	-				0.23	40	65		0.20	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.40	1.50	0.10	0.22	40	80	1.00	0.18	60
				50 HRc		1.50		0.20		70	1.00	0.16	55
				55 HRc		1.00		0.18		60	0.70	0.15	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.50		0.22		80	1.00	0.19	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.20	30	60	0.70	0.17	40
NF	Aluminium	12	AlSi12	130 HB	0.50	3.50	0.17	0.36	200	400	2.00	0.30	280

LDMT 1504 PDSR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	14.00	0.18	0.32	190	330	4.00	0.23	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	14.00	0.15	0.25	150	240	4.00	0.20	200
				230 HB						210			180
				280 HB				0.22	130	190		0.18	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	10.00	0.12	0.22	90	150	3.00	0.18	130
				280 HB						130			120
				320 HB				0.18	60	110		0.16	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	14.00	0.15	0.25	190	250	4.00	0.20	220
				240 HB			0.12	0.22	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	10.00	0.12	0.18	70	130	3.00	0.16	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	14.00	0.15	0.25	150	210	4.00	0.20	190
				42 HRc		10.00		0.20	90	150	3.00	0.16	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	14.00	0.18	0.32	150	240	4.00	0.23	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	14.00	0.15	0.28	100	200	4.00	0.20	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	10.00	0.12	0.18	25	45	3.00	0.16	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	10.00	0.12	0.20	30	55	3.00	0.18	40
			T40	-				0.18	40	65		0.16	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	5.00	0.10	0.18	40	80	2.00	0.14	60
				50 HRc		3.00		0.16		70	1.50	0.13	55
				55 HRc		1.50		0.14		60	1.00	0.12	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		4.00		0.18		80	1.50	0.14	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.14	30	60	1.00	0.12	40
NF	Aluminium	12	AlSi12	130 HB	0.50	14.00	0.18	0.32	200	400	4.00	0.25	280

ODMT 0504 ZZTR
OFMT 050405 TR
OFMT 05T305 TN

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	3.50	0.22	0.51	190	330	2.40	0.37	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	3.50	0.18	0.40	150	240	2.40	0.32	200
				230 HB						210			180
				280 HB				0.35	130	190		0.29	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.50	0.14	0.35	90	150	1.80	0.29	130
				280 HB						130			120
				320 HB				0.29	60	110		0.26	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	3.50	0.18	0.35	190	250	2.40	0.29	220
				240 HB			0.14	0.32	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.50	0.14	0.29	70	130	1.80	0.26	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	3.50	0.18	0.35	150	210	2.40	0.29	190
				42 HRc		2.50		0.32	90	150	1.80	0.26	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	3.50	0.22	0.51	150	240	2.40	0.37	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	3.50	0.18	0.45	100	200	2.40	0.32	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	2.50	0.14	0.29	25	45	1.80	0.26	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	2.50	0.14	0.32	30	55	1.80	0.29	40
			T40	-				0.29	40	65		0.26	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.40	1.30	0.12	0.29	40	80	1.20	0.22	60
				50 HRc		1.00		0.26		70	0.90	0.21	55
				55 HRc		0.80		0.22		60	0.60	0.19	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.00		0.29		80	0.90	0.22	50
	White Cast Iron		G-X300CrMo15	55 HRc		0.80		0.22	30	60	0.60	0.19	40
NF	Aluminium	12	AlSi12	130 HB	0.50	3.50	0.22	0.51	200	400	2.40	0.40	280

ODMT 060508 TN

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.22	0.54	190	330	2.50	0.39	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.18	0.43	150	240	2.50	0.34	200
				230 HB						210			180
				280 HB				0.37	130	190		0.31	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.80	0.14	0.37	90	150	1.90	0.31	130
				280 HB						130			120
				320 HB				0.31	60	110		0.27	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	4.00	0.18	0.37	190	250	2.50	0.31	220
				240 HB			0.14	0.34	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.80	0.14	0.31	70	130	1.90	0.27	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	4.00	0.18	0.37	150	210	2.50	0.31	190
				42 HRc		2.80		0.34	90	150	1.90	0.27	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	4.00	0.22	0.54	150	240	2.50	0.39	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	4.00	0.18	0.48	100	200	2.50	0.34	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	2.80	0.14	0.31	25	45	1.90	0.27	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	2.80	0.14	0.34	30	55	1.90	0.31	40
			T40	-				0.31	40	65		0.27	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.40	1.40	0.12	0.31	40	80	1.30	0.24	60
				50 HRc		1.10		0.27		70	0.90	0.22	55
				55 HRc		0.90		0.24		60	0.60	0.20	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.10		0.31		80	0.90	0.24	50
	White Cast Iron		G-X300CrMo15	55 HRc		0.90		0.24	30	60	0.60	0.20	40
NF	Aluminium	12	AlSi12	130 HB	0.50	4.00	0.22	0.54	200	400	2.50	0.43	280

MACHINING CONDITIONS | MILLING - LT 30 - LT 3000

ODMW 060508 TN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.22	0.58	190	330	3.00	0.41	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.18	0.45	150	240	3.00	0.36	200
				230 HB						210			180
				280 HB				0.40	130	190		0.32	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.80	0.14	0.40	90	150	2.30	0.32	130
				280 HB						130			120
				320 HB				0.32	60	110		0.29	100
				350 HB						90			80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	4.00	0.22	0.58	150	240	3.00	0.41	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	4.00	0.18	0.50	100	200	3.00	0.36	180
				200 HB						180			150
				250 HB						150			130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.40	1.40	0.12	0.32	40	80	1.10	0.25	60
				50 HRc		1.10		0.29		70	0.90	0.23	55
				55 HRc		0.90		0.25		60	0.70	0.22	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.10		0.32		80	0.90	0.25	50
	White Cast Iron		G-X300CrMo15	55 HRc		0.90		0.25	30	60	0.70	0.22	40

OFER 070405 TN
OFMT 070405 TN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.50	0.22	0.51	190	330	3.00	0.37	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.50	0.18	0.40	150	240	3.00	0.32	200
				230 HB						210			180
				280 HB				0.35	130	190		0.29	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	3.20	0.14	0.35	90	150	2.20	0.29	130
				280 HB						130			120
				320 HB				0.29	60	110		0.26	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	4.50	0.18	0.35	190	250	3.00	0.29	220
				240 HB			0.14	0.32	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	3.20	0.14	0.29	70	130	2.20	0.26	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	4.50	0.18	0.35	150	210	3.00	0.29	190
				42 HRc		3.20		0.32	90	150	2.20	0.26	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	4.50	0.22	0.51	150	240	3.00	0.37	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	4.50	0.18	0.45	100	200	3.00	0.32	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	3.20	0.14	0.29	25	45	2.20	0.26	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	3.20	0.14	0.32	30	55	2.20	0.29	40
			T40	-				0.29	40	65		0.26	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.40	1.60	0.12	0.29	40	80	1.50	0.22	60
				50 HRc		1.30		0.26		70	1.10	0.21	55
				55 HRc		1.00		0.22		60	0.70	0.19	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.30		0.29		80	1.10	0.22	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.22	30	60	0.70	0.19	40
NF	Aluminium	12	AlSi12	130 HB	0.50	4.50	0.22	0.51	200	400	3.00	0.40	280

ONKX 0806-45

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.16	0.58	190	330	3.00	0.46	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.14	0.50	150	240	3.00	0.40	200
				230 HB						210			180
				280 HB				0.44	130	190		0.36	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	4.00	0.11	0.44	90	150	3.00	0.36	130
				280 HB						130			120
				320 HB				0.36	60	110		0.32	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	1.50	0.14	0.44	190	250	1.20	0.34	220
				240 HB			0.11	0.40	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	1.50	0.11	0.36	70	130	1.20	0.30	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	1.50	0.14	0.44	150	210	1.20	0.34	190
				42 HRc				0.40	90	150		0.30	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	4.00	0.17	0.58	150	240	4.00	0.46	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	4.00	0.14	0.52	100	200	4.00	0.40	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	1.50	0.11	0.36	25	45	1.20	0.30	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	1.50	0.11	0.40	30	55	1.20	0.34	40
			T40	-				0.36	40	65		0.30	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.40	3.00	0.09	0.36	40	80	2.00	0.28	60
				50 HRc				0.32		70	1.00	0.26	55
				55 HRc		1.50		0.28		60	0.50	0.24	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		3.00		0.36		80	1.50	0.28	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.28	30	60	0.50	0.24	40
NF	Aluminium	12	AlSi12	130 HB	0.50	1.50	0.17	0.60	200	400	1.50	0.50	280

MACHINING CONDITIONS | MILLING - LT 30 - LT 3000

RDMT 0602 M0

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	1.50	0.18	0.48	190	330	0.80	0.29	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	1.50	0.15	0.38	150	240	0.80	0.25	200
				230 HB						210			180
				280 HB				0.33	130	190		0.22	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	1.10	0.12	0.33	90	150	0.60	0.22	130
				280 HB						130			120
				320 HB				0.27	60	110		0.20	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	1.50	0.15	0.38	190	250	0.80	0.25	220
				240 HB			0.12	0.33	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	1.20	0.12	0.27	70	130	0.60	0.20	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	1.50	0.15	0.38	150	210	0.80	0.25	190
				42 HRc		1.20		0.30	90	150	0.60	0.20	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	1.50	0.18	0.48	150	240	0.80	0.29	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	1.50	0.15	0.42	100	200	0.80	0.25	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	1.20	0.12	0.27	25	45	0.60	0.20	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	1.20	0.12	0.30	30	55	0.60	0.22	40
			T40	-				0.27	40	65		0.20	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	0.60	0.10	0.27	40	80	0.40	0.17	60
				50 HRc		0.40		0.24		70	0.30	0.16	55
				55 HRc				0.21		60		0.15	50
	Chilled Cast Iron		Ni-Hard 2	400 HB				0.27		80		0.18	50
	White Cast Iron		G-X300CrMo15	55 HRc	0.50			0.21	30	60		0.15	40
NF	Aluminium	12	AlSi12	130 HB	0.50	1.50	0.18	0.48	200	400	0.80	0.31	280

RDMT 0702 M0

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	1.80	0.18	0.54	190	330	0.80	0.32	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	1.80	0.15	0.43	150	240	0.80	0.28	200
				230 HB						210			180
				280 HB				0.37	130	190		0.25	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	1.30	0.12	0.37	90	150	0.60	0.25	130
				280 HB						130			120
				320 HB				0.31	60	110		0.22	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	1.80	0.15	0.43	190	250	0.80	0.28	220
				240 HB			0.12	0.37	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	1.40	0.12	0.31	70	130	0.60	0.22	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	1.80	0.15	0.43	150	210	0.80	0.28	190
				42 HRc		1.40		0.34	90	150	0.60	0.22	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	1.80	0.18	0.54	150	240	0.80	0.32	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	1.80	0.15	0.48	100	200	0.80	0.28	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	1.40	0.12	0.31	25	45	0.60	0.22	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	1.40	0.12	0.34	30	55	0.60	0.25	40
			T40	-				0.31	40	65		0.22	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	0.60	0.10	0.31	40	80	0.40	0.20	60
				50 HRc		0.50		0.27		70	0.30	0.18	55
				55 HRc				0.24		60		0.17	50
	Chilled Cast Iron		Ni-Hard 2	400 HB				0.31		80		0.20	50
	White Cast Iron		G-X300CrMo15	55 HRc				0.24	30	60		0.17	40
NF	Aluminium	12	AlSi12	130 HB	0.50	1.80	0.18	0.54	200	400	0.80	0.35	280

RDMT 0803 M0

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.00	0.18	0.58	190	330	0.80	0.34	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.00	0.15	0.45	150	240	0.80	0.30	200
				230 HB						210			180
				280 HB				0.40	130	190		0.27	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	1.40	0.12	0.40	90	150	0.60	0.27	130
				280 HB						130			120
				320 HB				0.32	60	110		0.24	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	2.00	0.15	0.45	190	250	0.80	0.30	220
				240 HB			0.12	0.40	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	1.50	0.12	0.32	70	130	0.60	0.24	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	2.00	0.15	0.45	150	210	0.80	0.30	190
				42 HRc		1.50		0.36	90	150	0.60	0.24	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	2.00	0.18	0.58	150	240	0.80	0.34	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	2.00	0.15	0.50	100	200	0.80	0.30	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	1.50	0.12	0.32	25	45	0.60	0.24	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	1.50	0.12	0.36	30	55	0.60	0.27	40
			T40	-				0.32	40	65		0.24	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	0.70	0.10	0.32	40	80	0.40	0.21	60
				50 HRc		0.60		0.29		70	0.30	0.19	55
				55 HRc		0.50		0.25		60		0.18	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		0.60		0.32		80		0.21	50
	White Cast Iron		G-X300CrMo15	55 HRc		0.50		0.25	30	60		0.18	40
NF	Aluminium	12	AlSi12	130 HB	0.50	2.00	0.18	0.58	200	400	0.80	0.38	280

LT 30 - LT 3000
RDMT 1003 M0
RDMT 10T3 M0
RDMX 10T3 M0

LT 3000
RDMX 1003 M0
RXMT 10T3 M0
RXMX 10T3 M0

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.50	0.18	0.64	190	330	1.00	0.34	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.50	0.15	0.50	150	240	1.00	0.30	200
				230 HB						210			180
				280 HB				0.44	130	190		0.27	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	1.80	0.12	0.44	90	150	0.80	0.27	130
				280 HB						130			120
				320 HB				0.36	60	110		0.24	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	2.50	0.15	0.50	190	250	1.00	0.30	220
				240 HB			0.12	0.44	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.00	0.12	0.36	70	130	0.80	0.24	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	2.50	0.15	0.50	150	210	1.00	0.30	190
				42 HRc		2.00		0.40	90	150	0.80	0.24	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	2.50	0.18	0.64	150	240	1.00	0.34	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	2.50	0.15	0.56	100	200	1.00	0.30	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	2.00	0.12	0.36	25	45	0.80	0.24	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	2.00	0.12	0.40	30	55	0.80	0.27	40
			T40	-				0.36	40	65		0.24	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	0.90	0.10	0.36	40	80	0.50	0.21	60
				50 HRc		0.70		0.32		70	0.40	0.19	55
				55 HRc		0.60		0.28		60	0.30	0.18	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		0.70		0.36		80	0.40	0.21	50
	White Cast Iron		G-X300CrMo15	55 HRc		0.60		0.28	30	60	0.30	0.18	40
NF	Aluminium	12	AlSi12	130 HB	0.50	2.50	0.18	0.64	200	400	1.00	0.38	280

LT 30 - LT 3000
RDMT 1204 M0
RDMT 12T3 M0

LT 3000
RDMX 1204 M0
RDMX 12T3 M0
RXMT 1204 M0
RXMX 1204 M0

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	3.00	0.25	0.74	190	330	1.30	0.34	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	3.00	0.21	0.57	150	240	1.30	0.30	200
				230 HB						210			180
				280 HB				0.51	130	190		0.27	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.20	0.17	0.51	90	150	1.00	0.27	130
				280 HB						130			120
				320 HB				0.41	60	110		0.24	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	3.00	0.21	0.57	190	250	1.30	0.30	220
				240 HB			0.17	0.51	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.40	0.17	0.41	70	130	1.00	0.24	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	3.00	0.21	0.57	150	210	1.30	0.30	190
				42 HRc		2.40		0.46	90	150	1.00	0.24	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	3.00	0.25	0.74	150	240	1.30	0.34	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	3.00	0.21	0.64	100	200	1.30	0.30	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	2.40	0.17	0.41	25	45	1.00	0.24	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	2.40	0.17	0.46	30	55	1.00	0.27	40
			T40	-				0.41	40	65		0.24	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	1.10	0.14	0.41	40	80	0.70	0.21	60
				50 HRc		0.90		0.37		70	0.50	0.19	55
				55 HRc		0.80		0.32		60	0.30	0.18	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		0.90		0.41		80	0.50	0.21	50
	White Cast Iron		G-X300CrMo15	55 HRc		0.80		0.32	30	60	0.30	0.18	40
NF	Aluminium	12	AlSi12	130 HB	0.50	3.00	0.25	0.74	200	400	1.30	0.38	280

RDMT 1604 M0

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.25	1.00	190	330	2.00	0.34	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.21	0.78	150	240	2.00	0.30	200
				230 HB						210			180
				280 HB				0.69	130	190		0.27	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.80	0.17	0.69	90	150	1.50	0.27	130
				280 HB						130			120
				320 HB				0.56	60	110		0.24	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	4.00	0.21	0.78	190	250	2.00	0.30	220
				240 HB			0.17	0.69	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	3.10	0.17	0.56	70	130	1.50	0.24	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	4.00	0.21	0.78	150	210	2.00	0.30	190
				42 HRc		3.10		0.63	90	150	1.50	0.24	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	4.00	0.25	1.00	150	240	2.00	0.34	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	4.00	0.21	0.88	100	200	2.00	0.30	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	3.10	0.17	0.56	25	45	1.50	0.24	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	3.10	0.17	0.63	30	55	1.50	0.27	40
			T40	-				0.56	40	65		0.24	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.40	1.40	0.14	0.56	40	80	1.00	0.21	60
				50 HRc		1.10		0.50		70	0.80	0.19	55
				55 HRc		1.00		0.44		60	0.50	0.18	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.10		0.56		80	0.80	0.21	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.44	30	60	0.50	0.18	40
NF	Aluminium	12	AlSi12	130 HB	0.50	4.00	0.25	1.00	200	400	2.00	0.38	280

LT 30 - LT 3000
RDMW 1003 M0
RDMW 10T3 M0

LT 3000
RXMW 10T3 M0

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.50	0.18	0.70	190	0.58	1.00	0.39	250
				190 HB									220
				250 HB									200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.50	0.15	0.55	130	0.45	1.00	0.34	200
				230 HB									180
				280 HB				0.48		0.40		0.31	150
				350 HB									140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	1.80	0.12	0.48	60	0.40	0.80	0.31	130
				280 HB									120
				320 HB				0.40		0.32		0.27	100
				350 HB									80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	2.50	0.18	0.70	150	0.58	1.00	0.39	200
				200 HB									180
				250 HB									160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	2.50	0.15	0.62	100	0.50	1.00	0.34	180
				200 HB									150
				250 HB									130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	0.90	0.10	0.40	30	0.32	0.50	0.24	60
				50 HRc		0.70		0.35		0.29	0.40	0.22	55
				55 HRc		0.60		0.31		0.25	0.30	0.20	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		0.70		0.40		0.32	0.40	0.24	50
	White Cast Iron		G-X300CrMo15	55 HRc		0.60		0.31		0.25	0.30	0.20	40

LT 30 - LT 3000
RDMW 1204 M0
RDMW 12T3 M0

LT 3000
RXMW 1204 M0

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.27	0.70	190	330	1.50	0.60	250
				190 HB				0.65				0.60	220
				250 HB		3.00		0.50				0.50	200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.25	0.65	130	240	1.50	0.60	200
				230 HB		3.00		0.57				0.55	180
				280 HB		2.00	0.23	0.52		170		0.50	150
				350 HB		1.50		0.50			1.00	0.50	140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.00	0.20	0.57	60	150	1.00	0.55	130
				280 HB				0.52				0.50	120
				320 HB		1.50		0.50		90			100
				350 HB				0.47				0.45	80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	3.00	0.20	0.80	150	240	2.00	0.80	200
				200 HB								0.70	180
				250 HB								0.60	160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	2.50	0.20	0.60	100	200	1.50	0.50	180
				200 HB								0.55	150
				250 HB								0.60	130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	1.00	0.18	0.38	30	80	0.50	0.38	60
				50 HRc		0.80		0.34		70		0.34	55
				55 HRc		0.50		0.30		60		0.30	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		1.00		0.38		80		0.38	50
	White Cast Iron		G-X300CrMo15	55 HRc		0.50		0.34		60		0.34	40

SDKT 1204 AETN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	7.00	0.18	0.53	190	330	3.00	0.39	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	7.00	0.15	0.41	150	240	3.00	0.34	200
				230 HB						210			180
				280 HB				0.36	130	190		0.31	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	5.00	0.12	0.36	90	150	2.30	0.31	130
				280 HB						130			120
				320 HB				0.30	60	110		0.27	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	7.00	0.15	0.36	190	250	3.00	0.31	220
				240 HB			0.12	0.33	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	5.00	0.12	0.30	70	130	2.30	0.27	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	7.00	0.15	0.36	150	210	3.00	0.31	190
				42 HRc		5.00		0.30	90	150	2.30	0.27	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	7.00	0.18	0.53	150	240	3.00	0.39	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	7.00	0.15	0.46	100	200	3.00	0.34	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	5.00	0.12	0.30	25	45	2.30	0.27	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	5.00	0.12	0.33	30	55	2.30	0.31	40
			T40	-				0.30	40	65		0.27	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.10	0.30	40	80	1.50	0.24	60
				50 HRc		1.80		0.26		70	1.10	0.22	55
				55 HRc		1.50		0.23		60	0.80	0.20	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.30		80	1.10	0.24	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.23	30	60	0.80	0.20	40
NF	Aluminium	12	AlSi12	130 HB	0.50	7.00	0.18	0.53	200	400	3.00	0.43	280

SDKW 0904-HF

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	1.50	0.30	1.50	190	330	1.10	1.30	250
				190 HB							1.00		220
				250 HB									200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	1.30	0.30	1.36	130	240	0.80	1.10	200
				230 HB									180
				280 HB						170		1.00	150
				350 HB									140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	1.30	0.30	1.20	60	150	0.70	0.90	130
				280 HB		1.20							120
				320 HB		1.10				90		0.70	100
				350 HB									80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.30	1.50	0.30	2.26	150	240	1.20	1.30	200
				200 HB				1.50					180
				250 HB									160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.30	1.50	0.30	1.36	100	200	1.20	1.10	180
				200 HB									150
				250 HB									130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	0.60	0.30	0.90	30	80	0.60	0.60	60
				50 HRc				0.76		70	0.50	0.50	55
				55 HRc		0.50				60		0.40	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		0.60		0.60		80	0.40	0.50	50
	White Cast Iron		G-X300CrMo15	55 HRc		0.50				60		0.40	40

SDKW 1205-HF

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	2.00	0.30	2.70	190	330	1.30	1.70	250
				190 HB									220
				250 HB									200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	1.60	0.30	2.50	130	240	1.00	1.50	200
				230 HB									180
				280 HB						170		1.40	150
				350 HB				2.25					140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	1.60	0.30	2.25	60	150	0.80	1.20	130
				280 HB		1.30		2.00					120
				320 HB		1.10		1.80		90		1.00	100
				350 HB				1.60					80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.30	2.00	0.30	2.70	150	240	1.60	1.70	200
				200 HB									180
				250 HB									160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.30	2.00	0.30	2.25	100	200	1.60	1.60	180
				200 HB									150
				250 HB									130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	0.80	0.30	1.25	30	80	0.70	0.80	60
				50 HRc		0.70		1.10		70	0.50	0.70	55
				55 HRc		0.60		0.90		60			50
	Chilled Cast Iron		Ni-Hard 2	400 HB		0.70		0.80		80	0.40	0.60	50
	White Cast Iron		G-X300CrMo15	55 HRc		0.60				60			40

SDKX 0904-HF

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	1.50	0.30	1.50	190	330	1.00	1.20	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	1.20	0.30	1.36	150	240	0.80	1.00	200
				230 HB						210			180
				280 HB					130	190		0.90	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	1.20	0.30	1.20	90	150	0.70	0.80	130
				280 HB		1.10				130			120
				320 HB		1.00			60	110		0.70	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.30	1.30	0.30	0.76	190	250	0.80	0.50	220
				240 HB					160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.30	1.10	0.30	0.46	70	130	0.70	0.30	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.30	1.20	0.30	0.52	150	210	0.80	0.40	190
				42 HRc		1.00		0.46	90	150	0.70	0.30	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.30	1.50	0.30	2.26	150	240	1.20	1.20	200
				200 HB				1.50		220			180
				250 HB				1.50		190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.30	1.50	0.30	1.36	100	200	1.20	1.00	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.30	1.40	0.30	0.60	25	45	0.80	0.30	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.30	1.40	0.30	0.52	30	55	0.80	0.30	40
			T40	-		1.50			40	65			55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	0.60	0.30	0.90	40	80	0.60	0.50	60
				50 HRc		0.50		0.76		70	0.50		55
				55 HRc				0.60		60	0.40	0.40	50
	Chilled Cast Iron		Ni-Hard 2	400 HB						80		0.50	50
	White Cast Iron		G-X300CrMo15	55 HRc					30	60		0.40	40
NF	Aluminium	12	AlSi12	130 HB	0.30	1.50	0.30	0.76	200	400	1.50	0.70	280

MACHINING CONDITIONS | MILLING - LT 3000

SDKX 1205-HF

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	2.00	0.30	2.70	190	330	1.20	1.70	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	1.60	0.30	2.50	150	240	0.90	1.50	200
				230 HB						210			180
				280 HB					130	190		1.40	150
				350 HB				2.25		170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	1.60	0.30	2.25	90	150	0.70	1.20	130
				280 HB		1.30		2.00		130			120
				320 HB		1.10		1.80	60	110		1.00	100
				350 HB				1.60		90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.30	1.50	0.30	1.00	190	250	0.90	0.80	220
				240 HB					160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.30	1.20	0.30	0.65	70	130	0.80	0.50	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.30	1.50	0.30	0.70	150	210	0.90	0.60	190
				42 HRc		1.10		0.65	90	150	0.80	0.50	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.30	2.00	0.30	2.70	150	240	1.50	1.70	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.30	2.00	0.30	2.25	100	200	1.50	1.60	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.30	1.80	0.30	0.90	25	45	1.00	0.50	32
			Inconel 700	250 HB				0.80		45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.30	1.80	0.30	0.90	30	55	1.00	0.50	40
			T40	-		2.00		0.80	40	65			55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	0.80	0.30	1.25	40	80	0.60	0.80	60
				50 HRc		0.70		1.10		70	0.50	0.70	55
				55 HRc		0.60		0.90		60	0.40	0.60	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		0.70		0.80		80			50
	White Cast Iron		G-X300CrMo15	55 HRc		0.60			30	60			40
NF	Aluminium	12	AlSi12	130 HB	0.30	2.00	0.30	1.10	200	400	2.00	1.00	280

MACHINING CONDITIONS | MILLING - LT 30 - LT 3000

SEKN 1203 AFTN
SEKN 1204 AFTN

SEKR 1203 AFTN
SEKR 1204 AFTN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	7.00	0.18	0.46	190	330	3.00	0.34	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	7.00	0.15	0.36	150	240	3.00	0.30	200
				230 HB						210			180
				280 HB				0.32	130	190		0.27	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	5.00	0.12	0.32	90	150	2.30	0.27	130
				280 HB						130			120
				320 HB				0.26	60	110		0.24	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	7.00	0.15	0.32	190	250	3.00	0.27	220
				240 HB			0.12	0.29	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	5.00	0.12	0.26	70	130	2.30	0.24	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	7.00	0.15	0.32	150	210	3.00	0.27	190
				42 HRc		5.00		0.26	90	150	2.30	0.24	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	7.00	0.18	0.46	150	240	3.00	0.34	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	7.00	0.15	0.41	100	200	3.00	0.30	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	5.00	0.12	0.26	25	45	2.30	0.24	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	5.00	0.12	0.29	30	55	2.30	0.27	40
			T40	-				0.26	40	65	2.30	0.24	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.10	0.26	40	80	1.50	0.21	60
				50 HRc		1.80		0.23		70	1.10	0.19	55
				55 HRc		1.50		0.20		60	0.80	0.18	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.26		80	1.10	0.21	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.20	30	60	0.80	0.18	40
NF	Aluminium	12	AlSi12	130 HB	0.50	7.00	0.18	0.46	200	400	3.00	0.37	280

SEKN 1504 AFTN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.18	0.50	190	330	4.00	0.37	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.15	0.39	150	240	4.00	0.32	200
				230 HB						210			180
				280 HB				0.34	130	190		0.29	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.40	0.12	0.34	90	150	3.00	0.29	130
				280 HB						130			120
				320 HB				0.28	60	110		0.26	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.15	0.34	190	250	4.00	0.29	220
				240 HB			0.12	0.31	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	6.40	0.12	0.28	70	130	3.00	0.26	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.15	0.34	150	210	4.00	0.29	190
				42 HRc		6.40		0.28	90	150	3.00	0.26	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	9.00	0.18	0.50	150	240	4.00	0.37	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	9.00	0.15	0.43	100	200	4.00	0.32	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	6.40	0.12	0.28	25	45	3.00	0.26	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	6.40	0.12	0.31	30	55	3.00	0.29	40
			T40	-				0.28	40	65		0.26	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	3.20	0.10	0.28	40	80	2.00	0.22	60
				50 HRc		1.90		0.25		70	1.50	0.21	55
				55 HRc		1.60		0.22		60	1.00	0.19	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.60		0.28		80	1.50	0.22	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.60		0.22	30	60	1.00	0.19	40
NF	Aluminium	12	AlSi12	130 HB	0.50	9.00	0.18	0.50	200	400	4.00	0.40	280

SEKT 1204 AFTN
SEKT 12T3 AGSN

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	6.00	0.18	0.46	190	330	3.00	0.34	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	6.00	0.15	0.36	150	240	3.00	0.30	200
				230 HB						210			180
				280 HB				0.32	130	190		0.27	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	5.00	0.12	0.32	90	150	2.30	0.27	130
				280 HB						130			120
				320 HB				0.26	60	110		0.24	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	6.00	0.15	0.32	190	250	3.00	0.27	220
				240 HB			0.12	0.29	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	5.00	0.12	0.26	70	130	2.30	0.24	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	6.00	0.15	0.32	150	210	3.00	0.27	190
				42 HRc		5.00		0.26	90	150	2.30	0.24	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	6.00	0.18	0.46	150	240	3.00	0.34	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	6.00	0.15	0.41	100	200	3.00	0.30	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	5.00	0.12	0.26	25	45	2.30	0.24	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	5.00	0.12	0.29	30	55	2.30	0.27	40
			T40	-				0.26	40	65	2.30	0.24	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.10	0.26	40	80	1.50	0.21	60
				50 HRc		1.80		0.23		70	1.10	0.19	55
				55 HRc		1.50		0.20		60	0.80	0.18	50
	Chilled Cast Iron		Ni-Hard 2	400 HB	0.50	2.00		0.26		80	1.10	0.21	50
	White Cast Iron		G-X300CrMo15	55 HRc	0.50	1.50		0.20	30	60	0.80	0.18	40
NF	Aluminium	12	AlSi12	130 HB	0.50	6.00	0.18	0.46	200	400	3.00	0.37	280

SNKX 1205-45

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	5.00	0.16	0.34	190	330	3.00	0.30	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	5.00	0.14	0.28	150	240	3.00	0.26	200
				230 HB						210			180
				280 HB				0.26	130	190		0.24	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	5.00	0.11	0.28	90	150	3.00	0.26	130
				280 HB						130			120
				320 HB				0.24	60	110		0.22	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	5.00	0.14	0.30	190	250	3.00	0.26	220
				240 HB			0.11		160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	4.00	0.11	0.25	70	130	2.50	0.22	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	5.00	0.14	0.30	150	210	3.00	0.26	190
				42 HRc		4.00		0.25	90	150		0.22	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	5.00	0.17	0.34	150	240	3.00	0.30	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	5.00	0.14	0.30	100	200	3.00	0.27	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	4.00	0.11	0.20	25	45	2.50	0.18	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	4.00	0.11	0.25	30	55	2.50	0.23	40
			T40	-				0.23	40	65		0.20	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.40	2.00	0.10	0.22	40	80	1.30	0.18	60
				50 HRc				0.20		70	1.30	0.16	55
				55 HRc		1.00		0.18		60	1.00	0.15	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.22		80	1.30	0.19	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.20	30	60	1.00	0.17	40
NF	Aluminium	12	AlSi12	130 HB	0.50	5.00	0.17	0.36	200	400	3.00	0.30	280

SNKX 1607-45

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB						330			250
				190 HB	0.50	6.50	0.16	0.58	190	300	4.00	0.46	220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB						240			200
				230 HB				0.50	150	210		0.40	180
				280 HB	0.50	6.50	0.14			190	4.00		150
				350 HB				0.44	130	170		0.36	140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB						150			130
				280 HB				0.44	90	130		0.36	120
				320 HB	0.50	6.50	0.11			110	3.00		100
				350 HB				0.36	60	90		0.32	80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	6.50	0.14	0.44	190	250	4.00	0.34	220
				240 HB			0.11	0.40	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	5.00	0.11	0.36	70	130	3.00	0.30	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	6.50	0.14	0.44	150	210	4.00	0.34	190
				42 HRc		5.00		0.40	90	150	3.00	0.30	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB						240			200
				200 HB	0.50	6.50	0.17	0.58	150	220	4.00	0.46	180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB						200			180
				200 HB	0.50	6.50	0.14	0.52	100	180	4.00	0.40	150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB						45			32
			Inconel 700	250 HB	0.50	5.00	0.11	0.36	25	45	3.00	0.30	30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	5.00	0.11	0.40	30	55	3.00	0.34	40
			T40	-				0.36	40	65		0.30	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc		3.00		0.36		80	2.00	0.28	60
				50 HRc				0.32	40	70	1.50	0.26	55
				55 HRc	0.40	1.50	0.09	0.28		60	1.00	0.24	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		3.00		0.36		80	1.50	0.28	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.28	30	60	1.00	0.24	40
NF	Aluminium	12	AlSi12	130 HB	0.50	6.50	0.17	0.60	200	400	4.00	0.50	280

SPKN 1203 EDTR
SPKN 1204 EDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB									250
				190 HB	0.50	7.00	0.18	0.43	190	330	3.00	0.30	220
				250 HB									200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB									200
				230 HB				0.34		240		0.26	180
				280 HB	0.50	7.00	0.15		150		3.00		150
				350 HB				0.30		170		0.23	140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB									130
				280 HB				0.30		150		0.23	120
				320 HB	0.50	5.00	0.12		70		2.30		100
				350 HB				0.24		90		0.21	80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB									200
				200 HB	0.50	7.00	0.18	0.43	150	240	3.00	0.30	180
				250 HB									160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB									180
				200 HB	0.50	7.00	0.15	0.38	100	200	3.00	0.26	150
				250 HB									130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc		2.50		0.24		80	1.50	0.18	60
				50 HRc		1.80		0.22		70	1.10	0.17	55
				55 HRc	0.50	1.50	0.10	0.19	40	60	0.80	0.16	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.24		80	1.10	0.18	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.19		60	0.80	0.16	40

SPKN 1504 EDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB									250
				190 HB	0.50	9.00	0.18	0.43	190	330	4.00	0.30	220
				250 HB									200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB									200
				230 HB				0.34		240		0.26	180
				280 HB	0.50	9.00	0.15		130		4.00		150
				350 HB				0.30		170		0.23	140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB									130
				280 HB				0.30		150		0.23	120
				320 HB	0.50	6.40	0.12		60		3.00		100
				350 HB				0.24		90		0.21	80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB									200
				200 HB	0.50	9.00	0.18	0.43	150	240	4.00	0.30	180
				250 HB									160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB									180
				200 HB	0.50	9.00	0.15	0.38	100	200	4.00	0.26	150
				250 HB									130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc		3.20		0.24		80	2.00	0.18	60
				50 HRc		2.30		0.22		70	1.50	0.17	55
				55 HRc	0.50	1.90	0.10	0.19	30	60	1.00	0.16	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.60		0.24		80	1.50	0.18	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.90		0.19		60	1.00	0.16	40

MACHINING CONDITIONS | MILLING - LT 30 - LT 3000

SPKR 1203 EDTR
SPKR 1204 EDTR

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	7.00	0.18	0.38	190	330	3.00	0.26	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	7.00	0.15	0.30	150	240	3.00	0.23	200
				230 HB						210			180
				280 HB				0.26	130	190		0.21	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	5.00	0.12	0.26	90	150	2.30	0.21	130
				280 HB						130			120
				320 HB	0.50			0.22	60	110		0.18	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	7.00	0.15	0.26	190	250	3.00	0.21	220
				240 HB			0.12	0.24	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	5.00	0.12	0.22	70	130	2.30	0.18	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	7.00	0.15	0.26	150	210	3.00	0.21	190
				42 HRc		5.00		0.22	90	150	2.30	0.18	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	7.00	0.18	0.38	150	240	3.00	0.26	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	7.00	0.15	0.34	100	200	3.00	0.23	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	5.00	0.12	0.22	25	45	2.30	0.18	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	5.00	0.12	0.24	30	55	2.30	0.21	40
			T40	-				0.22	40	65		0.18	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.10	0.22	40	80	1.50	0.16	60
				50 HRc		1.80		0.19		70	1.10	0.15	55
				55 HRc		1.50		0.17		60	0.80	0.14	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.22		80	1.10	0.16	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.17	30	60	0.80	0.14	40
NF	Aluminium	12	AlSi12	130 HB	0.50	7.00	0.18	0.38	200	400	3.00	0.29	280

SPMT 060304 TN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	6.00	0.06	0.12	190	330	2.40	0.10	250
				190 HB				0.10		300		0.08	220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	6.00	0.06	0.12	150	240	2.40	0.10	200
				230 HB				0.10		210		0.08	180
				280 HB			0.05		130	190			150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	6.00	0.06	0.08	90	150	1.80	0.07	130
				280 HB			0.05	0.10		130		0.08	120
				320 HB				0.08	60	110		0.06	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.30	6.00	0.06	0.08	190	250	2.40	0.07	220
				240 HB			0.05		160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.30	6.00	0.05	0.08	70	130	1.80	0.07	100
				310 HB				0.07		120		0.06	90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.30	6.00	0.05	0.08	150	210	2.40	0.07	190
				42 HRc				0.07	90	150	1.80	0.06	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.30	6.00	0.05	0.14	150	240	2.40	0.12	200
				200 HB				0.12		220		0.10	180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.30	6.00	0.05	0.14	100	200	2.40	0.12	180
				200 HB				0.12		180		0.10	150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.30	6.00	0.04	0.08	25	45	1.80	0.06	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.30	6.00	0.04	0.08	30	55	1.80	0.06	40
			T40	-					40	65			55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.30	6.00	0.04	0.10	40	80	1.20	0.08	60
				50 HRc				0.08		70	0.90	0.06	55
				55 HRc				0.06		60	0.60	0.05	50
	Chilled Cast Iron		Ni-Hard 2	400 HB						80	0.90		50
	White Cast Iron		G-X300CrMo15	55 HRc					30	60	0.60		40
NF	Aluminium	12	AlSi12	130 HB	0.30	6.00	0.08	0.14	200	400	2.40	0.12	280

SPMT 09T308 TN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.07	0.17	190	330	2.40	0.15	250
				190 HB			0.06	0.15		300		0.13	220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.07	0.17	150	240	2.40	0.15	200
				230 HB			0.06	0.15		210		0.13	180
				280 HB			0.05	0.13	130	190		0.11	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	9.00	0.07	0.15	90	150	1.80	0.13	130
				280 HB			0.05	0.13		130		0.11	120
				320 HB				0.10	60	110		0.08	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.07	0.12	190	250	2.40	0.10	220
				240 HB			0.05	0.10	160	210		0.08	190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	9.00	0.05	0.10	70	130	1.80	0.08	100
				310 HB				0.08		120		0.07	90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.05	0.08	150	210	2.40	0.07	190
				42 HRc					90	150	1.80		130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	9.00	0.06	0.22	150	240	2.40	0.18	200
				200 HB						220			180
				250 HB				0.20		190		0.16	160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	9.00	0.06	0.22	100	200	2.40	0.18	180
				200 HB			0.05			180			150
				250 HB				0.20		150		0.16	130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	9.00	0.04	0.12	25	45	1.80	0.10	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	9.00	0.04	0.12	30	55	1.80	0.10	40
			T40	-					40	65			55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	9.00	0.04	0.12	40	80	1.20	0.10	60
				50 HRc				0.10		70	0.90	0.08	55
				55 HRc				0.08		60	0.60	0.06	50
	Chilled Cast Iron		Ni-Hard 2	400 HB						80	0.90		50
	White Cast Iron		G-X300CrMo15	55 HRc					30	60	0.60		40
NF	Aluminium	12	AlSi12	130 HB	0.50	9.00	0.08	0.16	200	400	2.40	0.13	280

SPMT 120408 TN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	12.00	0.10	0.22	190	330	3.20	0.19	250
				190 HB			0.08	0.20		300		0.17	220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	12.00	0.10	0.22	150	240	3.20	0.19	200
				230 HB			0.08	0.20		210		0.17	180
				280 HB			0.07	0.18	130	190		0.15	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	12.00	0.08	0.20	90	150	2.40	0.17	130
				280 HB			0.07	0.18		130		0.15	120
				320 HB					60	110			100
				350 HB				0.16		90		0.14	80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	12.00	0.09	0.12	190	250	3.20	0.10	220
				240 HB			0.08	0.10	160	210		0.08	190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	12.00	0.08	0.10	70	130	2.40	0.08	100
				310 HB			0.06			120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	12.00	0.08	0.12	150	210	3.20	0.10	190
				42 HRc			0.06	0.10	90	150	2.40	0.08	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	12.00	0.10	0.28	150	240	3.20	0.26	200
				200 HB				0.26		220		0.24	180
				250 HB				0.24		190		0.22	160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	12.00	0.10	0.26	100	200	3.20	0.24	180
				200 HB				0.24		180		0.22	150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	12.00	0.06	0.14	25	45	2.40	0.12	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45		0.11	30
	Ti based	10	TiAl6V4	-	0.50	12.00	0.06	0.14	30	55	2.40	0.12	40
			T40	-					40	65			55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	12.00	0.06	0.14	40	80	1.60	0.10	60
				50 HRc				0.12		70	1.20	0.08	55
				55 HRc				0.10		60	0.80		50
	Chilled Cast Iron		Ni-Hard 2	400 HB						80	1.20		50
	White Cast Iron		G-X300CrMo15	55 HRc					30	60	0.80		40
NF	Aluminium	12	AlSi12	130 HB	0.50	12.00	0.10	0.18	200	400	3.20	0.15	280

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SPMT 12T308

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.13	0.29	190	330	3.00	0.18	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.10	0.22	150	240	3.00	0.16	200
				230 HB						210			180
				280 HB				0.20	130	190		0.14	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.40	0.08	0.20	90	150	2.30	0.14	130
				280 HB						130			120
				320 HB				0.16	60	110		0.13	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.10	0.22	190	250	3.00	0.16	220
				240 HB			0.08	0.20	160	210		0.16	190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	6.40	0.08	0.16	70	130	2.30	0.13	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.10	0.22	150	210	3.00	0.16	190
				42 HRc		6.40		0.18	90	150	2.30	0.13	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	9.00	0.13	0.29	150	240	3.00	0.18	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	9.00	0.10	0.25	100	200	3.00	0.16	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	6.40	0.08	0.16	25	45	2.30	0.13	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	6.40	0.08	0.18	30	55	2.30	0.14	40
			T40	-				0.16	40	65		0.13	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	3.20	0.07	0.16	40	80	1.50	0.11	60
				50 HRc		1.90		0.14		70	1.10	0.10	55
				55 HRc		1.00		0.13		60	0.80	0.10	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.60		0.16		80	1.10	0.11	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.00		0.13	30	60	0.80	0.10	40
NF	Aluminium	12	AlSi12	130 HB	0.50	9.00	0.13	0.29	200	400	3.00	0.20	280

SPUN 120308

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	7.00	0.18	0.37	190	330	3.00	0.26	250
				190 HB									220
				250 HB									200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	7.00	0.15	0.29	150	240	3.00	0.23	200
				230 HB									180
				280 HB				0.25		170		0.21	150
				350 HB									140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	5.00	0.12	0.25	70	150	2.30	0.21	130
				280 HB									120
				320 HB				0.21		90		0.18	100
				350 HB									80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	7.00	0.18	0.37	150	240	3.00	0.26	200
				200 HB									180
				250 HB									160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	7.00	0.15	0.32	100	200	3.00	0.23	180
				200 HB									150
				250 HB									130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	2.50	0.10	0.21	40	80	1.50	0.16	60
				50 HRc		1.80		0.18		70	1.10	0.15	55
				55 HRc		1.50		0.16		60	0.80	0.14	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		2.00		0.21		80	1.10	0.16	50
	White Cast Iron		G-X300CrMo15	55 HRc		1.50		0.16		60	0.80	0.14	40

TPKN 1603 PDTR

Group	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	12.00	0.14	0.27	190	330	3.00	0.19	250
				190 HB									220
				250 HB									200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	12.00	0.12	0.21	150	240	3.00	0.17	200
				230 HB									180
				280 HB				0.19		170		0.15	150
				350 HB									140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	8.60	0.10	0.19	70	150	2.30	0.15	130
				280 HB									120
				320 HB				0.15		90		0.14	100
				350 HB									80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	12.00	0.14	0.27	150	240	3.00	0.19	200
				200 HB									180
				250 HB									160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	12.00	0.12	0.24	100	200	3.00	0.17	180
				200 HB									150
				250 HB									130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	4.30	0.08	0.15	40	80	1.50	0.12	60
				50 HRc		3.00		0.14		70	1.10	0.11	55
				55 HRc		2.60		0.12		60	0.80	0.10	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		3.40		0.15		80	1.10	0.12	50
	White Cast Iron		G-X300CrMo15	55 HRc		2.60		0.12		60	0.80	0.10	40

TPKN 2204 PDTR

Group	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	18.00	0.16	0.27	190	330	4.00	0.19	250
				190 HB									220
				250 HB									200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	18.00	0.14	0.21	150	240	4.00	0.17	200
				230 HB									180
				280 HB				0.19		170		0.15	150
				350 HB									140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	12.90	0.11	0.19	70	150	3.00	0.15	130
				280 HB									120
				320 HB				0.15		90		0.13	100
				350 HB									80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	18.00	0.16	0.27	150	240	4.00	0.19	200
				200 HB									180
				250 HB									160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	18.00	0.14	0.24	100	200	4.00	0.17	180
				200 HB									150
				250 HB									130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	6.40	0.09	0.15	40	80	2.00	0.12	60
				50 HRc		4.50		0.14		70	1.50	0.11	55
				55 HRc		3.90		0.12		60	1.00	0.10	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		5.10		0.15		80	1.50	0.12	50
	White Cast Iron		G-X300CrMo15	55 HRc		3.90		0.12		60	1.00	0.10	40

TPKR 1603 PDTR

Group	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	12.00	0.13	0.22	190	330	3.00	0.17	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	12.00	0.10	0.17	150	240	3.00	0.15	200
				230 HB						210			180
				280 HB				0.15	130	190		0.13	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	8.60	0.08	0.15	90	150	2.30	0.13	130
				280 HB						130			120
				320 HB				0.13	60	110		0.12	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	12.00	0.10	0.15	190	250	3.00	0.13	220
				240 HB			0.08	0.14	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	8.60	0.08	0.13	70	130	2.30	0.12	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	12.00	0.10	0.15	150	210	3.00	0.13	190
				42 HRc		8.60		0.13	90	150	2.30	0.12	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	12.00	0.13	0.22	150	240	3.00	0.17	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	12.00	0.10	0.20	100	200	3.00	0.15	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	8.60	0.08	0.13	25	45	2.30	0.12	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	8.60	0.08	0.14	30	55	2.30	0.13	40
			T40	-				0.13	40	65	2.30	0.12	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	4.30	0.07	0.13	40	80	1.50	0.10	60
				50 HRc		3.00		0.11		70	1.10	0.09	55
				55 HRc		2.60		0.10		60	0.80	0.09	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		3.40		0.13		80	1.10	0.10	50
	White Cast Iron		G-X300CrMo15	55 HRc		2.60		0.10	30	60	0.80	0.09	40
NF	Aluminium	12	AlSi12	130 HB	0.50	12.00	0.13	0.22	200	400	3.00	0.18	280

TPKR 2204 PDTR

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	18.00	0.13	0.22	190	330	4.00	0.17	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	18.00	0.10	0.17	150	240	4.00	0.15	200
				230 HB						210			180
				280 HB				0.15	130	190		0.13	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	12.90	0.08	0.15	90	150	3.00	0.13	130
				280 HB						130			120
				320 HB				0.13	60	110		0.12	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	18.00	0.10	0.15	190	250	4.00	0.13	220
				240 HB			0.08	0.14	160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	12.90	0.08	0.13	70	130	3.00	0.12	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	18.00	0.10	0.15	150	210	4.00	0.13	190
				42 HRc		12.90		0.13	90	150	3.00	0.12	130
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	18.00	0.13	0.22	150	240	4.00	0.17	200
				200 HB						220			180
				250 HB						190			160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	18.00	0.10	0.20	100	200	4.00	0.15	180
				200 HB						180			150
				250 HB						150			130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.50	12.90	0.08	0.13	25	45	3.00	0.12	32
			Inconel 700	250 HB						45			30
			Stellite 21	350 HB						45			30
	Ti based	10	TiAl6V4	-	0.50	12.90	0.08	0.14	30	55	3.00	0.13	40
			T40	-				0.13	40	65		0.12	55
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	6.40	0.07	0.13	40	80	2.00	0.10	60
				50 HRc		4.50		0.11		70	1.50	0.09	55
				55 HRc		3.90		0.10		60	1.00	0.09	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		5.10		0.13		80	1.50	0.10	50
	White Cast Iron		G-X300CrMo15	55 HRc		3.90		0.10	30	60	1.00	0.09	40
NF	Aluminium	12	AlSi12	130 HB	0.50	18.00	0.13	0.22	200	400	4.00	0.18	280

MACHINING CONDITIONS | MILLING - LT 30 - LT 3000

TPUN 160308

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	12.00	0.14	0.27	190	330	3.00	0.19	250
				190 HB									220
				250 HB									200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	12.00	0.12	0.21	150	240	3.00	0.17	200
				230 HB									180
				280 HB				0.19		170		0.15	150
				350 HB									140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	8.60	0.10	0.19	70	150	2.30	0.15	130
				280 HB									120
				320 HB				0.15		90		0.14	100
				350 HB									80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.50	12.00	0.14	0.27	150	240	3.00	0.19	200
				200 HB									180
				250 HB									160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.50	12.00	0.12	0.24	100	200	3.00	0.17	180
				200 HB									150
				250 HB									130
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.50	4.30	0.08	0.15	40	80	1.50	0.12	60
				50 HRc		3.00		0.14		70	1.10	0.11	55
				55 HRc		2.60		0.12		60	0.80	0.10	50
	Chilled Cast Iron		Ni-Hard 2	400 HB		3.40		0.15		80	1.10	0.12	50
	White Cast Iron		G-X300CrMo15	55 HRc		2.60		0.12		60	0.80	0.10	40

MACHINING CONDITIONS | MILLING - LT 3130

XPKT 0602-HF LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.20	0.50	0.20	1.40	190	330	0.50	1.00	250
				190 HB						300			220
				250 HB						250			200
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.20	0.50	0.20	1.30	150	240	0.40	0.80	200
				230 HB						210			180
				280 HB					130	190		0.70	150
				350 HB						170			140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.20	0.40	0.20	1.10	90	150	0.40	0.70	130
				280 HB						130			120
				320 HB					60	110		0.60	100
				350 HB						90			80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.20	0.40	0.20	0.70	190	250	0.40	0.50	220
				240 HB					160	210			190
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.20	0.40	0.20	0.50	70	130	0.40	0.95	100
				310 HB						120			90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.20	0.40	0.20	0.50	150	210	0.40	0.40	190
				42 HRc					90	150		0.30	130

APKT 060204 PDTR LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	5.50	0.04	0.13	190	350	1.30	0.07	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	5.50	0.03	0.10	150	270	1.30	0.06	215
				230 HB						230			200
				280 HB				0.09	130	210		0.05	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	3.90	0.03	0.09	90	170	1.00	0.05	140
				280 HB						150			130
				320 HB				0.07	60	120			110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.30	5.50	0.03	0.10	190	260	1.30	0.06	230
				240 HB				0.09	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.30	3.90	0.03	0.07	70	140	1.00	0.05	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.30	5.50	0.03	0.10	150	220	1.30	0.06	200
				42 HRc		3.90		0.08	90	160	1.00	0.05	140

XPKW 0602-HF LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.20	0.50	0.20	1.40	190	350	0.50	1.00	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.20	0.50	0.20	1.30	150	270	0.40	0.80	215
				230 HB						230			200
				280 HB					130	210		0.70	165
				350 HB					130	190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.20	0.40	0.20	1.10	90	170	0.40	0.70	140
				280 HB						150			130
				320 HB					60	120		0.60	110
				350 HB						100			90

APKT 100304 PDTR LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm] min	DOC [mm] max	Feed [mm/z] min	Feed [mm/z] max	Vc [m/min] min	Vc [m/min] max	Suggested Starting Parameters DOC	Suggested Starting Parameters Feed	Suggested Starting Parameters Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.11	0.20	190	350	2.00	0.14	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.09	0.16	150	270	2.00	0.12	215
				230 HB						230			200
				280 HB				0.14	130	210		0.11	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.40	0.07	0.14	90	170	1.50	0.11	140
				280 HB						150			130
				320 HB				0.11	60	120		0.10	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.09	0.16	190	260	2.00	0.12	230
				240 HB			0.07	0.14	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	6.40	0.07	0.11	70	140	1.50	0.10	110
				310 HB			0.07	0.11	70	130	1.50		100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.09	0.16	150	220	2.00	0.12	200
				42 HRc		6.40	0.09	0.12	90	160	1.50	0.10	140

MACHINING CONDITIONS | MILLING - LT 3130

APKT 100308 PDTR LT 3130

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.13	0.26	190	350	2.00	0.17	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.11	0.21	150	270	2.00	0.15	215
				230 HB						230			200
				280 HB				0.18	130	210		0.13	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.40	0.08	0.18	90	170	1.50	0.13	140
				280 HB						150			130
				320 HB				0.15	60	120		0.12	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.11	0.21	190	260	2.00	0.15	230
				240 HB			0.08	0.18	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	6.40	0.08	0.15	70	140	1.50	0.12	110
				310 HB				0.15		130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.11	0.21	150	220	2.00	0.15	200
				42 HRc		6.40		0.16	90	160	1.50	0.12	140

ANKX 170608 PNTR LT 3130
APKT 1604 PDTR LT 3130
APKT 160408 PDTR LT 3130

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	15.00	0.18	0.32	190	350	4.00	0.23	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	15.00	0.15	0.25	150	270	4.00	0.20	215
				230 HB						230			200
				280 HB				0.22	130	210		0.18	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	10.70	0.12	0.22	90	170	3.00	0.18	140
				280 HB						150			130
				320 HB				0.18	60	120		0.16	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	15.00	0.15	0.25	190	260	4.00	0.20	230
				240 HB			0.12	0.22	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	10.70	0.12	0.18	70	140	3.00	0.16	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	15.00	0.15	0.25	150	220	4.00	0.20	200
				42 HRc		10.70		0.20	90	160	3.00	0.16	140

APMT 1135 PDTR LT 3130

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	10.00	0.13	0.22	190	350	2.00	0.15	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	10.00	0.11	0.18	150	270		0.13	215
				230 HB						230			200
				280 HB				0.15	130	210		0.12	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	7.20	0.08	0.15	90	170	1.50	0.12	140
				280 HB						150			130
				320 HB				0.13	60	120		0.10	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	10.00	0.11	0.18	190	260	2.00	0.13	230
				240 HB			0.08	0.15	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	7.20	0.08	0.13	70	140	1.50	0.10	110
				310 HB			0.08			130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	10.00	0.11	0.18	150	220	2.00	0.13	200
				42 HRc		7.20	0.08	0.14	90	160	1.50	0.10	140

APMT 1604 PDTR LT 3130

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	15.00	0.16	0.30	190	350	4.00	0.21	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	15.00	0.14	0.23	150	270	4.00	0.18	215
				230 HB						230			200
				280 HB				0.20	130	210		0.16	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	10.70	0.11	0.20	90	170	3.00	0.16	140
				280 HB						150			130
				320 HB				0.17	60	120		0.14	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	15.00	0.14	0.23	190	260	4.00	0.18	230
				240 HB			0.11	0.20	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	10.70	0.11	0.17	70	140	3.00	0.14	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	15.00	0.14	0.23	150	220	4.00	0.18	200
				42 HRc		10.70		0.19	90	160	3.00	0.14	140

MACHINING CONDITIONS | MILLING - LT 3130

HNKX 0604-45 LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	3.50	0.16	0.34	190	350	2.50	0.30	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	3.50	0.14	0.28	150	270	2.50	0.26	215
				230 HB						230			200
				280 HB				0.26	130	210		0.24	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	3.50	0.11	0.28	90	170	2.50	0.26	140
				280 HB						150			130
				320 HB				0.24	60	120		0.22	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	3.50	0.14	0.30	190	260	2.50	0.26	230
				240 HB			0.11		160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	3.50	0.11	0.25	70	140	2.50	0.22	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	3.50	0.14	0.30	150	220	2.50	0.26	200
				42 HRc				0.25	90	160		0.22	140

ONKX 0806-45 LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.16	0.58	190	350	3.00	0.46	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.14	0.50	150	270	3.00	0.40	215
				230 HB						230			200
				280 HB				0.44	130	210		0.36	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	4.00	0.11	0.44	90	170	3.00	0.36	140
				280 HB						150			130
				320 HB				0.36	60	120		0.32	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	1.50	0.14	0.44	190	260	1.20	0.34	230
				240 HB			0.11	0.40	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	1.50	0.11	0.36	70	140	1.20	0.30	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	1.50	0.14	0.44	150	220	1.20	0.34	200
				42 HRc				0.40	90	160		0.30	140

ODMW 060508 TN LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.22	0.58	190	350	3.00	0.41	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.18	0.45	150	270	3.00	0.36	215
				230 HB						230			200
				280 HB				0.40	130	210		0.32	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.90	0.14	0.40	90	170	2.30	0.32	140
				280 HB						150			130
				320 HB				0.32	60	120		0.29	110
				350 HB						100			90

SCMT 09T308 LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	9.00	0.07	0.17	190	350	2.40	0.15	265
				190 HB			0.60	0.15		320		0.13	240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	9.00	0.07	0.17	150	270	2.40	0.15	215
				230 HB			0.06	0.15		230		0.13	200
				280 HB			0.05	0.13	130	210		0.11	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	9.00	0.07	0.15	90	170	1.80	0.13	140
				280 HB			0.05	0.13		150		0.11	130
				320 HB				0.10	60	120		0.08	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	9.00	0.07	0.12	190	260	2.40	0.10	230
				240 HB			0.05	0.10	160	220		0.08	200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	9.00	0.05	0.10	70	140	1.80	0.08	110
				310 HB				0.08		130		0.07	100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	9.00	0.05	0.08	150	220	2.40	0.07	200
				42 HRc					90	160	1.80		140

RDMT 0702 M0 LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.16	0.58	190	350	3.00	0.46	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.14	0.50	150	270	3.00	0.40	215
				230 HB						230			200
				280 HB				0.44	130	210		0.36	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	4.00	0.11	0.44	90	170	3.00	0.36	140
				280 HB						150			130
				320 HB				0.36	60	120	3.00	0.32	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	1.50	0.14	0.44	190	260	1.20	0.34	230
				240 HB			0.11	0.40	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	1.50	0.11	0.36	70	140	1.20	0.30	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	1.50	0.14	0.44	150	220	1.20	0.34	200
				42 HRc				0.40	90	160		0.30	140

RDMT 1604 M0 LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.25	1.00	190	350	2.00	0.35	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.21	0.78	150	270	2.00	0.30	215
				230 HB						230			200
				280 HB				0.69	130	210		0.27	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.90	0.17	0.69	90	170	1.50	0.27	140
				280 HB						150			130
				320 HB				0.56	60	120		0.24	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	4.00	0.21	0.78	190	260	2.00	0.30	230
				240 HB			0.17	0.69	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	3.10	0.17	0.56	70	140	1.50	0.24	110
				310 HB				0.56		130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	4.00	0.21	0.78	150	220	2.00	0.30	200
				42 HRc		3.10		0.63	90	160	1.50	0.24	140

RDMT 10T3 M0 LT 3130
RXMT 10T3 M0 LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.50	0.18	0.64	190	350	1.00	0.35	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.50	0.15	0.50	150	270	1.00	0.30	215
				230 HB						230			200
				280 HB				0.44	130	210		0.27	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	1.80	0.12	0.44	90	170	0.80	0.27	140
				280 HB						150			130
				320 HB				0.36	60	120		0.24	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	2.50	0.15	0.50	190	260	1.00	0.30	230
				240 HB			0.12	0.44	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.00	0.12	0.36	70	140	0.80	0.24	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	2.50	0.15	0.50	150	220	1.00	0.30	200
				42 HRc		2.00	0.15	0.40	90	160	0.80	0.24	140

RDMT 1204 M0 LT 3130
RXMT 1204 M0 LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.50	0.18	0.64	190	350	1.00	0.35	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.50	0.15	0.50	150	270	1.00	0.30	215
				230 HB						230			200
				280 HB				0.44	130	210		0.27	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	1.80	0.12	0.44	90	170	0.80	0.27	140
				280 HB						150			130
				320 HB				0.36	60	120		0.24	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	2.50	0.15	0.50	190	260	1.00	0.30	230
				240 HB			0.12	0.44	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.00	0.12	0.36	70	140	0.80	0.24	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	2.50	0.15	0.50	150	220	1.00	0.30	200
				42 HRc		2.00		0.40	90	160	0.80	0.24	140

RDMW 10T3 M0 LT 3130
RXMW 10T3 M0 LT 3130

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.50	0.18	0.70	190	350	1.00	0.39	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.50	0.15	0.55	150	270	1.00	0.34	215
				230 HB						230			200
				280 HB				0.48	130	210		0.31	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	1.80	0.12	0.48	90	170	0.80	0.31	140
				280 HB						150			130
				320 HB				0.40	60	120		0.27	110
				350 HB						100			90

RDMW 1003 M0 LT 3130

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	4.00	0.25	1.00	190	350	2.00	0.35	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	4.00	0.21	0.78	150	270	2.00	0.30	215
				230 HB						230			200
				280 HB				0.69	130	210		0.27	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.90	0.17	0.69	90	170	1.50	0.27	140
				280 HB						150			130
				320 HB				0.56	60	120		0.24	110
				350 HB						100			90

RDMW 1204 M0 LT 3130
RXMW 1204 M0 LT 3130

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.50	0.18	0.70	190	350	1.00	0.39	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.50	0.15	0.55	150	270	1.00	0.34	215
				230 HB						230			200
				280 HB				0.48	130	210		0.31	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	1.80	0.12	0.48	90	170	0.80	0.31	140
				280 HB						150			130
				320 HB				0.40	60	120		0.27	110
				350 HB						100			90

RXMX 10T3 M0 LT 3130

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	2.50	0.18	0.64	190	350	1.00	0.35	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	2.50	0.15	0.50	150	270	1.00	0.30	215
				230 HB						230			200
				280 HB				0.44	130	210		0.27	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	1.80	0.12	0.44	90	170	0.80	0.27	140
				280 HB						150			130
				320 HB				0.36	60	120		0.24	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	2.50	0.15	0.50	190	260	1.00	0.30	230
				240 HB			0.12	0.44	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.00	0.12	0.36	70	140	0.80	0.24	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	2.50	0.15	0.50	150	220	1.00	0.30	200
				42 HRc	0.50	2.00		0.40	90	160	0.80	0.24	140

RXMX 1204 M0 LT 3130

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	3.00	0.25	0.74	190	350	1.30	0.35	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	3.00	0.21	0.58	150	270	1.30	0.30	215
				230 HB						230			200
				280 HB				0.51	130	210		0.27	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	2.20	0.17	0.51	90	170	1.00	0.27	140
				280 HB						150			130
				320 HB				0.41	60	120		0.24	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	3.00	0.21	0.58	190	260	1.30	0.30	230
				240 HB			0.17	0.51	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	2.40	0.17	0.41	70	140	1.00	0.24	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	3.00	0.21	0.58	150	220	1.30	0.30	200
				42 HRc		2.40		0.46	90	160	1.00	0.24	140

SDKX 0904-HF LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	1.50	0.30	1.50	190	350	1.00	1.20	265
				190 HB					190	320			240
				250 HB					190	280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	1.20	0.30	1.36	150	270	0.80	1.00	215
				230 HB					150	230			200
				280 HB					130	210		0.90	165
				350 HB					130	190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	1.20	0.30	1.20	90	170	0.70	0.80	140
				280 HB		1.10			90	150			130
				320 HB		1.00			60	120		0.70	110
				350 HB					60	100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.30	1.30	0.30	0.76	190	260	0.80	0.50	230
				240 HB					160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.30	1.10	0.30	0.46	70	140	0.70	0.30	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.30	1.20	0.30	0.52	150	220	0.80	0.40	200
				42 HRc		1.00		0.46	90	160	0.70	0.30	140

SDKX 1205-HF LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	2.00	0.30	2.70	190	350	1.20	1.70	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	1.60	0.30	2.50	150	270	0.90	1.50	215
				230 HB						230			200
				280 HB					130	210		1.40	165
				350 HB				2.25		190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	1.60	0.30	2.25	90	170	0.70	1.20	140
				280 HB		1.30		2.00		150			130
				320 HB		1.10		1.80	60	120		1.00	110
				350 HB				1.60		100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.30	1.50	0.30	1.00	190	260	0.90	0.80	230
				240 HB					160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.30	1.20	0.30	0.65	70	140	0.80	0.50	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.30	1.50	0.30	0.70	150	220	0.90	0.60	200
				42 HRc		1.10		0.65	90	160	0.80	0.50	140

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SDKW 0904-HF LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	1.50	0.30	1.50	190	350	1.10	1.30	265
				190 HB						320	1.00		240
				250 HB						280	1.00		215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	1.30	0.30	1.36	150	270	0.80	1.10	215
				230 HB						230			200
				280 HB					130	210		1.00	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	1.30	03.0	1.20	90	170	0.70	0.90	140
				280 HB		1.20				150			130
				320 HB		1.10			60	120		0.70	110
				350 HB						100			90

SDKW 1205-HF LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	2.00	0.30	2.70	190	350	1.30	1.70	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	1.60	0.30	2.50	150	270	1.00	1.50	215
				230 HB						230			200
				280 HB					130	210		1.40	165
				350 HB				2.25		190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	1.60	0.30	2.25	90	170	0.80	1.20	140
				280 HB		1.30		2.00		150			130
				320 HB		1.10		1.80	60	120		1.00	110
				350 HB				1.60		100			90

SEKT 12T3 AGSN LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	6.00	0.18	0.46	190	350	3.00	0.34	265
				190 HB					190	320			240
				250 HB					190	280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	6.00	0.15	0.36	150	270	3.00	0.30	215
				230 HB					150	230			200
				280 HB				0.32	130	210		0.27	165
				350 HB					130	190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	5.00	0.12	0.32	90	170	2.30	0.27	140
				280 HB					90	150			130
				320 HB				0.26	60	120		0.24	110
				350 HB					60	100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	6.00	0.15	0.32	190	260	3.00	0.27	230
				240 HB			0.12	0.29	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	5.00	0.12	0.26	70	140	2.30	0.24	110
				310 HB					70	130	2.30		100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	6.00	0.15	0.32	150	220	3.00	0.27	200
				42 HRc		5.00		0.26	90	160	2.30	0.24	140

SEKT 1204 AFTN LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.30	2.00	0.30	2.70	190	350	1.20	1.70	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.30	1.60	0.30	2.50	150	270	0.90	1.50	215
				230 HB						230			200
				280 HB					130	210		1.40	165
				350 HB				2.25		190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.30	1.60	0.30	2.25	90	170	0.70	1.20	140
				280 HB		1.30		2.00		150			130
				320 HB		1.10		1.80	60	120		1.00	110
				350 HB				1.60		100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.30	1.50	0.30	1.00	190	260	0.90	0.80	230
				240 HB					160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.30	1.20	0.30	0.65	70	140	0.80	0.50	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.30	1.50	0.30	0.70	150	220	0.90	0.60	200
				42 HRc		1.10		0.65	90	160	0.80	0.50	140

MACHINING CONDITIONS | MILLING - LT 3130

SNKX 1205-45 LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	5.00	0.16	0.34	190	350	3.00	0.30	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	5.00	0.14	0.28	150	270	3.00	0.26	215
				230 HB						230			200
				280 HB				0.26	130	210		0.24	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	5.00	0.11	0.28	90	170	3.00	0.26	140
				280 HB						150			130
				320 HB				0.24	60	120		0.22	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	5.00	0.14	0.30	190	260	3.00	0.26	230
				240 HB			0.11		160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	4.00	0.11	0.25	70	140	2.50	0.22	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	5.00	0.14	0.30	150	220	3.00	0.26	200
				42 HRc		4.00		0.25	90	160		0.22	140

SNKX 1607-45 LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/z]		Vc [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	Vc
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.50	6.50	0.16	0.58	190	350	4.00	0.46	265
				190 HB						320			240
				250 HB						280			215
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.50	6.50	0.14	0.50	150	270	4.00	0.40	215
				230 HB						230			200
				280 HB				0.44	130	210		0.36	165
				350 HB						190			155
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.50	6.50	0.11	0.44	90	170	3.00	0.36	140
				280 HB						150			130
				320 HB				0.36	60	120		0.32	110
				350 HB						100			90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.50	6.50	0.14	0.44	190	260	4.00	0.34	230
				240 HB			0.11	0.40	160	220			200
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.50	5.00	0.11	0.36	70	140	3.00	0.30	110
				310 HB						130			100
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.50	6.50	0.14	0.44	150	220	4.00	0.34	200
				42 HRc		5.00		0.40	90	160	3.00	0.30	140

LT 05 - NON FERROUS MILLING

APGT 100304 PDER ALU

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		VC [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	VC
NF	AL (<8%Si)	13	4% < Si < 8%	100 HB	0.30	9.00	0.10	0.18	200	1200	3.00	0.14	800
			Si < 4%	60 HB			0.12	0.20					
	Copper Alloys	14	CuZn30	100HB	0.30	9.00	0.10	0.18	200	800	3.00	0.14	500
	Non Metallic	15	Fiber Plastics	-	0.30	9.00	0.12	0.20	180	300	3.00	0.12	250
			Graphite	-									
			Hard Rubber	-									

APGT 160408 PDER ALU

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		VC [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	VC
NF	AL (<8%Si)	13	4% < Si < 8%	100 HB	0.50	15.00	0.13	0.29	200	1200	4.00	0.16	800
			Si < 4%	60 HB			0.15	0.32					
	Copper Alloys	14	CuZn30	100HB	0.50	15.00	0.13	0.29	200	800	4.00	0.16	500
	Non Metallic	15	Fiber Plastics	-	0.50	15.00	0.15	0.32	180	300	4.00	0.16	250
			Graphite	-									
			Hard Rubber	-									

SEGT 1204 AFEN ALU

Material Group		Lamina Gr. N°	Material Examples	Hardness	DOC [mm]		Feed [mm/rev]		VC [m/min]		Suggested Starting Parameters		
					min	max	min	max	min	max	DOC	Feed	VC
NF	AL (<8%Si)	13	4% < Si < 8%	100 HB	0.30	9.00	0.10	0.35	200	1200	3.00	0.25	800
			Si < 4%	60 HB			0.12						
	Copper Alloys	14	CuZn30	100HB	0.30	9.00	0.10	0.35	200	800	3.00	0.25	500
	Non Metallic	15	Fiber Plastics	-	0.30	9.00	0.12	0.35	180	300	3.00	0.25	250
			Graphite	-									
			Hard Rubber	-									

MACHINING CONDITIONS

SOLID END MILLS

LT 40
LT 4000

Material Group		Lamina Gr. N°	Material Examples	Hardness	LT 40 Vc [m/min]		LT 4000 Vc [m/min]	
					min	max	min	max
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	70	120	150	200
				190 HB	65	110	140	190
				250 HB	60	100	120	160
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	65	110	120	180
				230 HB	60	90	90	130
				280 HB	55	85	80	120
				350 HB	55	80	60	90
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	60	90	70	130
				280 HB	55	80	70	110
				320 HB	55	75	60	90
				350 HB	50	70	50	80
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	60	80	80	120
				240 HB	50	70	70	120
	Duplex	5	X2CrNiN23-4, S31500	290 HB	-	-	60	100
				310 HB	-	-	60	90
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	40	60	50	90
				42 HRc	30	45	30	60
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	70	120	140	200
				200 HB	65	110	150	190
				250 HB	55	100	120	160
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	65	110	130	180
				200 HB	60	100	110	150
				250 HB	55	90	90	130
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	-	-	30	50
			Inconel 700	250 HB	-	-	30	50
			Stellite 21	350 HB	-	-	20	50
	Ti based	10	T40	-	-	-	30	60
			TiAl6V4	-	-	-	40	70
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	35	60	40	60
				50 HRc	30	50	40	60
				55 HRc	-	-	30	50
	Chilled Cast Iron		Ni-Hard 2	400 HB	-	-	40	60
	White Cast Iron		G-X300CrMo15	55 HRc	-	-	30	50
NF	Aluminium	12	AlSi12	130 HB	120	180	160	250

The depth of cut and feed rate tables on the following pages are for the type and diameter specified above each table. Refer to cutting speeds on this page for recommended materials per grade.

90° 2 FLUTE | LT 40 - Ø 1 - 5

Material Group		Lamina Gr. N°	Material Examples	Hardness	Profiling		Slotting	fz [mm/tooth]				
					ap	ae	ap	Ø1.0	Ø2.0	Ø3.0	Ø4.0	Ø5.0
P	Non-Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	1.5xØ	0.5xØ	1.0xØ	0.008	0.010	0.014	0.019	0.024
				190 HB								
				250 HB								
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	1.5xØ	0.5xØ	1.0xØ	0.008	0.009	0.013	0.020	0.024
				230 HB								
				280 HB			0.7xØ	0.006	0.007	0.011	0.016	0.019
				350 HB								
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	1.5xØ	0.5xØ	1.0xØ	0.007	0.008	0.012	0.017	0.021
				280 HB								
				320 HB			0.6xØ	0.005	0.006	0.009	0.013	0.016
				350 HB								
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	1.5xØ	0.5xØ	1.0xØ	0.006	0.007	0.010	0.014	0.017
				240 HB								
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB	1.5xØ	0.5xØ	1.0xØ	0.004	0.005	0.007	0.011	0.013
				42 HRc								
K	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB	1.5xØ	0.5xØ	1.0xØ	0.010	0.011	0.016	0.023	0.029
				200 HB								
				250 HB								
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	1.5xØ	0.5xØ	1.0xØ	0.008	0.010	0.014	0.020	0.025
				200 HB								
				250 HB								
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	1.5xØ	0.3xØ	0.2xØ	0.003	0.004	0.005	0.009	0.011
				50 HRc								
NF	Al (>8%Si)	12	AlSi12	130 HB	1.5xØ	0.5xØ	0.1xØ	0.009	0.010	0.015	0.021	0.026

90° 2 FLUTE | LT 40 - Ø 6, 8, 10, 12, 16

Material Group		Lamina Gr. N°	Material Examples	Hardness	Profiling		Slotting	fz [mm/tooth]				
					ap	ae	ap	Ø6.0	Ø8.0	Ø10.0	Ø12.0	Ø16.0
P	Non-Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	1.5xØ	0.5xØ	1.0xØ	0.032	0.044	0.052	0.062	0.074
				190 HB								
				250 HB								
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	1.5xØ	0.5xØ	1.0xØ	0.031	0.042	0.050	0.059	0.071
				230 HB								
				280 HB			0.7xØ	0.026	0.034	0.042	0.050	0.059
				350 HB								
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	1.5xØ	0.5xØ	1.0xØ	0.027	0.037	0.044	0.051	0.061
				280 HB								
				320 HB			0.6xØ	0.020	0.028	0.033	0.039	0.046
				350 HB								
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	1.5xØ	0.5xØ	1.0xØ	0.022	0.030	0.036	0.042	0.050
				240 HB								
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.023	0.028	0.032	0.039
				42 HRc								
K	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB	1.5xØ	0.5xØ	1.0xØ	0.037	0.051	0.061	0.071	0.085
				200 HB								
				250 HB								
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	1.5xØ	0.5xØ	1.0xØ	0.032	0.044	0.052	0.062	0.074
				200 HB								
				250 HB								
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	1.5xØ	0.3xØ	0.2xØ	0.014	0.019	0.022	0.026	0.031
				50 HRc								
NF	Al (>8%Si)	12	AlSi12	130 HB	1.5xØ	0.5xØ	0.1xØ	0.034	0.046	0.055	0.065	0.077

90° 4 FLUTE, SHORT | LT 40 Ø 1 - 5

Material Group		Lamina Gr. N°	Material Examples	Hardness	Profiling		Slotting	fz [mm/tooth]				
					ap	ae	ap	Ø1.0	Ø2.0	Ø3.0	Ø4.0	Ø5.0
P	Non-Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.008	0.010	0.014	0.019	0.024
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.008	0.009	0.013	0.020	0.024
				280 HB 350 HB			0.7xØ	0.006	0.007	0.011	0.016	0.019
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.007	0.008	0.012	0.017	0.021
				320 HB 350 HB			0.6xØ	0.005	0.006	0.009	0.013	0.016
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.006	0.007	0.010	0.014	0.017
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.004	0.005	0.007	0.011	0.013
K	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.010	0.011	0.016	0.023	0.029
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.008	0.010	0.014	0.020	0.025
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.003	0.004	0.005	0.009	0.011
NF	Al (>8%Si)	12	AlSi12	130 HB	1.5xØ	0.5xØ	0.1xØ	0.009	0.010	0.015	0.021	0.026

90° 4 FLUTE, SHORT | LT 40 Ø 6, 8, 10, 12, 16

Material Group		Lamina Gr. N°	Material Examples	Hardness	Profiling		Slotting	fz [mm/tooth]				
					ap	ae	ap	Ø6.0	Ø8.0	Ø10.0	Ø12.0	Ø16.0
P	Non-Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.032	0.044	0.052	0.062	0.084
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.031	0.042	0.050	0.059	0.074
				280 HB 350 HB			0.7xØ	0.026	0.034	0.042	0.050	0.059
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.027	0.037	0.044	0.051	0.059
				320 HB 350 HB			0.6xØ	0.020	0.028	0.033	0.039	0.042
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.022	0.030	0.036	0.042	0.054
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.017	0.023	0.028	0.032	0.040
K	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.037	0.051	0.061	0.071	0.079
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.032	0.044	0.052	0.062	0.075
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.014	0.019	0.022	0.026	0.029
NF	Al (>8%Si)	12	AlSi12	130 HB	1.5xØ	0.5xØ	0.1xØ	0.034	0.046	0.055	0.065	0.084

MACHINING CONDITIONS | SOLID END MILLS - DEPTH OF CUT AND FEED

90° 4 FLUTE, LONG | LT 40 - Ø 3 - 6

Material Group		Lamina Gr. N°	Material Examples	Hardness	Profiling		Slotting	fz [mm/tooth]			
					ap	ae	ap	Ø3.0	Ø4.0	Ø5.0	Ø6.0
P	Non-Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.013	0.023	0.023	0.029
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.011	0.016	0.020	0.026
				280 HB 350 HB			0.7xØ	0.009	0.013	0.016	0.020
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.016	0.020
				320 HB 350 HB			0.6xØ	0.006	0.009	0.011	0.015
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.008	0.012	0.015	0.019
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.006	0.009	0.011	0.014
K	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.012	0.017	0.022	0.028
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.011	0.017	0.021	0.026
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.004	0.006	0.008	0.010
NF	Al (>8%Si)	12	AlSi12	130 HB	1.5xØ	0.5xØ	0.1xØ	0.013	0.018	0.023	0.029

90° 4 FLUTE, LONG | LT 40 - Ø 8, 10, 12, 16

Material Group		Lamina Gr. N°	Material Examples	Hardness	Profiling		Slotting	fz [mm/tooth]			
					ap	ae	ap	Ø8.0	Ø10.0	Ø12.0	Ø16.0
P	Non-Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.048	0.056	0.076
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.036	0.042	0.050	0.068
				280 HB 350 HB			0.7xØ	0.028	0.033	0.039	0.053
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.028	0.033	0.039	0.053
				320 HB 350 HB			0.6xØ	0.020	0.024	0.028	0.038
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.026	0.031	0.036	0.049
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.019	0.023	0.027	0.036
K	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.038	0.045	0.053	0.072
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.036	0.043	0.050	0.068
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.014	0.017	0.020	0.027
NF	Al (>8%Si)	12	AlSi12	130 HB	1.5xØ	0.5xØ	0.1xØ	0.040	0.048	0.056	0.076

BALL NOSE 2 FLUTE | LT 40 - Ø 1 - 5

	Material Group	Lamina Gr. N°	Material Examples*	Hardness	Contouring ap	Contouring ae	fz [mm/tooth] Ø1.0	Ø2.0	Ø3.0	Ø4.0	Ø5.0
P	Non-Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	0.25xØ	0.7xØ	0.028	0.036	0.052	0.064	0.084
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	0.25xØ	0.7xØ	0.021	0.027	0.039	0.048	0.063
				280 HB 350 HB			0.018	0.023	0.033	0.041	0.054
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	0.25xØ	0.7xØ	0.018	0.023	0.033	0.040	0.053
				320 HB 350 HB			0.013	0.017	0.025	0.031	0.040
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	0.25xØ	0.7xØ	0.015	0.019	0.027	0.033	0.044
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB 42 HRc	0.25xØ	0.7xØ	0.015	0.020	0.028	0.035	0.046
K	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB 200 HB 250 HB	0.25xØ	0.7xØ	0.025	0.032	0.046	0.056	0.074
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	0.25xØ	0.7xØ	0.021	0.027	0.040	0.049	0.064
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	0.25xØ	0.6xØ	0.009	0.012	0.017	0.020	0.027
NF	Al (>8%Si)	12	AlSi12	130 HB	0.25xØ	0.7xØ	0.022	0.029	0.042	0.051	0.067

BALL NOSE 2 FLUTE | LT 40 - Ø 6, 8, 10, 12, 16

	Material Group	Lamina Gr. N°	Material Examples*	Hardness	Contouring ap	Contouring ae	fz [mm/tooth] Ø6.0	Ø8.0	Ø10.0	Ø12.0	Ø16.0
P	Non-Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	0.25xØ	0.7xØ	0.080	0.092	0.100	0.112	0.106
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	0.25xØ	0.7xØ	0.060	0.069	0.075	0.084	0.080
				280 HB 350 HB			0.051	0.059	0.064	0.072	0.068
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	0.25xØ	0.7xØ	0.051	0.058	0.063	0.071	0.067
				320 HB 350 HB			0.038	0.044	0.048	0.054	0.051
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	0.25xØ	0.7xØ	0.042	0.048	0.052	0.058	0.055
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB 42 HRc	0.25xØ	0.7xØ	0.044	0.050	0.054	0.061	0.058
K	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB 200 HB 250 HB	0.25xØ	0.7xØ	0.070	0.081	0.088	0.099	0.093
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	0.25xØ	0.7xØ	0.061	0.070	0.076	0.085	0.081
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	0.25xØ 0.25xØ	0.6xØ	0.026	0.029	0.032	0.036	0.034
NF	Al (>8%Si)	12	AlSi12	130 HB	0.25xØ	0.7xØ	0.064	0.074	0.080	0.090	0.085

MACHINING CONDITIONS | SOLID END MILLS - DEPTH OF CUT AND FEED

90° 2 FLUTE | LT 4000 - Ø 1 - 5

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 1	Ø 2	Ø 3	Ø 4	Ø 5
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.010	0.012	0.017	0.024	0.030
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.110	0.011	0.016	0.025	0.030
				280 HB 350 HB	1.5xØ	0.5xØ	0.7xØ	0.007	0.009	0.014	0.020	0.024
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.010	0.015	0.021	0.026
				320 HB 350 HB	1.5xØ	0.5xØ	0.6xØ	0.007	0.008	0.011	0.016	0.020
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.007	0.008	0.012	0.017	0.022
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.006	0.006	0.009	0.013	0.017
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.006	0.006	0.009	0.013	0.017
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.012	0.014	0.020	0.029	0.036
K	Malleable & Nodular	8	GG20, GG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.010	0.012	0.017	0.025	0.031
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.006	0.007	0.010	0.014	0.018
S	Ti based	10	TiAl6V4 T40	- -	1.5xØ	0.5xØ	1.0xØ	0.006	0.007	0.010	0.015	0.018
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.004	0.007	0.007	0.011	0.013
				55 HRc	1.5xØ	0.2xØ	0.1xØ	0.003	0.005	0.005	0.008	0.010
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.003	0.005	0.005	0.008	0.010
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.003	0.005	0.005	0.008	0.010
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.011	0.018	0.018	0.027	0.033

90° 2 FLUTE | LT 4000 - Ø 6, 8, 10, 12

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 6	Ø 8	Ø 10	Ø 12
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.055	0.065	0.077
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.039	0.053	0.063	0.074
				280 HB 350 HB			0.7xØ	0.032	0.043	0.052	0.062
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.033	0.046	0.055	0.064
				320 HB 350 HB			0.6xØ	0.025	0.035	0.041	0.049
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.028	0.038	0.045	0.053
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.021	0.029	0.035	0.040
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.021	0.029	0.035	0.040
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.047	0.064	0.076	0.089
K	Malleable & Nodular	8	GG20, GG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.055	0.066	0.077
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.023	0.031	0.037	0.044
S	Ti based	10	TiAl6V4 T40	- -	1.5xØ	0.5xØ	1.0xØ	0.023	0.032	0.038	0.045
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.017	0.023	0.028	0.032
				55 HRc		0.2xØ	0.1xØ	0.013	0.017	0.021	0.024
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.013	0.017	0.021	0.024
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.013	0.017	0.021	0.024
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.042	0.058	0.069	0.081

90° 3 FLUTE | LT 4000 - Ø 3 - 6, 8, 10, 12

Material Group		Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.018	0.027	0.033	0.042	0.058	0.069	0.081
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.025	0.031	0.040	0.054	0.065	0.076
				280 HB 350 HB			0.7xØ	0.015	0.021	0.026	0.034	0.046	0.055	0.065
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.015	0.021	0.026	0.033	0.046	0.055	0.064
				320 HB 350 HB			0.6xØ	0.011	0.016	0.020	0.025	0.035	0.041	0.049
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.012	0.017	0.022	0.028	0.038	0.045	0.053
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.017	0.021	0.029	0.035	0.040
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.016	0.020	0.028	0.033	0.039
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.020	0.029	0.036	0.047	0.064	0.076	0.089
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.025	0.031	0.040	0.055	0.066	0.077
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.010	0.014	0.018	0.023	0.031	0.037	0.044
S	Ti based	10	T40 TiAl6V4	- -	1.5xØ	0.5xØ	1.0xØ	0.007	0.011	0.013	0.017	0.023	0.028	0.032
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.006	0.009	0.012	0.015	0.020	0.024	0.028
				55 HRc		0.2xØ	0.1xØ	0.006	0.008	0.010	0.013	0.017	0.021	0.024
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.006	0.008	0.010	0.013	0.017	0.021	0.024
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.006	0.008	0.010	0.013	0.017	0.021	0.024
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.018	0.027	0.033	0.042	0.058	0.0696	0.081

90° 4 FLUTE | LT 4000 - Ø 1 - 5

Material Group		Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 1	Ø 2	Ø 3	Ø 4	Ø 5
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.010	0.011	0.016	0.023	0.029
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.008	0.010	0.014	0.020	0.025
				280 HB 350 HB	1.5xØ	0.5xØ	0.7xØ	0.007	0.008	0.011	0.016	0.020
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.007	0.008	0.011	0.016	0.020
				320 HB 350 HB	1.5xØ	0.5xØ	0.6xØ	0.005	0.006	0.008	0.011	0.014
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.006	0.007	0.010	0.015	0.019
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.005	0.006	0.008	0.011	0.014
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.005	0.005	0.008	0.011	0.014
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.011	0.015	0.022	0.027
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.010	0.014	0.021	0.026
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.004	0.004	0.006	0.009	0.011
S	Ti based	10	T40 TiAl6V4	- -	1.5xØ	0.5xØ	1.0xØ	0.004	0.004	0.006	0.009	0.011
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.003	0.004	0.006	0.008	0.010
				55 HRc		0.2xØ	0.1xØ					
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.003	0.003	0.005	0.007	0.009
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.003	0.003	0.005	0.007	0.009
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.010	0.011	0.016	0.023	0.029

90° 4 FLUTE | LT 4000 - Ø 6, 8, 10, 12, 16

Material Group		Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 6	Ø 8	Ø 10	Ø 12	Ø 16
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.050	0.059	0.070	0.099	0.095
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.044	0.053	0.062	0.088	0.085
				280 HB 350 HB			0.7xØ	0.035	0.042	0.049	0.069	0.067
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.035	0.042	0.049	0.069	0.067
				320 HB 350 HB			0.6xØ	0.025	0.030	0.035	0.050	0.048
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.032	0.039	0.045	0.064	0.062
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.025	0.030	0.035	0.050	0.048
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.024	0.029	0.033	0.048	0.046
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.047	0.056	0.066	0.094	0.090
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.045	0.053	0.063	0.089	0.086
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.020	0.024	0.028	0.040	0.038
S	Ti based	10	T40 TiAl6V4	- -	1.5xØ	0.5xØ	1.0xØ	0.020	0.024	0.028	0.040	0.038
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.017	0.021	0.024	0.035	0.033
				55 HRc		0.2xØ	0.1xØ					0.029
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.015	0.018	0.021	0.030	0.029
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.015	0.018	0.021	0.030	0.029
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.050	0.059	0.070	0.099	0.095

90° 4 FLUTE, LONG | LT 4000 - Ø 1 - 5

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 1	Ø 2	Ø 3	Ø 4	Ø 5
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.010	0.011	0.016	0.023	0.029
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.008	0.010	0.014	0.020	0.025
				280 HB 350 HB			0.7xØ	0.007	0.008	0.011	0.016	0.020
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.007	0.008	0.011	0.016	0.020
				320 HB 350 HB			0.6xØ	0.005	0.006	0.008	0.011	0.014
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.006	0.007	0.010	0.015	0.019
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.005	0.006	0.008	0.011	0.014
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.005	0.005	0.008	0.011	0.014
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.011	0.015	0.022	0.027
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.010	0.014	0.021	0.026
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.004	0.004	0.006	0.009	0.011
S	Ti based	10	T40 TiAl6V4	- -	1.5xØ	0.5xØ	1.0xØ	0.004	0.004	0.006	0.009	0.011
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.003	0.004	0.006	0.008	0.010
				55 HRc		0.2xØ	0.1xØ	0.003	0.003	0.005	0.007	0.009
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.003	0.003	0.005	0.007	0.009
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.003	0.003	0.005	0.007	0.009
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.010	0.011	0.016	0.023	0.029

90° 4 FLUTE, LONG | LT 4000 - Ø 6, 8, 10, 12, 16

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 6	Ø 8	Ø 10	Ø 12	Ø 16
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.036	0.050	0.059	0.070	0.090
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.032	0.044	0.053	0.062	0.088
				280 HB 350 HB	1.5xØ	0.5xØ	0.7xØ	0.026	0.035	0.042	0.049	0.069
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.026	0.035	0.042	0.049	0.069
				320 HB 350 HB	1.5xØ	0.5xØ	0.6xØ	0.018	0.025	0.030	0.035	0.050
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.024	0.032	0.039	0.045	0.064
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.018	0.025	0.030	0.035	0.050
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.017	0.024	0.029	0.033	0.048
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.035	0.047	0.056	0.066	0.094
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.033	0.045	0.053	0.063	0.089
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.015	0.020	0.024	0.028	0.040
S	Ti based	10	T40 TiAl6V4	- -	1.5xØ	0.5xØ	1.0xØ	0.015	0.020	0.024	0.028	0.040
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.013	0.017	0.021	0.024	0.035
				55 HRc	1.5xØ	0.2xØ	0.1xØ	0.011	0.015	0.018	0.021	0.030
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.011	0.015	0.018	0.021	0.030
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.011	0.015	0.018	0.021	0.030
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.036	0.050	0.059	0.070	0.099

E90° 4 FLUTE WITH RADIUS 0.5 | LT 4000 - Ø 3 - 6, 8, 10, 12

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.024	0.030	0.040	0.055	0.065	0.077
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.160	0.025	0.030	0.039	0.053	0.063	0.074
				280 HB 350 HB			0.7xØ	0.014	0.020	0.024	0.032	0.043	0.052	0.062
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.015	0.021	0.026	0.033	0.046	0.055	0.064
				320 HB 350 HB			0.6xØ	0.011	0.016	0.020	0.025	0.035	0.041	0.049
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.012	0.017	0.022	0.028	0.038	0.045	0.053
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.017	0.021	0.029	0.035	0.040
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.017	0.021	0.029	0.035	0.040
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.020	0.029	0.036	0.047	0.064	0.076	0.089
K	Malleable & Nodular	8	GG20, GG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.025	0.031	0.040	0.055	0.066	0.077
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.010	0.014	0.018	0.023	0.031	0.037	0.044
S	Ti based	10	TiAl6V4 T40	- -	1.5xØ	0.5xØ	1.0xØ	0.010	0.015	0.018	0.023	0.032	0.038	0.045
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.007	0.011	0.013	0.017	0.023	0.028	0.032
				55 HRc		0.2xØ	0.1xØ	0.005	0.008	0.010	0.013	0.017	0.021	0.024
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.005	0.008	0.010	0.013	0.017	0.021	0.024
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.005	0.008	0.010	0.013	0.017	0.021	0.024
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.018	0.027	0.033	0.042	0.058	0.069	0.081

E90° 4 FLUTE WITH RADIUS 1.0 | LT 4000 - Ø 3 - 6, 8, 10, 12

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.024	0.030	0.040	0.055	0.065	0.077
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.160	0.025	0.030	0.039	0.053	0.063	0.074
				280 HB 350 HB			0.7xØ	0.014	0.020	0.024	0.032	0.043	0.052	0.062
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.015	0.021	0.026	0.033	0.046	0.055	0.064
				320 HB 350 HB			0.6xØ	0.011	0.016	0.020	0.025	0.035	0.041	0.049
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.012	0.017	0.022	0.028	0.038	0.045	0.053
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.017	0.021	0.029	0.035	0.040
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.017	0.021	0.029	0.035	0.040
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.020	0.029	0.036	0.047	0.064	0.076	0.089
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.025	0.031	0.040	0.055	0.066	0.077
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.010	0.014	0.018	0.023	0.031	0.037	0.044
S	Ti based	10	T40 TiAl6V4	- -	1.5xØ	0.5xØ	1.0xØ	0.010	0.015	0.018	0.023	0.032	0.038	0.045
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.007	0.011	0.013	0.017	0.023	0.028	0.032
				55 HRc		0.2xØ	0.1xØ	0.005	0.008	0.010	0.013	0.017	0.021	0.024
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.005	0.008	0.010	0.013	0.017	0.021	0.024
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.005	0.008	0.010	0.013	0.017	0.021	0.024
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.018	0.027	0.033	0.042	0.058	0.069	0.081

90° 4 FLUTE WITH RADIUS 2.0 | LT 4000 - Ø 6, 8, 10, 12

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 6	Ø 8	Ø 10	Ø 12
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.055	0.065	0.077
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.039	0.053	0.063	0.074
				280 HB 350 HB			0.7xØ	0.032	0.043	0.052	0.062
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.033	0.046	0.055	0.064
				320 HB 350 HB			0.6xØ	0.025	0.035	0.041	0.049
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.028	0.038	0.045	0.053
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.021	0.029	0.035	0.040
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.021	0.029	0.035	0.040
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.047	0.064	0.076	0.089
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.055	0.066	0.077
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.023	0.031	0.037	0.044
S	Ti based	10	T40 TiAl6V4	- -	1.5xØ	0.5xØ	1.0xØ	0.023	0.032	0.038	0.045
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.017	0.023	0.028	0.032
				55 HRc		0.2xØ	0.1xØ	0.013	0.017	0.021	0.024
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.013	0.017	0.021	0.024
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.013	0.017	0.021	0.024
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.042	0.058	0.069	0.081

90° 4 FLUTE WITH RADIUS 0.5, LONG | LT 4000 - Ø 8, 10, 12

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 8	Ø 10	Ø 12
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	3.0xØ	0.25xØ	1.0xØ	0.050	0.059	0.070
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	3.0xØ	0.25xØ	1.0xØ	0.044	0.053	0.062
				280 HB 350 HB			0.7xØ	0.035	0.042	0.049
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	3.0xØ	0.25xØ	0.7xØ	0.035	0.042	0.049
				320 HB 350 HB			0.5xØ	0.025	0.030	0.035
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	3.0xØ	0.25xØ	1.0xØ	0.032	0.039	0.045
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	3.0xØ	0.25xØ	1.0xØ	0.025	0.030	0.035
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	3.0xØ	0.25xØ	1.0xØ	0.024	0.029	0.033
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	3.0xØ	0.25xØ	1.0xØ	0.047	0.056	0.066
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	3.0xØ	0.25xØ	1.0xØ	0.045	0.053	0.063
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	3.0xØ	0.10xØ	1.0xØ	0.020	0.024	0.028
S	Ti based	10	T40 TiAl6V4	- -	3.0xØ	0.25xØ	1.0xØ	0.020	0.024	0.028
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	3.0xØ	0.10xØ	0.1xØ	0.017	0.021	0.024
				55 HRc				0.015	0.018	0.021
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	3.0xØ	0.10xØ	0.1xØ	0.015	0.018	0.021
H	White Cast Iron	13	G-X300CrMo15	55 HRc	3.0xØ	0.10xØ	0.1xØ	0.015	0.018	0.021
NF	Aluminium	14	AlSi12	130 HB	3.0xØ	0.25xØ	1.0xØ	0.050	0.050	0.070

MACHINING CONDITIONS | SOLID END MILLS - DEPTH OF CUT AND FEED

BALL NOSE, 2 FLUTE | LT 4000 - Ø 1 - 6, 8, 10, 12

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.035	0.045	0.065	0.080	0.105	0.100	0.115	0.125	0.140
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.033	0.042	0.061	0.075	0.099	0.094	0.108	0.118	0.132
				280 HB 350 HB			0.7xØ	0.028	0.036	0.052	0.064	0.084	0.080	0.092	0.100	0.112
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.028	0.036	0.051	0.063	0.083	0.079	0.091	0.099	0.111
				320 HB 350 HB			0.6xØ	0.021	0.027	0.039	0.048	0.063	0.060	0.069	0.075	0.084
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.023	0.029	0.042	0.052	0.068	0.065	0.075	0.081	0.091
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.018	0.023	0.033	0.040	0.053	0.050	0.058	0.063	0.070
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.024	0.031	0.044	0.054	0.071	0.068	0.078	0.085	0.095
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.039	0.050	0.072	0.088	0.116	0.110	0.127	0.138	0.154
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.033	0.043	0.062	0.076	0.100	0.095	0.109	0.119	0.133
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.022	0.029	0.042	0.051	0.067	0.064	0.074	0.080	0.090
S	Ti based	10	T40 TiAl6V4	- -	1.5xØ	0.5xØ	1.0xØ	0.019	0.025	0.036	0.044	0.058	0.055	0.063	0.069	0.077
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.014	0.018	0.026	0.032	0.042	0.040	0.046	0.050	0.056
				55 HRc		0.2xØ	0.1xØ	0.011	0.014	0.020	0.024	0.032	0.030	0.035	0.038	0.042
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.011	0.014	0.020	0.024	0.032	0.030	0.035	0.038	0.042
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.011	0.014	0.020	0.024	0.032	0.030	0.035	0.038	0.042
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.035	0.045	0.065	0.080	0.105	0.100	0.115	0.125	0.140

ROUGHER, 3 – 4 FLUTE | LT 4000 - Ø 4 - 6, 8, 10, 12

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz [mm/tooth] Ø 4 (Z3)	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.024	0.030	0.040	0.055	0.065	0.077
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB	1.5xØ	0.5xØ	1.0xØ	0.025	0.030	0.039	0.053	0.063	0.074
				280 HB 350 HB			0.7xØ	0.020	0.024	0.032	0.043	0.052	0.062
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	1.5xØ	0.5xØ	1.0xØ	0.021	0.026	0.033	0.046	0.055	0.064
				320 HB 350 HB			0.6xØ	0.016	0.020	0.025	0.035	0.041	0.049
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB 240 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.022	0.028	0.038	0.045	0.053
M	Duplex	5	X2CrNiN23-4, S31500	290 HB 310 HB	1.5xØ	0.5xØ	1.0xØ	0.013	0.017	0.021	0.029	0.035	0.040
M	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB 42 HRc	1.5xØ	0.5xØ	1.0xØ	0.013	0.017	0.021	0.029	0.035	0.040
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.029	0.036	0.047	0.064	0.076	0.089
K	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB 200 HB 250 HB	1.5xØ	0.5xØ	1.0xØ	0.025	0.031	0.040	0.055	0.066	0.077
S	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB 250 HB 350 HB	1.5xØ	0.3xØ	1.0xØ	0.014	0.018	0.023	0.031	0.037	0.044
S	Ti based	10	T40 TiAl6V4	- -	1.5xØ	0.5xØ	1.0xØ	0.015	0.018	0.023	0.032	0.038	0.045
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	1.5xØ	0.3xØ	0.2xØ	0.011	0.013	0.017	0.023	0.028	0.032
				55 HRc		0.2xØ	0.1xØ	0.008	0.010	0.013	0.017	0.021	0.024
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.008	0.010	0.013	0.017	0.021	0.024
H	White Cast Iron	13	G-X300CrMo15	55 HRc	1.5xØ	0.2xØ	0.1xØ	0.008	0.010	0.013	0.017	0.021	0.024
NF	Aluminium	14	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.027	0.033	0.042	0.058	0.069	0.081

HIGH FEED, 4 FLUTE – LT 4000 - Ø 3 - 6, 8, 10, 12

	Material Group	Lamina Gr. N°	Material Examples	Hardness	Profiling ap	Profiling ae	fz [mm/tooth] Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB 190 HB 250 HB	0.025xØ	0.5xØ	0.140	0.200	0.240	0.260	0.340	0.400	0.450
P	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB 230 HB 280 HB 350 HB	0.025xØ	0.5xØ	0.132	0.188	0.226	0.244	0.320	0.376	0.423
P	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB 280 HB	0.025xØ	0.5xØ	0.111	0.158	0.190	0.205	0.269	0.316	0.356
				320 HB 350 HB			0.084	0.120	0.144	0.156	0.204	0.240	0.270
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB 200 HB 250 HB	0.025xØ	0.5xØ	0.154	0.220	0.264	0.286	0.374	0.440	0.495
K	Malleable & Nodular	8	GG20, GG70, 50005	150 HB 200 HB 250 HB	0.025xØ	0.5xØ	0.133	0.190	0.228	0.247	0.323	0.380	0.428
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc 50 HRc	0.025xØ	0.5xØ 0.5xØ	0.070	0.100	0.120	0.130	0.170	0.200	0.225
				55 HRc		0.3xØ	0.056	0.080	0.096	0.104	0.136	0.160	0.180
H	Chilled Cast Iron	12	Ni-Hard 2	400 HB	0.025xØ	0.3xØ	0.056	0.080	0.096	0.104	0.136	0.160	0.180
H	White Cast Iron	13	G-X300CrMo15	55 HRc	0.025xØ	0.3xØ	0.056	0.080	0.096	0.104	0.136	0.160	0.180

MACHINING CONDITIONS

THREAD TURNING

THREAD MILLING

LT 10

Material Group		Lamina Gr. N°	Material Examples	Hardness	Vc [m/min] min	Vc [m/min] max
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	120	200
				190 HB	110	180
				250 HB	100	170
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	100	170
				230 HB		
				280 HB	70	120
				350 HB	60	90
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	100	170
				280 HB		
				320 HB	70	120
				350 HB	60	90
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	70	140
				240 HB	80	120
	Duplex	5	X2CrNiN23-4, S31500	290 HB	50	110
				310 HB		
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	70	140
				42 HRc	50	110
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	70	150
				200 HB	100	140
				250 HB	70	120
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	70	150
				200 HB	100	140
				250 HB	70	120
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	40	60
			Inconel 700	250 HB	30	50
			Stellite 21	350 HB	20	40
	Ti based	10	T40	-	50	70
			TiAl6V4	-	40	60
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	30	50
				50 HRc		
				55 HRc		40
	Chilled Cast Iron		Ni-Hard 2	400 HB		
	White Cast Iron		G-X300CrMo15	55 HRc		
NF	Aluminium	12	AlSi12	130 HB	100	400

RECOMMENDED NUMBER OF PASSES

ISO METRIC - EXTERNAL

DEPTH OF CUT

No. OF PASSES	PITCH (MM)										
	4	3.5	3	2.5	2	1.75	1.5	1.25	1	0.75	0.5
1	0.34	0.34	0.27	0.26	0.24	0.23	0.23	0.20	0.19	0.17	0.11
2	0.30	0.31	0.23	0.22	0.23	0.21	0.21	0.18	0.16	0.15	0.09
3	0.25	0.24	0.20	0.20	0.19	0.16	0.18	0.14	0.13	0.11	0.08
4	0.21	0.20	0.18	0.17	0.17	0.14	0.16	0.12	0.10	0.06	0.06
5	0.19	0.19	0.17	0.16	0.15	0.12	0.11	0.10	0.06		
6	0.18	0.17	0.16	0.14	0.12	0.10	0.06	0.06			
7	0.16	0.16	0.15	0.13	0.10	0.08					
8	0.15	0.15	0.13	0.12	0.06	0.06					
9	0.15	0.14	0.12	0.10							
10	0.14	0.12	0.11	0.06							
11	0.13	0.10	0.09								
12	0.12	0.06	0.06								
13	0.10										
14	0.06										
Total	2.48	2.18	1.87	1.56	1.26	1.10	0.95	0.80	0.64	0.49	0.34

ISO METRIC - INTERNAL

DEPTH OF CUT

No. OF PASSES	PITCH (MM)										
	4	3.5	3	2.5	2	1.75	1.5	1.25	1	0.75	0.5
1	0.32	0.32	0.25	0.25	0.23	0.22	0.22	0.19	0.18	0.16	0.10
2	0.27	0.29	0.22	0.21	0.21	0.20	0.20	0.16	0.15	0.14	0.09
3	0.22	0.23	0.19	0.19	0.18	0.15	0.17	0.13	0.12	0.10	0.07
4	0.20	0.19	0.17	0.16	0.16	0.13	0.15	0.11	0.10	0.06	0.06
5	0.19	0.18	0.16	0.15	0.14	0.11	0.10	0.10	0.06		
6	0.18	0.16	0.16	0.13	0.11	0.09	0.06	0.06			
7	0.16	0.15	0.14	0.12	0.09	0.08					
8	0.15	0.14	0.12	0.11	0.06	0.06					
9	0.14	0.13	0.11	0.09							
10	0.14	0.11	0.10	0.06							
11	0.12	0.09	0.08								
12	0.10	0.06	0.06								
13	0.09										
14	0.06										
Total	2.34	2.05	1.76	1.47	1.18	1.04	0.90	0.75	0.61	0.46	0.32

RECOMMENDED NUMBER OF PASSES

DEPTH OF CUT

No.OF PASSES	UN EXTERNAL (TPI)			UN INTERNAL (TPI)			WHITWORTH EXTERNAL & INTERNAL (TPI)			BSPT EXTERNAL & INTERNAL (TPI)		
	20	16	12	20	16	12	19	14	11	19	14	11
1	0.20	0.22	0.25	0.19	0.21	0.24	0.22	0.24	0.26	0.19	0.19	0.22
2	0.16	0.20	0.23	0.16	0.19	0.21	0.19	0.21	0.23	0.18	0.18	0.21
3	0.15	0.18	0.20	0.14	0.17	0.19	0.17	0.17	0.20	0.17	0.17	0.20
4	0.13	0.14	0.18	0.11	0.13	0.17	0.14	0.15	0.18	0.15	0.16	0.19
5	0.11	0.11	0.16	0.10	0.10	0.15	0.11	0.14	0.17	0.13	0.15	0.18
6	0.06	0.09	0.14	0.06	0.09	0.13	0.06	0.12	0.16	0.08	0.15	0.16
7		0.06	0.11		0.06	0.10		0.10	0.13		0.12	0.15
8			0.06			0.06		0.06	0.12		0.08	0.13
9									0.06			0.08
Total	0.81	1.00	1.33	0.76	0.95	1.25	0.89	1.19	1.51	0.90	1.20	1.51

DEPTH OF CUT

No. OF PASSES	NPT EXTERNAL & INTERNAL (TPI)				TRAPEZOIDAL EXTERNAL & INTERNAL (MM)	
	18	14	11.5	8	4.0	3.00
1	0.18	0.22	0.23	0.32	0.24	0.20
2	0.15	0.18	0.19	0.25	0.23	0.19
3	0.13	0.15	0.17	0.21	0.22	0.18
4	0.13	0.14	0.16	0.17	0.22	0.18
5	0.12	0.13	0.15	0.16	0.21	0.17
6	0.11	0.12	0.13	0.16	0.20	0.17
7	0.09	0.10	0.12	0.15	0.19	0.16
8	0.08	0.10	0.10	0.15	0.18	0.15
9	0.06	0.09	0.10	0.14	0.17	0.14
10		0.08	0.10	0.13	0.16	0.13
11		0.06	0.09	0.13	0.14	0.11
12			0.08	0.12	0.13	0.08
13			0.06	0.12	0.08	
14				0.10		
15				0.08		
16				0.06		
Total	1.05	1.37	1.68	2.45	2.37	1.86

	Material Group	Lamina Gr. N°	Material Examples	Hardness	V_c [m/min] min	V_c [m/min] max
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	80	130
				190 HB	70	110
				250 HB	60	100
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	70	110
				230 HB		
				280 HB	60	100
				350 HB	50	80
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	70	110
				280 HB	60	100
				320 HB	50	80
				350 HB		70
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	70	110
				240 HB	60	90
	Duplex	5	X2CrNiN23-4, S31500	290 HB	60	80
				310 HB		
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	70	90
				42 HRc	60	80
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	60	110
				200 HB	70	110
				250 HB	60	90
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	60	110
				200 HB		90
				250 HB		90
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	40	60
			Inconel 700	250 HB	30	50
			Stellite 21	350 HB	20	40
	Ti based	10	T40	-	40	70
			TiAl6V4	-	25	50
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	30	50
				50 HRc	25	
				55 HRc		40
	Chilled Cast Iron		Ni-Hard 2	400 HB		
	White Cast Iron		G-X300CrMo15	55 HRc		
NF	Aluminium	12	AlSi12	130 HB	80	300

RECOMMENDED TOOL FEED

Material Group		Lamina Gr. N°	Material Examples	Hardness	Feed (mm/tooth) 1.5 - 3.0	3.0 - 5.0	5.0 - 7.0	7.0 - 9.0	9.0 - 11.0
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.03	0.04	0.06	0.07	0.09
				190 HB	0.02	0.03	0.05	0.06	0.07
				250 HB					
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.02	0.03	0.05	0.06	0.07
				230 HB					
				280 HB					
				350 HB				0.05	0.05
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.02	0.03	0.05	0.06	0.07
				280 HB					0.06
				320 HB					
				350 HB				0.05	0.05
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.02	0.02	0.03	0.04	0.05
				240 HB			0.02	0.06	0.04
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.02	0.02	0.02	0.03	0.04
				310 HB	0.015				
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.02				
				42 HRc	0.015				0.03
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.02	0.03	0.06	0.07	0.08
				200 HB			0.05	0.06	0.07
				250 HB					
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.02	0.03	0.06	0.07	0.08
				200 HB			0.05	0.06	0.07
				250 HB					
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.02	0.02	0.02	0.03	0.04
			Inconel 700	250 HB	0.015	0.015	0.015	0.02	0.02
			Stellite 21	350 HB	0.01	0.01	0.01	0.015	0.015
	Ti based	10	TiAl6V4	-	0.02	0.02	0.02	0.02	0.025
			T40	-					0.02
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.01	0.01	0.02	0.02	0.02
				50 HRc					
				55 HRc					
	Chilled Cast Iron		Ni-Hard 2	400 HB					
	White Cast Iron		G-X300CrMo15	55 HRc					
NF	Aluminium	12	AlSi12	130 HB	0.03	0.03	0.04	0.08	0.12

MACHINING CONDITIONS

DRILLING

LT 30
LT 3130

	Material Group	Lamina Gr. N°	Material Examples	Hardness	LT 30 V_c [m/min]		LT 3130 V_c [m/min]	
					min	max	min	max
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	180	270	198	297
				190 HB		230		253
				250 HB		200		220
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	120	230	132	253
				230 HB		190		209
				280 HB	100	170	110	187
				350 HB		150		165
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	70	170	77	187
				280 HB		150		165
				320 HB	60	130	66	143
				350 HB		100		110
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	170	230	187	253
				240 HB	120	210	132	231
	Duplex	5	X2CrNiN23-4, S31500	290 HB	70	120	77	132
				310 HB		120		132
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	100	150	110	165
				42 HRc	60	100	66	110
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	150	230	165	253
				200 HB		210		231
				250 HB		170		187
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	120	200	132	220
				200 HB		170		187
				250 HB		150		165
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	30	40	27.5	38.5
			Inconel 700	250 HB				
			Stellite 21	350 HB	20	40	25.3	38.5
	Ti based	10	T40	-	40	60	38.5	66
			TiAl6V4	-	30	40	30.8	44
H	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	50	90	55	99
				50 HRc	40	70	44	77
				55 HRc	30	60	33	66
	Chilled Cast Iron		Ni-Hard 2	400 HB	40	60	40	66
	White Cast Iron		G-X300CrMo15	55 HRc	30	50	33	55
NF	Aluminium	12	AlSi12	130 HB	200	400	220	440

FOR DRILLING BODIES 2 X D AND 3 X D

SPMG 050204 NN
SPMG 060204 NN
SPMG 07T308 NN
SPMG 090408 NN
SPMG 110408 NN

	Material Group	Lamina Gr. N°	Material Examples	Hardness	SPMG 050204 NN Feed [mm/z]		SPMG 060204 NN Feed [mm/z]		SPMG 07T308 NN Feed [mm/z]		SPMG 090408 NN Feed [mm/z]		SPMG 110408 NN Feed [mm/z]	
					min	max	min	max	min	max	min	max	min	max
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.04	0.12	0.04	0.15	0.06	0.18	0.06	0.22	0.06	0.24
				190 HB										
				250 HB										
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.06	0.12	0.06	0.14	0.08	0.18	0.10	0.22	0.12	0.24
				230 HB										
				280 HB										
				350 HB										0.20
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.06	0.10	0.06	0.08	0.08	0.12	0.08	0.14	0.10	0.16
				280 HB										
				320 HB		0.08		0.12		0.14		0.16		0.18
				350 HB										
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.04	0.10	0.04	0.12	0.06	0.14	0.08	0.16	0.10	0.18
				240 HB	0.05		0.05		0.07		0.09		0.11	
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.05	0.09	0.05	0.10	0.06	0.12	0.06	0.14	0.08	0.15
				310 HB										0.13
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.05	0.09	0.05	0.10	0.06	0.12	0.06	0.14	0.08	0.15
				42 HRc	0.04	0.08	0.04	0.08	0.05	0.10	0.05	0.12	0.06	0.13
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.06	0.12	0.06	0.14	0.08	0.16	0.10	0.20	0.12	0.24
				200 HB										
				250 HB										
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.06	0.12	0.06	0.14	0.08	0.16	0.10	0.20	0.12	0.24
				200 HB										
				250 HB										
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.05	0.08	0.05	0.08	0.06	0.09	0.06	0.09	0.06	0.10
			Inconel 700	250 HB										
			Stellite 21	350 HB										
	Ti based	10	TiAl6V4	-	0.05	0.08	0.05	0.08	0.06	0.09	0.06	0.09	0.06	0.10
			T40	-										
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.04	0.07	0.04	0.07	0.05	0.08	0.06	0.09	0.06	0.09
				50 HRc										
				55 HRc										
	Chilled Cast Iron		Ni-Hard 2	400 HB										
	White Cast Iron		G-X300CrMo15	55 HRc										
NF	Aluminium	12	AlSi12	130 HB	0.05	0.12	0.05	0.14	0.06	0.16	0.06	0.18	0.08	0.20

FOR DRILLING BODIES 4 X D

SPMG 050204 NN
SPMG 060204 NN
SPMG 07T308 NN

SPMG 090408 NN
SPMG 110408 NN

Material Group		Lamina Gr. N°	Material Examples	Hardness	SPMG 050204 NN Feed [mm/z] min	max	SPMG 060204 NN Feed [mm/z] min	max	SPMG 07T308 NN Feed [mm/z] min	max	SPMG 090408 NN Feed [mm/z] min	max	SPMG 110408 NN Feed [mm/z] min	max
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.03	0.09	0.03	0.12	0.04	0.14	0.04	0.18	0.06	0.19
				190 HB										
				250 HB										
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.04	0.09	0.04	0.09	0.05	0.15	0.06	0.18	0.09	0.19
				230 HB										
				280 HB										
				350 HB										0.18
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.04	0.07	0.04	0.07	0.05	0.09	0.06	0.11	0.07	0.13
				280 HB										
				320 HB		0.06		0.08		0.11		0.12		0.15
				350 HB										
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.03	0.08	0.03	0.09	0.03	0.11	0.05	0.13	0.07	0.14
				240 HB	0.03		0.03		0.04		0.06		0.08	
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.03	0.09	0.03	0.07	0.03	0.10	0.04	0.11	0.05	0.13
				310 HB										0.12
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.03	0.07	0.03	0.07	0.04	0.10	0.05	0.12	0.05	0.13
				42 HRc	0.03	0.07	0.03	0.07	0.05	0.09	0.05	0.10	0.05	0.12
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.04	0.10	0.04	0.12	0.05	0.13	0.06	0.17	0.08	0.20
				200 HB										
				250 HB										
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.04	0.09	0.04	0.11	0.05	0.12	0.08	0.16	0.08	0.19
				200 HB										
				250 HB										
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.03	0.06	0.03	0.07	0.03	0.08	0.04	0.09	0.05	0.10
			Inconel 700	250 HB										
			Stellite 21	350 HB										
	Ti based	10	TiAl6V4	-	0.03	0.06	0.03	0.07	0.03	0.08	0.04	0.09	0.05	0.10
			T40	-										
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.03	0.06	0.03	0.06	0.03	0.07	0.04	0.08	0.05	0.09
				50 HRc										
				55 HRc										
	Chilled Cast Iron		Ni-Hard 2	400 HB										
	White Cast Iron		G-X300CrMo15	55 HRc										
NF	Aluminium	12	AlSi12	130 HB	0.03	0.10	0.04	0.12	0.05	0.14	0.06	0.15	0.07	0.16

* For drilling 4xD the feed must be reduced by 50%

MACHINING CONDITIONS - DRILLING - DEPTH OF CUT AND FEED

WCMX 040208 NN
WCMX 050308 NN

WCMX 06T308 NN
WCMX 080412 NN

Material Group		Lamina Gr. N°	Material Examples	Hardness	WCMX 040208 NN Feed [mm/z] min	max	WCMX 050308 NN Feed [mm/z] min	max	WCMX 06T308 NN Feed [mm/z] min	max	WCMX 080412 NN Feed [mm/z] min	max
P	Non Alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.05	0.10	0.06	0.11	0.06	0.12	0.06	0.16
				190 HB								
				250 HB								
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.05	0.10	0.06	0.11	0.06	0.12	0.06	0.16
				230 HB								
				280 HB								0.15
				350 HB								
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.07	0.10	0.09	0.11	0.08	0.12	0.09	0.16
				280 HB								
				320 HB	0.07	0.09	0.09	0.10	0.08	0.11	0.09	0.14
				350 HB								
M	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.05	0.10	0.06	0.11	0.06	0.12	0.06	0.15
				240 HB	0.07		0.09		0.08		0.09	
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.07	0.09	0.09	0.10	0.08	0.11	0.09	0.14
				310 HB								
	Ferritic & Martensitic	6	410, X6Cr17, 17-4PH, 430	200 HB	0.07	0.09	0.09	0.10	0.08	0.11	0.09	0.14
				42 HRc	0.05	0.08	0.06	0.09	0.06	0.10	0.06	0.13
K	Grey	7	GG20, GG40, EN-GJL-250, N030B	150 HB	0.09	0.11	0.09	0.12	0.09	0.13	0.10	0.18
				200 HB								
				250 HB								
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.09	0.11	0.09	0.12	0.09	0.13	0.10	0.18
				200 HB								
				250 HB								
S	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.05	0.08	0.06	0.09	0.06	0.10	0.06	0.13
			Inconel 700	250 HB								
			Stellite 21	350 HB								
	Ti based	10	TiAl6V4	-	0.05	0.08	0.06	0.09	0.06	0.10	0.06	0.13
			T40	-								
H	Steel	11	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.05	0.08	0.06	0.09	0.06	0.10	0.06	0.13
				50 HRc								
				55 HRc								
	Chilled Cast Iron		Ni-Hard 2	400 HB								
	White Cast Iron		G-X300CrMo15	55 HRc								
NF	Aluminium	12	AlSi12	130 HB	0.05	0.10	0.06	0.11	0.10	0.12	0.10	0.16

Increase your production efficiency

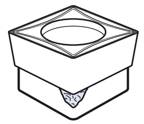
TECHNICAL GUIDE

MACHINING OPTIMIZATION

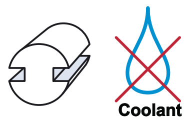
For new users of Lamina Technologies MULTI-MAT™ (MULTI-MATerial) inserts and to get more productivity and longer tool life, we have prepared a short machining guide to insure your satisfaction with our products.

The machining conditions included after each insert are our guidelines for optimal machining. However, our inserts can work in a range of cutting conditions to meet special machining needs.

TURNING

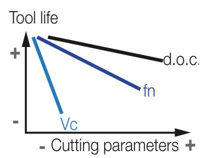


Check the condition of the tool holder (insert seat, shim, lever, screw) and check if the insert is well seated and clamped.



If there are interrupted cut or passes with short lengths of cut, dry operation is recommended to avoid thermal shocks. For heavy interrupted cut feed rate should be reduced.

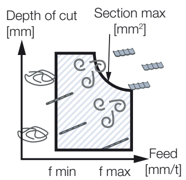
Check the stability of the machine. The tool overhang should be as short as possible.



Cutting speed has the greatest influence on tool life. For high productivity and long tool life, first increase d.o.c. and feed rate.

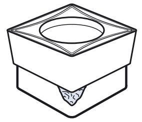
Feed x d.o.c.
=
Amax

Respect maximum chip section area for each insert. Amax = feed x d.o.c.



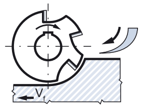
For higher productivity and better chip control in roughing, work close to the recommended Amax value.

MILLING



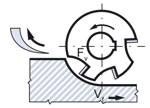
Check the condition of the tool holder (insert seat, shim, lever, screw) and check if the insert is well seated and clamped.

Check the stability of the machine. The tool overhang should be as short as possible.



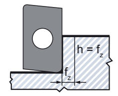
Climb Milling

Usually this is the recommended direction. Tool life up to 40% longer than conventional.



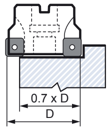
Conventional Milling

Recommended only for:
• Old machines with backlash in the table transmission
• Flame cut, forged and cast workpieces
• Thin workpieces (in order to reduce vibration)

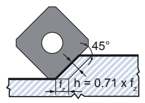


K = 90° Approach angle
High radial forces / Low axial forces.

Recommended:
• When 90° wall is needed
• For slender workpieces

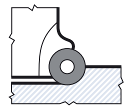


For face milling the width of cut (ae) should be about 70% of the cutter diameter, in order to achieve better chip formation and longer tool life. For limited engagement conditions, it is necessary to increase feed per tooth.



K = 45° Approach angle identical radial and axial forces.
High productivity fz=1.41 x h

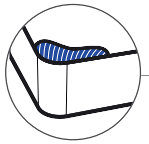
Recommended:
• When overhang is long (lower vibration tendency)
• For face milling (1st choice)



Round Inserts:

Roughing and general purposes.
Strongest cutting edge.

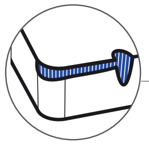
MACHINING OPTIMIZATION



BUILT-UP EDGE
(Adhesive Wear)

Description
The workpiece material is welded to the cutting edge. Normally caused by low temperatures

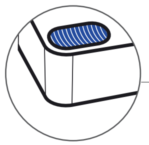
Solutions
Increase cutting speed / Increase feed / Use more positive geometry



NOTCH WEAR
(Adhesive/Mechanic Wear)

Description
Result of adhesive or mechanical action. Chipping or localized wear at the depth of cut line.

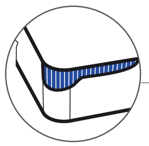
Solutions
Use more positive geometry / Reduce feed / Vary depth of cut



CRATER
(Chemical Wear)

Description
Happens on the rake surface. Normally the result of a combination of a diffusion and abrasion wear mechanism.

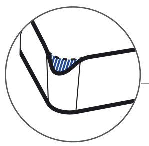
Solutions
Decrease cutting speed / Check coolant direction / Use more positive geometry



FLANK WEAR
(Abrasive Wear)

Description
Abrasive wear mechanism that happens on the cutting edge's flank. Not common in Lamina inserts.

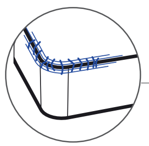
Solutions
Decrease cutting speed / Check coolant direction.



PLASTIC DEFORMATION
(Thermal Wear)

Description
Caused by cutting forces and too high temperature. Not common in Lamina inserts.

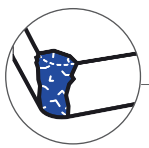
Solutions
Decrease cutting speed / Decrease feed rate



THERMAL CRACKS
(Thermal Wear)

Description
Small cracks normally at 90° to the cutting edge caused by temperature variation.

Solutions
Stabilize the temperature / Shut off the coolant



BREAKAGE
(Mechanic Wear)

Description
Most breakages happen because the wear development is not seen in time.

Solutions
Check the tool holder / Check the tool overhang / Check the Amax / Decrease feed and Vc / Apply more robust insert / Check the run-out

MATERIAL GROUPS

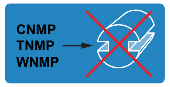
MATERIAL GROUP		LAMINA GR. N°	VDI GRP	MATERIAL EXAMPLES	DESCRIPTION	CAUTION
P	Non Alloyed	1	1 2 3	C35, Ck45, 1020, 1045, 1060, 28Mn6	Non-alloyed Steel **Composition:** Fe-C alloy (usually 0.1 to 0.6% carbon). Characteristics: Good machinability and high cutting speeds can be applied. When it has less than 0.25% carbon, it can be very sticky, requiring positive rake and small land inserts. Alloyed Steel **Composition:** Fe-C alloy (maximum 2.1% carbon) with additives like Cr, Mo, V, Ni, Mn, Co, W, etc. **Characteristics:** The variation in the amount of alloying elements and different heat treatments control features such as mechanical resistance and machinability. It's important to follow the cutting speeds recommended according to the hardness of the steel, as it influences temperature as well as chemical and adhesive wears. High alloyed Steel have more than 5% alloying elements.	Built-up edge Crater
P	Low Alloyed	2	4, 6 5, 7 6 8	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6		Built-up edge Crater
P	High Alloyed	3	10 10 11 11	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19		Crater
M	Austenitic	4	14 14	304, 316, X5CrNi18-9	**Composition:** Alloyed steel, more than 11% chrome (Cr). **Characteristics:** Stainless steels do not stain, corrode, or rust as easily as ordinary steel. Usually they are difficult to machine because of its narrow range of cutting speeds. If the cutting speed is too low, the material sticks in the cutting edge, if it's too high, the high quantity of additives produces abrasive wears in the cutting edge.	Built-up edge Notch wear
M	Duplex	5	14 14	X2CrNiN23-4, S31500		Notch wear Crater
M	Ferritic & Martensitic	6	12 13	410, X6Cr17, 17-4PH, 430		Crater
K	Grey	7	15 15 16	GG20, GG40, EN-GJL-250, N030B	**Composition:** Fe-C alloy with 2.1 to 5% of carbon. It can be alloyed with Si, P, Mn and Ni. **Characteristics:** Grey cast iron tends to be brittle, and malleable cast irons usually have a more ductile but less homogeneous micro-structure. Reinforced cutting edges will perform best. High productivity can be achieved by using high feeds.	Flank wear Crater Mechanical cracks
K	Malleable & Nodular	8	17, 19 17, 19 18, 20	GG40, GG70, 50005		
S	Fe, Ni & Co based	9	31, 32 33 34	Incoloy 800 Inconel 700 Stellite 21	**Composition:** Iron (Fe) based, Nickel (Ni) based or Cobalt (Co) based alloys and Titanium alloys. **Characteristics:** High temperature alloys and titanium provide excellent mechanical strength resistance, as well as corrosion and oxidation resistance. Relatively low cutting speed is recommended due to their poor thermal conductivity.	Notch wear Crater
S	Ti based	10	36 37	TiAl6V4 T40		
H	Steel	11	38 38 38	X100 CrMo13, 440C, G-X260NiCr42	This group includes hardened and tempered steel up to 55 HRc, chilled and white cast iron up to 55 HRc. Machining success depends largely on clamping system rigidity, as cutting forces and power consumption are high. Finishing represents the majority of the operations for this material group.	Crater
H	Chilled Cast Iron	12	40	Ni-Hard 2		
H	White Cast Iron	13	41	G-X300CrMo15		
NF	Alu	14	25	AlSi12	Non-ferrous and soft materials (less than 130HB of hardness). Most common: Aluminium **Composition:** Al alloys can be alloyed with Cu, Zn, Mg, Mn and Si. **Characteristics:** Aluminium is widely used due to its low density and relatively good strength to weight ratio. When machining, it tends to have long chips and built-up edge. A highly positive cutting edge together with low friction coating control the chips and reduce built up edge.	Built-up edge
NF	AL (<8%Si)	15	21, 22, 23, 24	4% < Si < 8% Si < 4%		
NF	Copper Alloys	16	26, 27, 28	CuZn30		
NF	Non Metallic	17	29 - 30	Fiber Plastics Graphite Hard Rubber		

MACHINING RECOMMENDATIONS

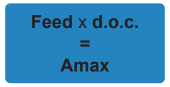
In machining stainless steel, please verify and respect the cutting speed recommended for the insert as there is a tendency to machine at speeds that are too low.

In machining stainless steel or exotic materials, P geometry inserts (CNMP, TNMP, WNMP) and NX chipbreakers are recommended as first choice.

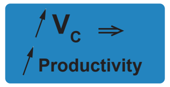
In machining exotic materials, it is important to verify cutting conditions of the specific insert.



P geometry inserts (CNMP, TNMP, WNMP) are not recommended when machining with interrupted cut.



It is important to verify and respect Amax, which is the maximum chip section. Feed x d.o.c. must be lower than the number noted as Amax.



To increase machining productivity, it is recommended to increase speed (Vc) while respecting chip size calculation.

TECHNICAL INFORMATION

COOLANT GUIDE

SUCCESSFUL MACHINING OPERATIONS DEPEND ON CORRECT COOLANT APPLICATION

TURNING

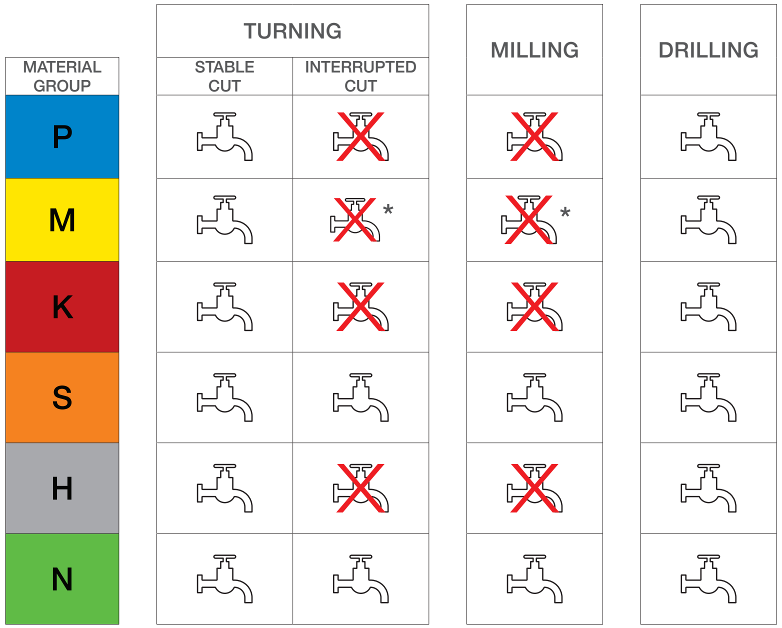
- In continuous cut, the application of coolant is recommended for all workpiece materials.
- If there is interrupted cut, use dry operation when machining material groups P, M, K and H.
- Coolant is always recommended for High-Temp Alloys (Group S) and Aluminum (Group N).

MILLING

- In dry operations, the usage of "air blow" is always recommended in order to evacuate the chips which can accumulate causing tool breakage and problems with surface finishing.

DRILLING

- Coolant in drilling is always recommended independent of workpiece material as it helps chip evacuation, improves hole quality and increases tool life.



- When machining Duplex Stainless Steels, both wet and dry operations should be considered, depending on variables in the machining process.

TECHNICAL FORMULAS

Turning

Cutting Speed (m/min)	$V_c = \dfrac{D_m \times \pi \times n}{1000}$
Rotation (Rev/min)	$n = \dfrac{V_c \times 1000}{D_m \times \pi}$
Chip Removal Rate (cm³/min)	$Q = V_c \times a_p \times f_n$
Cutting Time (min)	$T_c = \dfrac{l_m}{f_n \times n}$
Surface Roughness (µm)	$R_{max} = \dfrac{f_n^{\,2}}{r_\varepsilon} \times 125$

Symbol	Designation	Unit
D_m	Machining diameter	mm
f_n	Feed per revolution	mm/rev
l_m	Machining length	mm
n	Rotation	rev/min
Q	Chip removal rate	cm³/min
A_{max}	d.o.c x feed	mm²
r_ε	Nose radius	mm
T_c	Cutting time	min
R_{max}	Surface roughness	µm

Millling

Cutting Speed (m/min)	$V_c = \dfrac{n \times \pi \times D}{1000}$
Rotation (Rev/min)	$n = \dfrac{V_c \times 1000}{\pi \times D}$
Table Feed (mm/min)	$V_f = n \times z_c \times f_z$
Cutting Output (cm³/min)	$Q = \dfrac{a_e \times a_p \times V_f}{1000}$
Feed per Tooth	$f_z = \dfrac{V_f}{n \times z_c}$

Symbol	Designation	Unit
V_c	Cutting speed	m/min
a_p	Depth of cut (d.o.c.)	mm
a_e	Radial depth of cut (width of cut)	mm
D	Cutter diameter	mm
f_z	Feed per tooth	mm/tooth
Z_c	Effective number of teeth	pcs
V_f	Table Feed	mm/min
Z_n	Total number of teeth	pcs

SPECIFIC CUTTING FORCES

MATERIAL GROUP		Lamina Gr. N°	VDI Grp	MATERIAL EXAMPLES	HARDNESS	Specific cutting force, kc1 (N/mm²)	m_c
P	Non-Alloyed	1	1	C35, CK45, 1020, 1045, 1060, 28MN6	125 HB	1500	0.25
			2		190 HB	1700	0.25
			3		250 HB	1850	0.25
	Low alloyed	2	4	42CRMO4, ST50, CK60, 4140, 4340, 100CR6	180 HB	1700	0.25
			5.6		230 HB	1800	0.25
			7.8		280 HB	2040	0.25
			9		350 HB	2900	0.25
	High allowed	3	10	X40CRMOV5, H13, M42, D3, S6-5-2, 12NI19	220 HB	2050	0.25
			10		280 HB	2600	0.25
			11		320 HB	2950	0.25
			11		350 HB	3100	0.25
M	Austenitic	4	14	304, 316, X5CRNI18-9	180 HB	1800	0.21
			14		240 HB	2100	0.21
	Duplex	5	14	X2CRNIN23-4, S31500	290 HB	2600	0.21
			14		310 HB	2800	0.21
	Ferritic & Martensitic	6	12	410, X6CR17, 17-4 PH, 430	200 HB	1800	0.21
			13		42 HRc	2800	0.21
K	Grey	7	15	GG20, GG40, EN-GJL-250, NO30B	150 HB	800	0.28
			15		200 HB	1000	0.28
			16		250 HB	1100	0.28
	Malleable & Nodular	8	17.19	GGG40, GGG70, 50005	150 HB	870	0.28
			17.19		200 HB	1150	0.28
			18.20		250 HB	1400	0.28
S	Fe, Ni & Co based	9	31.32	Incoloy 800	240 HB	2600	0.25
			33	Inconel 700	250 HB	2700	0.25
			34	Stellite 21	350 HB	-3300	0.25
	Ti bases	10	36	TIAL6V4	-	1400	0.23
			37	T40	-	1450	0.23
NF	Al (>8%Si)	12	25	TIAL6V4	130 HB	700	0.25

NUMBER OF THREADING PASSES SELECTION FOR SINGLE POINTS INSERTS

PITCH	mm TPI	0.5 48	0.8 32	1.0 24	1.25 20	1.5 16	1.75 14	2.0 12	2.5 10	3.0 8	4.0 6	6.0 4
NUMBER OF PASSES		3-6	4-7	4-9	6-10	5-11	9-12	6-13	7-15	8-17	10-20	11-22

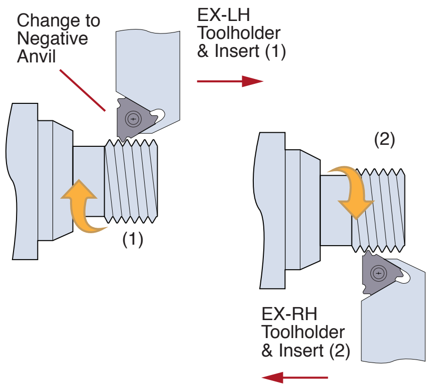
NOTES

1. For most standard applications the middle of the range is a good starting point.
2. The tougher workpiece material, the higher the number of cutting passes you should select.
3. General rule of thumb: fewer passes are better than more speed.

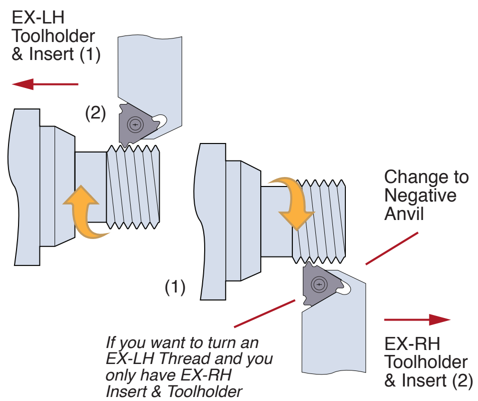
THREAD TURNING METHODS

EXTERNAL THREAD

RIGHT THREAD

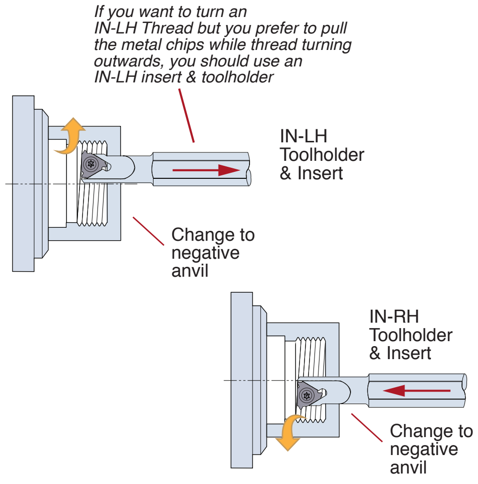


LEFT THREAD

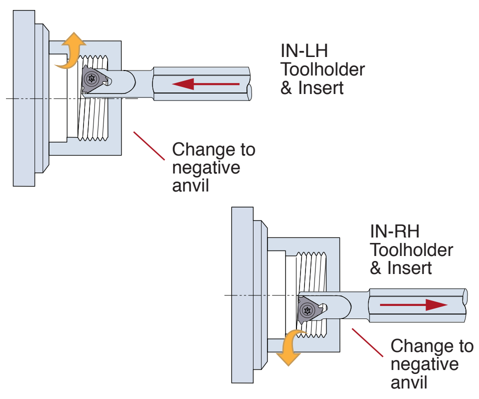


INTERNAL THREAD

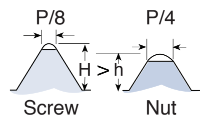
RIGHT THREAD



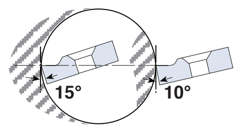
LEFT THREAD



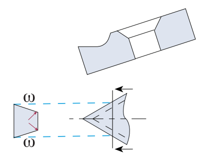
THREADING INSERTS



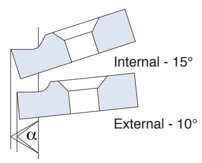
1. In most thread forms internal and external threads have different depth and radius, thus tools are not interchangeable



2. The insert relief angle of a standard Lamina external toolholder is 10°; for an internal toolholder it is 15°. This 5° difference is to provide additional necessary radial clearance.



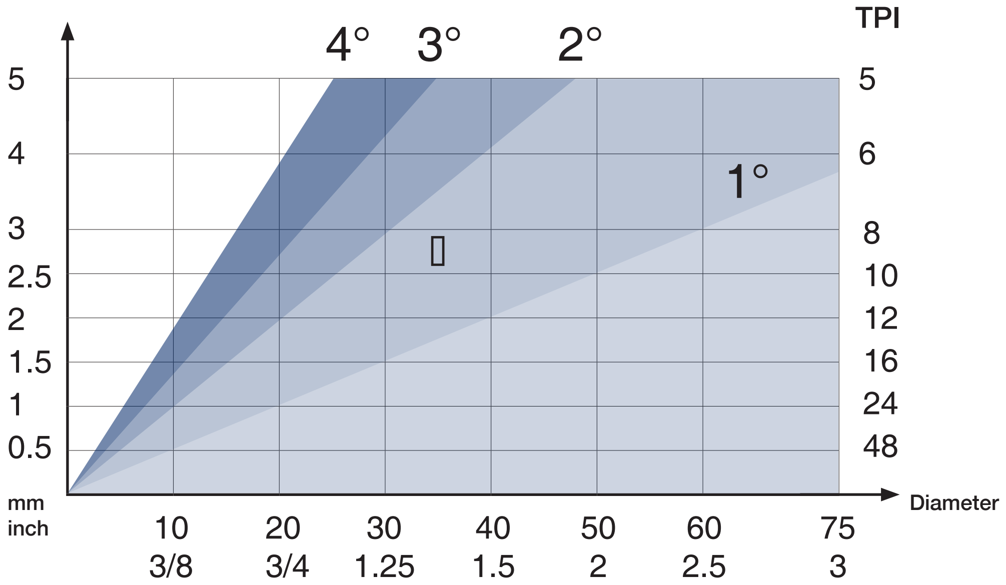
3. Our built-in relief angles ensure automatic insert flank angle clearance.



1. Profiles of Lamina internal & external threading inserts are precisely ground to ensure accurate thread geometry when used in their corresponding toolholders.
Using internal inserts with an external holder will result in distortion of angle and insert geometry.

2. Insert and toolholder should always match. An IN-RH insert must be used with an IN-RH toolholder.
No mismatch is allowed.

THREAD HELIX ANGLE



$$\tan ▯ = \frac{P}{\pi \times D}$$

Simplified formula

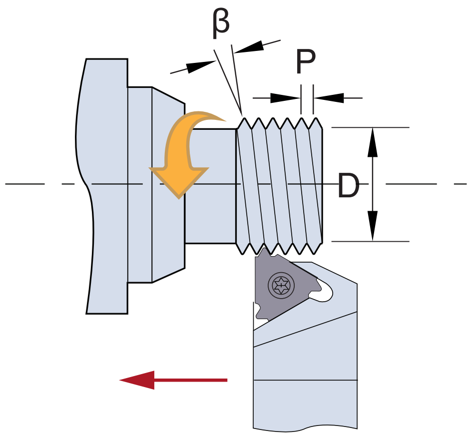
▯ = 20P/D

Example:

D = 30 mm (1.18")

P = 1.5 mm (16 TPI)

$$▯ = \frac{20 \times 15}{30} = 1°$$

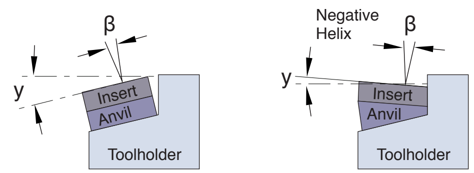


TECHNICAL INFORMATION

STANDARD AND SLANTED ANVILS

Lamina Toolholder Pockets are built with 1.5° helix angle. This angle may be adjusted to better match the thread helix angle by simply changing the anvil.

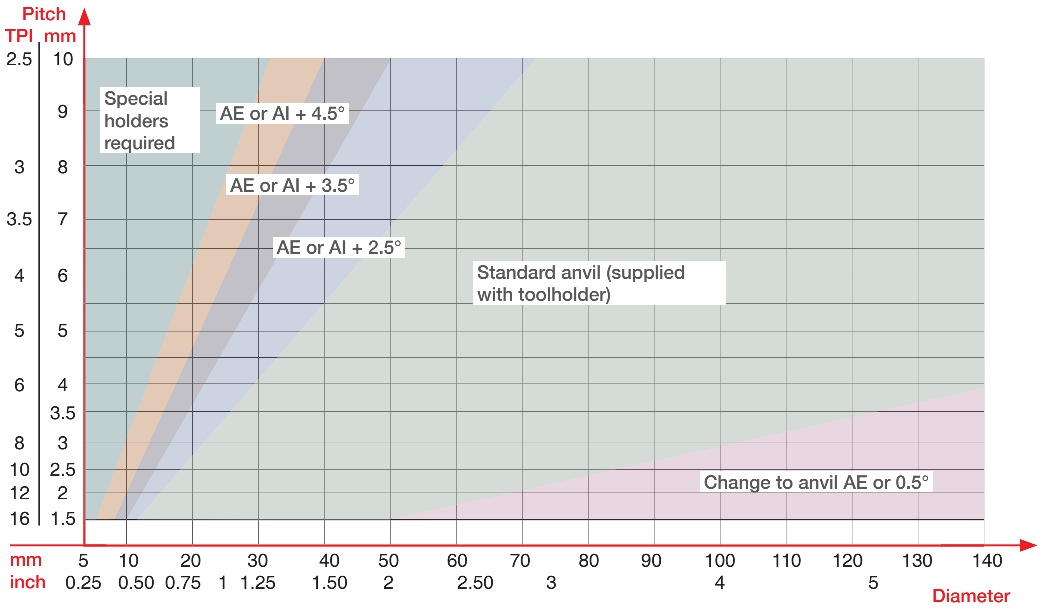
Negative helix is usually used when threading RH thread with LH holder or LH thread with RH holder.



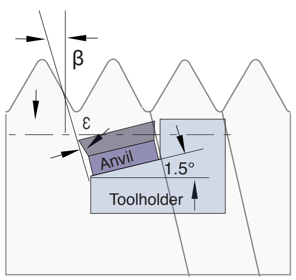
L	IC	POCKET ANGLE Y	4.5°	3.5°	2.5°	1.5° STANDARD	0.5°	-0.5°	-1.5°
16	3/8	EX-RH or IN-LH	SHIM 16E+4.5	SHIM 16E+3.5	SHIM16E+2.5	SHIM 16E	SHIM 16E+0.5	SHIM 16E-0.5	SHIM 16E-1.5
16	3/8	EX-LH or IN-RH	SHIM 16I+4.5	SHIM 16I+3.5	SHIM 16I+2.5	SHIM 16I	SHIM 16I+0.5	SHIM 16I-0.5	SHIM 16I-1.5
22	1/2	EX-RH or IN-LH	SHIM 22E+4.5	SHIM 22E+3.5	SHIM 22E+2.5	SHIM 22E	SHIM 22E+0.5	SHIM 22E-0.5	SHIM 22E-1.5
22	1/2	EX-LH or IN-RH	SHIM 22I+4.5	SHIM 22I+3.5	SHIM 22I+2.5	SHIM 22I	SHIM 22I+0.5	SHIM 22I-0.5	SHIM 22I-1.5

ANVIL CHANGE RECOMMENDATION

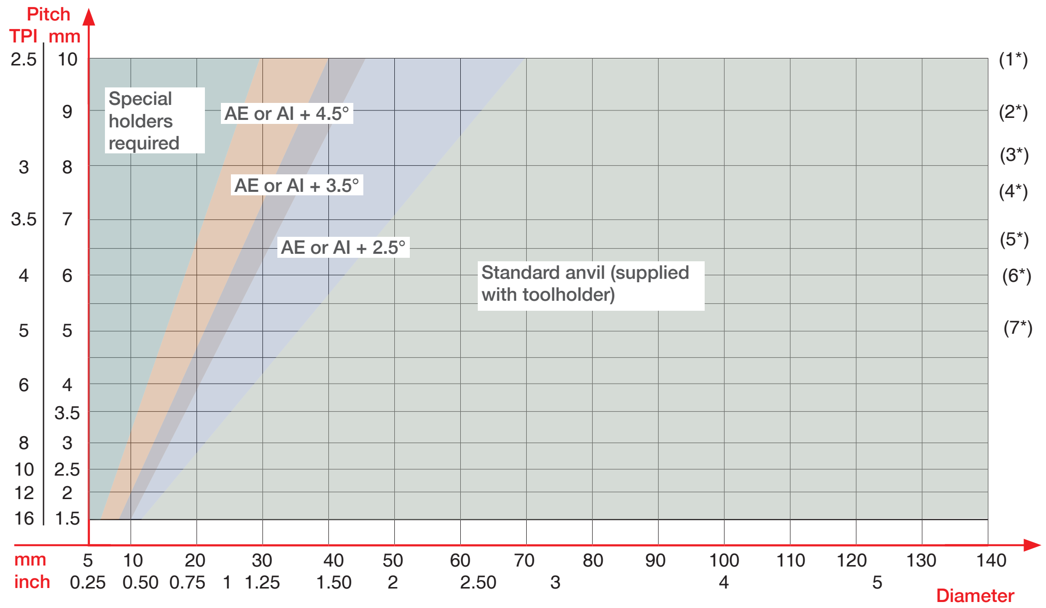
As it can be seen on the chart below, some Pitch to Diameter combinations require an anvil change.
If change is required, use AE anvils for EX-RH and IN-LH toolholders and AI anvils for IN-RH and EX-LH toolholders.



TRAPEZ (DIN 103)



As it can be seen on the chart below, most application do not require an anvil change. If change is required, use AE anvils for EX-RH and IN-LH toolholders and AI anvils for IN-RH and EX-LH toolholders.



(1*) PARTIAL PROFILE 60°
(2*) PARTIAL PROFILE 55°
(3*) ISO
(4*) UN
(5*) WHIT
(6*) NPT
(7*) BSPT

HIGH FEED MILLING

EFFECTIVE DIAMETER FOR RPM CALCULATION

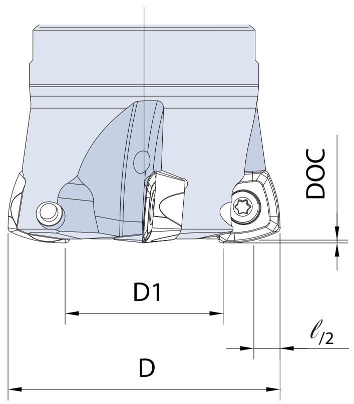
The effective cutting diameter (D_{eff}) must be calculated to obtain the correct revolution per minute (RPM) and consequently the table feed.

The effective cutting diameter is calculated using the following values and formula.

$$n = \frac{V_c \times 1000}{D_{eff} \times \pi}$$

$$D_{eff} = D - \ell$$

Symbol	Designation	Unit
D	Cutter Diameter	mm
DOC	Depth of cut	mm
ℓ	Diameter compensation (see chart below)	mm



SDKX 0904-HF SDKW 0904-HF	
DOC (mm)	ℓ (mm)
1.5	0
1.4	0.22
1.3	0.58
1.2	1.04
1.1	1.52
1.0	2.02
0.9	2.54
0.8	3.10
0.7	3.70
0.6	4.34
0.5	5.06
0.4	5.82
0.3	6.72
0.2	7.74
0.1	9.06

SDKX 1205-HF SDKW 1205-HF	
DOC (mm)	ℓ (mm)
2.0	0
1.8	0.66
1.6	1.58
1.4	2.58
1.2	3.66
1.0	4.84
0.8	6.16
0.6	7.66
0.4	9.44
0.2	11.76

APKT 0602-HF APKW 0602-HF	
DOC (mm)	ℓ (mm)
0.5	0
0.4	0.32
0.3	0.72
0.2	1.28
0.1	2.22

EXAMPLE FOR D_{eff} CALCUATION

Cutter: LT 903 S-W-D040/4 (D=40/Z=4)
Insert: SDKX 1205-HF
Material: Lamina Group 3 – 280 HB

VALUES	INCORRECT CALCULCATION	CORRECT CALCULCATION
Vc = 120 m/min D = 40 mm DOC = 1.0 mm ℓ = 4.84 mm $D_{eff} = D - \ell$ $D_{eff} = 40 - 4.84$ $D_{eff} = 35.16$	RPM for D=40 n = 954 rev/min	RPM for D_{eff}=35.16 n = 1085 rev/min

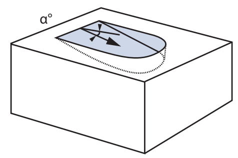
TECHNICAL INFORMATION

LT 752 / LT 910 - CUTTER LINE

APPLICATION PARAMETERS

LT 752 - SHOULDER MILLING - APKT 060204-PDTR

D	α° max. for linear ramping	Ap max. for linear ramping	Ae max. for linear plunging	Helical Milling C min.	Helical Milling P max.	Helical Milling C max.	Helical Milling P max.
10	3	5.2	0.6	14	0.9	19	3.0
12	2.2			18		23	2.5
16	1.5			26		31	2.0
20	1.15			34		39	1.8
25	0.9			44		49	1.7
32	0.7			58		63	1.7



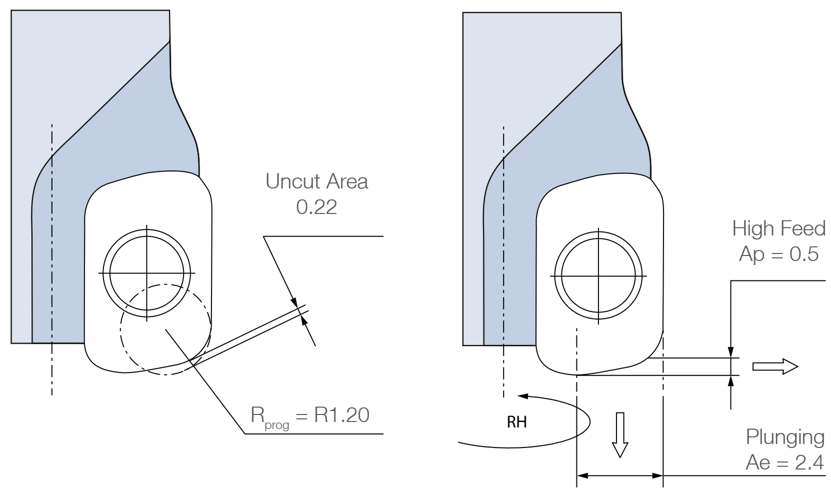
LT 910 - HIGH FEED MILLING - XPKT & XPKW 0602-HF

D	D1*	α° max. for linear ramping	Ap max. for linear ramping	Ae max. for linear plunging	Helical Milling C min.	Helical Milling P max.	Helical Milling C max.	Helical Milling P max.
10	4.7	1.25	0.5	2.4	14.7	0.5	18	0.5
12	6.7	2.5			18.7		22	
16	10.7	2			26.7		30	
20	14.7	1.25			34.7		38	
25	19.7	1			44.7		48	
32	26.7	0.9			58.7		62	

* Flat surface on face milling = D1

PROGRAMMING RADIUS

Uncut Area = Uncut thickness, maximum mismatch between programmed corner radii (Rprog) and generated machined profile.



LT 752 / LT 910 - ASSEMBLING INSTRUCTIONS

HOW TO ASSEMBLY LT 752 / LT 910 CUTTERS TO AVOID PREMATURE BREAKAGE

- Due to the small size of these inserts, it is vital that you only use a pre-set torque screw driver (0.4Nm) at all times for assembly and adjustment.
- It is also recommended that during mounting, the insert should be held in place with your finger.
- When using the cutter for the first time, the following start procedure should be followed. This procedure needs to be done only once, the first time the milling cutter perform the first touch on the material.

1. Start the milling operation and stop it after 10-20 seconds of machining
2. Tighten the screw again using the pre-set torque screw driver (0.4Nm)
3. Re-start the milling operation
4. This procedure will guarantee a precise and real torque force on the screw.

This procedure needs to be done only the first time any you use a new LT 752 milling cutter. After this your cutter should work without issue even after loading new inserts or starting and restarting the machining process.

Keep the insert positioned with the finger, when tightening the screw.

COPY MILLING

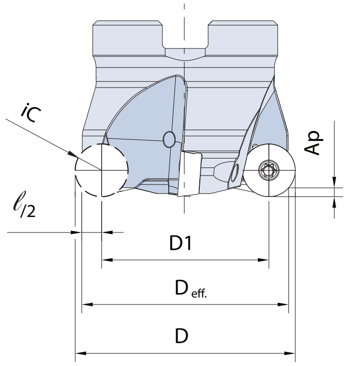
EFFECTIVE DIAMETER FOR RPM CALCULATION

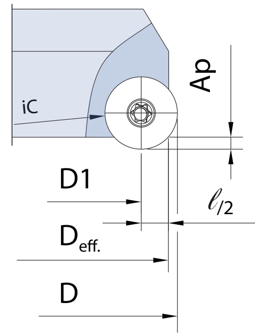
When calculating revolution per minute (n), the effective diameter must be taken into account. Refer to the formula below.

$$n = \frac{V_c \times 1000}{D_{eff} \times \pi}$$

$$D_{eff} = D1 + \ell$$

Symbol	Designation	Unit
D	Milling Cutter Diameter	mm
D_{eff}	Depth of cut (d.o.c.)	mm
D1	Cutter flat surface	mm
DOC	Depth of cut	mm
iC	Insert Diameter - Inscribed circle	mm
V_c	Cutting Speed	m/min
n	Rotation	rev/min
ℓ	Diameter compensation	mm





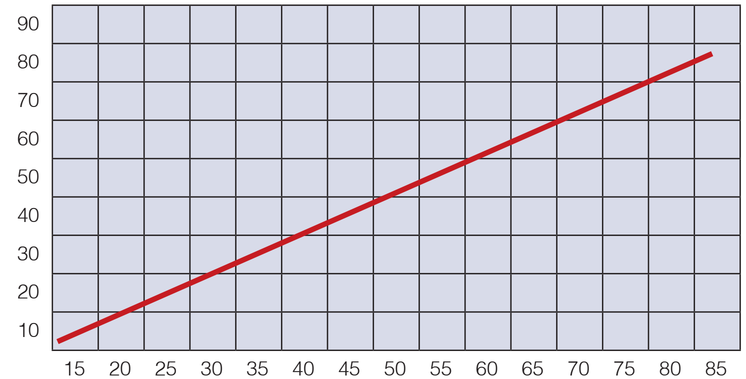
ℓ VALUES FOR DOC VALUES*

iC	DOC (Ap)							
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
6	3.3	4.5	5.2	-	-	-	-	-
7	3.6	4.9	5.7	6.3	-	-	-	-
8	3.9	5.3	6.2	6.9	-	-	-	-
10	4.4	6.0	7.1	8.0	8.7	-	-	-
12	4.8	6.6	7.9	8.9	9.7	10.4	-	-
16	5.6	7.7	9.3	10.6	11.6	12.5	13.2	13.9

* For min/max depth of cut, please check the cutting parameter pages for each insert.

DRILLING - COOLANT

COOLANT VOLUME REQUIREMENTS



COOLANT PRESSURE REQUIREMENT

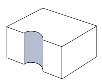
<table>
<tr><td rowspan="3">Drilling depth</td><td colspan="3">Recomended pressure (Bar)</td></tr>
<tr><td colspan="3">Drill diameter</td></tr>
<tr><td>15-25</td><td>> 25-40</td><td>> 40</td></tr>
<tr><td>< 3 x D
≥ 3 x D</td><td>6
12</td><td>4.5
9</td><td>3
6</td></tr>
<tr><td>< 3 x D
≤ 3 x D</td><td>6
12</td><td>4.5
9</td><td>3
6</td></tr>
</table>

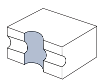
HOLE TOLERANCE (BASED ON STABLE CONDITIONS

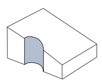
Drill lenght	Hole tolernace (mm)
2 x D	+ 0.20 / - 0.1
3 x D	+ 0.25 / - 0.1
4 x D	+ 0.30 / - 0.1

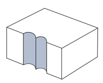
RECOMMENDED

*** SUITABLE**


GENERAL DRILLING

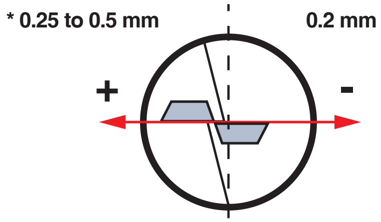

CROSS DRILLING


IRREGULAR SURFACE DRILLING


INTERRUPTED DRILLING

*** SUITABLE** Reduce the feed in 50%

MAX. AND MIN. HOLE DIAMETER



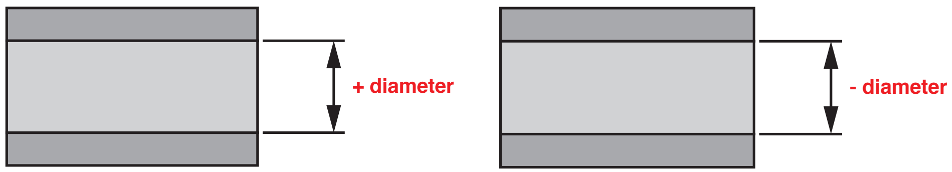
* the maximum diameter adjustement depends on the drill body diameter

Reduce the feed in 50% in case of 4xD drilling

DRILL DIAMETER	INSERT	RADIAL SHIFT	MAX. HOLE (Ø)
13	SPMG O50204	+0.5	14.0
14		+0.5	15.0
15		+0.5	16.0
16	SPMG O60204	+0.5	17.0
17		+0.5	18.0
18		+0.5	19.0
19		+0.5	20.0
20		+0.5	21.0
21		+0.25	21.5
22	SPMG O7T308	+0.5	23.0
23		+0.5	24.0
24		+0.5	25.0
25		+0.5	26.0
26		+0.25	26.5
27		+0.25	27.5
28	SPMG O90408	+0.5	29.0
29		+0.5	30.0
30		+0.5	31.0
31		+0.25	31.5
32		+0.25	32.5
33		+0.25	33.5
34	SPMG 110408	+0.5	35.0
35		+0.5	36.0
36		+0.5	37.0
37		+0.5	38.0
38		+0.5	39.0
39		+0.5	40.0
40		+0.25	40.5
41		+0.25	41.5

TROUBLESHOOTING

1 - OVERSIZED AND UNDERSIZED HOLES



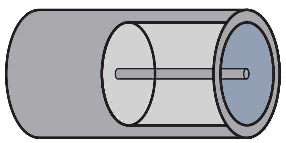
ROTATING DRILLS

1. Check the coolant flow and increase it, clean machine filter, clean the drill holes
2. Check the coolant pressure and volume according to the drill diameter and lenght of hole

NON ROTATING DRILLS

1. Check the lathe alignement
2. Rotate the drill 180

2 - PIN IN HOLES



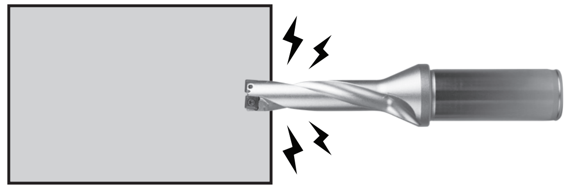
ROTATING DRILLS

1. Check the coolant pressure and volume according to the drill diameter and length of hole
2. Use a shorter drill

NON ROTATING DRILLS

1. Check the coolant flow and increase it, clean machine filter, clean the drill holes
2. Check the lathe alignment
3. Use a shorter drill

3 - VIBRATIONS



ROTATING DRILLS

1. Check the coolant pressure and volume according to the drill diameter and length of hole
2. Use a shorter drill

NON ROTATING DRILLS

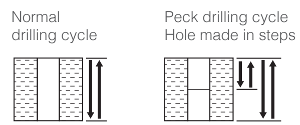
1. Check the coolant flow and increase it, clean machine filter, clean the drill holes
2. Check the lathe alignment
3. Use a shorter drill

4 - THE IMPORTANCE OF COOLANT IN DRILLING

Coolant in drilling is always recommended, independent of the workpiece material, because it helps chip evacuation, improves hole quality and increases tool life.

The best results are achieved with internal coolant, when it is not available, external coolant can help to achieve acceptable results if the coolant noses are well directed to the drill flutes and if the coolant pressure is good.

⚠ **Drilling without coolant is not recommended**, mainly because the chips can get stuck inside the hole causing the breakage of the drill. If it’s unavoidable due to machine limitations, the cutting speed should be reduced and the “wood peck“ drilling technique should be applied (after drilling a few millimeters, the drill is retracted out from the hole to ensure no chips are stuck on the drill, and then continue drilling).

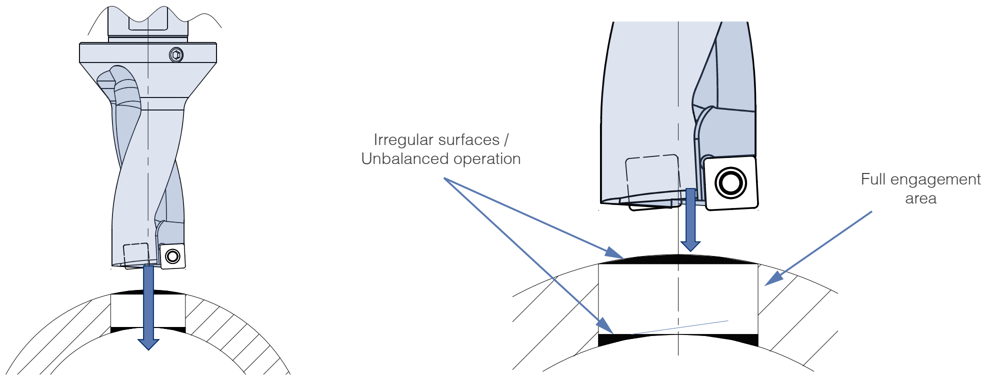


HELICAL INTERPOLATION

DRILLING - IRREGULAR WORK SURFACES

The example below shows a hole-making operation in a workpiece with irregular surface and weak set-up.

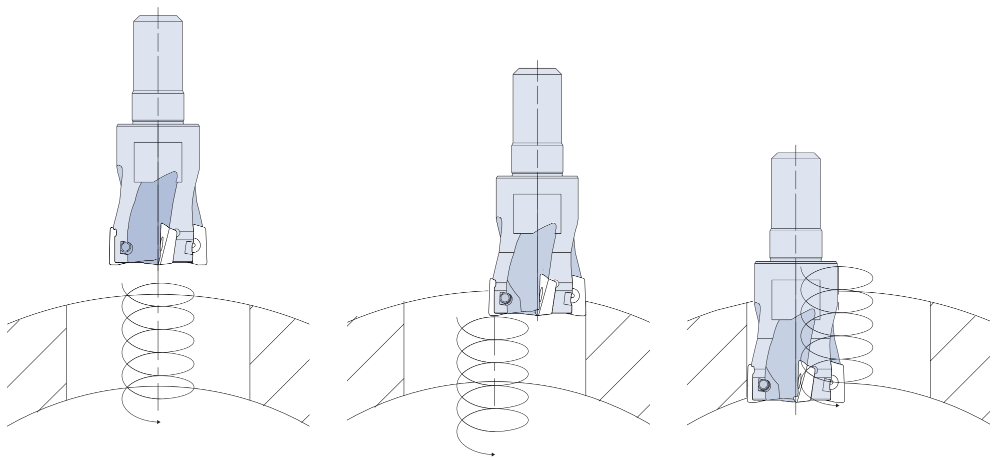
When using a drill body, until the full engagement is achieved, the operation is unbalanced causing vibrations, demanding a large feed rate reduction, with high risk of insert breakage. It can reduce the productivity in some cases.



HELICAL MILLING - IRREGULAR WORK SURFACES

In this case, the helical milling machine strategy is the best option because it has:

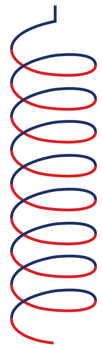
1. Good chip control and evacuation
2. Better surface quality and dimensional tolerances
3. Lower power consumption and vibration tendencies = more machining stability



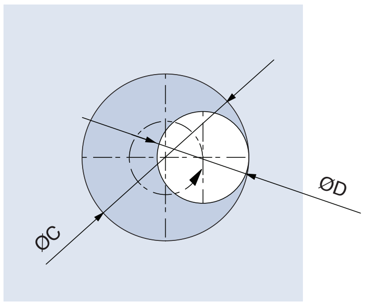
TECHNICAL INFORMATION

HELICAL MILLING - CUTTING DIRECTION

To maximize performance, the Helical Milling strategy must be applied with the correct cutting direction. For holemaking operations such as drilling and boring, CCLW is recommended for climb milling to keep the chip formation from thick to thin.



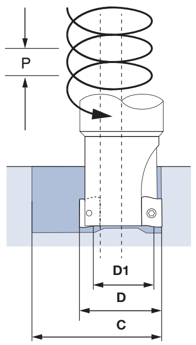
Counterclockwise direction (CCLW)



D = Milling Cutter Diameter
C = Hole Diameter

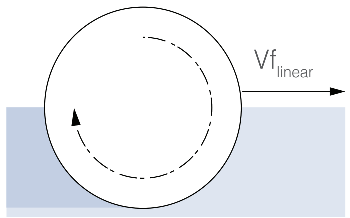
HELICAL MILLING - FEED RATE COMPENSATION

For Helical Milling, we need to compensate the feed rate, to keep the chip thickness like the same when performing a Linear Milling operation.



D = 16
C = 30

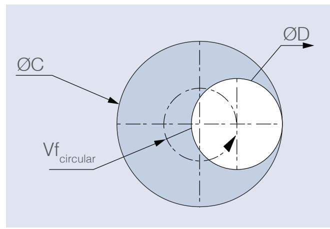
LINEAR MILLING



Vf_{linear} = fz x RPM x Z

RPM = 3600 rev/min
fz = 0.05 mm/tooth
Z = 4
Vf_{linear} = 720 mm/min
Climb Milling

CIRCULAR MILLING



$Vf_{circular}$ = ((C-D)/C) x Vf_{linear}

Feed Rate Compensation

((C-D/C) * Linear feed Rate
((30-16)/30)*720mm/min
(14/30)*720mm/min
0.466*720mm/min = 366 mm/min

Simplify your process

Decrease your tooling costs

Minimize your machining down time

Increase your production efficiency

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