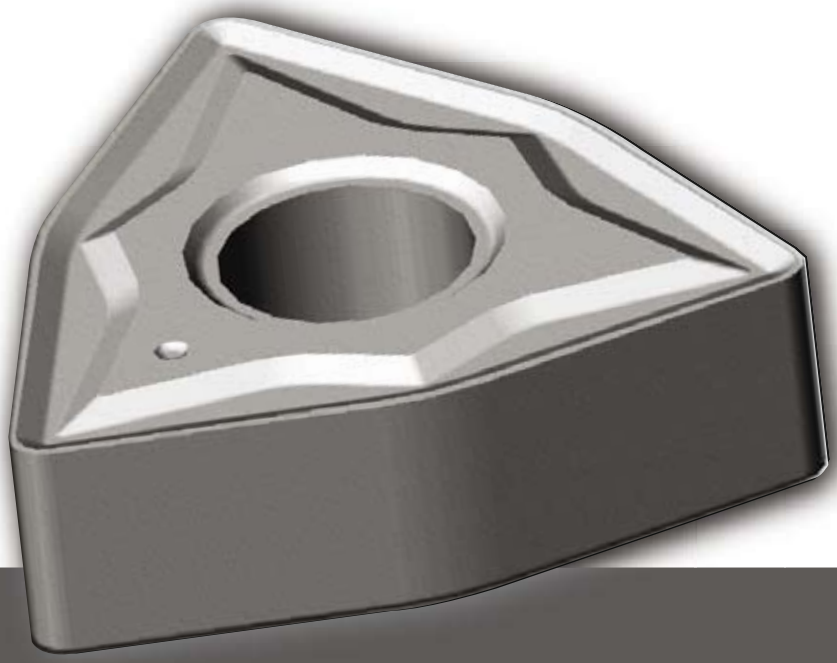
Turning

LT - 10 Multi-Mat® Turning
LT - 05 Aluminium

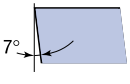
MULTI-MAT® TURNING INSERTS



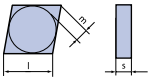
LAMINA TECHNOLOGIES

C C M T

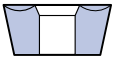
Shape
80° Diamond



Clearance Angle
7° Positive rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Screw Down Clamping
Single Sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
CCMT 060204 NN	LT 10	6	2,38	0,4	T0000055	13
CCMT 09T304 NN	LT 10	9	3,97	0,4	T0000056	14
CCMT 09T308 NN	LT 10	9	3,97	0,8	T0000117	15
CCMT 09T308 WM	LT 10	9	3,97	0,8	T0000057	16
CCMT 120404 NN	LT 10	12	4,76	0,4	T0001456	17
CCMT 120408 NN	LT 10	12	4,76	0,8	T0001457	18
CCMT 120412 NN	LT 10	12	4,76	1,2	T0001776	19

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CCMT 060204 NN					
CCMT 09T304 NN					
CCMT 09T308 NN					
CCMT 09T308 WM					
CCMT 120404 NN					
CCMT 120408 NN					
CCMT 120412 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

80° Diamond shape inserts, with positive chip breaker geometry. Very popular and useful for Boring even of small diameters, Facing and external turning operations. Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.10	2.0	0.08	0.20	0.36	180	350	1.0	0.18
			180		2.0		0.18	0.29		280		
			210		2.0		0.16	0.29		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.10	2.0	0.08	0.18	0.29	120	280	1.0	0.15
			230		2.0		0.18	0.24		250		
			280		1.5	0.09	0.16	0.24		210		
			320		1.5		0.14	0.19		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.10	2.0	0.08	0.16	0.24	70	190	1.0	0.12
			280		1.5		0.14	0.24		150		
			320		1.5		0.13	0.17		130		
			350		1.5		0.13	0.14		100		
			400	0.10	1.3	0.05	0.11	0.12	50	90	0.9	0.10
			480		1.2		0.09	0.10	40	80	0.7	0.08
			550		1.0		0.08	0.08	30	70	0.6	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.10	2.0	0.08	0.16	0.22	170	270	1.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		1.8	0.08	0.14	0.17	160	210	1.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		1.5	0.08	0.13	0.14	70	150	1.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.10	2.0	0.08	0.16	0.20	170	250	1.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.10	2.0	0.08	0.16	0.20	170	250	1.0	0.15
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.10	2.0	0.06	0.18	0.38	170	250	1.0	0.18
		GG 25						0.36		230		
		GG 30						0.36		210		
Nodular Cast Iron	10	GGG 40	210	0.10	2.0	0.06	0.16	0.29	120	230	1.0	0.15
		GGG 50	260					0.24		190		
		GGG 70	310					0.24		150		
		G-X260NiCr42	450	0.10	1.0	0.06	0.10	0.08	30	70	0.6	0.07
Nickel Based Alloys	11	Inconel 625	--------	0.10	1.5	0.08	0.14	0.14	25	35	1.0	0.12
		Inconel 718						0.14	28	40		
		Hastelloy C						0.17	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.10	1.5	0.08	0.14	0.17	35	60	1.0	0.14
		T40					0.13	0.14	28	40	1.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CCMT 060204 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CCMT 09T304 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CCMT 09T308 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

CCMT 09T308 WM

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CCMT 09T304 WM	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm] min	d.o.c [mm] max	feed [mm/rev] min	feed [mm/rev] max	A max [mm²]	V_C [m/min] min	V_C [m/min] max	Optimal cutting conditions d.o.c	Optimal cutting conditions feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CCMT 120404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

CCMT 120408 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

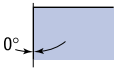
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CCMT 120408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm] min	d.o.c [mm] max	feed [mm/rev] min	feed [mm/rev] max	A max [mm²]	V_C [m/min] min	V_C [m/min] max	Optimal cutting conditions d.o.c	Optimal cutting conditions feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

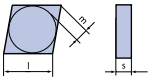
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CCMT 120412 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

C N M A

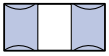
Shape
80° Diamond



Clearance Angle
0° No rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Cylindrical hole,
No Chip breaker.

Insert designation	Grade	l	s	r	Catalog Nr.	Page
CNMA 120416 NN	LT 10	12	4,76	1,6	T0000612	21

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMA 120416 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

80° Diamond shape flat insert. Strong edge preparation mainly for Gray Cast Iron machining. For general purpose Turning, Facing and Boring operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

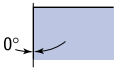
Machining Recommendation Guide - Please see Pg. 8

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm] min	d.o.c [mm] max	feed [mm/rev] min	feed [mm/rev] max	A max [mm²]	V_C [m/min] min	V_C [m/min] max	Optimal cutting conditions d.o.c	Optimal cutting conditions feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150 180 210	CNMA inserts are not recommended for Low Carbon Steel								
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180 230 280 320	CNMA inserts are not recommended for Alloy Steel								
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220 280 320 350 400 480 550	CNMA inserts are not recommended for High Alloy Steel								
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	CNMA inserts are not recommended for Austenitic Stainless Steel								
	5	X2 CrNiMo 17 2 2 316	230 to 270									
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------									
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	CNMA inserts are not recommended for Ferritic Stainless Steel								
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed Treated	CNMA inserts are not recommended for Martensitic Stainless Steel								
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	3.0	170	250	4.0	0.60
		GG 25						2.7		230		
		GG 30						2.7		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	2.3	120	230	4.0	0.50
		GGG 50	260					2.0		190		
		GGG 70	310					1.8		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.25	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	--------	CNMA inserts are not recommended for Exotic materials								
		Inconel 718										
		Hastelloy C										
Titanium Based Alloys	12	TiAl 6 V4	--------	CNMA inserts are not recommended for Exotic materials								
		T40										

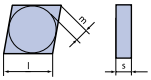
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMA 120416 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

C N M G

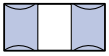
Shape
80° Diamond



Clearance Angle
0° No rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
CNMG 120404 NN	LT 10	12	4,76	0,4	T0000491	23
CNMG 120408 NN	LT 10	12	4,76	0,8	T0000059	24
CNMG 120408 NR	LT 10	12	4,76	0,8	T0001436	25
CNMG 120408 NP	LT 10	12	4,76	0,8	T0001966	26
CNMG 120408 WM	LT 10	12	4,76	0,8	T0000060	27
CNMG 120412 NN	LT 10	12	4,76	1,2	T0000061	28

NN All Purpose Chipbreaker WM Wiper Medium chip breaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMG 120404 NN					
CNMG 120408 NN					
CNMG 120408 NR					
CNMG 120408 NP					
CNMG 120408 WM					
CNMG 120412 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

The most popular general purpose Turning inserts. Use for Turning, Facing and Boring operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMG 120404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

CNMG 120408 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMG 120408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.27	0.68	2.3	180	330	4.0	0.50
			180		5.0		0.68	2.3		280		
			210		5.0		0.60	2.0		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.27	0.60	2.0	120	280	4.0	0.45
			230		5.0		0.60	1.5		250		
			280		5.0	0.23	0.53	1.5		210		
			320		4.0		0.53	1.3		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.23	0.60	1.5	70	190	4.0	0.40
			280		5.0		0.60	1.5		150		
			320		4.0		0.53	1.2		130		
			350		4.0		0.53	1.2		100		
			400	0.50	3.5	0.14	0.45	0.9	50	90	3.4	0.36
			480		3.0		0.35	0.7	40	80	2.9	0.30
			550		2.5		0.28	0.5	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.3	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.1	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	0.8	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.1	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.1	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	2.3	170	250	4.0	0.60
		GG 25						2.0		230		
		GG 30						2.0		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	1.7	120	230	4.0	0.50
		GGG 50	260					1.5		190		
		GGG 70	310					1.4		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.2	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	--------	0.50	5.0	0.26	0.46	1.1	25	35	3.0	0.38
		Inconel 718						1.1	28	40		
		Hastelloy C						1.2	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	5.0	0.23	0.46	1.2	35	60	3.0	0.38
		T40					0.39	0.9	28	40	3.0	0.32

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMG 120408 NR	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.27	0.68	2.3	180	330	4.0	0.50
			180		5.0		0.68	2.3		280		
			210		5.0		0.60	2.0		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.27	0.60	2.0	120	280	4.0	0.45
			230		5.0		0.60	1.5		250		
			280		5.0	0.23	0.53	1.5		210		
			320		4.0		0.53	1.3		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.23	0.60	1.5	70	190	4.0	0.40
			280		5.0		0.60	1.5		150		
			320		4.0		0.53	1.2		130		
			350		4.0		0.53	1.2		100		
			400	0.50	3.5	0.14	0.45	0.9	50	90	3.4	0.36
			480		3.0		0.35	0.7	40	80	2.9	0.30
			550		2.5		0.28	0.5	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.3	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.1	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	0.8	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.1	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.1	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	2.3	170	250	4.0	0.60
		GG 25						2.0		230		
		GG 30						2.0		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	1.7	120	230	4.0	0.50
		GGG 50	260					1.5		190		
		GGG 70	310					1.4		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.2	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	--------	0.50	5.0	0.26	0.46	1.1	25	35	3.0	0.38
		Inconel 718						1.1	28	40		
		Hastelloy C						1.2	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	5.0	0.23	0.46	1.2	35	60	3.0	0.38
		T40					0.39	0.9	28	40	3.0	0.32

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMG 120408 NP	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMG 120408 WM	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

CNMG 120412 NN

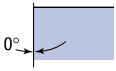
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.27	0.68	3.1	180	330	4.0	0.50
			180		5.0		0.68	3.1		280		
			210		5.0		0.60	2.6		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.27	0.60	2.6	120	280	4.0	0.45
			230		5.0		0.60	2.0		250		
			280		5.0	0.23	0.53	2.0		210		
			320		4.0		0.53	1.7		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.23	0.60	2.0	70	190	4.0	0.40
			280		5.0		0.60	2.0		150		
			320		4.0		0.53	1.6		130		
			350		4.0		0.53	1.6		100		
			400	0.50	3.5	0.14	0.45	1.2	50	90	3.4	0.36
			480		3.0		0.35	0.9	40	80	2.9	0.30
			550		2.5		0.28	0.6	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.7	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.4	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	1.0	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	3.0	170	250	4.0	0.60
		GG 25						2.7		230		
		GG 30						2.7		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	2.3	120	230	4.0	0.50
		GGG 50	260					2.0		190		
		GGG 70	310					1.8		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.3	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	--------	0.50	5.0	0.26	0.46	1.4	25	35	3.0	0.38
		Inconel 718						1.4	28	40		
		Hastelloy C						1.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	5.0	0.23	0.46	1.6	35	60	3.0	0.38
		T40					0.39	1.2	28	40	3.0	0.32

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMG 120412 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

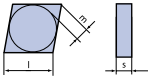
LAMINA TECHNOLOGIES

C N M M

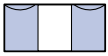
Shape
80° Diamond



Clearance Angle
0° No rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

CNMM –

Insert designation	Grade	l	s	r	Catalog Nr.	Page
CNMM 120408 NR	LT 10	12	4,76	0,8	T0000669	30
CNMM 120412 NR	LT 10	12	4,76	1,2	T0000671	31

NR Roughing chip breaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMM 120408 NR					
CNMM 120412 NR					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

80° Diamond shape, single sided inserts. Strong cutting edge for roughing operations which includes interrupted cut, high feeds and high depth of cut.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	1.20	7.0	0.30	0.60	3.0	180	330	5.0	0.45
			180		7.0		0.60	2.6		280		
			210		7.0		0.60	2.4		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	1.00	7.0	0.28	0.52	2.2	120	280	5.0	0.36
			230		7.0		0.40	2.0		250		
			280		7.0	0.25	0.38	1.6		210		
			320		7.0		0.32	1.4		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.80	7.0	0.25	0.42	1.8	70	190	5.0	0.35
			280		7.0		0.34	1.4		150		
			320		5.0		0.30	1.2		130		
			350		5.0		0.28	1.1		100		
			400	0.80	4.0	0.15	0.24	0.9	50	90	3.0	0.21
			480		3.5		0.20	0.8	40	80	2.5	0.18
			550		3.0		0.18	0.6	30	70	2.0	0.16
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	1.00	7.0	0.25	0.42	1.8	170	270	5.0	0.32
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.38	1.6	160	210	5.0	0.28
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.21	0.35	1.4	70	150	5.0	0.25
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	1.00	7.0	0.23	0.42	1.8	170	250	5.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	1.00	7.0	0.23	0.42	1.8	170	250	5.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	1.00	7.0	0.23	0.60	2.8	170	250	5.0	0.40
		GG 25						2.6		230		
		GG 30						2.4		210		
Nodular Cast Iron	10	GGG 40	210	0.80	7.0	0.21	0.50	2.6	120	230	5.0	0.38
		GGG 50	260					2.4		190		
		GGG 70	310					2.2		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.3	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	--------	0.80	5.0	0.26	0.38	1.2	25	35	3.0	0.32
		Inconel 718						1.2	28	40		
		Hastelloy C						1.4	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.80	5.0	0.23	0.38	1.4	35	60	3.0	0.32
		T40					0.34	1.0	28	40	3.0	0.30

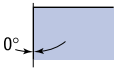
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMM 120408 NR	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	1.50	7.0	0.35	0.80	3.5	180	330	5.0	0.60
			180		7.0		0.80	3.2		280		
			210		7.0		0.80	2.8		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	1.20	7.0	0.32	0.70	3.0	120	280	5.0	0.42
			230		7.0		0.65	2.6		250		
			280		7.0	0.30	0.55	2.3		210		
			320		7.0		0.50	2.1		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	1.00	7.0	0.28	0.60	2.6	70	190	4.0	0.35
			280		7.0		0.50	2.3		150		
			320		5.0		0.40	2.0		130		
			350		5.0		0.35	1.8		100		
			400	1.00	4.0	0.17	0.32	1.5	50	90	3.5	0.29
			480		3.5		0.30	1.2	40	80	3.0	0.27
			550		3.0		0.25	1.0	30	70	2.5	0.23
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	1.50	7.0	0.28	0.58	2.8	170	270	4.0	0.32
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.25	0.52	2.2	160	210	4.0	0.28
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.25	0.50	1.9	70	150	4.0	0.25
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	1.20	7.0	0.28	0.52	2.8	170	250	4.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	1.20	7.0	0.28	0.52	2.8	170	250	4.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	1.50	7.0	0.28	0.90	3.8	170	250	4.0	0.40
		GG 25						3.5		230		
		GG 30						3.2		210		
Nodular Cast Iron	10	GGG 40	210	1.20	7.0	0.22	0.75	3.5	120	230	4.0	0.38
		GGG 50	260					3.2		190		
		GGG 70	310					3.0		150		
		G-X260NiCr42	450	1.00	2.4	0.12	0.24	0.5	30	50	1.2	0.18
Nickel Based Alloys	11	Inconel 625	--------	1.20	5.0	0.28	0.45	1.4	25	35	3.0	0.32
		Inconel 718						1.6	28	40		
		Hastelloy C						1.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	1.20	5.0	0.25	0.45	1.2	35	60	3.0	0.32
		T40					0.40	1.0	28	40	3.0	0.30

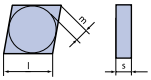
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMM 120412 NR	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

C N M P

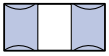
Shape
80° Diamond



Clearance Angle
0° No rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

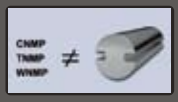
Insert designation	Grade	l	s	r	Catalog Nr.	Page
CNMP 120408 NN	LT 10	12	4,76	0,8	T0000062	33
CNMP 120412 NN	LT 10	12	4,76	1,2	T0000063	34

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMP 120408 NN					
CNMP 120412 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

80° Diamond shape, double sided inserts with positive chip breaker geometry. Generates low cutting forces, suitable for High Temperature Alloys.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent



Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMP 120408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

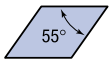
CNMP 120412 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.27	0.68	3.1	180	330	4.0	0.50
			180		5.0		0.68	3.1		280		
			210		5.0		0.60	2.6		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.27	0.60	2.6	120	280	4.0	0.45
			230		5.0		0.60	2.0		250		
			280		5.0	0.23	0.53	2.0		210		
			320		4.0		0.53	1.7		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.23	0.60	2.0	70	190	4.0	0.40
			280		5.0		0.60	2.0		150		
			320		4.0		0.53	1.6		130		
			350		4.0		0.53	1.6		100		
			400	0.50	3.5	0.14	0.45	1.2	50	90	3.4	0.36
			480		3.0		0.35	0.9	40	80	2.9	0.30
			550		2.5		0.28	0.6	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.7	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.4	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	1.0	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	3.0	170	250	4.0	0.60
		GG 25						2.7		230		
		GG 30						2.7		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	2.3	120	230	4.0	0.50
		GGG 50	260					2.0		190		
		GGG 70	310					1.8		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.3	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	--------	0.50	5.0	0.26	0.46	1.4	25	35	3.0	0.38
		Inconel 718						1.4	28	40		
		Hastelloy C						1.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	5.0	0.23	0.46	1.6	35	60	3.0	0.38
		T40					0.39	1.2	28	40	3.0	0.32

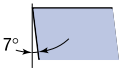
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNMP 120412 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

LAMINA TECHNOLOGIES

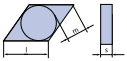
D C M T



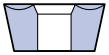
Shape
55° Diamond



Clearance Angle
7° Positive rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Screw down clamping
Single sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
DCMT 070204 NN	LT 10	7	2,38	0,4	T0000064	36
DCMT 11T304 NN	LT 10	11	3,97	0,4	T0000065	37
DCMT 11T308 NN	LT 10	11	3,97	0,8	T0000721	38

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DCMT 070204 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
DCMT 11T304 NN					
DCMT 11T308 NN					

55° Diamond shape inserts, suitable for Internal turning due to a unique chip removal geometry. Generates low cutting forces, most suitable for small work-pieces.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

DCMT 070204 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.10	2.0	0.08	0.20	0.36	180	350	1.0	0.18
			180		2.0		0.18	0.29		280		
			210		2.0		0.16	0.29		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.10	2.0	0.08	0.18	0.29	120	280	1.0	0.15
			230		2.0		0.18	0.24		250		
			280		1.5	0.09	0.16	0.24		210		
			320		1.5		0.14	0.19		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.10	2.0	0.08	0.16	0.24	70	190	1.0	0.12
			280		1.5		0.14	0.24		150		
			320		1.5		0.13	0.17		130		
			350		1.5		0.13	0.14		100		
			400	0.10	1.3	0.05	0.11	0.12	50	90	0.9	0.10
			480		1.2		0.09	0.10	40	80	0.7	0.08
			550		1.0		0.08	0.08	30	70	0.6	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.10	2.0	0.08	0.16	0.22	170	270	1.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		1.8	0.08	0.14	0.17	160	210	1.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		1.5	0.08	0.13	0.14	70	150	1.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.10	2.0	0.08	0.16	0.20	170	250	1.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.10	2.0	0.08	0.16	0.20	170	250	1.0	0.15
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.10	2.0	0.06	0.18	0.38	170	250	1.0	0.18
		GG 25						0.36		230		
		GG 30						0.36		210		
Nodular Cast Iron	10	GGG 40	210	0.10	2.0	0.06	0.16	0.29	120	230	1.0	0.15
		GGG 50	260					0.24		190		
		GGG 70	310					0.24		150		
		G-X260NiCr42	450	0.10	1.0	0.06	0.10	0.08	30	70	0.6	0.07
Nickel Based Alloys	11	Inconel 625	--------	0.10	1.5	0.08	0.14	0.14	25	35	1.0	0.12
		Inconel 718						0.14	28	40		
		Hastelloy C						0.17	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.10	1.5	0.08	0.14	0.17	35	60	1.0	0.14
		T40					0.13	0.14	28	40	1.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DCMT 070204 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

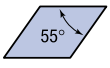
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DCMT 11T304 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

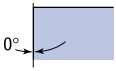
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DCMT 11T308 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

LAMINA TECHNOLOGIES

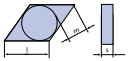
D N M G



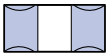
Shape
55° Diamond



Clearance Angle
0° No rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
DNMG 110404 NN	LT 10	11	4,76	0,4	T0000066	40
DNMG 110408 NN	LT 10	11	4,76	0,8	T0000675	41
DNMG 150404 NN	LT 10	15	4,76	0,4	T0000476	42
DNMG 150408 NN	LT 10	15	4,76	0,8	T0000475	43
DNMG 150412 NN	LT 10	15	4,76	1,2	T0001021	44
DNMG 150604 NN	LT 10	15	6,35	0,4	T0000583	45
DNMG 150608 NN	LT 10	15	6,35	0,8	T0000067	46
DNMG 150612 NN	LT 10	15	6,35	1,2	T0000672	47

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNMG 110404 NN					
DNMG 110408 NN					
DNMG 150404 NN					
DNMG 150408 NN					
DNMG 150412 NN					
DNMG 150604 NN					
DNMG 150608 NN					
DNMG 150612 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

NN All Purpose Chipbreaker

Machining Recommendation Guide - Please see Pg. 8

55° Diamond shape inserts. Suitable for roughing complex shapes operations such as Profiling, Copying and Finishing turning operations.

LAMINA TECHNOLOGIES

DNMG 110404 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNMG 110404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNMG 110408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm] min	d.o.c [mm] max	feed [mm/rev] min	feed [mm/rev] max	A max [mm²]	V_C [m/min] min	V_C [m/min] max	Optimal cutting conditions d.o.c	Optimal cutting conditions feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNMG 150404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	-------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNMG 150408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

DNMG 150412 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.27	0.68	3.1	180	330	4.0	0.50
			180		5.0		0.68	3.1		280		
			210		5.0		0.60	2.6		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.27	0.60	2.6	120	280	4.0	0.45
			230		5.0		0.60	2.0		250		
			280		5.0	0.23	0.53	2.0		210		
			320		4.0		0.53	1.7		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.23	0.60	2.0	70	190	4.0	0.40
			280		5.0		0.60	2.0		150		
			320		4.0		0.53	1.6		130		
			350		4.0		0.53	1.6		100		
			400	0.50	3.5	0.14	0.45	1.2	50	90	3.4	0.36
			480		3.0		0.35	0.9	40	80	2.9	0.30
			550		2.5		0.28	0.6	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.7	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.4	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	1.0	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	3.0	170	250	4.0	0.60
		GG 25						2.7		230		
		GG 30						2.7		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	2.3	120	230	4.0	0.50
		GGG 50	260					2.0		190		
		GGG 70	310					1.8		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.3	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	--------	0.50	5.0	0.26	0.46	1.4	25	35	3.0	0.38
		Inconel 718						1.4	28	40		
		Hastelloy C						1.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	5.0	0.23	0.46	1.6	35	60	3.0	0.38
		T40					0.39	1.2	28	40	3.0	0.32

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNMG 150412 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	-------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNMG 150604 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

DNMG 1500608 NN

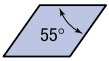
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNMG 150608 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

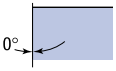
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.27	0.68	3.1	180	330	4.0	0.50
			180		5.0		0.68	3.1		280		
			210		5.0		0.60	2.6		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.27	0.60	2.6	120	280	4.0	0.45
			230		5.0		0.60	2.0		250		
			280		5.0	0.23	0.53	2.0		210		
			320		4.0		0.53	1.7		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.23	0.60	2.0	70	190	4.0	0.40
			280		5.0		0.60	2.0		150		
			320		4.0		0.53	1.6		130		
			350		4.0		0.53	1.6		100		
			400	0.50	3.5	0.14	0.45	1.2	50	90	3.4	0.36
			480		3.0		0.35	0.9	40	80	2.9	0.30
			550		2.5		0.28	0.6	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.7	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.4	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	1.0	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	3.0	170	250	4.0	0.60
		GG 25						2.7		230		
		GG 30						2.7		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	2.3	120	230	4.0	0.50
		GGG 50	260					2.0		190		
		GGG 70	310					1.8		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.3	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	-------	0.50	5.0	0.26	0.46	1.4	25	35	3.0	0.38
		Inconel 718						1.4	28	40		
		Hastelloy C						1.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.50	5.0	0.23	0.46	1.6	35	60	3.0	0.38
		T40					0.39	1.2	28	40	3.0	0.32

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNMG 150612 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

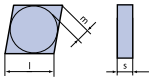
K N U X



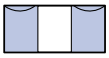
Shape
55° Rectangular



Clearance Angle
0° No rake



Tolerance
l ± 0.13 m ± 0.2
s ± 0.13



Insert Type
Pin / Top clamp
Single sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
KNUX 160405 R11	LT 10	16	4,76	0,5	T0000951	50

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
KNUX 160405 R11	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

A 55° nose angle insert with two cutting edges. Popular insert with excellent chip control and low cutting forces, suitable for conventional Turning operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

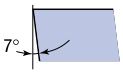
Machining Recommendation Guide - Please see Pg. 8

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	5.0	0.12	0.30	0.80	180	330	3.0	0.16
			180		4.0		0.28	0.80		280		
			210		4.0		0.25	0.70		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	4.0	0.10	0.28	0.80	120	280	3.0	0.15
			230		4.0		0.25	0.70		250		
			280		3.0	0.08	0.22	0.60		210		
			320		3.0		0.20	0.50		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	3.0	0.08	0.23	0.50	70	190	2.0	0.12
			280		3.0		0.21	0.50		150		
			320		3.0		0.18	0.30		130		
			350		3.0		0.16	0.30		100		
			400	0.20	2.6	0.05	0.14	0.25	50	90	1.7	0.12
			480		2.3		0.11	0.20	40	80	1.4	0.10
			550		2.0		0.09	0.20	30	70	1.2	0.08
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	4.0	0.12	0.23	0.70	170	270	3.0	0.16
	5	X2 CrNiMo 17 2 2 316	230 to 270		3.0	0.10	0.21	0.50	160	210	2.0	0.14
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		3.0	0.08	0.18	0.40	70	150	2.0	0.20
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	3.0	0.10	0.22	0.50	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	3.0	0.10	0.22	0.50	170	250	2.0	0.15
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	5.0	0.12	0.30	0.80	170	250	3.0	0.16
		GG 25						0.70		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	4.0	0.10	0.25	0.70	120	230	2.5	0.13
		GGG 50	260					0.60		190		
		GGG 70	310					0.50		150		
		G-X260NiCr42	450	0.40	1.4	0.06	0.14	0.13	30	50	1.0	0.10
Nickel Based Alloys	11	Inconel 625	--------	0.20	3.0	0.08	0.22	0.40	25	35	1.5	0.12
		Inconel 718						0.40	28	40		
		Hastelloy C						0.50	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	3.0	0.08	0.23	0.50	35	60	1.5	0.12
		T40					0.21	0.40	28	40	1.5	0.12

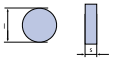
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
KNUX 160405 R11	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

R C M T

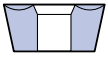
Shape
Round



Clearance Angle
7° Positive rake



Tolerance
l ± 0.05
s ± 0.13



Insert Type
Screw down clamping
Single sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
RCMT 0602 M0	LT 10	06	2,38	3	T0000090	51
RCMT 0803 M0	LT 10	08	3,18	4	T0000091	52
RCMT 10T3 M0	LT 10	10	3,97	5	T0000092	53
RCMT 1204 M0	LT 10	12	4,76	6	T0000093	54

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
RCMT 0602 M0					
RCMT 0803 M0					
RCMT 10T3 M0					
RCMT 1204 M0					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Round inserts with positive rake angle and excellent edge resistance. Suitable for Profiling operations of Mill rolls and Aerospace parts.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

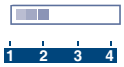
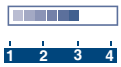
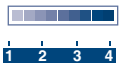
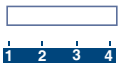
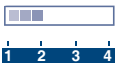
Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

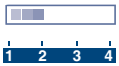
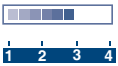
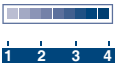
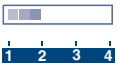
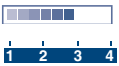
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	2.0	0.15	0.35	0.64	180	350	1.0	0.35
			180		2.0		0.35	0.64		280		
			210		1.5		0.35	0.56		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	2.0	0.15	0.30	0.56	120	280	1.0	0.30
			230		2.0		0.30	0.48		250		
			280		2.0	0.13	0.30	0.40		210		
			320		1.5		0.25	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	2.0	0.13	0.30	0.48	70	190	1.0	0.28
			280		2.0		0.30	0.40		150		
			320		1.5		0.30	0.32		130		
			350		1.5		0.25	0.24		100		
			400	0.50	1.2	0.08	0.22	0.17	50	90	0.9	0.20
			480		1.0		0.18	0.12	40	80	0.7	0.16
			550		0.8		0.14	0.10	30	70	0.6	0.12
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	2.0	0.14	0.25	0.32	170	270	1.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.13	0.18	0.24	120	210	1.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		1.5	0.13	0.18	0.24	70	120	1.0	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	2.0	0.15	0.20	0.32	170	250	1.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	2.0	0.15	0.20	0.32	170	250	1.0	0.32
			Treated						120	210		
Grey Cast Iron	9	GG 20	140 to 230	0.50	2.0	0.11	0.45	0.80	170	280	1.0	0.35
		GG 25						0.72		250		
		GG 30						0.72		230		
Nodular Cast Iron	10	GGG 40	210	0.50	2.0	0.11	0.35	0.60	120	230	1.0	0.30
		GGG 50	260					0.52		190		
		GGG 70	310					0.48		150		
		G-X260NiCr42	450	0.20	1.0	0.04	0.10	0.08	30	50	0.6	0.07
Nickel Based Alloys	11	Inconel 625	--------	0.50	1.5	0.13	0.18	0.20	25	35	1.0	0.28
		Inconel 718						0.20	28	40		
		Hastelloy C						0.24	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	1.5	0.13	0.18	0.24	35	60	1.0	0.30
		T40					0.15	0.24	28	40	1.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
RCMT 0602 M0	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

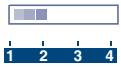
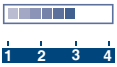
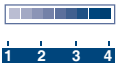
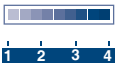
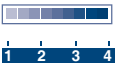
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	2.0	0.15	0.42	0.80	180	350	1.0	0.35
			180		2.0		0.42	0.80		280		
			210		1.5		0.42	0.70		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	2.0	0.15	0.36	0.70	120	280	1.0	0.30
			230		2.0		0.36	0.60		250		
			280		2.0	0.13	0.36	0.50		210		
			320		1.5		0.30	0.40		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	2.0	0.13	0.36	0.60	70	190	1.0	0.28
			280		2.0		0.36	0.50		150		
			320		1.5		0.36	0.40		130		
			350		1.5		0.30	0.30		100		
			400	0.50	1.3	0.08	0.26	0.21	50	90	0.9	0.23
			480		1.0		0.21	0.15	40	80	0.7	0.19
			550		0.9		0.17	0.10	30	70	0.6	0.15
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	2.0	0.14	0.30	0.40	170	270	1.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.13	0.21	0.30	120	210	1.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		1.5	0.13	0.21	0.30	70	120	1.0	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	2.0	0.15	0.24	0.40	170	250	1.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	2.0	0.15	0.24	0.40	170	250	1.0	0.32
			Treated						120	210		
Grey Cast Iron	9	GG 20	140 to 230	0.50	2.0	0.11	0.54	1.00	170	280	1.0	0.35
		GG 25						0.90		250		
		GG 30						0.90		230		
Nodular Cast Iron	10	GGG 40	210	0.50	2.0	0.11	0.42	0.75	120	230	1.0	0.30
		GGG 50	260					0.65		190		
		GGG 70	310					0.60		150		
		G-X260NiCr42	450	0.50	1.0	0.08	0.21	0.15	30	50	0.7	0.19
Nickel Based Alloys	11	Inconel 625	--------	0.50	1.5	0.13	0.21	0.25	25	35	1.0	0.28
		Inconel 718						0.25	28	40		
		Hastelloy C						0.30	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	1.5	0.13	0.21	0.30	35	60	1.0	0.30
		T40					0.18	0.30	28	40	1.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
RCMT 0803 M0					

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	3.0	0.20	0.50	1.1	180	350	1.0	0.35
			180		3.0		0.50	1.1		280		
			210		2.0		0.50	1.0		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	3.0	0.20	0.45	1.0	120	280	1.0	0.30
			230		2.0		0.42	0.8		250		
			280		2.0	0.16	0.42	0.7		210		
			320		2.0		0.35	0.6		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	2.0	0.16	0.45	0.8	70	190	1.0	0.28
			280		2.0		0.42	0.7		150		
			320		1.5		0.42	0.6		130		
			350		1.5		0.35	0.4		100		
			400	0.50	1.2	0.10	0.30	0.3	50	90	1.0	0.27
			480		1.0		0.25	0.2	40	80	0.8	0.22
			550		0.9		0.19	0.1	30	70	0.5	0.17
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	2.0	0.18	0.35	0.4	170	270	1.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.16	0.25	0.3	120	210	1.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		1.5	0.16	0.25	0.3	70	120	1.0	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	2.0	0.20	0.28	0.4	170	250	1.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	2.0	0.20	0.28	0.4	170	250	1.0	0.32
			Treated						120	210		
Grey Cast Iron	9	GG 20	140 to 230	0.50	2.0	0.14	0.63	1.4	170	280	1.0	0.35
		GG 25						1.3		250		
		GG 30						1.3		230		
Nodular Cast Iron	10	GGG 40	210	0.50	2.0	0.14	0.49	1.1	120	230	1.0	0.30
		GGG 50	260					0.9		190		
		GGG 70	310					0.8		150		
		G-X260NiCr42	450	0.50	1.0	0.10	0.25	0.2	30	50	0.8	0.22
Nickel Based Alloys	11	Inconel 625	--------	0.50	1.5	0.16	0.25	0.3	25	35	1.0	0.28
		Inconel 718						0.3	28	40		
		Hastelloy C						0.3	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	1.5	0.16	0.25	0.3	35	60	1.0	0.30
		T40					0.21	0.3	28	40	1.0	0.28

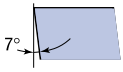
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
RCMT 10T3 M0					

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	4.0	0.22	0.70	1.6	180	350	2.0	0.45
			180		4.0		0.70	1.6		280		
			210		3.0		0.70	1.4		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	4.0	0.22	0.60	1.4	120	280	2.0	0.40
			230		3.0		0.60	1.2		250		
			280		3.0	0.18	0.60	1.0		210		
			320		2.5		0.50	0.8		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	3.0	0.18	0.60	1.2	70	190	2.0	0.38
			280		3.0		0.60	1.0		150		
			320		2.0		0.60	0.8		130		
			350		2.0		0.50	0.6		100		
			400	0.50	1.7	0.11	0.43	0.4	50	90	1.7	0.35
			480		1.4		0.35	0.3	40	80	1.4	0.32
			550		1.2		0.28	0.2	30	70	1.2	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	3.0	0.20	0.50	0.8	170	270	2.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		3.0	0.18	0.35	0.6	120	210	2.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.18	0.35	0.6	70	120	1.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	3.0	0.22	0.40	0.8	170	250	2.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	3.0	0.22	0.40	0.8	170	250	2.0	0.32
			Treated						120	210		
Grey Cast Iron	9	GG 20	140 to 230	0.50	3.0	0.15	0.90	1.8	170	280	2.0	0.35
		GG 25						1.6		250		
		GG 30						1.4		230		
Nodular Cast Iron	10	GGG 40	210	0.50	3.0	0.15	0.70	1.5	120	230	1.5	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.2	0.11	0.28	0.2	30	50	1.0	0.20
Nickel Based Alloys	11	Inconel 625	--------	0.50	2.0	0.18	0.35	0.5	25	35	1.5	0.28
		Inconel 718						0.5	28	40		
		Hastelloy C						0.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	2.0	0.18	0.35	0.6	35	60	1.5	0.30
		T40					0.30	0.6	28	40	1.5	0.28

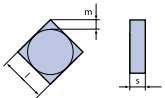
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
RCMT 1204 M0					

S C M T

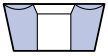
Shape
Square 90°



Clearance Angle
0° No rake



Tolerance
l ± 0.08 m ± 0.13
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
SCMT 09T304 NN	LT 10	9	3,97	0,4	T0001459	56
SCMT 09T308 NN	LT 10	9	3,97	0,8	T0001458	57
SCMT 120408 NN	LT 10	12	4,76	0,8	T0001777	58

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
SCMT 09T304 NN					
SCMT 09T308 NN					
SCMT 120408 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Square inserts with a positive rake angle with excellent cutting edge resistance. Suitable for Boring.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	330	2.0	0.20
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.18
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.14
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.16	50	90	1.7	0.11
			480		1.5		0.10	0.14	40	80	1.4	0.09
			550		1.4		0.08	0.10	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.16
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.14
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.16
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.16
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.16
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.14	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.14
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
SCMT 09T304 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	6.0	0.21	0.47	1.7	180	330	2.0	0.34
			180		5.0		0.42	1.4		280		
			210		5.0		0.35	1.2		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.42	1.4	120	280	2.0	0.32
			230		5.0		0.42	1.2		250		
			280		4.0	0.18	0.37	1.0		210		
			320		4.0		0.34	0.8		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.18	0.37	1.2	70	190	2.0	0.30
			280		5.0		0.34	1.0		150		
			320		4.0		0.30	0.8		130		
			350		4.0		0.30	0.7		100		
			400	0.50	3.5	0.11	0.26	0.6	50	90	1.7	0.23
			480		3.0		0.21	0.5	40	80	1.4	0.19
			550		2.5		0.17	0.4	30	70	1.2	0.15
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.37	1.0	170	270	2.0	0.32
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.34	0.8	120	210	2.0	0.27
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.30	0.7	70	120	2.0	0.24
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.37	0.9	170	250	2.0	0.30
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.37	0.9	170	250	2.0	0.30
			Treated						120	200		
Grey Cast Iron	9	GG 20	140 to 230	0.50	6.0	0.15	0.42	1.7	170	250	3.0	0.34
		GG 25						1.5		230		
		GG 30						1.3		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.38	1.3	120	230	3.0	0.30
		GGG 50	260					1.2		190		
		GGG 70	310					1.1		150		
		G-X260NiCr42	450	0.50	2.0	0.11	0.17	0.4	30	50	1.2	0.15
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.5	0.20	0.34	0.7	25	35	2.0	0.27
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.5	0.18	0.34	0.8	35	60	2.0	0.27
		T40					0.30	0.7	28	40	2.0	0.24

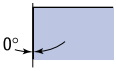
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
SCMT 09T308 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	6.0	0.21	0.47	1.7	180	330	2.0	0.34
			180		5.0		0.42	1.4		280		
			210		5.0		0.35	1.2		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.42	1.4	120	280	2.0	0.32
			230		5.0		0.42	1.2		250		
			280		4.0	0.18	0.37	1.0		210		
			320		4.0		0.34	0.8		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.18	0.37	1.2	70	190	2.0	0.30
			280		5.0		0.34	1.0		150		
			320		4.0		0.30	0.8		130		
			350		4.0		0.30	0.7		100		
			400	0.50	3.5	0.11	0.26	0.6	50	90	1.7	0.23
			480		3.0		0.21	0.5	40	80	1.4	0.19
			550		2.5		0.17	0.4	30	70	1.2	0.15
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.37	1.0	170	270	2.0	0.32
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.34	0.8	120	210	2.0	0.27
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.30	0.7	70	120	2.0	0.24
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.37	0.9	170	250	2.0	0.30
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.37	0.9	170	250	2.0	0.30
			Treated						120	200		
Grey Cast Iron	9	GG 20	140 to 230	0.50	6.0	0.15	0.42	1.7	170	250	3.0	0.34
		GG 25						1.5		230		
		GG 30						1.3		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.38	1.3	120	230	3.0	0.30
		GGG 50	260					1.2		190		
		GGG 70	310					1.1		150		
		G-X260NiCr42	450	0.50	2.0	0.11	0.17	0.4	30	50	1.2	0.15
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.5	0.20	0.34	0.7	25	35	2.0	0.27
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.5	0.18	0.34	0.8	35	60	2.0	0.27
		T40					0.30	0.7	28	40	2.0	0.24

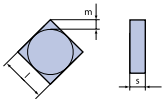
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
SCMT 120408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

S N M G

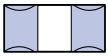
Shape
Square 90°



Clearance Angle
0° No rake



Tolerance
l ± 0.08 m ± 0.13
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
SNMG 120408 NN	LT 10	12	4,76	0,8	T0000322	60
SNMG 120412 NN	LT 10	12	4,76	1,2	T0000323	61

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
SNMG 120408 NN					
SNMG 120412 NN					

Square inserts with strong cutting edge. Suitable for roughing operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

SNMG 120408 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.30	0.64	1.8	180	350	3.0	0.50
			180		5.0		0.64	1.8		300		
			210		4.0		0.57	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.30	0.57	1.2	120	280	2.5	0.43
			230		4.0		0.57	1.2		250		
			280		4.0	0.26	0.50	1.2		210		
			320		3.5		0.50	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.26	0.57	1.2	70	190	2.0	0.40
			280		4.0		0.57	1.2		150		
			320		3.0		0.50	0.8		130		
			350		3.0		0.50	0.8		100		
			400	0.50	2.5	0.15	0.43	0.6	50	90	1.5	0.36
			480		2.0		0.35	0.4	40	80	1.2	0.29
			550		1.7		0.29	0.3	30	70	0.7	0.26
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.29	0.57	1.0	170	270	2.1	0.50
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.26	0.50	0.8	160	210	2.1	0.46
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.26	0.50	0.6	70	150	1.8	0.40
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.31	0.50	0.9	170	250	2.1	0.46
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.31	0.50	0.9	170	250	2.1	0.46
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.21	0.86	2.0	170	250	2.1	0.50
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.21	0.71	1.5	120	230	2.1	0.43
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.16	0.36	0.4	30	50	0.7	0.26
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.29	0.50	0.7	25	35	1.4	0.40
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.26	0.50	0.8	35	60	1.4	0.43
		T40					0.43	0.6	28	40	1.4	0.40

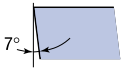
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
SNMG 120408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.39	0.97	3.1	180	330	3.0	0.70
			180		5.0		0.97	3.1		280		
			210		5.0		0.86	2.6		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.39	0.86	2.6	120	280	2.5	0.64
			230		5.0		0.86	2.0		250		
			280		5.0	0.33	0.76	2.0		210		
			320		4.0		0.76	1.7		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.33	0.86	2.0	70	190	2.5	0.57
			280		5.0		0.86	2.0		150		
			320		4.0		0.76	1.6		130		
			350		4.0		0.76	1.6		100		
			400	0.50	3.5	0.20	0.64	1.2	50	90	2.0	0.51
			480		3.0		0.50	0.9	40	80	1.8	0.43
			550		2.5		0.40	0.6	30	70	1.7	0.36
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.37	0.74	1.7	170	270	2.8	0.57
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.33	0.66	1.4	160	210	2.8	0.51
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.33	0.66	1.0	70	150	2.8	0.46
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.41	0.66	1.5	170	250	2.8	0.50
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.41	0.66	1.5	170	250	2.8	0.50
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.29	1.29	3.0	170	250	2.8	0.86
		GG 25						2.7		230		
		GG 30						2.7		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.29	1.00	2.3	120	230	2.8	0.71
		GGG 50	260					2.0		190		
		GGG 70	310					1.8		150		
		G-X260NiCr42	450	0.50	1.8	0.09	0.21	0.3	30	50	1.0	0.17
Nickel Based Alloys	11	Inconel 625	--------	0.50	5.0	0.37	0.66	1.4	25	35	2.1	0.54
		Inconel 718						1.4	28	40		
		Hastelloy C						1.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	5.0	0.33	0.66	1.6	35	60	2.1	0.54
		T40					0.56	1.2	28	40	2.1	0.46

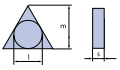
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
SNMG 120412 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

T C M T

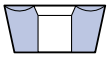
Shape
Triangle 60°



Clearance Angle
7° Positive rake



Tolerance
l ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Single sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
TCMT 110204 NN	LT 10	11	2,38	0,4	T0000477	63
TCMT 110208 NN	LT 10	11	2,38	0,8	T0000478	64
TCMT 16T304 NN	LT 10	16	3,97	0,4	T0000479	65
TCMT 16T308 NN	LT 10	16	3,97	0,8	T0000068	66
TCMT 16T312 NN	LT 10	16	3,97	0,8	T0001774	67

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TCMT 110204 NN					
TCMT 110208 NN					
TCMT 16T304 NN					
TCMT 16T308 NN					
TCMT 16T312 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

60° Triangle shape inserts, with positive rake angle. Suitable for regular and sever conditions Boring and Internal turning.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.10	2.0	0.08	0.20	0.36	180	350	1.0	0.18
			180		2.0		0.18	0.29		280		
			210		2.0		0.16	0.29		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.10	2.0	0.08	0.18	0.29	120	280	1.0	0.15
			230		2.0		0.18	0.24		250		
			280		1.5	0.09	0.16	0.24		210		
			320		1.5		0.14	0.19		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.10	2.0	0.08	0.16	0.24	70	190	1.0	0.12
			280		1.5		0.14	0.24		150		
			320		1.5		0.13	0.17		130		
			350		1.5		0.13	0.14		100		
			400	0.10	1.3	0.05	0.11	0.12	50	90	0.9	0.10
			480		1.2		0.09	0.10	40	80	0.7	0.08
			550		1.0		0.08	0.08	30	70	0.6	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.10	2.0	0.08	0.16	0.22	170	270	1.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		1.8	0.08	0.14	0.17	160	210	1.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		1.5	0.08	0.13	0.14	70	150	1.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.10	2.0	0.08	0.16	0.20	170	250	1.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.10	2.0	0.08	0.16	0.20	170	250	1.0	0.15
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.10	2.0	0.06	0.18	0.38	170	250	1.0	0.18
		GG 25						0.36		230		
		GG 30						0.36		210		
Nodular Cast Iron	10	GGG 40	210	0.10	2.0	0.06	0.16	0.29	120	230	1.0	0.15
		GGG 50	260					0.24		190		
		GGG 70	310					0.24		150		
		G-X260NiCr42	450	0.10	1.0	0.06	0.10	0.08	30	70	0.6	0.07
Nickel Based Alloys	11	Inconel 625	--------	0.10	1.5	0.08	0.14	0.14	25	35	1.0	0.12
		Inconel 718						0.14	28	40		
		Hastelloy C						0.17	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.10	1.5	0.08	0.14	0.17	35	60	1.0	0.14
		T40					0.13	0.14	28	40	1.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TCMT 110204 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

TCMT 110208 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	2.0	0.15	0.45	0.43	180	400	1.0	0.24
			180		2.0		0.40	0.35		350		
			210		2.0		0.40	0.35		200		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.0	0.12	0.40	0.35	120	300	1.0	0.22
			230		2.0		0.40	0.29		250		
			280		1.5	0.12	0.38	0.29		210		
			320		1.5		0.35	0.23		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.0	0.12	0.40	0.29	70	190	1.0	0.18
			280		1.5		0.38	0.29		150		
			320		1.5		0.35	0.20		130		
			350		1.5		0.32	0.17		100		
			400	0.20	1.2	0.07	0.27	0.12	50	90	1.0	0.16
			480		1.0		0.22	0.09	40	80	0.8	0.14
			550		0.8		0.18	0.06	30	70	0.5	0.12
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.0	0.15	0.38	0.31	170	270	1.0	0.24
	5	X2 CrNiMo 17 2 2 316	230 to 270		1.8	0.12	0.35	0.24	120	210	1.0	0.22
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		1.5	0.12	0.32	0.20	70	120	1.0	0.22
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.15	0.38	0.27	170	250	1.0	0.24
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.15	0.35	0.27	170	250	1.0	0.15
			Treated						120	210		
Grey Cast Iron	9	GG 20	140 to 230	0.20	2.0	0.15	0.40	0.46	170	280	1.0	0.24
		GG 25						0.43		250		
		GG 30						0.43		230		
Nodular Cast Iron	10	GGG 40	210	0.20	2.0	0.15	0.40	0.35	120	230	1.0	0.15
		GGG 50	260					0.29		190		
		GGG 70	310					0.29		150		
		G-X260NiCr42	450	0.20	0.8	0.07	0.18	0.09	30	50	0.9	0.12
Nickel Based Alloys	11	Inconel 625	--------	0.20	1.5	0.15	0.32	0.17	25	35	0.7	0.22
		Inconel 718						0.17	28	40		
		Hastelloy C						0.20	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	1.5	0.12	0.35	0.20	35	60	0.7	0.22
		T40					0.35	0.17	28	40	0.7	0.22

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TCMT 110208 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TCMT 16T304 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

TCMT 16T308 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

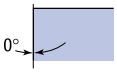
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TCMT 16T308 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.22	0.47	1.3	180	350	2.0	0.33
			180		4.0		0.43	1.1		280		
			210		4.0		0.38	0.9		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	4.0	0.22	0.43	1.1	120	280	1.5	0.30
			230		4.0		0.43	0.9		250		
			280		3.0	0.20	0.38	0.7		210		
			320		3.0		0.35	0.6		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.20	0.38	0.9	70	190	1.5	0.28
			280		4.0		0.35	0.7		150		
			320		3.0		0.32	0.6		130		
			350		3.0		0.32	0.5		100		
			400	0.20	2.8	0.05	0.28	0.4	40	90	2.4	0.23
			480		2.2		0.24	0.3	40	80	2.0	0.20
			550		1.5		0.20	0.3	30	70	1.2	0.16
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	4.0	0.22	0.38	0.9	170	270	1.5	0.28
	5	X2 CrNiMo 17 2 2 316	230 to 270		3.0	0.20	0.35	0.7	120	210	1.5	0.25
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		3.0	0.20	0.32	0.6	70	120	1.5	0.23
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	3.0	0.23	0.38	0.8	170	250	1.5	0.28
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	3.0	0.23	0.38	0.8	170	250	1.5	0.28
			Treated						120	210		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.18	0.45	1.3	170	280	3.0	0.32
		GG 25						1.2		250		
		GG 30						1.1		230		
Nodular Cast Iron	10	GGG 40	210	0.50	4.0	0.18	0.38	1.1	120	230	2.5	0.28
		GGG 50	260					1.0		190		
		GGG 70	310					0.9		150		
		G-X260NiCr42	450	0.20	1.2	0.04	0.12	0.1	30	50	0.9	0.08
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.22	0.34	0.7	25	35	1.5	0.25
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.20	0.34	0.8	35	60	1.5	0.25
		T40					0.30	0.7	28	40	1.5	0.22

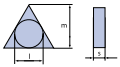
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TCMT 16T312 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

T N M G

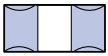
Shape
Triangle 60°



Clearance Angle
0° No rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
TNMG 160404 NN	LT 10	16	4,76	0,4	T0000457	69
TNMG 160408 NN	LT 10	16	4,76	0,8	T0000069	70
TNMG 160412 NN	LT 10	16	4,76	1,2	T0001734	71
TNMG 220404 NN	LT 10	22	4,76	0,4	T0001873	72
TNMG 220408 NN	LT 10	22	4,76	0,8	T0000113	73
TNMG 220412 NN	LT 10	22	4,76	1,2	T0001735	74

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNMG 160404 NN					
TNMG 160408 NN					
TNMG 160412 NN					
TNMG 220404 NN					
TNMG 220408 NN					
TNMG 220412 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

60° Triangle shape inserts. Suitable for General purpose Turning and Copying operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNMG 160404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNMG 160408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.27	0.68	3.1	180	330	4.0	0.50
			180		5.0		0.68	3.1		280		
			210		5.0		0.60	2.6		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.27	0.60	2.6	120	280	4.0	0.45
			230		5.0		0.60	2.0		250		
			280		5.0	0.23	0.53	2.0		210		
			320		4.0		0.53	1.7		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.23	0.60	2.0	70	190	4.0	0.40
			280		5.0		0.60	2.0		150		
			320		4.0		0.53	1.6		130		
			350		4.0		0.53	1.6		100		
			400	0.50	3.5	0.14	0.45	1.2	50	90	3.4	0.36
			480		3.0		0.35	0.9	40	80	2.9	0.30
			550		2.5		0.28	0.6	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.7	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.4	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	1.0	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	3.0	170	250	4.0	0.60
		GG 25						2.7		230		
		GG 30						2.7		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	2.3	120	230	4.0	0.50
		GGG 50	260					2.0		190		
		GGG 70	310					1.8		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.3	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	-------	0.50	5.0	0.26	0.46	1.4	25	35	3.0	0.38
		Inconel 718						1.4	28	40		
		Hastelloy C						1.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.50	5.0	0.23	0.46	1.6	35	60	3.0	0.38
		T40					0.39	1.2	28	40	3.0	0.32

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNMG 160412 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	4.0	0.15	0.40	1.3	180	330	3.0	0.25
			180		4.0		0.40	1.3		280		
			210		4.0		0.30	1.1		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	4.0	0.15	0.30	1.1	120	280	2.5	0.25
			230		4.0		0.30	1.1		250		
			280		4.0	0.15	0.28	1.0		210		
			320		4.0		0.28	1.2		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.13	0.30	1.1	70	190	2.0	0.20
			280		4.0		0.30	1.1		150		
			320		3.0		0.28	1.0		130		
			350		3.0		0.28	1.0		100		
			400	0.50	2.5	0.08	0.24	0.5	50	90	1.7	0.18
			480		2.0		0.20	0.3	40	80	1.4	0.16
			550		1.5		0.15	0.2	30	70	1.2	0.14
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	4.0	0.15	0.30	1.0	170	270	2.0	0.18
	5	X2 CrNiMo 17 2 2 316	230 to 270		3.0	0.15	0.25	1.0	160	210	2.0	0.15
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		3.0	0.15	0.25	1.0	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.16	0.25	1.0	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.16	0.25	0.9	170	250	2.0	0.15
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	4.0	0.12	0.40	1.7	170	250	3.0	0.18
		GG 25						1.5		230		
		GG 30						1.3		210		
Nodular Cast Iron	10	GGG 40	210	0.50	4.0	0.12	0.35	1.6	120	230	2.0	0.15
		GGG 50	260					1.3		190		
		GGG 70	310					1.1		150		
		G-X260NiCr42	450	0.50	1.5	0.08	0.15	0.3	30	50	0.6	0.07
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.12	0.25	0.5	25	35	1.0	0.13
		Inconel 718						0.5	28	40		
		Hastelloy C						0.3	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.11	0.25	0.3	35	60	1.0	0.15
		T40					0.23	0.3	28	40	1.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNMG 220404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	7.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		7.0		0.45	1.8		300		
			210		5.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	7.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		7.0		0.40	1.2		250		
			280		5.0	0.18	0.35	1.2		210		
			320		4.0		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		5.0		0.40	1.2		150		
			320		4.0		0.35	0.8		130		
			350		4.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	7.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	7.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	5.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	5.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNMG 220408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

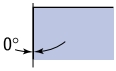
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	6.0	0.27	0.68	3.1	180	330	4.0	0.50
			180		5.0		0.68	3.1		280		
			210		5.0		0.60	2.6		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	6.0	0.27	0.60	2.6	120	280	4.0	0.45
			230		6.0		0.60	2.0		250		
			280		5.0	0.23	0.53	2.0		210		
			320		5.0		0.53	1.7		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	6.0	0.23	0.60	2.0	70	190	4.0	0.40
			280		5.0		0.60	2.0		150		
			320		5.0		0.53	1.6		130		
			350		4.0		0.53	1.6		100		
			400	0.50	3.5	0.14	0.45	1.2	50	90	3.4	0.36
			480		3.0		0.35	0.9	40	80	2.9	0.30
			550		2.5		0.28	0.6	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.7	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.4	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	1.0	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	6.0	0.20	0.90	3.0	170	250	4.0	0.60
		GG 25						2.7		230		
		GG 30						2.7		210		
Nodular Cast Iron	10	GGG 40	210	0.50	6.0	0.20	0.70	2.3	120	230	4.0	0.50
		GGG 50	260					2.0		190		
		GGG 70	310					1.8		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.3	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	--------	0.50	5.0	0.26	0.46	1.4	25	35	3.0	0.38
		Inconel 718						1.4	28	40		
		Hastelloy C						1.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	5.0	0.23	0.46	1.6	35	60	3.0	0.38
		T40					0.39	1.2	28	40	3.0	0.32

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNMG 220412 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

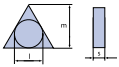
LAMINA TECHNOLOGIES

T N M P

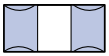
Shape
Triangle 60°



Clearance Angle
0° No rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

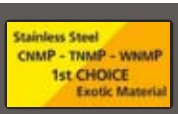
Insert designation	Grade	l	s	r	Catalog Nr.	Page
TNMP 160408 NN	LT 10	16	4,76	0,8	T0000492	76

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNMP 160408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

60° Triangle shape inserts, with positive chip breaker geometry. Generates considerably low cutting forces. Suitable for General purpose, Copying, High Temperature Alloys and Stainless Steel turning operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent



Machining Recommendation Guide - Please see Pg. 8

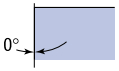
LAMINA TECHNOLOGIES

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

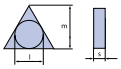
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNMP 160408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

T N U X

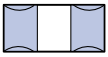
Shape
Triangle 60°



Clearance Angle
0° No rake



Tolerance
l ± 0.13 m ± 0.2
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
TNUX 160404 R	LT 10	16	4,76	0,4	T0001125	78
TNUX 160404 L	LT 10	16	4,76	0,4	T0001877	78
TNUX 160408 R	LT 10	16	4,76	0,8	T0001137	79
TNUX 160408 L	LT 10	16	4,76	0,8	T0001878	79

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNUX 160404 R					
TNUX 160404 L					
TNUX 160408 R					
TNUX 160408 L					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

60° Triangle shape inserts. Suitable for General turning and longitudinal operations, where there is a concern for work piece vibrations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

TNUX 160404 R & TNUX 160404 L

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm] min	d.o.c [mm] max	feed [mm/rev] min	feed [mm/rev] max	A max [mm²]	V_C [m/min] min	V_C [m/min] max	Optimal cutting conditions d.o.c	Optimal cutting conditions feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	5.0	0.12	0.30	1.2	180	330	2.5	0.16
			180		4.0		0.28	0.8		280		
			210		4.0		0.25	0.8		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	4.0	0.10	0.28	0.8	120	280	2.0	0.15
			230		4.0		0.25	0.8		250		
			280		3.0	0.08	0.22	0.6		210		
			320		3.0		0.20	0.5		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	3.0	0.08	0.23	0.6	70	190	1.5	0.12
			280		3.0		0.21	0.5		150		
			320		3.0		0.18	0.5		130		
			350		3.0		0.16	0.4		100		
			400	0.20	2.0	0.05	0.12	0.2	50	90	1.5	0.11
			480		1.5		0.10	0.2	40	80	1.0	0.09
			550		1.0		0.08	0.1	30	70	0.5	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	4.0	0.12	0.23	0.7	170	270	3.0	0.16
	5	X2 CrNiMo 17 2 2 316	230 to 270		3.0	0.10	0.21	0.5	160	210	2.0	0.14
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		3.0	0.08	0.18	0.5	70	150	1.5	0.20
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	3.0	0.10	0.22	0.6	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	3.0	0.10	0.22	0.6	170	250	2.0	0.15
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	5.0	0.12	0.30	1.2	170	250	3.0	0.16
		GG 25						1.2		230		
		GG 30						1.2		210		
Nodular Cast Iron	10	GGG 40	210	0.20	4.0	0.10	0.25	0.8	120	230	2.0	0.13
		GGG 50	260					0.8		190		
		GGG 70	310					0.8		150		
		G-X260NiCr42	450	0.20	1.4	0.05	0.10	0.1	30	50	1.0	0.07
Nickel Based Alloys	11	Inconel 625	--------	0.20	3.0	0.08	0.22	0.6	25	35	1.5	0.12
		Inconel 718						0.6	28	40		
		Hastelloy C						0.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	3.0	0.08	0.23	0.6	35	60	1.5	0.12
		T40					0.21	0.5	28	40	1.5	0.12

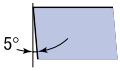
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNUX 160404 R & L	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	5.0	0.18	0.45	1.8	180	350	3.0	0.35
			180		4.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	4.0	0.15	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		3.0	0.12	0.35	1.2		210		
			320		3.0		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	3.0	0.12	0.40	1.2	70	190	2.5	0.28
			280		3.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.5	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.5	0.22
			550		1.0		0.19	0.2	30	70	1.0	0.15
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	4.0	0.18	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		3.0	0.15	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		3.0	0.12	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	3.0	0.15	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	3.0	0.15	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	5.0	0.12	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.20	4.0	0.10	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.0	0.10	0.19	0.2	30	50	1.0	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	3.0	0.12	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	3.0	0.12	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

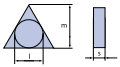
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNUX 160408 R & L	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

T P M R

Shape
Triangle 60°



Clearance Angle
5° Positive rake



Tolerance
d ± 0.05 m ± 0.16
s ± 0.13

Insert Type
Clamping
Single sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
TPMR 160304 NN	LT 10	16	3,76	0,4	T0001638	81
TPMR 160308 NN	LT 10	16	3,76	0,8	T0001535	82

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TPMR 160304 NN					
TPMR 160308 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

60° Triangle shape inserts, with positive rake angle. Suitable for Boring and Internal turning operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

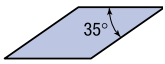
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TPMR 160304 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

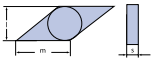
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TPMR 160304 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

V B M T

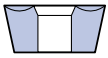


Shape
35° Diamond

Clearance Angle
5° Positive rake



Tolerance
l ± 0.05 m ± 0.16
s ± 0.13



Insert Type
Screw down clamping
Single sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
VBMT 110304 NN	LT 10	11	3,76	0,4	T0001460	84
VBMT 160404 NN	LT 10	16	4,76	0,4	T0000070	85
VBMT 160408 NN	LT 10	16	4,76	0,8	T0000071	86

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VBMT 110304 NN					
VBMT 160404 NN					
VBMT 160408 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

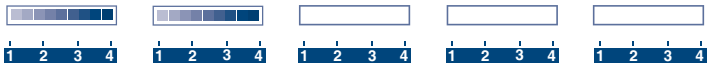
35° shape inserts, with positive rake angle. Suitable for internal and external Copying operations of complex geometries.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.10	2.0	0.08	0.20	0.36	180	350	1.0	0.18
			180		2.0		0.18	0.29		280		
			210		2.0		0.16	0.29		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.10	2.0	0.08	0.18	0.29	120	280	1.0	0.15
			230		2.0		0.18	0.24		250		
			280		1.5	0.09	0.16	0.24		210		
			320		1.5		0.14	0.19		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.10	2.0	0.08	0.16	0.24	70	190	1.0	0.12
			280		1.5		0.14	0.24		150		
			320		1.5		0.13	0.17		130		
			350		1.5		0.13	0.14		100		
			400	0.10	1.3	0.05	0.11	0.12	50	90	0.9	0.10
			480		1.2		0.09	0.10	40	80	0.7	0.08
			550		1.0		0.08	0.08	30	70	0.6	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.10	2.0	0.08	0.16	0.22	170	270	1.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		1.8	0.08	0.14	0.17	160	210	1.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		1.5	0.08	0.13	0.14	70	150	1.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.10	2.0	0.08	0.16	0.20	170	250	1.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.10	2.0	0.08	0.16	0.20	170	250	1.0	0.15
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.10	2.0	0.06	0.18	0.38	170	250	1.0	0.18
		GG 25						0.36		230		
		GG 30						0.36		210		
Nodular Cast Iron	10	GGG 40	210	0.10	2.0	0.06	0.16	0.29	120	230	1.0	0.15
		GGG 50	260					0.24		190		
		GGG 70	310					0.24		150		
		G-X260NiCr42	450	0.10	1.0	0.06	0.10	0.08	30	70	0.6	0.07
Nickel Based Alloys	11	Inconel 625	--------	0.10	1.5	0.08	0.14	0.14	25	35	1.0	0.12
		Inconel 718						0.14	28	40		
		Hastelloy C						0.17	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.10	1.5	0.08	0.14	0.17	35	60	1.0	0.14
		T40					0.13	0.14	28	40	1.0	0.12

Insert designation VBMT 110304 NN



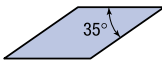
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VBMT 160404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

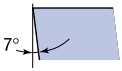
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm] min	d.o.c [mm] max	feed [mm/rev] min	feed [mm/rev] max	A max [mm²]	V_C [m/min] min	V_C [m/min] max	Optimal cutting conditions d.o.c	Optimal cutting conditions feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VBMT 160404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

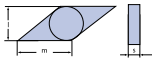
V C M T



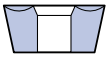
Shape
35° Diamond



Clearance Angle
7° Positive rake



Tolerance
l ± 0.05 m ± 0.16
s ± 0.13



Insert Type
Screw down clamping
Single sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
VCMT 160404 NN	LT 10	16	4,76	0,4	T0001102	88
VCMT 160408 NN	LT 10	16	4,76	0,8	T0001103	89

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VCMT 160404 NN					
VCMT 160408 NN					

1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4

VCMT

35° shape inserts, with positive rake angle. Suitable for internal and external Copying operations of complex geometries.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

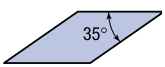
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VCMT 160404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

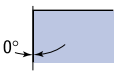
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VCMT 160408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

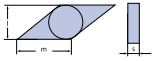
V N M G



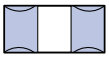
Shape
35° Diamond



Clearance Angle
0° No rake



Tolerance
l ± 0.05 m ± 0.16
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
VNMG 160404 NN	LT 10	16	4,76	0,4	T0000072	91
VNMG 160408 NN	LT 10	16	4,76	0,8	T0000073	92

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VNMG 160404 NN					
VNMG 160408 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

35° shape inserts. Suitable for Semi-roughing external Copying operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

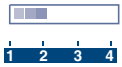
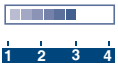
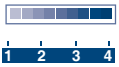
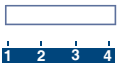
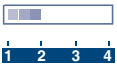
Machining Recommendation Guide - Please see Pg. 8

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	-------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VNMG 160404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

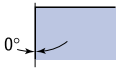
VNMG 160408 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

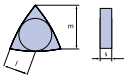
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VNMG 160408 NN					

W N M G

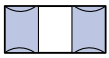
Shape
80° Diamond



Clearance Angle
0° No rake



Tolerance
l ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
WNMG 060404 NN	LT 10	6	4,76	0,4	T0000133	94
WNMG 060408 NN	LT 10	6	4,76	0,8	T0000137	95
WNMG 080404 NN	LT 10	8	4,76	0,4	T0000584	96
WNMG 080408 NN	LT 10	8	4,76	0,8	T0000075	97
WNMG 080408 NR	LT 10	8	4,76	0,8	T0001437	98
WNMG 080408 NP	LT 10	8	4,76	0,8	T0001967	99
WNMG 080408 WM	LT 10	8	4,76	0,8	T0000076	100
WNMG 080412 NN	LT 10	8	4,76	1,2	T0000077	101

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMG 060404 NN					
WNMG 060408 NN					
WNMG 080404 NN					
WNMG 080408 NN					
WNMG 080408 NR					
WNMG 080408 NP					
WNMG 080408 WM					
WNMG 080412 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

NN All Purpose Chipbreaker WM Wiper Medium chip breaker

80° Trigon shape inserts, with 6 cutting edges. Suitable for all-purpose Turning, Facing and Boring operations.

LAMINA TECHNOLOGIES

WNMG 060404 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMG 060404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	3.5	0.21	0.45	1.2	180	350	3.0	0.35
			180		3.5		0.45	1.2		300		
			210		3.5		0.40	1.0		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	3.5	0.21	0.40	1.0	120	280	3.0	0.30
			230		3.0		0.40	1.0		250		
			280		3.0	0.18	0.35	0.9		210		
			320		3.0		0.35	0.8		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	3.0	0.18	0.40	1.0	70	190	2.5	0.28
			280		3.0		0.40	1.0		150		
			320		2.5		0.35	0.7		130		
			350		2.5		0.35	0.7		100		
			400	0.50	2.0	0.11	0.30	0.5	50	90	1.5	0.25
			480		1.5		0.25	0.3	40	80	1.0	0.20
			550		1.0		0.20	0.2	30	70	0.5	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	-------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMG 060408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

WNMG 080404 NN

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMG 080404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	-------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMG 080408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

WNMG 080408 NR

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.27	0.68	2.3	180	330	4.0	0.50
			180		5.0		0.68	2.3		280		
			210		5.0		0.60	2.0		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.27	0.60	2.0	120	280	4.0	0.45
			230		5.0		0.60	1.5		250		
			280		5.0	0.23	0.53	1.5		210		
			320		4.0		0.53	1.3		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.23	0.60	1.5	70	190	4.0	0.40
			280		5.0		0.60	1.5		150		
			320		4.0		0.53	1.2		130		
			350		4.0		0.53	1.2		100		
			400	0.50	3.5	0.14	0.45	0.9	50	90	3.4	0.36
			480		3.0		0.35	0.7	40	80	2.9	0.30
			550		2.5		0.28	0.5	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.3	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.1	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	0.8	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.1	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.1	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	2.3	170	250	4.0	0.60
		GG 25						2.0		230		
		GG 30						2.0		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	1.7	120	230	4.0	0.50
		GGG 50	260					1.5		190		
		GGG 70	310					1.4		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.2	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	--------	0.50	5.0	0.26	0.46	1.1	25	35	3.0	0.38
		Inconel 718						1.1	28	40		
		Hastelloy C						1.2	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	5.0	0.23	0.46	1.2	35	60	3.0	0.38
		T40					0.39	0.9	28	40	3.0	0.32

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMG 080408 NR	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.27	0.68	2.3	180	330	4.0	0.50
			180		5.0		0.68	2.3		280		
			210		5.0		0.60	2.0		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.27	0.60	2.0	120	280	4.0	0.45
			230		5.0		0.60	1.5		250		
			280		5.0	0.23	0.53	1.5		210		
			320		4.0		0.53	1.3		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.23	0.60	1.5	70	190	4.0	0.40
			280		5.0		0.60	1.5		150		
			320		4.0		0.53	1.2		130		
			350		4.0		0.53	1.2		100		
			400	0.50	3.5	0.14	0.45	0.9	50	90	3.4	0.36
			480		3.0		0.35	0.7	40	80	2.9	0.30
			550		2.5		0.28	0.5	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.3	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.1	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	0.8	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.1	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.1	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	2.3	170	250	4.0	0.60
		GG 25						2.0		230		
		GG 30						2.0		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	1.7	120	230	4.0	0.50
		GGG 50	260					1.5		190		
		GGG 70	310					1.4		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.2	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	-------	0.50	5.0	0.26	0.46	1.1	25	35	3.0	0.38
		Inconel 718						1.1	28	40		
		Hastelloy C						1.2	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.50	5.0	0.23	0.46	1.2	35	60	3.0	0.38
		T40					0.39	0.9	28	40	3.0	0.32

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMG 080408 NP	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

WNMG 080408 WM

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

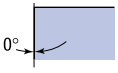
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMG 080408 WM	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.27	0.68	3.1	180	330	4.0	0.50
			180		5.0		0.68	3.1		280		
			210		5.0		0.60	2.6		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.27	0.60	2.6	120	280	4.0	0.45
			230		5.0		0.60	2.0		250		
			280		5.0	0.23	0.53	2.0		210		
			320		4.0		0.53	1.7		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	5.0	0.23	0.60	2.0	70	190	4.0	0.40
			280		5.0		0.60	2.0		150		
			320		4.0		0.53	1.6		130		
			350		4.0		0.53	1.6		100		
			400	0.50	3.5	0.14	0.45	1.2	50	90	3.4	0.36
			480		3.0		0.35	0.9	40	80	2.9	0.30
			550		2.5		0.28	0.6	30	70	2.5	0.25
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.26	0.52	1.7	170	270	4.0	0.40
	5	X2 CrNiMo 17 2 2 316	230 to 270		5.0	0.23	0.46	1.4	160	210	4.0	0.36
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		5.0	0.23	0.46	1.0	70	150	4.0	0.32
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	5.0	0.29	0.46	1.5	170	250	4.0	0.35
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.20	0.90	3.0	170	250	4.0	0.60
		GG 25						2.7		230		
		GG 30						2.7		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.20	0.70	2.3	120	230	4.0	0.50
		GGG 50	260					2.0		190		
		GGG 70	310					1.8		150		
		G-X260NiCr42	450	0.50	1.8	0.06	0.15	0.3	30	50	1.2	0.12
Nickel Based Alloys	11	Inconel 625	-------	0.50	5.0	0.26	0.46	1.4	25	35	3.0	0.38
		Inconel 718						1.4	28	40		
		Hastelloy C						1.6	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.50	5.0	0.23	0.46	1.6	35	60	3.0	0.38
		T40					0.39	1.2	28	40	3.0	0.32

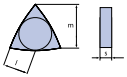
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMG 080412 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

W N M P

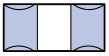
Shape
80° Diamond



Clearance Angle
0° No rake



Tolerance
l ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
WNMP 060404 NN	LT 10	6	4,76	0,4	T0000306	103
WNMP 060408 NN	LT 10	6	4,76	0,8	T0000307	104
WNMP 080408 NN	LT 10	8	4,76	0,8	T0000308	105

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMP 060404 NN					
WNMP 060408 NN					
WNMP 080408 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

80° Trigon shape inserts, with positive chip breaker geometry. Generates lower cutting forces, suitable for High Temperature Alloys and Stainless Steel operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	-------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMP 060404 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

WNMP 060408 NN

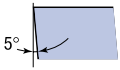
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	3.5	0.21	0.45	1.2	180	350	3.0	0.35
			180		3.5		0.45	1.2		300		
			210		3.5		0.40	1.0		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	3.5	0.21	0.40	1.0	120	280	3.0	0.30
			230		3.0		0.40	1.0		250		
			280		3.0	0.18	0.35	0.9		210		
			320		3.0		0.35	0.8		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	3.0	0.18	0.40	1.0	70	190	2.5	0.28
			280		3.0		0.40	1.0		150		
			320		2.5		0.35	0.7		130		
			350		2.5		0.35	0.7		100		
			400	0.50	2.0	0.11	0.30	0.5	50	90	1.5	0.25
			480		1.5		0.25	0.3	40	80	1.0	0.20
			550		1.0		0.20	0.2	30	70	0.5	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

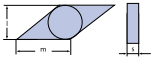
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMP 060408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

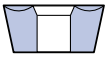
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	5.0	0.21	0.45	1.8	180	350	3.0	0.35
			180		5.0		0.45	1.8		300		
			210		4.0		0.40	1.5		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	5.0	0.21	0.40	1.2	120	280	3.0	0.30
			230		4.0		0.40	1.2		250		
			280		4.0	0.18	0.35	1.2		210		
			320		3.5		0.35	1.0		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	4.0	0.18	0.40	1.2	70	190	2.5	0.28
			280		4.0		0.40	1.2		150		
			320		3.0		0.35	0.8		130		
			350		3.0		0.35	0.8		100		
			400	0.50	2.5	0.11	0.30	0.6	50	90	2.0	0.25
			480		2.0		0.25	0.4	40	80	1.7	0.20
			550		1.7		0.20	0.3	30	70	1.0	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
WNMP 080408 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

STAR
V 35° D 55° T 60° C 80° B M T







Shape
35° / 55° / 60° / 80°
Diamond

Clearance Angle
5° Positive rake

Tolerance
l ± 0.05 m ± 0.16
s ± 0.13

Insert Type
Screw down clamping
Single sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
ST-CBMT 060408L NN	LT 10	6	4,76	0,8	T0001005	108
ST-DBMT 060404L NN	LT 10	6	4,76	0,4	T0000965	109
ST-TBMT 060404L NN	LT 10	6	4,76	0,4	T0000996	110
ST-VBMT 060404L NN	LT 10	6	4,76	0,4	T0000995	111

NN All Purpose Chipbreaker

STAR Tool holders on the next page

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
ST-CBMT 060408L NN					
ST-DBMT 060404L NN					
ST-TBMT 060404L NN					
ST-VBMT 060404L NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Exclusive and unique design inserts with positive chip breaker geometry. Suitable for roughing, semi fininshig and finishing operations due to the ability to use the same tool holder and for 35° - 80° angle operations. Limited in Plunging angle.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

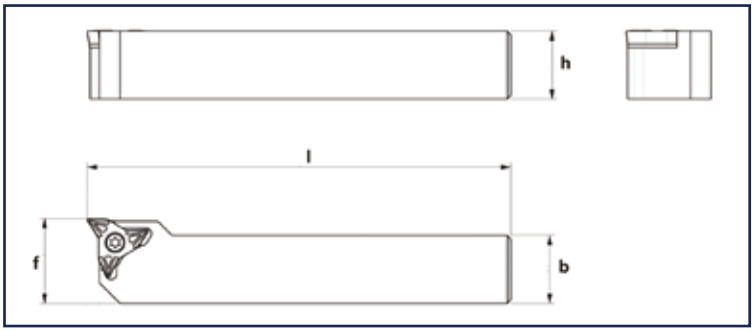
Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

ST-C/D/T/VBMT

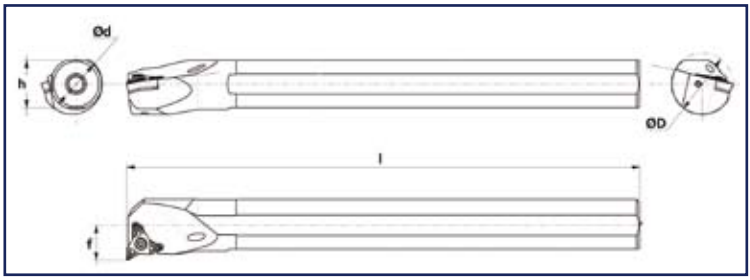
External

Catalog Nr.	Description	h	b	l	f
T2001028	ST-SXJBL 2020 K06	20	20	125	25
T2001029	ST-SXJBL 2525 K06	25	25	150	32



Internal

Catalog Nr.	Description	ød	l	h	f	øDmin
T2001031	ST-A25S-SXJBR 06	25	250	23	17	30



Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.50	3.5	0.21	0.45	1.2	180	350	3.0	0.35
			180		3.5		0.45	1.2		300		
			210		3.5		0.40	1.0		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.50	3.5	0.21	0.40	1.0	120	280	3.0	0.30
			230		3.0		0.40	1.0		250		
			280		3.0	0.18	0.35	0.9		210		
			320		3.0		0.35	0.8		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.50	3.0	0.18	0.40	1.0	70	190	2.5	0.28
			280		3.0		0.40	1.0		150		
			320		2.5		0.35	0.7		130		
			350		2.5		0.35	0.7		100		
			400	0.50	2.0	0.11	0.30	0.5	50	90	1.5	0.25
			480		1.5		0.25	0.3	40	80	1.0	0.20
			550		1.0		0.20	0.2	30	70	0.5	0.18
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.50	5.0	0.20	0.40	1.0	170	270	3.0	0.35
	5	X2 CrNiMo 17 2 2 316	230 to 270		4.0	0.18	0.35	0.8	160	210	3.0	0.32
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		4.0	0.18	0.35	0.6	70	150	2.5	0.28
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.50	4.0	0.22	0.35	0.9	170	250	3.0	0.32
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.50	5.0	0.15	0.60	2.0	170	250	3.0	0.35
		GG 25						1.8		230		
		GG 30						1.8		210		
Nodular Cast Iron	10	GGG 40	210	0.50	5.0	0.15	0.50	1.5	120	230	3.0	0.30
		GGG 50	260					1.3		190		
		GGG 70	310					1.2		150		
		G-X260NiCr42	450	0.50	1.7	0.11	0.25	0.4	30	50	1.0	0.18
Nickel Based Alloys	11	Inconel 625	--------	0.50	3.0	0.20	0.35	0.7	25	35	2.0	0.28
		Inconel 718						0.7	28	40		
		Hastelloy C						0.8	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.50	3.0	0.18	0.35	0.8	35	60	2.0	0.30
		T40					0.30	0.6	28	40	2.0	0.28

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
ST-CBMT 060408L NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	-------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	-------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

STAR

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
ST-DBMT 060404L NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
ST-TBMT 060404L NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_C [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.20	3.0	0.11	0.23	0.60	180	350	2.0	0.18
			180		2.5		0.20	0.48		280		
			210		2.5		0.18	0.48		250		
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.20	2.5	0.11	0.20	0.48	120	280	2.0	0.15
			230		2.5		0.20	0.40		250		
			280		2.0	0.09	0.18	0.40		210		
			320		2.0		0.16	0.32		180		
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.20	2.5	0.09	0.18	0.40	70	190	2.0	0.12
			280		2.5		0.16	0.40		150		
			320		2.0		0.14	0.28		130		
			350		2.0		0.14	0.24		100		
			400	0.20	1.8	0.05	0.12	0.20	50	90	1.7	0.11
			480		1.5		0.10	0.17	40	80	1.4	0.09
			550		1.4		0.08	0.13	30	70	1.2	0.07
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.20	2.5	0.10	0.18	0.32	170	270	2.0	0.15
	5	X2 CrNiMo 17 2 2 316	230 to 270		2.0	0.09	0.16	0.24	160	210	2.0	0.12
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	-------		2.0	0.09	0.14	0.20	70	150	2.0	0.12
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.15
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.20	2.0	0.11	0.18	0.28	170	250	2.0	0.12
			Treated						120	190		
Grey Cast Iron	9	GG 20	140 to 230	0.20	3.0	0.08	0.20	0.64	170	250	2.0	0.18
		GG 25						0.60		230		
		GG 30						0.60		210		
Nodular Cast Iron	10	GGG 40	210	0.20	2.5	0.08	0.18	0.48	120	230	2.0	0.15
		GGG 50	260					0.40		190		
		GGG 70	310					0.40		150		
		G-X260NiCr42	450	0.20	1.5	0.05	0.10	0.17	30	70	1.4	0.09
Nickel Based Alloys	11	Inconel 625	--------	0.20	2.0	0.10	0.16	0.24	25	35	2.0	0.12
		Inconel 718						0.24	28	40		
		Hastelloy C						0.28	40	65		
Titanium Based Alloys	12	TiAl 6 V4	--------	0.20	2.0	0.09	0.16	0.28	35	60	2.0	0.14
		T40					0.14	0.24	28	40	2.0	0.12

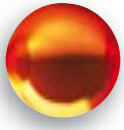
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
ST-VBMT 060404L NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

ONLY ONE GRADE

The Lamina Multi-Mat LT-10 Grade for Turning and Parting can Machine most materials with

Only one grade

LT-10

Steel	Stainless Steel	Cast Iron	Super Alloys
			
Example **35 NC 6**	Example **316L**	Example **FC400-12**	Example **Inconel 718**

True Multi-Mat inserst for real productivity

LAMINA TECHNOLOGIES

ALU-Turning

LT - 05 Aluminium

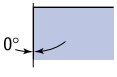
ALUMINIUM-TURNING INSERTS

Lamina's unique line of Turning inserts for Aluminium and soft material machining. Based on optimized chip breaker geometry and our unique coated grade, LT-05.

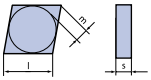
LAMINA TECHNOLOGIES

C N G G

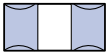
Shape
80° Diamond



Clearance Angle
0° No rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
CNGG 120404 ALU	LT 05	12	4,76	0,4	T0001025	115
CNGG 120408 ALU	LT 05	12	4,76	0,8	T0001019	115

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNGG 120404 ALU					
CNGG 120408 ALU					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

ISO standard inserts with extreme and unique positive chip breaker geometry, for Aluminum turning operations. Suitable mostly for external operations but good also for internal operations, Roughing - Finishing operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

CNGG 120404-ALU

Aluminium	Group No	Material Examples*	Brinell hardness HB	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Si < 4%	13	AlMgSi 1	----	0.25	5.0	0.12	0.35	1.5	400	1200	0.5 to 3	0.23
4% < Si < 8%	13	AlSi 6 Cu 4	----			0.10	0.30	1.2	250	600		
Si > 8%	14	AlSi 12	----	Recommended to use CNMG 120404 NN - LT-10								

For high Si Aluminuim, it is recommended to use CNMG 120404 NN.
See cutting conditions bellow.

Si > 8%	14	AlSi 12	----	0.50	5.0	0.10	0.30	0.80	200	400	0.5 to 1.2	0.15

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNGG 120404 ALU	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

CNGG 120408-ALU

Aluminium	Group No	Material Examples*	Brinell hardness HB	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Si < 4%	13	AlMgSi 1	----	0.25	5.0	0.12	0.60	2.0	400	1200	0.5 to 3	0.23
4% < Si < 8%	13	AlSi 6 Cu 4	----			0.10	0.50	1.8	250	600		
Si > 8%	14	AlSi 12	----	Recommended to use CNMP 120408 NN - LT-10								

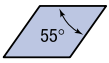
For high Si Aluminuim, it is recommended to use CNMP 120408 NN.
See cutting conditions bellow.

Si > 8%	14	AlSi 12	----	0.50	5.0	0.15	0.50	1.50	200	400	1.0 to 3.0	0.25

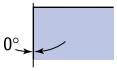
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
CNGG 120408 ALU	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

LAMINA TECHNOLOGIES

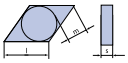
D N G G



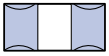
Shape
55° Diamond



Clearance Angle
0° No rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
DNGG 110404 ALU	LT 05	11	4,76	0,4	T0001026	117
DNGG 110408 ALU	LT 05	11	4,76	0,8	T0001010	117

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNGG 110404 ALU					
DNGG 110408 ALU					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

ISO standard inserts with extreme and unique positive chip breaker geometry, for Aluminum turning operations. Suitable mostly for external operations but good also for internal operations, Roughing - Finishing operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

DNGG 110404-ALU

Aluminium	Group No	Material Examples*	Brinell hardness HB	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Si < 4%	13	AlMgSi 1	----	0.25	5.0	0.12	0.30	1.5	400	1200	0.5 to 3	0.23
4% < Si < 8%	13	AlSi 6 Cu 4	----			0.10	0.25	1.2	250	600		
Si > 8%	14	AlSi 12	----	Recommended to use LT-10								

For high Si Aluminuim, it is recommended to use DNMG 110404 NN.
See cutting conditions bellow.

Si > 8%	14	AlSi 12	----	0.50	5.0	0.10	0.30	0.80	200	400	0.5 to 1.2	0.15

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNGG 110404 ALU	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

DNGG 110408-ALU

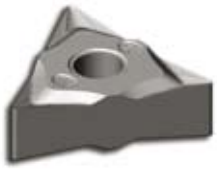
Aluminium	Group No	Material Examples*	Brinell hardness HB	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Si < 4%	13	AlMgSi 1	----	0.25	5.0	0.12	0.60	2.0	400	1200	0.5 to 3	0.32
4% < Si < 8%	13	AlSi 6 Cu 4	----			0.10	0.45	1.6	250	600		
Si > 8%	14	AlSi 12	----	Recommended to use LT-10								

For high Si Aluminuim, it is recommended to use DNMG 110408 NN.
See cutting conditions bellow.

Si > 8%	14	AlSi 12	----	0.50	5.0	0.10	0.30	0.80	200	400	0.5 to 1.2	0.15

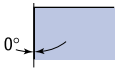
Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNGG 110408 ALU	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

LAMINA TECHNOLOGIES

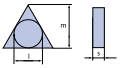


T N G G

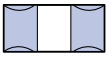
Shape
Triangle 60°



Clearance Angle
0° No rake



Tolerance
d ± 0.05 m ± 0.08
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
TNGG 160404 ALU	LT 05	16	4,76	0,4	T0001105	119

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
TNGG 160404 ALU	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

ISO standard inserts with extreme and unique positive chip breaker geometry, for Aluminum turning operations. Suitable mostly for external operations but good also for internal operations, Roughing - Finishing operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

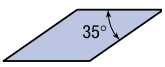
Aluminium	Group No	Material Examples*	Brinell hardness HB	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Si < 4%	13	AlMgSi 1	----	0.25	5.0	0.12	0.30	1.5	400	1200	0.5 to 3	0.23
4% < Si < 8%	13	AlSi 6 Cu 4	----			0.10	0.25	1.2	250	600		
Si > 8%	14	AlSi 12	----	Recommended to use TNMG 160404 NN - LT-10								

For high Si Aluminuim, it is recommended to use TNMG 160404 NN.
See cutting conditions bellow.

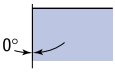
Si > 8%	14	AlSi 12	----	0.20	4.0	0.10	0.30	0.80	200	400	0.5 to 1.2	0.15

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
DNGG 110404 ALU	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

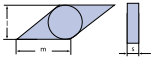
V N G G



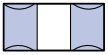
Shape
35° Diamond



Clearance Angle
0° No rake



Tolerance
l ± 0.05 m ± 0.16
s ± 0.13



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	r	Catalog Nr.	Page
VNGG 160404 ALU	LT 05	16	4,76	0,4	T0001006	121
VNGG 160408 ALU	LT 05	16	4,76	0,8	T0001032	121

NN All Purpose Chipbreaker

Application Guide	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VNMG 160404 NN					
VNMG 160408 NN					
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

ISO standard inserts with extreme and unique positive chip breaker geometry, for Aluminum turning operations. Suitable mostly for external operations but good also for internal operations, Roughing - Finishing operations.

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

Machining Recommendation Guide - Please see Pg. 8

VNGG 160404-ALU

Aluminium	Group No	Material Examples*	Brinell hardness HB	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Si < 4%	13	AlMgSi 1	----	0.25	6.0	0.12	0.30	1.5	400	1'200	0.5 to 3	0.23
4% < Si < 8%	13	AlSi 6 Cu 4	----			0.10	0.25	1.2	250	600		
Si > 8%	14	AlSi 12	----	Recommended to use VNMG 160404 NN - LT-10								

For high Si Aluminuim, it is recommended to use VNMG 160404 NN.
See cutting conditions bellow.

Si > 8%	14	AlSi 12	----	0.50	5.0	0.10	0.30	0.80	200	400	0.5 to 1.2	0.15

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VNGG 160404 ALU	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

VNGG 160408-ALU

Aluminium	Group No	Material Examples*	Brinell hardness HB	d.o.c [mm]		feed [mm/rev]		A max [mm²]	V_c [m/min]		Optimal cutting conditions	
				min	max	min	max		min	max	d.o.c	feed
Si < 4%	13	AlMgSi 1	----	0.25	6.0	0.12	0.60	2.0	400	1'200	0.5 to 3	0.32
4% < Si < 8%	13	AlSi 6 Cu 4	----			0.10	0.45	1.6	250	600		
Si > 8%	14	AlSi 12	----	Recommended to use VNMG 160408 NN - LT-10								

For high Si Aluminuim, it is recommended to use VNMG 160408 NN.
See cutting conditions bellow.

Si > 8%	14	AlSi 12	----	0.50	5.0	0.18	0.45	1.50	200	400	1.0 to 3.0	0.25

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrrupted Cut
VNGG 160404 ALU	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

LAMINA TECHNOLOGIES

Aluminium machining like never before...

LAMINA **4** CUTTING EDGES

instead of

ISO **2** CUTTING EDGES

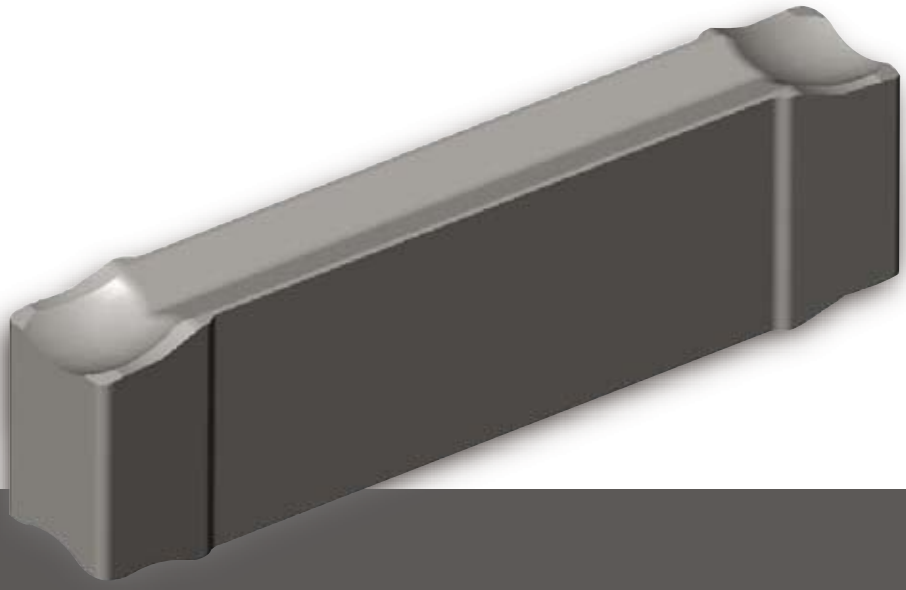
- Excellent chip control and surface finishing- even in low Silicon Aluminium.
- Excellent toughness & wear resistance characteristics.
- Double the cutting edges, per insert.
- Can handle with ease depth of cut of up to 6 mm.
- True ability to run un-manned in CNC operation.
- Can be mounted on a standard tool-holder.

LAMINA TECHNOLOGIES

Parting

LT - 10 Parting

MULTI-MAT® PARTING INSERTS



LAMINA TECHNOLOGIES

G N T X
G C T X

Shape
"Doge bone"

Clearance Angle
N = 0° No rake
C = 7° rake angle

Tolerance
l ± 0.05 m ± 0.16
s ± 0.13

Insert Type
Special

Insert designation	Grade	W	R	Catalog Nr.	Page
GNTX 2002 NN	LT 10	2.0mm	0.18mm	T0001468	126
GNTX 3003 NN	LT 10	3.0mm	0.18mm	T0001470	127
GCTX 2002 NN	LT 10	3.0mm	0.25mm	T0001469	128
GCTX 3003 NN	LT 10	3.0mm	0.25mm	T0001471	129
GCTX 2002 PP	LT 10	3.0mm	0.25mm	T0001880	130
GCTX 3003 PP	LT 10	3.0mm	0.25mm	T0001879	131

NN All Purpose Chipbreaker

Application Guide	Parting	Grooving	Side Turning	Chamfering
GNTX 2002 NN				
GNTX 3003 NN				
GCTX 2002 NN				
GCTX 3003 NN				
GCTX 2002 PP				
GCTX 3003 PP				
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

1 Not Recommended 2 Acceptable 3 Recommended 4 Excellent

GNTX : 4 CUTTING EDGE - For Steel and cast Iron.
GCTX : 2 CUTTING EDGE - For Stainless Steel.

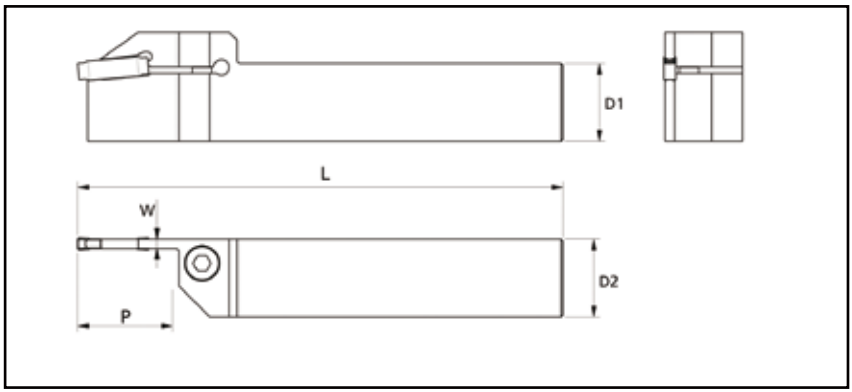
Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

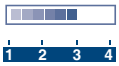
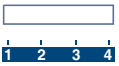
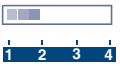
GNTX / GCTX

Catalog Nr.	Description	D1	D2	L	W	P_{max}	Hand	
T2001164	LT PNG-L 12-2.0	12	12	120	1.6	20	left
T2001165	LT PNG-R 12-2.0	12	12	120	1.6	20	right
T2001166	LT PNG-L 16-2.0	16	16	120	1.6	20	left
T2001167	LT PNG-R 16-2.0	16	16	120	1.6	20	right
T2001484	LT PNG-L 20-2.0	20	20	120	1.6	20	left
T2001485	LT PNG-R 20-2.0	20	20	120	1.6	20	right
T2001482	LT PNG-L 25-2.0	25	25	120	1.6	20	left
T2001483	LT PNG-R 25-2.0	25	25	120	1.6	20	right

Catalog Nr.	Description	D1	D2	L	W	P_{max}	Hand	
T2001168	LT PNG-L 16-3.0	16	16	120	2.4	20	left
T2001169	LT PNG-R 16-3.0	16	16	120	2.4	20	right
T2001170	LT PNG-L 20-3.0	20	20	125	2.4	25	left
T2001171	LT PNG-R 20-3.0	20	20	125	2.4	25	right
T2001197	LT PNG-L 25-3.0	25	25	125	2.4	25	left
T2001198	LT PNG-R 25-3.0	25	25	125	2.4	25	right



Material Group	Group No	Material Examples*	Brinell hardness	feed [mm/rev] min	feed [mm/rev] max	V_c [m/min] min	V_c [m/min] max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.04	0.17	130	220
			180				
			210				
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.04	0.15	90	200
			230				
			280	0.03	0.15	90	180
			320				
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.03	0.14	60	150
			280				
			320	0.03	0.14	60	110
			350				
			400	0.03	0.07	50	80
			480				
			550				
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	For Stainless Steel please use GCTX insert.			
	5	X2 CrNiMo 17 2 2 316	230 to 270				
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------				
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed				
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed				
			Treated				
Grey Cast Iron	9	GG 20	140 to 230	0.06	0.16	130	190
		GG 25					
		GG 30					
Nodular Cast Iron	10	GGG 40	210	0.05	0.14	90	150
		GGG 50	260				
		GGG 70	310				
		G-X260NiCr42	450	0.05	0.14	90	150
Nickel Based Alloys	11	Inconel 625	--------	For Exotic material please use GCTX insert.			
		Inconel 718					
		Hastelloy C					
Titanium Based Alloys	12	TiAl 6 V4	--------				
		T40					

Insert designation	Parting	Grooving	Side Turning	Chamfering
GNTX 2002 NN				

Material Group	Group No	Material Examples*	Brinell hardness	feed [mm/rev] min	feed [mm/rev] max	V_c [m/min] min	V_c [m/min] max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150 180 210	0.06	0.20	130	220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180 230	0.05	0.18	90	200
			280 320	0.05	0.18	90	180
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220 280	0.05	0.17	60	150
			320 350	0.05	0.17	60	110
			400 480 550	0.03	0.07	50	80
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	For Stainless Steel please use GCTX insert.			
	5	X2 CrNiMo 17 2 2 316	230 to 270				
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------				
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed				
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed Treated				
Grey Cast Iron	9	GG 20 GG 25 GG 30	140 to 230	0.08	0.18	130	190
Nodular Cast Iron	10	GGG 40 GGG 50 GGG 70	210 260 310	0.08	0.15	90	150
		G-X260NiCr42	450	0.06	0.08	30	70
Nickel Based Alloys	11	Inconel 625 Inconel 718 Hastelloy C	--------	For Exotic material please use GCTX insert.			
Titanium Based Alloys	12	TiAl 6 V4 T40	--------				

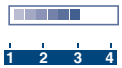
Insert designation	Parting	Grooving	Side Turning	Chamfering
GNTX 3003 NN	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

LAMINA TECHNOLOGIES

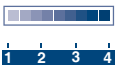
Material Group	Group No	Material Examples*	Brinell hardness	feed [mm/rev]		V_c [m/min]	
				min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150 180 210	0.04	0.17	130	230
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180 230	0.03	0.15	90	200
			280 320	0.03	0.15	90	180
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220 280	0.03	0.14	60	150
			320 350	0.03	0.14	70	130
			400 480 550	0.03	0.07	50	80
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.03	0.10	170	230
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.03	0.08	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.03	0.08	90	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.03	0.10	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.03	0.10	60	210
			Treated	0.03	0.10	90	150
Grey Cast Iron	9	GG 20 GG 25 GG 30	140 to 230	0.06	0.16	130	190
Nodular Cast Iron	10	GGG 40	210	0.05	0.14	90	150
		GGG 50	260				
		GGG 70	310				
		G-X260NiCr42	450	0.03	0.06	30	70
Nickel Based Alloys	11	Inconel 625 Inconel 718 Hastelloy C	--------	0.03	0.06	25	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.03	0.06	28	60
		T40			0.06	28	40

Insert designation
GCTX 3003 NN

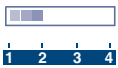
Parting



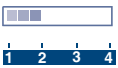
Grooving



Side Turning



Chamfering

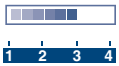


LAMINA TECHNOLOGIES

Material Group	Group No	Material Examples*	Brinell hardness	feed [mm/rev]		V_c [m/min]	
				min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150 180 210	0.06	0.20	130	230
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180 230	0.05	0.18	90	200
			280 320	0.05	0.18	90	180
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220 280	0.05	0.17	60	150
			320 350	0.05	0.22	70	130
			400 480 550	0.03	0.07	50	80
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.04	0.12	170	230
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.04	0.10	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.04	0.08	90	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.04	0.12	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.04	0.12	60	210
			Treated	0.04	0.12	90	150
Grey Cast Iron	9	GG 20 GG 25 GG 30	140 to 230	0.08	0.18	130	190
Nodular Cast Iron	10	GGG 40	210	0.08	0.15	90	150
		GGG 50	260				
		GGG 70	310				
		G-X260NiCr42	450	0.06	0.08	30	70
Nickel Based Alloys	11	Inconel 625 Inconel 718 Hastelloy C	--------	0.04	0.18	25	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.04	0.08	28	60
		T40			0.08	28	40

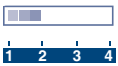
Insert designation
GCTX 3003 NN

Parting

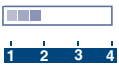


Grooving

Side Turning



Chamfering



LAMINA TECHNOLOGIES

Material Group	Group No	Material Examples*	Brinell hardness	feed [mm/rev] min	feed [mm/rev] max	V_c [m/min] min	V_c [m/min] max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.04	0.17	130	230
			180				
			210				
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.03	0.15	90	200
			230				
			280	0.03	0.15	90	180
			320				
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.03	0.14	60	150
			280				
			320	0.03	0.14	70	130
			350				
			400	0.03	0.07	50	80
			480				
			550				
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.03	0.10	170	230
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.03	0.08	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.03	0.08	90	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.03	0.10	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.03	0.10	60	210
			Treated	0.03	0.10	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.06	0.16	130	190
		GG 25					
		GG 30					
Nodular Cast Iron	10	GGG 40	210	0.05	0.14	90	150
		GGG 50	260				
		GGG 70	310				
		G-X260NiCr42	450	0.03	0.06	30	70
Nickel Based Alloys	11	Inconel 625	--------	0.03	0.06	25	65
		Inconel 718					
		Hastelloy C					
Titanium Based Alloys	12	TiAl 6 V4	--------	0.03	0.06	28	60
		T40			0.06	28	40

Insert designation	Parting	Grooving	Side Turning	Chamfering
GCTX 2002 PP	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

LAMINA TECHNOLOGIES

Material Group	Group No	Material Examples*	Brinell hardness	feed [mm/rev]		V_c [m/min]	
				min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.06	0.20	130	230
			180				
			210				
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.05	0.18	90	200
			230				
			280	0.05	0.18	90	180
			320				
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.05	0.17	60	150
			280				
			320	0.05	0.22	70	130
			350				
			400	0.03	0.07	50	80
			480				
			550				
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.04	0.12	170	230
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.04	0.10	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.04	0.08	90	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.04	0.12	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.04	0.12	60	210
			Treated	0.04	0.12	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.08	0.18	130	190
		GG 25					
		GG 30					
Nodular Cast Iron	10	GGG 40	210	0.08	0.15	90	150
		GGG 50	260				
		GGG 70	310				
		G-X260NiCr42	450	0.06	0.08	30	70
Nickel Based Alloys	11	Inconel 625	--------	0.04	0.18	25	65
		Inconel 718					
		Hastelloy C					
Titanium Based Alloys	12	TiAl 6 V4	--------	0.04	0.08	28	60
		T40			0.08	28	40

Insert designation	Parting	Grooving	Side Turning	Chamfering
GCTX 3003 PP	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

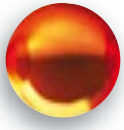
LAMINA TECHNOLOGIES

ONLY ONE GRADE

The Lamina Multi-Mat LT-30 Grade for Milling and Drilling can machine most materials with

Only one grade

LT-30

Steel	Stainless Steel	Cast Iron	Super Alloys
			
Example **35 NC 6**	Example **316L**	Example **FC400-12**	Example **Inconel 718**

True Multi-Mat inserts for real productivity

LAMINA TECHNOLOGIES