Milling

LT - 30 Multi-Mat® Milling
LT - 05 Aluminium

MULTI-MAT® MILLING INSERTS

LAMINA TECHNOLOGIES

A D K T

Shape
80° Diamond

Clearance Angle
15°

Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

Insert Type
Screw Down Clamping
no chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
ADKT 1505 PDTR	LT 30	15	5,56	90º	15º	Right	M0001573	136

Surfacing Insert Lead angle 90°

Application Guide

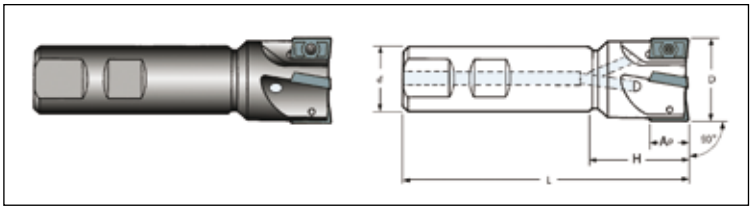
Multi purpose 90° milling insert. Suitable for Roughing to Finishing - Slotting, Shoulder and Face milling operations.

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

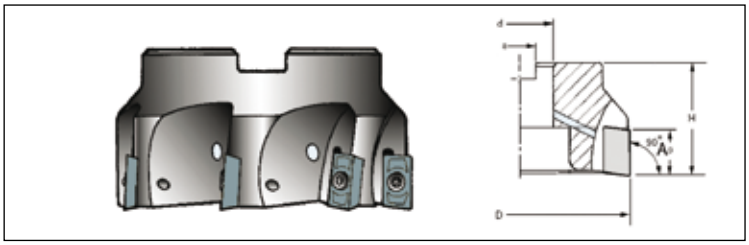
Catalog Nr.	Description	D	d	L	H	Ap	z
M2001613	LT 790 W-W-D25	25	25	100	44	15	2
M2001503	LT 790 W-W-D32	32	32	110	50	15	3
M2001614	LT 790 W-W-D40	40	32	115	45	15	4

Screw set: VT 40 Key set: CT 15



Catalog Nr.	Description	D	d	H	Ap	z
M2001615	LT 790 M-W-D40	40	16	40	15	4
M2001504	LT 790 M-W-D50	50	22	40	15	5
M2001616	LT 790 M-W-D63	63	22	40	15	6
M2001617	LT 790 M-W-D80	80	27	50	15	7
M2001618	LT 790 M-W-D100	100	32	50	15	8
M2001619	LT 790 M-W-D125	125	40	63	15	9

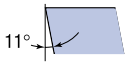
W = With coolant Screw set: VT 50 Key set: CT 15



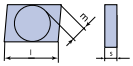
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	14.0	0.18	0.32	180	300
			180		14.0		0.32		260
			210		14.0		0.32		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	14.0	0.15	0.25	130	200
			230		14.0		0.25		180
			280	0.5	14.0	0.15	0.22	100	160
			320		14.0		0.22		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	10.0	0.12	0.22	90	130
			280		10.0		0.22		110
			320	0.5	10.0	0.12	0.18	60	100
			350		10.0		0.18		90
			400	0.5	5.0	0.10	0.18	40	80
			480		3.0		0.16		70
			550		1.5		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	14.0	0.15	0.25	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	14.0	0.12	0.22	120	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	10.0	0.12	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	14.0	0.15	0.25	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	14.0	0.15	0.25	130	210
			Treated	0.5	14.0	0.15	0.20	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	14.0	0.18	0.32	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	14.0	0.15	0.28	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	10.0	0.12	0.18	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	10.0	0.12	0.20	35	60
		T40					0.18	28	40

A O M T

Shape
80° Diamond



Clearance Angle
15°



Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

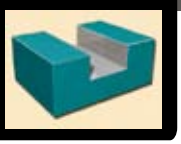
Insert Type
Screw Down Clamping
no chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
AOMT 123608 PETR	LT 30	15	5,56	90º	15º	Right	M0001640	139

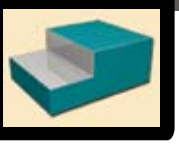
Surfacing Insert Lead angle 90°

Application Guide

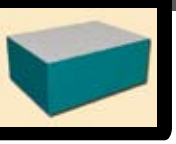
Slotting



Shoulder Milling



Surfacing

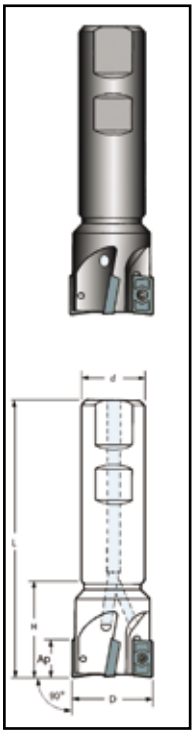


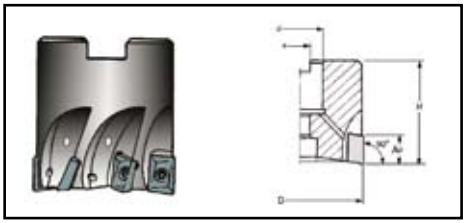
Multi purpose 90° milling insert. Suitable for Roughing to Finishing - Slotting, Shoulder, Face and Ramping down milling operations.

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Catalog Nr.	Description	D	d	L	H	Ap	z
M2001817	LT720 W-W-D16/1	16	16	85	25	10	1
M2001781	LT720 W-W-D16/2	16	16	85	25	10	2
M2001818	LT720 W-W-D20/2	20	20	100	30	10	2
M2001782	LT720 W-W-D20/3	20	20	100	30	10	3
M2001783	LT720 W-W-D25/3	25	25	115	35	10	3
M2001819	LT720 W-W-D25/4	25	25	115	35	10	4
M2001820	LT720 W-W-D32/4	32	32	125	45	10	4
M2001784	LT720 W-W-D32/5	32	32	125	45	10	5





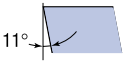
Catalog Nr.	Description	D	d	H	Ap	z
M2001785	LT 720 M-W-D40/6	40	22	40	10	6
M2001821	LT 720 M-W-D50/7	50	22	40	10	7

W = With coolant Screw set: VT 25 Key set: BT 08

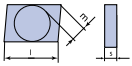
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	11.0	0.10	0.38	180	300
			180		11.0		0.25		260
			210		11.0		0.23		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	11.0	0.08	0.22	130	200
			230		11.0		0.22		180
			280	0.5	11.0	0.08	0.18	100	160
			320		11.0		0.18		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.08	0.18	90	130
			280		7.0		0.18		110
			320	0.5	7.0	0.08	0.16	60	100
			350		7.0		0.16		90
			400	0.5	4.0	0.10	0.16	40	80
			480		2.0		0.15		70
			550		1.0		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	7.0	0.10	0.22	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	7.0	0.10	0.20	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	7.0	0.08	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	7.0	0.08	0.20	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	7.0	0.08	0.20	130	210
			Treated	0.5	7.0	0.08	0.20	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	9.0	0.10	0.25	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	9.0	0.10	0.22	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.08	0.15	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.08	0.18	35	60
		T40					0.15	28	40

A P K T

Shape
80° Diamond



Clearance Angle
15°



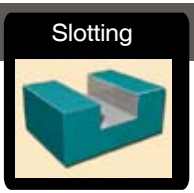
Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

Insert Type
Screw Down Clamping
no chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
APKT 1604 PDTR	LT 30	16	4,76	90º	15º	Right	M0000021	143
APKT 160424 ER	LT 30	16	4,76	2,4	15º	Right	M0000300	143
APKT 1705 PETR	LT 30	17	5,56	2,4	15º	Right	M0001810	144

Surfacing Insert Lead angle 90°

Application Guide

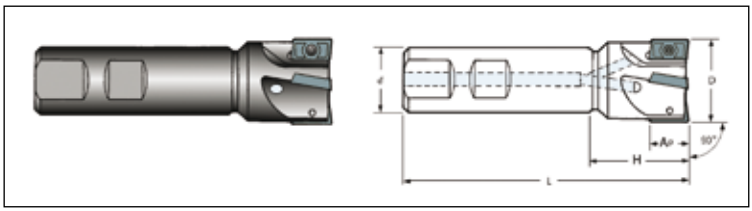


Multi purpose 90° milling inserts. Suitable for Roughing to Finishing - Slotting, Shoulder and Face milling operations.

Machining Recommendation Guide - Please see Pg. 8

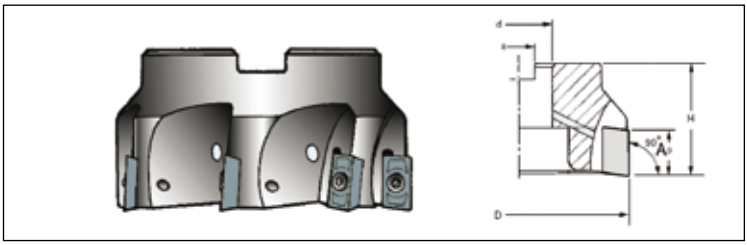
Catalog Nr.	Description	D	d	L	H	Ap	z	
M2000536	LT 730 W-W-D25	25	25	100	44	15	2	
M2001478	LT 730 W-WL-D25	25	20	150	44	15	2	
M2000537	LT 730 W-W-D32	32	32	110	50	15	3	
M2001479	LT 730 W-WL-D32	32	25	150	50	15	3	
M2000538	LT 730 W-W-D40	40	32	115	45	15	4	
M2001480	LT 730 W-WL-D40	40	32	150	45	15	4	

Screw set: VT 40 Key set: CT 15



Catalog Nr.	Description	D	d	H	Ap	z
M2000539	LT 730 M-W-D40	40	16	40	15	4
M2000540	LT 730 M-W-D50	50	22	40	15	5
M2000541	LT 730 M-W-D63	63	22	40	15	6
M2000542	LT 730 M-W-D80	80	27	50	15	7
M2000543	LT 730 M-W-D100	100	32	50	15	8
M2000544	LT 730 M-W-D125	125	40	63	15	9
M2000545	LT 730 M-W-D160	160	40	63	15	10

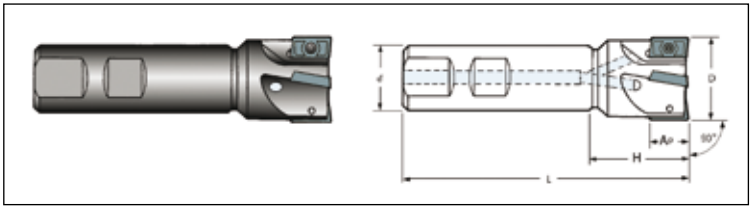
W = With coolant Screw set: VT 40 Key set: CT 15



LAMINA TECHNOLOGIES

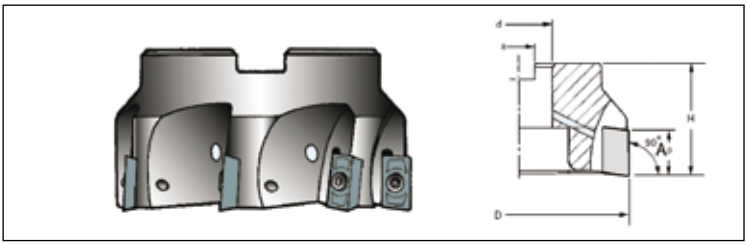
Catalog Nr.	Description	D	d	L	H	Ap	z	
M2001833	LT737 W-W-D25/2	25	20	100	32	14	2	
M2001834	LT737 W-W-D32/3	32	32	110	40	14	3	
M2001835	LT737 W-W-D40/4	40	32	115	45	14	4	
M2001836	LT737 W-WL-D25/2	25	25	210	40	14	2	
M2001837	LT737 W-WL-D32/3	32	32	200	65	14	3	

Screw set: VT 40 Key set: CT 15



Catalog Nr.	Description	D	d	H	Ap	z
M2001838	LT737 M-W-D40/4	40	16	40	14	4
M2001839	LT737 M-W-D50/5	50	22	40	14	5
M2001841	LT737 M-W-D63/6	63	22	40	14	6
M2001842	LT737 M-W-D80/7	80	27	50	14	7
M2001843	LT737 M-W-D100/7	100	32	50	14	7
M2001844	LT737 M-W-D125/9	125	40	63	14	9
M2001845	LT737 M-W-D160/10	160	40	63	14	10

W = With coolant Screw set: VT 40 Key set: CT 15



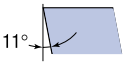
LAMINA TECHNOLOGIES

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	15.0	0.18	0.32	180	300
			180		15.0		0.32		260
			210		15.0		0.32		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	15.0	0.15	0.25	130	200
			230		15.0		0.25		180
			280	0.5	15.0	0.15	0.22	100	160
			320		15.0		0.22		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	12.0	0.12	0.22	90	130
			280		12.0		0.22		110
			320	0.5	12.0	0.12	0.18	60	100
			350		12.0		0.18		90
			400	0.5	5.0	0.10	0.18	40	80
			480		3.0		0.16		70
			550		1.5		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	15.0	0.15	0.25	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	15.0	0.12	0.22	120	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	12.0	0.12	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	15.0	0.15	0.25	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	15.0	0.15	0.25	130	210
			Treated	0.5	15.0	0.15	0.20	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	15.0	0.18	0.32	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	15.0	0.15	0.28	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	12.0	0.12	0.18	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	12.0	0.12	0.20	35	60
		T40					0.18	28	40

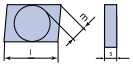
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	15.0	0.18	0.40	180	300
			180		15.0		0.35		260
			210		15.0		0.32		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	15.0	0.18	0.35	130	200
			230		15.0		0.32		180
			280	0.5	15.0	0.18	0.30	100	160
			320		15.0		0.28		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	15.0	0.18	0.32	90	130
			280		15.0		0.30		110
			320	0.5	7.0	0.15	0.28	60	100
			350		7.0		0.26		90
			400	0.5	4.0	0.10	0.24	40	80
			480		2.0		0.22		70
			550		1.0		0.20		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	9.0	0.15	0.22	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	9.0	0.15	0.20	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	9.0	0.15	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	9.0	0.10	0.20	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	9.0	0.10	0.20	130	210
			Treated	0.5	9.0	0.10	0.20	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	9.0	0.20	0.45	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	9.0	0.20	0.45	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.22	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.08	0.15	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.08	0.18	35	60
		T40					0.15	28	40

A P L X

Shape
80° Diamond



Clearance Angle
15°



Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

Insert Type
Screw Down Clamping
no chip breaker

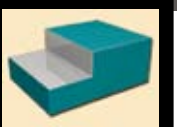
Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
APLX 1003 PDTR	LT 30	10	3,18	90º	15º	Right	M0000454	148
APLX 100308 PDTR	LT 30	10	3,18	0,8	15º	Right	M0001151	148
APLX 100332 PDTR	LT 30	10	3,18	3,2	15º	Right	M0001566	149
APLX 100340 PDTR	LT 30	10	3,18	4,0	15º	Right	M0001567	149

Surfacing Insert Lead angle 90°

Application Guide

Slotting

Shoulder Milling



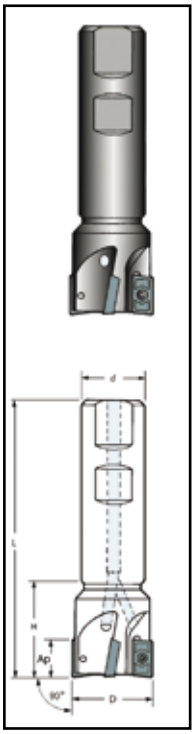
Surfacing

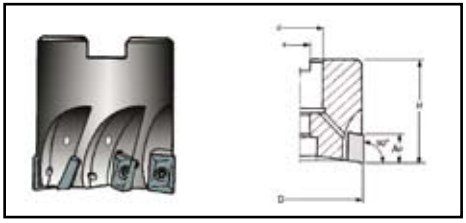
Multi purpose 90° milling inserts. Suitable for Roughing to Finishing - Slotting, Shoulder and Face milling operations.

Machining Recommendation Guide - Please see Pg. 8

APLX 1003 PDTR & APLX 100308 PDTR

Catalog Nr.	Description	D	d	L	H	Ap	z
M2000518	LT 740 W-W-D10/1	10	16	80	24	9	1
M2000530	LT 740 W-WL-D10	10	16	150	24	9	1
M2000519	LT 740 W-W-D12/1	12	16	80	24	9	1
M2000531	LT 740 W-WL-D12	12	16	150	24	9	1
M2000520	LT 740 W-W-D14/1	14	16	80	24	9	1
M2000521	LT 740 W-W-D16/2	16	16	85	25	9	2
M2000532	LT 740 W-WL-D16	16	16	150	24	9	2
M2000522	LT 740 W-W-D18/2	18	20	85	25	9	2
M2000523	LT 740 W-W-D20	20	20	90	25	9	3
M2000533	LT 740 W-WL-D20	20	20	150	25	9	3
M2000524	LT 740 W-W-D22	22	25	95	25	9	3
M2000525	LT 740 W-W-D25/3	25	25	95	25	9	3
M2000526	LT 740 W-W-D25	25	25	95	25	9	4
M2000534	LT 740 W-WL-D25	25	20	150	25	9	4
M2000527	LT 740 W-W-D28	28	25	95	25	9	4
M2000528	LT 740 W-W-D30	30	25	95	25	9	4
M2000529	LT 740 W-W-D32	32	25	95	26	9	5
M2000535	LT 740 W-WL-D32	32	25	150	26	9	5





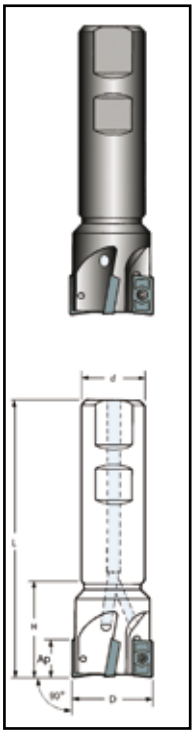
Catalog Nr.	Description	D	d	H	Ap	z
M2000514	LT 740 M-W-D40/6	40	22	40	9	6
M2000515	LT 740 M-W-D50/7	50	22	40	9	7
M2000516	LT 740 M-W-D63/8	63	22	40	9	8
M2000517	LT 740 M-W-D80/11	80	27	50	9	11

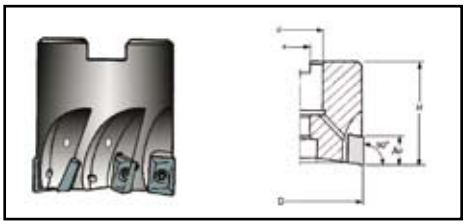
W = With coolant

Screw set: VT 25 Key set: BT 08

LAMINA TECHNOLOGIES

Catalog Nr.	Description	D	d	L	H	Ap	z
* M2001584	LT 745 W-W-D10/1	10	16	80	24	9	1
* M2001596	LT 745 W-WL-D10	10	16	150	24	9	1
* M2001585	LT 745 W-W-D12/1	12	16	80	24	9	1
* M2001597	LT 745 W-WL-D12	12	16	150	24	9	1
* M2001586	LT 745 W-W-D14/1	14	16	80	24	9	1
* M2001587	LT 745 W-W-D16/2	16	16	85	25	9	2
* M2001598	LT 745 W-WL-D16	16	16	150	24	9	2
* M2001588	LT 745 W-W-D18/2	18	20	85	25	9	2
* M2001589	LT 745 W-W-D20	20	20	90	25	9	3
* M2001599	LT 745 W-WL-D20	20	20	150	25	9	3
* M2001590	LT 745 W-W-D22	22	25	95	25	9	3
* M2001591	LT 745 W-W-D25/3	25	25	95	25	9	3
* M2001592	LT 745 W-W-D25	25	25	95	25	9	4
* M2001600	LT 745 W-WL-D25	25	20	150	25	9	4
* M2001593	LT 745 W-W-D28	28	25	95	25	9	4
* M2001594	LT 745 W-W-D30	30	25	95	25	9	4
* M2001595	LT 745 W-W-D32	32	25	95	26	9	5
* M2001601	LT 745 W-WL-D32	32	25	150	26	9	5





Catalog Nr.	Description	D	d	H	Ap	z
* M2001580	LT 745 M-W-D40/6	40	22	40	9	6
* M2001581	LT 745 M-W-D50/7	50	22	40	9	7
* M2001582	LT 745 M-W-D63/8	63	22	40	9	8
* M2001583	LT 745 M-W-D80/11	80	27	50	9	11

W = With coolant Screw set: VT 25 Key set: BT 08

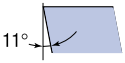
*** Non stock item - On special request.**

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	9.0	0.10	0.38	180	300
			180		9.0		0.25		260
			210		9.0		0.23		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	9.0	0.08	0.22	130	200
			230		9.0		0.22		180
			280	0.5	9.0	0.08	0.18	100	160
			320		9.0		0.18		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.08	0.18	90	130
			280		7.0		0.18		110
			320	0.5	7.0	0.08	0.16	60	100
			350		7.0		0.16		90
			400	0.5	4.0	0.10	0.16	40	80
			480		2.0		0.15		70
			550		1.0		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	9.0	0.10	0.22	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	9.0	0.10	0.20	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	9.0	0.08	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	9.0	0.08	0.20	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	9.0	0.08	0.20	130	210
			Treated	0.5	9.0	0.08	0.20	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	9.0	0.10	0.25	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	9.0	0.10	0.22	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.08	0.15	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.08	0.18	35	60
		T40					0.15	28	40

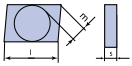
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	9.0	0.10	0.38	180	300
			180		9.0		0.25		260
			210		9.0		0.23		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	9.0	0.08	0.22	130	200
			230		9.0		0.22		180
			280	0.5	9.0	0.08	0.18	100	160
			320		9.0		0.18		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.08	0.18	90	130
			280		7.0		0.18		110
			320	0.5	7.0	0.08	0.16	60	100
			350		7.0		0.16		90
			400	0.5	4.0	0.10	0.16	40	80
			480		2.0		0.15		70
			550		1.0		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	9.0	0.10	0.22	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	9.0	0.10	0.20	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	9.0	0.08	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	9.0	0.08	0.20	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	9.0	0.08	0.20	130	210
			Treated	0.5	9.0	0.08	0.20	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	9.0	0.10	0.25	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	9.0	0.10	0.22	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.08	0.15	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.08	0.18	35	60
		T40					0.15	28	40

A P M T

Shape
80° Diamond



Clearance Angle
15°



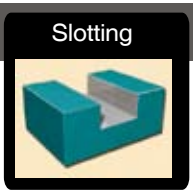
Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

Insert Type
Screw Down Clamping
no chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
APMT 0903 PDTR	LT 30	9	3,18	90º	15º	Right	M0000663	154
APMT 1135 PDTR	LT 30	11	3,52	90º	15º	Right	M0001133	155
APMT 1604 PDTR	LT 30	16	4,76	90º	15º	Right	M0001134	156

Surfacing Insert Lead angle 90°

Application Guide

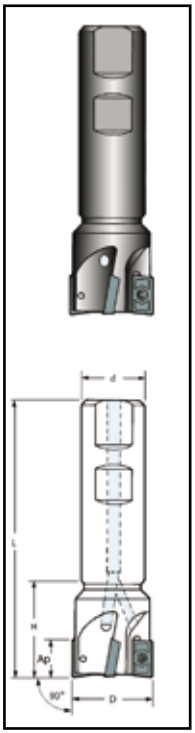


Multi purpose 90° milling inserts. Suitable for Roughing to Finishing - Slotting, Shoulder and Face milling operations.

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Catalog Nr.	Description	D	d	L	H	Ap	z	
M2001652	LT 755 W-W-D10/1	10	16	100	25	9	1	
M2001653	LT 755 W-W-D12/1	12	16	100	30	9	1	
M2001654	LT 755 W-W-D16/2	16	16	120	30	9	2	
M2001658	LT 755 W-WL-D16/2	16	16	160	30	9	2	
M2001655	LT 755 W-W-D20/2	20	20	120	35	9	2	
M2001659	LT 755 W-WL-D20/2	20	20	150	35	9	2	
M2001656	LT 755 W-W-D25/4	25	25	150	40	9	4	
M2001660	LT 755 W-WL-D25/4	25	25	200	40	9	4	
M2001657	LT 755 W-W-D32/4	32	25	150	40	9	4	
M2001661	LT 755 W-WL-D32/4	32	25	200	40	9	4	

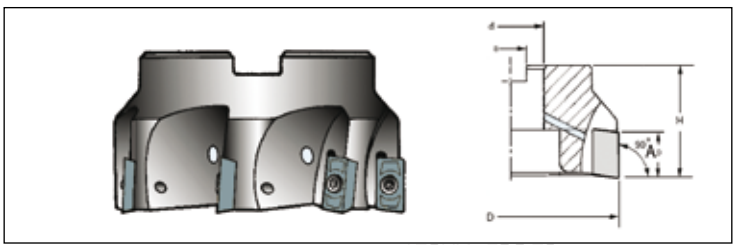


APMT 1604 PDTR

Catalog Nr.	Description	D	d	H	Ap	z	
M2001662	LT 760 W-W-D25/2	25	25	150	50	15	2
M2001665	LT 760 W-WL-D25/2	25	25	200	70	15	2
M2001663	LT 760 W-W-D32/2	32	32	200	100	15	3
M2001666	LT 760 W-WL-D32/3	32	32	250	100	15	3
M2001664	LT 760 W-W-D40/4	35	32	200	100	15	3
M2001667	LT 760 W-WL-D40/4	35	32	250	100	15	3

Catalog Nr.	Description	D	d	H	Ap	z
M2001668	LT 760 M-W-D50/5	50	22	40	15	5
M2001669	LT 760 M-W-D63/6	63	22	40	15	6
M2001670	LT 760 M-W-D80/7	80	27	50	15	7
M2001671	LT 760 M-W-D100/8	100	32	50	15	8
M2001672	LT 760 M-W-D125/9	125	40	63	15	9

W = With coolant Screw set: VT 40 Key set: CT 15



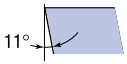
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	8.5	0.10	0.25	180	300
			180		8.5		0.25		260
			210		8.5		0.25		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	8.5	0.08	0.22	130	200
			230		8.5		0.22		180
			280	0.5	8.5	0.08	0.18	100	160
			320		8.5		0.18		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.08	0.18	90	130
			280		7.0		0.18		110
			320	0.5	7.0	0.08	0.16	60	100
			350		7.0		0.16		90
			400	0.5	4.0	0.10	0.16	40	80
			480		2.0		0.15		70
			550		1.0		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	8.5	0.10	0.22	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	8.5	0.10	0.20	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	7.0	0.08	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	8.5	0.08	0.22	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	8.5	0.08	0.18	130	210
			Treated	0.5	8.5	0.08	0.18	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	8.5	0.10	0.28	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	8.5	0.10	0.25	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.08	0.15	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.08	0.18	35	60
		T40					0.15	28	40

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	10.0	0.10	0.38	180	300
			180		10.0		0.25		260
			210		10.0		0.23		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	10.0	0.08	0.22	130	200
			230		10.0		0.22		180
			280	0.5	10.0	0.08	0.18	100	160
			320		10.0		0.18		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.08	0.18	90	130
			280		7.0		0.18		110
			320	0.5	7.0	0.08	0.16	60	100
			350		7.0		0.16		90
			400	0.5	4.0	0.10	0.16	40	80
			480		2.0		0.15		70
			550		1.0		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	10.0	0.10	0.22	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	10.0	0.10	0.20	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	7.0	0.08	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	10.0	0.08	0.20	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	7.0	0.08	0.20	130	210
			Treated	0.5	7.0	0.08	0.20	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	10.0	0.10	0.25	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	10.0	0.10	0.22	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.08	0.15	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.08	0.18	35	60
		T40					0.15	28	40

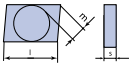
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	15.0	0.18	0.32	180	300
			180		15.0		0.32		260
			210		15.0		0.32		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	15.0	0.15	0.25	130	200
			230		15.0		0.25		180
			280	0.5	15.0	0.15	0.22	100	160
			320		15.0		0.22		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	12.0	0.12	0.22	90	130
			280		12.0		0.22		110
			320	0.5	12.0	0.12	0.18	60	100
			350		12.0		0.18		90
			400	0.5	5.0	0.10	0.18	40	80
			480		3.0		0.16		70
			550		1.5		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	15.0	0.15	0.25	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	15.0	0.12	0.22	120	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	12.0	0.12	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	15.0	0.15	0.25	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	15.0	0.15	0.25	130	210
			Treated	0.5	15.0	0.15	0.20	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	15.0	0.18	0.32	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	15.0	0.15	0.28	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	12.0	0.12	0.18	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	12.0	0.12	0.20	35	60
		T40					0.18	28	40

L D M T

Shape
80° Diamond



Clearance Angle
15°



Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

Insert Type
Screw Down Clamping
no chip breaker

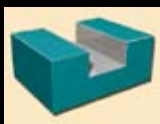
Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
LDMT 1504 PDTR	LT 30	15	4,76	90º	15º	Right	M0001772	157

Surfacing Insert Lead angle 90°

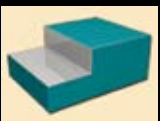
*Availability is subject to special agreement

Application Guide

Slotting



Shoulder Milling



Surfacing

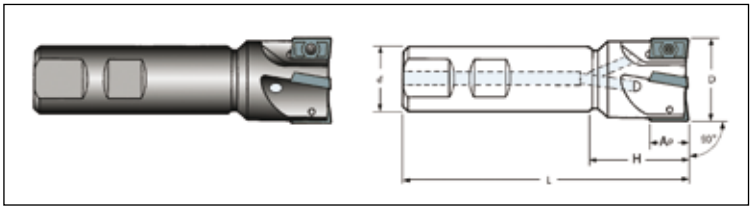
Multi purpose 90° milling insert. Suitable for Roughing to Finishing - Slotting, Shoulder and Face milling operations.

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

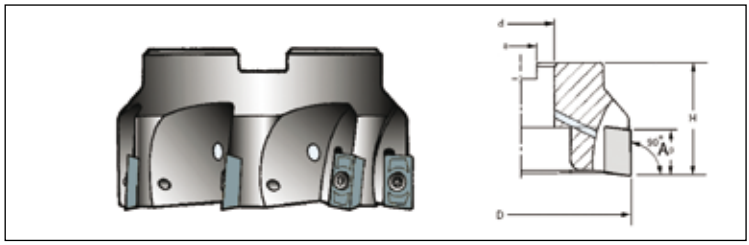
Catalog Nr.	Description	D	d	L	H	Ap	z	
M2001822	LT 770 W-W-D25/2	25	25	100	44	15	2	
M2001823	LT 770 W-W-D32/3	32	32	110	50	15	3	
M2001824	LT 770 W-W-D40/4	40	32	115	45	15	4	
M2001825	LT 770 W-WL-D25/2	25	25	150	44	15	2	
M2001826	LT 770 W-WL-D32/3	32	32	150	50	15	3	

Screw set: VT 40 Key set: CT 15



Catalog Nr.	Description	D	d	H	Ap	z
M2001827	LT 770 M-W-D40	40	16	40	15	4
M2001828	LT 770 M-W-D50	50	22	40	15	5
M2001829	LT 770 M-W-D63	63	22	40	15	6
M2001846	LT 770 M-W-D80	80	27	50	15	7
M2001830	LT 770 M-W-D100	100	32	50	15	8
M2001831	LT 770 M-W-D125	125	40	63	15	9
M2001832	LT 770 M-W-D160	160	50	63	15	9

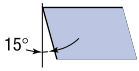
W = With coolant Screw set: VT 50 Key set: CT 15



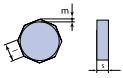
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	14.0	0.10	0.38	180	300
			180		14.0		0.25		260
			210		14.0		0.23		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	14.0	0.08	0.22	130	200
			230		14.0		0.22		180
			280	0.5	14.0	0.08	0.18	100	160
			320		14.0		0.18		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.08	0.18	90	130
			280		7.0		0.18		110
			320	0.5	7.0	0.08	0.16	60	100
			350		7.0		0.16		90
			400	0.5	4.0	0.10	0.16	40	80
			480		2.0		0.15		70
			550		1.0		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	14.0	0.10	0.22	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	14.0	0.10	0.20	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	7.0	0.08	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	7.0	0.08	0.20	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	7.0	0.08	0.20	130	210
			Treated	0.5	7.0	0.08	0.20	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	14.0	0.10	0.25	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	14.0	0.10	0.22	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.08	0.15	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.08	0.18	35	60
		T40					0.15	28	40

O D M T

Shape
Octagonal



Clearance Angle
15°



Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

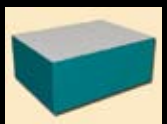
Insert Type
Screw down clamping
Chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
ODMT 0504 ZZTR	LT 30	5	4,76	0,8		Right	M0000664	160
ODMT 060508 TN	LT 30	6	5,56	0,8		Right	M0001104	161

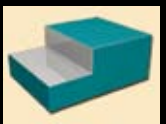
Surfacing Insert Lead angle 45°

Application Guide

Surfacing



Chamfering

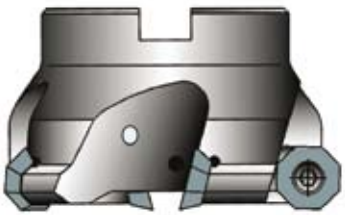


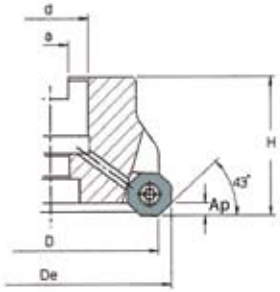
Multi purpose 45° milling inserts, with 8 cutting edges. Suitable for Roughing to Finishing - Face milling, Plunging and Ramping down operations.

Machining Recommendation Guide - Please see Pg. 8

Catalog Nr.	Description		D	De	L	Ap	H	z
M2000711	LT 820 M-D80	80	90	27	4	50	5	
M2000712	LT 820 M-D100	100	110	32	4	50	6	
M2000713	LT 820 M-D125	125	135	40	4	63	7	
M2000714	LT 820 M-D160	160	170	40	4	63	9	

Screw set: C O6710 Key set: CT 15



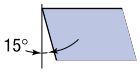


Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	3.5	0.23	0.48	190	350
			180		3.5		0.48		300
			210		3.5		0.48		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	3.5	0.28	0.42	150	240
			230		3.5		0.42		210
			280	0.5	3.5	0.28	0.35	130	190
			320		3.5		0.35		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	3.5	0.15	0.32	90	150
			280		3.5		0.32		130
			320	0.5	3.5	0.15	0.28	60	110
			350		3.5		0.28		90
			400	0.5	3.0	0.14	0.25	40	80
			480		2.0		0.22		70
			550		1.0		0.20		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	3.5	0.22	0.35	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	3.5	0.18	0.32	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	3.5	0.15	0.28	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	3.5	0.18	0.35	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	3.5	0.18	0.35	150	230
			Treated	0.5	3.5	0.18	0.28	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	3.5	0.20	0.50	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	3.5	0.18	0.48	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3.0	0.14	0.25	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	3.5	0.15	0.30	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	3.5	0.15	0.35	35	60
		T40					0.28	28	40

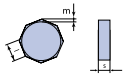
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	4.0	0.23	0.52	190	350
			180		4.0		0.52		300
			210		4.0		0.52		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	4.0	0.20	0.48	150	240
			230		4.0		0.48		210
			280	0.5	4.0	0.20	0.45	130	190
			320		4.0		0.45		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	4.0	0.15	0.42	90	150
			280		4.0		0.42		130
			320	0.5	4.0	0.15	0.38	60	110
			350		4.0		0.38		90
			400	0.5	3.0	0.14	0.25	40	80
			480		2.0		0.22		70
			550		1.0		0.20		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	4.0	0.18	0.35	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	4.0	0.18	0.32	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	4.0	0.15	0.28	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	4.0	0.21	0.38	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	4.0	0.21	0.38	150	230
			Treated	0.5	4.0	0.21	0.32	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	4.0	0.22	0.50	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	4.0	0.18	0.45	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3.0	0.14	0.25	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	4.0	0.16	0.32	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	4.0	0.18	0.32	35	60
		T40					0.28	28	40

O D M W

Shape
Octagonal



Clearance Angle
15°



Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

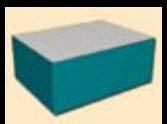
Insert Type
Screw down clamping
Chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
ODMW 060508 TN	LT 30	6	5,56	0,8		Right	M0000451	164

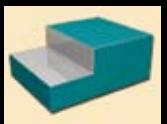
Surfacing Insert Lead angle 45°

Application Guide

Surfacing



Chamfering



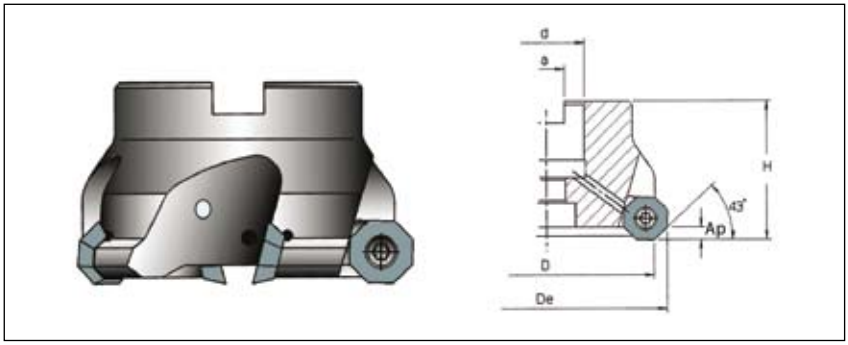
Multi purpose 45° milling insert, with 8 cutting edges and flat rake surface. Designed for materials that generate short chips. Suitable for Roughing to Finishing - Face milling, Plunging and Ramping down operations.

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Catalog Nr.	Description		D	De	L	Ap	H	z
M2000711	LT 820 M-D80	80	90	27	4	50	5
M2000712	LT 820 M-D100	100	110	32	4	50	6
M2000713	LT 820 M-D125	125	135	40	4	63	7
M2000714	LT 820 M-D160	160	170	40	4	63	9

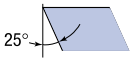
Screw set: C O6710 Key set: CT 15



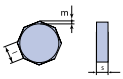
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	4	0.28	0.52	190	350
			180		4		0.52		300
			210		4		0.52		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	4	0.25	0.48	150	240
			230		4		0.48		210
			280	0.5	4	0.25	0.42	130	190
			320		4		0.42		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	4	0.23	0.38	90	150
			280		4		0.38		130
			320	0.5	4	0.23	0.32	60	110
			350		4		0.32		90
			400	0.5	3	0.14	0.25	40	80
			480		2		0.22		70
			550		1		0.2		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	ODMW inserts are not recommended for 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						
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed						
			Treated						
Grey Cast Iron	9	GG 20	140 to 230	0.5	4	0.25	0.6	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	4	0.23	0.5	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3	0.14	0.25	30	60
Nickel Based Alloys	11	Inconel 625	--------	ODMW inserts are not recommended for Exotic materials					
		Inconel 718							
		Hastelloy C							
Titanium Based Alloys	12	TiAl 6 V4	--------						
		T40							

O F E R

Shape
Octagonal



Clearance Angle
25°



Tolerance
l ± 0.025 m ± 0.025
s ± 0.025

Insert Type
Screw down clamping with chip breaker

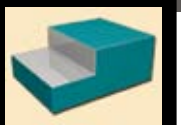
Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
OFER 070405 TN	LT 30	7	4,76	0,8		Right	M0000033	167

Surfacing Insert Lead angle 43°

Application Guide

Surfacing

Chamfering



Multi purpose 45° milling insert, with 8 cutting edges and flat rake surface. Suitable for Roughing to Finishing - Face milling, Plunging and Ramping down operations.

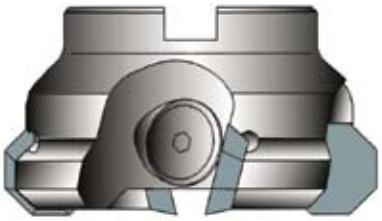
Machining Recommendation Guide - Please see Pg. 8

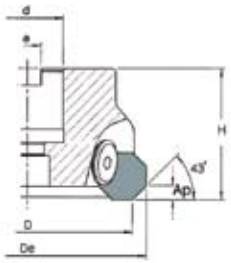
LAMINA TECHNOLOGIES

OFER 070405 TN

Catalog Nr.	Description	D	De	d	H	Ap	z
M2000508	LT 880 M-W-D63	63	73	22	40	5	4
M2000510	LT 880 M-W-D80	80	90	27	50	5	5
M2000511	LT 880 M-W-D100	100	110	32	50	5	6
M2000512	LT 880 M-W-D125	125	135	40	63	5	8
M2000513	LT 880 M-W-D160	160	170	40	63	5	10

W = With coolant Screw set: CVB 88 Key set: ET 4

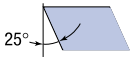




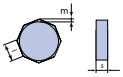
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	4.0	0.18	0.32	190	350
			180		4.0		0.32		300
			210		4.0		0.32		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	4.0	0.15	0.30	150	240
			230		4.0		0.30		210
			280	0.5	4.0	0.15	0.30	130	190
			320		4.0		0.30		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	4.0	0.12	0.25	90	150
			280		4.0		0.25		130
			320	0.5	4.0	0.12	0.25	60	110
			350		4.0		0.25		90
			400	0.5	3.0	0.14	0.25	40	80
			480		2.0		0.22		70
			550		1.0		0.20		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	5.0	0.18	0.32	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	5.0	0.15	0.28	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	3.5	0.12	0.25	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	5.0	0.12	0.32	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	5.0	0.12	0.32	150	230
			Treated	0.5	5.0	0.12	0.25	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	5.0	0.15	0.40	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	5.0	0.12	0.32	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3.0	0.14	0.25	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	3.5	0.12	0.28	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	3.5	0.12	0.28	35	60
		T40						28	40

O F M T

Shape
Octagonal



Clearance Angle
15°



Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

Insert Type
Screw down clamping
Chip breaker

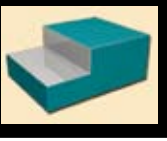
Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
OFMT 05T305 TN	LT 30	5	3,97	0,8		Right	M0000591	170
OFMT 050405 TR	LT 30	5	4,76	0,8		Right	M0000034	170
OFMT 070405 TN	LT 30	7	4,76	0,8		Right	M0000592	171

Surfacing Insert Lead angle 43°

Application Guide

Surfacing

Chamfering



Multi purpose 45° milling inserts, with 8 cutting edges and flat rake surface. Suitable for Roughing to Finishing - Face milling, Plunging and Ramping down operations.

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

OFMT 05T305 TN

Catalog Nr.	Description	D	De	d	H	Ap	z
M2000501	LT 800 M-W-D32	32	39	16	40	3,5	3
M2000502	LT 800 M-W-D40	40	47	16	40	3,5	3
M2000503	LT 800 M-W-D50	50	57	22	40	3,5	4
M2000504	LT 800 M-W-D63	63	70	22	40	3,5	5
M2000505	LT 800 M-W-D80	80	87	27	50	3,5	6
M2000506	LT 800 M-W-D100	100	107	32	50	3,5	7
M2000507	LT 800 M-W-D125	125	132	40	63	3,5	8

OFMT 050405 TR

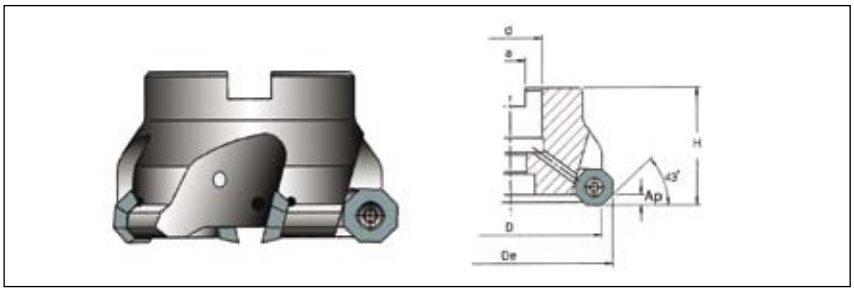
Catalog Nr.	Description	D	De	d	H	Ap	z
M2001602	LT 805 M-W-D32	32	39	16	40	3,5	3
M2001603	LT 805 M-W-D40	40	47	16	40	3,5	3
M2001604	LT 805 M-W-D50	50	57	22	40	3,5	4
M2001605	LT 805 M-W-D63	63	70	22	40	3,5	5
M2001607	LT 805 M-W-D80	80	87	27	50	3,5	6
M2001608	LT 805 M-W-D100	100	107	32	50	3,5	7
M2001609	LT 805 M-W-D125	125	132	40	63	3,5	8

OFMT 070405 TN

Catalog Nr.	Description	D	De	d	H	Ap	z
M2000707	LT 810 M-D80	80	92	27	50	5	6
M2000708	LT 810 M-D100	100	112	32	50	5	7
M2000709	LT 810 M-D125	125	137	40	63	5	8

W = With coolant

Screw set: C O6710 Key set: CT 15



OFMT 05T305 TN & OFMT 050405 TR

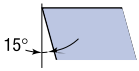
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	3.5	0.23	0.48	190	350
			180		3.5		0.48		300
			210		3.5		0.48		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	3.5	0.28	0.42	150	240
			230		3.5		0.42		210
			280	0.5	3.5	0.28	0.35	130	190
			320		3.5		0.35		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	3.5	0.15	0.32	90	150
			280		3.5		0.32		130
			320	0.5	3.5	0.15	0.28	60	110
			350		3.5		0.28		90
			400	0.5	3.0	0.14	0.25	40	80
			480		2.0		0.22		70
			550		1.0		0.20		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	3.5	0.22	0.35	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	3.5	0.18	0.32	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	3.5	0.15	0.28	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	3.5	0.18	0.35	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	3.5	0.18	0.35	150	230
			Treated	0.5	3.5	0.18	0.28	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	3.5	0.20	0.50	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	3.5	0.18	0.48	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3.0	0.14	0.25	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	3.5	0.15	0.30	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	3.5	0.15	0.35	35	60
		T40					0.28	28	40

LAMINA TECHNOLOGIES

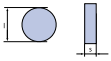
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	4.5	0.23	0.48	190	350
			180		4.5		0.48		300
			210		4.5		0.48		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	4.5	0.28	0.42	150	240
			230		4.5		0.42		210
			280	0.5	4.5	0.28	0.35	130	190
			320		4.5		0.35		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	4.0	0.15	0.32	90	150
			280		4.0		0.32		130
			320	0.5	4.0	0.15	0.28	60	110
			350		4.0		0.28		90
			400	0.5	3.0	0.14	0.25	40	80
			480		2.0		0.22		70
			550		1.0		0.20		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	4.5	0.22	0.35	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	4.5	0.18	0.32	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	4.5	0.15	0.28	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	4.5	0.18	0.35	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	4.5	0.18	0.35	150	230
			Treated	0.5	4.5	0.18	0.28	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	4.5	0.20	0.50	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	4.0	0.18	0.48	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3.0	0.14	0.25	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	4.0	0.15	0.30	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	4.0	0.15	0.35	35	60
		T40					0.28	28	40

R D M T

Shape
Round



Clearance Angle
15º



Tolerance
ll ± 0.05
s ± 0.13

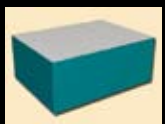
Insert Type
Screw down clamping chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
RDMT 0602 MO	LT 30	6	2,38	3		Neutral	M0000035	175
RDMT 0803 MO	LT 30	8	3,18	4		Neutral	M0000037	176
RDMT 1003 MO	LT 30	10	3,18	5		Neutral	M0001875	177
RDMT 10T3 MO	LT 30	10	3,97	5		Neutral	M0000038	177
RDMT 1204 MO	LT 30	12	4,76	6		Neutral	M0000039	178
RDMT 12T3 MO	LT 30	12	3,97	6		Neutral	M0001876	178

Surfacing Insert Lead angle 90°

Application Guide

Surfacing



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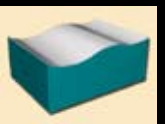


Mould-Milling

Multi purpose Round inserts. Suitable for Roughing to Semi-finishing Copying of 3D surfaces and Face milling operations.

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

RDMT 0602 MO

Catalog Nr.	Description	D	H	L	Ap	z
M2000676	LT 060 W-W-D16	16	25	150	3	2
M2000677	LT 060 W-W-D20	20	60	180	3	3
M2000678	LT 060 W-W-D25	25	80	180	3	3

RDMT 0803 MO

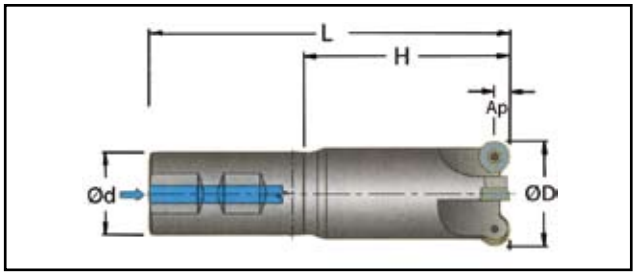
Catalog Nr.	Description	D	H	L	Ap	z
M2000679	LT 080 W-W-D20	20	42	180	4	2
M2000680	LT 080 W-W-D25	25	60	180	4	3
M2000681	LT 080 W-W-D32	32	80	180	4	3

RDMT 1003 MO

Catalog Nr.	Description	D	H	L	Ap	z
M2002085	LT 105 W-W-D20	20	42	180	4	2
M2002086	LT 105 W-W-D25	25	60	180	4	3
M2002087	LT 105 W-W-D32	32	80	180	4	3

RDMT 10T3 MO

Catalog Nr.	Description	D	H	L	Ap	z
M2000683	LT 100 W-W-D20	20	80	180	5	2
M2000684	LT 100 W-W-D25	25	80	180	5	3
M2000685	LT 100 W-W-D32	32	105	212	5	3



RDMT 1204 M0

Catalog Nr.	Description	D	H	L	Ap	z
M2000687	LT 120 W-W-D40	40	110	170	6	4

Catalog Nr.	Description	D1	D2	d	H	Ap	z
M2000691	LT 120 M-W-D40	40	28	16	40	6	4
M2000689	LT 120 M-W-D63	63	51	27	40	6	5
M2000690	LT 120 M-W-D80	80	68	32	50	6	6
M2000688	LT 120 M-W-D100	100	88	40	50	6	7

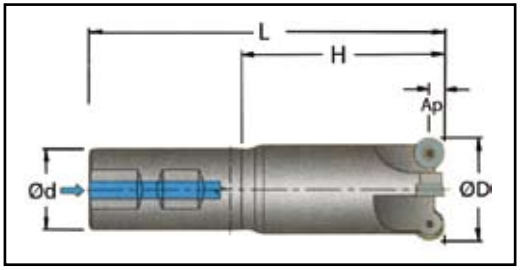
W = With coolant

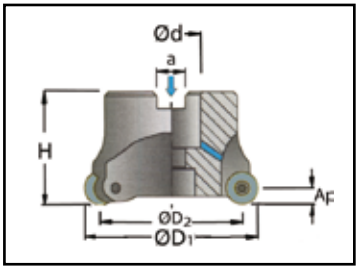
RDMT 12T3 M0

Catalog Nr.	Description	D	H	L	Ap	z
M2002088	LT 125 W-W-D40	40	110	170	6	4

Catalog Nr.	Description	D1	D2	d	H	Ap	z
M2002089	LT 125 M-W-D40	40	28	16	40	6	4
M2002090	LT 125 M-W-D63	63	51	27	40	6	5
M2002091	LT 125 M-W-D80	80	68	32	50	6	6
M2002093	LT 125 M-W-D100	100	88	40	50	6	7

W = With coolant





Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	2.0	0.18	0.40	190	350
			180		2.0		0.35		300
			210		1.5		0.32		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	2.0	0.15	0.40	150	240
			230		2.0		0.32		210
			280	0.5	2.0	0.13	0.30	130	190
			320		1.5		0.25		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	2.0	0.13	0.32	90	150
			280		2.0		0.30		130
			320	0.5	1.5	0.13	0.27	60	110
			350		1.5		0.25		90
			400	0.2	0.8	0.12	0.22	40	80
			480		0.5		0.20		70
			550		0.5		0.18		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	2.0	0.14	0.28	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	2.0	0.13	0.25	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	1.5	0.13	0.22	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	2.0	0.15	0.25	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	2.0	0.15	0.25	150	230
			Treated	0.5	2.0	0.15	0.25	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	2.0	0.11	0.45	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	2.0	0.11	0.35	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.2	0.5	0.11	0.20	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	1.5	0.13	0.23	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	1.5	0.13	0.25	35	60
		T40					0.18	28	40

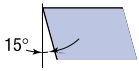
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	3.0	0.20	0.50	190	350
			180		2.5		0.47		300
			210		1.5		0.43		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	3.0	0.18	0.45	150	240
			230		2.5		0.40		210
			280	0.5	2.0	0.15	0.37	130	190
			320		1.5		0.35		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	2.0	0.13	0.40	90	150
			280		2.0		0.37		130
			320	0.5	1.5	0.13	0.35	60	110
			350		1.5		0.32		90
			400	0.2	1.0	0.12	0.28	40	80
			480		0.5		0.25		70
			550		0.5		0.22		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	3.0	0.14	0.35	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	2.5	0.13	0.32	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	2.0	0.13	0.30	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	2.5	0.15	0.30	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	2.5	0.15	0.30	150	230
			Treated	0.5	2.5	0.15	0.30	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	3.0	0.11	0.50	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	2.5	0.11	0.45	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.2	0.5	0.12	0.25	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	2.0	0.13	0.27	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	2.0	0.13	0.32	35	60
		T40					0.25	28	40

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	3.0	0.23	0.58	190	350
			180		2.5		0.52		300
			210		1.5		0.45		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	3.0	0.21	0.52	150	240
			230		2.5		0.47		210
			280	0.5	2.0	0.20	0.43	130	190
			320		1.5		0.40		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	2.0	0.17	0.47	90	150
			280		2.0		0.43		130
			320	0.5	1.5	0.17	0.40	60	110
			350		1.5		0.38		90
			400	0.2	1.0	0.12	0.32	40	80
			480		0.5		0.28		70
			550		0.5		0.25		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	3.0	0.17	0.38	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	2.5	0.15	0.35	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	2.0	0.13	0.32	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	2.5	0.15	0.35	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	2.5	0.15	0.35	150	230
			Treated	0.5	2.5	0.15	0.35	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	3.0	0.18	0.60	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	2.5	0.18	0.50	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.2	0.5	0.12	0.32	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	2.0	0.15	0.32	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	2.0	0.17	0.35	35	60
		T40					0.27	28	40

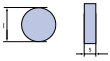
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	3.0	0.27	0.70	190	350
			180		2.5		0.65		300
			210		1.5		0.50		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	3.0	0.25	0.65	150	240
			230		2.5		0.57		210
			280	0.5	2.0	0.23	0.52	130	190
			320		1.5		0.50		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	2.0	0.20	0.57	90	150
			280		2.0		0.52		130
			320	0.5	1.5	0.20	0.50	60	110
			350		1.5		0.47		90
			400	0.5	1.5	0.18	0.38	40	80
			480		1.0		0.34		70
			550		0.5		0.30		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	3.0	0.20	0.45	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	2.5	0.17	0.40	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	2.0	0.15	0.37	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	2.5	0.17	0.40	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	2.5	0.17	0.40	150	230
			Treated	0.5	2.5	0.17	0.40	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	3.0	0.20	0.80	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	2.5	0.20	0.60	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.3	1.0	0.16	0.30	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	2.0	0.17	0.35	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	2.0	0.20	0.38	35	60
		T40					0.30	28	40

R D M W

Shape
Round



Clearance Angle
15°



Tolerance
ll ± 0.05
s ± 0.13

Insert Type
Screw down clamping
chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
RDMW 10T3 MO	LT 30	10	3,97	5		Neutral	M0001550	181

Surfacing Insert Lead angle 90°

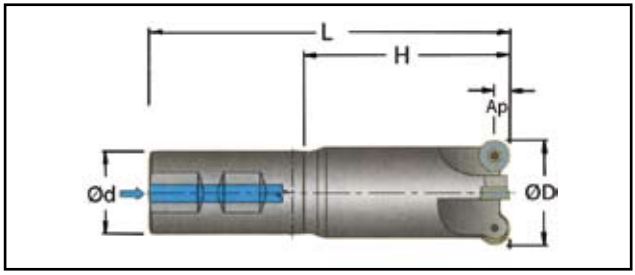
Application Guide

Multi purpose Round insert, with flat rake surface, designed for hard materials. Suitable for Roughing to Semi-finishing Copying of 3D surfaces and Face milling operations.

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

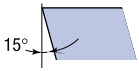
Catalog Nr.	Description	D	H	L	Ap	z
M2000683	LT 100 W-W-D20	20	80	180	5	2
M2000684	LT 100 W-W-D25	25	80	180	5	3
M2000685	LT 100 W-W-D32	32	105	212	5	3



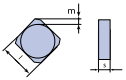
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	3	0.23	0.58	190	350
			180		2.5		0.52		300
			210		1.5		0.45		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	3	0.21	0.52	150	240
			230		2.5		0.47		210
			280	0.5	2	0.2	0.43	130	190
			320		1.5		0.4		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	2	0.2	0.47	90	150
			280		2		0.43		130
			320	0.5	1.5	0.2	0.4	60	110
			350		1.5		0.38		90
			400	0.3	1	0.2	0.36	40	80
			480		0.5		0.35		70
			550		0.5		0.3		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	RDMW inserts are not recommended for 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						
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed						
			Treated						
Grey Cast Iron	9	GG 20	140 to 230	0.5	3	0.18	0.6	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	2.5	0.18	0.5	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.2	0.5	0.12	0.32	30	60
Nickel Based Alloys	11	Inconel 625	--------	RDMW inserts are not recommended for Exotic materials					
		Inconel 718							
		Hastelloy C							
Titanium Based Alloys	12	TiAl 6 V4	--------						
		T40							

S D K T

Shape
Square 90°



Clearance Angle
15º



Tolerance
l ± 0.08 m ± 0.013
s ± 0.025

Insert Type
Screw down clamping chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
SDKT 1204 AETN	LT 30	12	4,76	45º	20º	Neutral	M0000171	184

Surfacing Insert Lead angle 45°

Application Guide

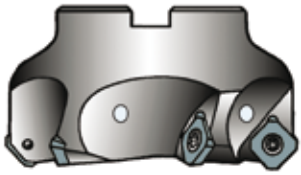
Multi purpose 45° milling insert, designed for high depths of cut. Suitable for Roughing to Finishing - Face, Plunging and Ramping down milling operations.

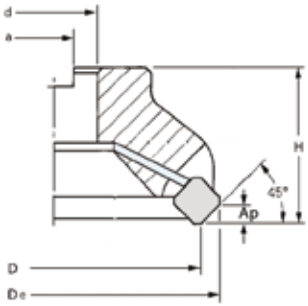
Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Catalog Nr.	Description	D	de	d	H	Ap	z
M2000553	LT 670 M-W-D50	50	63	22	48	6	4
M2000555	LT 670 M-W-D63	63	76	22	48	6	5
M2000556	LT 670 M-W-D80	80	93	27	50	6	6
M2000557	LT 670 M-W-D100	100	113	32	55	6	6
M2000558	LT 670 M-W-D125	125	138	40	63	6	7
M2000559	LT 670 M-W-D160	160	173	40	63	6	8

W = With coolant Screw set: VT 45 P Key set: CT 20

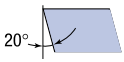




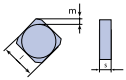
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	7.0	0.20	0.48	190	350
			180		7.0		0.48		300
			210		7.0		0.48		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	7.0	0.18	0.45	150	240
			230		7.0		0.45		210
			280	0.5	7.0	0.18	0.40	130	190
			320		7.0		0.40		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.16	0.42	90	150
			280		7.0		0.42		130
			320	0.5	7.0	0.16	0.38	60	110
			350		7.0		0.38		90
			400	0.3	5.0	0.14	0.35	40	80
			480		3.0		0.32		70
			550		1.5		0.28		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	7.0	0.18	0.35	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	5.0	0.15	0.32	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	5.0	0.12	0.28	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	7.0	0.18	0.35	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	7.0	0.15	0.35	150	230
			Treated	0.5	3.0	0.15	0.28	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	7.0	0.18	0.48	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	7.0	0.15	0.42	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.3	3.0	0.14	0.32	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.15	0.28	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.18	0.32	35	60
		T40					0.28	28	40

S E K N

Shape
Square 90°



Clearance Angle
20°



Tolerance
l ± 0.08 m ± 0.013
s ± 0.025

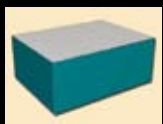
Insert Type
Clamping
No chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
SEKN 1203 AFTN	LT 30	12	3,18	45°	25°	Neutral	M0000041	187
SEKN 1204 AFTN	LT 30	12	4,76	45°	25°	Neutral	M0000042	187
SEKN 1504 AFTN	LT 30	15	4,76	45°	25°	Neutral	M0000450	188

Surfacing Insert Lead angle 45°

Application Guide

Surfacing



Chamfering

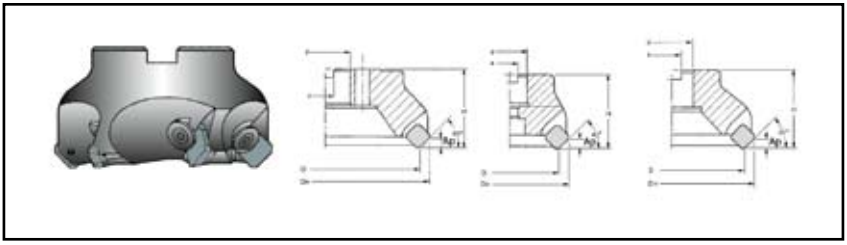
Multi purpose 45° milling inserts, designed for high depths of cut. Suitable for Roughing to Finishing - Face, Plunging and Ramping down milling operations.

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Catalog Nr.	Description	D	De	d	H	Ap	z
M2000563	LT 550 M-D50	50	63	22	48	6	4
M2000564	LT 550 M-D63	63	76	22	48	6	5
M2000565	LT 550 M-D80	80	93	27	50	6	6
M2000566	LT 550 M-D100	100	113	32	50	6	6
M2000567	LT 550 M-D125	125	138	40	63	6	7
M2000568	LT 550 M-D160	160	173	40	63	6	7
M2000569	LT 550 M-D200	200	213	60	63	6	10
M2000570	LT 550 M-D250	250	263	60	63	6	13

Screw set: CVB 55 Key set: ET 4

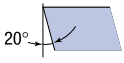


Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	7.0	0.20	0.32	190	350
			180		7.0		0.32		300
			210		7.0		0.32		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	7.0	0.20	0.30	150	240
			230		7.0		0.30		210
			280	0.5	7.0	0.20	0.30	130	190
			320		7.0		0.30		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.15	0.25	90	150
			280		7.0		0.25		130
			320	0.5	7.0	0.15	0.25	60	110
			350		7.0		0.25		90
			400	0.5	5.0	0.12	0.24	40	80
			480		3.0		0.22		70
			550		1.5		0.20		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	7.0	0.18	0.32	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	5.0	0.15	0.28	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	5.0	0.12	0.25	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	7.0	0.12	0.32	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	7.0	0.12	0.32	150	230
			Treated	0.5	5.0	0.12	0.28	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	7.0	0.15	0.40	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	7.0	0.12	0.32	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3.0	0.12	0.22	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.12	0.28	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.12	0.32	35	60
		T40					0.28	28	40

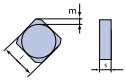
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	9.0	0.20	0.52	190	350
			180		9.0		0.52		300
			210		9.0		0.52		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	9.0	0.20	0.48	150	240
			230		9.0		0.48		210
			280	0.5	9.0	0.20	0.45	130	190
			320		9.0		0.45		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	9.0	0.15	0.42	90	150
			280		9.0		0.42		130
			320	0.5	9.0	0.15	0.38	60	110
			350		9.0		0.38		90
			400	0.5	5.0	0.12	0.32	40	80
			480		3.0		0.28		70
			550		1.5		0.26		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	7.0	0.25	0.35	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	7.0	0.23	0.32	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	7.0	0.18	0.28	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	9.0	0.23	0.38	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	9.0	0.18	0.38	150	230
			Treated	0.5	9.0	0.18	0.32	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	9.0	0.25	0.60	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	9.0	0.18	0.50	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3.0	0.12	0.28	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	7.0	0.18	0.32	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	7.0	0.18	0.32	35	60
		T40					0.28	28	40

S E K R

Shape
Square 90°



Clearance Angle
20°



Tolerance
l ± 0.08 m ± 0.013
s ± 0.025

Insert Type
Clamping
chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
SEKR 1203 AFTN	LT 30	12	3,18	45°	25°	Neutral	M0000043	191
SEKR 1204 AFTN	LT 30	12	4,76	45°	25°	Neutral	M0000044	191

Surfacing Insert Lead angle 45°

Application Guide

Surfacing

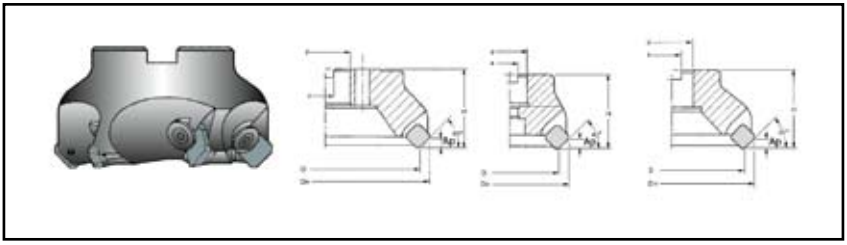
Chamfering

Multi purpose 45° milling inserts, designed for high depths of cut and materials that generate long chips. Suitable for Roughing to Finishing - Face, Plunging and Ramping down milling operations.

Machining Recommendation Guide - Please see Pg. 8

Catalog Nr.	Description	D	De	d	H	Ap	z
M2000563	LT 550 M-D50	50	63	22	48	6	4
M2000564	LT 550 M-D63	63	76	22	48	6	5
M2000565	LT 550 M-D80	80	93	27	50	6	6
M2000566	LT 550 M-D100	100	113	32	50	6	6
M2000567	LT 550 M-D125	125	138	40	63	6	7
M2000568	LT 550 M-D160	160	173	40	63	6	7
M2000569	LT 550 M-D200	200	213	60	63	6	10
M2000570	LT 550 M-D250	250	263	60	63	6	13

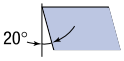
Screw set: CVB 55 Key set: ET 4



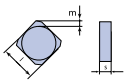
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	7.0	0.24	0.32	190	350
			180		7.0		0.32		300
			210		7.0		0.32		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	7.0	0.20	0.30	150	240
			230		7.0		0.30		210
			280	0.5	7.0	0.20	0.30	130	190
			320		7.0		0.30		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	5.0	0.15	0.25	90	150
			280		5.0		0.25		130
			320	0.5	5.0	0.15	0.25	60	110
			350		5.0		0.25		90
			400	0.5	5.0	0.12	0.24	40	80
			480		3.0		0.22		70
			550		1.5		0.20		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	7.0	0.18	0.32	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	5.0	0.15	0.28	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	5.0	0.12	0.25	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	7.0	0.18	0.32	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	7.0	0.12	0.32	150	230
			Treated	0.5	7.0	0.12	0.23	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	7.0	0.15	0.32	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	5.0	0.12	0.28	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3.0	0.12	0.22	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.12	0.23	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.12	0.28	35	60
		T40					0.28	28	40

S E K T

Shape
Square 90°



Clearance Angle
20º



Tolerance
l ± 0.08 m ± 0.013
s ± 0.025

Insert Type
Screw down clamping chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
SEKT 12T3 AGSN	LT 30	12	3,97	45º	30º	Neutral	M0000455	194
SEKT 1204 AFTN	LT 30	12	4,76	45º	25º	Neutral	M0000045	194

Surfacing Insert Lead angle 45°

Application Guide

Multi purpose 45° milling inserts, designed for high depths of cut. Suitable for Roughing to Finishing - Face, Plunging and Ramping down milling operations.

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

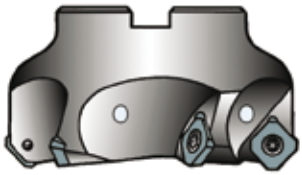
Catalog Nr.	Description	D	De	d	H	Ap	z
M2000546	LT 600 M-W-D40	40	53	16	40	6	3
M2000547	LT 600 M-W-D50	50	63	22	48	6	4
M2000548	LT 600 M-W-D63	63	76	22	48	6	5
M2000549	LT 600 M-W-D80	80	93	27	50	6	6
M2000550	LT 600 M-W-D100	100	113	32	50	6	6
M2000551	LT 600 M-W-D125	125	138	40	63	6	7
M2000552	LT 600 M-W-D160	160	173	40	63	6	8

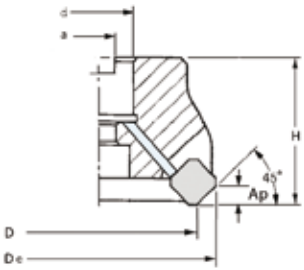
SEKT 12T3 AFTN

Catalog Nr.	Description	D	De	d	H	Ap	z
M2001431	LT 610 M-W-D40	40	53	16	40	6	3
M2001382	LT 610 M-W-D50	50	63	22	48	6	4
M2001383	LT 610 M-W-D63	63	76	22	48	6	5
M2001384	LT 610 M-W-D80	80	93	27	50	6	6
M2001432	LT 610 M-W-D100	100	113	32	50	6	6
M2001433	LT 610 M-W-D125	125	138	40	63	6	7
M2001434	LT 610 M-W-D160	160	173	40	63	6	8

W = With coolant

Screw set: VT 50 Key set: CT 20

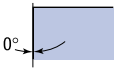




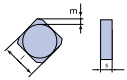
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	7.0	0.20	0.48	190	350
			180		7.0		0.48		300
			210		7.0		0.48		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	7.0	0.18	0.45	150	240
			230		7.0		0.45		210
			280	0.5	7.0	0.18	0.40	130	190
			320		7.0		0.40		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.16	0.42	90	150
			280		7.0		0.42		130
			320	0.5	7.0	0.16	0.38	60	110
			350		7.0		0.38		90
			400	0.3	5.0	0.14	0.35	40	80
			480		3.0		0.32		70
			550		1.5		0.28		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	7.0	0.18	0.35	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	5.0	0.15	0.32	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	5.0	0.12	0.28	70	150
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	7.0	0.18	0.35	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	7.0	0.15	0.35	150	230
			Treated	0.5	3.0	0.15	0.28	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	7.0	0.18	0.48	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	7.0	0.15	0.42	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.3	3.0	0.14	0.32	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.15	0.28	25	35
		Inconel 718						28	40
		Hastelloy C						40	60
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.18	0.32	35	60
		T40					0.28	28	40

S N K X

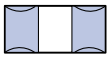
Shape
Square 90°



Clearance Angle
0° No rake



Tolerance
l ± 0.08 m ± 0.013
s ± 0.025



Insert Type
Pin / Top clamp
Double sided

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
SNKX 09T3-90°	LT 30	09	3,18	90°	25°	Neutral	M0001986	197
SNKX 09T3-45°	LT 30	09	3,18	45°	25°	Neutral	M0001984	198

Application Guide

Exclusive and unique design insert with 8 cutting edges for 45° and true 90°. Suitable for general purpose milling including Slotting, Square shoulder, Facing and Ramping down operations.

Machining Recommendation Guide - Please see Pg. 8

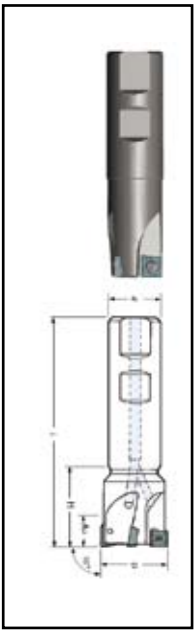
LAMINA TECHNOLOGIES

SNKX 09T3-90°

Catalog Nr.	Description	D	d	L	H	Ap	z
M2001987	LT 990 W-D25/3	25	25	100	46	5	3
M2002070	LT 990 W-D32/4	32	32	110	50	5	4

Catalog Nr.	Description	D	d	H	Ap	z
M2002072	LT 990 M-W-D40/5	40	16	40	5	5
M2002073	LT 990 M-W-D50/6	50	22	40	5	6
M2002074	LT 990 M-W-D63/8	63	22	40	5	8

W = With coolant Screw set: VT 25 Key set: BT 08

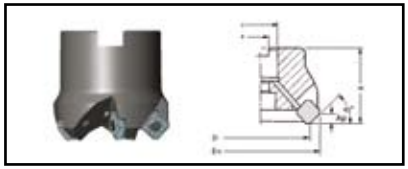


SNKX 09T3-45°

Catalog Nr.	Description	D	d	L	H	Ap	z
M2002075	LT 945 W-D25/3	25	25	100	46	5	3
M2002076	LT 945 W-D32/4	32	32	110	50	5	4

Catalog Nr.	Description	D	d	H	Ap	z
M2001988	LT 945 M-W-D40/5	40	16	40	5	5
M2002077	LT 945 M-W-D50/6	50	22	40	5	6
M2002078	LT 945 M-W-D63/8	63	22	40	5	8

W = With coolant Screw set: VT 25 Key set: BT 08



Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	1.5	0.10	0.25	180	300
			180		1.5		0.25		260
			210		1.5		0.25		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	1.5	0.08	0.22	130	200
			230		3.0		0.22		180
			280	0.5	3.0	0.08	0.18	100	160
			320		3.0		0.18		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	3.0	0.08	0.18	90	130
			280		3.0		0.18		110
			320	0.5	3.0	0.08	0.16	60	100
			350		3.0		0.16		90
			400	0.5	2.0	0.10	0.16	40	80
			480		1.5		0.15		70
			550		1.0		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	1.5	0.10	0.22	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	1.5	0.10	0.20	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	1.5	0.08	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	1.5	0.08	0.22	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	1.5	0.08	0.18	130	210
			Treated	0.5	1.5	0.08	0.18	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	3.0	0.10	0.28	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	3.0	0.10	0.25	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	1.5	0.08	0.15	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	1.5	0.08	0.18	35	60
		T40					0.15	28	40

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	3.0	0.14	0.30	180	300
			180		3.0		0.30		260
			210		3.0		0.30		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	3.0	0.10	0.28	130	200
			230		3.0		0.28		180
			280	0.5	3.0	0.10	0.26	100	160
			320		3.0		0.26		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	3.0	0.10	0.26	90	130
			280		3.0		0.26		110
			320	0.5	3.0	0.10	0.23	60	100
			350		3.0		0.23		90
			400	0.5	2.0	0.14	0.23	40	80
			480		1.5		0.21		70
			550		1.0		0.20		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	3.0	0.14	0.30	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	3.0	0.14	0.28	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	3.0	0.10	0.26	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	3.0	0.10	0.30	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	3.0	0.10	0.26	130	210
			Treated	0.5	3.0	0.10	0.26	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	3.0	0.14	0.32	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	3.0	0.14	0.30	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.14	0.20	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	3.0	0.10	0.21	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	3.0	0.10	0.26	35	60
		T40					0.21	28	40

S P K N

Shape
Square 90°

Clearance Angle
20º

Tolerance
l ± 0.08 m ± 0.013
s ± 0.025

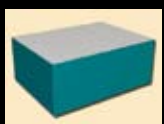
Insert Type
Clamping
chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
SPKN 1203 EDTR	LT 30	12	3,18	75º	15º	Right	M0000046	201
SPKN 1204 EDTR	LT 30	12	4,76	75º	15º	Right	M0000047	201
SPKN 1504 EDTR	LT 30	15	4,76	75º	15º	Right	M0001673	202

Surfacing Insert Lead angle 75°

Application Guide

Surfacing



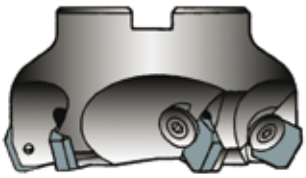
SPKN

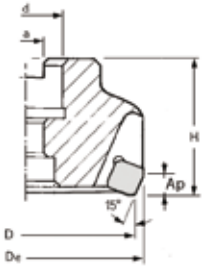
Square inserts with 75° lead angle, designed for high depths of cut. Suitable for Roughing to Finishing Face milling operations.

Machining Recommendation Guide - Please see Pg. 8

Catalog Nr.	Description	D	De	d	H	Ap	z
M2000571	LT 750 M-D63	63	69	22	40	9	4
M2000572	LT 750 M-D80	80	86	27	50	9	5
M2000574	LT 750 M-D100	100	106	32	50	9	7
M2000575	LT 750 M-D125	125	131	40	63	9	8
M2000576	LT 750 M-D160	160	166	40	63	9	10
M2000577	LT 750 M-D200	200	206	60	63	9	12
M2000578	LT 750 M-D250	250	256	60	63	9	14

Screw set: CVB 55 Key set: ET 4



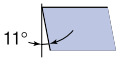


Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	7	0.18	0.38	190	350
			180		7		0.38		300
			210		7		0.38		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	7	0.15	0.35	150	240
			230		7		0.35		210
			280	0.5	7	0.15	0.32	130	190
			320		7		0.32		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7	0.12	0.32	90	150
			280		7		0.32		130
			320	0.5	7	0.12	0.28	60	110
			350		7		0.28		90
			400	0.5	5	0.1	0.22	40	80
			480		3		0.2		70
			550		1.5		0.28		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	SPKN inserts are not recommended for 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						
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed						
			Treated						
Grey Cast Iron	9	GG 20	140 to 230	0.5	7	0.15	0.38	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	7	0.12	0.3	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3	0.1	0.2	30	60
Nickel Based Alloys	11	Inconel 625	--------	SPKN inserts are not recommended for Exotic materials					
		Inconel 718							
		Hastelloy C							
Titanium Based Alloys	12	TiAl 6 V4	--------						
		T40							

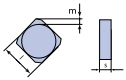
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	9	0.18	0.38	190	350
			180		9		0.38		300
			210		9		0.38		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	9	0.15	0.35	150	240
			230		9		0.35		210
			280	0.5	9	0.15	0.32	130	190
			320		9		0.32		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	9	0.12	0.32	90	150
			280		9		0.32		130
			320	0.5	9	0.12	0.28	60	110
			350		9		0.28		90
			400	0.5	6	0.1	0.22	40	80
			480		3		0.2		70
			550		1.5		0.28		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	SPKN inserts are not recommended for 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						
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed						
			Treated						
Grey Cast Iron	9	GG 20	140 to 230	0.5	9	0.15	0.38	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	9	0.12	0.3	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3	0.1	0.2	30	60
Nickel Based Alloys	11	Inconel 625	--------	SPKN inserts are not recommended for Exotic materials					
		Inconel 718							
		Hastelloy C							
Titanium Based Alloys	12	TiAl 6 V4	--------						
		T40							

S P K R

Shape
Square 90°



Clearance Angle
20º



Tolerance
l ± 0.08 m ± 0.013
s ± 0.025

Insert Type
Clamping
chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
SPKR 1203 EDTR	LT 30	12	3,18	75º	15º	Right	M0000048	205
SPKR 1204 EDTR	LT 30	12	4,76	75º	15º	Right	M0000049	205

Surfacing Insert Lead angle 75°

Application Guide

Surfacing

Square inserts, with 75° lead angle designed for high depths of cut and materials that generate long chips. Suitable for Roughing to Finishing Face milling operations.

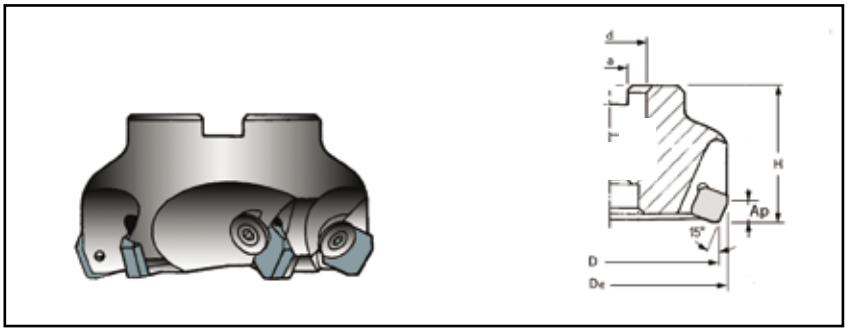
SPKR

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Catalog Nr.	Description	D	De	d	H	Ap	z
M2000571	LT 750 M-D63	63	69	22	40	9	4
M2000572	LT 750 M-D80	80	86	27	50	9	5
M2000574	LT 750 M-D100	100	106	32	50	9	7
M2000575	LT 750 M-D125	125	131	40	63	9	8
M2000576	LT 750 M-D160	160	166	40	63	9	10
M2000577	LT 750 M-D200	200	206	60	63	9	12
M2000578	LT 750 M-D250	250	256	60	63	9	14

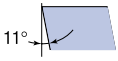
Screw set: CVB 55 Key set: ET 4



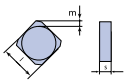
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	7.0	0.18	0.32	190	350
			180		7.0		0.32		300
			210		7.0		0.32		260
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	7.0	0.15	0.30	150	240
			230		7.0		0.30		210
			280	0.5	7.0	0.15	0.28	130	190
			320		7.0		0.28		170
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.12	0.28	90	150
			280		7.0		0.28		130
			320	0.5	7.0	0.12	0.25	60	110
			350		7.0		0.25		90
			400	0.5	5.0	0.10	0.22	40	80
			480		3.0		0.20		70
			550		1.5		0.28		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	0.5	0.18	0.25	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	0.5	0.15	0.20	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	10.0	0.12	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	5.0	0.12	0.25	150	210
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	5.0	0.12	0.25	150	230
			Treated	0.5	5.0	0.12	0.23	90	170
Grey Cast Iron	9	GG 20	140 to 230	0.5	7.0	0.15	0.32	170	300
		GG 25							250
		GG 30							210
Nodular Cast Iron	10	GGG 40	210	0.5	7.0	0.12	0.27	120	210
		GGG 50	260						170
		GGG 70	310						150
		G-X260NiCr42	450	0.5	3.0	0.10	0.20	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	10.0	0.12	0.18	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	10.0	0.12	0.20	35	60
		T40					0.18	28	40

S P M T

Shape
Square 90°



Clearance Angle
11º



Tolerance
l ± 0.08 m ± 0.013
s ± 0.025

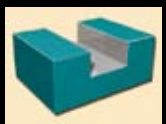
Insert Type
Clamping
No chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
SPMT 12T308	LT 30	12	3,18	75º		Nutral	M0001226	207

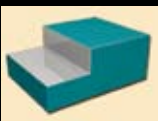
Surfacing Insert Lead angle 45°

Application Guide

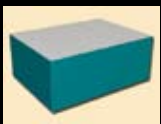
Slotting



Shoulder Milling



Surfacing



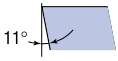
Multi purpose 90° milling insert with 4 cutting edges. Suitable for Roughing to Finishing - Slotting, Shoulder and Face milling operations.

Machining Recommendation Guide - Please see Pg. 8

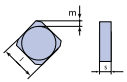
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	9.0	0.10	0.38	180	300
			180		9.0		0.25		260
			210		9.0		0.23		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	9.0	0.08	0.22	130	200
			230		9.0		0.22		180
			280	0.5	9.0	0.08	0.18	100	160
			320		9.0		0.18		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.08	0.18	90	130
			280		7.0		0.18		110
			320	0.5	7.0	0.08	0.16	60	100
			350		7.0		0.16		90
			400	0.5	4.0	0.10	0.16	40	80
			480		2.0		0.15		70
			550		1.0		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	9.0	0.10	0.22	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	9.0	0.10	0.20	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	9.0	0.08	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	9.0	0.08	0.20	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	9.0	0.08	0.20	130	210
			Treated	0.5	9.0	0.08	0.20	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	9.0	0.10	0.25	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	9.0	0.10	0.22	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	5.0	0.08	0.15	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	5.0	0.08	0.18	35	60
		T40					0.15	28	40

S P U N

Shape
Square 90°



Clearance Angle
11º



Tolerance
l ± 0.13 m ± 0.2
s ± 0.13

Insert Type
Clamping
No chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
SPUN 120308	LT 30	12	3,18	0,8		Neutral	M0000050	210

Application Guide

Surfacing

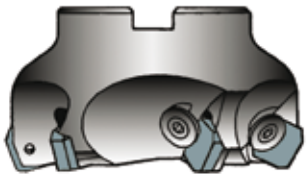
Chamfering

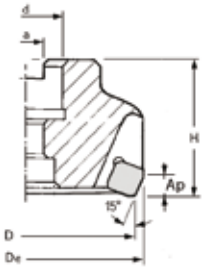
Multi purpose Square insert with corner radius and a flat rake surface. Use for face milling. Roughing to finishing.

Machining Recommendation Guide - Please see Pg. 8

Catalog Nr.	Description	D	De	d	H	Ap	z
M2000571	LT 750 M-D63	63	69	22	40	9	4
M2000572	LT 750 M-D80	80	86	27	50	9	5
M2000574	LT 750 M-D100	100	106	32	50	9	7
M2000575	LT 750 M-D125	125	131	40	63	9	8
M2000576	LT 750 M-D160	160	166	40	63	9	10
M2000577	LT 750 M-D200	200	206	60	63	9	12
M2000578	LT 750 M-D250	250	256	60	63	9	14

Screw set: CVB 55 Key set: ET 4

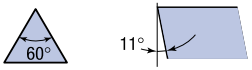




Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	7	0.18	0.32	180	300
			180		7		0.32		260
			210		7		0.32		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	7	0.15	0.28	130	200
			230		7		0.28		180
			280	0.5	7	0.15	0.25	100	160
			320		7		0.25		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7	0.12	0.27	90	130
			280		7		0.27		110
			320	0.5	7	0.12	0.23	60	95
			350		7		0.23		80
			400	0.5	5	0.1	0.18	40	80
			480		3		0.16		70
			550		1.5		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	SPUN inserts are not recommended for 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						
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed						
			Treated						
Grey Cast Iron	9	GG 20	140 to 230	0.5	7	0.15	0.35	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	7	0.12	0.28	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3	0.1	0.14	30	60
Nickel Based Alloys	11	Inconel 625	--------	SPUN inserts are not recommended for Exotic materials					
		Inconel 718							
		Hastelloy C							
Titanium Based Alloys	12	TiAl 6 V4	--------						
		T40							

LAMINA TECHNOLOGIES

T P K N



Shape
Triangle 60°

Clearance Angle
11°

Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

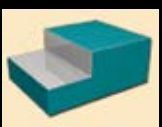
Insert Type
Clamping
no chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
TPKN 1603 PDTR	LT 30	16	3,18	90º	15º	Right	M0000051	213
TPKN 2204 PDTR	LT 30	22	4,76	90º	15º	Right	M0000052	214

Application Guide

Slotting

Sholder Milling



Surfacing

Multi purpose 90° milling insert with 3 cutting edges. Use for slotting, shoulder milling and face milling. Roughing to finishing.

Machining Recommendation Guide - Please see Pg. 8

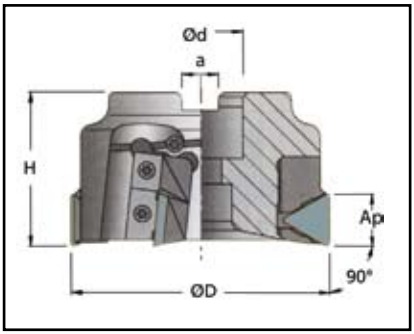
LAMINA TECHNOLOGIES

TPKN 1603 PDTR

Catalog Nr.	Description	D	d	H	Ap	z
M2000699	LT 310 M-D63	63	22	50	14	6
M2000700	LT 310 M-D80	80	27	50	14	6
M2000701	LT 310 M-D100	100	32	50	14	7
M2000702	LT 310 M-D125	125	40	63	14	8

TPKN 2204 PDTR

Catalog Nr.	Description	D	d	H	Ap	z
M2000703	LT 320 M-D80	80	27	50	20	5
M2000704	LT 320 M-D100	100	32	50	20	6
M2000705	LT 320 M-D125	125	40	63	20	7
M2000706	LT 320 M-D160	160	40	63	20	9



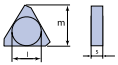
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	12	0.15	0.25	180	300
			180		12		0.25		260
			210		12		0.25		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	7	0.12	0.23	130	200
			230		7		0.23		180
			280	0.5	7	0.12	0.22	100	160
			320		7		0.22		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7	0.12	0.18	90	130
			280		7		0.18		120
			320	0.5	7	0.12	0.18	90	110
			350		7		0.18		100
			400	0.5	5	0.1	0.18	40	80
			480		3		0.16		70
			550		1.5		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	TPKN inserts are not recommended for 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						
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed						
			Treated						
Grey Cast Iron	9	GG 20	140 to 230	0.5	12	0.15	0.25	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	12	0.12	0.21	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3	0.1	0.16	30	60
Nickel Based Alloys	11	Inconel 625	--------	TPKN inserts are not recommended for Exotic materials					
		Inconel 718							
		Hastelloy C							
Titanium Based Alloys	12	TiAl 6 V4	--------						
		T40							

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	18	0.18	0.28	180	300
			180		18		0.28		260
			210		18		0.28		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	18	0.15	0.23	130	200
			230		18		0.23		180
			280	0.5	14	0.15	0.23	100	160
			320		14		0.23		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	12	0.12	0.18	90	130
			280		12		0.18		110
			320	0.5	12	0.12	0.18	60	95
			350		12		0.18		80
			400	0.5	5	0.1	0.18	40	80
			480		3		0.16		70
			550		1.5		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	TPKN inserts are not recommended for 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						
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed						
			Treated						
Grey Cast Iron	9	GG 20	140 to 230	0.5	18	0.18	0.28	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	14	0.15	0.23	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3	0.1	0.18	30	60
Nickel Based Alloys	11	Inconel 625	--------	TPKN inserts are not recommended for Exotic materials					
		Inconel 718							
		Hastelloy C							
Titanium Based Alloys	12	TiAl 6 V4	--------						
		T40							

T P K R

Shape
Triangle 60°

Clearance Angle
11°



Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

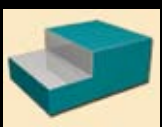
Insert Type
Clamping
Chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
TPKR 1603 PDTR	LT 30	16	3,18	90º	15º	Right	M0000053	217
TPKR 2204 PDTR	LT 30	22	4,76	90º	15º	Right	M0000983	218

Application Guide

Slotting

Sholder Milling



Surfacing

Multi purpose 90° milling insert, with 3 cutting edges, designed for materials that generate long chips. Suitable for Roughing to Finishing - Slotting, Shoulder Face milling operations.

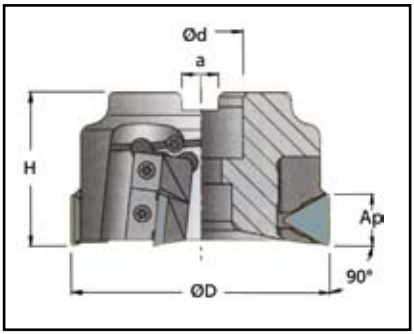
Machining Recommendation Guide - Please see Pg. 8

TPKR 1603 PDTR

Catalog Nr.	Description	D	d	H	Ap	z
M2000699	LT 310 M-D63	63	22	50	14	6
M2000700	LT 310 M-D80	80	27	50	14	6
M2000701	LT 310 M-D100	100	32	50	14	7
M2000702	LT 310 M-D125	125	40	63	14	8

TPKR 2204 PDTR

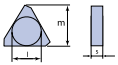
Catalog Nr.	Description	D	d	H	Ap	z
M2000703	LT 320 M-D80	80	27	50	20	5
M2000704	LT 320 M-D100	100	32	50	20	6
M2000705	LT 320 M-D125	125	40	63	20	7
M2000706	LT 320 M-D160	160	40	63	20	9



Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	12.0	0.15	0.22	180	300
			180		12.0		0.22		260
			210		12.0		0.22		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	12.0	0.15	0.18	130	200
			230		12.0		0.18		180
			280	0.5	12.0	0.15	0.18	100	160
			320		12.0		0.18		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7.0	0.12	0.18	90	130
			280		7.0		0.18		120
			320	0.5	7.0	0.12	0.18	90	110
			350		7.0		0.18		100
			400	0.5	5.0	0.10	0.18	40	80
			480		3.0		0.16		70
			550		1.5		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	12.0	0.12	0.21	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	12.0	0.12	0.18	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	10.0	0.12	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	5.0	0.12	0.23	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	5.0	0.12	0.23	130	210
			Treated	0.5	5.0	0.12	0.18	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	7.0	0.15	0.23	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	7.0	0.12	0.18	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.16	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	10.0	0.12	0.18	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	10.0	0.12	0.20	35	60
		T40					0.18	28	40

Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	18.0	0.18	0.25	180	300
			180		18.0		0.40		260
			210		18.0		0.35		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	18.0	0.15	0.23	130	200
			230		18.0		0.23		180
			280	0.5	18.0	0.15	0.20	100	160
			320		18.0		0.20		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	12.0	0.12	0.18	90	130
			280		12.0		0.18		110
			320	0.5	12.0	0.12	0.18	60	95
			350		12.0		0.18		80
			400	0.5	5.0	0.10	0.18	40	80
			480		3.0		0.16		70
			550		1.5		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	0.5	18.0	0.18	0.25	190	250
	5	X2 CrNiMo 17 2 2 316	230 to 270	0.5	18.0	0.18	0.23	160	210
	6	X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic	--------	0.5	10.0	0.12	0.18	70	120
Ferritic Stainless Steel	7	X8 Cr 7 430	Annealed	0.5	15.0	0.18	0.28	150	230
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed	0.5	15.0	0.18	0.28	130	210
			Treated	0.5	15.0	0.18	0.23	90	150
Grey Cast Iron	9	GG 20	140 to 230	0.5	18.0	0.18	0.25	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	18.0	0.18	0.20	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3.0	0.10	0.16	30	60
Nickel Based Alloys	11	Inconel 625	--------	0.5	10.0	0.12	0.18	25	35
		Inconel 718						28	38
		Hastelloy C						40	65
Titanium Based Alloys	12	TiAl 6 V4	--------	0.5	10.0	0.12	0.20	35	60
		T40					0.18	28	40

T P U N



Shape
Triangle 60°

Clearance Angle
11°

Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

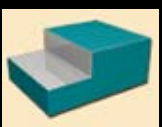
Insert Type
Clamping
No chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
TPUN 160308	LT 30	16	3,18	90º	15º	Right	M0000054	221

Application Guide

Slotting

Sholder Milling

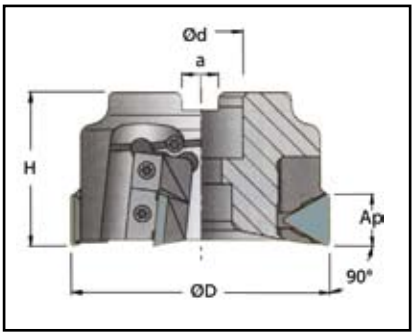


Surfacing

Multi purpose 90° milling insert, with 3 cutting edges and corner radius. Suitable for Roughing to Finishing - Slotting, Shoulder and Face milling operations.

Machining Recommendation Guide - Please see Pg. 8

Catalog Nr.	Description	D	d	H	Ap	z
M2000699	LT 310 M-D63	63	22	50	14	6
M2000700	LT 310 M-D80	80	27	50	14	6
M2000701	LT 310 M-D100	100	32	50	14	7
M2000702	LT 310 M-D125	125	40	63	14	8



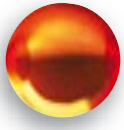
Material Group	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Low Carbon Steel	1	Ck15, Ck45 1020, 1045	150	0.5	12	0.15	0.25	180	300
			180		12		0.25		260
			210		12		0.25		220
Alloy Steel	2	42 CrMo 4 St 50-2 Ck60 1060 4140	180	0.5	7	0.12	0.23	130	200
			230		7		0.23		180
			280	0.5	7	0.12	0.22	100	160
			320		7		0.22		140
High Alloy Steel	3	X40 CrMoV 5 1 H 13 40 NiCrMo 6 4340 S 2-10-1-8 HSS M42	220	0.5	7	0.12	0.18	90	130
			280		7		0.18		120
			320	0.5	7	0.12	0.18	90	110
			350		7		0.18		100
			400	0.5	5	0.1	0.18	40	80
			480		3		0.16		70
			550		1.5		0.14		60
Austenitic Stainless Steel	4	X5 CrNi 18 9 304	210 to 250	TPUN inserts are not recommended for 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						
Martensitic Stainless Steel	8	X15 Cr 13 410	Annealed						
			Treated						
Grey Cast Iron	9	GG 20	140 to 230	0.5	12	0.15	0.25	150	240
		GG 25							220
		GG 30							190
Nodular Cast Iron	10	GGG 40	210	0.5	12	0.12	0.21	100	200
		GGG 50	260						160
		GGG 70	310						130
		G-X260NiCr42	450	0.5	3	0.1	0.16	30	60
Nickel Based Alloys	11	Inconel 625	--------	TPUN inserts are not recommended for Exotic materials					
		Inconel 718							
		Hastelloy C							
Titanium Based Alloys	12	TiAl 6 V4	--------						
		T40							

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

ALU-Milling

LT - 05 Aluminium

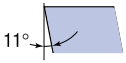
ALUMINIUM-MILLING INSERTS

Lamina's unique line of Milling inserts for Aluminum and soft material machining.
Based on revolutionary geometry and our unique coated grade, LT-05.

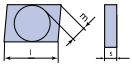
LAMINA TECHNOLOGIES

A P G T

Shape
80° Diamond



Clearance Angle
15°



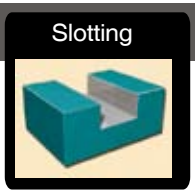
Tolerance
l ± 0.05 m ± 0.013
s ± 0.025

Insert Type
Screw Down Clamping
no chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
APGT 1003 PDER ALU	LT 05	16	4,76	90º	15º	Right	M0001007	225
APGT 1604 PDER ALU	LT 05	16	4,76	2,4	15º	Right	M0000963	225

Surfacing Insert Lead angle 90°

Application Guide



Highly positive inserts with a unique coating and 90° lead angle for Aluminum. Suitable for Roughing to Finishing - Slotting, Shoulder and Face milling operations.

Milling bodies
APGT 10 - see cutters of APLX 10 (page 147)
APGT 16 - see cutters of APKT 16 (page 142)

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

APGT 1003 ALU

Aluminium	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Si < 4%	13	AlMgSi 1	----	0.3	9.0	0.12	0.20	400	1200
4% < Si < 8%	13	AlSi 6 Cu 4	----			0.10	0.18	250	600
Si > 8%	14	AlSi 12	----	Recommended to use APLX 1003 PDTR - LT-30					

For high Si Aluminuim, it is recommended to use APLX 1003 PDTR.
See cutting conditions bellow.

Si > 8%	14	AlSi 12	----	0.5	9.0	0.08	0.20	200	400

APGT 1604 Alu

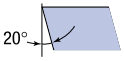
Aluminium	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Si < 4%	13	AlMgSi 1	----	0.5	15.5	0.15	0.32	400	1200
4% < Si < 8%	13	AlSi 6 Cu 4	----			0.12	0.25	250	600
Si > 8%	14	AlSi 12	----	Recommended to use APKT 1604 PDTR - LT-30					

For high Si Aluminuim, it is recommended to use APKT 1604 PDTR.
See cutting conditions bellow.

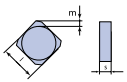
Si > 8%	14	AlSi 12	----	0.5	16.0	0.15	0.25	200	400

S E G T

Shape
Square 90°



Clearance Angle
20º



Tolerance
l ± 0.08 m ± 0.013
s ± 0.025

Insert Type
Screw down clamping chip breaker

Insert designation	Grade	l	s	P/r	D	Direction	Catalog Nr.	Page
SEGT 1204 AFEN ALU	LT 30	12	4,76	45º	25º	Neutral	M0001008	227

Surfacing Insert Lead angle 45°

Application Guide

Surfacing

Chamfering

Highly positive inserts with a unique coating and 90° lead angle for Aluminum. Suitable for Roughing to Finishing - Slotting, Shoulder and Face milling operations.

Milling bodies
SEGT 1204 - see cutters of SEKT 1204 (page 190)

Machining Recommendation Guide - Please see Pg. 8

LAMINA TECHNOLOGIES

Aluminium	Group No	Material Examples*	Brinell hardness	d.o.c [mm]		feed [mm/tooth]		V_c [m/min]	
				min	max	min	max	min	max
Si < 4%	13	AlMgSi 1	----	0.3	7.0	0.15	0.40	400	1200
4% < Si < 8%	13	AlSi 6 Cu 4	----			0.12	0.35	250	600
Si > 8%	14	AlSi 12	----	Recommended to use SEKT 1204 AFTN - LT-30					

For high Si Aluminuim, it is recommended to use SEKT 1204 AFTN.
See cutting conditions bellow.

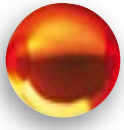
Si > 8%	14	AlSi 12	----	0.5	7.0	0.20	0.45	200	400

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