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BAND SAW BLADES • SAWING MACHINES • CUTTING FLUIDS



BAND SAW BLADES

BI-METAL | TUNGSTEN CARBIDE | CARBON STEEL | GRIT EDGE

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Blade selector

		STEELS AND ALLOYS					
STYLES	NON-METALS	NON-FERROUS	Machinability			PAGE	
			EASY	MODERATE	DIFFICULT		VERY DIFFICULT
	<ul style="list-style-type: none"> • Wood • Plastic • Rubber 	<ul style="list-style-type: none"> • Aluminium • Copper • Brass • Free machining steels 	<ul style="list-style-type: none"> • Mild steels • Low carbon • Alloy steels 	<ul style="list-style-type: none"> • High carbon • Tool steels • Die steels 	<ul style="list-style-type: none"> • Stainless steels • Titanium • Nickel based alloys 	<ul style="list-style-type: none"> • High nickel alloys • Super alloys 	
BI-METAL	for highest productivity and lowest costs in most metal sawing applications						
Silencer GP	Longer wear life		General purpose Bi-Metal blade with longer wearing tooth			10	
Silencer PLUS		Best all around choice for multi-purpose applications				11	
StructurALL		Best choice for structurals, tubing and bundles				12	
Penetrator		Best choice for most high production sawing applications				13	
PMP			Longest wearing Bi-Metal high production blade			14	
Supreme			Coated blades improve wear resistance on Bi-Metal blades for extended blade life			15	
Coated			Most aggressive Bi/Metal blade with varying tooth angle and tooth height			16	
TUNGSTEN CARBIDE	for the very toughest and most abrasive applications that generate high cutting temperatures and rapid tool wear						
T3P		For high production rate				17	
T3W		Ultimate tooth for the toughest materials				17	
STS / Set Tooth	Very abrasive materials & cast aluminium	Wave enhanced penetration				18	
CARBON STEEL	for easier-to-cut materials that generate little heat or tool wear						
Dart		Hard back allows high band tension, heavy feed				19	
Metal Master	Lowest cost blade					20	
Friction		Special high-speed sawing of ferrous metals up to 25 mm				20	
Olympia	Wood					21	
GRIT EDGE	for grinding materials too hard, too brittle or too abrasive to machine with a toothed blade						
Tungsten Grit		For hard, abrasive metals between 45 and 65 HRC				22	
Diamond		Hardest, brittle, most abrasive materials (not steel!)				23	

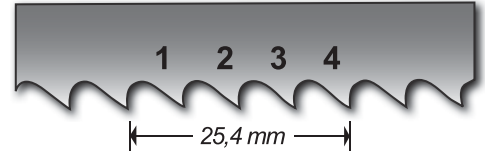
Pitch selector solids

Pitch selector

The Pitch indicates the tooth spacing. The correct pitch choice ensures proper tooth pressure and adequate gullet capacity for chips. In most applications, a blade should engage no less than 3 teeth and no more than 25 teeth, in the cut.

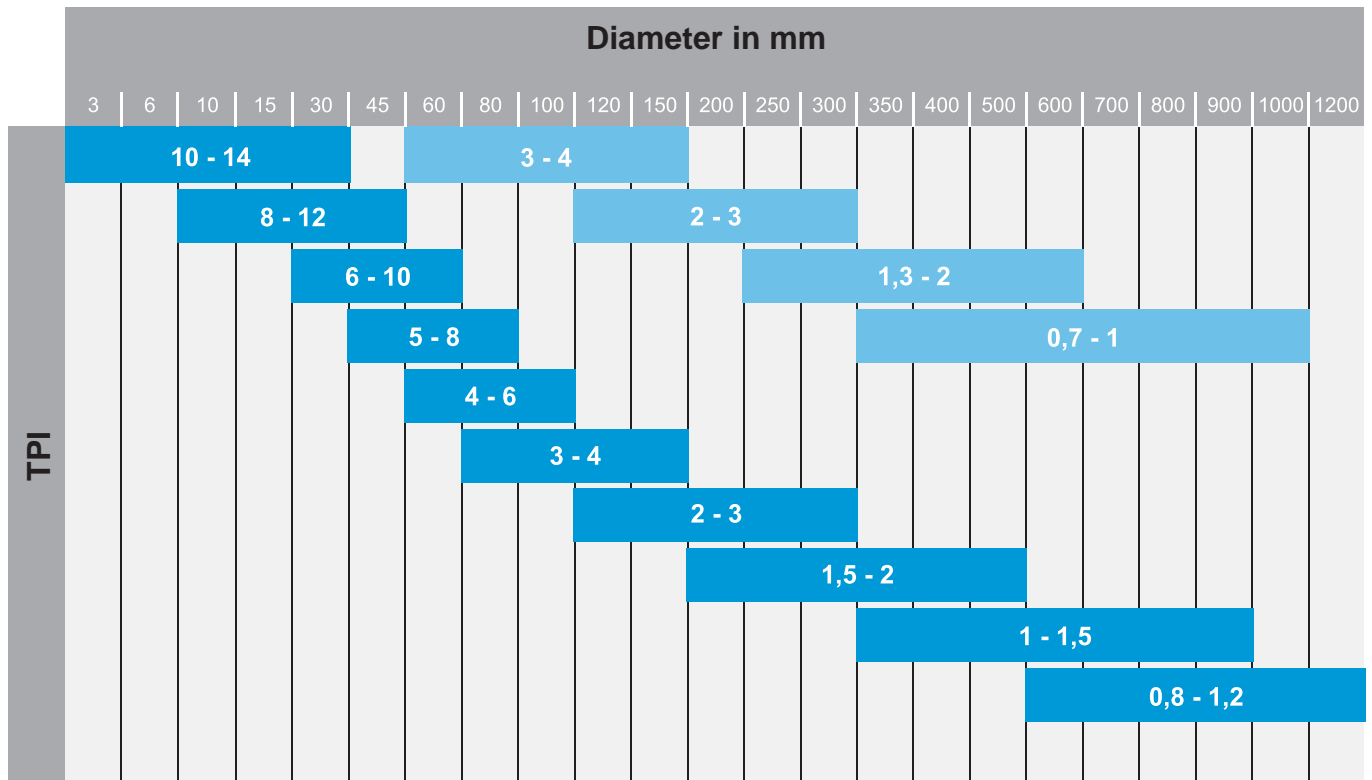
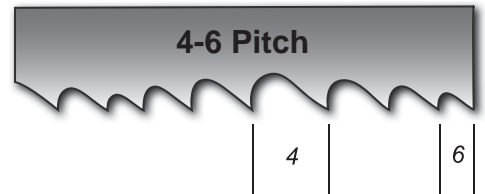
Single Pitch blades have uniform tooth spacing and shape.
Pitch (teeth per inch) is the number of gullets in a 1-inch (25,4 mm) span.

- Use primarily for solids on rigid band machines.



Multi Pitch blades have varying tooth spacing to reduce vibrations.
Pitch designation hyphenates single pitches of coarsest and finest teeth.

- Use for most sawing applications
- Best for structurals, or any vibration-prone application.



 Bi-Metal

 Tungsten Carbide

Pitch selector structurals

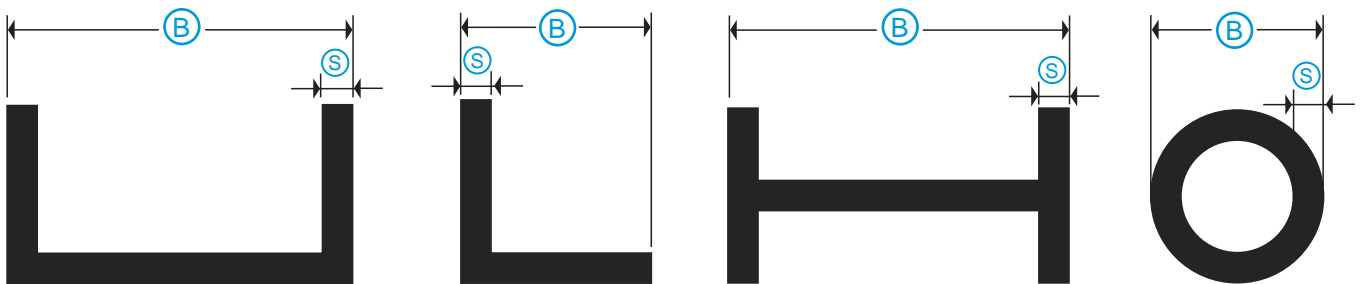
Pitch selector

This selector can be used to easily find the correct pitch for cutting profiles and tubing. Select the maximum dimension of the part to be cut on the horizontal scale. Then check on the vertical column the wall thickness measured and find the advised pitch in the table. For faster cutting, the next larger pitch can be used.

It is not advised to use a finer pitch as the overfilling gullets will break the teeth.

Cutting in bundles:

- For round tubing double the single wall thickness and find the correct pitch.
- For square and rectangular tubing, take in consideration the maximum distance to cut in the bundle and the combined wall thickness.



Wall thickness S mm	TPI (teeth per inch) Dimension in mm B											
	20	40	60	80	100	120	150	200	300	500	750	1000
2	10 - 14	10 - 14	10 - 14	10 - 14	10 - 14	10 - 14	10 - 14	10 - 14	8 - 12	6 - 10	5 - 8	5 - 8
3	10 - 14	10 - 14	10 - 14	10 - 14	10 - 14	10 - 14	8 - 12	8 - 12	6 - 10	5 - 8	4 - 6	4 - 6
4	10 - 14	10 - 14	10 - 14	10 - 14	8 - 12	8 - 12	6 - 10	6 - 10	5 - 8	4 - 6	4 - 6	4 - 6
5	10 - 14	10 - 14	10 - 14	8 - 12	6 - 10	6 - 10	6 - 10	5 - 8	4 - 6	4 - 6	4 - 6	3 - 4
6	10 - 14	8 - 12	8 - 12	8 - 12	6 - 10	6 - 10	5 - 8	5 - 8	4 - 6	4 - 6	3 - 4	3 - 4
8		6 - 10	6 - 10	6 - 10	5 - 8	5 - 8	5 - 8	4 - 6	4 - 6	3 - 4	3 - 4	3 - 4
10		6 - 10	6 - 10	5 - 8	5 - 8	5 - 8	4 - 6	4 - 6	4 - 6	3 - 4	3 - 4	3 - 4
12		5 - 8	5 - 8	5 - 8	4 - 6	4 - 6	4 - 6	4 - 6	3 - 4	3 - 4	2 - 3	2 - 3
15			5 - 8	4 - 6	4 - 6	4 - 6	3 - 4	3 - 4	3 - 4	2 - 3	2 - 3	2 - 3
20			4 - 6	4 - 6	4 - 6	3 - 4	3 - 4	3 - 4	2 - 3	2 - 3	2 - 3	2 - 3
30				3 - 4	3 - 4	3 - 4	2 - 3	2 - 3	2 - 3	2 - 3	1,5 - 2	1,5 - 2
50						3 - 4	2 - 3	2 - 3	2 - 3	1,5 - 2	1,5 - 2	1,5 - 2
75								1,5 - 2	1,5 - 2	1,5 - 2	1,5 - 2	1 - 1,5
100									1,5 - 2	1 - 1,5	1 - 1,5	1 - 1,5
150										1 - 1,5	1 - 1,5	1 - 1,5
200										1 - 1,5	1 - 1,5	1 - 1,5

Band speed & group selector

Material group	Group number	DIN	Werkstoff number	AISI (SAE)	GHOST	Cutting speed (m/min)						Remarks	
						Bi-Metal			Carbide				
						<100mm	100-400mm	>400mm	<100mm	100-400mm	>400mm		
						Diameter >>>	34 mm	41 mm	54 mm	34 mm	41 mm	54 mm	
						Blade width >>>	34 mm	41 mm	54 mm	34 mm	41 mm	54 mm	
Structural steels	1	St37 / St42	1.0037 / 1.0042	1015	St3ps	70 - 90	60 - 80	50 - 70	120 - 160	110 - 150	100 - 140		
Free machining		St52 / St60	1.0050 / 1.0060	ASTM-A570	St6ps	45 - 60	40 - 55	40 - 55	90 - 120	85 - 120	95 - 125		
		9S20	1.0711	1112 / 1212			60 - 80	50 - 65	55 - 70	120 - 160	110 - 150	120 - 160	
		C10 / C15	1.0301 / 1.0401	1010 / 1015	10		60 - 80	50 - 65	55 - 70	120 - 160	110 - 150	120 - 160	
Cementation ste		16MnCr5	1.7131	5115	18XG		40 - 50	35 - 45	35 - 45	75 - 100	75 - 100	75 - 100	
		20CrMo5	1.7264		20XM		40 - 50	35 - 45	35 - 45	75 - 100	75 - 100	75 - 100	
	21NiCrMo2	1.6523	8620	20XGNM		40 - 50	35 - 45	35 - 45	75 - 100	75 - 100	75 - 100		
Bearing steel	2	100Cr6	1.2067	52100	9X2	35 - 45	30 - 40	30 - 40	70 - 95	70 - 90	65 - 90		
Spring steels		65Si7	1.5028	9260H	60S2	35 - 50	30 - 45	30 - 45	70 - 95	70 - 95	70 - 95		
		50CrV4	1.8159	6150	50XFA	35 - 50	30 - 45	30 - 45	70 - 95	70 - 95	70 - 95		
Hot working steels	3	C35 / C45	1.0501 / 1.0503	1035 / 1045	35 / 45	45 - 60	40 - 55	40 - 55	90 - 125	85 - 120	95 - 125		
		42CrMo4	1.7225	4140	40XN2MA		40 - 50	35 - 45	35 - 47	77 - 105	75 - 100	75 - 103	
		34CrNiMo6	1.6582	4337	38X2N2MA		25 - 35	23 - 31	24 - 33	50 - 70	50 - 68	55 - 75	
Nitriding steel	4	34CrAl6	1.2581	H21	3X2V8F	24 - 32	21 - 28	23 - 31	48 - 65	46 - 63	51 - 69		
High alloyed hot working steels		40CrMnMo7	1.2311			26 - 35	23 - 31	24 - 33	51 - 70	50 - 68	54 - 74		
		X40CrMoV5-1	1.2344	H13	4X5MF1S		24 - 32	21 - 28	23 - 31	48 - 65	46 - 63	51 - 69	
		56NiCrMoV7	1.2713	L6	5XNM		26 - 35	23 - 31	24 - 33	51 - 70	50 - 68	54 - 74	
Unalloyed tool steels	5	C125W	1.1563	W112	U13-1	34 - 46	31 - 41	31 - 41	69 - 93	68 - 92	68 - 92		
		C80W1	1.1525	W108	U8A-1	34 - 46	31 - 41	31 - 41	69 - 93	68 - 92	68 - 92		
Cold working steels	6	X210Cr12	1.2080	D3	X12	20 - 27	17 - 23	19 - 26	40 - 55	38 - 52	42 - 57	Dry	
		X155CrVMo12-1	1.2379	D2		20 - 27	17 - 23	19 - 26	40 - 55	38 - 52	42 - 57	Dry	
		90MnCrV8	1.2842			34 - 46	31 - 41	31 - 41	69 - 93	68 - 92	68 - 92		
High-speed steels	7	S 6-5-2	1.3343	M2	R6M5	29 - 39	24 - 33	26 - 35	58 - 78	54 - 74	58 - 78		
		S 3-3-2	1.3333		R3AM3F2	29 - 39	24 - 33	26 - 35	58 - 78	54 - 74	58 - 78		
		S 2-10-1-8	1.3247	M42		29 - 39	24 - 33	26 - 35	58 - 78	54 - 74	58 - 78		
		S 10-4-3-10	1.3207		R12F3K10M3	29 - 39	24 - 33	26 - 35	58 - 78	54 - 74	58 - 78		
		S 18-0-1	1.3355	T1	R18	29 - 39	24 - 33	26 - 35	58 - 78	54 - 74	58 - 78		
Cast iron	8	GG30	0.6030	A48	Sc30	31 - 41	26 - 36	28 - 37	61 - 83	53 - 71	55 - 75	Dry	
		GGG50	0.7050	A536	Vc50	31 - 41	26 - 36	28 - 37	61 - 83	53 - 71	55 - 75	Dry	
Stainless steels	9	X8CrNiS18-9	1.4305	303	12X18N9	33 - 41	26 - 35	28 - 39	60 - 81	52 - 70	57 - 77		
		X5CrNi18-10	1.4301	304	08X18N10	33 - 41	26 - 35	28 - 39	60 - 81	52 - 70	57 - 77		
		X6CrNiMoTi17-12-2	1.4571	316Ti	10X17N13M2T	23 - 31	20 - 26	21 - 29	45 - 61	39 - 53	43 - 58		
		X5CrNiMo17-12-2	1.4401	316		23 - 31	20 - 26	21 - 29	45 - 61	39 - 53	43 - 58		
	X20Cr13	1.4021	420	20X13		27 - 36	24 - 32	27 - 36	54 - 73	48 - 65	63 - 72		
Heat resistant steels	11	X45CrSi9-3	1.4718	HNV3	40Ch9S2	24 - 32	21 - 28	23 - 31	48 - 65	46 - 63	51 - 69		
		X12CrCoNi21-20	1.4971	661		15 - 21	12 - 17	13 - 18	31 - 41	24 - 33	26 - 35		
		X20CrMoWV12-1	1.4935	616		27 - 36	24 - 32	27 - 36	54 - 73	48 - 65	54 - 72		
		X15CrNiSi25-20	1.4841	314	20X25N20S2	15 - 21	12 - 17	13 - 18	31 - 41	24 - 33	26 - 35		
		X12NiCrSi36-16	1.4864	330		15 - 21	12 - 17	13 - 18	31 - 41	24 - 33	26 - 35	INCOLOY DS	
	X8CrNiAlTi20-20	1.4847	334		15 - 21	12 - 17	13 - 18	31 - 41	24 - 33	26 - 35	INCOLOY 840		
Nickel base alloys	12	NiCr19NbMo	2.4668	5596E (AMS)		10 - 13	9 - 12	10 - 13	20 - 26	17 - 23	20 - 27	INCONEL 718	
		NiCr13Mo6Ti3	2.4662	5660J (AMS)		10 - 13	9 - 12	10 - 13	20 - 26	17 - 23	20 - 27	NIMONIC 901	
		NiCo20Cr20MoTi	2.4650	5872D (AMS)		10 - 13	9 - 12	10 - 13	20 - 26	17 - 23	20 - 27	NIMONIC 263	
Aluminium	13	6003				95 - 115	100 - 120	100 - 120	175 - 200	175 - 200	170 - 225		
Copper	14	AA1100				95 - 115	100 - 120	100 - 120	175 - 200	175 - 200	170 - 225		
Brass	15	CDA110				50 - 70	40 - 60	35 - 45	100 - 140	80 - 120	70 - 90		
Alu-bronze	16	CuZn39Pb1AIB-B				73 - 110	73 - 110	85 - 115	175 - 200	175 - 200	170 - 225		
Titanium alloys	17	Ti-6Al-4V				13 - 23	10 - 20	10 - 15	40 - 50	40 - 50	35 - 45		
Steels with tensile strength more than 1.000 N/mm2	18	1000-1200 N/mm2				30 - 35	25 - 30	20 - 25	60 - 70	50 - 60	40 - 50		
		1200-1400 N/mm2					25 - 30	20 - 25	15 - 20	50 - 60	40 - 50	30 - 40	
		1400-1600 N/mm2					20 - 25	15 - 20	10 - 15	40 - 50	30 - 40	20 - 30	

Blade break-in procedure

Why break-in a band saw blade?

The teeth of a new saw blade are too sharp and therefore have the risk to “hang” themselves in the material being cut. This can cause little fragments to breakout at the cutting edge. The damaged tooth tips will shorten the life of a sawblade. To prevent this, the new blade should cut thinner chips from the material. This is done by reducing the Feed Force.

Bandspeed should be set as normal!

Breaking in the blade

Bi-Metal

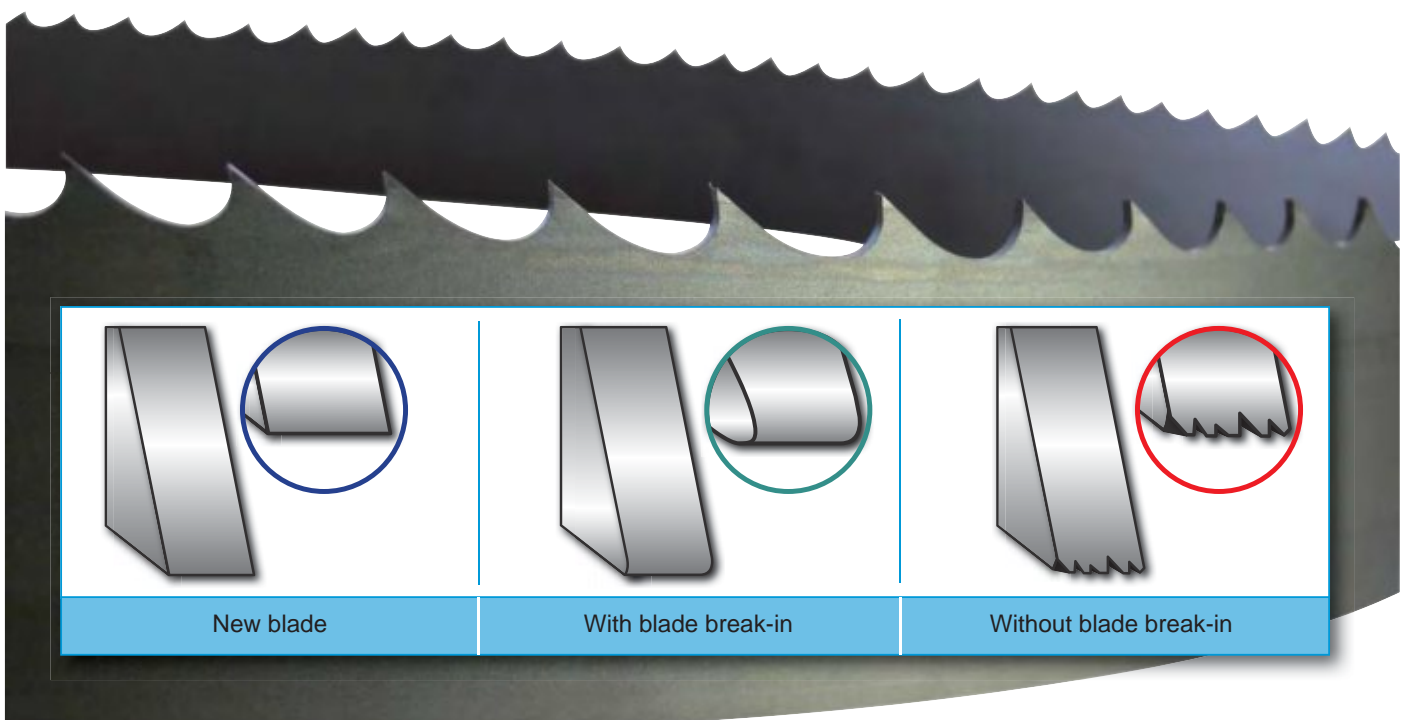
Procedure Reduce Feed Force during first 20 minutes of cutting to 50% of normal feed. Then gradually increase feed force in 4 steps to normal in about 10 minutes.

Carbide tipped sawblade with Set Tooth

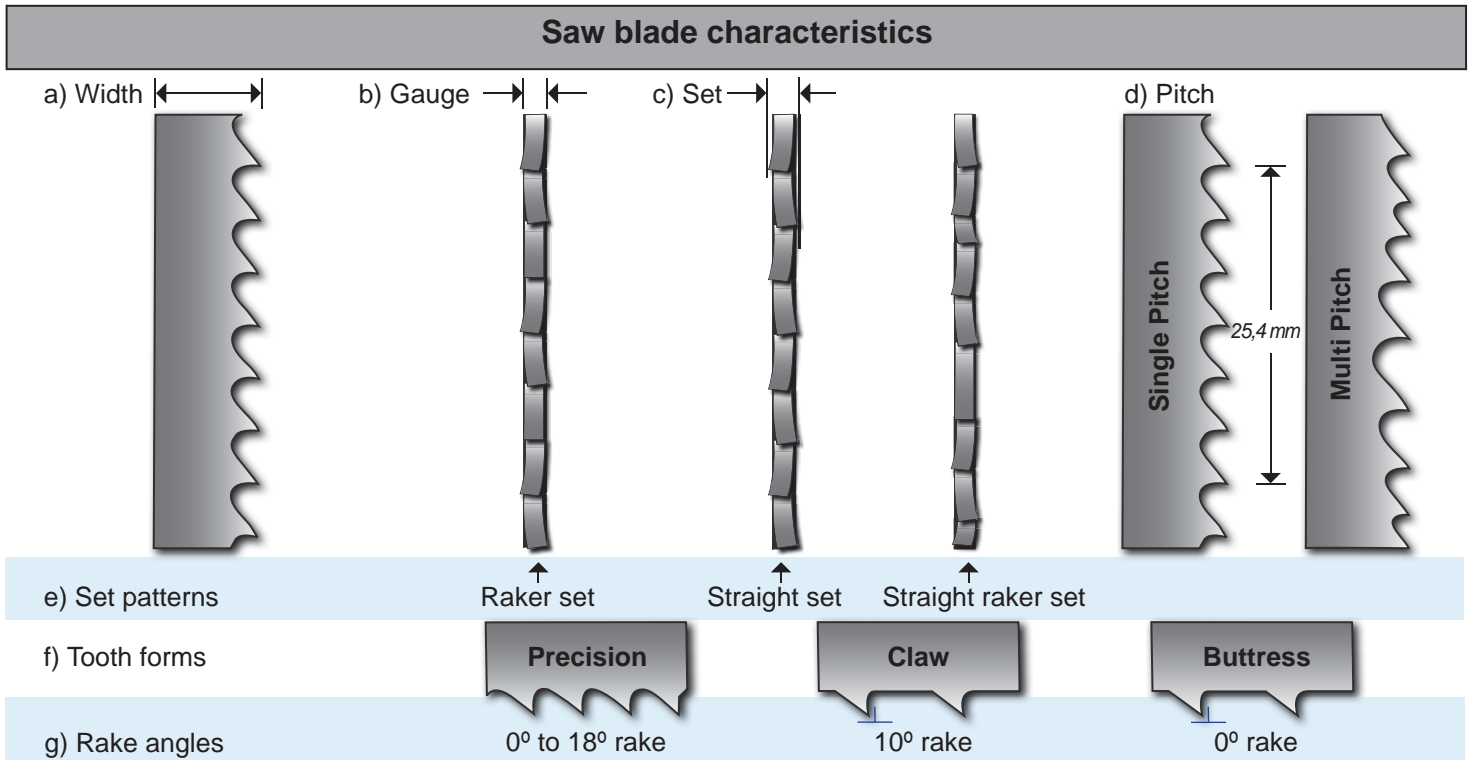
Procedure Reduce Bandspeed during first 20 minutes of cutting to 70% of normal speed. Reduce Feed Force during first 20 minutes of cutting to 50% of normal feed. Then gradually increase bandspeed and feed force in 4 steps to normal in about 10 minutes.

Triple Chip Carbide tipped

Procedure Reduce Feed Force during first 40 minutes of cutting to 50% of normal feed. Then gradually increase feed force in 4 steps to normal in about 10 minutes.



Blade characteristics



TIPS

- a) Width is the dimension from the tooth tips to the back edge.

 - for fast, accurate sawing, choose the widest blade that fits the machine.
 - for contour sawing, choose the widest blade that will cut the smallest part radius. (See chart on page 9)
- b) Thickness (gauge) is the narrow dimension of the blade.

 - Choose the thinner option for longer flex life over small band wheels.
 - Choose the thicker option for straighter cuts under heavy feed force.
- c) Set is the dimension across the offset teeth.

 - Choose the standard set for most applications
 - Choose the wider (heavier) set to avoid pinching in highly stressed metals and large structurals.
- d) Pitch (teeth per inch or TPI) is a measure of tooth spacing.

 - Consider a single pitch blade for fast cutting materials. Single pitch blades have consistent tooth spacing. The number of teeth over one-inch length is the TPI.
 - Choose a multi-pitch blade for most metal sawing applications. Multi-pitch blades vary tooth spacing between two extremes. The pitch designation of a multi-pitch blade hyphenates the equivalent single pitch designations of those extremes.
- e) Set pattern is the sequence used in offsetting the teeth.

 - Choose raker set for sawing ferrous and tough metals.
 - Choose straight set for easily machined metals and non-metals.
 - Straight raker set is used for all multi pitch blades.
- f) Tooth forms are combinations of rake angle and gullet shape.

 - Choose **Precision** for most sawing applications.
 - Consider **Claw** to increase beam strength and penetration.
 - Use **Buttress** for woodworking applications.
- g) Rake angle is a measure of the tooth face inclination to the work. Rake angles are neutral, positive or negative.

 - Choose a neutral rake blade for most work narrower than 50 mm.
 - Choose a positive rake blade for wider, tougher to penetrate work.
 - Choose a negative rake blade for case hardened work.

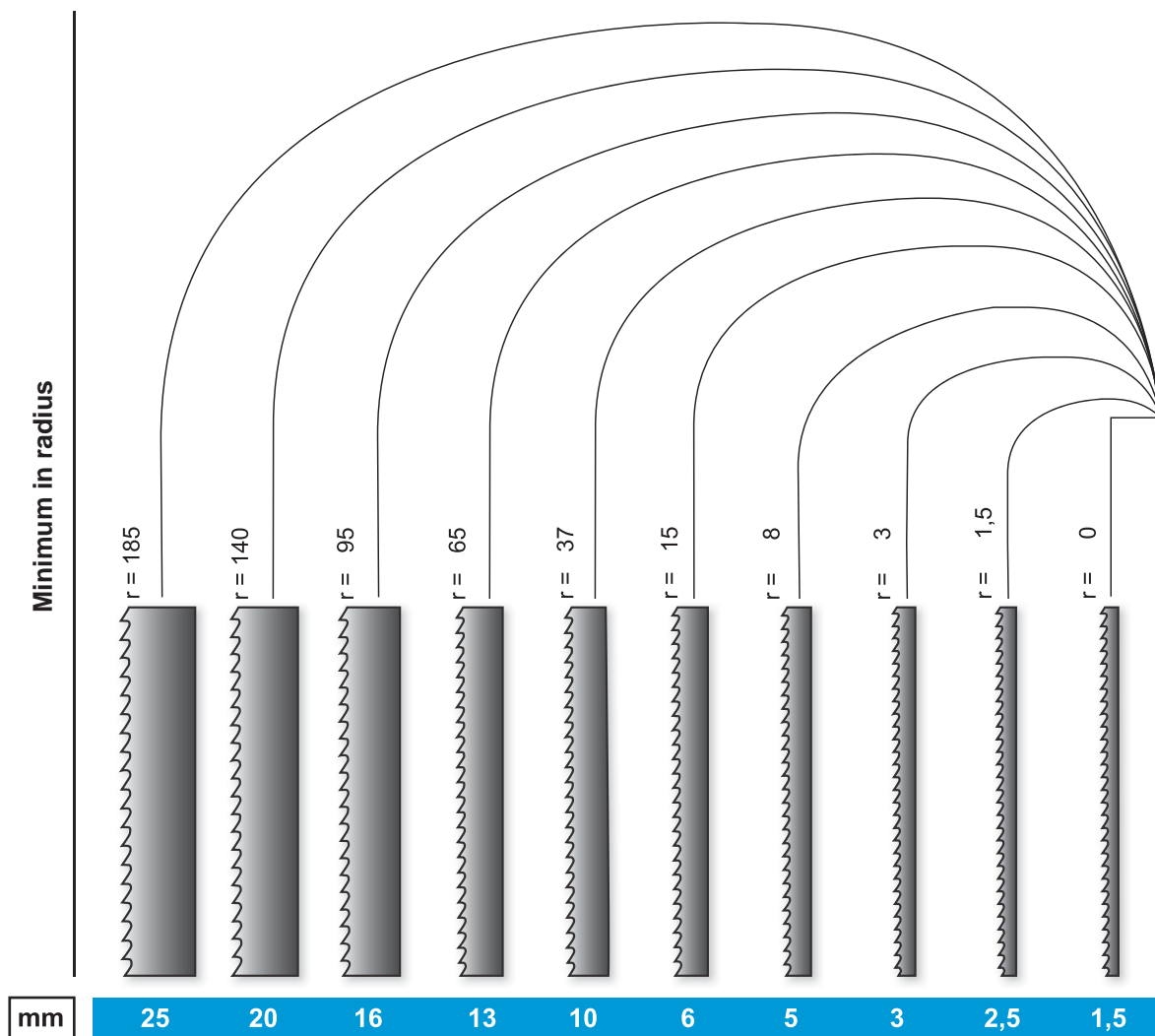
Chip characteristics

Chip form								
Condition	Thick, hard, short	Thick, hard, brittle	Thick, hard, springy	Thin, hard, springy	Thin, curly, springy	Thin, straight, springy	Powdery	Thin, tightly curled
Color	Blue or Brown	Blue or Brown	Silver or light straw	Silver	Silver	Silver	Silver	Silver
Band speed	Reduce	Reduce	OK	Reduce slightly	OK	OK	Reduce	OK
Feed rate	Reduce	Reduce	Reduce slightly	Increase slightly	OK	Increase	Increase	Reduce
Other	Check cutting fluid & mix ratio	Check cutting fluid & mix ratio	Check for correct blade pitch	Check for correct blade pitch				Use a coarser pitch blade

Radius chart

The blade width is measured from the tooth tips to the back edge.

- For contour cuts, use the widest blade that will cut the smallest radius needed for the job.



FEATURES

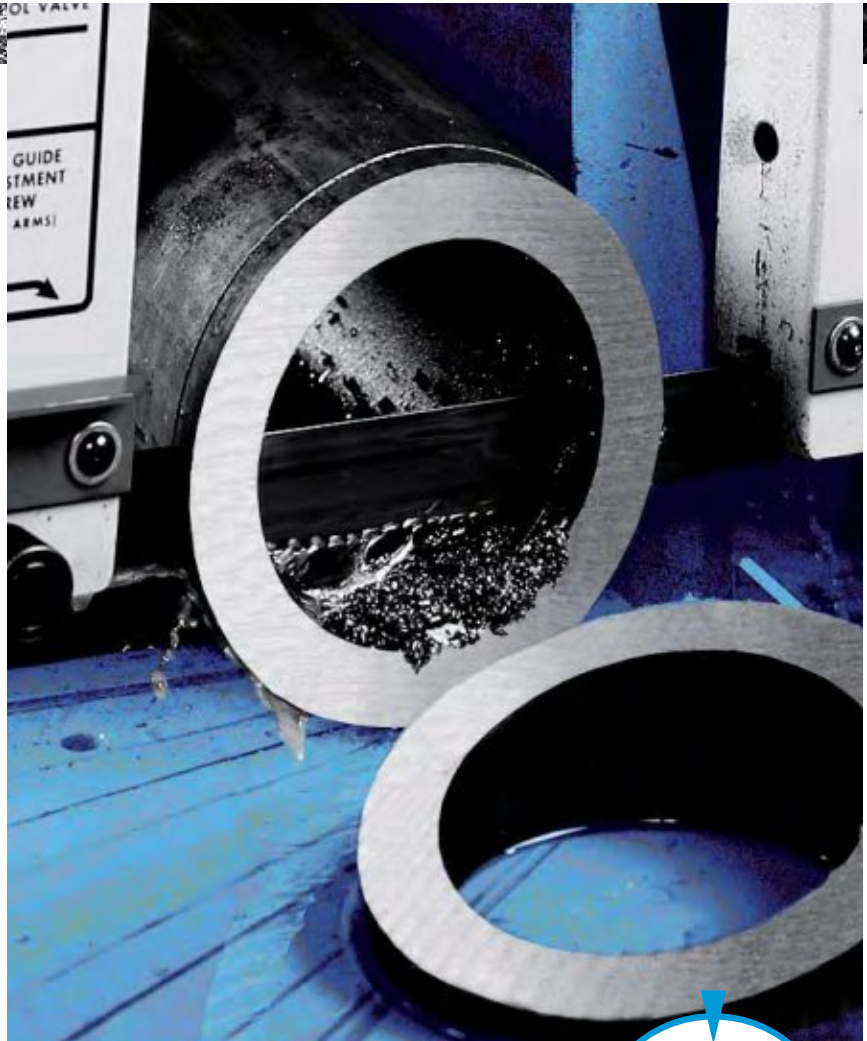
- M42 HSS tooth
- Neutral rake tooth
- Wide range of sizes and pitches

BENEFITS

- Strong, wear-resistant tooth stays sharp longer
- Best choice for small machines and short blade lengths

APPLICATION

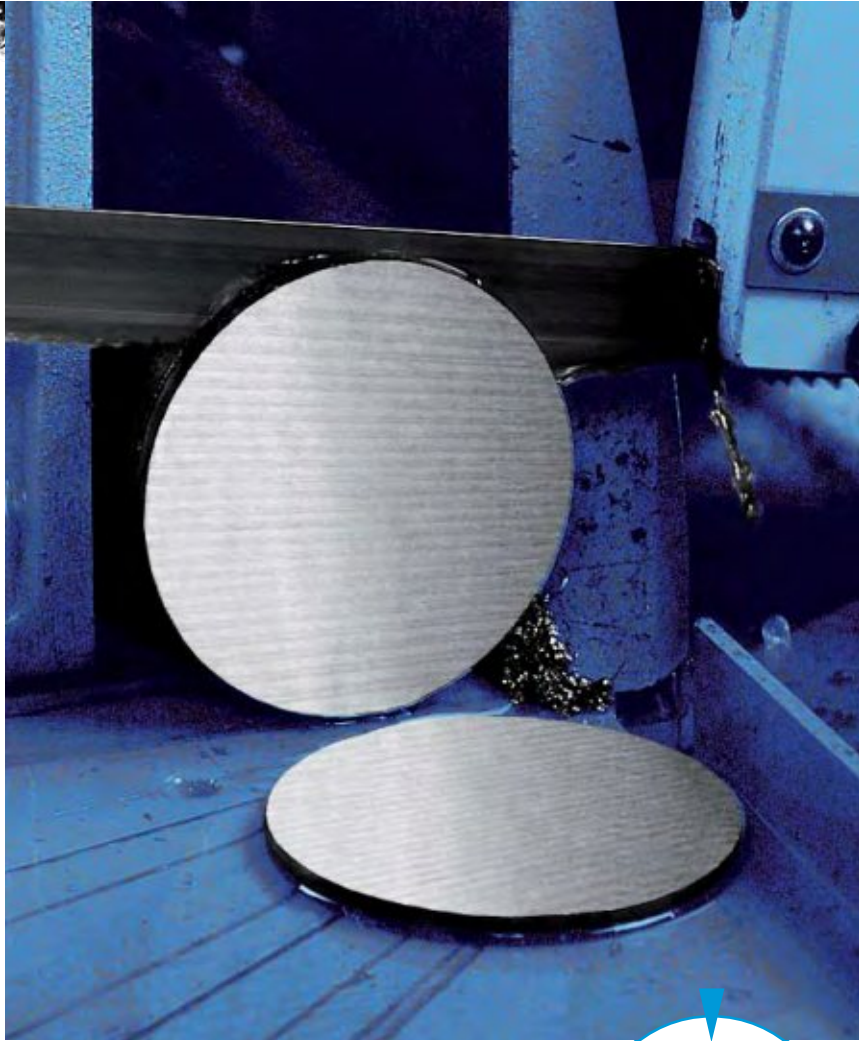
All metals in tubing, profiles and small solids



Metric		SILENCER GP												
Width	Gauge	3-4	4	4-6	5-8	6	6-10	8	8-12	10	14	10-14	18	24
6	0,9												303-010	
10	0,9					303-011							303-014	
13	0,6						303-933		303-935		303-019	303-133	303-026	303-027
	0,9				303-932	303-020	303-934		303-936			303-028		
20	0,9			303-410	303-182		303-415		303-300			303-420	303-430W	
27	0,9	303-903	303-735	303-900	303-905	303-743	303-901	303-750	303-400	303-768		303-769		
				303-471	303-475									
34	1,1	303-904		303-902	303-539	303-770	303-562		303-600					
				303-099										
41	1,3			303-687	303-729		303-610							

MATERIAL GROUP

1 2 3 4 9 10



FEATURES

- M42 HSS tooth
- Positive rake tooth
- Special tooth form

BENEFITS

- Aggressive, wear resistant, multi-purpose blade
- Several wide set pitches for greater back clearance

APPLICATION

Multi purpose blade for all metals in tubing, profiles, solids and bundles.

Metric		SILENCER PLUS									
Width	Gauge	1-1,3	1-1,5	1,5-2	2-3	3	3-4	4	4-6	5-8	6
6	0,9										333-046
10	0,9							306-487			
13	0,9					333-023		306-488			333-026
20	0,9					333-103			333-146	333-158	
27	0,9				333-223		333-234		333-246	333-258	
34	1,1				333-323		333-334		333-346	333-358	
41	1,1	336-413									
	1,3				333-423		333-434		333-446	333-458	
54	1,3			306-445	336-523		336-534		336-546	336-558	
	1,6	306-511		306-512	333-523		333-534		333-546		
							306-610				
67	1,6	306-611	306-660	306-612	306-640						
80	1,6	306-711	306-760	306-712	306-723						

MATERIAL GROUP

1 2 3 4 8 9 10

FEATURES

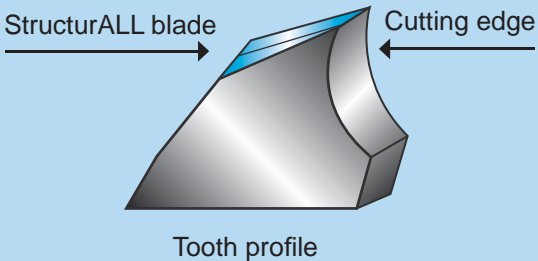
- M42 HSS tooth
- Positive rake tooth
- Special ground tooth form
- Extreme shock proof design

BENEFITS

- Controlled, quiet sawing of non-solid materials
- Tooth resists stripping in structurals and bundles
- Strengthened teeth, long blade life

APPLICATION

Tubing and structurals both single and in bundles or nests



Metric		STRUCTURALL			
Width	Gauge	2-3	3-4	4-6	5-8
27	0,9		320-234	320-246	320-258
34	1,1		320-334	320-346	320-358
41	1,3	320-423	320-434	320-446	320-458
54	1,3	340-523	340-534	340-546	
	1,6	320-523	320-534	320-546	
67	1,6	320-623	320-634	320-646	
		320-625			

MATERIAL GROUP

1 9 13

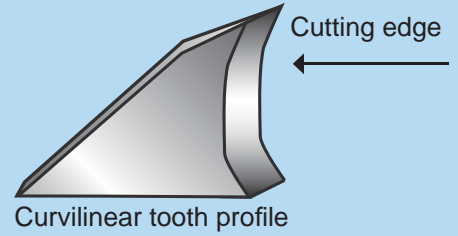
Wide Set precision teeth provide greater back clearance

PENETRATOR



FEATURES

- M42 HSS tooth
- High positive rake curvilinear tooth
- Ground teeth



BENEFITS

- Fast cutting, wear resistant blade
- Designed for production sawing

APPLICATION

Moderate to difficult alloys on power saws for high production

Metric		PENETRATOR										
Width	Gauge	0,8-1,2	1-1,5	1,3	1,5-2	2	2-3	3	3-4	4-6	6	5-8
27	0,9						301-423	301-719	301-598	301-615	301-127	301-656
34	1,1			301-594		301-842	301-689	301-226	301-739	301-748		301-789
41	1,3		301-330		301-880		301-879	301-796	301-887	301-375		301-379
54	1,3		301-949		301-977		301-381				301-994	
	1,6	301-072	301-071	301-073	301-070		301-069		301-085	301-384		
67	1,6	301-183	301-185	301-966	301-186		301-184		301-187	301-181		
80	1,6	301-430	301-433	301-982					301-990			

MATERIAL GROUP

- 2 3 4 5 6 9 10
11 13 14 15 16 17

Claw Tooth

Wide Set precision teeth provide greater back clearance

FEATURES

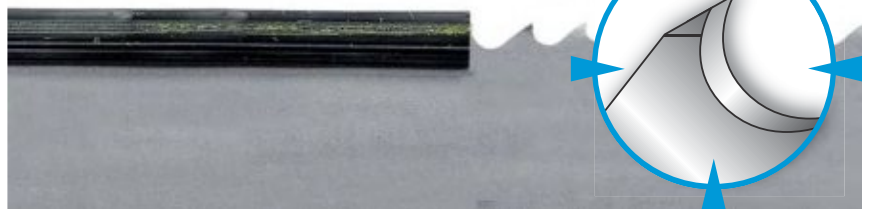
- Powder metal HSS tooth with 70 HRC hardness
- High positive rake curvilinear tooth
- Aggressive ground tooth design

BENEFITS

- Most wear-resistant Bi-Metal tooth
- Fast production sawing

APPLICATION

Moderate to difficult alloys on power saws in high production rates with extended blade life



Metric		PMP					
Width	Gauge	1-1,5	1,5-2	2-3	3-4	4-6	5-8
27	0,9				307-660	307-665	307-670
34	1,1			307-689	307-739	307-759	307-760
41	1,3		307-877	307-879	307-887	307-893	
54	1,6		307-901	307-902			
67	1,6	307-911	307-913	307-912			

MATERIAL GROUP

- 2 3 4 5 6 7 8 9 10
11 12 17 18

SUPREME >>>



FEATURES

- M81 powder metal tooth tip 70 HRC
- Varying tooth angle and tooth height
- Extremely positive rake angle

BENEFITS

- Higher cutting rates
- Long tool life on difficult to cut materials
- Improved penetration

APPLICATION

Difficult to cut materials like nickel based alloys and other exotics

Metric		SUPREME						
Width	Gauge	0,8-1,2	1-1,3	1,5-2	2-3	3-4	4-6	5-8
27	0,9					381-234	381-246	381-258
34	1,1				381-323	381-334	381-346	381-358
41	1,3			381-412	381-423	381-434	381-446	
54	1,6	381-581	381-511	381-512	381-523			
67	1,6	381-681	381-611	381-612				
80	1,6	381-781	381-711					

MATERIAL GROUP

7 8 9 10 11 12 17 18

Coated

FEATURES

- TiN - Penetrator
- TiN - Supreme
- Low surface friction

BENEFITS

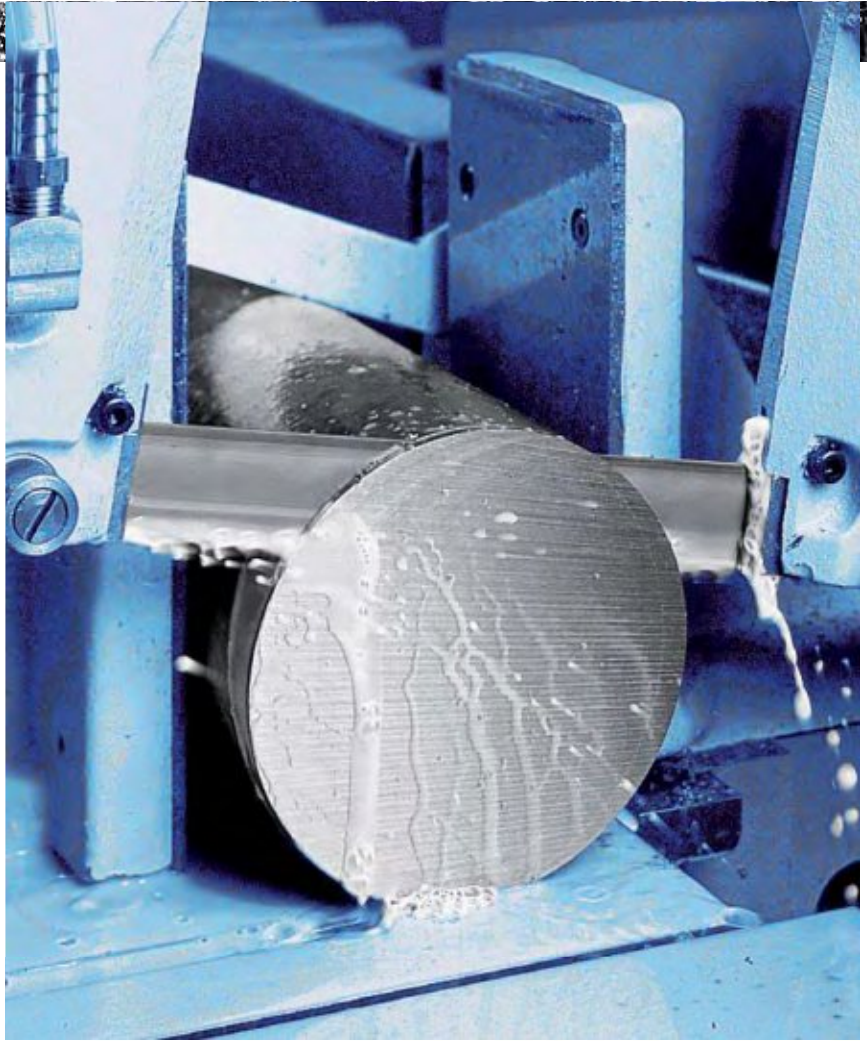
- Provides longer blade life
- Improved wear resistance
- Easy to difficult-to-machine metals

APPLICATION

Use these blades to saw any materials recommended for Penetrator and Supreme blades

MATERIAL GROUP

See Penetrator and Supreme blades



Metric		TiN Coated PENETRATOR					
Width	Gauge	1-1,5	1,5-2	2-3	3-4	4-6	5-8
27	0,9			319-423	319-598	319-615	319-645
34	1,1			319-558	319-533	319-567	319-789
41	1,3		319-880	319-640	319-319	319-375	
54	1,6	319-071	319-070	319-327	319-085		
67	1,6	319-185		319-184			
80	1,6	319-433					

Metric		TiN Coated SUPREME		
Width	Gauge	2-3	3-4	4-6
27	0,9		319-634	319-635
34	1,1	319-656	319-658	
41	1,3	319-809	319-814	

T3P & T3W Carbide



FEATURES

T3P Carbide

- Tungsten Carbide tooth
- Triple Chip tooth design
- Positive rake tooth

T3W Carbide

- Tungsten Carbide tooth
- Triple Chip tooth design
- Positive rake tooth
- Wave tooth height variation

BENEFITS

T3P Carbide

- Most heat and wear resistant tooth tip
- Smooth finish
- Aggressive sawing

T3W Carbide

- All the advantages of Production TC blade with enhanced penetration for the toughest metals

APPLICATION

T3P Carbide

Super alloys, high-nickel alloys, titanium etc.

T3W Carbide

Large diameters super alloys, high-nickel alloys, titanium etc.

T3N Carbide

For case hardened materials

Metric		T3P Carbide				
Width	Gauge	0,7-1	1,3-2	2-3	3	3-4
20	0,9				326-025	
27	0,9			328-223	326-035	328-234
34	1,1			328-323	326-045	328-334
41	1,3		328-431	328-422	326-074	328-434
54	1,6	328-571	328-532	328-523		
67	1,6	328-671	328-672			
80	1,6	328-771				
		328-773				

Metric		T3W Carbide				
Width	Gauge	0.7-1.0	1,3-2	2	2-3	3-4
34	1,1					327-334
41	1,3		327-431	327-375	327-422	
54	1,6		327-532		327-523	
67	1,6	327-671	327-672			

Metric		T3N Carbide
Width	Gauge	3-4
34	1,1	331-334
41	1,3	331-434

MATERIAL GROUP

11 12 13 14 15 16 18

STS

FEATURES

- Tungsten Carbide tooth
- Left, right, center and chamfered raker tooth
- Great back clearance

BENEFITS

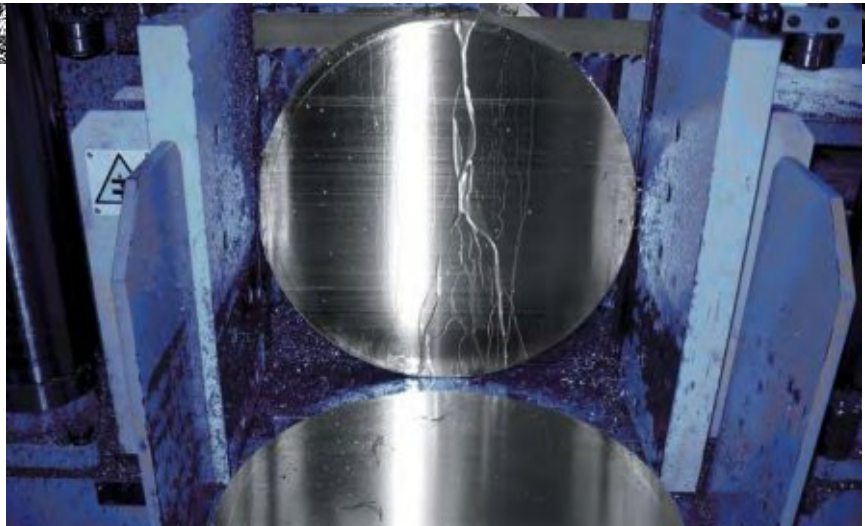
- Special double set cutting operation
- Three teeth cutting sides and bottom and fourth tooth controlling direction

APPLICATION

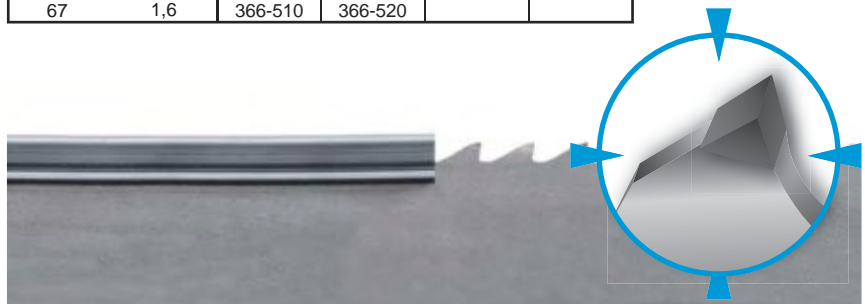
High performance cutting of difficult alloys like nickel steels and non-ferrous metals

MATERIAL GROUP

4 5 6 7 9 10 11 12 16 17 18



Metric		STS			
Width	Gauge	1,0-1,3	1,3-2	2-3	3-4
27	0,9				366-140
34	1,1			366-230	366-240
41	1,3		366-320	366-330	366-340
54	1,6		366-420	366-430	366-440
67	1,6	366-510	366-520		



FEATURES

- Tungsten Carbide tooth
- Set tooth design
- Positive rake tooth

BENEFITS

- Withstands rapid tool wear caused by fast cutting of highly abrasive materials

APPLICATION

Abrasive materials that dull Bi-Metal blades rapidly like: aluminium castings, graphite, fiberglass etc.



Metric		Set Tooth
Width	Gauge	2,5
10	0,6	305-015S
13	0,6	305-020S
20	0,9	305-025S
27	0,9	305-045S
27	0,9	305-029R
34	1,1	305-326R
41	1,3	305-375R

S = Straight Set R = Raker Set

Dart

FEATURES

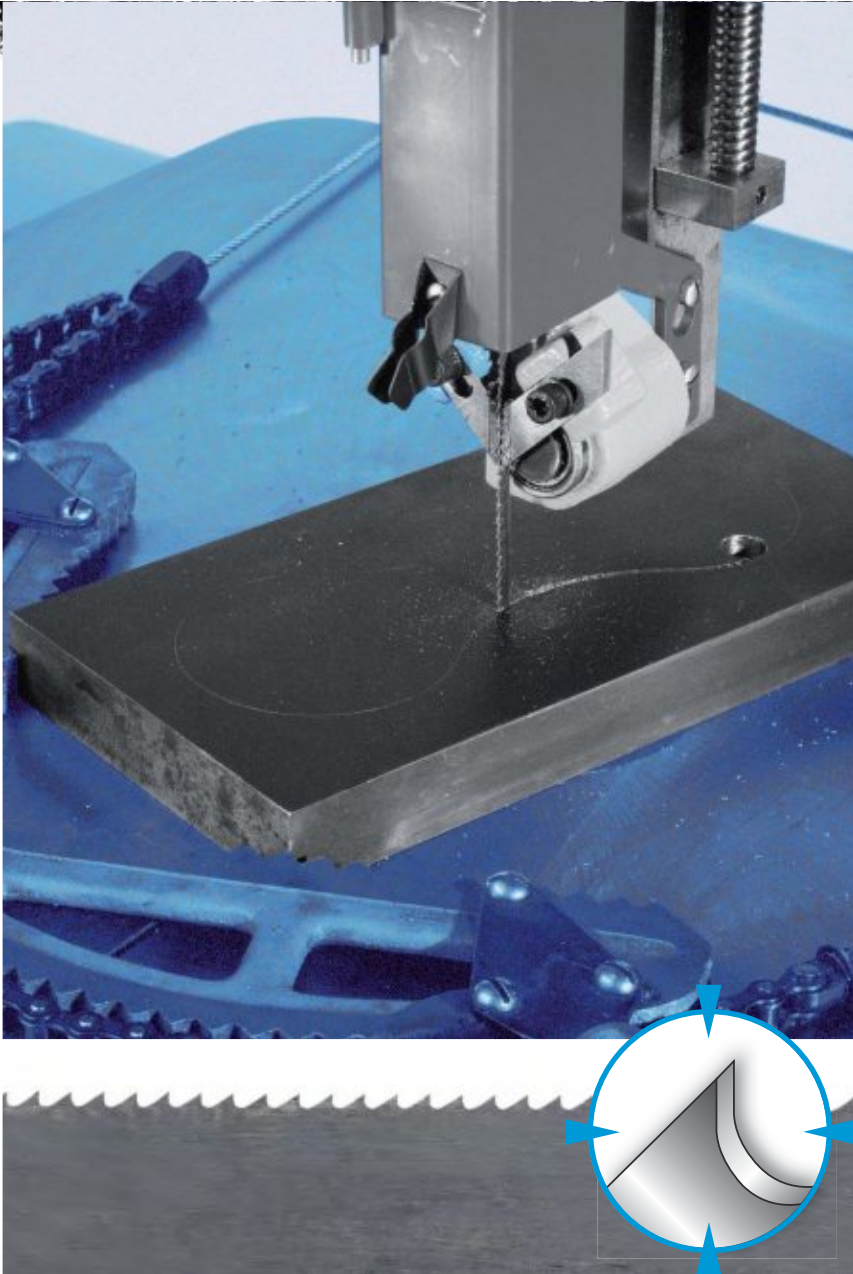
- Flexible hardened back
- Carbon steel teeth
- Hardened tooth tip

BENEFITS

- Accepts high band tension for straight cuts
- Resists scoring; extended cutting life

APPLICATION

Mild steels and other metals, plastics, aluminium and wood



Metric		DART										
Width	Gauge	1,3	2	3	4	6	8	10	14	18	24	32
5	0,6				308-825			308-023	308-049	308-064		
6	0,6				309-021*	309-047*		308-080	308-106	308-122	308-148*	308-601
					308-841*							
10	0,6			309-062	309-088*	309-104	308-163	308-189	308-205*	308-221*		
					308-908							
13	0,6					308-247		308-262*	308-288*	308-304		
				309-120*	309-146*	309-161*		308-627	308-643		308-668	
16	0,8							308-346				
20	0,8					308-403*	308-429*	308-445*	308-486*			
				309-187*		309-203*		308-700	308-742	308-767		
25	0,9			309-229*		308-502*	308-528*	308-544*	308-585*			
			308-973	309-211S*								
32	0,9	**309-948	**309-955	309-260								
38	0,9	**309-989										

Metal Master

FEATURES

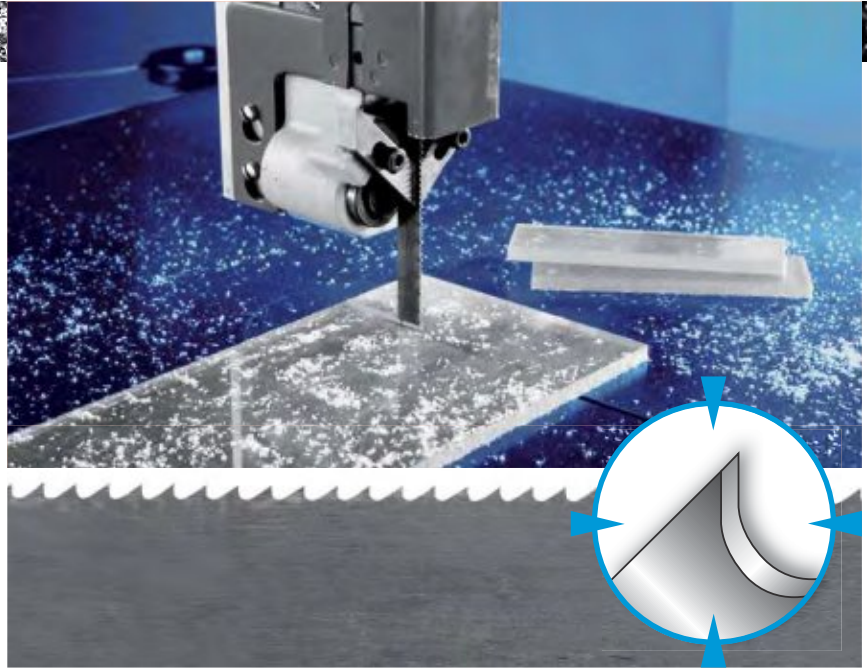
- Carbon steel teeth
- Flexible back
- Hardened tooth tip

BENEFITS

- Low cost band saw blade
- Contour sawing

APPLICATION

Easy non-ferrous metals, plastics and wood



Metric		METAL MASTER						
Width	Gauge	3	4	6	10	14	18	24
1,5	0,6							334-043
3	0,6					334-100		
6	0,6		335-348		334-227*	334-243*	334-268	
10	0,6			335-422	334-326*	334-342		
13	0,6	335-488	335-462	335-505*	334-409		334-449	
20	0,8	335-547			334-581*			
25	0,9	335-620			334-748			

■ Claw Tooth

* = Available in 30,5 m or 152,4 m coils

Friction

FEATURES

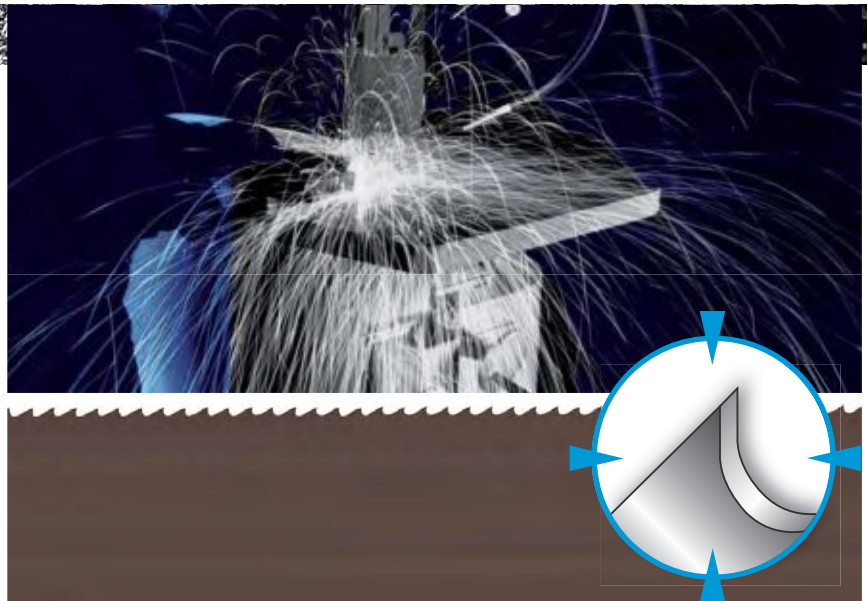
- Silicon-enhanced carbon steel
- Special wide set
- Hardened tooth tips

BENEFITS

- Slower set wear and longer fatigue life

APPLICATION

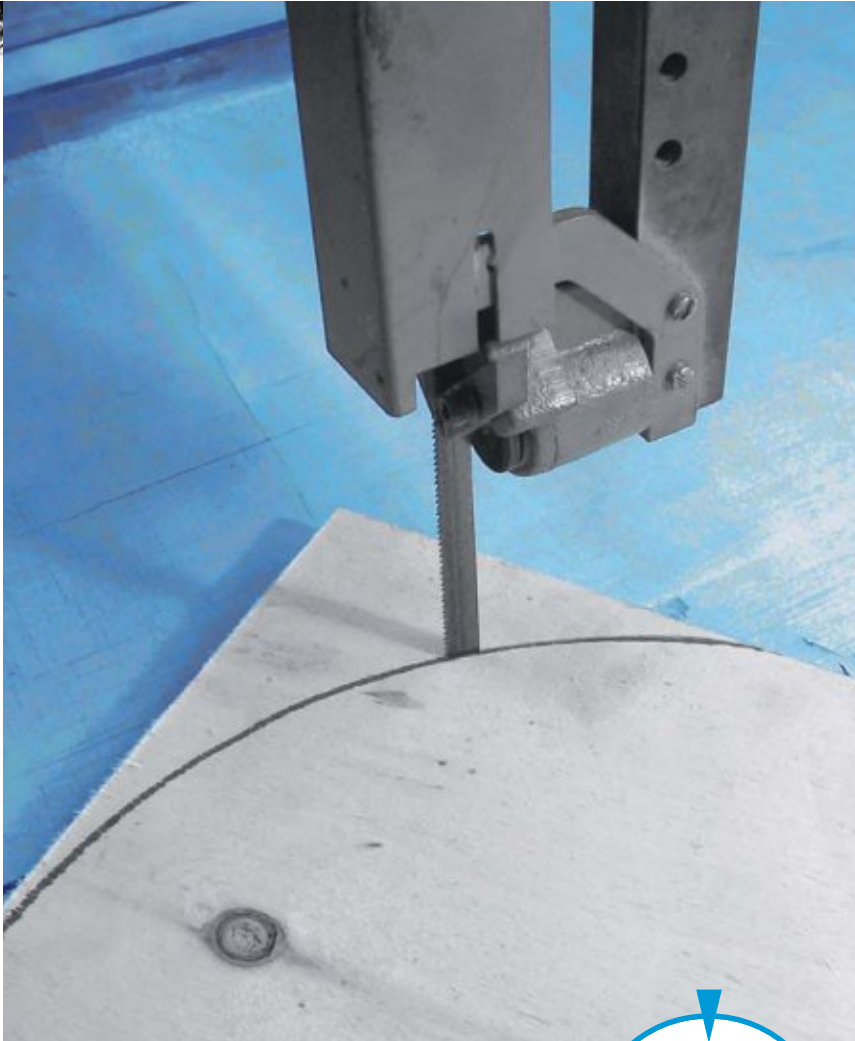
Ferrous metals of any hardness up to 25 mm thick at speeds exceeding 1500 m/min.



Metric		FRICTION	
Width	Gauge	8	10
13	0,8		310-037
20	0,9		310-094
25	0,9	310-134	310-136
32	0,9		310-359*

* = Available in 91,4 m coils other sizes 152,4 m coils

Olympia



FEATURES

- Precision milled tooth form
- Flame hardened tooth tips
- Spring hardened back

BENEFITS

- Long blade life
- Typical woodworking operations
- Strong blade for accurate contouring

APPLICATION

Woods and plastics

Metric		OLYMPIA			
Width	Gauge	1,3	2	3	4
6	0,6				358-054
10	0,6			358-108	358-118
	0,8		358-104	358-114	
13	0,6			358-152	
	0,8			358-156	
16	0,8		358-211S	358-215	
20	0,8		358-252	358-256	
25	0,9			358-328	
			358-304		
32	0,9	358-356	358-362		
38	0,9	358-423			
50	0,9	358-513			

■ Claw Tooth

S = Straight Set

Coil lengths up too 20 mm 152,4 m and over 20 mm 91,4 m

Tungsten Grit

FEATURES

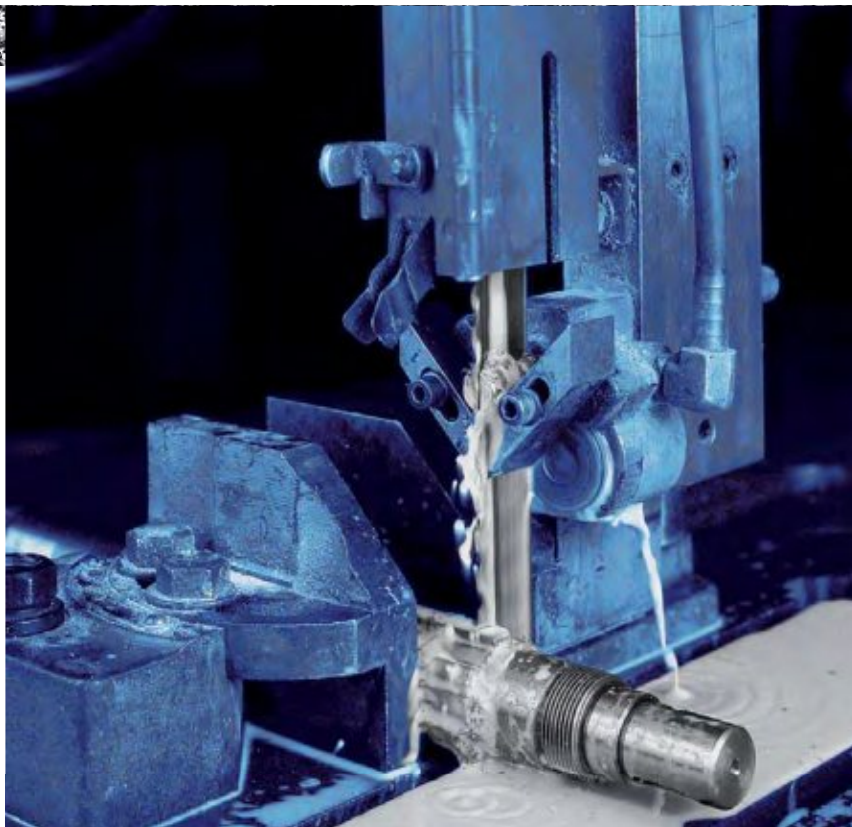
- Tungsten carbide grit edge
- Segmented for large materials; continuous for materials up to 25 mm

BENEFITS

- Cuts hardened steels up to 65 HRc and a wide range of hard or abrasive materials

APPLICATION

Hardened steels, glass, foamglass, car tires, friction materials, low density ceramics etc.



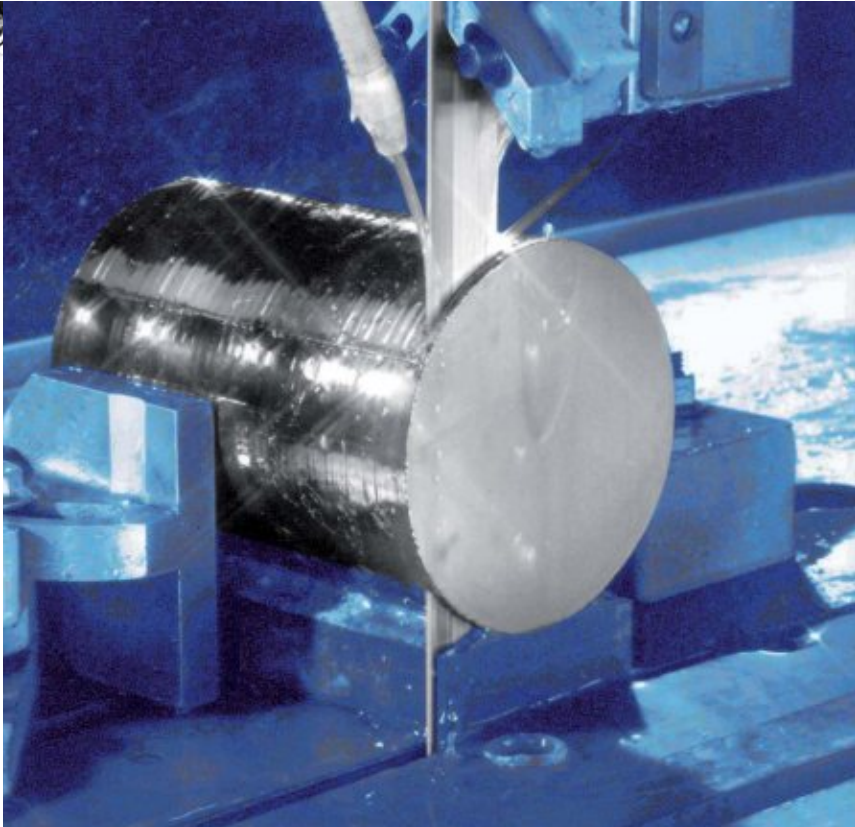
Metric		Pitch	Edge Type	
Width	Gauge	Class	Continuous	Segmented
6	0,5	Medium	325-043	325-035
10	0,6	Medium	325-167	325-159
		Medium Coarse		325-175
13	0,5	Medium	325-324	325-316
		Medium Coarse	325-327	325-330
	0,6	Fine	325-332	
		Medium	325-365	325-357
20	0,8	Medium Coarse		325-373
		Medium	325-548	325-530
		Medium Coarse		325-555
25	0,9	Coarse	325-589	325-571
		Medium	325-712	
		Medium Coarse	325-746	325-738
		Coarse	325-779	325-753
32	0,9	Deep Gullet Coarse*		325-754
		Medium Coarse		325-800
	1,1	Coarse	325-846	325-837
		Medium Coarse		
38	1,1	Coarse	325-850	325-852
		Deep Gullet Coarse*		325-870
		Deep Gullet Coarse*		325-936
42	1,3	Coarse		325-951
		Extra Coarse		325-960
		Coarse		325-965

Continuous edge blades reduce work chipping, especially in thin sections

Segmented edge blades carry coolant through large work sections

*Deep gullet for greater swarf clearance

Diamond



FEATURES

- Diamond grit edge
- Segmented for large materials; continuous for materials up to 25 mm
- For use on special vertical machines

BENEFITS

- Hardest material known grinds the hardest, most brittle, most abrasive special applications

APPLICATION

Silicon, glass, quartz, abrasive composites, hard graphites, carbide, marble, limestone, brake linings etc.

NOT FOR STEEL!

Metric		Type	DIAMOND with stainless steel backing Grit size			
Width	Gauge		25/30	35/40	60/80	100/120
25	1,0	Continuous		406-421	406-462	
		Segmented		406-442	406-433	
32	1,0	Continuous	406-450	406-428	406-476	
		Segmented	406-455	406-447	406-483	
38	1,0	Continuous	406-485	406-480		
50	1,0	Continuous	406-496			
Kerf	Factor	Milimeters	1,6	1,4	0,6	0,4


Metric		Type	DIAMOND Grit size					
Width	Gauge		25/30	35/40	40/50	60/80	100/120	200
13	0,5	Continuous			406-942	406-918		
19	0,5	Continuous			406-959	406-926	406-750	406-769
		Segmented			406-741			
25	1,0	Continuous	406-829	406-825				
		Segmented			406-967	406-934	406-971	
32	0,5	Continuous			406-827	406-843	406-846	
		Segmented			406-827	406-843	406-846	
38	1,0	Continuous	406-987	406-983		406-553	406-016	
		Segmented		406-520		406-546		
50	0,5	Continuous			406-807	406-804	406-802	
		Segmented			406-813			
50	1,0	Continuous	406-991	406-820		406-814		
		Segmented	406-512	406-821		406-815		
50	1,0	Continuous			406-817			
		Segmented	406-828	406-823		406-818		
50	1,0	Continuous	406-913	406-909				
		Segmented	406-836			406-830		
Kerf	Factor	Milimeters	1,6	1,4	0,9	0,6	0,4	0,3

Note 1: Shaded areas show available bands (minimum order required)

Note 2: To determine approximate kerf add kerf factor to gauge of the band



KOOL-ALL®
SEMI SYNTHETIC FLUID



Amine-free metal working coolants for high performance. All these water miscible EP coolants are formulated from mineral oil. These 2nd generation coolants are free of amines and boric acid and are bio-stable. The amine-free coolants offer excellent protection for operator and environment.

Metal working coolants for high performance.
All these coolants are free of chlorine and nitrite and are bio-stable.

The demands on water-miscible metal working coolants are changing continuously because of production, environmental and operator safety requirements. DoALL's semi-synthetic fluids optimize the benefits of synthetics and soluble oils in one fluid. These fluids contain typically 6 to 25% mineral oil and performance enhancing chemical additives. The oil enhances overall tool life and improves surface finish quality. Chemical additives further prolong tool life and provide tramp oil rejection while cleaning the machine and work piece. These coolants provide excellent cooling and keep costs to a minimum. Low oil emulsion levels keep bacteria growth and odour to a minimum and help to extend sump life and reduce disposal costs.

KOOL-ALL 011 ECO

To meet special market requirements for light to medium duty machining operations of customers operating in areas with poor mixing/tap water conditions. Designed for machining and grinding operations on steel, cast iron and aluminium. This fluid does contain EP additives.

KOOL-ALL 144

KOOL-ALL 144 is suitable for grinding and deep grinding of all metals. For machining of steel, non-ferrous metals and cast iron. This coolant is free of chlorine, nitrite and secondary amines.

KOOL-ALL 146

KOOL-ALL 146 is suitable for heavy machining of steel, high tensile steel and cast iron. Non-ferrous metals are not stained by this coolant. This coolant is free of chlorine, nitrite and secondary amines.

KOOL-ALL 148

KOOL-ALL 148 is suitable for machining operations in tough steels. Excellent in alloyed steel and high tensile steel. This coolant is free of chlorine, nitrite and secondary amines.

KOOL-ALL 022 ECO



This soluble oil type metal working fluid has a modern preservative package and is dedicated to light duty machining operations in materials such as steel, cast iron and aluminium.

KOOL-ALL 240



KOOL-ALL 240 is generally used for machining and grinding operations of steel, aluminium and cast iron.

KOOL-ALL 243



KOOL-ALL 243 is specifically used for non-ferrous metals like copper and its alloys (bronze, brass). It needs efficient filtration to achieve best results.

KOOL-ALL 244



KOOL-ALL 244 is a multi-purpose coolant for all heavy machining operations of steels, cast iron and non-ferrous metals. Especially good in machining aluminium, including tapping and reaming.


KOOL-ALL 248



KOOL-ALL 248 is the best for heavy machining operations of tough and difficult to machine steels and alloys. Best results in sawing, deep hole drilling and chipless forming.



KLEEN-KOOL®
SYNTHETIC FLUID



Metal working coolants with best cooling performance and amine-free. These amine-free 2nd generation coolants offer excellent protection for operator and environment. These fluids are free of mineral oil, chlorine and amines.

Metal working coolants with the best cooling performance.
All these coolants are free of mineral oil.

Synthetic water-miscible coolants contain no oil and rely on chemical composition and additives for performance. These fluids offer the highest level of cooling, best workplace visibility, and are formulated to minimize operator sensitivity. These fluids are low foaming which is ideal in high-pressure coolant systems and also offer good detergent properties for maintaining free cutting grinding wheels. These synthetic fluids offer a long sump life, are very easy to maintain and have the lowest disposal cost.


KLEEN-KOOL 170

KLEEN-KOOL 170 is especially suitable for all grinding operations such as circular, surface and form grinding. The low foaming characteristics offer an excellent visibility of the work piece. This coolant is free of chlorine, nitrite and secondary amines. For steel and cast iron.

KLEEN-KOOL 174


KLEEN-KOOL 174 is a multi-purpose EP coolant for machining operations in steel, cast iron and non-ferrous metals. Excellent when transparency and high degree of lubrication are required. For machining, grinding and chipless forming operations. This coolant is free of chlorine, nitrite and secondary amines.

KLEEN-KOOL 270




KLEEN-KOOL 270 is a water-miscible, synthetic coolant free of mineral oil. This coolant is formulated for grinding operations on tungsten carbide, and is also suitable for grinding of steel and cast iron. Kleen-Kool 270 avoids cobalt leaching due to a special inhibitor package. This fluid is non sticking or gumming. Efficient filtration is a must for good results. The use of magnetic separators, hydro-cyclones or centrifuges may cause a foaming problem.

KLEEN-KOOL 274



KLEEN-KOOL 274 is a coolant with EP additives formulated for use on tungsten carbide, but will also work excellent on steel, cast iron and non-ferrous metals. For machining, grinding and chipless forming.

KLEEN-KOOL 284



KLEEN-KOOL 284 is a high performance coolant suitable for heavy machining operations of aluminium alloys, high tensile steels and special alloys. Excellent results are also achieved in forming operations.



BRIGHT-EDGE® CUTTING OIL

Cutting oils are blends of premium base oils and provide the highest degree of lubrication, longest tool life, and best surface finish of all metal working fluids. These oils provide long fluid life and have no rust issues associated with their use. Plus, these oils do not require dilution, have low to mild odour, and have the least amount of operator sensitivity. In addition, cutting oils are low misting and non-foaming.



AL-2100 series MIN. QUANTITY LUBRICATION OIL

Minimal lubrication oils are formulated for use in applications where flood coolants are prohibited or not desired. These oils are used with a pneumatic applicator unit and produce "dry" chips because the oil is consumed totally in the cutting operation. These oils are ideal for most cutting, sawing, turning, tapping, drilling and milling operations when applied directly on the tip of the cutting tool. These oils can be used on almost all steels, including stainless steel, titanium, and non-ferrous metals. These oils are a blend of natural raw materials keeping the environment in mind. These products are biodegradable.

BRIGHT-EDGE 200

Bright-Edge 200 is a special grinding oil featuring low viscosity, low mist and low evaporation properties. This product is a blend of highly refined base oils of superior quality and free of aromatics. This grinding oil is free of chlorine and heavy metals such as lead, zinc and barium.

Bright-Edge 200 is used for grinding operations on any steel and tool. The specific choice of basic compounds avoids any leaching of cobalt during the process. The high quality surface finish is achieved by the combination of polar EP additives.

Bright-Edge 200 is suited for micro-machining operations like slot cutting, fine drilling and reaming.

BRIGHT-EDGE 210

Bright-Edge 210 is used as a cutting oil for easy and more demanding machining operations on medium tensile steels, cast iron, aluminium and non-ferrous metals. It also suits for magnesium treatment.

BRIGHT-EDGE 230Ti

Bright-Edge is suitable for machining operations, primarily for operations on magnesium and titanium. Sensitive magnesium alloys are not discoloured.

BRIGHT-EDGE 250

Bright-Edge 250 is suitable for heavy machining operations and all kinds of chipless forming operations. Particularly suited for broaching and milling on temperature resistant high tensile stainless steels, such as bearing steel and austenitic steel. This fluid contains polar EP additives avoiding welding of chips between tool and work piece.

AL-2100

AL-2100 is a synthetic lubricant formulated from ester oil. This product can be used as cutting and spray oil and is designed for use in minimal lubrication systems. This lubricant is developed for non-ferrous and light metal working operations where higher cutting speeds are used.

AL-2100HV

AL-2100HV is a synthetic lubricant formulated from ester oil. This product can be used as cutting and spray oil. It is particularly suited for sawing operations to be applied by minimal lubrications systems. Also for machining operations on steel and non-ferrous metals using lower cutting speeds such as key-way broaching.

AL-2100EP

AL-2100EP has been developed for sawing operations of high alloyed and special carbon steel, chrome-nickel-molybdenum steel, nickel alloys and titanium. Offering high cutting performance, outstanding tool life and minimum consumption of cutting fluid.

SPECIAL APPLICATION FLUID

This group of additional fluids is developed to improve the maintenance of the machines as well as to keep the cutting fluids in excellent condition.



WAY-LUBRICANT 068

Way-Lubricant 068 is suitable for workshops equipped with modern CNC machines and machining centres where high positioning accuracy is required to achieve top level of surface finish and component tolerances.

Way-Lubricant 068 distinguishes itself by a rapid and exact demulsifying effect, when working with DoALL coolant emulsions. The emulsion circulating in the machine will not be weakened in its homogeneity, stability or consistency, due to a rapid separation of the emulsion from the slide-way oil during standstill of the machine.

This lubricant offers good adhesiveness, low friction values, high pressure absorption, no stick slip and good demulsifying properties.

KLEEN-FLUSH 010 & 020

Kleen-Flush 010 and 020 are cleaning agents. They remove impurities from tooling machines, their coolant tanks and tubing without any additional work. The machine can operate normally during the process. These cleaning agents are based on removing soil, bacterial slime, fungal patches and yeast colonies from surfaces.

Even on inaccessible places! Oil separations and creaming are quickly re-emulsified and loosened dirt is carried by the emulsion.

- Use Kleen-Flush 010 for emulsions containing mineral oils.
- Use Kleen-Flush 020 for solution without mineral oils.

Add 1 – 2% Kleen-Flush to the old emulsion and run for at least 8 hours, than drain system, flush with water and refill system.

ANTI-FOAM 077

Anti-Foam 077 is a mineral oil free de-foaming additive. It is suitable for all water mixed coolants and serves only for re-defoaming. Anti-Foam 077 maintains its anti-foaming effect over a long period, compared to traditional defoamers.

PRESERVATIVE 025

Preservative 025 is a light yellow, pH-neutral additive with low viscosity. It has a broad spectrum of activities against a great number of micro-organisms such as bacteria, fungi, yeast and spores. This additive will recondition used emulsions.

KK=Kleen-Kool
 KA=Kool-All
 BE=Bright Edge

Custom mixed products are also available to handle specific requirements.

FLUID APPLICATION CHART

		General machining, turning, drilling, milling		Grinding surface-cylindrical		Deep hole drilling		Gear cutting		Tapping		Reaming		Sawing		Stamping		
Easy to machine steels	Standard	KA 011 KA 144 KK 174	4% 3% 3%	KA 011 KA 144 KA 174 KA 170	4% 3% 3% 4%	KA 144 KA 148	4% 4%	KA 146 KA 148	4% 4%	KA 146 KA 148	4% 4%	KA 146 KA 148	4% 4%	KA 146 KA 148	8% 8%	KA 148	4% 4%	
	Amine-free	KA 022 KA 240 KK 274	5% 4% 3%	KA 022 KA 240 KA 274 KK 270	5% 4% 3% 3%	KA 248	5%	KA 248	5%	KA 244 KA 248	6% 5%	KA 244 KA 248	6% 5%	KA 244 KA 248	8% 8%	KA 248	10%	
	Straight oil	BE 250						BE 250					BE 250		BE 250			
	Minimum lubrication	AL-2100 AL-2100EP AL-2100HV												AL-2100 AL-2100EP AL-2100HV		AL-2100EP AL-2100HV		
Hard to machine steels	Standard	KA 146 KA 148 KK 174	5% 4% 3%	KK 170 KK 174	4% 3%	KA 148	4%	KA 148	4%	KA 146 KA 148	5% 4%	KA 146 KA 148	5% 4%	KA 148	8%	KA 148	4%	
	Amine-free	KA 244 KA 248 KK 274	6% 5% 3%	KA 240 KK 270 KK 274	4% 3% 3%	KA 248	5%	KA 248	5%	KA 244 KA 248	6% 5%	KA 244 KA 248	6% 5%	KA 248	8%	KA 248	10%	
	Straight oil	BE 250											BE 250		BE 250			
	Minimum lubrication	AL-2100EP AL-2100HV												AL-2100EP AL-2100HV		AL-2100EP AL-2100HV		
Cast iron	Standard	KA 011 KA 144 KK 174	4% 4% 4%	KA 011 KA 144 KK 170 KK 174	4% 5% 5% 3%					KA 144 KA 146	5% 5%			KA 146	10%			
	Amine-free	KA 022 KA 240 KK 244 KK 274	6% 4% 6% 4%	KA 022 KA 240 KK 270 KK 274	5% 4% 4% 3%					KA 244	6%			KA 244	8%			
	Straight oil	BE 210 BE 250											BE 250		BE 250			
	Minimum lubrication	AL-2100 AL-2100EP AL-2100HV												AL-2100 AL-2100EP AL-2100HV		AL-2100EP AL-2100HV		
Aluminium alloys	Standard	KA 011 KK 174	5% 3%	KA 011 KK 170 KK 174	4% 4% 3%									KA 146	8%			
	Amine-free	KA 022 KA 244 KK 274	5% 6% 3%	KA 022 KK 284 KK 270 KK 274	5% 3% 3% 3%					KA 244	6%			KA 244	8%			
	Minimum lubrication	AL-2100 AL-2100EP AL-2100HV												AL-2100 AL-2100EP AL-2100HV		AL-2100EP AL-2100HV		
Titanium alloys	Standard	KA 146 KA 148	5% 4%															
	Amine-free	KA 244 KA 248	6% 6%	KK 284	3%	KK 284	5%	KA 248	6%	KA 248	5%	KK 284	6%	KA 248	8%	KK 284	10%	
	Straight oil	BE 230Ti												BE 230Ti				
	Minimum lubrication	AL-2100EP AL-2100HV												AL-2100EP AL-2100HV		AL-2100EP AL-2100HV		
Carbide	Amine-free			KK 270	3%													
	Straight oil			BE 200														

Calculation for correction of concentration

The percentage of the emulsion is 1/100. First you have to calculate the difference of the concentration and multiple this with the fill capacity of the machine.

For example:

The concentration should be 6% but after measuring with the refracometer you measure 4%, which is a difference of 2% (0,02).

The fill capacity of the machine is 200 liters.

The measured difference should be multiplied with 200 (fill capacity): $0,02 \times 200 = 4$ liters.

This means 4 liters of coolants have to be mixed and refilled into the machine.

ATTENTION: The measured percentage with the refractometer allways have to be multiplied with the refractometer factor to determine the exact percentage of concentration.

For example you measure 3% and the refractometer factor is 2, the exact concentration is $3\% \times 2 = 6\%$ concentration of coolant.

NOTES



FOR ALL YOUR SAWING NEEDS!

Welcome to DoALL

It started with the metal cutting band saw, invented by our founder Mr. Leighton A. Wilkie in 1933. He was the first to produce all three vital elements for band sawing: band saw blades, sawing machines and cutting fluids.

DoALL invented the Bi-Metal band saw blade and released many improvements over the years. Today we are still the trendsetter in band saw blade technology. We have production facilities in the USA; Canada as well as in Europe.

ISO 9001:2008 quality certification

DoALL is committed to provide you, our customer, with the best products and services available. This ambition resulted in the ISO 9001:2008 certification of our quality system.



At your service!

The European Distribution Center is located strategically in Dordrecht, The Netherlands. Our sawing products are distributed throughout Europe including the Russian Federation and the Middle East. Our factory trained local distributors operate their own welding centers to provide fast and local welding service and offer technical assistance.



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