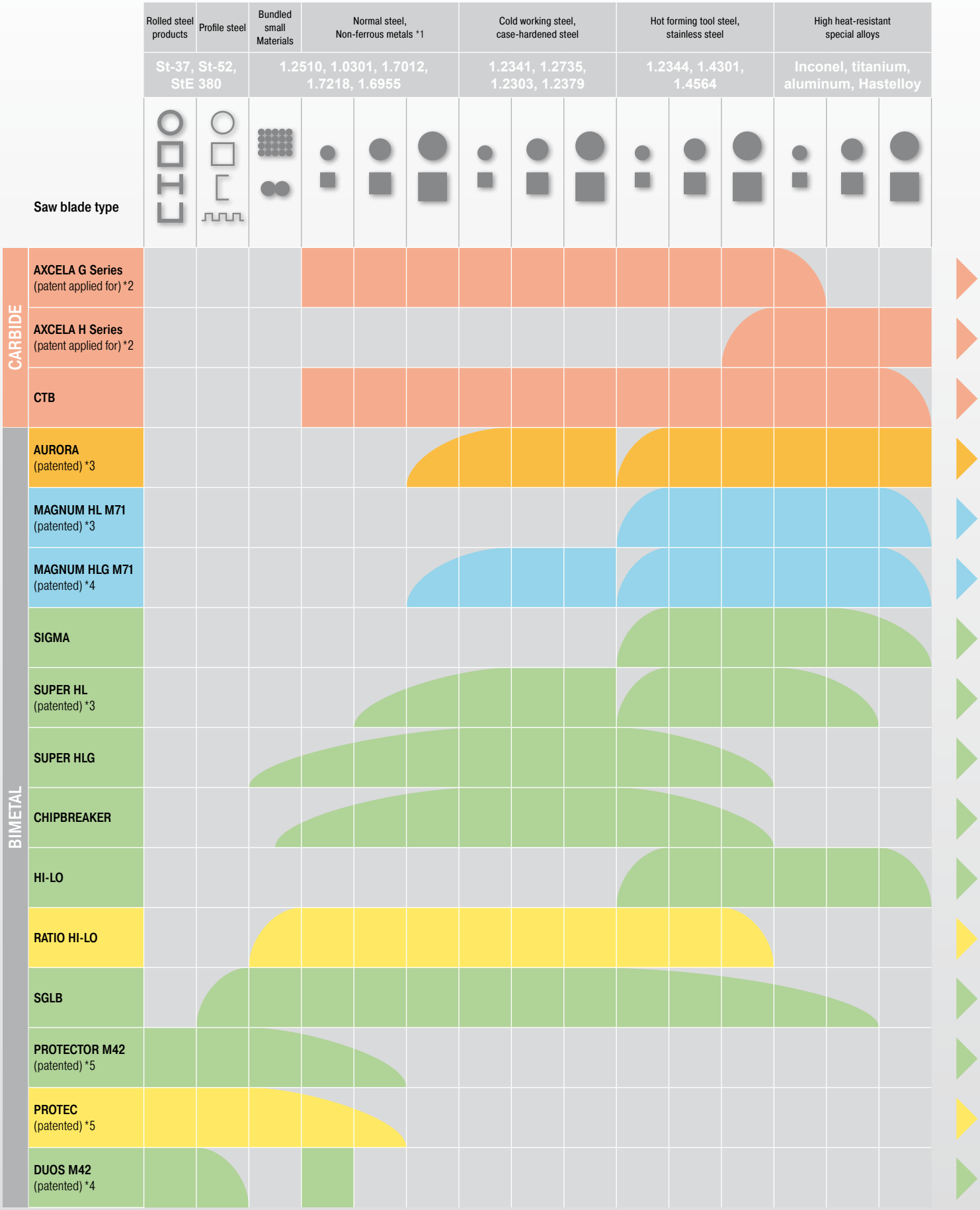
AMADA MACHINE TOOLS EUROPE

Saw Blades

Product Overview

BAND SELECTION TABLE



*1 *Non-ferrous metals are mainly aluminum, aluminum alloys, copper and copper alloys. In some cases, these materials can be just as hard as difficult to cut steels or even harder. In such cases, it is recommended to contact AMADA in advance.*

*2 *JP. PAT. P.*
*3 *US. PAT.*
*4 *JP. PAT.*
*5 *JP. PAT. (2/3P, 3/4P, 4/6P)*

Select the blade according to the material form and quality to be sawn taking account of the task.

When sawing wide, rolled H profiles, the saw blade can pinch in the material to be sawn. In order to prevent this effect, a WS (wide offset) is available for **„PROTECTOR“** *5.

For solid material with larger diameters, we provide an Anti-Pinching variant (AP) of the **„SUPER HL“** *3 for prevention of the pinching effect.

Saw blade type	Tooth tip material	Tooth tip hardness *6	Properties	
AXCELA G Series (patent applied for) *2	Carbide + various coatings	up to 2500 HV depending on type	Carbide saw blades for maximum performance with outstanding tool life. The types AXCELA G: BN-3, BS-3, BN-4, BN-2 and CS-2 are suitable for various materials.	CARBIDE
AXCELA H Series (patent applied for) *2	Carbide	1600 HV	Carbide saw blades for challenging materials. For optimum results, the AXCELA H Series has many application-specific types; AXCELA H: BN-1, CS-1, SS-1, SR-1, CY-1 and CG-1.	
CTB		1600 HV	Due to its carbide teeth tips, this offset blade is intended for extra hard materials which can no longer be cut with HSS bimetal saw blades. Also very well suited for conventional cutting without carbide finishing.	
AURORA (patented) *3	M42 + TiN	950 + 2300 HV	TiN coated high-performance saw blade for difficult to cut materials with extremely long tool life.	BIMETAL
MAGNUM HL M71 (patented) *3	AMADA M71 HSS	1000 HV	HILO tooth geometry and precision offsetting result in friction reduction. High-performance tooth tip material and sectional cutting channel using patented tooth geometry. Can be used for difficult to cut materials including high heat-resistant special alloys.	
MAGNUM HLG M71 (patented) *4		1000 HV	HILO tooth geometry and precision offsetting result in friction reduction. Outstanding cutting performance for tool steel.	
SIGMA	M42 HSS	950 HV	Sectional cutting channel using patented tooth geometry for the reduction of cutting resistance. Can be used for difficult to cut materials. Particularly recommended for stainless steels.	
SUPER HL (patented) *3		950 HV	HILO tooth geometry and precision offsetting result in friction reduction. The sectional cutting channel reduces the cutting resistance. For materials in the medium and large diameter range. An Anti-Pinching variant is available for materials with internal clamping.	
SUPER HLG		950 HV	HILO tooth geometry and precision offsetting result in friction reduction. Wide application area from normal steel to difficult to cut materials.	
CHIPBREAKER		950 HV	Special tooth profile in combination with HILO tooth geometry reduces the heat development at the tooth tip and promotes the formation of smaller chips. As a result, particularly suitable for materials with unfavorable chip form.	
HI-LO		> 950 HV	Special tooth profile in combination with HILO tooth geometry and a particular production method enables the economic cutting of tubes made of high strength materials such as duplex steel.	
RATIO HI-LO	Matrix HSS M42 Basis	900 HV	Proven, patented AMADA HILO tooth shape reduces the friction and enables high cutting performance for materials with a strength up to 950 N/mm^2.	
SGLB	M42 HSS	950 HV	Universal blade with wide range of applications.	
PROTECTOR M42 (patented) *5		950 HV	Saw blade specially for profile steel and tubes with reinforced tooth back for reduction of tooth breakouts.	
PROTEC (patented) *5	Matrix HSS M42 Basis	900 HV	Saw blade specially for profile steel and tubes with reinforced tooth back for reduction of tooth breakouts. Particularly suitable for steels with a strength up to 950 N/mm^2.	
DUOS M42 (patented) *4	M42 HSS	950 HV	Due to the special offsetting and the different tooth heights, the sawing of a wide range of dimensions without blade replacement is possible. Particularly suitable for light weight workshop machines.	

*2 JP. PAT. P.
*3 US. PAT.
*4 JP. PAT.
*5 JP. PAT. (2/3P, 3/4P, 4/6P)

*6 *The hardness of the tooth tips refers to the average values published by AMADA. These can be different depending on type and dimensions of the product.*
The basic requirement for cutting is that the tooth tip must be harder than the material to be cut. As a general rule of thumb, the tooth tips should be at least twice as hard as the material to be cut.

AXCELA CARBIDE SAW BLADES

Carbide-tipped high-performance saw blades for maximum cutting performance for materials which can only be cut in a limited way or not at all with traditional bimetal saw blades.

AXCELA G Series*2 – coated carbide saw blades

AXCELA G-BN3 (BS3)
- Universal application range up to nickel-based alloys
- Particularly hard coating for maximum wear resistance (EXCOAT-DP)

AXCELA G-BN4
- Application area: normal steel, tool steel, case-hardened steel and hot forming tool steel
- Optimized coating for long tool life

AXCELA G-BN2 / G-CS2
- Universal application area – particularly for normal steel, tool steel and stainless steel

AXCELA H Series*2 – not coated carbide saw blades

AXCELA H-BN1 / H-CS1
- Application area: cast iron, engine blocks (Al-Si), cast materials

AXCELA H-SS1
- Wide application range for all ferrous and non-ferrous metals

AXCELA H-SR1 (AP)
- Particularly suitable for non-ferrous metals such as aluminum, bronze, copper alloys
- Special offsetting against pinching of the saw blade (AP)

AXCELA H-CY1
- Developed for titanium and nickel based alloys

AXCELA H-CG1 (AP)
- Developed for titanium and nickel based alloys
- Special offsetting against pinching of the saw blade (AP)

BIMETAL SAW BLADES

Here are some examples of bimetal saw blades which have been optimized for special application areas. As a tool for general applications, we recommend our „SGLB“ product. Further information can be obtained from our Sales Department.

PROTECTOR M42 (patented) *5

Saw blade specially for profile steel and tubes. With reinforced tooth back for reduction of tooth breakouts.

SUPER HLG

HILO tooth geometry and precision offsetting result in friction reduction. Wide application area from normal steel to difficult to machine materials.

MAGNUM HLG M71 (patented) *4

HILO tooth geometry and precision offsetting result in friction reduction. Outstanding cutting performance for tool steel.

SUPER HL (patented) *3

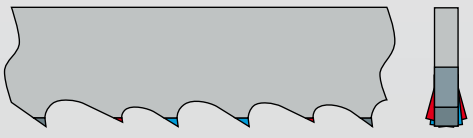
The sectional kerf reduces the cutting resistance.
For materials in the medium and large diameter range.
An Anti-Pinching variant (AP) is available for materials with internal clamping.

SIGMA

Sectional kerf using patented tooth geometry for reduction of cutting resistance. Can be used for difficult to machine materials. Particularly recommended for stainless steels.

MAGNUM HL M71 (patented) *3

High-performance tooth tip material and sectional kerf using patented tooth geometry. Can be used for difficult to machine materials including high heat-resistant special alloys.



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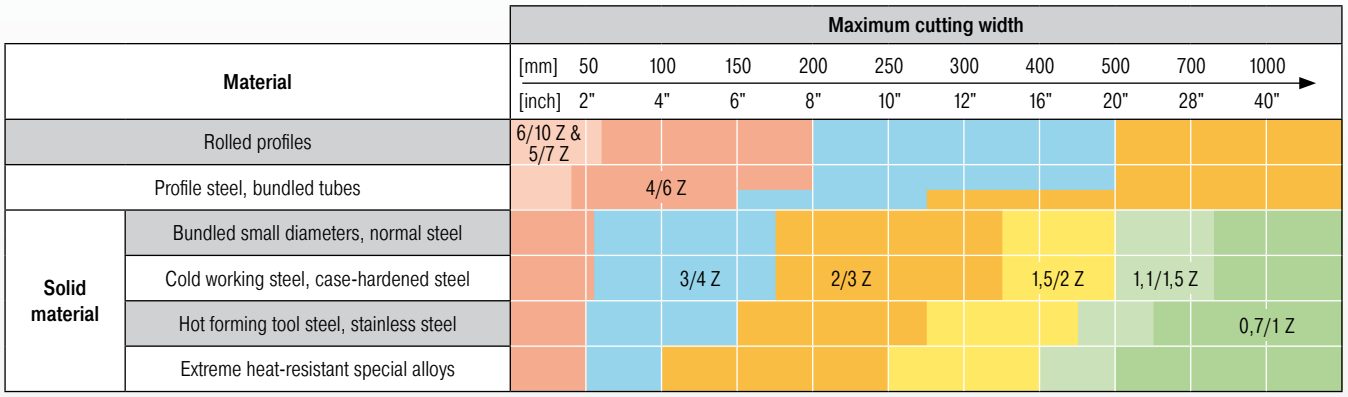
SELECTION OF THE TOOTH PITCH PER MATERIAL



Comments

1. For optimum sawing, we recommend selecting a toothing pitch which always has 10 to 20 teeth in the material.
2. For sawing deformed workpieces or workpieces with varying cutting width, it is recommended during the cutting that at least two teeth penetrate the material simultaneously.
3. The above table is based on a quality „SGLB“ as guideline. Specific applications of other blades vary occasionally due to their characteristic properties. For example, a 3/4 teeth PROTECTOR can also cut material from the above 4/6 teeth/inch range.

BASICS OF THE CUTTING PARAMETERS SELECTION

1. Select a suitable saw blade according to the saw blade quality table.
2. Select a suitable tooth pitch according to the tooth pitch selection table.
3. Set the blade speed according to the table below.
4. In relation to the cutting performance specified in the table, set the feed rate so that the cutting time calculated according to the table below is achieved.

Note: If a new blade is used, carry out the running-in process (see „General Instructions“)

DETERMINATION OF THE CUTTING RATE

Cutting rate means the machined area per minute and is expressed using the unit cm^2/min. To achieve the target cutting performance, calculate the cutting time according to the following equation and set the feed rate.

$$\text{Cutting time (minutes)} = \frac{\text{Material surface area (cm}^2\text{)}}{\text{Cutting rate (cm}^2\text{/min)}}$$

For simplified calculation of the surface area, use the following formula*:

- Surface area of square material = width (cm) x height (cm)
- Surface area of round material = Ø (cm) x Ø (cm) x 0.785

** For bundle cutting, multiply the number of the bundled materials by the value of the individual surface areas.*

	Material dimensions [mm] Area [cm²]	**100 79**	**200 314**	**300 707**	**400 1256**	**500 1963**	**700 3847**	**1000 7850**
Normal steel	Blade speed [m/min]	48 – 75	48 – 75	48 – 75	43 – 65	39 – 58	34 – 51	30 – 44
	Cutting rate [cm²/min]	36 – 54	72 – 108	72 – 108	60 – 91	49 – 73	37 – 56	26 – 38
Cold working steel	Blade speed [m/min]	28 – 42	28 – 42	28 – 42	25 – 38	23 – 34	20 – 30	18 – 26
	Cutting rate [cm²/min]	11 – 23	23 – 46	23 – 46	20 – 40	17 – 35	15 – 25	12 – 20
Case-hardened steel	Blade speed [m/min]	44 – 66	44 – 66	44 – 66	39 – 59	35 – 52	30 – 45	26 – 38
	Cutting rate [cm²/min]	28 – 42	56 – 84	56 – 84	47 – 71	39 – 58	30 – 45	22 – 32
Hot forming tool steel	Blade speed [m/min]	24 – 36	24 – 36	22 – 32	19 – 29	17 – 26	17 – 26	17 – 26
	Cutting rate [cm²/min]	8 – 15	16 – 30	14 – 27	14 – 27	13 – 24	13 – 24	13 – 24
Stainless steel	Blade speed [m/min]	40 – 60	40 – 60	40 – 60	35 – 53	31 – 46	26 – 39	22 – 32
	Cutting rate [cm²/min]	20 – 30	40 – 60	40 – 60	34 – 52	29 – 43	23 – 35	18 – 26
High heat-resistant special alloys	Blade speed [m/min]	10 – 20	10 – 25	10 – 25	10 – 25	10 – 25	10 – 20	10 – 15
	Cutting rate [cm²/min]	2 – 10	3 – 15	3 – 15	3 – 15	3 – 15	3 – 15	3 – 15

Orientation values – real performance is strongly related to individual machine. These performance figures are significantly exceeded with AMADA blade saws of the PCSAW series.

Diese Zeile löschen?

GENERAL INFORMATION

- In order to achieve optimal tool lives, saw blades should always be run in. We recommend running in each saw blade using a cutting area of approx. 3000 cm^2. Reduce the blade speed here by approx. 30% and the cutting performance by approx. 50%.
- Ensure that the chip brush(es) of your machine is (are) always engaged. Replace worn brushes, otherwise the quality of the cut face and the tool life reduces.
- Ensure sufficient concentration of the cooling lubricant; this should usually be approx. 10%. For stainless steels, a slightly increased concentration of approx. 12% has proven itself. Only cast iron and plastic should be sawn dry.

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The cutting performance data in this catalogue is affected by material, tooling and cutting conditions.
Technical changes reserved.

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