Tools for Production of **Window and Door Joinery**
2020/2021

GlobUs®
since 1921

VITAL INFORMATION:

Indexes presented in this folder which are marked with "**o**" are available only to client's order.

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A comprehensive list of GLOBUS catalogue products can be found on www.globus-wapienica.com.

WINDOW AND DOOR JOINERY

After several years of dynamic growth, manufacturers of window and door joinery are facing many new challenges. They must follow new trends and technologies in order to meet rising requirements related to energy saving and thermal insulation power of their products. New trends require not only purchasing new technologies and machines, but also applying tools of highest quality, often determined by efficiency, very high precision of cutting various details and intermediate products, guaranteed continuity of operation, fast and professional service support.

Apart from highly specialized industrial tools, the GLOBUS brand also offers comprehensive advisory services provided by a professional engineering team, and a wide range of after-sale services for the manufactured tools. Our work is based on many years of experience in industry and design, research and development conducted by our R&D department, as well as highly skilled employees.

This is our latest brochure related to professional tools used in specialized production lines for manufacturing vertical and horizontal windows, windowsills, interior and exterior doors, stairs, roller blinds and shutters, garage doors, smoke vents, guards, facade systems, i.e. the whole gamut of products generally referred to as window and door joinery. Thanks to their high performance, GLOBUS industrial tools are also widely applied in companies cooperating with window and door manufacturers in the production of profile systems, glazed units, fittings, and ventilation.

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WHICH TOOLS PRODUCTION PROCESSES WE USE?

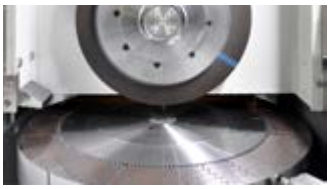
CUTTING PROCESS

Delivered metal sheets are inserted to a special cutter and undergo laser cutting processes, where laser acts as a “knife”.

HARDENING AND TEMPERING

Heat treatment of tool steel consists of three stages:
Stage 1 - steel heating;
Stage 2 - quick cooling of material;
Stage 3 - tempering.

DISCS GRINDING



Grinding of planes aims to obtain required thickness with maintaining minimum scattering and flatness of the disc. This part of process is implemented on automated grinding machine, which provides precise grinding with accuracy up to 0,005 mm.

TENSIONING AND BALANCING OF DISCS

Due to the character of manufactured disc tools, they have to maintain the specified rigidity and stability during working. Therefore, saw blades discs undergo tensioning and dynamic balancing.

SOLDERING OF SINTERED CARBIDES

Soldering of sintered carbides is executed on fully automated soldering units. Carbides are segregated in vibrating drums and set into a soldering position.

SHARPENING OF SINTERED CARBIDES

Sharpening of sintered carbides is made in a modern, fully automated line of highly - efficient production grinders with numerically-controlled axes serviced by an arm of robot.

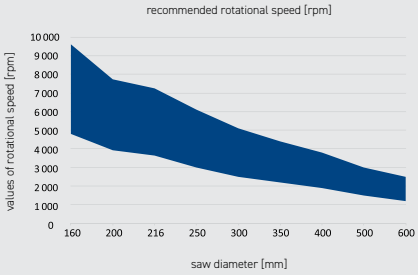
DISCS MARKING

Laser marking is one of the most advanced marking methods. This method is very quick and aesthetic.

QUALITY CONTROL - PACKAGING

Marked tools go to the control department where they undergo final acceptance by experienced experts from the quality department.

TOOLS FOR ALUMINUM AND PVC JOINERY



EXPERT'S ADVICE:

- Adequate selection of the pitch, type and geometry of teeth has a decisive influence on proper operation of the saw and high quality of the surface after cutting.
- In the case of cutting of AL and PVC profiles, it is recommended to use saws with GA type teeth with a positive or negative rake angle (depending on wall thickness of cut profiles).
- Number of teeth should be selected using the following rule – the thicker the wall of the cut profile, the less number of teeth.
- In order to obtain the best quality of surface (especially when cutting thin-walled profiles) it is recommended to pay attention to rigid clamping of the material while cutting; it is recommended to fix the material with clamps on both sides.

HM saw blades, series ALUEX GA-5°

for cutting of Al i PVC sections

- used in the production of window and door joinery for cutting of single window profiles, frames, casings and beads
- also used for cutting of sections and open profiles of Al and PVC with wall thickness up to 3 mm
- saw blade with a negative rake angle, intended for cutting of sections of Al alloys with wall thickness up to 3 mm and for cutting of PVC profiles
- low-noise series, with very precise parameters of execution, dynamically balanced disk, and specially selected sintered carbide

Index								CATALOGUE PRICE
	mm	mm	mm	mm			ilxd$_o$/d$_p$	
PS415-0160-0002	160	20	2,5	1,8	56	-	-	
PS415-0200-0004	200	30	2,5	1,8	60	-	2x7/42+2x8,5/46+2x10/60	
PS415-0216-0001	216	30	2,8	2,2	72	Cu	2x7/42+2x8,5/46+2x10/60	
PS415-0250-0002	250	30	3,2	2,5	80	Cu	2x7/42+2x8,5/46+2x10/60	
PS415-0300-0002	300	30	3,2	2,5	96	Cu	2x7/42+2x8,5/46+2x10/60	
PS415-0350-0002	350	30	3,2	2,5	108	Cu	2x7/42+2x8,5/46+2x10/60	
PS415-0350-0001	350	32	3,2	2,5	108	Cu	2x10/60+2x11/63+2x11/70	
PS415-0380-0001	380	32	4,0	3,4	108	Cu	2x10/60+2x11/63+2x11/70	
PS415-0400-0003	400	30	4,0	3,4	120	Cu	2x10/60+2x11/63+2x11/70	
PS415-0450-0001	450	30	4,0	3,4	108	Cu	2x10/60+2x11/63+2x11/70	
PS415-0500-0003	500	30	4,2	3,6	120	Cu	2x10/60+2x11/63+2x11/70	
PS415-0600-0001	600	30	4,4	3,8	160	Cu	2x10/60+2x11/63+2x11/70	

d_o- driving holes diameter d_p- pitch diameter of holes

* see the website for more products

See our tools in ACTION!

EXPERT'S ADVICE:

- Adequate selection of the pitch, type and geometry of teeth has a decisive influence on proper operation of the saw and high quality of the surface after cutting.
- In the case of cutting of AL and PVC profiles, it is recommended to use saws with GA teeth geometry with a positive or negative rake angle (depending on wall thickness of cut profiles).
- Number of teeth should be selected using the following rule – the thinner the wall of the cut profile, the greater number of teeth.
- You should not use a tool which is blunt, because it increases cutting resistence and may lead to the damage of the tool; sharpening process should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip).

HM saw blades, series ALUEX GA+5°

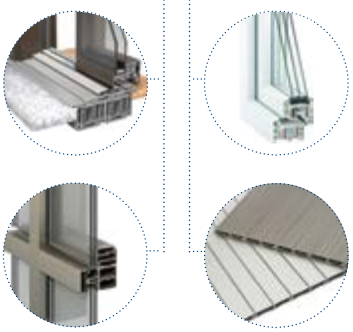
for cutting of Al i PVC sections

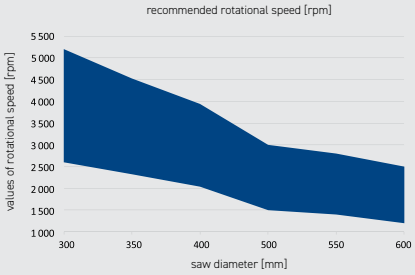
- used in the production of window and door joinery for cutting of beads, sections, and closed profiles of thickness above 3 mm
- also used for single cutting of facade aluminium profiles with wall thickness up to 5 mm
- saw with a negative rake angle, intended for cutting of sections of Al alloys with wall thickness up to 3 mm and for cutting of PVC profiles
- low-noise series, with very precise parameters of execution, dynamically balanced disk, and specially selected sintered carbide

Index								CATALOGUE PRICE
	mm	mm	mm	mm			ilxd$_o$/d$_s$	
PS415-0160-0003	160	20	2,5	1,8	56	-	-	
PS415-0200-0003	200	30	2,5	1,8	60	-	2x7/42+2x8,5/46+2x10/60	
PS415-0250-0001	250	30	3,2	2,5	80	Cu	2x7/42 2x8,5/46+2x10/60	
PS415-0300-0001	300	30	3,2	2,5	96	Cu	2x7/42+2x8,5/46+2x10/60	
PS415-0350-0009	350	30	3,2	2,5	78	Cu	2x7/42+2x8,5/46+2x10/60	
PS415-0350-0003	350	30	3,2	2,5	108	Cu	2x7/42+2x8,5/46+2x10/60	
PS415-0400-0004	400	30	4,0	3,4	120	Cu	2x10/60+2x11/63+2x11/70	
PS415-0450-0002	450	30	3,7	3,0	120	Cu	2x10/60+2x11/63+2x11/70	
PS415-0500-0016	500	30	5,0	4,0	72	Cu	2x8/42	
PS415-0500-0100	500	30	4,2	3,6	120	Cu	2x10/60+2x11/63+2x11/70	
PS415-0500-0005	500	32	4,2	3,6	120	Cu	2x10/60+2x11/63+2x11/70	
PS415-0550-0228	550	32	4,4	3,6	128	Cu	2x10/60+2x11/63+2x11/70	
PS415-0550-0002	550	30	4,4	3,2	160	Cu	2x10/60+2x11/63+2x11/70	

d_o- driving holes diameter d_s- pitch diameter of holes

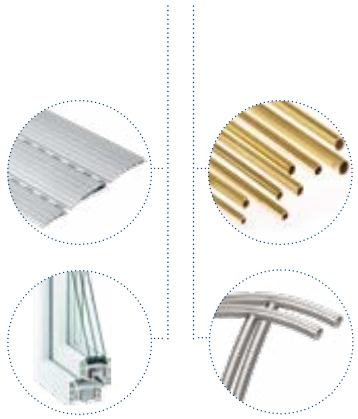
* see the website for more products





EXPERT'S ADVICE:

- In order to reduce production costs, connected with machine tool changeover times between jobs and tool seriving, users expect tools characterised by longer lifetime of the blades and high quality of the surface after cutting.
- To meet customers needs GLOBUS brand launched a series of saw blades dedicated to cutting of aluminium, non-ferrous metals and plastics profiles.
- The use of special type of sintered carbides increases the lipespan of the saw blades by up to several dozen percent and reduces production downtime related to saw blades maintenance in comparison with ordinary saw blades for cutting of aluminium and PVC.
- Remember to always use a sharp tool! Sharpening process should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip)



HM saw blades, series ALUEX MARATHON 1GA-5°

for Alu, non-ferrous metals and plastics profiles cutting

- saw blade with negative rake angle, dedicated to cutting of aluminum sections with wall thickness up to 3 mm made from soft alloys, non-ferrous metals and PVC
- thanks to the use of specialized type of sintered carbide saw blades are characterized by several dozen percent increase of durability
- special type of teeth 1GA negative (TRF - triple chip + flat) prevents the edge of teeth from crumbling and allows to obtain even better surface after cutting
- low noise series with very precise performance parameters, dynamically balanced disc with diminished imbalance parameters (elimination of vibrations during cutting which additionally affects the higher quality of surfaces)

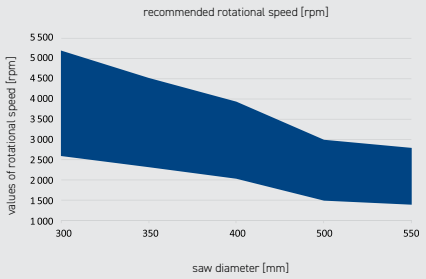
Index								CATALOGUE PRICE
	mm	mm	mm	mm			ilxd$_o$/d$_p$	
PS425-0300-0001	300	30	3,2	2,5	96	Cu	2x7/42+2x8,5/46+2x10/60	
PS425-0350-0001	350	30	3,2	2,5	108	Cu	2x7/42+2x8,5/46+2x10/60	
PS425-0350-0003	350	32	3,2	2,5	108	Cu	2x10/60+2x11/63+2x11/70	
PS425-0400-0001	400	30	4,0	3,4	120	Cu	2x10/60+2x11/63+2x11/70	
PS425-0400-0003	400	32	4,0	3,4	120	Cu	2x10/60+2x11/63+2x11/70	
PS425-0500-0001	500	30	4,0	3,4	160	Cu	2x10/60+2x11/63+2x11/70	
PS425-0500-0002	500	30	4,2	3,6	120	Cu	2x10/60+2x11/63+2x11/70	
PS425-0550-0002	550	30	4,4	3,2	160	Cu	2x10/60+2x11/63+2x11/70	
PS425-0600-0001	600	30	4,4	3,8	160	Cu	2x10/60+2x11/63+2x11/70	

d$_o$- driving holes diameter d$_p$- pitch diameter of holes

* see the website for more products

EXPERT'S ADVICE:

- In order to reduce production costs, connected with machine tool changeover times between jobs and tool seriving, users expect tools characterised by longer lifetime of the blades and high quality of the surface after cutting.
- To meet customers needs GLOBUS brand launched a series of saw blades dedicated to cutting of aluminium, non-ferrous metals and plastics profiles.
- The use of special type of sintered carbides increases the lipespan of the saw blades by up to several dozen percent and reduces production downtime related to saw blades maintenance in comparison with ordinary saw blades for cutting of aluminium and PVC.
- Remember to always use a sharp tool! Sharpening process should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip)



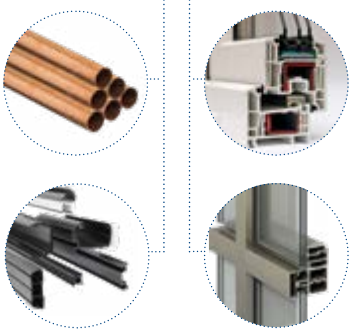
HM saw blades, series ALUEX MARATHON 1GA+5°

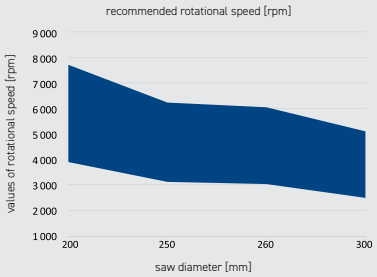
for Alu, non-ferrous metals and plastics profiles cutting

- saw blade with positive rake angle, dedicated to cutting of aluminum sections with wall thickness above 3mm and full materials made from aluminum, non-ferrous metals and PVC
- thanks to the use of specialized type of sintered carbide saw blades are characterized by several dozen percent increase of durability
- special type of teeth 1GA positive (TRF - triple chip + flat) prevents the edge of teeth from crumbling and allows to obtain even better surface after cutting
- low noise series with very precise performance parameters, dynamically balanced disc with diminished imbalance parameters (elimination of vibrations during cutting which additionally affects the higher quality of surfaces)

Index					1 2 3...			CATALOGUE PRICE
	mm	mm	mm	mm			ilxd$_c$/d$_p$	
PS425-0300-0002	300	30	3,2	2,5	96	Cu	2x7/42+2x8,5/46+2x10/60	
PS425-0350-0002	350	30	3,2	2,5	108	Cu	2x7/42+2x8,5/46+2x10/60	
PS425-0400-0002	400	30	4,0	3,4	120	Cu	2x10/60+2x11/63+2x11/70	
PS425-0500-0003	500	30	4,2	3,6	120	Cu	2x10/60+2x11/63+2x11/70	
PS425-0550-0001	550	30	4,4	3,2	160	Cu	2x10/60+2x11/63+2x11/70	

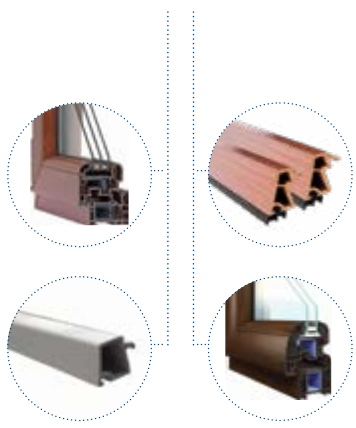
d$_c$- driving holes diameter d$_p$- pitch diameter of holes * see the website for more products





EXPERT'S ADVICE:

- Saws for cutting of glazing beads with an adequately selected tooth pitch, make it possible to eliminate the phenomenon of tearing the cut material – this element of the tool structure has a decisive influence on surface quality of the cut detail.
- In order to ensure a proper cutting process and to maintain a high surface quality, special attention must be paid to rigid fastening of the element on the work table so to protect the detail from uncontrolled displacement.
- You should not use a tool which is blunt, because it increases cutting resistence and may lead to the damage of the tool; sharpening process should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip).



HM saw blades, series ALUEX GA

for cutting of glazing beads

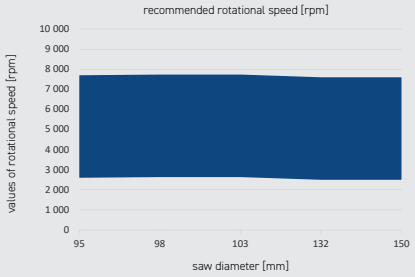
- for cutting of PVC beads with a rubber seal on specialized machines used in the production of PVC windows
- often used in combination with saws for beveling of glazing beads
- series with very precise parameters of disk execution and specially selected sintered carbide
- saw with a greater number of teeth is intended especially for cutting of thin-walled profiles

Index								CATALOGUE PRICE
	mm	mm	mm	mm			°	
PS415-0200-0008	200	30	2,2	1,6	100	-	-5°	
PS415-0200-0006	200	32	2,2	1,6	100	-	-5°	
PS415-0250-0009	250	30	2,2	1,6	100	-	-5°	
PS415-0250-0006	250	32	2,2	1,6	100	-	-5°	
PS415-0260-0001	260	30	2,5	2,0	100	Cu	5°	
PS415-0300-0004	300	30	3,2	2,5	120	-	-5°	

* see the website for more products

EXPERT'S ADVICE:

- Depending on machine type, saws can be used in machines as right and left ones.
- Saw blades can operate in a set with the main saw, or can be used singly with the main saw in the case of a system of two cutting axes.
- Saw blades for chamfering of glazing beads work in a set with the following indexes: PS415-0200-0008, PS415-0200-0006, PS415-0250-0009, PS415-0250-0006, PS415-0260-0001, PS415-0300-0004.
- You should not use a tool which is blunt, because it increases cutting resistence and may lead to the damage of the tool; sharpening process should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip).



HM saw blades, series ALUEX - Chamfering PVC -

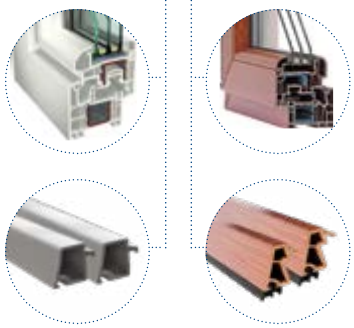
for chamfering of glazing beads

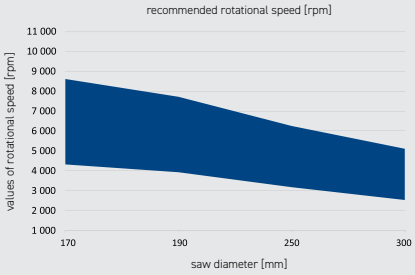
- saw blades with special teeth geometry and rake angle +5 for chamfering PVC glazig beads with rubber seal.
- HM saw blade for chamfering glazing beads operates as a set with the main saw blade.
- use of saw blades with sintered carbides for chamfering ensures long lifetime and high quality of the chemfered surface.
- precisely made disc guarantees stable saw blade operation during cutting process

	Index						Tip angle	CATALOGUE PRICE
		mm	mm	mm	mm			
o	**PS496-0095-0001**	95	20	2,1	1,6	20	left saw blade	
o	**PS496-0095-0002**	95	20	2,1	1,6	20	right saw blade	
o	**PS496-0095-0003**	95	20	2,1	1,6	36	left saw blade	
o	**PS496-0095-0004**	95	20	2,1	1,6	36	right saw blade	
o	**PS496-0098-0001**	98	32	3,0	2,0	36	left saw blade	
o	**PS496-0098-0002**	98	32	3,0	2,0	36	right saw blade	
	PS496-0103-0001	103	32	2,2	1,6	36	right saw blade	
	PS496-0103-0002	103	32	2,2	1,6	36	left saw blade	
o	**PS496-0132-0002**	132	30	2,2	1,6	42	left saw blade	
o	**PS496-0132-0001**	132	30	2,2	1,6	42	right saw blade	
o	**PS496-0150-0005**	150	30	2,0	1,4	60	left saw blade	
o	**PS496-0150-0006**	150	30	2,0	1,4	60	right saw blade	

Info: o- to order

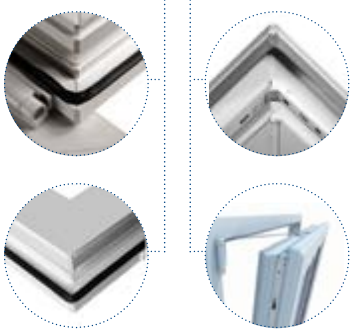
* see the website for more products





EXPERT'S ADVICE:

- Often used as left and right saws in respect of milling side and rotation direction – therefore please note: before ordering a saw, please check the operation and maintenance documentation of your machine.
- Saws are equipped with beveled fixing holes that enable the saw to be properly fastened in the machine.
- Additional and longer HM teeth enable deeper milling of PVC corners.
- You should not use a tool which is blunt, because it increases cutting resistence and may lead to the damage of the tool; sharpening process should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip)



HM saw blades, series ALUEX -Cleaning PVC-

for angle deburring machines for PVC windows

- specialized saw for executing the process of milling the outer side of the corner, aimed at removal of the so-called fin after welding of PVC profiles
- dedicated to special machines for the production of PVC window and door industry
- specially designed type and teeth geometry allow for high efficiency and great quality of the processed surface
- disc made from thermally improved high quality tool steel guarantees stable cutting process

	Index	mm	mm	mm	mm		ilxd$_o$/d$_p$	Bevel	Teeth geometry	CATALOGUE PRICE
o	**PS495-0170-0001**	170	20	4,5	3,2	16+4	6x6,8/40	right	W2R	
o	**PS495-0190-0001**	190	20	4,5	3,2	16+4	6x6,8/40	right	W2R	
o	**PS495-0190-0002**	190	22	4,5	3,2	16+4	6x6,8/40	left	W2R	
o	**PS495-0220-0002**	220	20	4,5	3,2	28+4	6x6,8/40	right	1GB	
o	**PS495-0250-0001**	250	22	4,5	3,2	22+4	6x6,8/40	-	W2R	
o	**PS495-0280-0001**	280	22	4,5	3,2	32+4	6x6/40	-	W2R	
o	**PS495-0300-0006**	300	25	4,0	3,0	96+4	1x5/70	-	1GB	

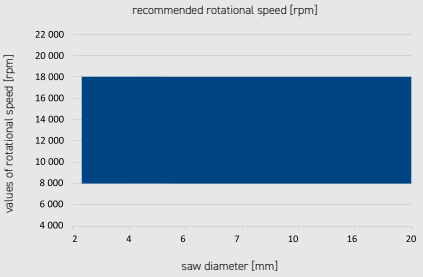
d_o- driving holes diameter d_p- pitch diameter of holes o- to order

minimum quantity for ordering: 2 pieces scope of diameters for execution: 150-400 mm

*see the website for more products

EXPERT'S ADVICE:

- Specialized router bits which carry out the cleaning process of the inner side of the PVC window corner
- Router bit which has the task of deburring after welding PVC profiles
- Router bits dedicated to specialized machines for the production of plastic joinery
- Feeds from 2 to 12 m/min - depending on the diameter of the tool and the type of processed material



Solid carbide router bits (T-shaped)

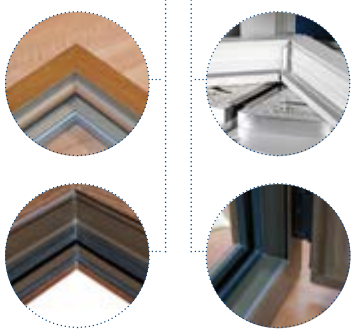
for cleaning of PVC corners

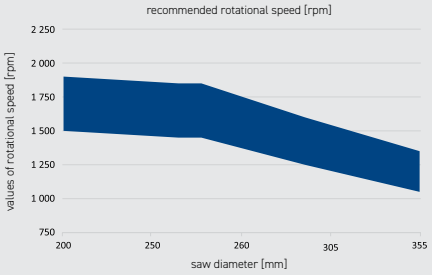
- solid carbide router bits - body and working part made of sintered carbide
- possibility of making router bits in diameters from 2 to 20 mm, with different overall length and different length of working part
- special geometry of the blade allows to easily remove chips and to obtain a smooth surface of processed material
- possibility to produce router bits made of sintered carbide of increased strength and impact strength characterized by the ULTRA NANO GRAIN

	Group / Index						CATALOGUE PRICE
		mm	mm	mm	mm		
o	**LS232**	2-20	11-120	60-150	6-20	2/3	
o	**LS232-0806-0001**	8	40	100	6	2	
o	**LS232-0806-0002**	8	40	100	6	3	
o	**LS232-0806-0003**	8	45	100	6	3	
o	**LS232-0808-0001**	8	45	100	8	3	

o- to order

*see the website for more products





EXPERT'S ADVICE:

- Introduction of cutting of steel profiles on steel miter saws makes it possible to significantly improve the working conditions (reduction of noise, elimination of dustiness), and has an excellent effect on surface quality after cutting (no burns, significant reduction of burr).
- Please note that miter saws for steel cutting are operated on lower rotational speeds, specially adapted to cutting of steel sections using saws with sintered carbides.
- You should not use a tool which is blunt, because it increases cutting resistence and may lead to the damage of the tool; sharpening process should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip)

HM saw blades, series STEEL-TECH

for steel battens and profiles cutting with miter saws

- cutting of steel glazing cavity beads and steel reinforcements
- also used for cutting of steel profiles constituting elements of doors and garage door structures
- cutting of steel sections of constructional steel with wall thickness < 3mm with the use of miter saws of such brands as: Jepson, Ridgid, Makita, DeWalt, Metabo, Bosch, etc.
- saw of this series is equipped with specialized sintered carbide intended for cutting of steel details

	Index					1 2 3...	Teeth geometry		CATALOGUE PRICE
		mm	mm	mm	mm			°	
	PS810-0200-0003	200	30	2,4	1,8	64	GC	5°	
	PS810-0200-0008	200	30	2,2	1,6	100	GC	-5°	
	PS810-0250-0004	250	30	3,2	2,5	80	GC	5°	
o	**PS810-0250-0007**	250	30	2,4	1,6	100	GC	5°	
o	**PS810-0260-0003**	260	30	2,2	1,8	80	GC	5°	
	PS810-0260-0001	260	30	2,5	2,0	100	GC	5°	
	PS810-0305-0013	305	25,4	2,5	2,0	80	GC	10°	
	PS810-0305-0014	305	30	2,5	2,0	80	GC	10°	
	PS810-0355-0007	355	25,4	2,2	1,8	90	2GC	10°	
o	**PS810-0355-0001**	355	25,4	2,2	1,8	90	GC	10°	
o	**PS810-0355-0012**	355	30	2,2	1,8	90	2GC	10°	

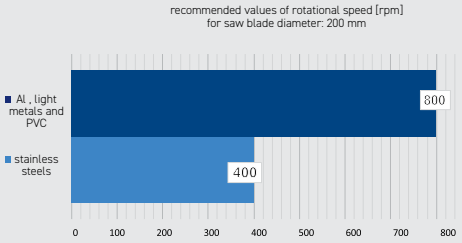
o- to order

Info: Saw blade PS810-0355-0001 has driving holes: 4x11,5/55 - one hole fi 11,5mm additionally shifted from the axis.

*see the website for more products

EXPERT'S ADVICE:

- HSS saw blades are tools intended for very precise cutting operations in order to obtain the best surface quality after processing – these tools are executed on the basis of very precise standards.
- Such precise parameters are achieved thanks to the ability to execute saw blades with a high number of teeth and simultaneously with very thin bodies.
- Advantages of their operation are especially evident while cutting thin-walled sections with wall thickness of ≤ 0.5 mm.



HSS circular saw blades [TiCN]

for cutting steel spacer bars with metal cut-off machines

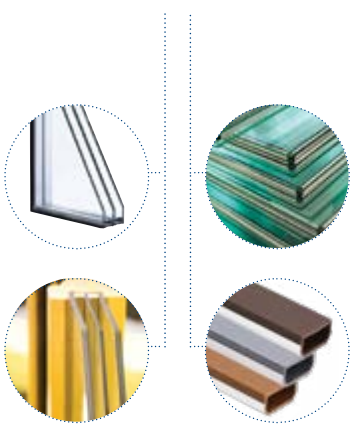
- for cutting of window spacer bars made of aluminum, plastics and stainless steel
- saw blade used in specialized machines adapted for cutting with HSS saw blades– with adequate tool rotational speed adapted to the type of the material cut
- tool made of extra-fine high-speed steel with additional TiCN coating aimed at reducing the cutting resistance and extending the service life
- adequately selected pitch and geometry of teeth ensures high quality of surface after cutting

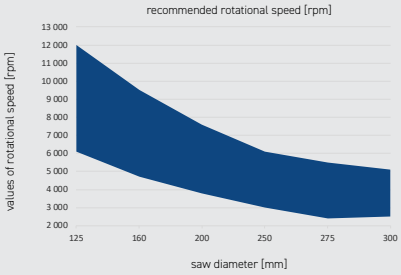
	Index						Blades coating	CATALOGUE PRICE
		mm	mm	mm	ilxd$_o$/d$_p$			
o	**FP600-0200-0001**	200	32	0,50/1,00	1x7,1/55	350	TiCN	

d$_o$- driving holes diameter d$_p$- pitch diameter of holes o- to order

minimum quantity for ordering: 2 pieces scope of diameters for execution: 160 -315 mm

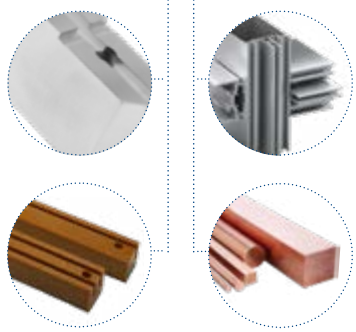
*see the website for more products





EXPERT'S ADVICE:

- In case of necessity of grooving in aluminium or other non-ferrous metals you should use specialised saw blades; in majority of cases the bottom of the groove has a rectangular shape, so GM teeth geometry (flat teeth) is used for these saw blades.
- Rake angle depends on the depth of the groove and the hardness of the processed material (in case of grooving saw blades the most common rake angle is +5 degrees).
- While selecting a proper saw blade you should consider the number of teeth (tooth pitch), the harder the processed material the smaller pitch (the greater number of teeth)
- You should not use a tool which is blunt, because it increases cutting resistence and may lead to the damage of the tool; sharpening process should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip)



HM saw blades, series ALUEX -Grooving-

for grooving and slotting of aluminum, non-ferrous metals and PVC

- saw blades for rectangular grooves slotting in aluminum, non-ferrous metals and plastics
- sintered carbide thickness adjusted to the width of the slotted groove
- number of teeth is selected depending on the depth of the slotted groove
- saw blade disc made of heat-treated tool steel guarantees stable cutting process

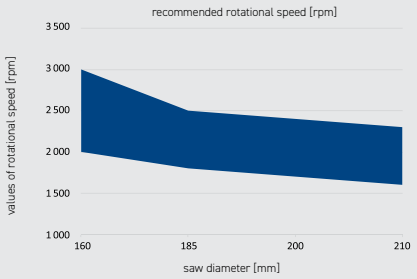
	Index							CATALOGUE PRICE
		mm	mm	mm	mm			
o	**PS450-0125-0006**	125	22	6,0	4,1	32	GM10°	
o	**PS450-0150-0007**	150	30	7,0	5,0	36	GM10°	
o	**PS450-0150-0004**	150	30	8,0	5,0	18	GM15°	
o	**PS450-0160-0003**	160	32	5,0	3,0	36	GM5°	
o	**PS450-0160-0008**	160	30	5,0	4,0	48	GM5°	
o	**PS450-0180-0004**	180	20	6,0	4,8	24	GM5°	
o	**PS450-0180-0001**	180	30	8,0	5,0	24	GM15°	
o	**PS450-0220-0001**	220	32	4,5	4,0	48	GM5°	
o	**PS450-0250-0019**	250	30	5,0	3,9	40	GM5°	
o	**PS450-0250-0016**	250	40	6,0	5,0	40	GM5°	
o	**PS450-0250-0015**	250	40	8,0	6,0	32	GM5°	
o	**PS450-0275-0001**	275	40	8,0	6,0	32	GM10°	
o	**PS450-0280-0003**	280	40	8,0	6,0	36	GM5°	
o	**PS450-0300-0006**	300	30	8,0	6,0	16	GM10°	

d_o- driving holes diameter d_p- pitch diameter of holes o- to order

*see the website for more products

EXPERT'S ADVICE:

- Very good surface of steel section after cutting is a result of using specialized sintered carbide (for cutting of steel) and teeth geometry specially designed for this series of saws.
- In the case of cutting metal sheets and other thin elements, the material must be properly fastened before commencing work in order to avoid uncontrolled vibrations of the elements cut.
- For operation in sawing machines with adjustment of rotational speed or adapted for cutting of steel at lower rotational speeds.
- You should not use a tool which is blunt, because it increases cutting resistence and may lead to the damage of the tool; sharpening process should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip).



HM saw blades, series STEEL-TECH Electro

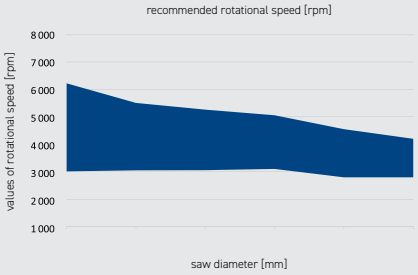
for cutting of steel elements with hand-held circular saws

- circular saws for the so-called cold cutting of steel elements guarantee no burns at the cutting edge
- series designed for cutting elements made of constructional steel like: pipes, profiles, trapezoidal steel sheets with thickness of up to 2,5 mm
- also used for cutting of elements of doors and garage door structures made of mild structural steel
- special type of sintered carbides with increased cobalt content and appropriate hardness guarantees increased impact resistance, which protects teeth from breaking during cutting of steel elements

Index							CATALOGUE PRICE
	mm	mm	mm	mm		for power tools	
PS682-0160-0001	160	20	2,0	1,4	40	BOSCH GKS 55+ GCE, HILTI SCM 22-A, METABO MKS 18 LTX 58	
PS682-0185-0001	185	30	2,0	1,4	48	EVOLUTION R185CCS, FURY1-B, RAGE-B, FLEX CSM 4060, HIKOKI CD7SA, MAKITA 4131, REXON MC1850R, STEELMAX SM S7 XP	
PS682-0200-0001	200	30	2,0	1,4	50	AGP CS200, JEPSON 8200, FESTOOL TS 75	
PS682-0210-0001	210	30	2,0	1,4	50	FESTOOL TS 75	

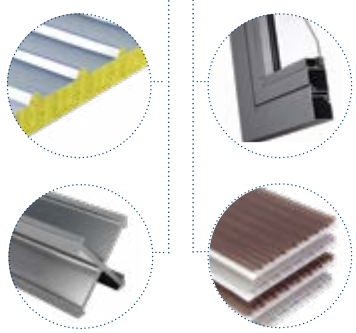
* For some models of circular saw blades it is necessary to use reduction rings 30/25,4mm or 30/20mm.

*see the website for more products



EXPERT'S ADVICE:

- Series equipped with special sintered carbide for cutting of steel with high impact resistance.
- Multi spline hole - a new type of fastening significantly reduces resistance forces during mounting of saw blade on the clamping sleeve, in case of any soiling / dust it enables correct positioning and configuration of the saw blade towards the arbour and the clamp
- Due to the designed feed limiter, the saw cannot be used in cutting-off machines with mechanical feed.
- Multi-purpose saw blades series guaranteeing fine cutting
- Sharpening process of teeth should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip)



HM saw blades, series POWER PLUS 3 -Universal-

for cutting of sandwich panels with hand-held circular saws

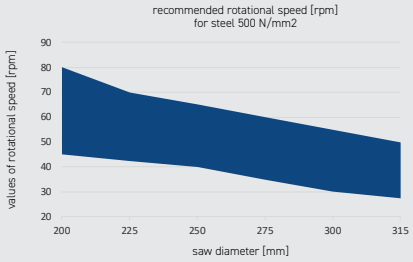
- cutting of sandwich panels used in construction of doors, gates, walls, and roofing sandwich panels
- also used for cutting of polycarbonate panels, PVC profiles, as well as sections of steel sheet or non-ferrous metals (Al, Cu)
- special 1GS5 tooth geometry (alternate top bevel) makes it easier to lead he saw while cutting
- special tooth shape designed for this series, and sintered carbide applied, guarantee long lifetime and enable multiple sharpenings of the tool

Index							CATALOGUE PRICE
	mm	mm	mm	mm		for power tools	
PS606-0160-0001	160	20	2,7	1,6	32	BOSCH GKS 600, PKS 55, FESTOOL HK 55, HILTI SC 55W, WSC 55, MAFELL KSP 55, KSS 400, MS 55, PSS 3100 SE, MAKITA 5603R, 5604R, METABO KS 55, KSE 55,	
PS606-0180-0001	180	20	2,7	1,6	36	DeWALT FLEXVOLT DCS575-XE, DCS576-XE, GRAPHITE 58G486, PRO 59GP100, MAFELL K 65, KSS 60, STAYER CH 185 B, CPT 3000 E	
PS606-0190-0001	190	30	2,7	1,6	40	DeWALT DWE575, DWE576, DCS575, DCS576, DCS577, EINHELL TC-CS 1400, TE-CS 190, MAFELL KSP 65, MAKITA 5017RKB, 5705R, HS7100, HS7101, HS7601 METABO KS 66, KSE 68, MILWAUKEE SCS 65, M18 BLCS66, M18 CCS66, M18 FCS66	
PS606-0200-0001	200	30	2,7	1,6	42	CELMA DBRCc 67, PERLES KS 170, REBIR IE-5107 G-2, RZ 2-70-2, SPARKY TK 70, VIRUTEX SR90J	
PS606-0210-0001	210	30	2,7	1,6	42	GRAPHITE 58G493, HILTI WSC 85, MAKITA 5008MG, 5903R, SPARKY TK 75, VANDER VPT718	
PS606-0230-0001	230	30	2,7	1,6	44	BOSCH GKS 9, GKS 235 Turbo, DeWALT D23700, FESTOOL HK 85, HILTI WSC 85, HITACHI / HIKOKI C9BU, C9U2, C9U3, MAKITA 5901B, 5902B, N5900B, 5903R, METABO KS 85, MILWAUKEE CS 85	

*see the website for more products

EXPERT'S ADVICE:

- In order to extend the lifetime of HSS saw blade, the disk can be covered with PVD coatings (e.g. titanium nitride TiN) – application of coatings reduces the friction coefficient, increases the surface microhardness and tool's lifetime by 200-300%.
- During the use of HSS saw blades pay attention to the fact that they should not operate on cutting off machines without a disk cooling system.
- Please note – the saw blade tooth pitch is strictly related to material thickness or wall thickness.



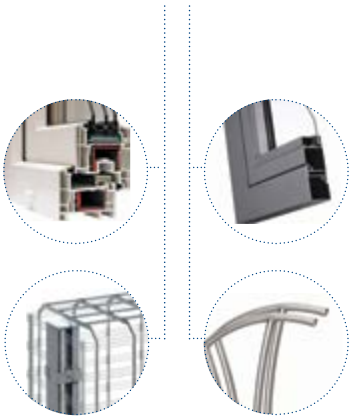
HSS saw blades

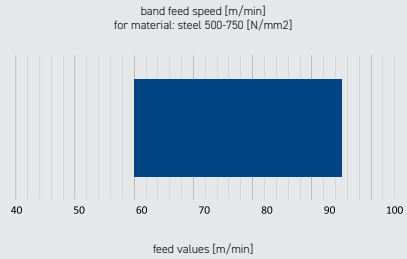
for cutting of full materials and profiles on cut-off machines

- dedicated to cutting of steel reinforcements in windows, as well as profiles and sections of steel doors
- cutting process characterized by high quality of the surfaces cut and dimensional precision of processed details
- saw blade made of high - speed steel HSS-DM°5 (SW7M), used in low rotational speed cutting-off machines designed for cutting of steel elements
- type, pitch, and geometry of teeth selected adequately for cutting of sections of structural steel with wall thickness of 1.5-3.0 mm

Index						Teeth geometry		CATALOGUE PRICE
	mm	mm	mm	mm			ilxd$_o$/d$_p$	
FP220-0200-0001	200	32	2,00	200	80	Bw18°	Typ "F" 2 x 8,5/45 i 2 x 11/63	
FP220-0225-0002	225	32	2,00	180	80	Bw18°	Typ"C" 2x8,5/45; 2x9,5/50 i 2x12/64	
FP220-0225-0001	225	32	2,00	220	80	Bw18°	Typ"C" 2x8,5/45; 2x9,5/50 i 2x12/64	
o **FP220-0225-0006**	225	32	2,00	220	64	Bw18°	Typ "REMS" 1x8,5/45 i 1x10/45 Kąt 15 st.	
FP220-0250-0001	250	32	2,00	200	80	Bw18°	Typ"C" 2x8,5/45; 2x9,5/50 i 2x12/64	
FP220-0250-0002	250	32	2,5	200	100	Bw18°	Typ "C" 2 x 8,5/45; 2x9,5/50 i 2 x 12/64	
FP220-0250-0011	250	40	2,00	200	80	Bw18°	Typ "H" 2 x 8,5/55 i 4 x 12/64	
FP220-0275-0001	275	32	2,00	220	100	Bw18°	Typ"C" 2x8,5/45; 2x9,5/50i 2x12/64	
FP220-0275-0007	275	32	2,50	220	100	Bw18°	Typ"C" 2x8,5/45; 2x9,5/50 i 2x12/64	
FP220-0275-0005	275	40	2,50	200	100	Bw18°	Typ"H" 2x8,5/55 i 4x12/64	
FP220-0300-0007	300	32	2,5	180	100	Bw18°	Typ "C" 2 x 8,5/45; 2x9,5/50 i 2 x 12/64	
FP220-0315-0001	315	32	2,50	220	100	Bw18°	Typ"C" 2x8,5/45; 2x9,5/50 i 2x12/64	
FP220-0315-0002	315	40	3,00	200	100	Bw18°	Typ "U" 4 x 10,5/63	

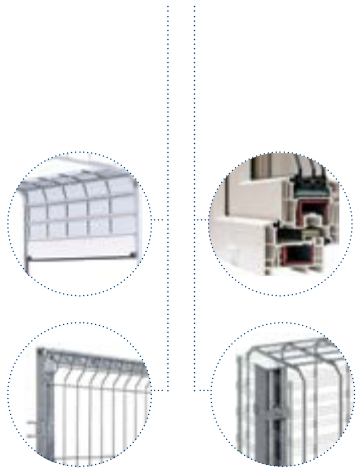
d$_o$- driving holes diameter d$_p$- pitch diameter of holes o- to order *see the website for more products





EXPERT'S ADVICE:

- When setting a new cutting band in the cutting-off machine and before commencing the actual work, apply band grinding-in.
- This process is performed in the following way: using an adequate speed of the cutting band, selected for the grade of the cut material, during the first 10 minutes of cutting, increase the feed by 1/3-1/2 of the value, during next 10 minutes, gradually increase the feed until the recommended values are reached.
- Application of grinding-in extends the life time of bands by 20-30%!!!



Band saw blades, series METAL PROF-CUT

for cutting of steel reinforcements and profiles with band saw machines

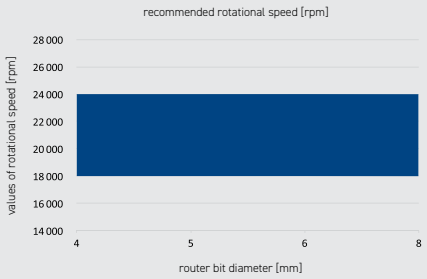
- in the production of window and door joinery, dedicated to cutting of steel reinforcements in windows and other profiles of iron alloys used in structures of gates, doors, roller blinds, etc.
- designed also for cutting of most grades of materials from aluminum to stainless steels
- structure of bimetallic saw, where tooth tips are made of high-speed cobalt steel (M42) of 8% cobalt content, ensures long life time of the tool
- saws welded with the use of latest - generation devices, (with temperature control), which ensures high strength of the band and prevents its from breaking during operation

	Index					Toothing type	MU	CATALOGUE PRICE
		mm	mm	mm				
o	**PX100-2009-0003**	custom order	20	0,9	6/10	PC-S	rm.	
o	**PX100-2009-0004**	custom order	20	0,9	8/12	PC-S	rm.	
o	**PX100-2009-0005**	custom order	20	0,9	10/14	PC-S	rm.	
o	**PX100-2709-0005**	custom order	27	0,9	6/10	PC-S	rm.	
o	**PX100-2709-0006**	custom order	27	0,9	8/12	PC-S	rm.	
o	**PX100-2709-0007**	custom order	27	0,9	10/14	PC-S	rm.	
o	**PX100-3411-0005**	custom order	34	1,1	6/10	PC-S	rm.	
o	**PX100-4113-0005**	custom order	41	1,3	6/10	PC-S	rm.	

o- to order price for rm includes the cost of welding *see the website for more products

EXPERT'S ADVICE:

- Solid carbide finishing router bits with one spiral are best during execution of drainage grooves.
- Number/quantity of spirals is selected depending on the parameters and type of the machine in which the cutting process is executed..
- In order to increase tool's lifetime it is possible to cover the body of a router bit with refining coatings.
- We offer tool servicing such as sharpening, regeneration of cutting edge etc..



HM router bits, single and two flute

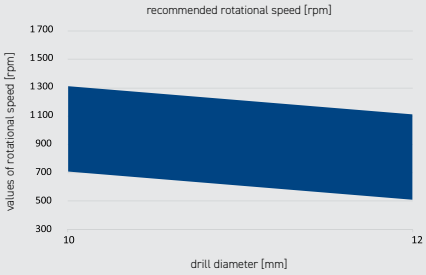
for milling of drainages, hinges and handles on CNC machines

- milling and drilling of drainage grooves and holes for fixing of hinges, handles in windows
- dedicated to processing of plastics and aluminum profiles
- special blade geometry and spiral arrangement allow for easy chip removal and for obtaining smooth surface of the processed material
- solid carbide cutters, body and working part made of sintered carbide

	Index							CATALOGUE PRICE
		mm	mm	mm	mm			
o	LS220-0004-0001	4	25	60	6	2 positive	R	
	LS220-0006-0001	6	22	70	8	2 positive	R	
	LS220-0008-0001	8	32	80	8	2 positive	R	
o	LS070-0005-0003	5	15	80	8	1 positive	R	
o	LS070-0005-0001	5	15-25	80	8	1 positive	R	
o	LS070-0005-0009	5	30	80	8	1 positive	R	
o	LS070-0006-0002	6	15	80	8	1 positive	R	
o	LS070-0006-0003	6	15-25	80	8	1 positive	R	
o	LS070-0008-0008	8	25	80	8	1 positive	R	
o	LS070-0008-0019	8	32	70	8	1 positive	R	
o	LS071-0003-0001	3	20	70	8	1 positive	R	
o	LS071-0005-0002	5	36	80	5	1 positive	R	
o	LS071-0005-0014	5	35	100	8	2 positive	R	

o- to order

*see the website for more products



EXPERT'S ADVICE:

- Application of the pilot facilitates drilling into the material, reduces the cutting resistance, and makes it possible to achieve a better quality of the processed surface.
- In order to extend the life time of the tool, it is recommended to use drill bits of HSS-E steel (with increased cobalt content).
- Drill bits of HSS-E material have extended lifetime and are more durable – they operate longer.!

HSS drill bit for door handle holes

for machining centres

- right - or left- drill bits with external thread
- for drilling of holes for handles in PVC profiles
- drilling in profiles with or without steel reinforcement installed
- possibility of executing drill bits made of HSS-E steel and/or pilot drill bits

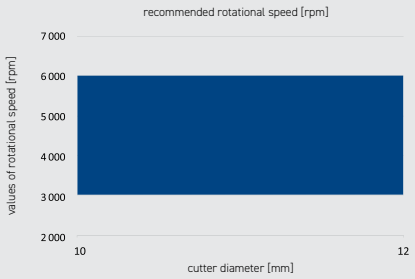
	Index						Info	CATALOGUE PRICE
		mm	mm	mm	mm			
o	LS580-1010-0001	10	M10	50	87	L	-	
o	LS580-1010-0002	10	M10	50	87	R	-	
o	LS580-1010-0003	10	M10	50	87	L	pilot drill bit	
o	LS580-1010-0004	10	M10	50	87	R	pilot drill bit	
o	LS580-1210-0001	12	M10	50	87	R	-	
o	LS580-1210-0002	12	M10	50	87	L	-	
o	LS580-1210-0003	12	M10	50	87	L	pilot drill bit	
o	LS580-1210-0004	12	M10	50	87	R	pilot drill bit	
o	LS580-0010-0004	10	M10	65	115	L	-	
o	LS580-0010-0006	10	M10	65	115	R	-	
o	LS580-0012-0004	12	M10	65	115	R	-	
o	LS580-0012-0006	12	M10	65	115	L	-	

o- to order

*see the website for more products

EXPERT'S ADVICE:

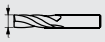
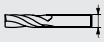
- Use of shank cutters made of HSS-E steel, with increased cobalt content, is recommended for processing of hardly machinable metals.
- HSS-E shank cutters are characterized by extended life time and increased durability.
- In the case of processing of hardly machinable metals, as well as for the purpose of extending the lifetime of tools, it is recommended to use refining coatings (TiN, TiCN, etc.).
- Use of the coatings, refining the cutter surface, extends the lifetime by up to 50% in comparison with the uncoated tools.



HSS shank cutter for processing of metal, Al and PVC

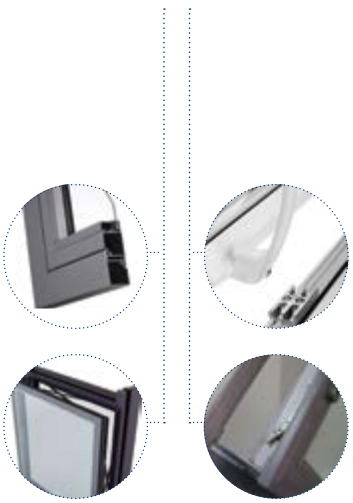
for machining centers

- made of high-quality, high-speed HSS steel
- for milling and drilling of grooves and holes in window profiles made of PVC, aluminum, and steel in machining centers, milling machines and tracer milling machines
- possibility of executing smooth shell cutters and chip breaker shell cutters, depending on the intended use
- saw blades are characterized by high edge stability and durability, as well as increased resistance to chipping

Subgroup					CATALOGUE PRICE
	mm	mm	mm	mm	
o **LS300**	6/8/10/12/ 16 /18/20	15-100	60-150	6/8/10/12/ 16/18/20	

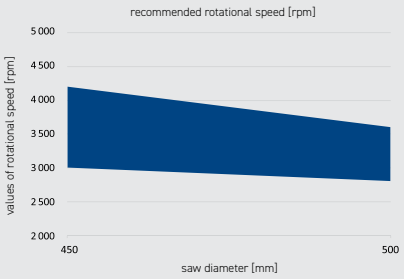
o- to order

*see the website for more products



TOOLS FOR PRODUCTION OF WOODEN JOINERY

See our tools in ACTION!



EXPERT'S ADVICE:

- Specialized saws for cutting out defects, adapted to operating in specialized machines where cutting takes several milliseconds!!!
- Specially profiled HM 3GE teeth shape (sharp alternate top bevel) makes it possible to maintain very good surface quality of processed materials.
- Due to the application of VERY hard sintered carbide (HM), saws should be sharpened at specialized tool sharpening points in machines equipped with continuous cooling systems – wet sharpening.
- During defect marking special attention should be paid to ensuring that defect area on both sides of the processed material does not exceed the contour of marking.

HM saw blade, series LL CUT line 3GE

for cross cuting and defects removing

- for cross cutting and defects removing using impact method on the optimazing cross cut saw with high feed rate
- used in the production of glued elements in window and door joinery, both before and after tenoning
- SUPER HARD carbide tips (ULTRAFINE) with hardness of 2.100 HV ensure longer lifetime - higher number of sharpenings
- dynamically balanced disk made of thermally improved high quality steel, cut with the use of laser technology, ensures high rigidity and stability of the tool during the cutting process

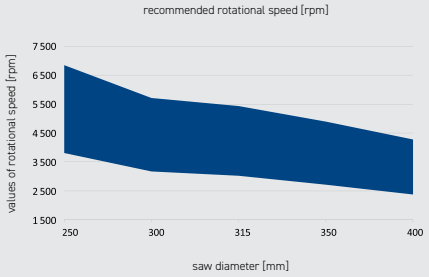
Index					1 2 3..	Teeth geometry		CATALOGUE PRICE
	mm	mm	mm	mm			ilxd$_o$/d$_p$	
PS390-0450-0008	450	30	4,8	3,5	136	3GE10°	2x15/63	
PS390-0500-0003	500	30	4,8	3,5	144	3GE5°	2x14,5/63	

d$_o$- driving holes diameter d$_p$- pitch diameter of holes

*see the website for more products

EXPERT'S ADVICE:

- Specially profiled HM GS 10° teeth shape (alternate top bevel) allows to maintain very good surface quality of processed materials.
- Due to the application of VERY hard sintered carbide (HM), saws should be sharpened at specialized tool sharpening points in machines equipped with continuous cooling systems – wet sharpening.
- Sharpening process of teeth should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip).



HM saw blade, series LL CUT line GS10

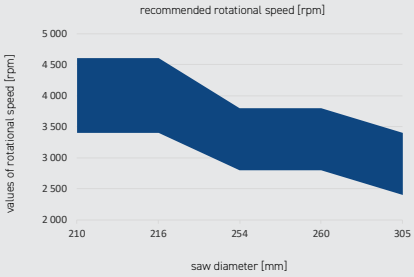
for cutting of wooden door and window profiles

- series designed for cutting/incising of hard -wood, including exotic wood, wood based veneered materials, and plywood
- used for precise cutting of beads, glazing frames, and other finishing elements having the structure of wood grain fibers
- VERY hard sintered carbide (ULTRAFINE) with hardness of 2.100 HV guarantees even longer tool life and enables repeated sharpening
- dynamically balanced disk of toughened extra-fine steel, cut using laser technology, ensures high rigidity and stability of the tool during the cutting process

Index								CATALOGUE PRICE
	mm	mm	mm	mm			ilxd$_o$/d$_p$	
PS320-0250-0003	250	30	3,2	2,2	80	L	2x7/42+2x8,5/46+2x10/60	
PS320-0300-0005	300	30	3,2	2,2	72	L	2x7/42+2x8,5/46+2x10/60	
PS320-0300-0001	300	30	3,2	2,2	96	L	2x7/42+2x8,5/46+2x10/60	
PS320-0315-0001	315	30	3,2	2,2	96	L	2x7/42+2x8,5/46+2x10/60	
PS320-0350-0002	350	30	3,2	2,2	84	L	2x7/42+2x8,5/46+2x10/60	
PS320-0350-0005	350	30	3,2	2,2	108	L	2x7/42+2x8,5/46+2x10/60	
PS320-0400-0002	400	30	3,5	2,5	96	L	2x7/42+2x8,5/46+2x10/60	

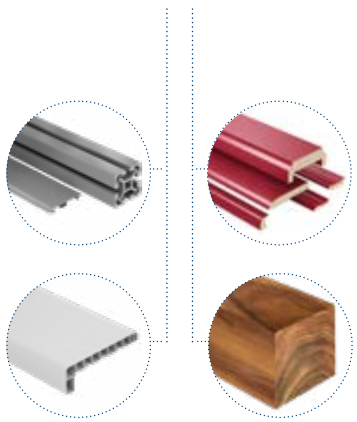
d$_o$- driving holes diameter d$_p$- pitch diameter of holes

* see the website for more products



EXPERT'S ADVICE:

- SUPER hard sintered carbide requires sharpening of saw blades in special points dealing with sharpening of tools on machinery which are equipped with continuous cooling systems.
- MITER 1 -Chipboard- for cutting of hard wood-based materials like MDF and HDF, for cutting of chipboard coated with very hard laminate, conglomerate and PVC and aluminum profiles with wall thickness up to 2mm.
- MITER 2 -Wood- is a universal saw blade for soft and hard wood cutting and it is dedicated also for cutting of plywood and wood-based materials with natural veneer.
- MITER 3 -Special Wood&Chipboard- with aggressive geometry of toothing (3GS) for fast cutting of soft and hard wood – the required cutting quality should be adapted by selecting an adequate feed.



HM saw blade, series MITER

for miter saws

- SUPER HARD carbide tips (ULTRAFINE) with hardness of 2.100 HV ensure a longer life time of the tool
- produced as industrial saw blades where the deviation from the nominal size does not exceed hundredths of millimetre
- thin kerf and disc used give the feeling of easy saw blade operating while cutting
- execution of broad spectrum of installation and assembly works on site: straight and angled cutting, cutting of wood and wood-based materials, plastics, PVC and aluminium to size

	Index						Teeth geometry		CATALOGUE PRICE
		mm	mm	mm	mm			ilxd$_0$/d$_p$	
M1	**PS601-0210-0001**	210	30	2,7	2,0	54	GA-5°	COMBO	
M1	**PS601-0216-0001**	216	30	2,8	2,0	72	GA-5°	COMBO	
M1	**PS601-0254-0002**	254	30	2,8	2,0	96	GA-5°	COMBO	
M1	**PS601-0260-0002**	260	30	2,7	2,0	96	GA-5°	COMBO	
M1	**PS601-0305-0001**	305	30	2,8	2,0	96	GA-5°	COMBO	
M2	**PS602-0210-0001**	210	30	2,7	2,0	54	GS-5°	COMBO	
M2	**PS602-0216-0001**	216	30	2,7	2,0	72	GS-5°	COMBO	
M2	**PS602-0254-0001**	254	30	2,7	2,0	80	GS-5°	COMBO	
M2	**PS602-0260-0001**	260	30	2,7	2,0	80	GS-5°	COMBO	
M2	**PS602-0305-0001**	305	30	2,8	2,0	96	GS-5°	COMBO	
M3	**PS603-0210-0001**	210	30	2,7	2,0	54	3GS5°	COMBO	
M3	**PS603-0216-0001**	216	30	2,7	2,0	72	3GS5°	COMBO	
M3	**PS603-0254-0001**	254	30	2,7	2,0	96	3GS5°	COMBO	
M3	**PS603-0260-0001**	260	30	2,7	2,0	96	3GS5°	COMBO	
M3	**PS603-0305-0001**	305	30	2,7	2,0	96	3GS5°	COMBO	

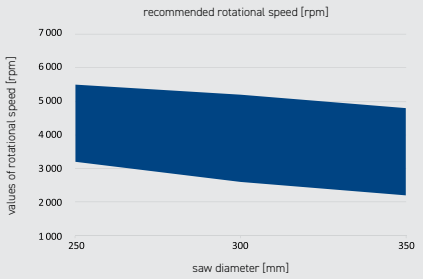
d$_0$- driving holes diameter d$_p$- pitch diameter of holes COMBO hole: 2x7/42+2x8,5/46+2x10/60

M1- MITER 1 -Chipboard-, M2- MITER 2 -Wood- , M3- MITER 3 -Special Wood&Chipboard-

* see the website for more products

EXPERT'S ADVICE:

- Due to the application of SUPER hard sintered carbide, saws should be sharpened at specialized tool sharpening points in machines equipped with continuous cooling systems – wet sharpening.
- Series working on vertical and horizontal sizing machines equipped with scoring saw blades (pre-cutting saw blades).
- GA teeth geometry (triple chip grind) – designed for precise cutting of homogeneous wood - based materials.
- Sharpening process of teeth should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip).



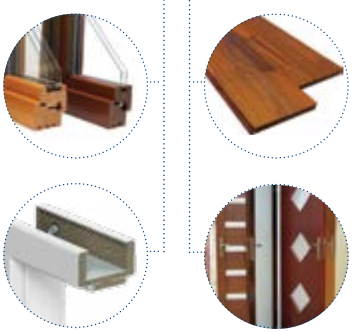
HM saw blade, series LL CUT VH line GA5

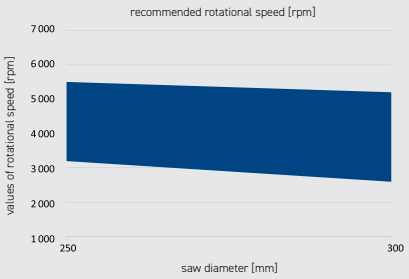
for cutting of wooden door and window profiles

- in window and door joinery, for cutting of fixed and adjustable casings made of MDF or finishing materials for window and door joinery
- cutting of interior windowsills of homogeneous wood-based materials – can also be used for cutting of other wood-based materials, not related to the production of window and door joinery
- SUPER HARD sintered carbide (NANOGRAIN) showing hardness amounting to 2.250 HV guarantees even longer tool life and enables repeated sharpening
- dynamically balanced disk made of toughened extra-fine steel, cut with the use of laser technology, ensures high rigidity and stability of the tool during the cutting process

Index								CATALOGUE PRICE
	mm	mm	mm	mm			ilxd$_o$/d$_p$	
PS312-0250-0002	250	30	3,2	2,2	80	L	2x7/42+2x8,5/46+2x10/60	
PS312-0300-0003	300	30	3,2	2,2	96	L	2x7/42+2x8,5/46+2x10/60	
PS312-0350-0002	350	30	3,2	2,2	108	L	2x10/60	

d$_o$- driving holes diameter d$_p$- pitch diameter of holes * see the website for more products





EXPERT'S ADVICE:

- Series recommended for cutting of materials with height not exceeding 30 mm.
- Specialy profiled shape of the blade of the knife HM 3GS (alternate top bevel) allows maintaining a very good quality of surfaces of processed materials.
- SUPER hard sintered carbide requires sharpening of saw blades in special points dealing with sharpening of tools on machinery equipped with continuous cooling system - wet sharpening.
- Sharpening process of teeth should be performed when the blunting reaches 0,10-0,20 mm, measured on the flank surface of the HM tip (the edge between rake surface, and a flank surface of the carbide tip). Remember not to cause change to rake or clearance angle during sharpening process - it may result in incorrect tool operation and lower quality of the surfaces cut.

HM saw blades, series LL CUT VH line 3GS-5

for cutting of strips and frames

- saws designed for cutting of natural and artificial veneers, wood and wood-based strips and frames
- in windows and doors joinery used for cutting of cellular materials
- is characterized by an excellent surface after cutting and a very good edge surface after the blade exits the cut material
- SUPER HARD sintered carbide (NANOGRAIN) with hardness of 2.250 HV ensures a longer life time and allows multiple sharpening

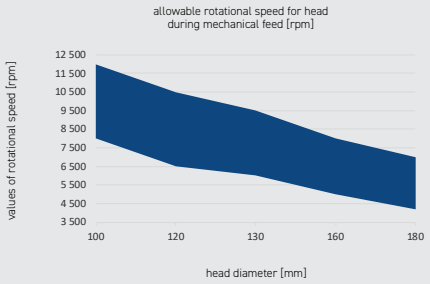
	Index							CATALOGUE PRICE
		mm	mm	mm	mm		ilxd$_z$/d$_s$	
o	**PS322-0250-0001**	250	30	3,2	2,2	80	2x7/42+2x8,5/46+2x10/60	
	PS322-0300-0003	300	30	3,2	2,2	96	2x7/42+2x8,5/46+2x10/60	

o- to order

* see the website for more products

EXPERT'S ADVICE:

- Please note that the selection of a specific type of tool for planed work depends on the density and hardness of the processed material.
- Quality of processed surface depends not only on quality of the tools in the head, but also on proper mutual alignment of the tools in the cutterhead.
- The knife should not protrude outside the cutterhead by more than two times its thickness (e.g. the knife with 3 mm thickness should not protrude by more than 6 mm).
- If you need a planing cutterhead you can order it from us - cutterheads with 4 or 6 knives on stock.



Planer knives

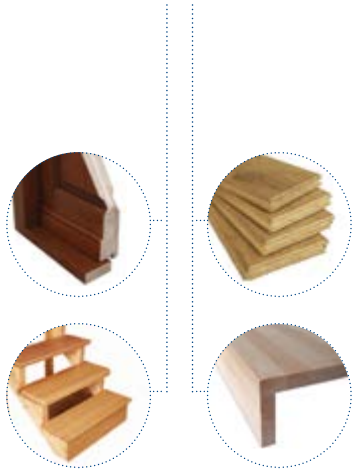
for planing of wood on planing machines

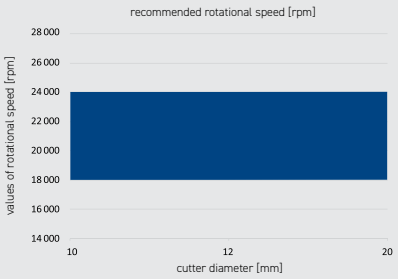
- in the production of window and door joinery, very often used in planing heads in multiple – cutterhead tools – four-sided
- for planing of structural elements of posts, casings of wood before the profiling process
- HSS PREMIUM planer knives with HM insert vary in hardness, lifetime and purpose
- the STANDARD HSS tool is recommended for softwood, the PREMIUM HSS tool is recommended for hardwood (deciduous wood), and a tool with HM carbide is recommended for wood based materials

	Index					Knife material	Machined material	CATALOGUE PRICE
		mm	mm	mm	°			
	NS130-0120-0002	120	30	3,0	43°	HSS PREMIUM	board and wood based materials, soft and hard wood	
	NS130-0120-0003	120	35	3,0	43°	HSS PREMIUM	board and wood based materials, soft and hard wood	
	NS130-0130-0002	130	30	3,0	43°	HSS PREMIUM	board and wood based materials, soft and hard wood	
	NS130-0130-0001	130	35	3,0	43°	HSS PREMIUM	board and wood based materials, soft and hard wood	
	NS130-0160-0007	160	30	3,0	43°	HSS PREMIUM	board and wood based materials, soft and hard wood	
	NS130-0160-0003	160	35	3,0	43°	HSS PREMIUM	board and wood based materials, soft and hard wood	
o	**NS140-0120-0102**	120	30	3,0	40°/45°	HM	for board and wood based materials	
o	**NS140-0130-0102**	130	30	3,0	40°/45°	HM	for board and wood based materials	
o	**NS140-0160-0102**	160	30	3,0	40°/45°	HM	for board and wood based materials	

o- to order

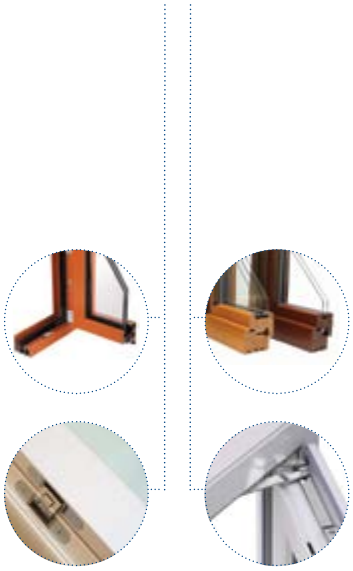
* see the website for more products





EXPERT'S ADVICE:

- Solid-carbide router bits are recommended for operation within the range of turnover from 18000 to 24000 depending on type of processed material.
- Feed values used should be within the range from 2 to 12 m/min. depending on diameter of the tool, number of tips, type and thickness of processed material.
- Possibility of execution of sintered carbide ULTRA NANO GRAIN router bits characterised by increased resistance and impact strength.
- Option to execute cutters of sintered carbide with improved strength and impact resistance, covering of working part of the cutter with refining coatings.



Solid carbide finishing router bits - Z3

for milling and drilling in wood on centers and milling machines

- cutter with universal application in milling and drilling in CNC machining centers and top spindle milling machines
- intended for processing of wood, plywood, MDF panels, chipboards, and plastics (PVC, Plexiglas) – for hinges, locks, and handles
- special blade geometry and spiral arrangement make it possible to remove chip easily and to obtain smooth surface of the processed material
- solid carbide cutters – body and working part made of sintered carbide

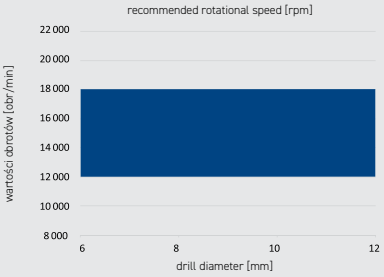
Index							CATALOGUE PRICE
	mm	mm	mm	mm			
LS010-0010-0001	10	42	90	10	3 positive	R	
LS010-0012-0001	12	42	90	12	3 positive	R	
LS010-0016-0001	16	55	110	16	3 positive	R	
o LS010-0020-0001	20	60	120	20	3 positive	R	

o- to order

* see the website for more products

EXPERT'S ADVICE:

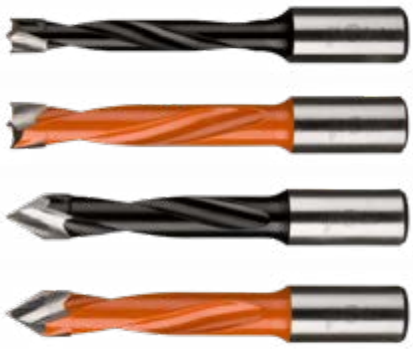
- Drill bits with HM inserts are tools where the sintered carbide (HM) insert can be safely serviced – HM inserts are sharpened in specialized grinding machines, without changing the tool diameter at the same time.
- Due to the applied production technology, the drill bit structure ensures extending the tool life time by up to 20%.
- If you need a drill bit of specialized spiral structure and untypical parameters – be sure to send an inquiry, drawing and description of use.



Drill bit with an HM finishing

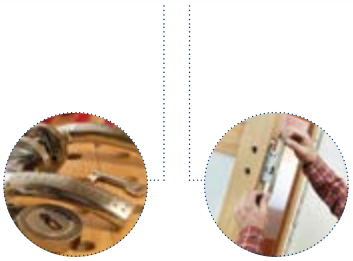
for machining centers and multiple-spindle drilling machines

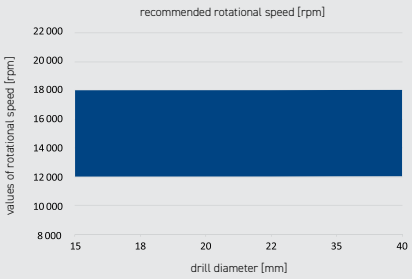
- drilling of through and blind holes in wooden win dow profiles and doors of wood and wood based materials
- drill bits designed for processing in machining centers and multiplespin-dle drilling machines – holes for hinges and handles
- blade made of sintered carbide, and drill bit body made of special tool steel characterized by durability and resistance to cracking
- drill bit with machine shank (with bevel) facili-tates fast assembly and disassembly in a machine chuck



Index						CATALOGUE PRICE
	mm	mm	mm	mm		
LS501-0810-0002	8	10	20	70	R	
LS501-1010-0002	10	10	20	70	R	
LS501-1210-0002	12	10	20	70	R	
LS502-0810-0002	8	10	20	70	L	
LS502-1010-0002	10	10	20	70	L	
LS502-1210-0002	12	10	20	70	L	
LS503-0810-0002	8	10	20	70	R	
LS503-1010-0001	10	10	20	70	R	
LS503-1210-0001	12	10	20	70	R	
LS504-0810-0002	8	10	20	70	L	
LS504-1010-0001	10	10	20	70	L	
LS504-1210-0001	12	10	20	70	L	

* see the website for more products





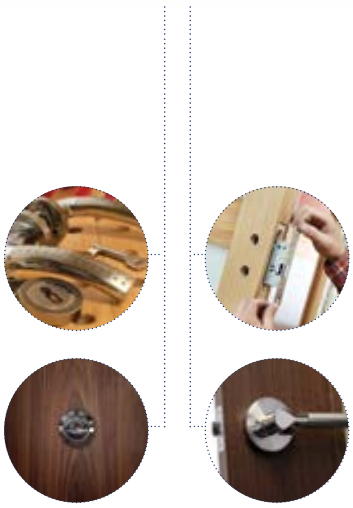
EXPERT'S ADVICE:

- Possibility of executing drill bits in various diameter type dimensions.
- Suitable for operation in wood and wood-based materials.
- Possibility of manufacturing drill bits in various total lengths of 90, 105, 110, and 120 mm.

HM cylinder boring bit / machine drill bit

for machining centers and multiple-spindle drilling machines

- drilling of blind holes in wooden window profiles and doors wood and wood based materials
- drill bits designed for processing in machining centers and multple-spindle drilling machines
- blade made of sintered carbide, and drill bit body made of special tool steel characterized by durability and resistance to cracking
- drill bit with machine shank (with bevel) facilitates fast assembly and disassembly in a machine chuck



	Index						CATALOGUE PRICE
		mm	mm	mm	mm		
o	**LS550-1510-0003**	15	15	57	10	R	
o	**LS550-1510-0004**	15	15	70	10	R	
o	**LS550-1510-0005**	15	15	57	10	L	
o	**LS550-1510-0006**	15	15	70	10	L	
o	**LS550-2010-0001**	20	15	57	10	R	
o	**LS550-2010-0002**	20	15	70	10	R	
o	**LS550-2010-0006**	20	15	57	10	L	
o	**LS550-2010-0003**	20	15	70	10	L	
o	**LS550-2510-0001**	25	15	57	10	R	
o	**LS550-2510-0002**	25	15	70	10	R	
o	**LS550-3010-0006**	30	15	70	10	R	
o	**LS550-3510-0002**	35	15	70	10	R	

o- to order

* see the website for more products

SETS OF CUTTERS FOR WINDOWS

On individual client's request, we execute sets of formed arbor cutters for various types of window profiles.

WE MANUFACTURE CUTTERS IN VERSION WITH AN HSS OR HM BLADE, DEPENDING ON THE TYPE OF MACHINED MATERIAL

- sets of cutters with HSS blade are recommended for processing of solid wood
- sets of cutters with HM blade are recommended for processing of glued solid wood and for processing of window profiles of PVC

Make an enquiry! Price offer for execution of the mentioned tools is prepared based on received profile drawing with dimensions or based on finished component processed with the given tool.

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