since 1921

English

Instructions for use/operation

Disc Cutters, HSS Circular Saw blades

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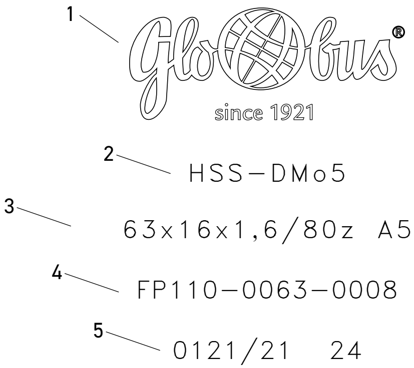
GENERAL INFORMATION

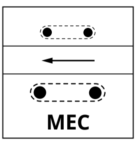
Podstawowe zalecenia dotyczące eksploatacji i bezpiecznej pracy frezami tarczowymi HSS / HSS-E.

MARKING

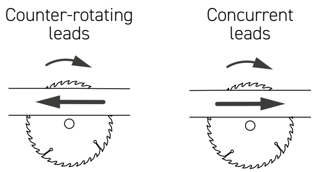


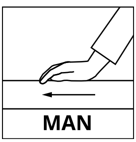
1. Tool manufacturer/brand.
2. Material from which the disc cutter is made, e.g.:
   HSS-DMo5 - high-speed steel SW7M / M2
   HSS-E - high-speed steel SK5M / M35 with 5% cobalt content
   VHM - powder steel (sintered carbide)
3. Typical tool dimensions with tooth geometry.
4. Manufacturer's index.
5. Serial number.

MATERIAL FEED AND DIRECTIONS

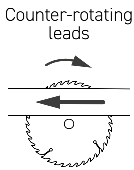


Mechanical feed
and recommended directions of guiding/feeding the material

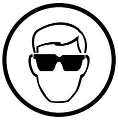




Manual feed
and recommended directions of guiding/feeding the material



EXPLANATION OF SYMBOLS USED

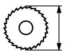
Pictogram	Explaination
	Before removing the tool/disc cutter from the packaging, read the information leaflet.
	Be careful: The tool has very sharp tooth edges, so protect your hands, legs and/or feet when removing the disc from the packaging or when mounting the disc cutter on the machine spindle.
	When working/operating with the shield, wear protective gloves to increase your safety.
	When working with disc milling cutters (material cutting process), chips/sparks/swarf may be thrown out, so always use safety glasses to protect your eyes.
	Wear a dust mask when handling cutting materials.
	Use ear protection as excessive noise may be generated during work.
	Wear safety shoes and protect your feet from various dangerous situations that may occur during your work.
	Protect the tool from moisture and avoid exposing the blade to direct or indirect contact with water.

BASIC RECOMMENDATIONS FOR OPERATION AND SAFETY WORKING WITH HSS, HSSE, VHM CIRCULAR SAW BLADES

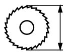
1. HSS HSS-E circular saw blade should be transported and stored so as to prevent damage.
2. Before starting work, the cutters should be visually inspected. If cracks or excessive dullness of the tool are found, it should be withdrawn from use.
3. The central holes are made to a high standard of accuracy and any modifications are not permitted. The use of reduction rings is prohibited.
4. Before starting to cut, all guards on the machine must be in place.
5. Before starting work, be sure to check that you have the correct tool, including the correct shape and tooth pitch for the cross-section and type of material being cut.
6. HSS circular saw blade should be cooled with liquids or cooling and lubricating oils during operation. Generally available coolants such as Ekobiocol AK or Ekobiocol Special can be used - a 3-10% water solution of these agents is recommended, or machining oils that are particularly useful for machining high-alloy and stainless steels.
7. The formation of build-up on the side surfaces of the saw blades should be avoided. To eliminate it, cutters with a passivation coating or a titanium nitride coating can be used.
8. The operating parameters should be selected so as not to overload the circular saw blades, as this would result in rapid wear or destruction of the tool.
9. HSS / HSS-E circular saw blades work on slow-speed milling / cutting machines - remember this absolutely!
10. The circular saw blade must not be allowed to become excessively blunt, as this causes excessive increase in cutting resistance, heating of the circular saw blade and, consequently, loss of operating parameters or may even lead to the circular saw blade saw blade breaking.
11. Excessive dullness of cutters, especially with smaller thicknesses, can cause them to break suddenly, which poses a risk to the operator, especially in the absence of appropriate guards.
12. Sharpening of circular saw blades should be carried out on specialized sharpening machines for this type of circular saw blades, ensuring minimum radial run-out as well as repeatability of angles on the circular saw blades (appropriate rake angle (γ) and relief angle (α), as well as appropriate tooth depression in toothing C.)
13. Sharpen without causing burns on the rake and clearance surfaces. Burns reduce the service life of the circular saw blade.
14. Working with a damaged circular saw bladfe is prohibited.
15. The machine manufacturer's recommendations contained in the operating instructions or technical and operational documentation (DTR) must be followed.
16. The recommended spindle speeds and feed rates can be found in the GLOBUS Tool Catalog, manufactured by Fabryka Pił i Narzędzi „Wapienica" or on the website: https://www.globus-wapienica.com/

NOTE: Circular saw blades used contrary to the above recommendations and notes cannot be subject to complaint, except for obvious material defects or obvious manufacturing defects. Circular saw blades damaged as a result of their incorrect selection for the type of work cannot be subject to complaint either.

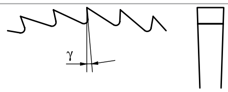
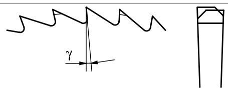
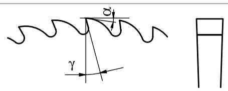
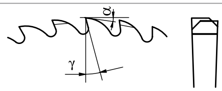
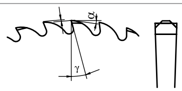
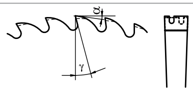
EXAMPLES OF CUTTER ROTATIONAL SPEEDS FOR SELECTED MATERIAL TYPES

	Sainless steel	Steel above 1000 N/mm2	Cast iron	Steel 700 ± 800 N/mm2	Steel 550 ± 650 N/mm2	Steel 450 ± 500 N/mm2
 γ	8°-10°	12°-15°	15°-20°	18°-20°	20°-22°	23°-26°
α	6°- 8°	6°- 8°	6°- 8°	6°- 8°	6°- 8°	8°-10°
Circular saw blade diameter	Rotation speeds RPM					
20	318	637	637	796	796	955
25	255	509	509	637	637	764
32	199	398	398	497	497	597
40	159	318	318	398	398	477
50	127	255	255	318	318	382
63	101	202	202	253	253	303
80	80	159	159	199	199	239
100	64	127	127	159	159	191
125	51	102	102	127	127	153
160	40	80	80	99	99	119
200	32	64	64	80	80	95
250	25	51	51	64	64	76
315	20	40	40	51	51	61

EXAMPLES OF CUTTER ROTATIONAL SPEEDS FOR SELECTED MATERIAL TYPES

	Ebonit	Welded pipes	Seamless pipes	Copper	Brass	Al and light metals
 γ	0°	18°-20°	20°-22°	20°-30°	2°-5°	25°-35°
α	12°	6°- 8°	6°- 8°	8°-10°	5°-7°	10°-12°
Circular saw blade diameter	Rotation speeds RPM					
20	955	955	1114	2387	3183	6366
25	764	764	891	1910	2546	5096
32	597	597	696	1492	1989	3979
40	477	477	557	1194	1592	3183
50	382	382	446	955	1273	2546
63	303	303	354	758	1011	2021
80	239	239	279	597	796	1592
100	191	191	223	477	637	1273
125	153	153	178	382	509	1019
160	119	119	139	298	398	796
200	95	95	111	239	318	637
250	76	76	89	191	255	509
315	61	61	71	152	202	404

TYPES OF TEETHING OF CIRCULAR SAW BLADES

Name	Drawing	Designa-tion	Ang γ for tool type		
			N ±2°	H ±2°	W ±2°
Triangular tooth		A	5°	0°	10°
Triangular tooth with alternating phases		Aw	5°	0°	10°
Arch tooth		B	15°	8°	25°
Arch tooth with alternating phases		Bw	15° 18°*	8°	25°
Arch tooth with cutting and selecting tooth		C (HZ)	18°	8°	25°
Arch tooth with chip splitte		Bf (BR)	18°	8°	25°

EXAMPLES OF USING SUITABLE TYPES OF TOOLS/CIRCULAR SAW BLADES, DEPENDING ON THE MATERIAL BEING PROCESSED

Material		Type of tool
Mild steel	Rm till 500 MPa	N, (W)
Medium hard steel	Rm till 800 MPa	N
Hard ductile steel	Rm till 1000 MPa	N, (H)
Hard ductile steel	Rm till 1300 MPa	H
The stable	–	N, (H)
Grey cast iron	HB till 180 kg/mm^2	N
Grey cast iron	HB above 180 kg/mm^2	N, (H)
Malleable cast iron	–	N
Copper, soft copper alloys	–	W, (N)

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EXAMPLES OF USING SUITABLE TYPES OF TOOLS/CIRCULAR SAW BLADES, DEPENDING ON THE MATERIAL BEING PROCESSED

Material	Type of tool
Brittle copper alloys	N, (H)
Zinc alloys	W, (N)
Soft aluminum alloys	W
Medium-hard aluminum alloys	N, (W)
Hardened aluminum alloys, low cutting speed	N
Hardened aluminium alloys, high cutting speed	W
Magnesium alloys	N, (W)
Homogeneous plastics without layers	N, (W)
Layerless plastics	W

OTHER IMPORTANT INFORMATION

TOOL CLEANING / MAINTENANCE

The tool should be washed immediately after use with agents that do not react with metals, e.g. GO Cleaner or GO Cleaner+ tool cleaning and washing liquid, removing dirt from its surface that has formed during work. Deposits accumulated on the disc should be removed frequently, this can also be done with hot water with dissolved soda or other cleaning agents and a soft brush. Excessive deposits significantly impair the operation of the saw. After washing the tool, it should be preserved with agents protecting against corrosion, e.g.: M protective oil, ANTYKOL M-100 oil, etc.

TRANSPORT/STORAGE CONDITIONS

The product must be transported and stored in its original and undamaged packaging, with a secured blade. The product must be stored in roofed, closed and dry rooms, at ambient temperatures between +5°C and +30°C.

APPROVALS / STANDARDS

The product is manufactured according to the internal standards of Fabryka Pił i Narzędzi WAPIENICA Sp. z o. o. based in Bielsko-Biała. The product meets the requirements of Polish and European Union law.

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