## Sawing process

Sawing is a process of separation involving circular or straight cutting movements to sever or cut semi-finished products or profile material. The material is cut by the cutting teeth of the saw. The resulting chip material is transported out of the kerf between the gaps in the teeth.

**The following saw forms are distinguishable:**

**Circular saws**

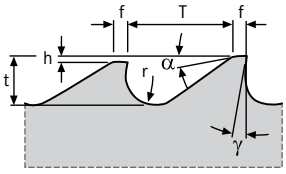

**Bandsaws**

**Bow saws**

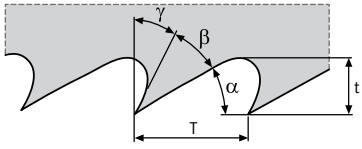
## Angle and pitch at saw tooth

The size of the angle is defined by the shape of the saw blade. The clearance angle defines the size of the chip space. As the size of the clearance angle increases, so does the size of the chip space.

The lip angle in turn gives the saw tooth stability. Hard and tough materials therefore require a large lip angle. In general, the lip angle is approximately 50°; the clearance and lip angle together are approx. 90°.




Circular saws




Bandsaws

α clearance angle (°)
β lip angle (°)
γ chip angle (°)
T tooth pitch (mm)
t tooth depth (mm)
h height difference (mm)
f clearance angle chamfer (mm)
r curvature radius (mm)

## Cutting materials on metal circular saws

**When separating and cutting slots (grooves), the following cutting materials are used.**

**HSS**

HSS metal circular saws can be used in materials up to 1000 N/mm². This cutting material can also be used in materials up to 1300 N/mm² under certain conditions (increased wear). The cutting material has high bending strength and can be used with unstable machine conditions. The cutting speed is relatively low when machining with this cutting material.

**HSSE**

Metal circular saws made from HSSE cutting material can be used in materials up to 1300 N/mm². The addition of cobalt allows even difficult materials with high toughness or hardness to be processed. This cutting material has a high flexural strength and can be used in unstable machining conditions. The cutting speed can be slightly increased compared to HSS circular saws.

**VHM**

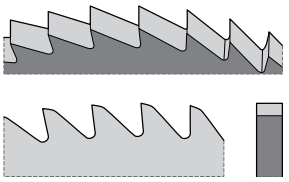
Metal circular saws made of cemented carbide cutting material can be used in all materials. This cutting material allows difficult materials with high toughness or hardness to be processed. The cutting material has a low flexural strength and can only be used in stable machines and clamping conditions. However, the low bending resistance is an advantage in terms of machining accuracy.

Carbide-tipped circular saw blades have a carbide piece soldered onto a steel support. This technology shows its benefits particularly when it comes to machining non-ferrous metals.

## Tooth shapes for metal circular saws

When machining with metal circular saw blades, the selection of tooth shape is crucial in the various machining tasks. A distinction is made between the following tooth shapes and their applications:

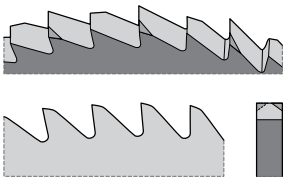
**SHAPE A - Metal circular saw blades DIN 1837 A (fine-toothed with angular serration)**



Tooth shape A has been developed for working with brittle, short-chipping materials. For this kind of toothing, the chip space is relatively small and can hold only a small volume of chips. The low tooth pitch and low chip volume make the saw blade only suitable for low cutting depths or thin-walled materials.

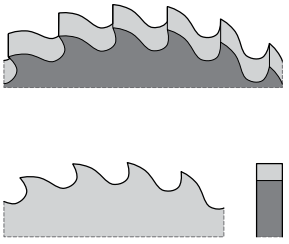
Tooth pitches < 2 are suitable for cutting depths down to 4 mm. Tooth pitches > 2 are suitable for cutting depths greater than 15 mm or Cross-section possible.

**SHAPE Aw – Metal circular saw blades DIN 1837 Aw (fine-toothed with alternating toothing)**



Tooth shape AW has been developed for cutting of thin-walled profiles with low cut depths. With this tooth shape, the chip spaces are relatively small and only a small volume of chips can be accepted.

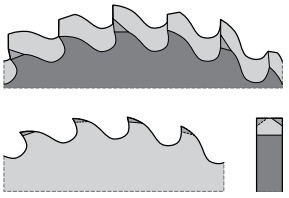
**SHAPE B - Metal circular saw blades DIN 1838 B (coarse-toothed with arc serration)**



SHAPE Bw - Metal circular saw blades DIN 1838 Bw (coarse-toothed with alternating toothing)

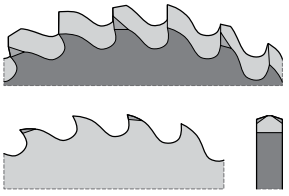
Tooth shape B has been developed for cutting solid material with high cutting depths. For this kind of toothing, the chip space is relatively large and can hold a large volume of chips. It is therefore used universally in numerous applications. The tooth spacing allows 30% greater chip volume. This tooth shape caters to tough as well as soft materials. Depending on the blade thickness, the tooth pitches range from 3.15 to 12.5 mm. Components with cutting depths and diameters up to max. 100 mm can be sawed.

**SHAPE Bw - Metal circular saw blades DIN 1838 Bw (coarse-toothed with alternating toothing)**



Tooth shape Bw has been developed for cutting solid material with high cutting depths (applications with cutting depths in excess of 5% of the saw blade diameter). This tooth shape produces narrower chips and allows the chip material to expand laterally (heat-induced). This tooth shape caters to tough as well as soft materials. The chips are 1/3 narrower and reduce the cutting forces at the tooth base by 30%. More space is created for the coolant in the area to be cut.

**SHAPE C - Metal circular saw blades DIN 1838 C (coarse-toothed with arc serration with pre- and post-cutter = HZ serration)**



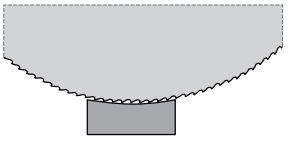
Tooth shape C is used to separate materials. Owing to its chip-separating tooth shape, it works especially well when machining materials of low to medium strength thanks to high cutting performance.

Tooth shape C is best used to produce very deep cuts and with large diameters when cutting workpieces. When creating grooves, a groove caused by the over-height taper tap is created at the cut base. A flat cut base is therefore not achieved. The radius of the taper tap is 0.1–0.3 mm higher than the following tooth.

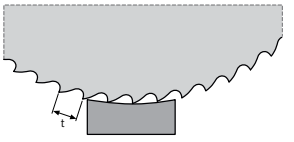
Large saw blades therefore have better guidance and thus more precise cutting.

## Number of contact teeth on metal circular saws

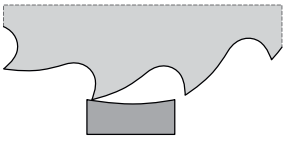
When selecting the number of teeth, it is important that two to three teeth are in use. If too many teeth are in use, the cutting forces are too high and it leads to saw blade breakage. If too few teeth are in use, too much cutting performance is being expected per tooth. The following graphics illustrate the relationship.



**Too fine**




**Correct**



**Correct**

## Tooth pitch selection table for machine saw blades

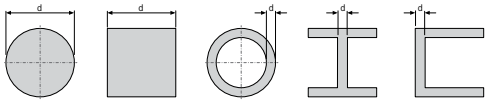
When selecting the tooth pitch, the cross-section of the workpiece to be machined is the key consideration. The following ratio essentially applies: The smaller the cross-section to be machined, the lower the pitch. As a rule of thumb, 2-3 teeth should always be engaged.

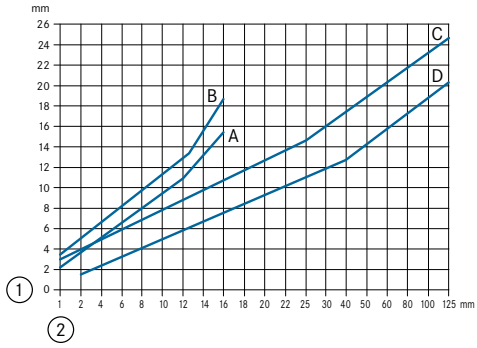
The chart illustrates the ratio:



Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

| Material | Pipes / Profiles | Solid material |
|---|---|---|
| Steel < 800 Nmm² | B | D |
| Steel 800 to 1200 N/mm² | C | D |
| Grey cast iron | | D |
| Copper | B | C |
| Bronze | B | C |
| Brass, zinc alloys | A | D |
| Aluminium alloys | B | C |




① Pitch in mm ② Cross-section d in mm

## ATORN® Solid carbide metal circular saw blade, finely toothed, type A (DIN 1837)

**Up to 1300 N/mm² in thin-walled workpieces and low cutting depths, CNC machines**

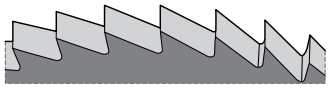
A | VHM

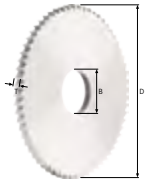
**Application:**
for producing saw cuts in thin-walled workpieces and small cutting depths, in steel, stainless steel, cast iron and non-ferrous metals material groups up to a strength of 1300 N/mm².

**Execution:**
- precision-ground metal circular saw blade with tooth shape A, fine-toothed, hollow ground on side

**Advantage:**
- innovative cutting geometry for very high dimensional accuracy, process reliability and chip removal
- high-quality cutting material for very high service life requirements
- universal use in numerous applications

**Technical data:**
- Tolerance of cutting edge diameter: j15
- Tolerance of cutting edge thickness: j11
- Tolerance of hole diameter: H6



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| D (mm) | T (mm) | B (mm) | Z (PCS) | Tooth shape A 14020... Ident. No. | |
|---|---|---|---|---|---|
| 30 | 1 | 8 | 64 | 125 | ● |
| 30 | 1.2 | 8 | 48 | 127 | ● |
| 30 | 2 | 8 | 48 | 135 | ● |
| 40 | 0.5 | 10 | 80 | 151 | ● |
| 40 | 0.6 | 10 | 80 | 152 | ● |
| 40 | 0.8 | 10 | 80 | 154 | ● |
| 40 | 1 | 10 | 64 | 156 | ● |
| 40 | 2 | 10 | 48 | 166 | ● |
| 50 | 0.5 | 13 | 100 | 182 | ● |
| 50 | 0.6 | 13 | 100 | 183 | ● |
| 50 | 0.8 | 13 | 80 | 185 | ● |
| 50 | 1 | 13 | 80 | 187 | ● |
| 50 | 1.2 | 13 | 80 | 189 | ● |
| 50 | 2 | 13 | 64 | 197 | ● |
| 63 | 0.5 | 16 | 128 | 211 | ● |
| 63 | 0.6 | 16 | 100 | 212 | ● |
| 63 | 0.8 | 16 | 100 | 214 | ● |
| 63 | 1 | 16 | 100 | 216 | ● |
| 63 | 1.2 | 16 | 80 | 218 | ● |
| 63 | 1.6 | 16 | 80 | 223 | ● |
| 63 | 2 | 16 | 80 | 227 | ● |
| 63 | 2.5 | 16 | 64 | 228 | ● |
| 80 | 0.5 | 22 | 128 | 239 | ● |
| 80 | 0.8 | 22 | 128 | 242 | ● |
| 80 | 1 | 22 | 100 | 244 | ● |
| 80 | 2 | 22 | 80 | 254 | ● |
| 80 | 2.5 | 22 | 80 | 255 | ● |
| 100 | 1 | 22 | 128 | 268 | ● |
| 100 | 1.2 | 22 | 128 | 270 | ● |
| 100 | 1.6 | 22 | 120 | 274 | ● |
| 100 | 2 | 22 | 100 | 278 | ● |

Prod. Gr. 1QA

# ORION® Circular metal saw blade, HSS, finely toothed, type A (DIN 1837)

**Up to 1000 N/mm² in thin-walled workpieces and low cutting depths, CNC machines**

A | HSS

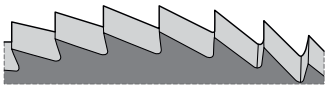
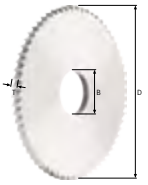
**Application:**
For producing saw cuts in thin-walled workpieces and shallow cutting depths, in steel, (stainless steel), cast iron and (non-ferrous metals) material groups up to a strength of 1000 N/mm².

**Execution:**
- Precision-ground circular metal saw blade with tooth shape A, finely toothed, laterally hollow ground, hole without keyway, up to a diameter of 160 mm without collar, from a diameter of 200 mm with collar

**Advantage:**
- Innovative cutting geometry ensures very high dimensional accuracy, process reliability and chip removal
- High-quality cutting material for very high service life requirements
- Universal use in numerous applications

**Technical data:**
- Tolerance of cutting edge diameter: js15
- Tolerance of cutting edge thickness: js11
- Tolerance of hole diameter: H7



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| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14002 | 45 | 35 | 20 | 10 | 10 | 230 | 300 | 120 | 100 | 70 | 80 | 60 | | 35 | | | | | |

| | | | Tooth shape | A |
|---|---|---|---|---|
| D (mm) | T (mm) | B (mm) | Z (PCS) | 14002... Ident. No. | |
| 20 | 0.2 | 5 | 80 | 005 | ● |
| 20 | 0.3 | 5 | 64 | 060 | ● |
| 20 | 0.4 | 5 | 64 | 095 | ● |
| 20 | 0.5 | 5 | 48 | 130 | ● |
| 20 | 0.6 | 5 | 48 | 170 | ● |
| 20 | 0.8 | 5 | 48 | 215 | ● |
| 20 | 1 | 5 | 40 | 260 | ● |
| 20 | 1.2 | 5 | 40 | 315 | ● |
| 20 | 1.6 | 5 | 40 | 370 | ● |
| 20 | 2 | 5 | 32 | 430 | ● |
| 25 | 0.2 | 8 | 80 | 010 | ● |
| 25 | 0.3 | 8 | 80 | 065 | ● |
| 25 | 0.4 | 8 | 64 | 100 | ● |
| 25 | 0.5 | 8 | 64 | 135 | ● |
| 25 | 0.6 | 8 | 64 | 175 | ● |
| 25 | 0.8 | 8 | 48 | 220 | ● |
| 25 | 1 | 8 | 48 | 265 | ● |
| 25 | 2 | 8 | 40 | 435 | ● |
| 32 | 0.2 | 8 | 100 | 015 | ● |
| 32 | 0.4 | 8 | 80 | 105 | ● |
| 32 | 0.5 | 8 | 80 | 140 | ● |
| 32 | 0.6 | 8 | 64 | 180 | ● |
| 32 | 0.8 | 8 | 64 | 225 | ● |
| 32 | 1 | 8 | 64 | 270 | ● |
| 32 | 1.2 | 8 | 48 | 325 | ● |
| 32 | 1.6 | 8 | 48 | 380 | ● |
| 32 | 2 | 8 | 48 | 440 | ● |
| 32 | 3 | 8 | 40 | 565 | ● |
| 40 | 0.2 | 10 | 128 | 020 | ● |
| 40 | 0.3 | 10 | 100 | 075 | ● |
| 40 | 0.4 | 10 | 100 | 110 | ● |
| 40 | 0.5 | 10 | 80 | 145 | ● |
| 40 | 0.6 | 10 | 80 | 185 | ● |
| 40 | 0.8 | 10 | 80 | 230 | ● |
| 40 | 1 | 10 | 64 | 275 | ● |
| 40 | 1.2 | 10 | 64 | 330 | ● |
| 40 | 1.6 | 10 | 64 | 385 | ● |
| 40 | 2 | 10 | 48 | 445 | ● |
| 40 | 2.5 | 10 | 48 | 505 | ● |
| 40 | 3 | 10 | 48 | 570 | ● |
| 50 | 0.2 | 13 | 128 | 025 | ● |
| 50 | 0.3 | 13 | 128 | 080 | ● |
| 50 | 0.4 | 13 | 100 | 115 | ● |
| 50 | 0.5 | 13 | 100 | 150 | ● |
| 50 | 0.6 | 13 | 100 | 190 | ● |
| 50 | 0.8 | 13 | 80 | 235 | ● |
| 50 | 1 | 13 | 80 | 280 | ● |
| 50 | 1.2 | 13 | 80 | 335 | ● |
| 50 | 1.6 | 13 | 64 | 390 | ● |
| 50 | 2 | 13 | 64 | 450 | ● |
| 50 | 2.5 | 13 | 64 | 510 | ● |
| 50 | 3 | 13 | 48 | 575 | ● |

| D (mm) | T (mm) | B (mm) | Z (PCS) | Tooth shape A 14002... Ident. No. | |
|---|---|---|---|---|---|
| 63 | 0.3 | 16 | 128 | 085 | ● |
| 63 | 0.4 | 16 | 128 | 120 | ● |
| 63 | 0.5 | 16 | 128 | 155 | ● |
| 63 | 0.6 | 16 | 100 | 195 | ● |
| 63 | 0.8 | 16 | 100 | 240 | ● |
| 63 | 1 | 16 | 100 | 285 | ● |
| 63 | 1.2 | 16 | 80 | 340 | ● |
| 63 | 1.6 | 16 | 80 | 395 | ● |
| 63 | 2 | 16 | 80 | 455 | ● |
| 63 | 2.5 | 16 | 64 | 515 | ● |
| 63 | 3 | 16 | 64 | 580 | ● |
| 80 | 0.3 | 22 | 160 | 090 | ● |
| 80 | 0.4 | 22 | 160 | 125 | ● |
| 80 | 0.5 | 22 | 128 | 160 | ● |
| 80 | 0.6 | 22 | 128 | 200 | ● |
| 80 | 0.8 | 22 | 128 | 245 | ● |
| 80 | 1 | 22 | 100 | 290 | ● |
| 80 | 1.2 | 22 | 100 | 345 | ● |
| 80 | 1.6 | 22 | 100 | 400 | ● |
| 80 | 2 | 22 | 80 | 460 | ● |
| 80 | 2.5 | 22 | 80 | 520 | ● |
| 80 | 3 | 22 | 80 | 585 | ● |
| 100 | 0.5 | 22 | 160 | 165 | ● |
| 100 | 0.6 | 22 | 160 | 205 | ● |
| 100 | 1 | 22 | 128 | 295 | ● |
| 100 | 1.6 | 22 | 100 | 405 | ● |
| 100 | 2 | 22 | 100 | 465 | ● |
| 100 | 2.5 | 22 | 100 | 525 | ● |
| 100 | 3 | 22 | 80 | 590 | ● |
| 125 | 0.6 | 22 | 160 | 210 | ● |
| 125 | 0.8 | 22 | 160 | 255 | ● |
| 125 | 1 | 22 | 160 | 300 | ● |
| 125 | 1.2 | 22 | 128 | 355 | ● |
| 125 | 1.6 | 22 | 128 | 410 | ● |
| 125 | 2 | 22 | 128 | 470 | ● |
| 125 | 2.5 | 22 | 100 | 530 | ● |
| 125 | 3 | 22 | 100 | 595 | ● |
| 160 | 1 | 32 | 160 | 305 | ● |
| 160 | 1.6 | 32 | 160 | 415 | ● |
| 160 | 2 | 32 | 128 | 475 | ● |
| 160 | 3 | 32 | 128 | 600 | ● |
| 200 | 1 | 32 | 200 | 310 | ● |
| 200 | 1.6 | 32 | 160 | 420 | ● |
| 200 | 2 | 32 | 160 | 480 | ● |

Prod. Gr. 1QK

## ORION® HSS metal circular saw blade, coarse-toothed, type B (DIN 1838)

**Up to 1000 N/mm² large cross sections and cutting depths, on CNC machines**

B | HSS

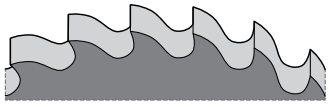
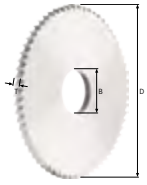
**Application:**
For creating saw cuts in large cross sections and for medium to large cutting depths in the material groups of steel, (stainless steel), cast iron and (non-ferrous metals) up to a strength of 1000 N/mm².

**Execution:**
- precision-ground metal circular saw blade with tooth type B, coarse serrated, laterally hollow ground and hole without keyway

**Advantage:**
- innovative cutting geometry with large chip space ensures chip removal and universal application
- top-quality cutting material for extremely demanding requirements in terms of service life
- universal use for a multitude of applications

**Technical data:**
- Tolerance of cutting edge diameter: js15
- Tolerance of cutting edge thickness: js11
- Tolerance of hole diameter: H7



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| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14004 | 45 | 35 | 20 | 10 | 10 | 230 | 300 | 120 | 100 | 70 | 80 | 60 | | 35 | | | | | |

| D (mm) | T (mm) | B (mm) | Z (PCS) | Tooth shape B 14004... Ident. No. | |
|---|---|---|---|---|---|
| 50 | 0.5 | 13 | 48 | 150 | ● |

| D (mm) | T (mm) | B (mm) | Z (PCS) | Tooth shape B 14004... Ident. No. | |
|---|---|---|---|---|---|
| 50 | 0.6 | 13 | 48 | 190 | ● |
| 50 | 0.8 | 13 | 40 | 235 | ● |
| 50 | 1 | 13 | 40 | 280 | ● |
| 50 | 1.2 | 13 | 40 | 335 | ● |
| 50 | 1.6 | 13 | 32 | 390 | ● |
| 50 | 3 | 13 | 32 | 575 | ○ |
| 63 | 0.5 | 16 | 64 | 155 | ● |
| 63 | 0.6 | 16 | 48 | 195 | ● |
| 63 | 0.8 | 16 | 48 | 240 | ● |
| 63 | 1 | 16 | 48 | 285 | ● |
| 63 | 1.2 | 16 | 40 | 340 | ● |
| 63 | 1.6 | 16 | 40 | 395 | ● |
| 63 | 2 | 16 | 40 | 455 | ● |
| 63 | 3 | 16 | 32 | 580 | ● |
| 80 | 0.5 | 22 | 64 | 160 | ● |
| 80 | 0.6 | 22 | 64 | 200 | ● |
| 80 | 0.8 | 22 | 64 | 245 | ● |
| 80 | 1 | 22 | 48 | 290 | ● |
| 80 | 1.6 | 22 | 48 | 400 | ● |
| 80 | 3 | 22 | 40 | 585 | ● |
| 100 | 0.6 | 22 | 80 | 205 | ● |
| 100 | 0.8 | 22 | 64 | 250 | ● |
| 100 | 1 | 22 | 64 | 295 | ● |
| 100 | 1.2 | 22 | 64 | 350 | ● |
| 100 | 1.6 | 22 | 48 | 405 | ● |
| 100 | 2 | 22 | 48 | 465 | ● |
| 100 | 2.5 | 22 | 48 | 525 | ● |
| 100 | 3 | 22 | 40 | 590 | ● |
| 125 | 1 | 22 | 80 | 300 | ● |
| 125 | 1.2 | 22 | 64 | 355 | ● |
| 125 | 1.6 | 22 | 64 | 410 | ● |
| 125 | 2 | 22 | 64 | 470 | ● |
| 125 | 2.5 | 22 | 48 | 530 | ● |
| 160 | 1 | 32 | 80 | 305 | ● |
| 160 | 1.6 | 32 | 80 | 415 | ● |
| 160 | 2.5 | 32 | 64 | 535 | ○ |
| 160 | 3 | 32 | 64 | 600 | ● |

Prod. Gr. 1QK

## ORION® HSS metal circular saw blade, coarse-toothed with taper tap and third tap, type C (DIN 1838)

**Up to 1000 N/mm² large cross sections and cutting depths**

C HSS

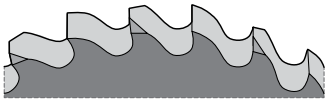
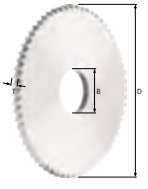
**Application:**
For creating separation cuts in medium to large cutting depths in the material groups of steel, (stainless steel), cast iron and (non-ferrous metals) up to a strength of 1000 N/mm².

**Execution:**
- precision-ground metal circular saw blade with tooth type B, coarse serrated with taper tap and third tap, laterally hollow-ground, hole without keyway

**Advantage:**
- innovative cutting geometry with large chip space plus taper tap and third tap ensures cutting distribution and increases cutting performance
- top-quality cutting material for extremely demanding requirements in terms of service life
- universal use for a multitude of applications

**Technical data:**
- Tolerance of cutting edge diameter: js15
- Tolerance of cutting edge thickness: js11
- Tolerance of hole diameter: H7



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| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plastics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14008 | 45 | 35 | 20 | 10 | 10 | 230 | 300 | 120 | 100 | 70 | 80 | 60 | | 35 | | | | | |

| D (mm) | T (mm) | B (mm) | Z (PCS) | Tooth shape C 14008... Ident. No. | |
|---|---|---|---|---|---|
| 50 | 2 | 13 | 32 | 450 | ● |
| 50 | 2.5 | 13 | 32 | 510 | ○ |
| 63 | 1 | 16 | 48 | 285 | ● |
| 63 | 1.6 | 16 | 40 | 395 | ● |
| 63 | 2 | 16 | 40 | 455 | ● |
| 63 | 2.5 | 16 | 32 | 515 | ● |
| 63 | 3 | 16 | 32 | 580 | ○ |

| D (mm) | T (mm) | B (mm) | Z (PCS) | Tooth shape C<br>14008...<br>Ident. No. | |
|---|---|---|---|---|---|
| 80 | 1 | 22 | 48 | 290 | ● |
| 80 | 1.2 | 22 | 48 | 345 | ● |
| 80 | 1.6 | 22 | 48 | 400 | ● |
| 80 | 2 | 22 | 40 | 460 | ● |
| 80 | 3 | 22 | 40 | 585 | ● |
| 100 | 1 | 22 | 64 | 295 | ● |
| 100 | 1.2 | 22 | 64 | 350 | ● |
| 100 | 1.6 | 22 | 48 | 405 | ● |
| 100 | 2 | 22 | 48 | 465 | ● |
| 100 | 3 | 22 | 40 | 590 | ● |
| 125 | 1.2 | 22 | 64 | 355 | ● |
| 125 | 1.6 | 22 | 64 | 410 | ● |
| 125 | 2 | 22 | 64 | 470 | ● |
| 125 | 3 | 22 | 48 | 595 | ● |
| 160 | 2 | 32 | 64 | 475 | ● |
| 160 | 3 | 32 | 64 | 600 | ● |
| 200 | 2 | 32 | 80 | 480 | ● |
| 200 | 2.5 | 32 | 80 | 540 | ● |
| 200 | 3 | 32 | 64 | 605 | ● |

Prod. Gr. 1QK

## ATORN® Carbide-tipped circular saw blades

**For use in non-ferrous metals**

**Application:**

**No. 14009:** For separation cuts, mitre cutting, trimming and longitudinal cuts in aluminium, CuZN, plastics and profiles on high-speed machines, whether fed horizontally or from underneath.

**No. 14011:** For separation cuts, mitre cutting, trimming and longitudinal cuts in aluminium, CuZN, plastics in thin-walled profiles on high-speed machines, fed from above.

**Execution:**

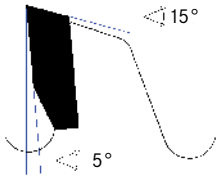
- **No. 14009:** circular saw blade with trapezoid carbide inserts with positive 5° chip angle, taper tap and third tap, free-cutting
- **No. 14011:** circular saw blade with trapezoid carbide plates with negative 6° chip angle, taper tap and third tap, free-cutting

**Advantage:**

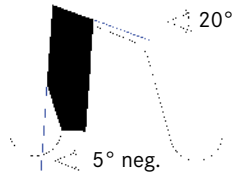
- innovative cutting geometry with large chip space plus taper tap and third tap ensures cutting distribution and increases cutting performance
- top-quality cemented carbide for extremely demanding requirements in terms of service life
- **No. 14009:** special geometry ensures smooth and burr-free cuts

No. 14009

No. 14011




No. 14009




No. 14011

| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14009 | | | | | | 800 | 400 | 450 | 350 | 300 | 200 | 400 | | | | | | | |
| 14011 | | | | | | 800 | 400 | 450 | 350 | 300 | 200 | 400 | | | | | | | |

| Cutting edge Ø (mm) | Bore Ø (mm) | Teeth type | Thickness of cutting edge (mm) | Teeth spacing (mm) | Side holes | Z | Cutting edge geometry Type | Positive 14009... Ident. No. | | Negative 14011... Ident. No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 250 | 30 | Fine | 3.2 | 9.8 | 2/10/60 \| 2/11/63 \| 2/12/64 \| 2/7/42 | 80 | - | 010 | ● | 210 | ● |
| 250 | 32 | Fine | 3.2 | 9.8 | 2/10/60 \| 2/11/63 \| 2/12/64 | 80 | Kaltenbach \| Berg and Schmid | 020 | ● | 220 | ● |
| 250 | 40 | Medium | 3.2 | 13.1 | 2/9/55 \| 4/12/64 | 60 | Eisele \| Trennjäger \| Häberle | 030 | ● | - | - |
| 300 | 30 | Fine | 3.2 | 9.8 | 2/10/60 \| 2/11/63 \| 2/12/64 | 96 | - | 040 | ● | 240 | ● |
| 350 | 30 | Fine | 3.2 | 9.8 | 2/10/60 \| 2/11/63 \| 2/12/64 | 108 | - | - | - | 250 | ● |
| 350 | 40 | Medium | 3.2 | 13.1 | 2/9/55 \| 4/12/64 | 84 | Eisele \| Trennjäger \| Häberle | 060 | ● | 260 | ● |
| 400 | 30 | Medium | 3.2 | 11.6 | 2/10/60 \| 2/11/63 \| 2/12/64 | 108 | - | - | - | 270 | ● |

Prod. Gr. 1QA

# ORION® Metal circular saw blades with secondary pinholes HSS/HSSE

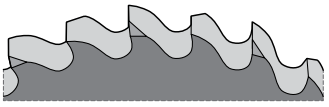
**For cutting on sawing machines**

c | HSS | HSSE Co5

**Application:**
**Ident. No. 050, 080, 110, 230, 290, 310:** For creating saw cuts on low-speed machines such as Eisele, Trennjäger and other brands.
**Ident. No. 060–070, 090, 120, 240–250, 300, 410–510:** for creating saw cuts on low-speed machines such as Eisele, Trennjäger and other brands.

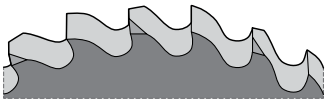
**Execution:**
- precision-ground metal circular saw blade with Bw tooth type (curved tooth = alternate bevel) and C tooth type (with taper tap and third tap)

**Advantage:**
- innovative cutting geometry for cutting solid material with high cutting depths
- steam-treated protects against metal welding
- **Ident. No. 050, 080, 110, 230, 290, 310–410, 430–510:** short narrow swarf is created
- **Ident. No. 060–070, 090, 120, 240–250, 300, 420:** cut distribution enables high cutting performance



Ident. No. 050–410, 430–510

Ident. No. 420



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| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14015 HSSE BW | 45 | 35 | 20 | 20 | 18 | 230 | 300 | 45 | 45 | 40 | 40 | 60 | | 35 | | | | | |

| Cutting edge Ø (mm) | Bore Ø (mm) | Thickness of cutting edge (mm) | Teeth spacing (mm) | Tooth shape | Side holes | Cutting material Z | HSS 14015... Ident. No. | | HSSE Co5 14015... Ident. No. | |
|---|---|---|---|---|---|---|---|---|---|---|
| 225 | 32 | 2 | 4 | BW | 2/8/45 \| 2/9/50 \| 2/11/63 | 180 | 050 | ● | - | - |
| 225 | 32 | 2 | 6 | C | 2/8/45 \| 2/9/50 \| 2/11/63 | 120 | 060 | ● | - | - |
| 225 | 32 | 2 | 8 | C | 2/8/45 \| 2/9/50 \| 2/11/63 | 90 | 070 | ● | - | - |
| 225 | 40 | 2 | 4 | BW | 2/8/55 \| 4/12/64 | 180 | 080 | ● | - | - |
| 225 | 40 | 2 | 6 | C | 2/8/55 \| 4/12/64 | 120 | 090 | ● | - | - |
| 250 | 40 | 2 | 4 | BW | 2/8/55 \| 4/12/64 | 200 | 110 | ● | 410 | ● |
| 250 | 40 | 2 | 6 | C | 2/8/55 \| 4/12/64 | 128 | 120 | ● | 420 | ● |
| 315 | 40 | 3 | 4 | BW | 2/8/55 \| 4/12/64 | 220 | 230 | ● | 430 | ● |
| 315 | 40 | 3 | 6 | C | 2/8/55 \| 4/12/64 | 160 | 240 | ● | 440 | ● |
| 315 | 40 | 3 | 8 | C | 2/8/55 \| 4/12/64 | 120 | 250 | ● | 450 | ● |
| 350 | 40 | 3 | 5 | BW | 2/8/55 \| 4/12/64 | 220 | 290 | ● | 490 | ● |
| 350 | 40 | 3 | 9 | C | 2/8/55 \| 4/12/64 | 120 | 300 | ● | 500 | ● |
| 350 | 40 | 3 | 4 | BW | 2/8/55 \| 4/12/64 | 280 | 310 | ● | 510 | ● |

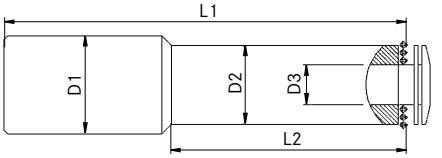
Prod. Gr. 1QK

# ORION® Mount for metal circular saws

**Application:**
For holding metal circular saw blades 14002-14008 and 16385.

**Execution:**
- precision-engineered clamp HSSE with 64 HRC, concentricity tolerance = 0.01 mm, straight shank and clamping surface as per DIN 1835 B

**Advantage:**
- top-quality substrate with high-quality finish for precise work



| Suitable for sawblade Ø (mm) | L1 (mm) | L2 (mm) | D2 (mm) | D3 (mm) | D1 (mm) | Mount for metal circular saws 14010... Ident. No. | | Clamping screw for metal circular saw clamp 14010... Ident. No. | | Clamping disc for metal circular saw clamp 14010... Ident. No. | | Clamp set for metal circular saws 14010... Ident. No. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 90 | 30 | 10 | 5 | 20 | 022 | ● | 122 | ● | 222 | ● | 900 | ● |
| 25 | 100 | 42 | 13 | 8 | 20 | 027 | ● | 127 | ● | 227 | ● | 900 | ● |
| 32 | 105 | 53 | 16 | 8 | 20 | 034 | ● | 134 | ● | 234 | ● | 900 | ● |
| 40 | 110 | 60 | 20 | 10 | 20 | 042 | ● | 142 | ● | 242 | ● | 900 | ● |
| 50 | 136 | 77 | 24.5 | 13 | 25 | 052 | ● | 152 | ● | 252 | ● | 900 | ● |
| 63 | 136 | 77 | 24.5 | 16 | 25 | 065 | ● | 165 | ● | 265 | ● | 900 | ● |

Prod. Gr. 1QK

## ORION® Clamp set for metal circular saws

**Application:**
For holding metal circular saw blades 14002-14008 and 16385.

**Execution:**
- precision-engineered clamp set HSSE with 64 HRC, concentricity tolerance = 0.01 mm, straight shank and clamping surface as per DIN 1835, available for saw blade clamp diameters of 20/25/32/40/50/63, clamping screws and clamping discs

**Advantage:**
- top-quality substrate with high-quality finish for precise work

| 14010... | Ident. No. | 900 |
|---|---|---|
| | | ● |

Prod. Gr. 1QK

## ATORN® Bandsaw blades, welded, type Uni bi-metal

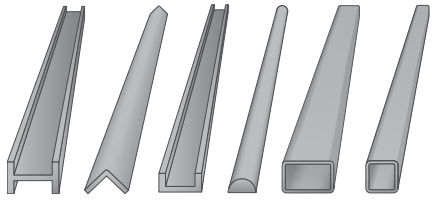
**non-ferrous metals**

**Separation cuts in solid material and profiles in steel, (stainless steel), cast iron,**

**Application:**
For producing separation cuts in profiles, supports and solid material in steel and non-ferrous metals material groups, up to a strength of 1300 N/mm² in single-part production and series production.

**Execution:**
- Precision-made machine saw band as a standard length with M42 HSS tooth tips (67–69 HRC) and universal tooth geometry

**Advantage:**
- Universal use both for full cuts and interrupted cuts for broad range of materials
- Innovative, positive tooth geometry and offset for exact and straight cuts
- Very smooth running and vibrations minimised



| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14044 | 80 | 40 | 25 | 20 | 20 | 100 | 100 | 65 | 65 | 40 | 40 | | | 60 | 20 | | | | |

| L (mm) | Width x thickness Teeth per inch | 20 x 0.9 mm 14044... Ident. No. | | 27 x 0.9 mm 14044... Ident. No. | | 34 x 1.1 mm 14044... Ident. No. | |
|---|---|---|---|---|---|---|---|
| 2375 | 6/10 | 045 | ● | - | - | - | - |
| 2375 | 10/14 | 055 | ● | - | - | - | - |
| 2450 | 4/6 | - | - | 075 | ● | - | - |
| 2450 | 5/8 | - | - | 080 | ● | - | - |
| 2450 | 6/10 | - | - | 085 | ● | - | - |
| 2480 | 4/6 | - | - | 096 | ● | - | - |
| 2480 | 5/8 | - | - | 097 | ● | - | - |
| 2480 | 6/10 | - | - | 098 | ● | - | - |
| 2710 | 4/6 | - | - | 100 | ● | - | - |
| 2710 | 5/8 | - | - | 103 | ● | - | - |
| 2710 | 6/10 | - | - | 105 | ● | - | - |
| 2750 | 4/6 | - | - | 120 | ● | - | - |
| 2750 | 5/8 | - | - | 125 | ● | - | - |
| 2750 | 6/10 | - | - | 135 | ● | - | - |
| 2835 | 3/4 | - | - | 195 | ● | - | - |
| 2835 | 4/6 | - | - | 200 | ● | - | - |
| 2835 | 5/8 | - | - | 201 | ● | - | - |
| 2890 | 3/4 | - | - | 210 | ● | - | - |
| 2890 | 4/6 | - | - | 215 | ● | - | - |
| 2890 | 5/8 | - | - | 218 | ● | - | - |
| 2890 | 6/10 | - | - | 220 | ● | - | - |
| 2910 | 3/4 | - | - | 224 | ● | - | - |
| 2910 | 4/6 | - | - | 225 | ● | - | - |
| 2910 | 5/8 | - | - | 226 | ● | - | - |
| 2910 | 6/10 | - | - | 228 | ● | - | - |
| 2950 | 3/4 | - | - | 253 | ● | - | - |
| 2950 | 4/6 | - | - | 255 | ● | - | - |
| 2950 | 5/8 | - | - | 260 | ● | - | - |

| L (mm) | Width x thickness Teeth per inch | 20 x 0.9 mm 14044... Ident. No. | | 27 x 0.9 mm 14044... Ident. No. | | 34 x 1.1 mm 14044... Ident. No. | |
|---|---|---|---|---|---|---|---|
| 2950 | 6/10 | - | - | 262 | ● | - | - |
| 3000 | 3/4 | - | - | 285 | ● | - | - |
| 3000 | 4/6 | - | - | 286 | ● | - | - |
| 3000 | 5/8 | - | - | 287 | ● | - | - |
| 3150 | 3/4 | - | - | 290 | ● | - | - |
| 3150 | 4/6 | - | - | 293 | ● | - | - |
| 3150 | 5/8 | - | - | 295 | ● | - | - |
| 3150 | 6/10 | - | - | 305 | ● | - | - |
| 3280 | 3/4 | - | - | 320 | ● | - | - |
| 3280 | 4/6 | - | - | 325 | ● | - | - |
| 3280 | 5/8 | - | - | 326 | ● | - | - |
| 3280 | 6/10 | - | - | 330 | ● | - | - |
| 3320 | 3/4 | - | - | 331 | ● | - | - |
| 3320 | 5/8 | - | - | 332 | ● | - | - |
| 3320 | 6/10 | - | - | 333 | ● | - | - |
| 3370 | 3/4 | - | - | 337 | ● | - | - |
| 3370 | 4/6 | - | - | 338 | ● | - | - |
| 3370 | 5/8 | - | - | 340 | ● | - | - |
| 3370 | 6/10 | - | - | 341 | ● | - | - |
| 3660 | 3/4 | - | - | 345 | ● | - | - |
| 3660 | 4/6 | - | - | 350 | ● | - | - |
| 3660 | 5/8 | - | - | 355 | ● | - | - |
| 3660 | 6/10 | - | - | 360 | ● | - | - |
| 3770 | 3/4 | - | - | 375 | ● | - | - |
| 3770 | 4/6 | - | - | 380 | ● | - | - |
| 3770 | 5/8 | - | - | 382 | ● | - | - |
| 3770 | 6/10 | - | - | 385 | ● | - | - |
| 3800 | 3/4 | - | - | 390 | ● | - | - |

| Width x thickness | | 20 x 0.9 mm | | 27 x 0.9 mm | | 34 x 1.1 mm | |
|---|---|---|---|---|---|---|---|
| L (mm) | Teeth per inch | 14044... Ident. No. | | 14044... Ident. No. | | 14044... Ident. No. | |
| 3800 | 4/6 | - | - | 395 | ● | - | - |
| 3800 | 5/8 | - | - | 396 | ● | - | - |
| 3830 | 3/4 | - | - | 415 | ● | - | - |
| 3830 | 4/6 | - | - | 417 | ● | - | - |
| 3830 | 5/8 | - | - | 420 | ● | - | - |
| 3830 | 6/10 | - | - | 430 | ● | - | - |
| 4100 | 2/3 | - | - | - | - | 480 | ● |
| 4100 | 3/4 | - | - | - | - | 485 | ● |

| Width x thickness | | 20 x 0.9 mm | | 27 x 0.9 mm | | 34 x 1.1 mm | |
|---|---|---|---|---|---|---|---|
| L (mm) | Teeth per inch | 14044... Ident. No. | | 14044... Ident. No. | | 14044... Ident. No. | |
| 4100 | 4/6 | - | - | - | - | 490 | ● |
| 4150 | 3/4 | - | - | 450 | ● | 510 | ● |
| 4150 | 4/6 | - | - | 455 | ● | 515 | ● |
| 4150 | 5/8 | - | - | 456 | ● | - | - |
| 4150 | 2/3 | - | - | - | - | 509 | ● |
| 4640 | 2/3 | - | - | - | - | 520 | ● |
| 4640 | 3/4 | - | - | - | - | 525 | ● |

Prod. Gr. 1DJ

## ATORN® Machine saw blades for hacksaw machines, HSS

**For universal use up to 1100 N/mm² on hacksaw machines**

**Application:** For making separation cuts on hacksaw machines

| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14060010-506 | 35 | 25 | 15 | | | 42 | 40 | 38 | 38 | 30 | 30 | | | 28 | | | | | |

| Length x width x thickness | Cutting material: Number of teeth per inch | HSS 14060... Ident. No. | |
|---|---|---|---|
| 300 x 25 x 1.5 mm | 10 | 010 | ● |
| 300 x 25 x 1.5 mm | 14 | 012 | ● |
| 350 x 30 x 1.5 mm | 6 | 014 | ● |
| 350 x 30 x 1.5 mm | 8 | 016 | ● |
| 350 x 30 x 1.5 mm | 10 | 018 | ● |
| 350 x 30 x 1.5 mm | 14 | 020 | ● |
| 350 x 30 x 2.0 mm | 4 | 022 | ● |
| 350 x 30 x 2.0 mm | 6 | 024 | ● |
| 350 x 30 x 2.0 mm | 8 | 026 | ● |
| 350 x 30 x 2.0 mm | 10 | 028 | ● |
| 400 x 25 x 1.25 mm | 14 | 030 | ● |
| 400 x 25 x 1.25 mm | 22 | 032 | ● |
| 400 x 25 x 1.5 mm | 10 | 034 | ● |
| 400 x 25 x 1.5 mm | 14 | 036 | ● |
| 400 x 30 x 1.5 mm | 6 | 038 | ● |
| 400 x 30 x 1.5 mm | 8 | 040 | ● |
| 400 x 30 x 1.5 mm | 10 | 042 | ● |
| 400 x 30 x 1.5 mm | 14 | 044 | ● |
| 400 x 30 x 1.5 mm | 18 | 046 | ● |
| 400 x 30 x 1.5 mm | 22 | 048 | ● |

| Length x width x thickness | Cutting material: Number of teeth per inch | HSS 14060... Ident. No. | |
|---|---|---|---|
| 400 x 30 x 2.0 mm | 4 | 050 | ● |
| 400 x 30 x 2.0 mm | 6 | 052 | ● |
| 400 x 30 x 2.0 mm | 8 | 054 | ● |
| 400 x 30 x 2.0 mm | 10 | 056 | ● |
| 400 x 40 x 2.0 mm | 4 | 058 | ● |
| 400 x 40 x 2.0 mm | 6 | 060 | ● |
| 400 x 40 x 2.0 mm | 8 | 062 | ● |
| 450 x 30 x 2.0 mm | 4 | 064 | ● |
| 450 x 30 x 2.0 mm | 6 | 066 | ● |
| 450 x 30 x 2.0 mm | 8 | 068 | ● |
| 450 x 40 x 2.0 mm | 4 | 500 | ● |
| 450 x 40 x 2.0 mm | 6 | 502 | ● |
| 450 x 40 x 2.0 mm | 8 | 504 | ● |
| 450 x 40 x 2.0 mm | 10 | 506 | ● |
| 500 x 40 x 2.0 mm | 4 | 070 | ● |
| 500 x 40 x 2.0 mm | 6 | 072 | ● |
| 550 x 50 x 2.5 mm | 6 | 074 | ● |
| 600 x 50 x 2.5 mm | 6 | 076 | ● |
| 650 x 50 x 2.5 mm | 4 | 078 | ● |
| 650 x 50 x 2.5 mm | 6 | 080 | ● |

Prod. Gr. 1QG

## ATORN® Machine saw blades for hacksaw machines HSS, bimetal

**For universal use up to 1100 N/mm² on hacksaw machines**

**Application:** For making separation cuts on hacksaw machines

| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14060200-218 | 35 | 25 | 15 | | | 42 | 40 | 38 | 38 | 30 | 30 | | | 28 | | | | | |

| Length x width x thickness | Cutting material: Number of teeth per inch | Bimetal 14060... Ident. No. | |
|---|---|---|---|
| 300 x 32 x 1.6 mm | 10 | 200 | ● |
| 350 x 32 x 1.6 mm | 6 | 202 | ● |
| 350 x 32 x 1.6 mm | 8 | 204 | ● |
| 400 x 32 x 1.6 mm | 4 | 206 | ● |
| 400 x 32 x 1.6 mm | 6 | 208 | ● |

| Length x width x thickness | Cutting material: Number of teeth per inch | Bimetal 14060... Ident. No. | |
|---|---|---|---|
| 400 x 32 x 1.6 mm | 8 | 210 | ● |
| 500 x 38 x 1.9 mm | 6 | 212 | ● |
| 500 x 50 x 2.5 mm | 6 | 214 | ● |
| 600 x 50 x 2.5 mm | 4 | 216 | ● |
| 600 x 50 x 2.5 mm | 6 | 218 | ● |

Prod. Gr. 1QG

## ATORN® Machine saw blades for hacksaw machines, HSSE

**For universal use up to 1100 N/mm² on hacksaw machines**

**Application:** For making separation cuts on hacksaw machines

| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14060300-310 | 35 | 25 | 15 | 12 | 10 | 42 | 40 | 38 | 38 | 30 | 30 | | | 28 | 4 | 8 | 5 | | |

| Length x width x thickness | Number of teeth per inch | Cutting material HSSE 14060... Ident. No. | |
|---|---|---|---|
| 400 x 32 x 2.0 mm | 4 | 300 | ● |
| 400 x 32 x 2.0 mm | 6 | 302 | ● |
| 400 x 32 x 2.0 mm | 8 | 304 | ● |
| 450 x 40 x 2.0 mm | 4 | 306 | ● |
| 450 x 40 x 2.0 mm | 6 | 308 | ● |
| 450 x 40 x 2.0 mm | 8 | 310 | ● |

Prod. Gr. 1QG

## ATORN® Machine saw blades for Kasto HSS hacksaw machines

**For universal use up to 1100 N/mm² on Kasto hacksaw machines**

**Application:** For making separation cuts on hacksaw machines

| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14060100-150 | 35 | 25 | 15 | | | 42 | 40 | 38 | 38 | 30 | 30 | | | 28 | | | | | |

| Length x width x thickness | Number of teeth per inch | Cutting material HSS 14060... Ident. No. | |
|---|---|---|---|
| 300 x 30 x 1.5 mm | 14 | 104 | ● |
| 300 x 30 x 1.5 mm | 10 | 102 | ● |
| 300 x 30 x 1.5 mm | 6 | 100 | ● |
| 350 x 36 x 2.0 mm | 6 | 108 | ● |
| 400 x 32 x 2.0 mm | 8 | 116 | ● |
| 450 x 36 x 2.0 mm | 8 | 124 | ● |
| 350 x 36 x 2.0 mm | 10 | 110 | ● |
| 400 x 32 x 2.0 mm | 4 | 112 | ● |
| 350 x 36 x 2.0 mm | 4 | 106 | ● |
| 400 x 32 x 2.0 mm | 6 | 114 | ● |
| 400 x 32 x 2.0 mm | 10 | 118 | ● |
| 450 x 36 x 2.0 mm | 4 | 120 | ● |
| 450 x 36 x 2.0 mm | 6 | 122 | ● |
| 450 x 40 x 2.0 mm | 4 | 126 | ● |
| 450 x 40 x 2.0 mm | 6 | 128 | ● |
| 450 x 40 x 2.0 mm | 10 | 130 | ● |
| 550 x 45 x 2.0 mm | 4 | 132 | ● |
| 550 x 45 x 2.0 mm | 6 | 134 | ● |
| 575 x 50 x 2.5 mm | 4 | 136 | ● |
| 575 x 50 x 2.5 mm | 6 | 138 | ● |
| 600 x 50 x 2.5 mm | 4 | 140 | ● |
| 600 x 50 x 2.5 mm | 6 | 142 | ● |
| 650 x 55 x 2.5 mm | 4 | 144 | ● |
| 650 x 55 x 2.5 mm | 6 | 146 | ● |
| 700 x 55 x 2.5 mm | 4 | 148 | ● |
| 700 x 55 x 2.5 mm | 6 | 150 | ● |

Prod. Gr. 1QG

## ATORN® Machine saw blades for Kasto HSS hacksaw machines, bimetal

**For universal use up to 1100 N/mm² on hacksaw machines**

**Application:** For making separation cuts on hacksaw machines

| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14060250-268 | 35 | 25 | 15 | | | 42 | 40 | 38 | 38 | 30 | 30 | | | 28 | | | | | |

| Length x width x thickness | Number of teeth per inch | Cutting material Bimetal 14060... Ident. No. | |
|---|---|---|---|
| 400 x 38 x 1.9 mm | 4 | 250 | ● |
| 400 x 38 x 1.9 mm | 6 | 252 | ● |
| 400 x 38 x 1.9 mm | 10 | 254 | ● |
| 450 x 40 x 2.0 mm | 8 | 255 | ● |
| 500 x 38 x 1.9 mm | 6 | 256 | ● |
| 575 x 50 x 2.5 mm | 4 | 258 | ● |
| 575 x 50 x 2.5 mm | 6 | 260 | ● |
| 600 x 50 x 2.5 mm | 4 | 262 | ● |
| 600 x 50 x 2.5 mm | 6 | 264 | ● |
| 700 x 50 x 2.5 mm | 4 | 266 | ● |
| 700 x 50 x 2.5 mm | 6 | 268 | ● |

Prod. Gr. 1QG

## ATORN® Machine saw blades for Kasto HSS hacksaw machines

**For universal use up to 1100 N/mm² on Kasto hacksaw machines**

**Application:** For making separation cuts on hacksaw machines

| Application | Steel (N/mm²) | | | Stainless steel | | Alu | | Brass | | Bronze | | Plas-tics | Graphite G(C)FK | GG(G) GjMW | Titan-alloy | Nickel-alloy | Super-alloy | Hard mat. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | <700 | <1000 | <1300 | marten. | austen. | short | long | short | long | short | long | | | | | | | <55 HRC | <65 HRC |
| 14060350-372 | 35 | 25 | 15 | 12 | 10 | 42 | 40 | 38 | 38 | 30 | 30 | | | 28 | 4 | 8 | 5 | | |

| Length x width x thickness | Cutting material: Number of teeth per inch | HSSE 14060... Ident. No. | |
|---|---|---|---|
| 400 x 36 x 2.0 mm | 4 | 350 | ● |
| 400 x 36 x 2.0 mm | 6 | 352 | ● |
| 450 x 40 x 2.0 mm | 4 | 354 | ● |
| 450 x 40 x 2.0 mm | 6 | 356 | ● |
| 450 x 40 x 2.0 mm | 8 | 358 | ● |
| 450 x 40 x 2.0 mm | 10 | 360 | ● |

| Length x width x thickness | Cutting material: Number of teeth per inch | HSSE 14060... Ident. No. | |
|---|---|---|---|
| 500 x 40 x 2.0 mm | 6 | 362 | ● |
| 550 x 45 x 2.0 mm | 6 | 364 | ● |
| 600 x 50 x 2.5 mm | 4 | 366 | ● |
| 600 x 50 x 2.5 mm | 6 | 368 | ● |
| 700 x 55 x 2.5 mm | 4 | 370 | ● |
| 700 x 55 x 2.5 mm | 6 | 372 | ● |

Prod. Gr. 1QG