

Metal and Resin Continuous Rim Cutting Discs



Introduction

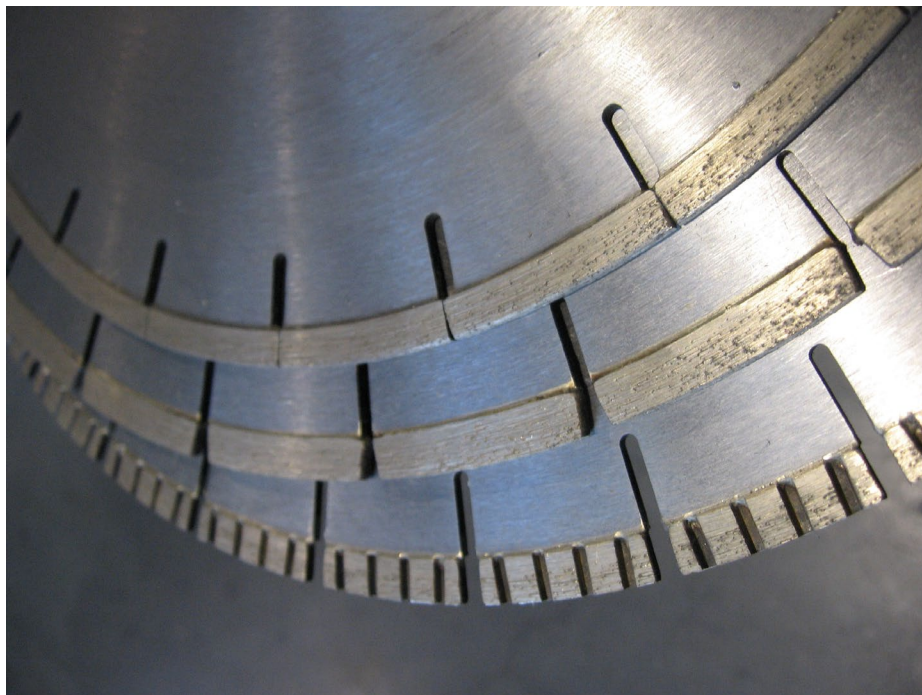
Sawing of Flat Glass

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Introduction

The sawing of glass is required either to cut pieces to obtain the required dimensions, or simply to take the top off hollow objects which, for various economic or technical reasons, cannot be cut by means of the “crack-off” technique.

Sawing of Flat Glass

Two possibilities can be figured out:

- simple glass or **one-layer glass**
- **multi-layer glass**, also called “**laminated glass**”.

One-layer glass

In the case of one-layer glass a diamond cutting disc will only be used when the conventional cutting technique is not feasible, whether for economical or technical reasons.

The continuous rim cutting disc is broadly used and offers the best quality cut. The segmented discs are more appropriate for thicknesses from 15 to 19 mm.

Machines

They are either portable or fixed.

Instructions for use

- Peripheral speeds: 25-35 m/s
- Cutting speeds: 150-200 cm²/min

Laminated glass

The increase in criminality, the evolution in architectural requirements and statutory regulations strongly increased the need for laminated glass. In this category we will make the distinction between safety glass and fire-proof glass.

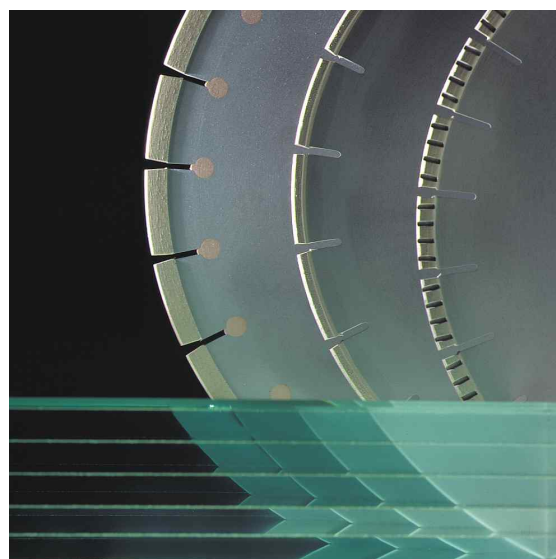


Fig. 1: Different types of discs for the sawing of safety glass

Safety glass

This type of glass is an anti-crime and bullet-proof glass composed of alternating layers of plastic and glass, of which the number and thickness vary according to the required security level.

Safety glass is produced in large sheets which are then cut to the dimensions required. This is generally done by means of segmented discs to avoid the clogging of the diamond by the melting of the polymer. Segmentation does indeed produce a specific cutting effect on the plastic, the latter being eliminated in chips and not through abrasion. This allows for optimum cooling. **Altifort Boart** offers a range of discs adapted to a wide variety of existing glass types (Fig. 1). Disc type B-Turbo, for instance, can be considered as a universal disc which could be used even for the most sophisticated products.

Machines

Safety glass can be cut on both vertical and horizontal machines.

Instructions for use

- peripheral speeds: 45-55 m/s
- abundant cooling with multiple nozzles.

Fire-proof glass

Fire-proof glass is also made up from a combination of glass sheets and organic interlayers, foam among others, so that the side opposite to the flames remains cold for a certain time. The thickness of these glass types varies from 10 to 50 mm.

Machines

Both vertical and horizontal machines are used for the sawing.

Instructions for use

- Optimum peripheral speeds: 50-55 m/s.

Sawing of Optical Glass

The peculiarity of this application lies in the high cost of the material to be cut, which requires a process minimising the loss of glass. Moreover, the size of the workpieces, the large varieties of glass types and hardness are among the numerous challenges of sawing. The glass hardness can indeed be as low as SF16 and as high as Zerodur.

Cutting discs used

For the reasons described above, the characteristics of the discs to use are very specific. The high cutting depths will require the use of discs with diameters ranging from 350 to 700 mm and thicknesses of 1.3 to 3.2 mm to limit sawing marks. Large diameter discs mounted with reduced flanges, low diamond thicknesses and therefore very thin sheets are all parameters that limit the stability of the disc during sawing and increase the difficulty of use. As a result, the choice of specifications, the precision of execution, the lateral runout and the tension on the disc will be essential factors for the final quality of the work.

Instructions for use

- | | |
|---|--------------------------------|
| • optimum peripheral speed: | 27 m/s |
| • material removal (according to glass type): | 30 to 100 cm ² /min |
| • tool life (according to glass type): | from 25 to 75 m ² . |

Machines

Optical glass sawing is mostly done with manual machines. However, when the thickness of the workpieces becomes too large, sawing will be processed on automatic precision machines.

Two different sawing methods are commonly used. The first is **multi-pass pendulum sawing** whereby the disk gradually sinks into the material, pass after pass. The second is **single pass sawing** consisting of a vertical sinking of the disc over the entire thickness at first, followed by a length feed.

Standard, Order Examples

Continuous rim saws with metal bond

D: Diameter in mm
 T: Diamond layer thickness in mm
 H: Bore in mm
 E: Body thickness in mm

Standard:

D	T	X	E	Grit	Concentration	Bond
30	0.5	5	0.3	D46-D151	C20-C25-C30-C40-C50	Metal
50	0.6	5	0.5	D46-D151	C20-C25-C30-C40-C50	Metal
75	1.0	5	0.8	D46-D252	C20-C25-C30-C40-C50	Metal
100	0.5	5	0.4	D46-D151	C20-C25-C30-C40-C50	Metal
125	0.5	5	0.4	D46-D151	C20-C25-C30-C40-C50	Metal
150	1.0	5	0.8	D46-D252	C20-C25-C30-C40-C50	Metal
150	1.0	10	0.8	D46-D252	C20-C25-C30-C40-C50	Metal
175	1.2	5	0.9	D46-D252	C20-C25-C30-C40-C50	Metal
200	1.2	5	0.9	D46-D252	C20-C25-C30-C40-C50	Metal
250	1.5	5	1.1	D46-D252	C20-C25-C30-C40-C50	Metal
300	1.8	10	1.4	D46-D252	C20-C25-C30-C40-C50	Metal
350	1.8	10	1.4	D46-D252	C20-C25-C30-C40-C50	Metal
400	2.2	10	1.7	D46-D252	C20-C25-C30-C40-C50	Metal
450	2.5	10	2.0	D46-D252	C20-C25-C30-C40-C50	Metal
500	3.0	10	2.4	D46-D252	C20-C25-C30-C40-C50	Metal

Bore diameter H to be specified.

Order example

L18A-300-1.8-10-D181-MG20J-16/E=1.4

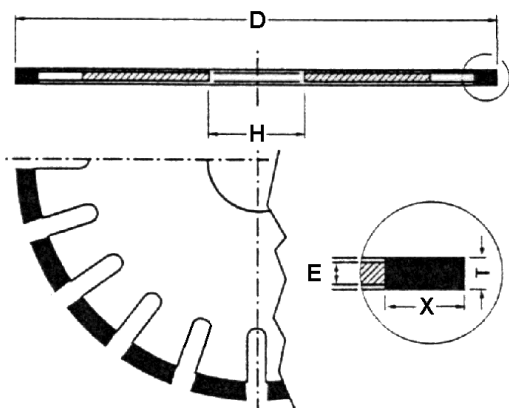
Segmented saws with metal bond

Optical and technical glass

ALTIFORT-BOART Form

L18C-D-T-X-Specification-H/E - FEPA 1A1RSS – 3 mm gap between the segments

L18M-D-T-X-Specification-H/E - FEPA 1A1RSS – 1 mm gap between the segments



D: Diameter in mm
T: Diamond layer thickness in mm
X: Diamond layer depth in mm
H: Bore in mm
E: Body thickness in mm

Standard for optical and technical glass:

ALTIFORT-BOART Form	D	T	X	E	Number of segments	Bond
L18C	200	2.0	5	1.3	13	Metal
L18C	250	2.2	5	1.5	17	Metal
L18C	300	2.4	5	1.8	21	Metal
L18M	300	2.4	5	1.8	23	Metal
L18C	350	2.8	5	2.2	25	Metal
L18M	350	2.8	5	2.2	27	Metal
L18C	400	1.5	5	1.2	28	Metal
L18C	400	3.2	5	2.5	28	Metal
L18M	400	1.5	5	1.2	31	Metal
L18M	400	3.2	5	2.5	31	Metal
L18C	500	1.8	5	1.2	36	Metal
L18C	500	2.8	5	2.2	36	Metal
L18M	500	2.4	5	1.8	39	Metal
L18C	600	2.4	5	1.8	42	Metal
L18C	600	3.2	5	2.2	42	Metal
L18C	700	3.2	5	2.5	50	Metal

Bore diameter H to be specified, silent core on request.

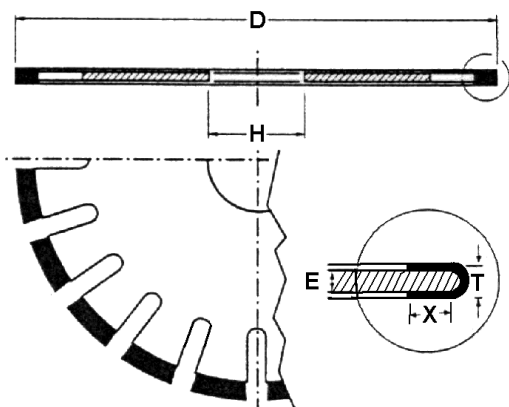
The choice of the specification depends on the application.

Order example

L18C-600-3.2-5-D252-MG20J-60/E=2.2

One-layer galvanic segmented discs

ALTIFORT-BOART Form
M18C -D-T-X-Grit-GN333-H/E - FEPA 1A1RSS



D: Diameter in mm
 T: Diamond layer thickness in mm
 X: Diamond layer depth in mm
 H: Bore in mm
 E: Body thickness in mm

Standard:

D	X	E	Number of slots	Grit	Bond
150	2.5	1.5	23	D46-D602	Galvanic
200	2.5	2.0	31	D46-D602	Galvanic
225	2.5	2.0	35	D46-D602	Galvanic
250	2.5	2.0	39	D46-D602	Galvanic
275	2.5	2.5	43	D46-D602	Galvanic
300	2.5	2.5	47	D46-D602	Galvanic
350	2.5	3.0	55	D46-D602	Galvanic
400	2.5	3.0	63	D46-D602	Galvanic
450	2.5	3.5	70	D46-D602	Galvanic
500	2.5	3.5	79	D46-D602	Galvanic

Bore diameter H to be specified.

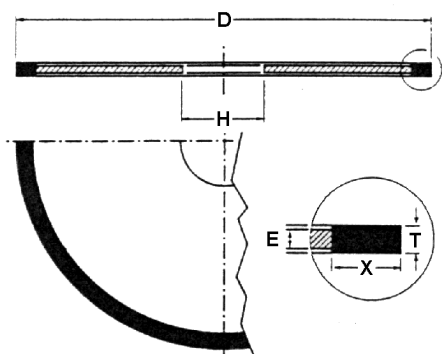
Layer thickness T depends on the grit size chosen.

Order example

M18C-400-5-2.5-D602-GN333-60/E=3.5

Multi-layer galvanic discs with continuous rim

ALTIFORT-BOART Form
M18A -D-T-X-Grit-GN666-H/E-CMG - FEPA



D: Diameter in mm
 T: Diamond layer thickness in mm
 X: Diamond layer depth in mm
 H: Bore in mm
 E: Body thickness in mm

Standard:

D	T	X	E	Grit	Bond
30/40/50/60/75/100/125/150	0.15	1.0	0.10	D46-D64	Galvanic
30/40/50/60/75/100/125/150	0.20	2.0	0.15	D46-D64-D91-D126	Galvanic
30/40/50/60/75/100/125/150	0.25	2.0	0.20	D46-D64-D91-D126-D151	Galvanic
30/40/50/60/75/100/125/150	0.30	2.0	0.25	D46-D64-D91-D126-D151-D181	Galvanic
30/40/50/60/75/100/125/150	0.40	2.0	0.30	D46-D64-D91-D126-D151-D181-D252	Galvanic
30/40/50/60/75/100/125/150	0.50	2.0	0.40	D46-D64-D91-D126-D151-D181-D252	Galvanic
30/40/50/60/75/100/125/150	0.60	2.0	0.50	D46-D64-D91-D126-D151-D181-D252	Galvanic
30/40/50/60/75/100/125/150	0.70	2.0	0.60	D46-D64-D91-D126-D151-D181-D252	Galvanic
30/40/50/60/75/100/125/150	0.80	2.0	0.70	D46-D64-D91-D126-D151-D181-D252	Galvanic
30/40/50/60/75/100/125/150	1.00	2.0	0.80	D46-D64-D91-D126-D151-D181-D252	Galvanic

Bore diameter H to be specified.

Order example

M18A-100-0.15-1-D64-GN666-25/E=0.10-CMG