

# Tool system for sawing and filing in precision engineering



## 1 The basic tools of the system

### 1.1 The precision sawing table

This surface hardened sawing table is the elementary tool for all kind of sawing. The sawing of sheet metals (especially thin sheet metals of less than 1 mm thickness) can even be done easily when they are soft annealed. When working very tightly at the edge of the sawing table cuttings of the very thin sheet metals can be made without vibrating and are protected against bending. The table edge will not be damaged by the saw blade. It may serve as cutting guide for linear cuttings. While the sawing table should be tightened rigidly when straight edges are cut the possibility of a freely movable sawing table enables comfortable working when cutting free form curved contours. (further details please see under 4.2)



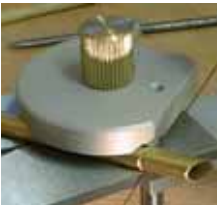
### 1.2 The clamping clip

When sawing small size sheet metals or squared profiles this clamping device holds the workpiece. Following the angle lines marked on the sawing table the workpiece can be firmly clamped and be sawn in infinite variable angles. Thus the edge of the sawing table serves as cutting guide.



### 1.3 The profile clamping plate

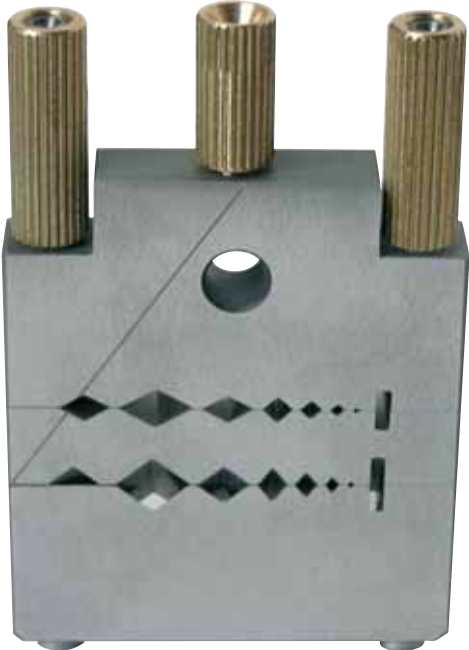
This special clamping plate is mainly used when clamping round profiles in infinite variable angles. A geometry shape which can be found on the back side of the clamping plate guarantees both a safe and careful support of the profile to be sawn. The marking of the angles which is made on the sawing table is done by means of the profile clamping plate and will be copied to the workpiece. The cutting along the table edge thus results in the angles of intersection.



### 1.4 The Profile cutting device

The profile cutting device is mainly used when level filing and precise filing of workpieces has to be done which were sawn before on the sawing table. Due to the rather broad width of the cutting device sawing of profiles with a diameter of more than 3 mm is only restrict-edly possible. It depends on the design of cutting device featuring special angles that the most common geometric basic forms can also be produced without angle stop. As far as the geometric shape of the CATHARA-cutting device is concerned, it is available in four different de-signs (in terms of appearance they seem to be identical):

\*) Patented version of profile cutting device



- featuring 90°/45° angles: cutting of profiles, production of squares and rectangles.
- featuring 90°/45°/30° angles: Additionally pro-duction of equilateral triangles.
- featuring 90°/45°/30°/60°/54° angles\*: Addi-tional production of an equilateral or stretched hexagon as well as geometric figures with dif-ferent angles (i.e. rhombus). The 54° angle can be used for the production of equilateral pen-tagons.
- featuring 90°/45°/30°/60°/67,5° angles\*: Instead of 54° the angle of 67.5° allows the pro-duction of equilateral or stretched octagons. This profile cutting device can also be used for the production of geometric figures with differ-ent angles.



All cutting devices can be dismantled completely which enables a thorough cleaning and following greasing of the fitting holes and fitting screws.



A detailed user's manual with many illustra-tions and various drawings shows you how to handle and use the individual tools.

[ Quotation of Prof. Dr. Erhard Brepohl: "Theorie und Praxis des Goldschmieds" 15th german edition ]

"The profile cutting device is a good example how the development of traditional tools can be progressed. A complete tool system was created the use of which still requires craft-manship; it also means that highest precision can be reached and it also makes work much easier."



presented by:





10 years  
**CATHARA®**  
tool system

**The concept:**  
Manual sawing  
and filing  
■ precisizing,  
■ accelerating,  
■ facilitating.

As one of the oldest handicrafts jewellers today increasingly use modern high technology production and processing methods.

Terms like unique specimen, repair or alteration are known in the daily business of a goldsmith or a clockmaker as well as in many other precision engineering crafts where precise manual processing still is an essential component. In the following we want to familiarize you with a tool system which still demands craftsmanship and manual skills but which however precisizes, facilitates and accelerates manual working in many ways.

## 2 The multi-functional clamp



The multi-functional clamp serves to hold the precision sawing table at the workbench as well as to fasten the profile cutting device. Thus this combination becomes a precision vise.

Instead of holding the cutting device with one hand the workpieces now can be clamped very easily and the work can be done much faster.

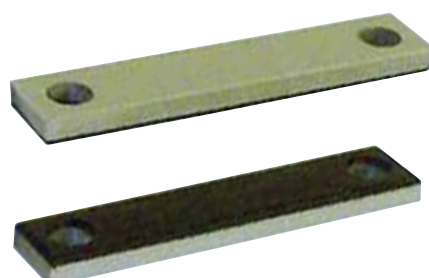
Moreover the multi-functional clamp offers the combination of different angle units with the cutting device. This makes her a central and equally important component of the CATHARA®-tool system.



## 3 Internal extension system

### 3.1 The padded jaws

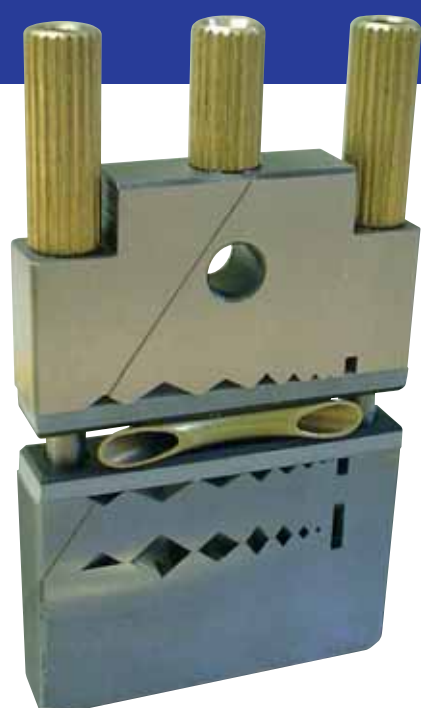
Padded jaws extend the range of operation of CATHARA® cutting devices, for instance when workpieces are clamped where the geometric shape of the grooves would be restricting.



Finished workpieces can be kept scratch-free.

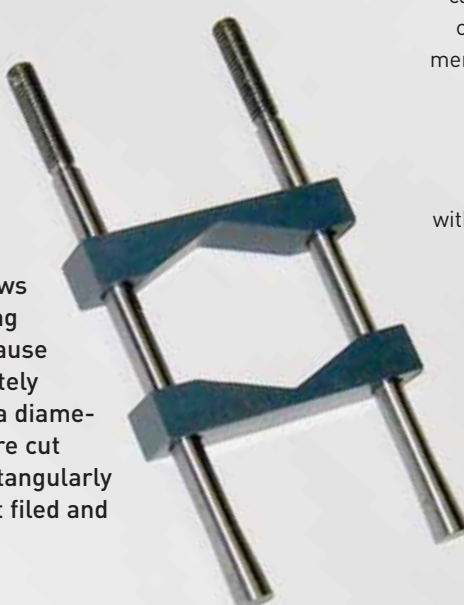


The padded jaws can also be used for wire winding of soft metals.



### 3.2 Prismatic groove jaws and extension fitting screws

When clamping profiles with large diameters the use of so called prismatic groove jaws is necessary. In order to be able to open the cutting device widely the original fitting screws have to be replaced by extended fitting screws which can easily be done because the device can be dismantled completely (see section 1.4). Profile pieces with a diameter between 13 and 40 mm which were cut before hand can now be clamped rectangularly into the cutting device and can be flat filed and filed precisely.



The prismatic grooves can also be used when cutting of arched segments or complete rings has to be done. Made of plastic they give good hold for winding metal wires without damaging them.



When using the prismatic groove jaws even large size wax profiles can be clamped rectangularly and processed accordingly.



## 4 External extension system

While extension fitting screws, prismatic groove jaws and padded jaws extend the cutting devices internally, several stops and adapters respectively stand for the external extension.

### 4.1 The length stop

For serial cutting of profile sections the length stop is recommended. Being adjusted accordingly, it precisely sets the lengths of the sections when level filing of their ends is needed.

### 4.2 The length stop adapter

A cross drilling of 8 mm diameter in the cutting device serves the fastening of stops in case the cutting device will be held with one hand. This bore hole is blocked if the multifunctional clamp is fastened. In this case the length stop adapter offers another hole and thus the possibility to fasten the length stop additionally at the clamp (see item 2, illustration in the middle).

When serial cutting of profiles at the sawing table is done the length stop may be fastened by the same adapter to the profile clamping plate.



This adapter also serves the freely movable fastening of the precision sawing table which can be of help for the sawing of precise contours.

### 4.3 The specific angle unit

With the specific angle unit profile endings can be level filed in the infinitely variable angle section of approx. 15° to 90°. Thus very different geometric figures can be produced. Furthermore the specific angle unit can be used for the determination of the position of the miter angles to each other whereby a production of three-dimensional geometric forms is possible and can be exactly repeated.

The specific angle unit can be set directly by the multifunctional clamp without adapter.

