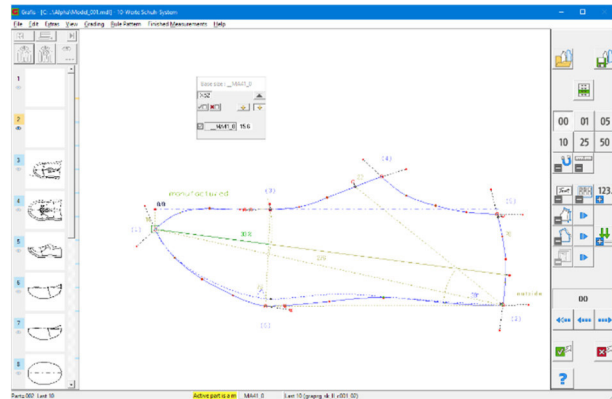


2.5 Interactive Last 10

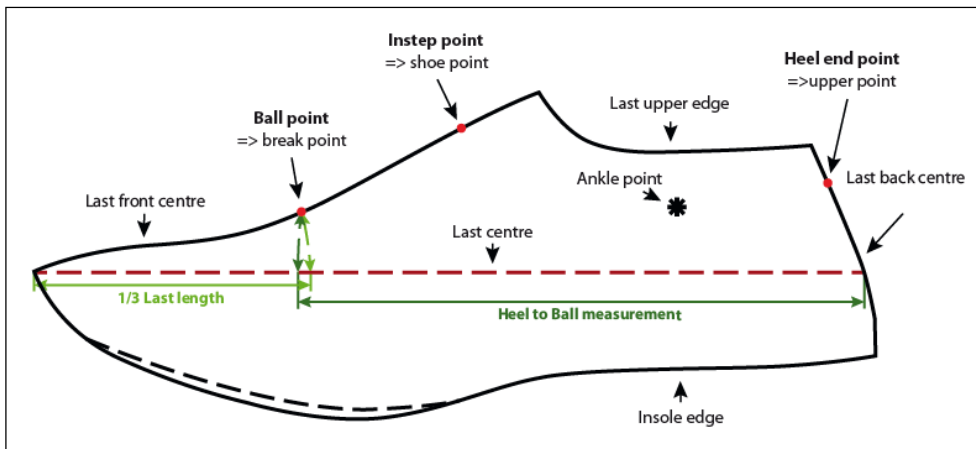
Last 10 is the basis for all upper constructions in Grafis, Picture 2-13. *Last 10* is used to interactively trace the contour of the last, loaded as a background image.

Tracing the last generates four contour lines for the outer last and four lines for the inner last.



Picture 2-13

When generating the last, the following points are usually defined and marked on the last: ball point, instep, heel end point and ankle (Picture 2-14). They are anatomical fixed points which are important for future styling and are transferred together with the last. Once correctly defined, these points cannot be altered.



Picture 2-14

The instep and the heel end point serve as orientation for the subsequent upper opening. The instep is located on the centre of the last front and indicates the end of the instep, i.e. the bridge of the foot. The heel end point is located on the centre of the last back and indicates the end of the heel.

To draw the upper opening, these points can be moved in the *Basic Shoe 10* module. The fixed points remain unchanged, new points are created: shoe point and upper point.

The ball point is located on the centre of the last front and indicates the place where the shoe width is measured and graded.

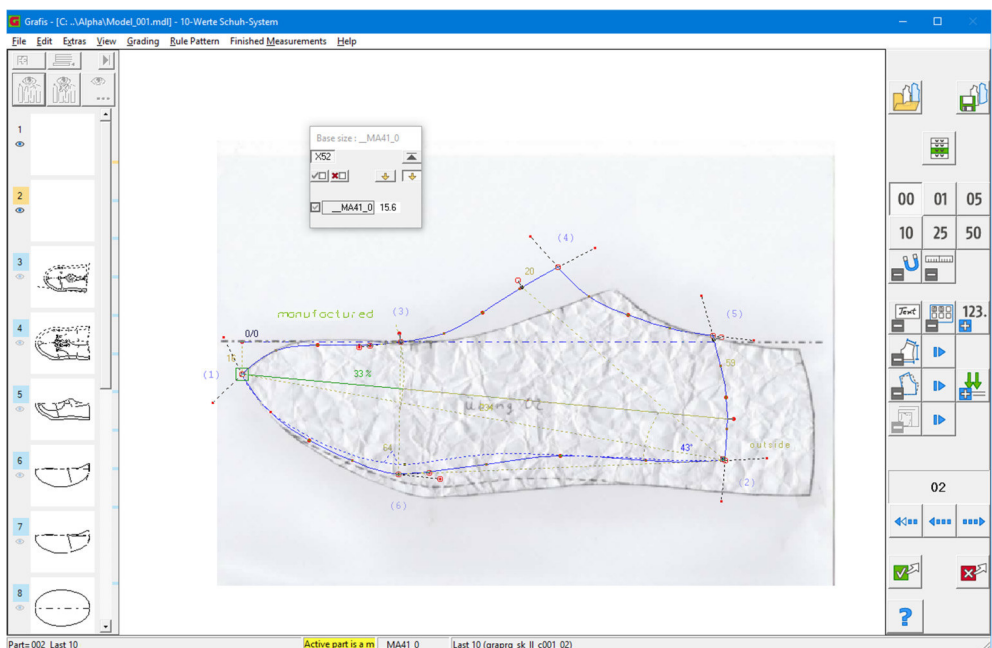
The break point indicates the location where the fold intersects with the inner last and the outer last. Depending on the style, the break point can be defined differently from the ball point.

The ankle point is a further anatomical fixed point. It indicates the point of the ankle bone and can serve as orientation for the upper opening curve. In the *Basic Shoe 10* module the ankle point can be used via an option to position auxiliary lines.

Method for adjustment of Last 10

Schrittfolge

- ⇒ Load background image of a last (Picture 2-2)
- ⇒ Determine zero point in the background image (Picture 2-3)
- ⇒ Open another part in *part organisation* (Picture 2-6)
- ⇒ Call *Last 10*
- ⇒ Activate *Last 10* by double-clicking or via F12
- ⇒ Activate the option *Display measurements*

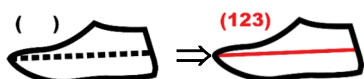


Picture 2-15

If the option *Display measurements* is active, numbers in brackets will appear at some drag points (Picture 2-15). These numbers indicate the order in which adjustments should be carried out. The order should be observed as some points depend on others and will be moved along with the adjustment of points of a higher priority.

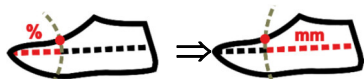
Options of Last 10

Display measurements



This option controls the display of measurements and auxiliary lines. These measurements and auxiliary lines offer additional information and simplify the adjustment.

Auxiliary measurement for ball point determination



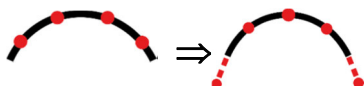
The ball point can be determined in two different ways:

A circle arc with the radius $\frac{1}{3}$ of the last centre line is drawn from the last tip (can be altered). The intersection with the front last centre gives the ball point.

A circle arc with the radius heel to ball length is drawn from the end of the last centre line. The heel to ball length is measured from the heel to the ball point on the last. The intersection with the front last centre gives the ball point.

This option alters the auxiliary measurement for the ball point determination and becomes inactive if the option *Display measurements* is deactivated.

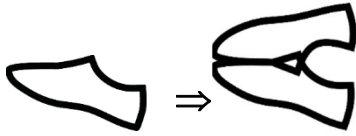
Curve type



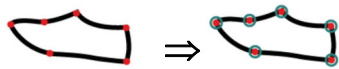
In *Last 10* two different processes for tracing the curves can be selected:

With setting 1 each curve can be recreated with a number of points.

With setting 2 curves are recreated via directions and form points of the 1st and 2nd order. During alteration of this option, the values for the different option are recalculated in the background.

Mirrored adjustment

With this option you can determine whether you want to display and adjust the last open or closed. The closed state can be useful to compare inner last and outer last.

Display drag point marker

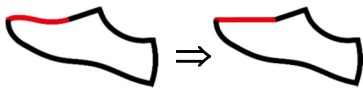
With this option you can display additional markers for easier detection of the drag points.

Proportion inner last/outer last

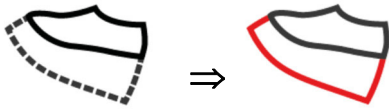
This option controls the advanced adjustments for the inner last.

Setting 1 enables unrestricted adjustment of the inner last (in the same way as the outer last). With setting 2 only the sole edge of the inner last can be adjusted. All other adjustments are transferred from the outer last.

Setting 3 hides the *Inner last* drag area and transfers all values from the outer last to the inner last. This can be used for simple styles and saves a lot of adjustment.

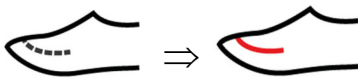
Trace last folded

If a style sketch is available with curves straightened from the break point, this option can reduce a number of adjustment steps.

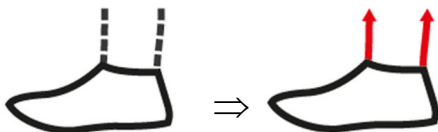
Cork line

For some shoe styles a cork line is required. This option enables two further drag areas where the cork line for the inner last and the outer last can be shaped separately.

If in orthopaedic styles the cork line is to be used for one foot only, the use of the line can be adjusted size-dependent or foot-dependent via a switch in the *Outer cork line* drag area.

Display mirror seam

Some shoe styles require a mirror seam. Via this option, two further drag areas are unlocked in which the mirror seam for the inner and outer lasts can be shaped separately.


Boot last

This option enables simplified tracing of lasts, derived from boot lasts. In the drag areas *Trace outer last* and *Trace inner last* further drag points appear if the option is activated.

Use outer lines as magnet lines

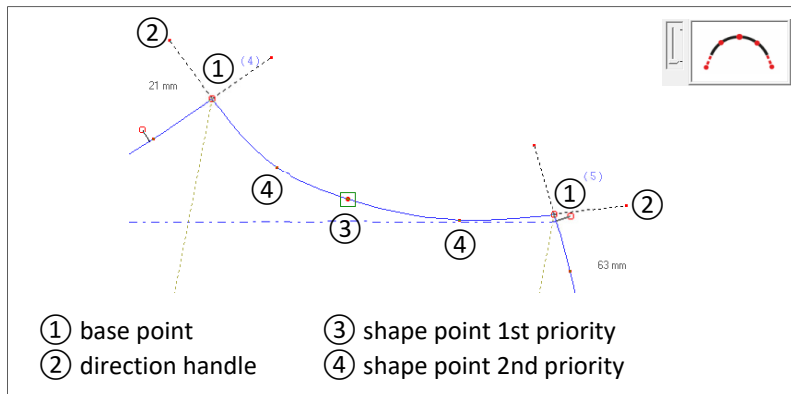
When adjusting the inner last, it can be helpful to use the outer last as a magnetic line, for example when the sole edge of the outer last is identical to the inner last at beginning and end and differs only in the middle.

In other cases, a magnetic outer last can be counter-productive, e.g. when tracing a digitized last.


If this option is active, the outer last becomes magnetic for some drag points of the inner last, when *Magnet*  is active in the drag area.


Adjusting an interactive curve using the example of *Last 10*

The same principles apply to the adjustment of curves in all interactive constructions. These principles are now explained using the example of *Last 10*, see also Picture 2-16.



Picture 2-16

Base points ① are positioned at the beginning and end of the curve, marked by a point and a red circle. If the cursor takes the shape  at these points, they can be moved along the corresponding line.

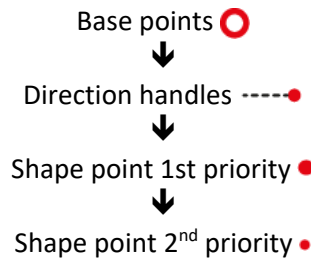
Dashed extensions with little points at the beginning/end of the curve are direction handles ②. If the cursor takes on the shape  at these points, the direction can be dragged.

There are one or three shape points between two neighbouring base points:

- one shape point 1st priority ③, displayed as a slightly larger red point and
- possibly two shape points 2nd priority ④, displayed as small red points.

The position of the shape points is controlled via two values: a value in percent for the position of an imaginary line between the two base points and a second value for the distance to the imaginary line. The second value is usually measured in millimetres. The zero position of the shape points is normally 50% and 0mm.

The above objects have the following **priorities**:



Priority means that the objects of lower priority are changed with the alteration of objects of higher priority, but not the other way around. Moving base points alters the position of the shape points and results in direction changes, if the direction depends on the base point.

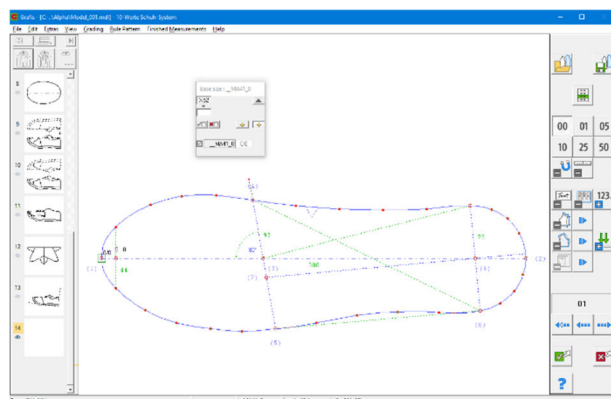
Important: *Always start adjusting the objects with the highest priority.*

2.6 Interactive Insole 10

With the interactive *Insole 10* the contour of a digitized or scanned insole or foot imprint can be traced.

The insole is not required for every style. Therefore, a separate module is provided to be used if required.

The outline of an insole can be derived from the last. E.g. a last is placed onto a piece of paper and traced with a pen.



Picture 2-17

The outline can then be scanned and traced with this module. The shape of an orthopaedic insole based on a foot imprint can equally be adjusted with this module. The insole consists of three auxiliary lines and two contour lines: the insole centre serves as the base line from which the insole is constructed. The heel line and the ball line are constructed onto the insole centre. The inner sole and the outer sole is a continuous line from the tip to the symmetry point of the heel, Picture 2-18.