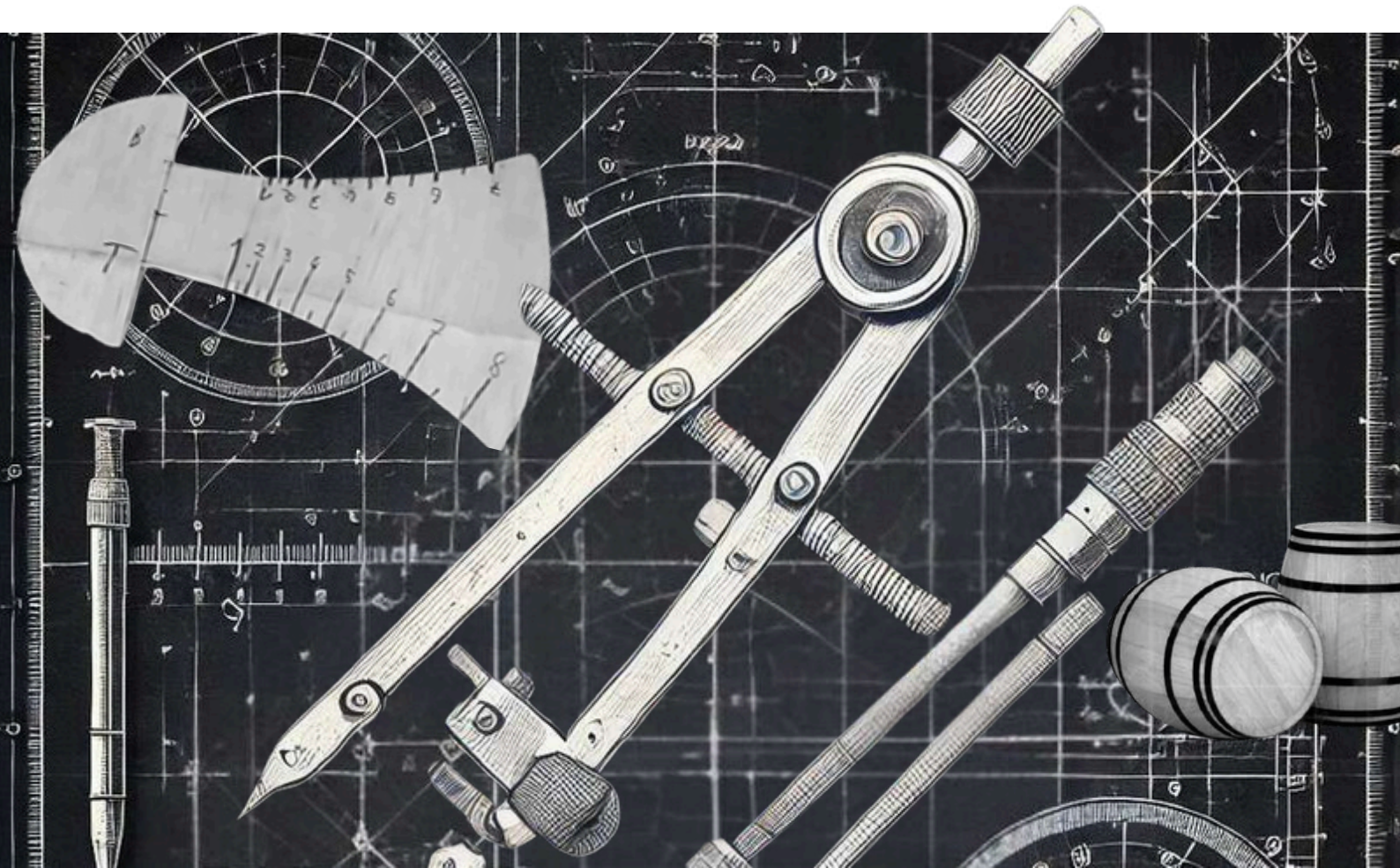
"Austrian" oval

MARIAUD CONSULTING



Layout of an "Austrian" oval (Construction based on the major axis)

1. Principe

The oval is constructed by a succession of circular arcs connected to one another.

The objective is to obtain a curve:

- **Regular**
- **Symmetrical**
- **Without breaks between the arcs**

• Step 1

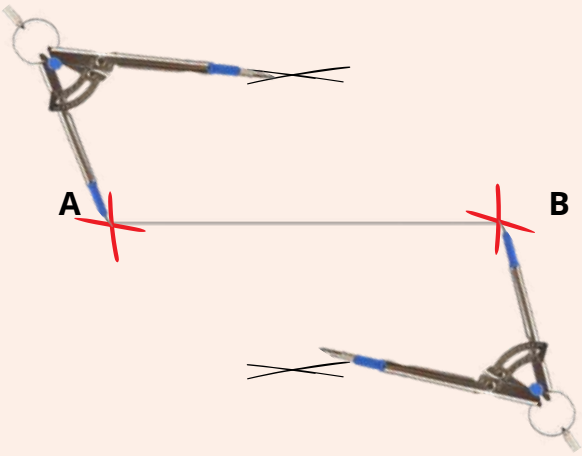
Trace the major axis

- **Trace the segment [AB]**

major axis = 120 mm

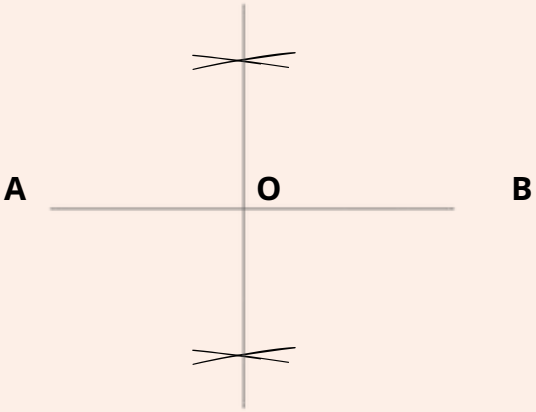
• Step 2

Construction of the minor axis *(very important)* **Place point O, the midpoint of [AB]**



Compass method:

- **Set an opening greater than half of [AB]**
- **From A, draw an arc above and below**
- **From B, draw the same arcs**



The intersections provide two points

Connect these two points perpendicular bisector of [AB] **→ you obtain the**

The minor axis measures 75 mm in this example and is centered on the AB axis.

"Austrian" oval

Step 3

Determination of the minor radius

$$\text{Minor radius} = \frac{\text{width}}{2} - 8\%$$

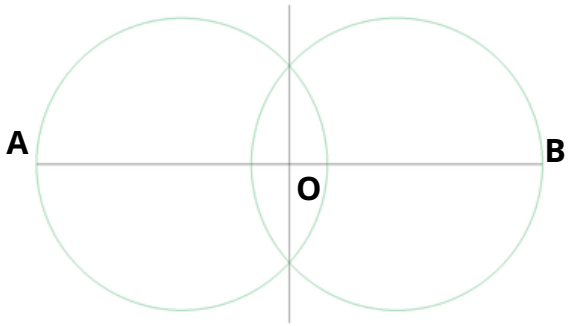
$$75/2 = 37.5 \quad \rightarrow \quad 37.5 - 8\% = 34.5$$

Minor radius = 34.5

Construction circles layout

- **Place the centers on the minor axis**
- **draw two circles::**
  - **left center**
  - **right center**

Radius = 34.5



Step 4

Determination of the major radius

Major radius = minor radius x 1.2

$$34.5 \times 1.2 = 41.4$$

Major radius = 41.4

"Austrian" oval

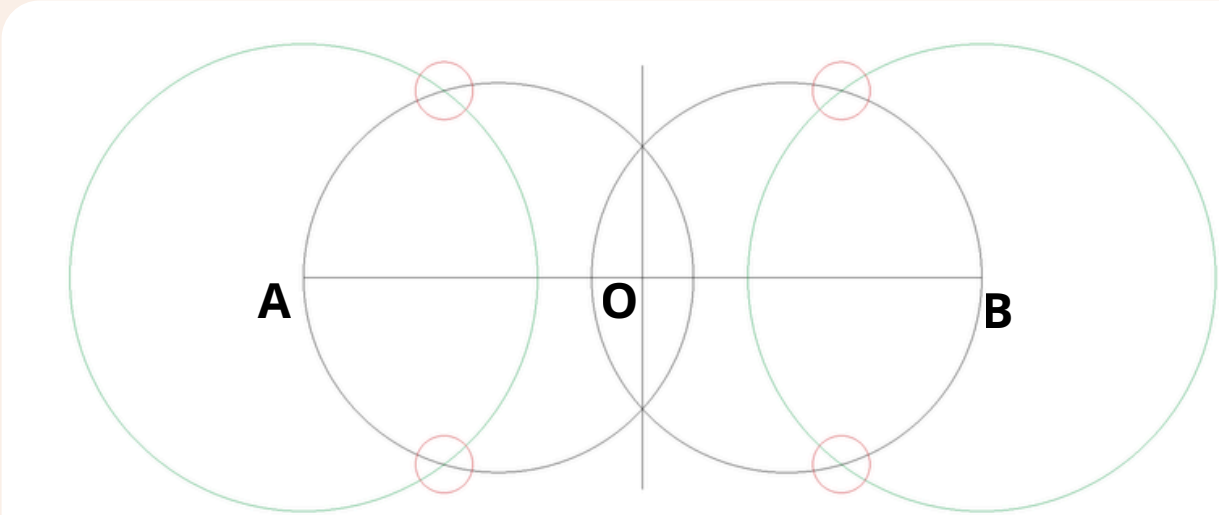
- **Step 5**

Construction of the blending points

• Draw a circle with a radius of 41.4

center = extremity of the major axis (top and bottom)

The intersections with the previous circles provide the blending points (circled in red in the figure)



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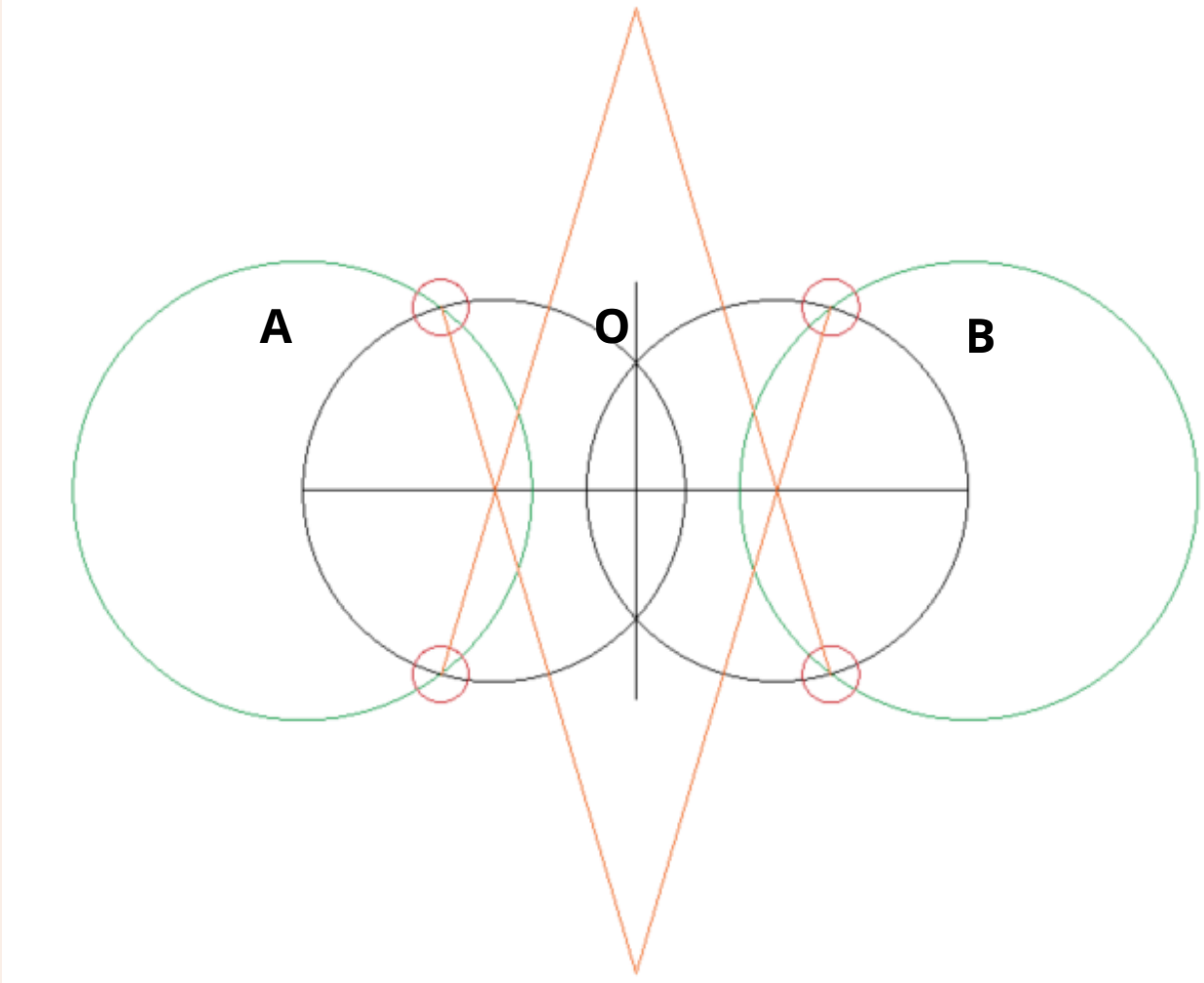
- **Step 6**

Determination of the major arc centers

- From each blending point, draw a line passing through the center of the corresponding small circle.
- Perform this construction on **both sides**.

Perform this construction on both sides.



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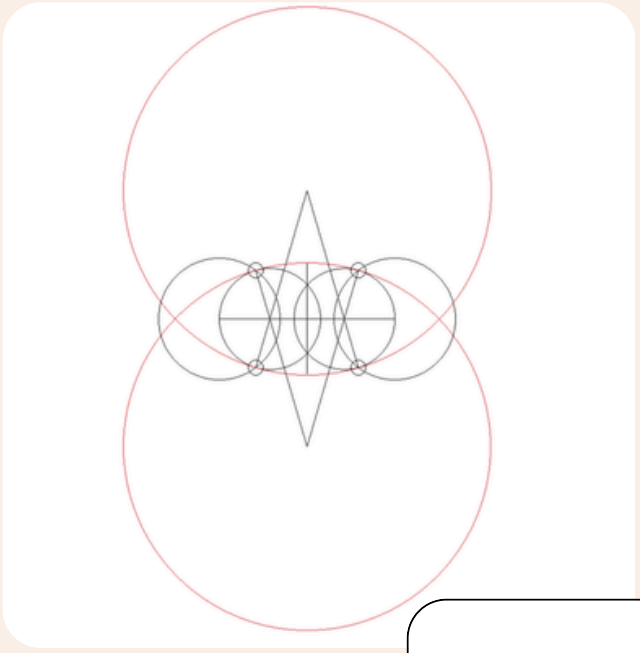
• Step 7

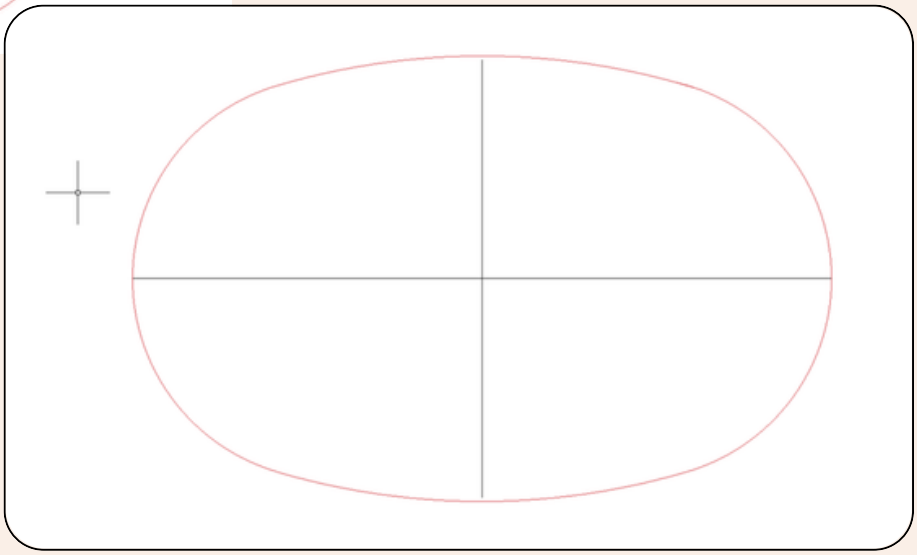
Layout of the arcs

- Draw the head arcs (R = 34.5)
- Draw the side arcs (R = 41.4)

Perform this construction on both sides.



This layout results in a rather rectangular shape, but lacks precision: a discrepancy in the final width is therefore normal.



It is up to you to put this into practice and perfect your craftsmanship!