



Schematic layout of the thread method

## Description:

The thread method is a superficially qualitative evaluation method with which both macro- and micro-lead on sealing surfaces can be detected.

The component to be measured is chucked horizontally in a jaw chuck and aligned. A thread weighted down with a weight is looped around the sealing surface. The shaft is then set in rotation. Lead structures on the sealing surface cause an axial force component on the thread, which then executes an axial movement. This thread movement serves as an indicator for an existing lead. To exclude a wrong chucking, the thread must run in the opposite axial direction after reversing the rotation direction.

A digital camera with a magnifying lens is used to observe the thread movement.

## Specifications:

There are currently no generally standardized specifications for the implementation of the thread method. There is a multitude of different guidelines and company works standards, which specify different threads, speeds and weights. It is also not unusual to wet the seal counter surface with oil. At the IMA the following specifications are used:

<b>Type of thread:</b>	Mercifil 40 (Amann Group)
<b>Shaft:</b>	Dry
<b>Speed of rotation:</b>	60 U/min
<b>Weight:</b>	35 g
<b>Wrap angle:</b>	220 – 240°

## Determination of the lead angle according to RMA OS 1-1:

In the guideline OS 1-1 of the RMA, a procedure for determining a lead angle based on the thread method is documented. If desired, this procedure can be performed.

At a rotation speed of 60 rpm, the distance the thread travels axially within 60 seconds is measured. The lead angle is calculated as follows:

$$\phi = \tan^{-1} \left( \frac{X}{\pi D} \right) = \tan^{-1} \left( \frac{X_t}{\pi D N} \right)$$

$\phi$	= Lead angle
$D$	= Shaft diameter
$X$	= Axial thread path
$X_t$	= Thread path per second
$N$	= Speed of rotation