

Dear customer!

At KROB SCANNERS we are currently using these following three methods to mark the balls:

1) Marking the balls with an alcohol-based marker pen:

This method, which you mentioned in your email, too, is one of the fastest and easiest methods. We ink the center of the drive disc with an alcohol-based marker, where the drive disc inks the ball at their touch point (touch point of the drive discs and the ball) and thus it leaves a mark – „the meridians“. To achieve the maximal effectiveness of this method we recommend:

- 1.1. Clean down the spherocone roller properly – especially the hardmetals, clean down the drive disc and the ball that you want to mark. We recommend you to use industrial spirit (absolute alcohol) for the cleaning.
- 1.2. Mark with a marker pen with as thin a tip as possible.
- 1.3. Make sure that the marker has plenty of ink and that its tip is not damaged. Try to write a little with the marker pen first so that it writes freely.
- 1.4. Point the marker's tip firmly to the center of the drive disc. We recommend you to ensure as far as possible that the marker does not move from its initial position. Try to make a thin line exactly in the center of the drive disc along its whole perimeter.
- 1.5. Slowly and continuously rotate the drive disc manually.
- 1.6. Check the ball's marking to avoid overlaying the already marked meridians.
- 1.7. Use gloves to manipulate the marked ball.
- 1.8. Mark several balls and choose the best-marked one.

Though the result of this method is subjective (it depends on the skill of the person doing the marking), you can obtain high quality results - even for small balls.

2) Marking balls with carbon-paper.

Carrying out this method accurately is a bit more demanding. However, the ball is marked with finer marking, which is less visible. A possible pole cap is marked more definitely. The method is analogic to marking with an alcohol-based marker and its performance is almost identical. However we put a piece of carbon-paper slightly moistened with alcohol in contact with the drive disc instead of an alcohol-based marker pen. The carbon-paper leaves a fine film on the drive disc's surface, which marks the ball with a thin mark. The visibility of this marking is low; it is rather better visible with a magnifying glass or a microscope. But the intersection of the meridians on the poles is better visible with this method. To achieve maximum effectiveness of this method we recommend:

- 2.1. Adhere to guidelines 1.1, 1.5, 1.6, 1.7, 1.8 – see above.
- 2.2. Moisten the carbon-paper with alcohol very slightly. Too much soaking is not desirable.
- 2.3. Press the carbon-paper on the drive disc with sufficient pressure.

3) Marking balls using a special testing device:

To mark the balls in our laboratory we have developed a special machine for internal use at KROB SCANNERS. It allows us to set the pressure of the diamond for different spherocone

rollers, the exact position of the diamond, the rotation speed and also it enables the counting of the meridians. The diamond engraves a very fine and thin mark, which requires an inspection with a microscope. This method is very precise, but it is feasible only with use of this special device.