Olympus eyepiece repair

On one of my Olympus WH10X-H/22 eyepieces, the worm gear for adjusting the diopter could no longer be turned. After 25 years, the grease used by Olympus had obviously gummed up. You should not try to turn with force, as this can damage the worm thread or deform the sleeve.

I would like to show here how I disassembled the eyepiece, cleaned it and made it work again.

First, the upper part of the aluminum sleeve must be removed. To do this, loosen the three small grub screws on the upper edge of the eyepiece (s. figs. 1 and 2).



Fig. 1: The grub screws on the upper edge must be loosen.



Fig. 2: Do not loosen the grub screws so far that they fall out.

After loosening the grub screws, pull the sleeve up slightly and then unscrew it from the thread. It can only be removed when it is unscrewed (s. figs. 3 and 4).



Fig. 3: Remove the upper aluminium sleeve after loosen the grub screws.

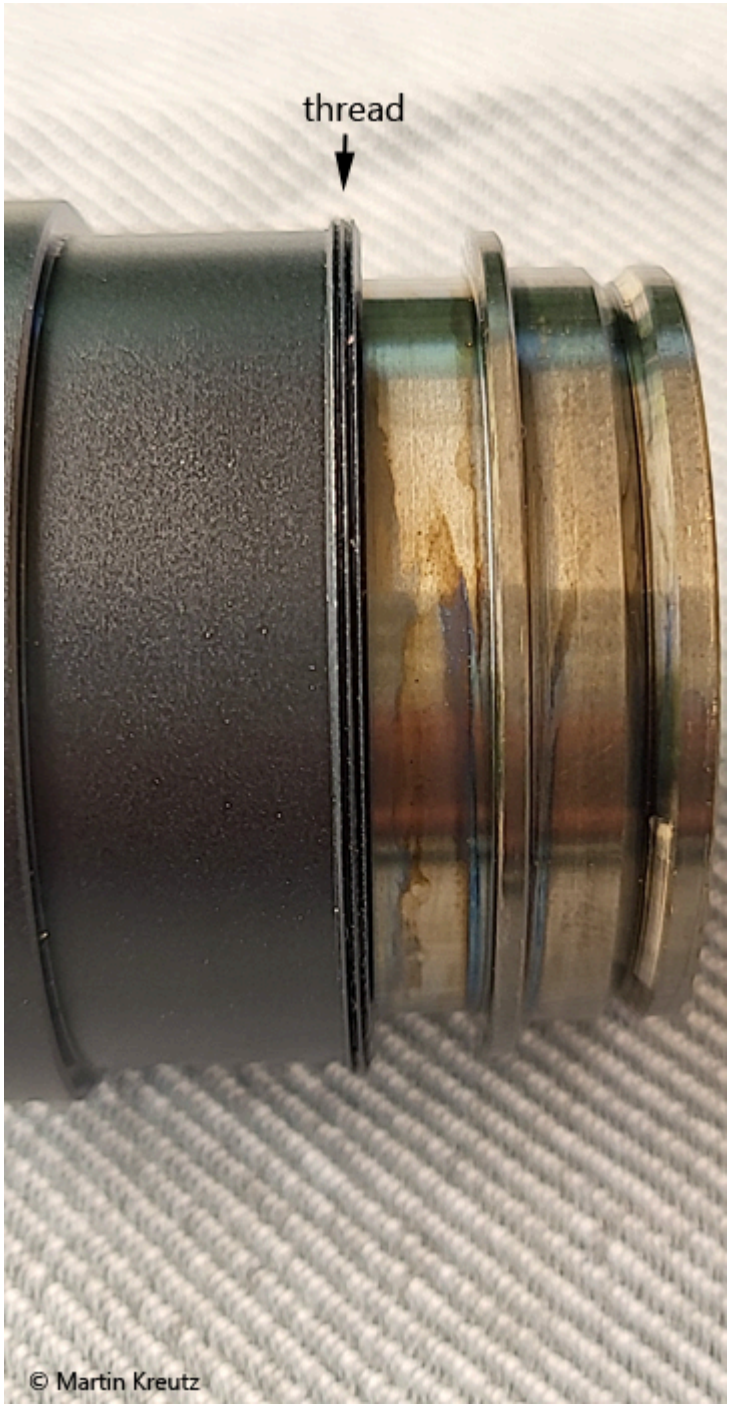


Fig. 4: The thread for tightening the upper sleeve becomes visible (arrow).

The brass sleeve with the lens group is now visible, but cannot yet be unscrewed due to the seized worm thread. I now put a few drops of gun oil (Ballistol) into the gap between the brass sleeve and the lower aluminum sleeve (s. figs. 5 a-b).

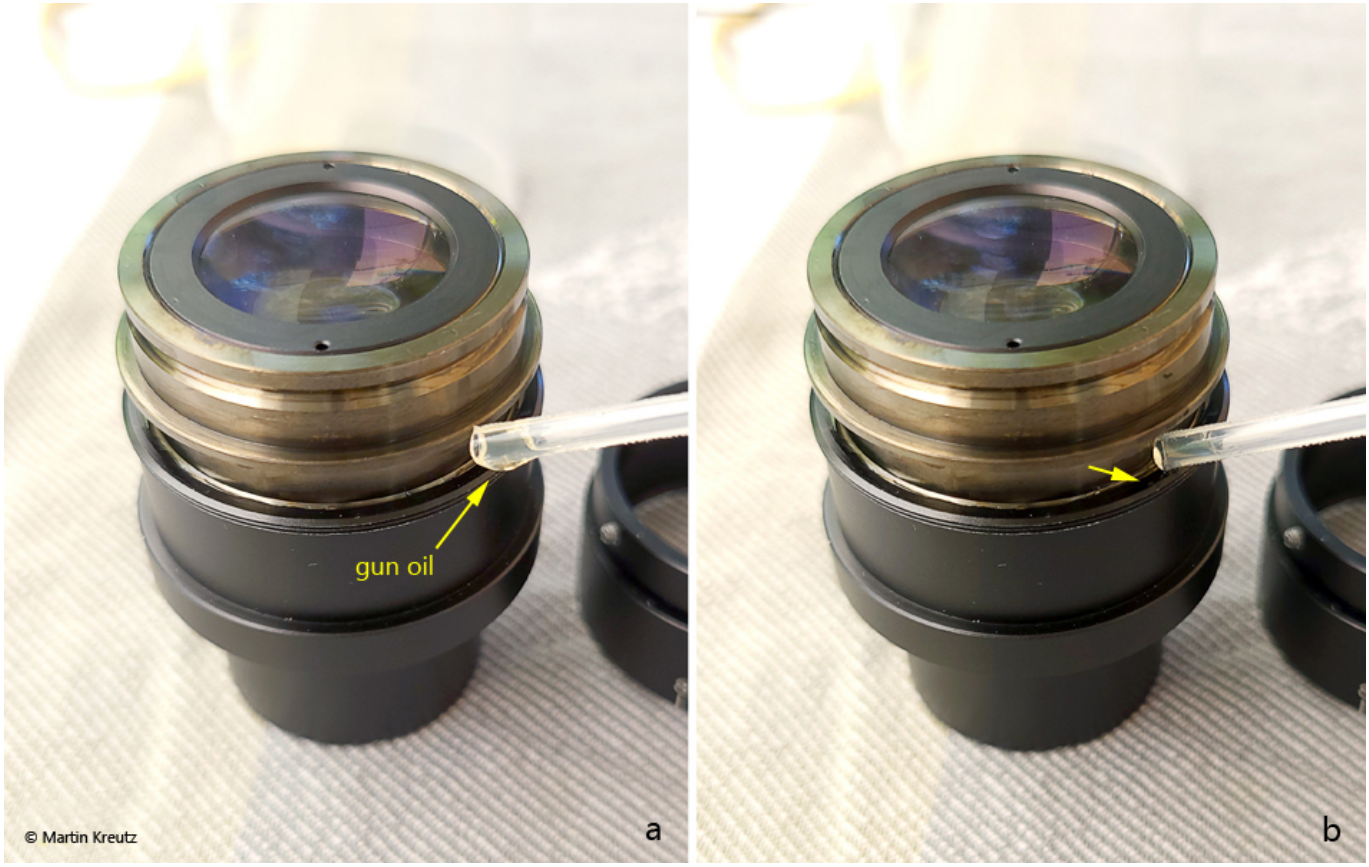


Fig. 5 a-b: The loose the worm thread some droplets of gun oil (a) are transferred in the slit between brass sleeve and the black aluminium sleeve (b, arrow).

After waiting for about an hour, carefully try to turn the worm gear for the first time. If it is still too stiff, wait another hour. If it moves easily, turn it carefully back and forth so that the gun oil is distributed more quickly. If it moves smoothly enough, you can unscrew the brass sleeve (s. fig. 6).



Fig. 6: Once the gun oil has dissolved the resinified grease, the brass sleeve can be unscrewed.

Now the threads must be thoroughly cleaned. I use spirit (denatured alcohol) and cellulose wipes for this. The old grease is greenish due to dissolved copper ions (s. figs. 7 and 8).



Fig. 7: Cleaning of the threads with spirit and cellulose.



Fig. 8: The worm threads after cleaning.

After cleaning the threads, the field lens must be cleaned, as it is no longer easy to access it once the eyepiece has been reassembled. To do this, I use standard glass cleaner from the supermarket and two microfiber cloths (s. fig. 9). The first cloth is for pre-cleaning to remove coarse dirt and the second cloth is used to remove any remaining dust grains and fibers from the glass surface.



Fig. 9: Standard glass cleaner and two microfiber cloths for cleaning the lenses.

First I moisten the cloth with the glass cleaner for pre-cleaning (not too strong). Then I wipe it over the glass surface once or twice in one go. Do not try to rub. If streaks are still visible afterwards, repeat the process with an unused part of the cloth. Now take the second cloth for subsequent cleaning and wipe the cloth (not the glass surface. This only moistens the surface of the cloth very slightly. Wipe the glass surface in one go. All fibers and dust particles will stick to the slightly moistened microfibers. If any residue remains, repeat the process with an unused part of the cloth. The glass surface is then completely clean (see fig. 10).



Fig. 10: The cleaned field lense.

The worm thread can now be regreased. To do this, I use silicone grease, which is resistant to oxidation and resinification. I use commercially available silicone grease from DIY stores or online retailers. I use a toothpick to apply the grease. The silicone grease must be applied sparingly (s. fig. 11 a-b).

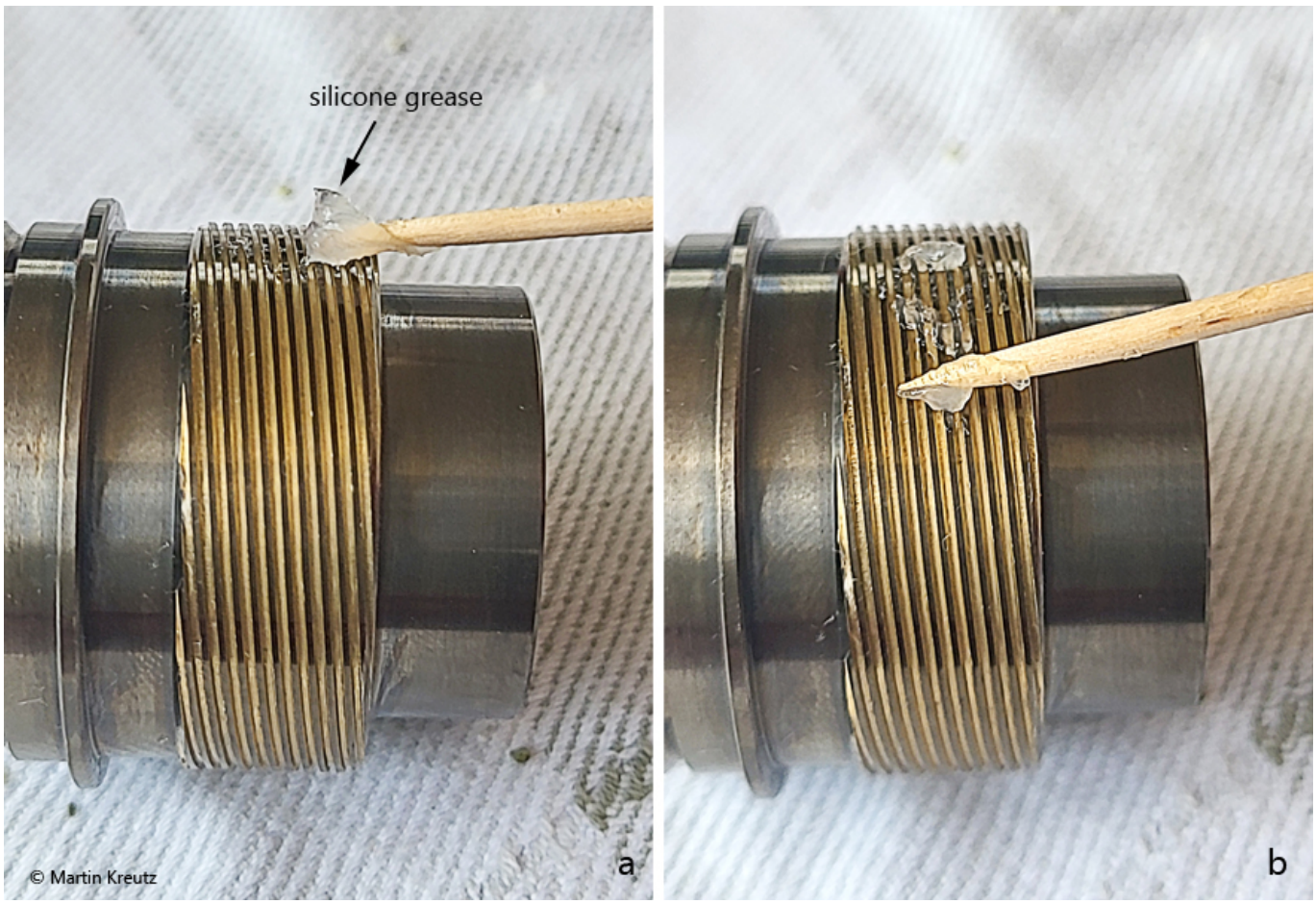


Fig. 11 a-b: The regreasing of the worm thread with silicone grease.

After greasing, the brass sleeve can be carefully screwed back into the lower aluminum sleeve (s. fig. 12 a). Remove any excess silicone grease (s. fig. 12 b). The upper aluminum sleeve can then be screwed back on and fixed in place with the grub screws. The last step is to clean the eye lens in the same way as the field lens (s. above). The eyepiece is then fully functional again (s. fig. 12 c).

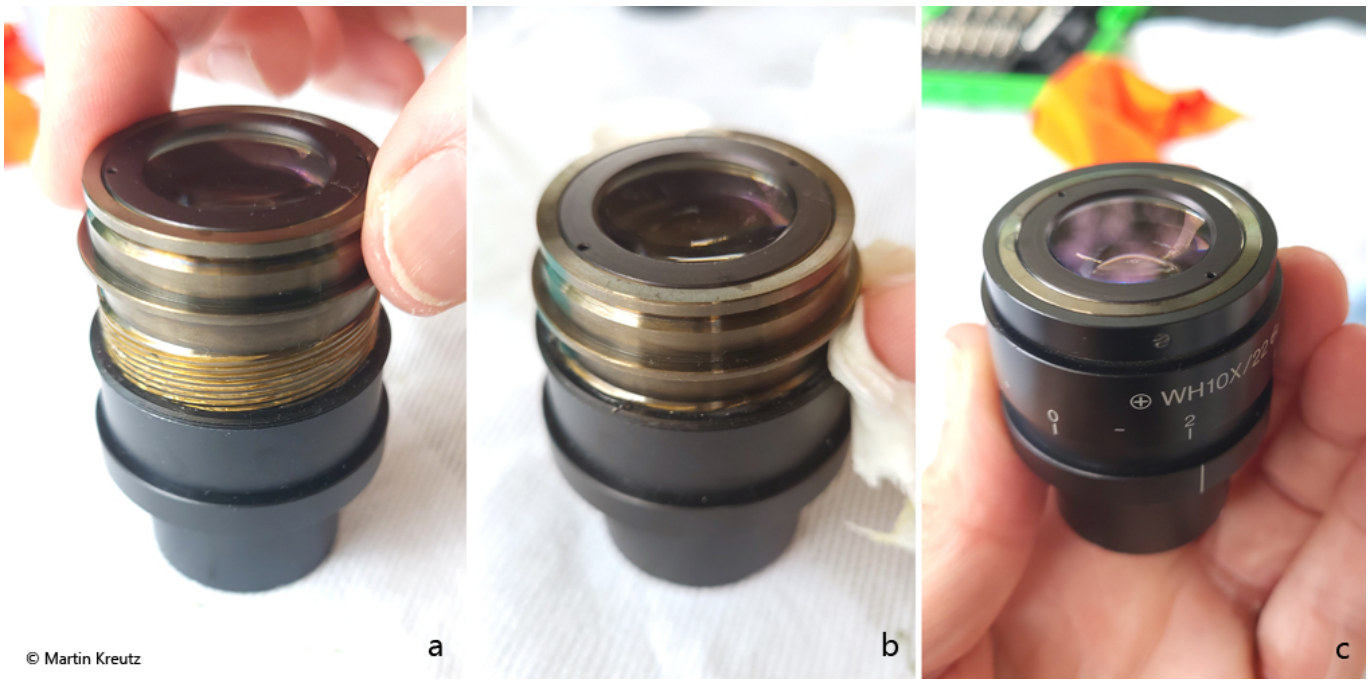


Fig. 12 a-c: The regreasing of the worm thread with silicone grease.