

Astrel Instruments

AST8300B – glued window version
MOUNTING FILTERS STEP BY STEP
USER GUIDE
rev A

Introduction

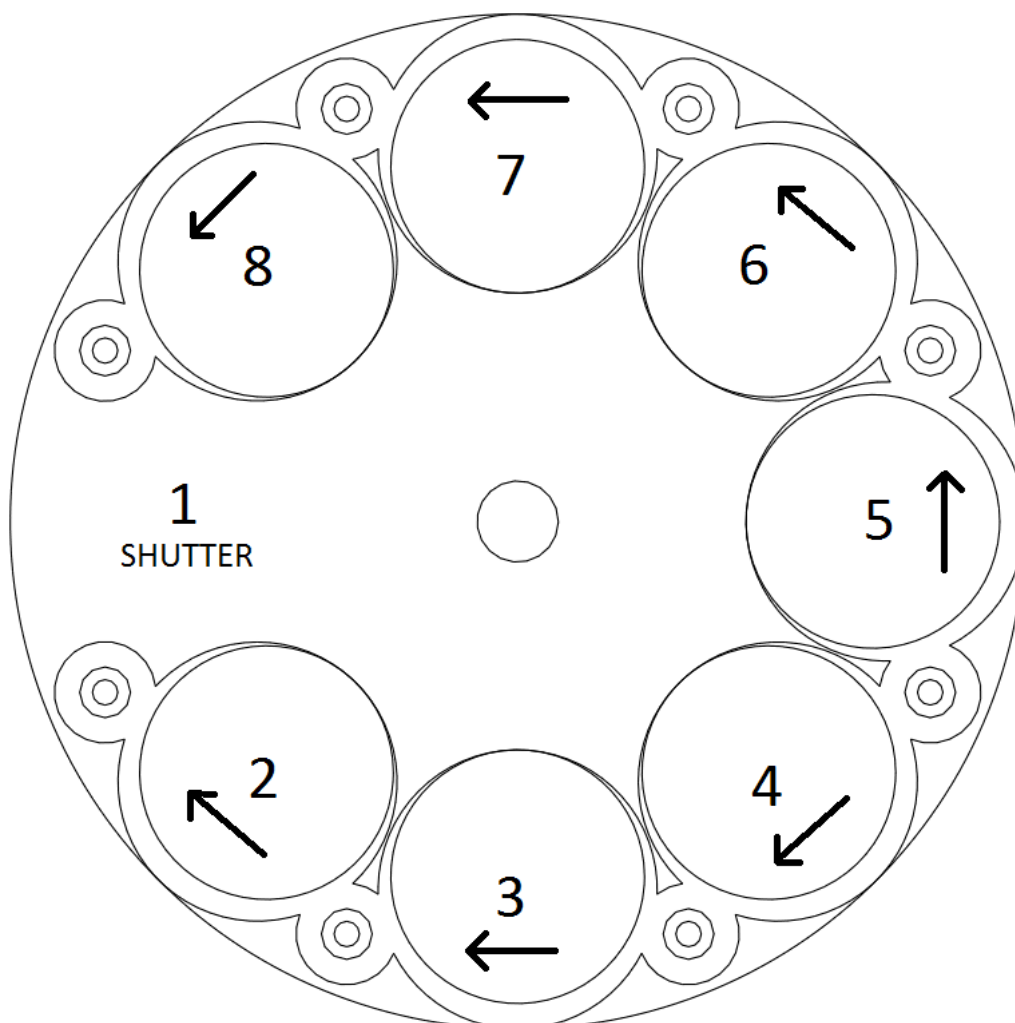
This guide describes the complete procedure to be followed by the user to mount filters on the integrated filter-wheel.

The guide refers to SW release 1.13.

Filter wheel description

The AST8300B is equipped with 8 positions internal filter wheel.

On the wheels, filters are referenced as 1 (shutter) - 2 - 3 ... looking at the camera from the optical window side and counting CCW.



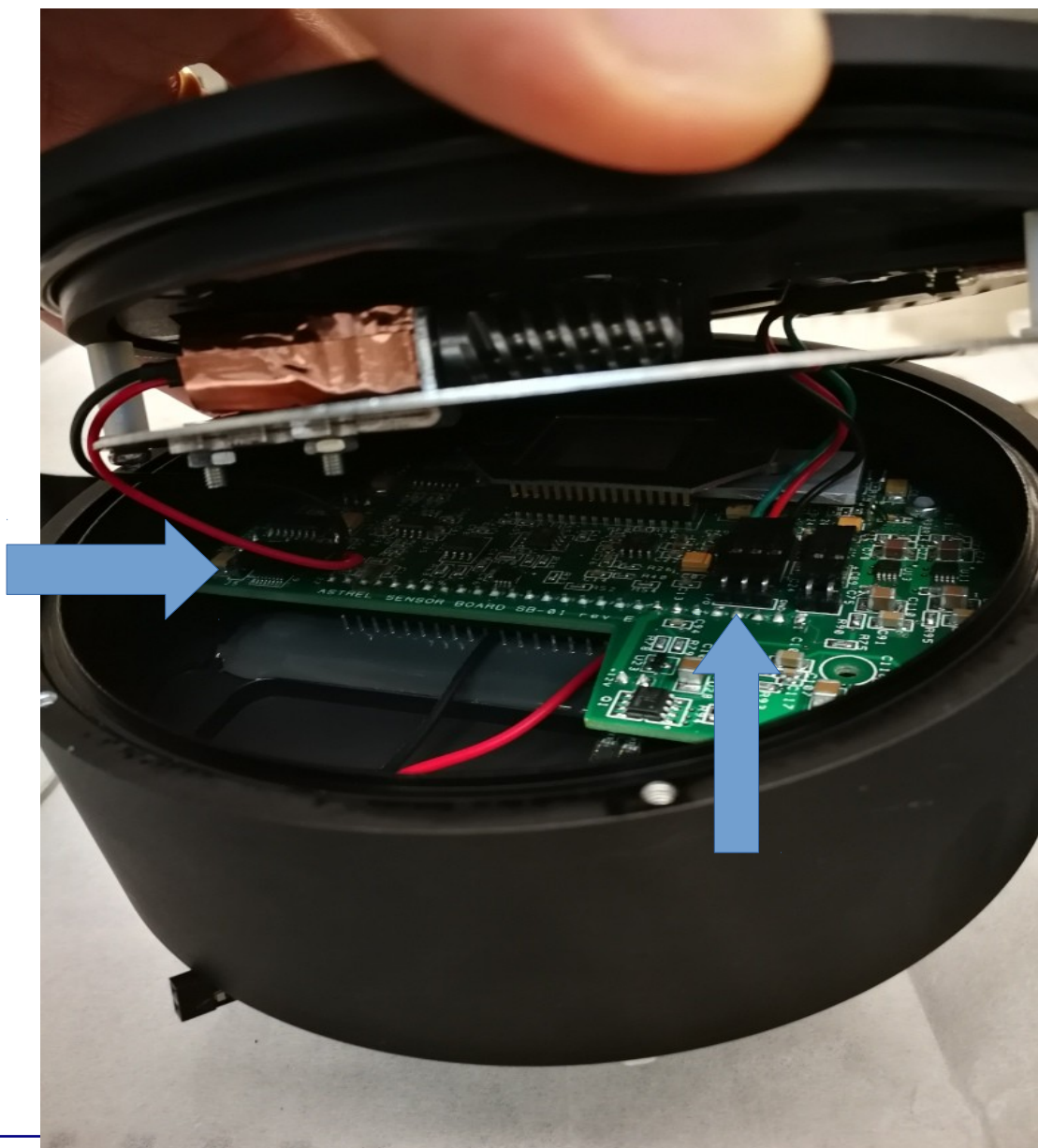
At the beginning of the exposure, the wheels moves CW or CCW depending on which filter is selected in order to minimize filter crossing to reach the selected one (see the arrows).

Filters mounting step by step

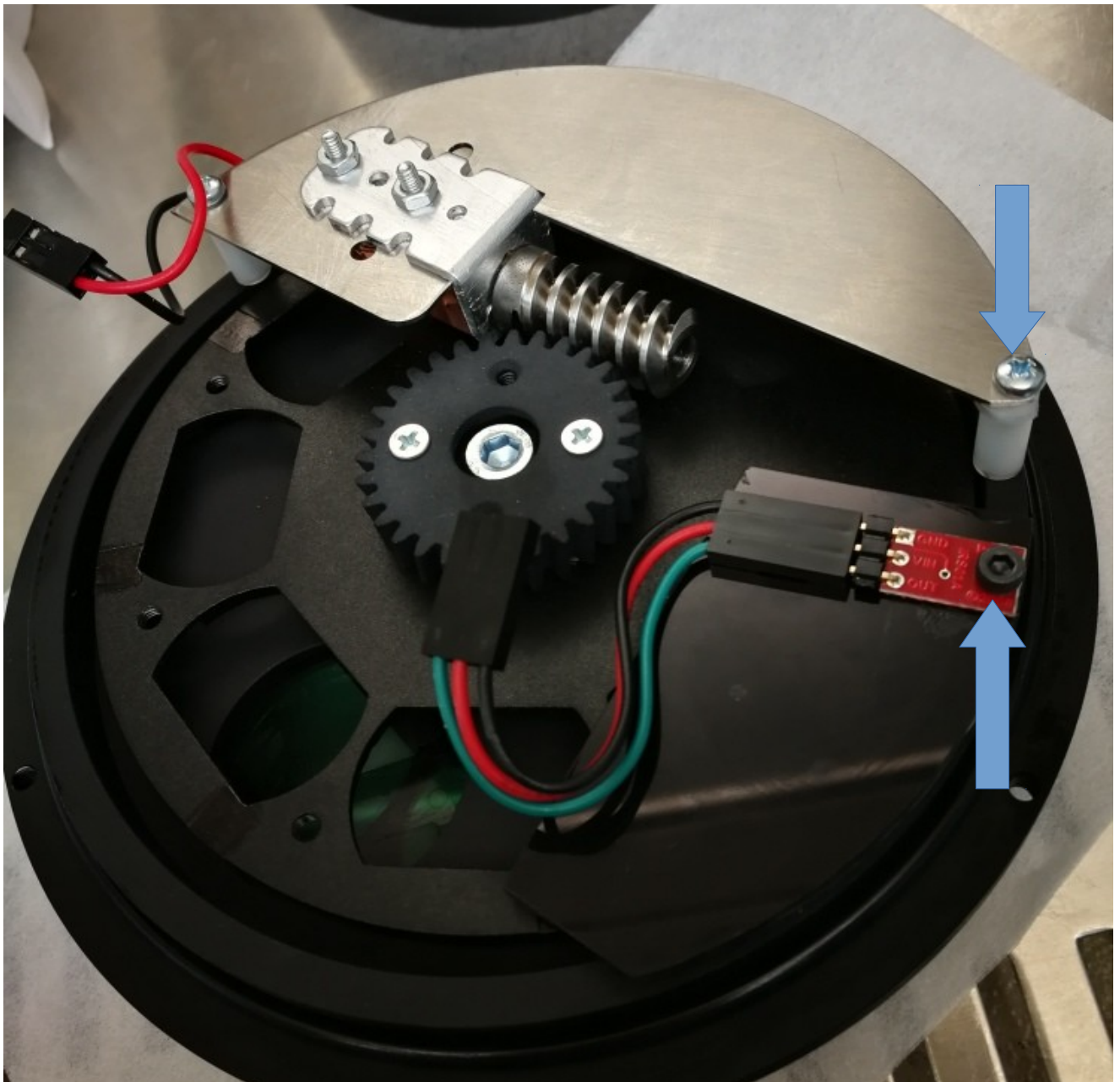
WARNING: Do all the operation in a clean and dry ambient.

WARNING: As you will potentially get in contact with electronic boards, there's a small risk of damage due to static electricity from your body so, if possible, do your best to discharge.

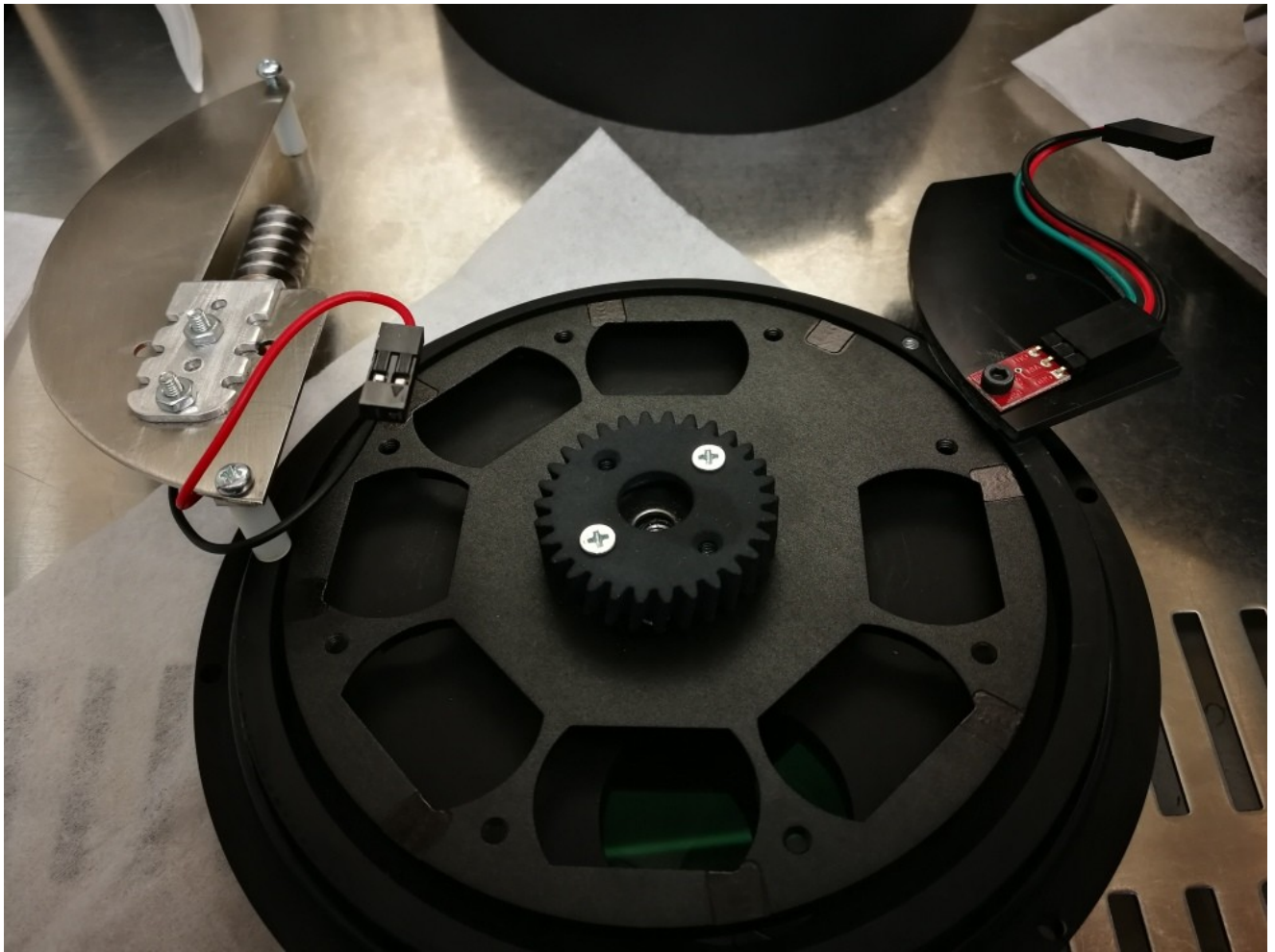
1. Before opening the air valve to remove the vacuum, always insert the vacuum pump into the camera air valve and make vacuum on the connecting tube: using the vacuum pump to fill air into the camera helps to avoid the air water vapor to condensate into liquid water inside the camera
2. open the air valve and slowly remove the vacuum by lightly pressing the button below the nose of the vacuum pump
3. remove the screws that fix the top of the camera on its body
4. open the camera box taking care of not forcing the 2 cables connecting the motor and the light sensor to the electronic board (see fig 1 below)



5. Disconnect the 2 cables by sliding their connectors in the direction indicated by the arrows in the picture above and separate the camera body from the top assembly
6. Place the camera body with its opening toward the table in order to avoid dust entering into it.
7. Loosen the light sensor screw and remove one of the motor support screws (see fig 2 below)

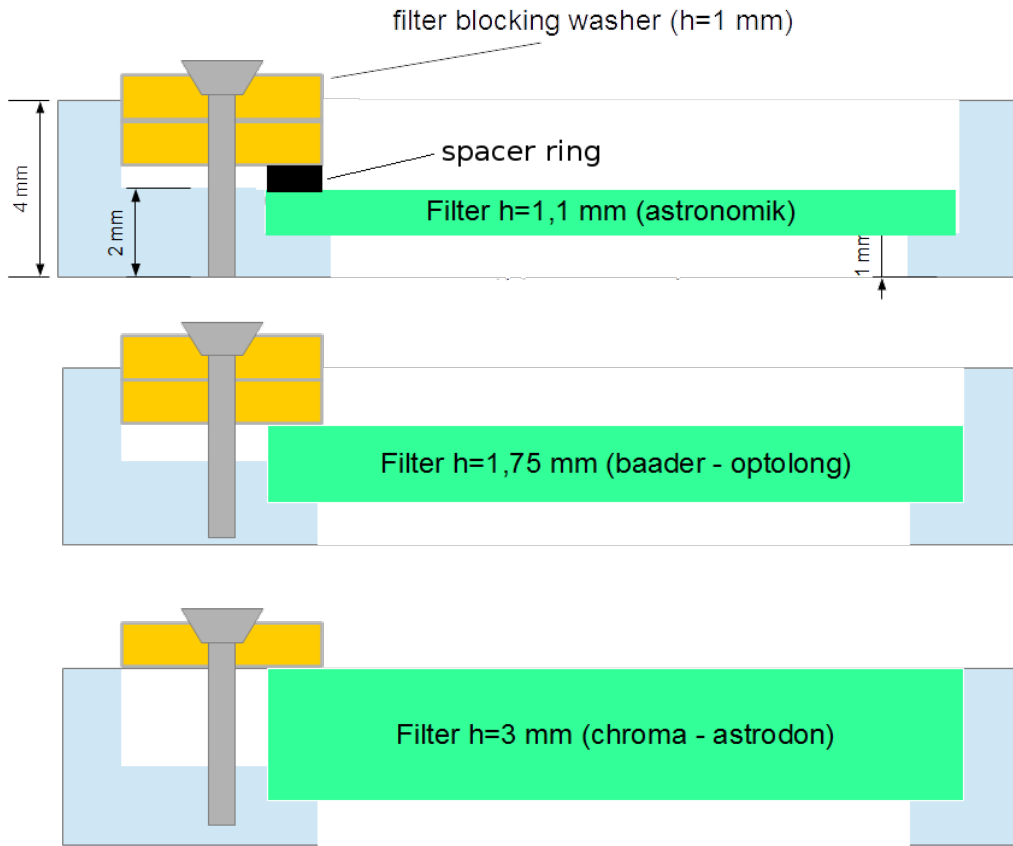


8. Loosen the other motor support screw and rotate the light sensor cover and the motor support so that they don't interfere with the wheel diameter and remove the screw that hold fix the wheel on the top plate (see fig 3 below)



9. remove the wheel

Each filter is blocked by two plastic caps fixed by a screw and if needed also a plastic ring. Depending on the filter's thickness, you have to use different ways to fix the filters on the wheel, like in the picture below:

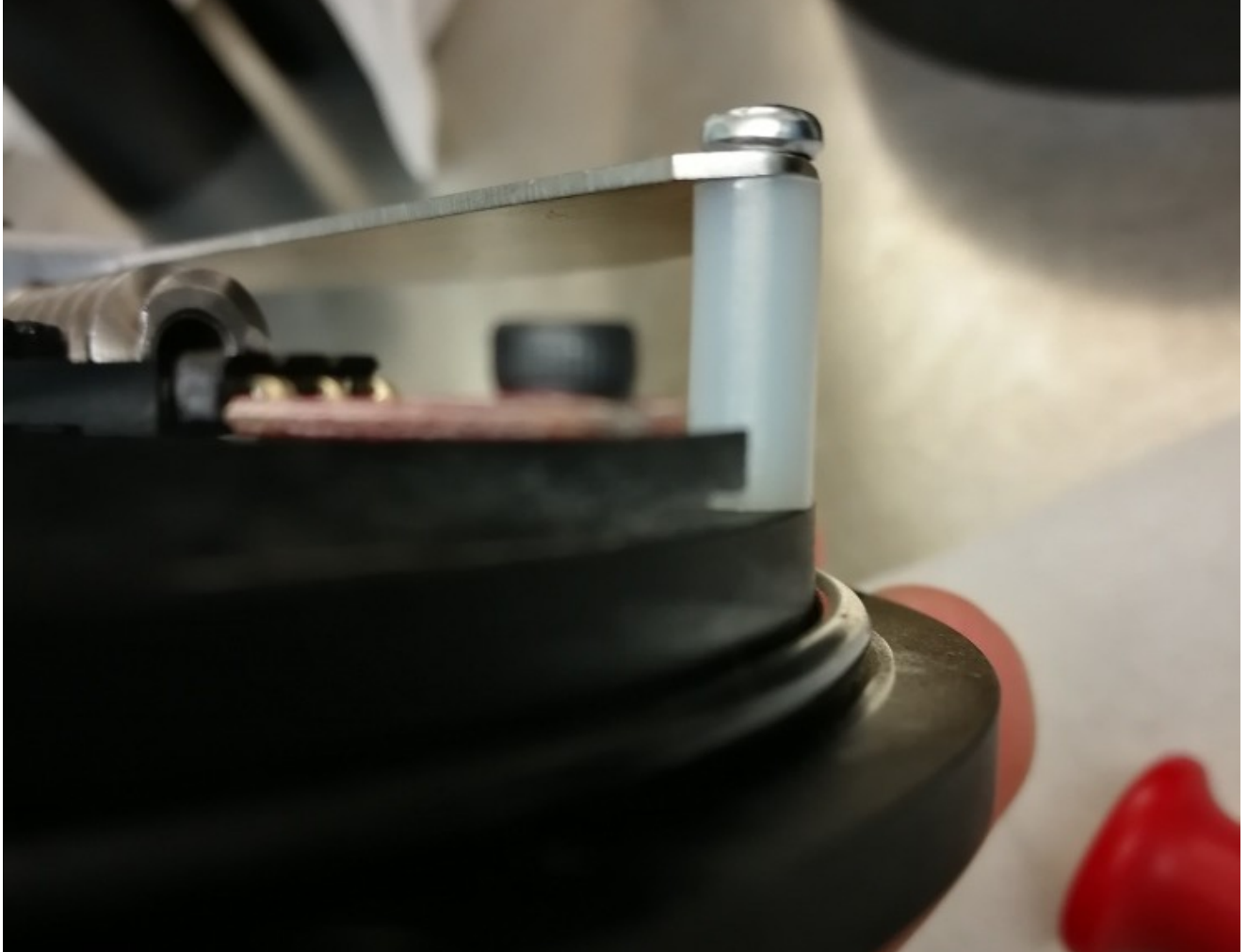


10. insert all the filters
11. insert the spacer rings where needed (only for thin filters of 1.1 mm thickness)
12. insert the correct number of filter blocking washers (1 or 2 for each screw depending on the filter's thickness) and fasten the related screws
13. depending on your filters thickness, if the blocking washers get too bent when locking the screws, it might be necessary to add a certain number of the small 0.5mm washers until the filter gets locked with the blocking washer not too bent

WARNING: never leave the screws unfastened when moving the filterwheel: the washers may hit the border of the optical window hole and lock, possibly breaking the filterwheel motor or damaging the window. Pay also attention that the screw's tapped side doesn't exit from the other side of the wheel, or it may lock too: there's no need to over-tight the screw, just put enough pressure so that the filters are no more free to move

14. re-mount the filter wheel tightening strongly the central screw. Verify that the movement of the wheel is smooth and check that while rotating the washers don't hit the top plate and that the screws tapped side don't protrude from the wheel

15. put back in place the light sensor cover and motor support like in fig. 2 and tighten the 3 screws. Take care that the motor support spacers don't protrude outside the oring site or the top assembly will not fit in the camera body. For a correct positioning, both the motor support spacers and the motor support plate must be pushed towards the center of the wheel while tightening them (see fig 4 below for a correct positioning)



16. verify that the central gear of the wheel is well matched with the worm gear of the motor:
there should be just a little play within them but not too much to risk a disengage
17. verify that the o-ring and its site on the camera body are clean
18. Put the top assembly over the camera body and reconnect the 2 cables to the corresponding connectors on the electronic board. Take care that the cables don't interfere with the filter wheel moving parts
19. slightly fasten the screws that fix the top on the body
20. make the vacuum inside the camera using the vacuum pump and close the valve
21. complete fastening the screws

When putting/removing filters, weight distribution of the wheel changes and it could be necessary to adjust the filterwheel calibration using the provided app into the Admin tab of the camera Desktop (refer to the Admin Tools User Guide).

The filter name on the buttons of Filterwheel can be changed using the Configure app into the Admin tab of the camera Desktop (refer to the Admin Tools User Guide).