

Adjusting the Fibre Coupler

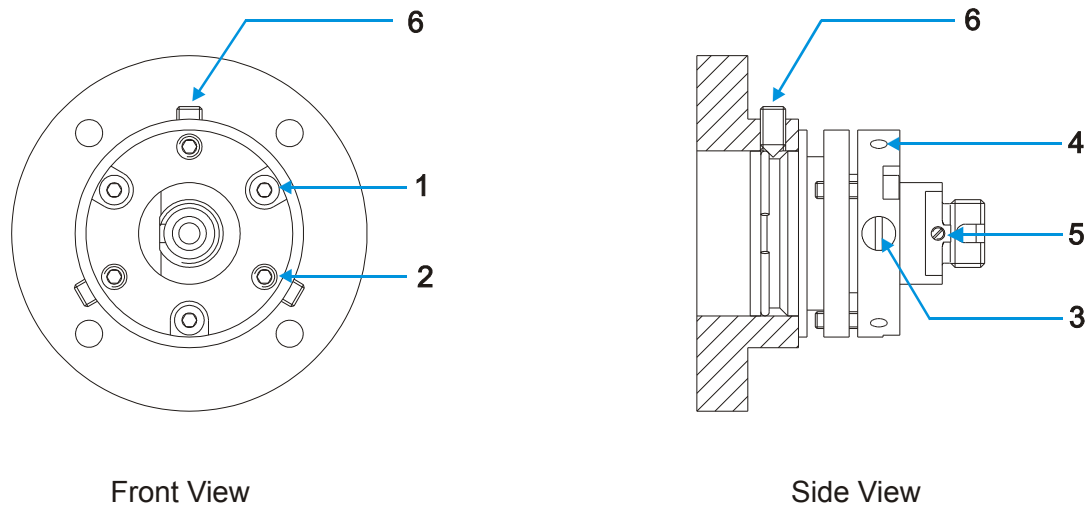


Figure 1: Fibre Coupler

- 1 Tilt adjustment screws (3 x)
- 2 Counter force to the tilt adjustment (3 x)
- 3 Access for the z-adjustment key
- 4 Locking screws for the z-adjustment (2 x)
- 5 Locking screw for the fibre ferrule
- 6 Locking screws for axial rotational adjustment (3 x)

For a complete alignment of the fiber coupler follow the steps below.

Note! In order to achieve the maximum coupling efficiency, you will need to use a sensitive power meter (or photo detector) to monitor the output of the fibre while you adjust the alignment.

1. Connect the fibre to the Fibre Coupler
2. Switch ON the PDL 800-B. Set the PDL 800-B to maximum repetition rate (i.e. 40 or 80 MHz) and set the output power at PDL 800-B to the maximum. Wait at least 5 min. to warm-up the lasers.
3. Connect the power meter to the end of the fibre and check if any laser power can be measured. If the fibre coupling is completely misaligned the signal is only on the order of some Nanowatts. Make sure that your power meter is sensitive enough.
4. Very slightly loosen the three counter screws (# 2 in Figure 1).
5. Carefully adjust the coupler by slightly turning the adjustment screws (# 1 in Figure 1). Usually only 2 of the 3 screws need to be changed. Start with the first screw and make very small adjustments (1/20 turn or less) while monitoring the output power. Find the maximum for that screw and do the same for the next screw. Step by step increase the output power to the maximum. It may take several iterations of the above steps to achieve the maximum coupling.

Note! For the x-y tilt adjustment only 2 screws need to be turned.

6. If you have reached the maximum with the tilt alignment you may also try to optimize the focussing. First loosen the locking screws (#4 in Figure 1) then try to find the z-Position with the highest output power using an excenter key.

Note! If you re-adjust the fibre coupler, it is the best not to change the z-position

7. Repeat steps 5 and 6, if necessary, using progressively smaller adjustments.
8. For Polarization Maintaining Fibres you have to adjust the polarization axis. Loosen the locking screws (#6 in Figure 1) and turn the Fibre Coupler into the polarization axis

Note ! If you are having difficulties reaching an output power (through the fibre) of >30% for single mode or >80% for multi mode of the free beam output behind the fibre coupler, please call PicoQuant GmbH for assistance.