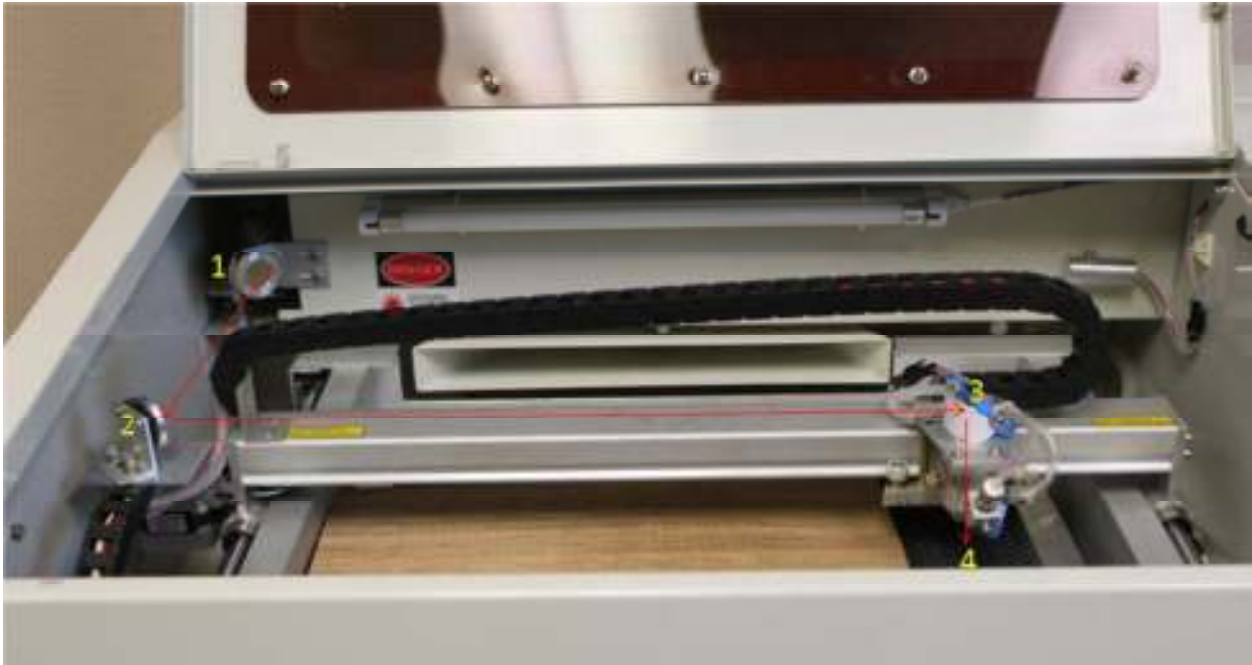


Full Spectrum Laser LLC Beam Combiner Instructions

Overview



The beam combiner (1) is positioned at 45 degrees to the red laser pointed mounted in the silver tube on the far right of the laser cabinet. The beam combiner is a special optic that is reflective to the red light on the front but transparent to the invisible CO2 laser beam through the back. This allows the combination of the red laser beam and the invisible CO2 laser beam.

You must first align the invisible laser tube using the thermal paper then align the beam combiner. Do **not** adjust mirrors (2) or laser head (3) after it is aligned with the invisible CO2 beam. Adjust only the beam combiner (1) and the red laser pointer so that the red dot passes through the laser head and lens (3) (4). Both the red laser pointer and the beam combiner can be adjusted on their respective mounts.

Holes are predrilled on 4th generation units. With 3rd generation units, we recommend you use double sided tape to adjust the positioning until you are happy with the alignment before drilling holes.

Adjustment of the beam combiner is a time consuming process but only needs to be done once. As long as most of the red beam goes through the laser head the lens will focus the beam to the same spot as the invisible CO2 cutting beam.

Beam Combiner Mount:

A set of two screws (1) is used to mount against the predrilled holes in the 4th generation laser models.

When mounting the beam combiner, it is usually much easier to mount the beam combiner to the back side of the laser cabinet. By mounting the beam combiner to the back of the laser cabinet, the optic can be adjusted much closer to the cabinet. This will allow the red laser diode beam to be in closer proximity of the beam combiner optic. Adjusting the optic closer or further away to the cabinet can be done by either adding or removing the washers that were included with the beam combiner.



The added spacing between the beam combiner mount and the cabinet was created by the extra washers included with the beam combiner. This has the effect of moving the optic closer to the cabinet.

Alternatively, you can also adjust the pair of nuts (2) and (3) tilt and mounting distance.

Another technique we use to get the diode in closer proximity of the optic is to use a shim as shown in the below picture. This is done by loosening the screws holding the diode enclosure to the cabinet, and then sliding the shim underneath the enclosure. You might find it helpful to twist the diode inside the enclosure to orient the beam closer to the optic.



The ZnSe beam combiner optic is held in place by the holder (8). Screws (7) and (6) with the rubber O-rings (5) hold down the optic against the holder (8). Three screws (6) (7) can be tightened to tilt the

beam combiner for precise control. This is how you align the laser diode.



Red laser pointer and mount

Screw (3) is used to attach the laser diode against the case of the 4th generation models. Screws (1) (2) adjust the position of the laser pointer inside the silver laser diode mount (note there may only be one adjustment screw on some models). Red wire (5) goes to +5V and black wire (6) goes to GND. The 4th generation models are prewired. On the 3rd generation units, you will need to splice 5V from pin 3 of the 6 pin power connection to RetinaEngrave USB as shown below. Both Pin 1 and Pin 6 are GND.

