

Color Alignment Instructions

Anleitung zur Farbeinstellung

Ecoline Series
Evolution Series
Club Series
Proline Series (2012+)

**Read the whole instructions prior to
starting with any work on the unit!**

**Lesen Sie die gesamte Anleitung bevor Sie mit Arbeiten
am Gerät beginnen!**



WARNING:

The procedures described in this document may require additional qualification, depending on the national and state laws of the country in which the procedures described shall be carried out.

It is forbidden to carry out the procedures described in this manual in the United States of America.

Always ensure to stick with the law that applies in the country where the procedures shall be carried out!

Laserworld (Switzerland) AG or any of their subsidiaries is not responsible nor liable for any damage to people or things that may arise from acting according to the following instructions or trying to follow these instructions.

The person carrying out the instructions given in the following must be properly qualified.

Minors must not carry out the procedures described in this document!

ACHTUNG:

Das in diesem Dokument beschriebene Vorgehen kann, je nach Rechtslage des Landes in dem die Arbeiten ausgeführt werden sollen, zusätzlich Qualifikationen oder Befähigungen erfordern.

Stellen Sie unbedingt immer sicher, dass Sie die gesetzlichen Bestimmungen des Landes, in dem Sie handeln, einhalten.

Weder die Laserworld (Switzerland) AG noch eine ihrer Tochtergesellschaften haften für Schäden an Personen oder Sachen, die durch das Befolgen von Schritten dieser Anleitung, oder dem Versuch dazu, entstehen.

Jene Person, welche die Anweisungen dieser Anleitung umsetzt, muss über ausreichende Qualifikation verfügen.

Minderjährige dürfen die in diesem Dokument beschriebenen Schritte nicht durchführen!

You need these tools:

Pliers (one or the other type)



Screw Driver



DMX controller or ILDA Software with interface



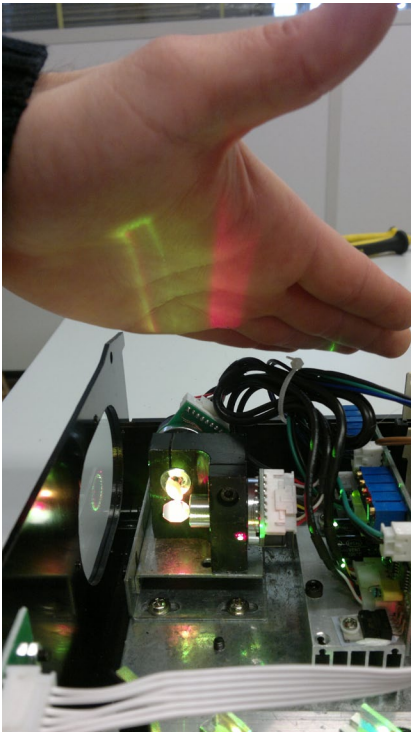
Possibly: Set of Allen Keys



Preliminary warning notices

1. Do not use reflective tools: If tools have a reflective surface, it helps to cover them with black duct tape.
2. Never look directly into the laser source and avoid to look into any reflection of the laser beam. Danger of damage to the eyes or even blindness in extreme cases!
3. Do not wear reflective jewellery and do not wear watches when following these instructions. They might cause unwanted laser reflections and thus can cause injury.

ATTENTION: Laser Emission above the unit if operated without cover!
Do not bend over the unit during maintenance work!



WARNING:

This instruction requires working on a powered show laser light device. Laser emission is necessary for carrying out the instructions below. Be aware that this is dangerous.

**1. Open the device**

- Unplug mains. Make sure that the show laser light system is not connected to mains at all (no cable plugged in).
- Use the screwdriver to remove the top cover of the device as well as the front panel.



2. Identify misalignment problem

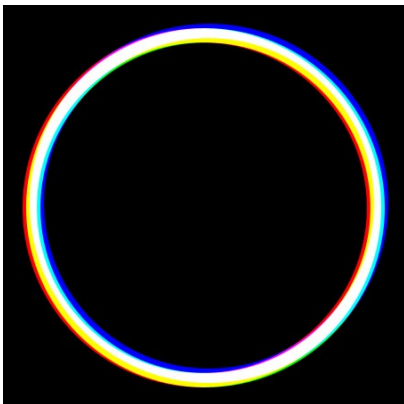
Depending on the unit, different types of misalignment can occur. Either can the colors be out of alignment (convergence is bad) or the red color emerges with two instead of one beams - resulting in a „doubling“ of the projected image or at least in a visibly broader red beam (which is not indicated by a low-budget red source). This last case can only happen if the show laser light systems is equipped with two red laser sources that are combined by polarization cube.

Both types can show up at the same time. In this case just follow both instructions below, but do the polarization cube alignment first.

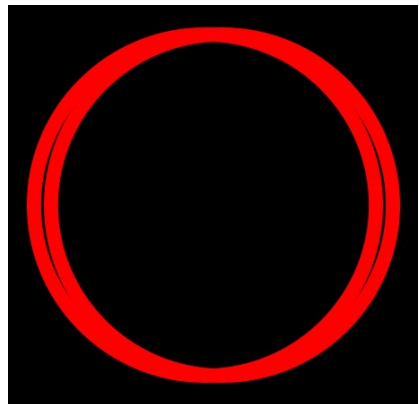
Power up the unit and project either a circle or a test pattern - depending on the control options you have (DMX or ILDA). Identify the problem. Choose the projection distance as far as possible, but only that far that you can still see the changes you do during the alignment process.

Examples:

Bad convergence



Pole cube out of alignment

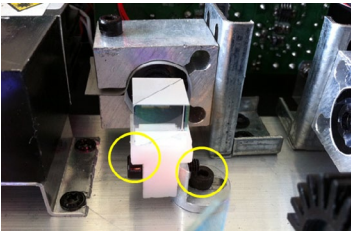


3. Pole cube alignment

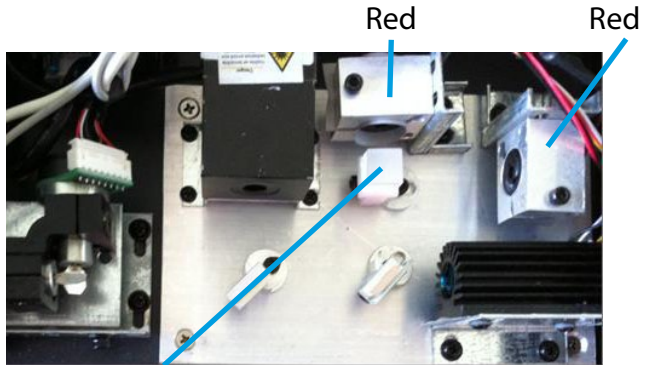
Make the laser emit red color only. If it's not possible to switch off the other colors, cover the very beam outlet with a non-reflective, non-electroconductive, non flammable sheet.

Be careful: Use of electroconductive material as covers can cause damage to laser sources

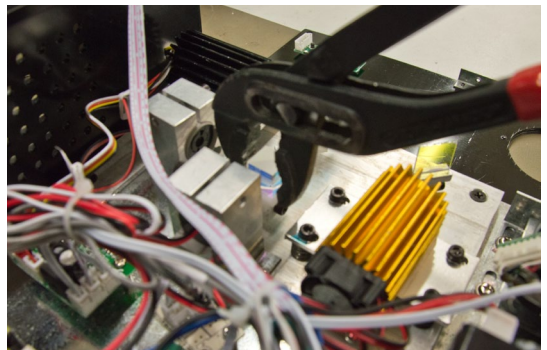
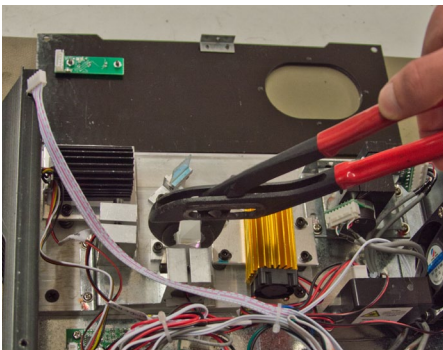
Be careful: Reflective materials can cause deflection of the beam and thus harm you or others!



Do NOT loosen these screws.
As the beams are not much out of alignment, there is no major alignment necessary.



Polarization Cube



For fine adjusting the pole cube, use the pliers to slightly bend the mount of the pole cube. Make sure to only grab the mount, not the pole cube - otherwise it will get scratched or, worst case, break off or apart.

Up/down movement: This will move the picture left/right

Left/right movement: This will move the picture up/down

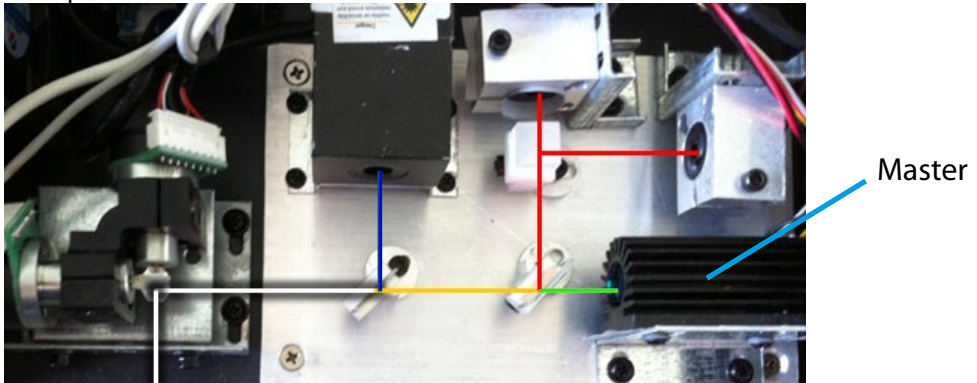
Get the two projections into alignment so they become one.

4. Convergence / Color alignment

Identify master beam

To realign the colors of a multi color laser, it is essential to not break up the general setup and thus bring the whole system out of alignment. That's why it is necessary to identify the laser source that creates the direct beam to the scanner mirrors first. Usually this is the last laser source in the beam path.

Example:



Do not alter anything at this Master laser source, except it does not hit the scanners properly any more. Aligning this master laser source to the scanners is not described in this manual.

Aligning colors always refers to the master beam:

In the example above, red would be matched on green first, then blue would be matched on green afterwards.

THIS ONLY APPLIES IF GREEN IS THE MASTER BEAM. ANY OTHER COLOR CAN BE THE MASTER BEAM, SO IDENTIFY THAT ONE FIRST.

To start the alignment, project any picture you think may help, for ILDA controlled lasers we suggest to use a test pattern, for DMX controlled lasers use a pattern that properly allows for x and y adjustments, a circle or square is a good choice.

Now only project the two colors you want to align, switch off any other color if possible. If the colors cannot be switched off with software or DMX controller, please cover the beam outlet of the laser source that is not needed for alignment with a non-reflective, non-electroconductive, non flammable sheet.

Be careful: Use of electroconductive material as covers can cause damage to laser sources!

Be careful: Reflective materials can cause deflection of the beam and thus harm you or others!

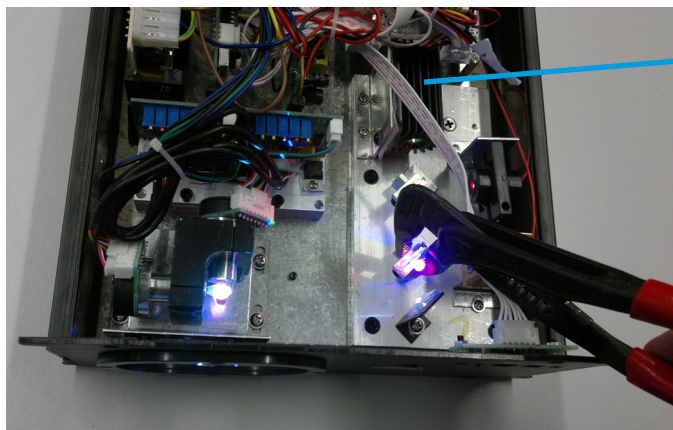
So first alignment is done with aligning the dichroic filter that combines the master beam with the next one in the beam path. Spoken in above example this is green and red. We assume that red itself is in proper alignment if it is combined of two or more sources. If not, please refer to Point 3 in this document first and follow the steps for the polarization cube alignment.
The third source is „off“ - either switched off or covered as described above.

Use the pliers to slightly bend the mount of the dichroic filter so the two colored projections match up in one.

Bend up/down: Picture moved left/right

Bend left/right: Picture moves up/down

Important: Do NOT loosen the screws of the dichro mount! It would not allow for fine adjustment but might lead to complete misalignment, which often can only be fixed by our service center.



After having aligned these two colors, switch off the one you just aligned to the master beam and switch on the other one that was off. Now the second color is aligned to the master beam in the exactly same way as the last one.

After having finished this process, switch on all colors and check if the output is in proper alignment.

5. Reassembling the unit

SWITCH OFF POWER, UNPLUG MAINS!

Do NOT reassemble the unit with mains connected, this may lead to damage of the laser and worst case in an electric shock for you!

Final statement

Laserworld products are tested and product packaging is inspected before leaving our warehouse.

Users must follow the local safety regulations and warnings within this document and adhere to any regulations within its place of use. Damages through inappropriate use will void any liability or warranty of our products.

Due to continual product developments, please check for the latest update of this document at www.laserworld.com. If you do have any further questions, then please contact your dealer/place of purchase or use our contact section on our website.

For service issues, please contact your dealer/place of purchase and ensure only genuine Laserworld spare parts are used in any service repairs.

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