

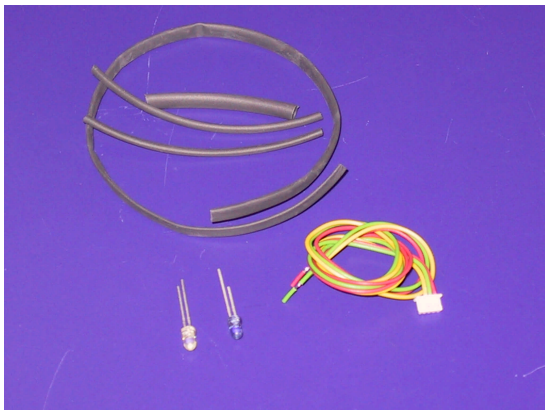
RACEGUN COMPUTER GRIP ANTI CHOP EYE (ACE) INSTALLATION GUIDE

This guide explains how to install the Anti Chop Eye to be used with the Racegun computer grip.

Please note that the installation requires advanced drilling and soldering skills—If you do not feel confident in doing the installation please contact a qualified airsmith for assistance.

Racegun can not be held responsible for any damage done to your cocker body due to incorrect drilling and/or installation.

Please note that this guide (including all measurements) is based on standard WorrGames Cocker bodies—Custom milled or non-WorrGames bodies might need special installation.



The ACE kit contains:

- 1 pcs. Light emitter (clear)
- 1 pcs. Light receiver (dark)
- 1 pcs. Racegun ACE connection cable
- Assorted black heat shrink tubing

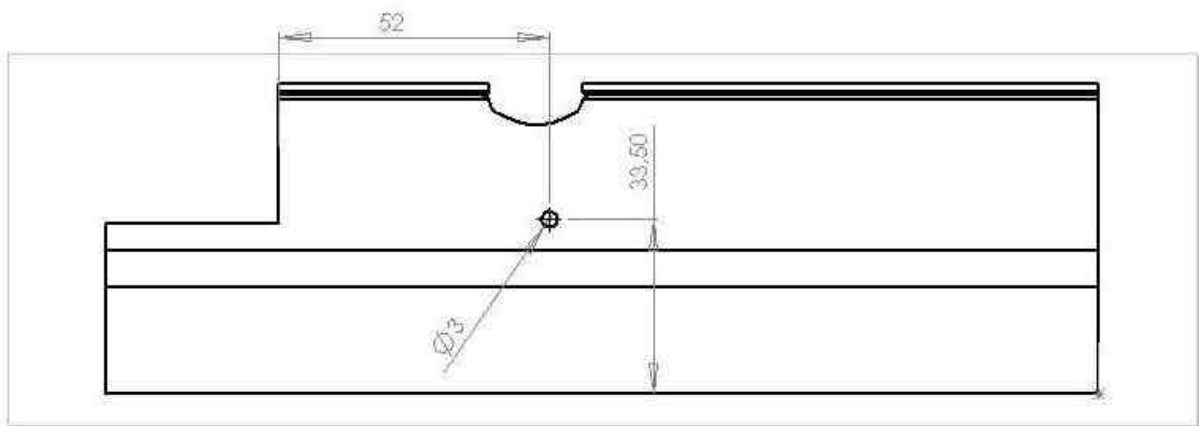
You will also need some **black** Epoxy glue to mount the emitter and receiver—Racegun recommends the use of 3M DP-420 epoxy which can be bought at www.mcmaster.com item number 7467A51

To install the eye you need:

- Racegun ACE kit
- Cocker with Racegun grip
- Electronic cutting plier
- Soldering iron and some fine flux core solder
- Heatgun to shrink the heat shrink tubing
- Drill press and 3mm drill (1/8")
- Dremel tool or small round file
- 30+ minutes of time



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Placement of hole for eye kit

All measurements are in millimeters

1. First you need to drill the two holes for the LED's in the body of your Cocker. Take great care in doing the measurements for the holes correctly and use a sharp drill to avoid chipping the surface coating of your Cocker. Use a precision drill press to drill the holes - do **NOT** try to drill the holes using a handheld drill of any kind.

The holes need to be aligned correctly and the operation of the ACE is very much depending on the correct placement of the holes. Make sure that you remove any burrs from both the inside of the breech and the outside of your Cocker.

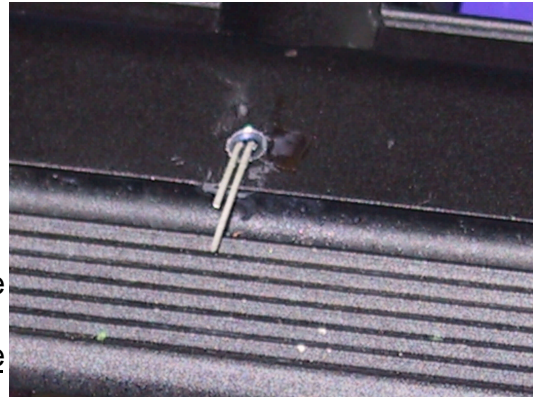


2. Place the light receiver (the dark colored component) in the hole on the right side of the body bend the legs downward in an angle the fits with the route you want your cable to follow.

Install the light receiver so that the long leg of the component is to your right (looking from the bottom of the body).

Use a little glue at this time, just enough to keep the receiver from falling out.

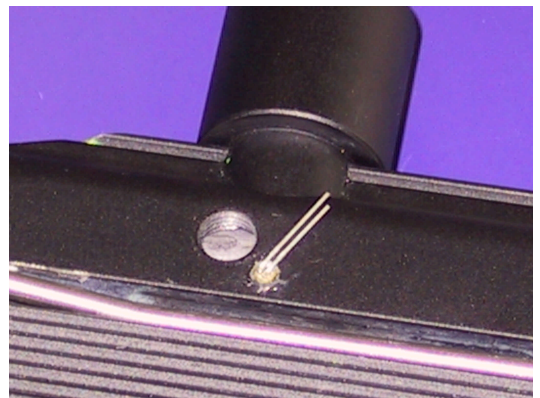
NOTE Place the bolt in the breech before gluing the components in place this will ensure that the top of the receiver/emitter does not protrude to far into the breech.



3. Place the light emitter (the clear component) in the hole on the left side of the body bend the legs upwards in an angle the fits with the route you want you cable to follow.

Install the light emitter so that the long leg of the component is to your right (looking from the top of the body).

Use a little glue at this time but just enough to keep the emitter from falling out.

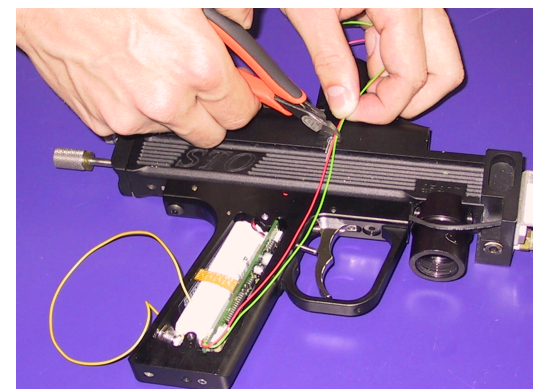


4. The green and the red wire will be going to the light receiver—find the length for the cable going from the plug on the board of your grip (marked sensor) to the receiver and add about 20mm (3/4").

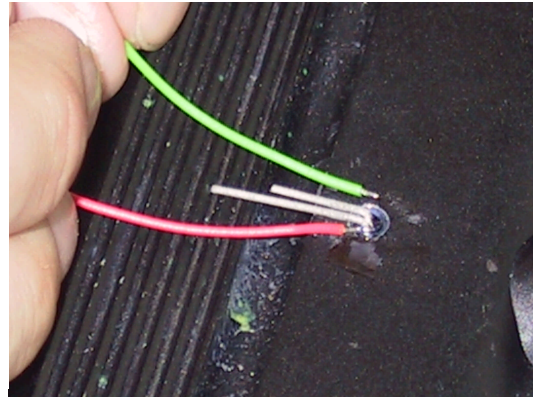


5. Cut the green and red wires in the desired length and remove the isolation on both cables for about 2,5 mm (1/10"). Save the piece of green wire that has been cut off—we will need this later.

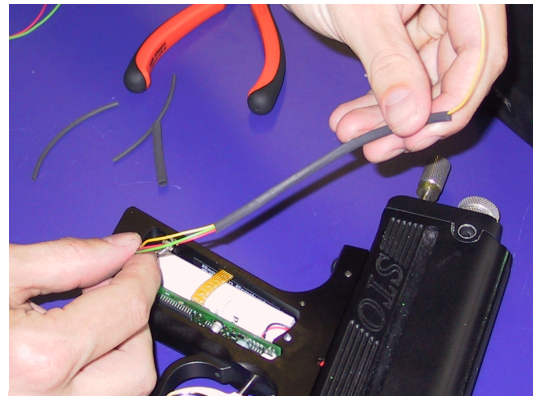
Also cut the legs of the light receiver so that they are only about 3mm (1/8") long (make sure you know which leg was the long one).



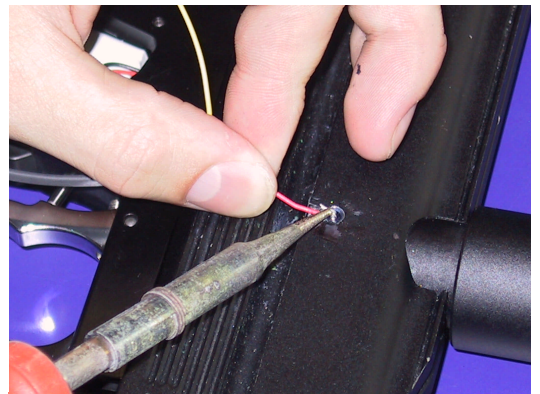
6. The red wire must go to the long leg of the light receiver and the green wire must go to the short leg.



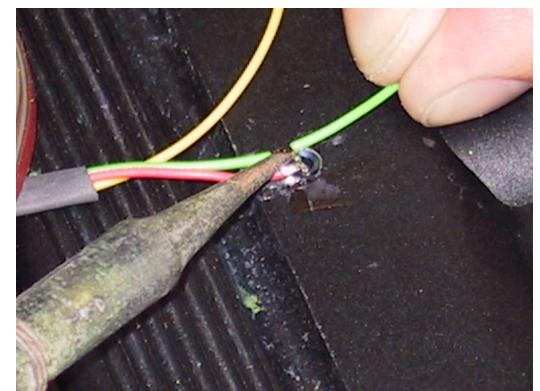
7. Put a piece of the thin heat shrink tube about 100-125 mm (4"-5") long over all three wires coming from the plug.



8. Solder the red wire to what used to be the long leg of the light receiver (the one to the right if you are looking from the bottom of the body)



9. Take the loose piece of the green wire, remove the isolation from one end and solder both green wires to the short leg of the light receiver.



10. Find the length required for the the wires (green and yellow) to reach the emitter on the left side of the gun.

Cut the wires and the legs of the light emitter as you did with the receiver.

Remove the isolation of the green and yellow wire like you did with the wires on the other side of the gun.

Make sure you know which leg was the long one on the light emitter.



11. Put a piece of the thin heat shrink tube over the green and yellow wire. Make sure that the length fits the length of the wires (less than 6mm (1/4") of the cable should stick out of the end of the heat shrink tube).



12. Put a piece of the thicker heat shrink tube over the thin tube - it needs to be about twice the length of the pieces of wire sticking out of the end of the thin heat shrink tubing which would make the piece 12-15mm (1/2") long.



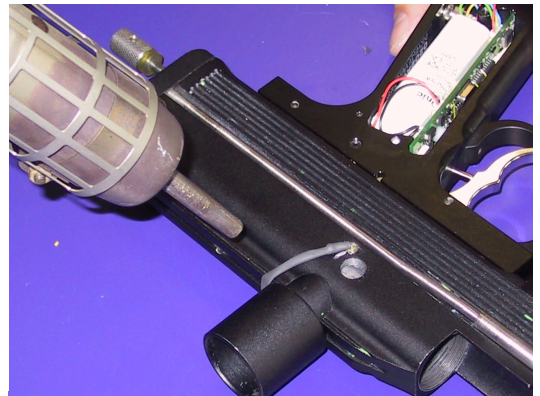
13. Solder the yellow wire to what used to be the long leg of the light emitter (the one to the right if you are looking from the top of the body). Solder the green wire to the short leg of the light emitter



14. Push the piece of thicker heat shrink tube all the way up to light emitter



15. Shrink the heat shrink tube using a heat blower (or a hair dryer) - be careful not to heat the solderings too much.



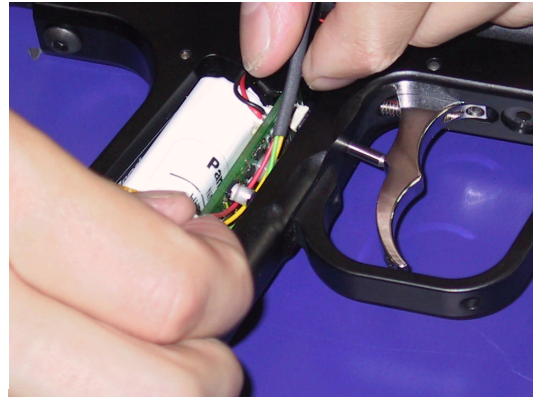
16. While the heat shrink tubing is still hot you can form it to follow the contour of your Cocker body.



17. When heating the last part of the heat shrink tubing make sure you do **NOT** heat the electronics and the battery of your grip. The heat from the heat blower can desolder components of the board if you are not careful.



18.Route the cable under the small capacitor (small aluminium cylinder) on the board of the grip and connect the plug to the connector marked sensor on the board.



19.Cut a groove in your grip using a small round file or a dremel so that the cable can exit the grip without being crushed.



20.Put on the grip .

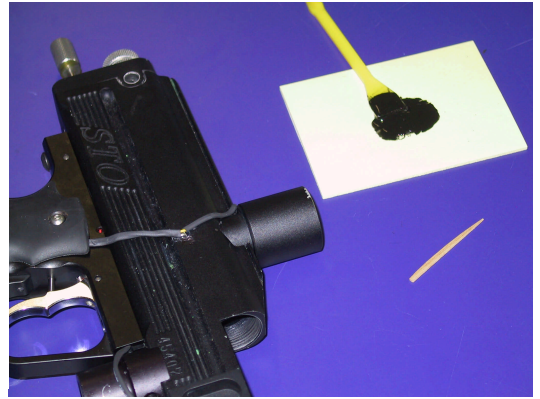


21.By using the heat blower and your fingers you can sculpt the cable so that it follows the contour of the sight rail and feed tube of your Cocker. Be carefull not to burn your fingers doing this .

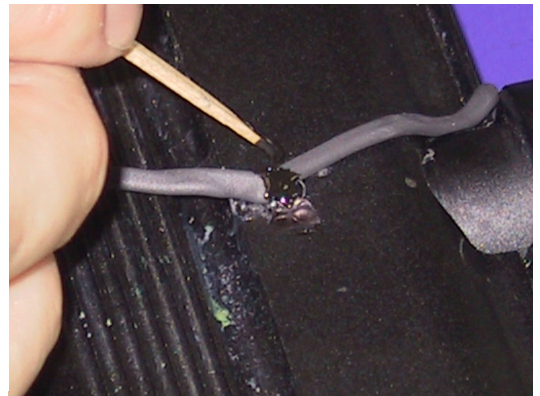


22.Mix the epoxy (follow the instructions for mixing and use on the package) - you only need a very small amount of epoxy to fix the light emitter and light receiver to the body of your Cocker.

Note Racegun only recommends the use of black epoxy.



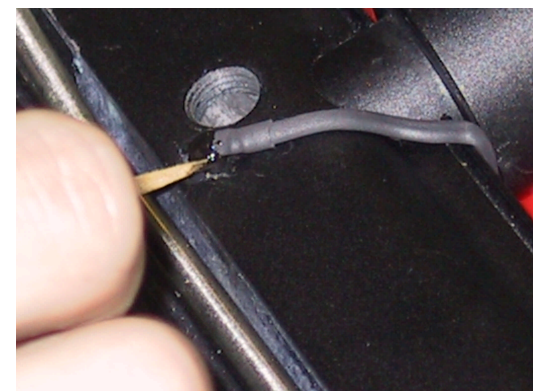
23.Use a toothpick (or a match) to apply a small amount of epoxy covering the the light receiver. Push a small amount of epoxy onto the heat shrink tubes (make sure to get some under the tubes as well) - this will make the ACE stronger in case of paintball hit on the tubing.



24.It might be necessary to apply the epoxy in two layers to make sure that no light can get to the light receiver. If the light receiver is not shielded 100% from external light the operation of the ACE might be affected.



25.Cover the light emitter in a similar way, make sure that you get some epoxy onto and into the heat shrink tube here as well.



Load the correct firmware

To use the ACE you need to load firmware version 2.0.0 (or newer) into the grip (some older version like 1.1.23 and 1.1.7X also support the use of the ACE but with limited functionality). After the firmware is updated please use the RIP version 1.0 software to enable the ACE and set the associated settings for computercontrolled ACE operation etc.

Test of the ACE

To test the function of the ACE set the following settings in th RIP software

1. "A.C.E. mounted" selected
2. "Use A.C.E." selected
3. "CTO adjust" selected
4. Do **NOT** select "Eye Check Max" and "Eye Ok Max"

Make sure the LPR pressure is set correctly and that the battery is fully charged.

Pressurize the gun and turn the grip to live mode (red LED)

When firing the gun (without any paintballs) the back block/bolt will stay in the "back" position—if a ball or any other object (like a straw) is put into the breech (breaking the beam of light between the light emitter and light receiver) the back block/bolt will move forward and close the breech.

If your gun does not act like this you will first need to check if your ACE is working.

1. Depressurize the gun.
2. Remove the bolt.
3. Put the gun in live mode.
4. Pull the trigger.
5. You should hear a click from the solenoid (releasing the sear) and the red led on the 5-way valve will turn on and stay on !
6. Put the bolt back into place and the red led on the 5-way will turn off.

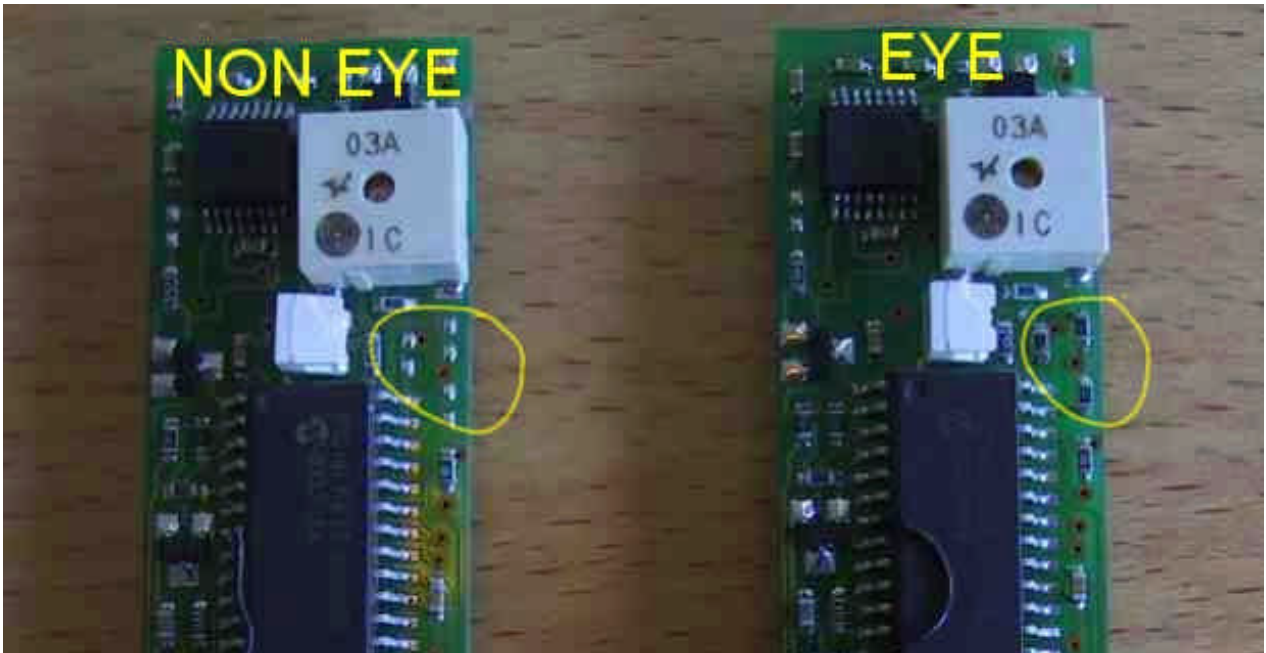
If the steps above seems to work you need to either raise your LPR pressure or use a longer "Open Time" (CTO).

If the red led on the 5-way does not act as described above your ACE is not working and you need to check the following:

1. Check that you have loaded the correct firmware and selected the correct options in the RIP software.
2. Check the installation make sure that you have installed everything as described.
3. Check that the plug on the circuit board is fully inserted.
4. Check that your circuit board supports the ACE (see next page).

Contrary to popular belief the light beam from the light emitter is **NOT** visible so looking for light in the breech will not help.

If you cannot make the ACE work please contact Racegun or the nearest distributor.



IMPORTANT

The first batch of grips shipped from Racegun did not have the necessary components to support the ACE—The picture above shows the location of the components required for the ACE to function.

In case your board does not have the components required to support the ACE please contact Racegun or one of our distributors for an exchange of the "old" board.

This diagram shows the connection of the light emitter and light receiver.

Please note that even though the components used for this purpose look like a standard light emitter and light receiver—they are specifically selected for this purpose and Racegun does not support the use of any other components than the original supplied!

