

Warthog Installation & Operation

WARNING. BRAKING IS SERIOUS BUSINESS. IF THIS LIGHT INTERFERES IN ANY WAY WITH YOUR BIKE'S BRAKING SYSTEM, DO NOT USE IT! We believe our system can give cyclists more visibility on the road, but if the Warthog does not fit your bike properly and interferes with braking, please return it. See our web site at www.rfcycle.com for return/refund information.

What's In The Box

1 Warthog control unit (CU)

- 1 magnet
- 4 zip ties (2 to be used and 2 spares)
- 1 piece of double sided tape
- 1 piece of shrink tubing

1 Warthog taillight

- 1 Taillight clip (You will need this with either mounting method you choose)
- 1 Seat post mount
- 1 Rack mount
- 2 rubber shims
- 30 mm USB cable

Additional Equipment Needed for Installation

Philips Screw driver

Heat source (hair dryer or other)
to shrink the shrink tubing

Strong scissors or wire clippers
to trim the zip ties

How it Works

Overview section and diagrams

The Wireless Warthog taillight system allows the user to actively control his taillight. Previous taillights are set before the rider begins to ride, and, at that point, are not changed until the cyclist stops. This is the major improvement that the Warthog allows. By using a wireless radio frequency (RF) control unit, the warthog can send real time signals to the taillight. First, activating a switch on the control unit sends either a left or right turn signal (pressing either switch again shuts it off). Also, by placing a magnet on the brake lever, and depressing the same lever, the magnetic field of the magnet then brakes the sensors placed in the control unit that informs it to send the signal to the taillight to activate the braking pattern. When the magnetic field moves out of position of the control unit, the unit sends a signal to the taillight telling it to revert to its operational mode. This real time transfer of data to the taillight and the changing to the taillight that this allows, makes the bike respond more like an automobile, showing to traffic reactions drivers are used to seeing in patterns they understand.

LED pattern on Warthog

The LED patterns on the Warthog taillight are divided into two groups. Active patterns and passive patterns. 12 LEDs provide various light patterns designed to accent the active braking and form the arrow shape that makes the turn signal. The passive patterns have been designed around the placement of the 12 LEDs, and increasing governmental regulations, which now require that at least one LED be on at all times.

Modes

Active Modes:

The Warthog taillight system allows multiple lights to be configured (or chained together wirelessly), allowing an expansion of their use. The taillights may then be configured in to run in multiple patterns to take advantage of this interconnection. You may configure one light to be a left turn signal, and, when you turn left, the left turn signal will activate. However, when you turn right, only the brake light will activate when depressed. Pairing it with another light that is configured as a right turn signal, then, allows one of the lights to display the direction of the turn, while the other shows that the bike is braking. One other active mode expands on this. A light can be set to be a brake light only. This deactivates the turn signal on it, and the light is only active when the brake lever is pressed. This can be used as a third light with a left/right combination, again increasing the chance that your presence will be seen.

Braking v non-braking

When a light it is not braking, the light will display one of the passive modes. These passive modes are described in the **Operating/Flashing modes** listed below. Again, by varying these modes on different lights, the different patterns may increase driver awareness of your presence.

Options

The Warthog control unit can control more than one taillight. This feature must be set by the user. The taillight and control unit in this box have already been paired and the taillight configured to work as a right and left turn signal, as well as a brake light. If you do not wish to pair this with additional lights, using the “one control unit, one taillight” approach, you can skip to *How to Mount Your Control Unit*.

In addition to controlling multiple lights with one control unit, you can also control the same taillight with multiple units (if you want to add a second control unit to the other brake or move your light to a second bike).

How to Pair Your Control Unit with Multiple Taillights

1. To pair your control unit and taillight (or additional taillights to the same control unit) simply press the switch on the back of the taillight and then either of the switches on the control unit.
2. A single light on the taillight will flash, informing you that the light has been set.
3. You can test this by then pressing any button on the control unit to see the taillight respond.

How Do You Want Your Taillight to Operate?

Operating/Flashing Modes

The taillight comes with 5 different operational modes, plus an off mode. To select a mode, briefly press the button on the back of the taillight. The modes immediately begin to display:

Mode 1	Slow Flash of 5 LEDs. Two lights will always remain on in this mode. Note: All 12 lights illuminate only during braking to distinguish between a non-braking and braking taillight.
Mode 2	No flashing lights. This daylight mode will be indicated by the brief flash of a single LED light. Lights will only be activated by the control unit. ///Is this the same as braking?///
Mode 3	Random flash. In this mode, two LEDs will always remain operational, but all lights around them will randomly flash on or off, providing the second lowest operational light.
Mode 4	Patterned flash. In this mode, two LEDs will always remain operational, but the lights surrounding it will fire in a consecutive circular pattern.
Mode 5	All twelve LEDs lit. While this is the brightest mode available, we do not recommend using this mode unless you do not have a control unit available. It will not allow the turn signal nor brake light to function.
Off Mode	Briefly pressing the light again will shut the unit off. Note: If your bike remains motionless for a half hour, the light automatically shuts off.

Assign a Braking and Turn Signal Pattern

1. Press and hold the button on the back of the taillight for ten seconds. The light will emit a beep and display the mode in which it is set.
2. Press and hold the button for an additional ten seconds. This takes the taillight to the next mode and so on.
3. The light will switch between one of four modes as follows:

Brake and two directional turn signal (factory default setting)

Brake and left turn signal

Brake and no turn signal

Brake and right turn signal

The light comes out of the box with the factory default setting of brake and two directional turn signal.

How to Mount the Control Unit

Please go to www.rfcycle.com to find an instructional video on how to perform this process.

The Warthog system uses a small magnet mounted on the brake lever and the control unit mounted underneath this magnet to activate the braking component of the taillight. In order for the system to work, the taillight and magnet must be lined up with one another.

We have found the easiest way to do this is to firsts roughly fit the control unit against the handlebar under the brake lever, ensuring that it does not interfere with the brake lever when the brake lever is depressed. You will want this position to be such that the distance when the brake lever is depressed is not too close to the control unit or too far. This distance may best be determined when you place the magnet.

When you have found what you think is the best position, remove and lightly place the double sided tape above it on the brake lever. Then, with the taillight on, hold the magnet in one hand against the brake lever, while your other hand holds the control unit in place. Depress the brake lever and see if the taillight activates, with minimal pressing of the brake lever. If it does, you can firmly press the magnet into the tape and proceed to cover it with the provided shrink tubing and mount the control unit to the handlebars. You want the brake light to activate the second you press the brake lever, if possible, that will most closely mimic the braking system of an automobile.

MAKE SURE THE MAGNET AND CONTROL UNIT DO NOT TOUCH OR OTHERWISE INTERFERE WITH YOUR BRAKING WHEN THE BRAKE LEVER IS DEPRESSED. If you cannot get it to work, you may need take your bike to a professional mechanic, who can adjust your brakes and help install your light.

Permanently Installing the Control Unit

Make sure the magnet is firmly placed within the tape to allow you both hands to install the

control unit to the handlebars. Mark the position of the control unit on the handlebars. At this point, you will need to pry the cover off the control unit. This is done by inserting a screwdriver or small coin between the two halves at its most narrow side, in the provided notch, and twisting until the two parts separate slightly. At this point you can remove the two halves from one another. Carefully set the half with the battery holder and buttons aside. Place two zip ties in the inside of the other half, with their heads facing outwards, They should be on the side with no upward projections near them. Set the case in position on the handlebars, and loop the zip ties around the handlebars and thread them through the two remaining holes on the case. Fasten the zip ties together, and pull each tight, so that they end up on the side with the upwards projection. As you tighten the ties, make sure the case is in its proper position on the handlebars that was previously marked. Tighten the ties completely and trim them as close as possible. Take the main part of the control unit, place the tang at the wider end in place, and gently lower the narrower end into position. If the fit appears too tight, you may need to use the edge of a screwdriver to gently and slightly press the tab at the front inwards enough to allow it clearance into the mounted back. At this time, the control unit is mounted and does not need to be removed except to change the battery. Test to make sure that the system operates. You may need to readjust the magnet at this point.

Permanently Installing the Magnet

Once you have positioned the magnet and control unit the way you like, take the shrink tubing and gently slide it over the end of your brake lever and over the magnet, so as not to dislodge the magnet, but to cover it completely. Use a heat source, such as a hair dryer, to heat the shrink tubing, this will shrink it over the magnet, which will keep it safe from vibration and the environment.

Programming the Turn Signal Button on the Control Unit

The control unit is set so that, when mounted underneath and out of site on most road bikes, the then facing left button controls the left turn signal and the right controls the right turn signal. If you set your control unit up in a different fashion, or prefer them in the opposite direction, you may change which button operates the left turn signal by holding down that button for ten seconds. At that time, the taillight will beep once, indicating that the programming has been successful. This will automatically set the second button to be the right turn signal.

How To Mount Your Taillight

The taillight comes with an affixed clip that allows the taillight to be attached to clothing and gear, such as a backpack or other bag. Please check that when attached in this manner, that vibration from moving does not dislodge it. Readjust its placement to make sure that it remains secure.

The Warthog also comes with two means of attaching the light to the bicycle: A seatpost mount and a rack mount.

Seatpost Mount

Make sure the screw connecting the seatpost mount are loose and allow the two ends of the

mount to separate. Gentle spread the two ends apart and wrap the mount around the seatpost. Place the taillight clip in line with the screw holes on the seatpost mount. Align the angle of the clip so that it is at a right angle with the ground and ensure that its position allows the placement of the taillight to take place from the top. Tighten the screw with the screwdriver until tight. If your seatpost mount is too loose, you may need to wrap one or both of the rubber shims around the seatpost, underneath the mount. Make sure the screw is tight enough to prevent the mount and clip from moving. Place the taillight into the clip. To release it, press the release tab at the bottom of the clip.

Rack Mount

The rack mount comes with two pieces that are held in place with four screws. One part has an added extension that allows the taillight clip to be attached to it that the second piece is lacking. Position both parts of the in place on the rack. Screw the four screws into their appropriate holes to attach the mount to the rack. We recommend placing the nut end of the screws to the inside, leaving you with easy access to the head of the screws. Depending on your rack size, you may need to use one or both of the shims to allow firm placement of the mount to the rack. After the mount is firmly attached, screw the taillight clip to the rack mount with the provided screw. Make sure the opening for the taillight faces upwards. Place the taillight into the clip. To release it, press the release tab at the bottom of the clip.

Battery Charging and Changing

Both the taillight and control unit have batteries. The taillight has a USB rechargeable battery. Due to its small size, the control unit operates with a **CR2032 coin cell battery**.

Recharging the Taillight

Connect the provided cable to the taillight. Connect the other end to an appropriate power source (computer or recharge unit). When properly connected, a single LED will slowly flash on and off letting you know that the unit is charging. The light will stay lit when the unit is fully charged.

NOTE 1: The taillight remains in a sleep/wait mode for a signal from the control unit. Because of this, the light may discharge after a few days of inactivity. Make sure your light is charged before you use it.

Replacing the Control Unit Battery

Leaving the case attached to the bicycle, gently pry the two halves of the control unit case apart. Take the part the comes off of the unit away, remove the battery, replace with a fresh battery, and gently snap the control unit back into position. We recommend placing the wider side with the tab into place first, and then gently snapping the narrower tab into position. You may need to use a screwdriver to gently nudge the tab into position.

Final Thoughts

We want to hear from you!

If you have any difficulties or issues, please contact us at info@rfcycle.com or call us at 505-639-7410.

If you have any positive feedback, feel free to contact us the same way. We would love to hear from you with suggestions, photos of your newly installed Warthog, and/or critiques of any kind. The best way to improve our lights is through your input!

Thanks,

rfCycle

Legal Disclaimers:

Warthog Control Unit: (Model CU-01) FCC ID: 2AFH3-1333101, IC: 20819-3591

THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

Note: *This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:*

—Reorient or relocate the receiving antenna, increase the separation between the equipment and receiver, or consult rfCYCLE for help.

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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