



BLUE OX®

Patriot® Braking System

Owner's Manual & Installation Instructions



BRK2012

Patent Pending

THANK YOU

for purchasing a Patriot® braking system from Blue Ox®. We've organized this manual to make your installation simple and as trouble-free as possible. Please read before operating the brake. Keep your sales receipt and this manual in a safe place so that both are available for future use if needed.

Welcome to the Blue Ox® Experience

Congratulations! You are now the proud owner of a Patriot® braking system.

Welcome to the Blue Ox® Family. The braking system that you have purchased combines quality components with the latest in technology and style. We are confident that these design features will provide you with the conveniences you expect during your travels. After you understand how to properly and safely operate and care for your Patriot®, expect years of trouble-free operation and service backed by a two year limited warranty.

Please read all of the technical documents, warnings, cautions, tips, and notes in this manual before attempting to operate your Patriot® for the first time. Improper installation, use or maintenance may result in malfunction causing personal injury or property damage. Please fill out and return your warranty card or register via our web site at www.blueox.com within ten days of delivery. For future reference, your serial number is located on the outside of the manual packaging and is also located on the bottom of your Patriot® unit.

Equipment Information Record

Customer Name: _____

Date Purchased: _____

Purchased From: _____

Address: _____

City: _____ **State:** ____ **Zip Code:** _____

Phone Number of Dealership: _____

Installed By: _____

Service #: _____

Model #: _____

Serial #: _____

Notes: _____



WARNING

Fully understand these instructions before installing. Improper installation and/or operation can create a hazard which can cause serious injury, property damage or death. Improper installation and/or operation will void the warranty.



WARNING

Always follow the towing procedures in your vehicle's owners manual.
Do NOT modify your Patriot® in any way NOT authorized by Blue Ox®, as it will void the warranty.

DEALERS AND DISTRIBUTORS:

PLEASE give these instructions to the customer so they fully understand the set-up, operation, and safety precautions of this braking system.

Patriot® Braking System

Unpacking your Patriot®

Remove the Patriot® and accessories from the shipping carton, review parts list and diagram below. Make sure that you have the appropriate items shown below. If **NOT**, please contact a Blue Ox® Dealer or Distributor, or call a member of the Customer Care Team at (402) 385-3051 to order replacement parts.

Contents:

1. Patriot® Unit
2. 2-Way RF In-Coach Controller
3. Brake Feet
4. Breakaway Switch
5. Breakaway Lanyard
6. Breakaway Cable



Important:

USE ONLY GENUINE FACTORY REPLACEMENT PARTS. Do NOT substitute homemade or non-typical parts. This may cause your brake to fail and result in injury or death. If repair parts or components are needed, you may order them through your nearest Blue Ox® Dealer or Distributor, or call our Customer Care Team at (402) 385-3051.

Safety & Compliance

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.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

To satisfy FCC RF exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Patriot® Braking System



RF Remote Unit



Manual Override

Patriot® Braking System

Initial Set-Up

In Towed Vehicle

1. Open the driver side door of the towed vehicle and push the driver seat back as far as possible.
2. Place the Patriot® unit on the floor.
3. Open the brake claw and place it on the brake pedal. (Figure 1)

Reference page 6 for claw operating instructions

4. The feet can be attached and adjusted for proper height position for uneven floorboards.

Note: Do not store or transport with the feet attached to the unit.

5. Slide the driver seat forward against the push pads. Adjust the push pad up or down for proper height position in relationship to the seat.

Note: Seat must be as far forward as possible without causing the brake lights to be activated. If the seat can't be moved forward far enough, an arm extension is available.

6. Plug in the power cord into a 12 volt power source. The indicator light will glow.
7. Turn on the power switch. (Figure 2) The display will read "INITIALIZING".

Note: If using a breakaway, it must be connected first prior to turning on power to the unit.

8. Push the "SET-UP" button. (Figure 3) The brake will stroke three (3) times then remain in the ready position.

Note: If the brake extends fully and remains extended without stroking three times, the seat is not far enough forward. Turn the brake off then back on. Reposition the seat as far forward as possible without causing the brake lights to be activated then restart set-up process.



Figure 1



Figure 2



Figure 3

In the Motor Coach

Find a sturdy, easy-to-reach location to mount the RF in-coach controller. The dashboard is the suggested mounting point, but anywhere that is secure and accessible to the driver will work.

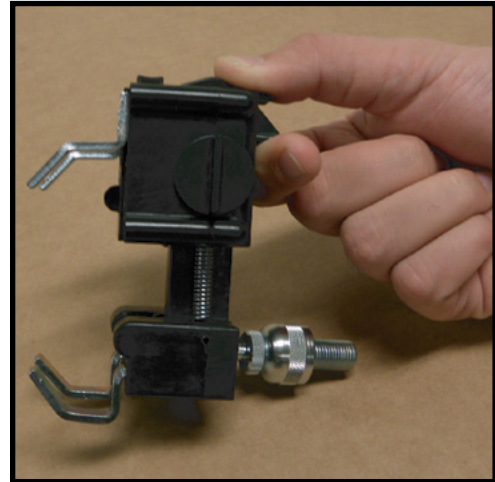
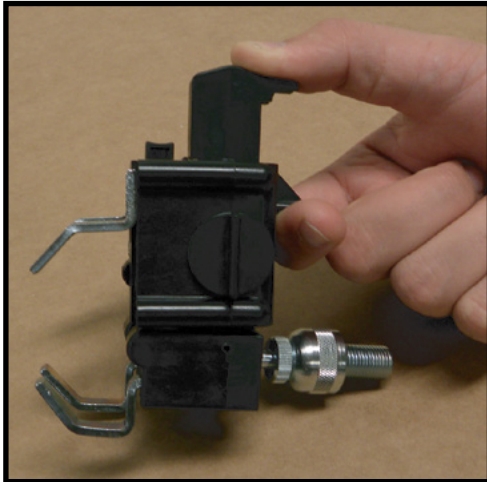
Using the Velcro provided, attach one side to the desired mounting point, and the other side to the controller.

Note: The Patriot® Brake can be used with or without the RF controller. We recommend using the controller for the operational feedback, but the brake can be set without the RF controller.



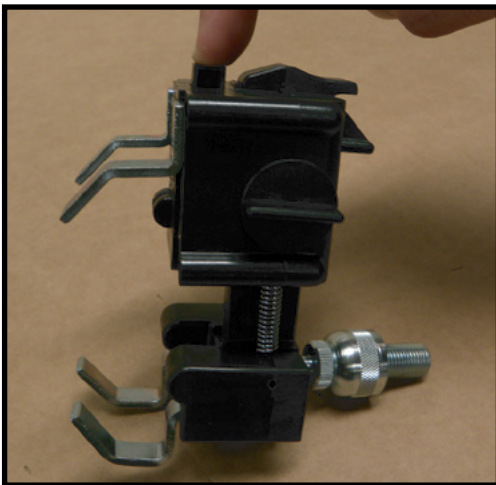
Figure 4

Locking Brake Claw Operating Instructions



To Open:

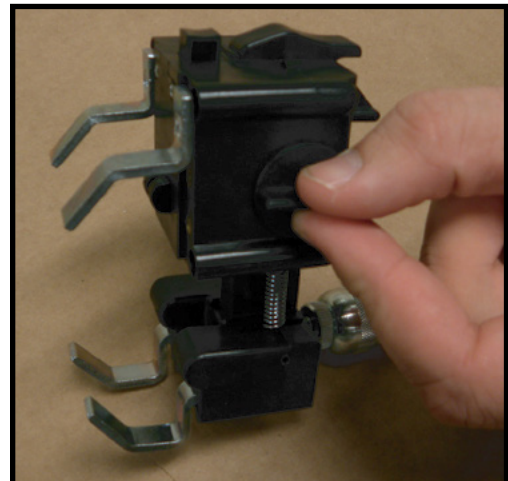
1. Place your thumb on top of the claw and place your pointer finger under the back ledge (right). Pinch your fingers together until the claw locks in place (left).



To Close:

2. Position the claw onto the brake pedal.
NOTE: You can adjust the size of the claw by changing where the top fangs are mounted.
3. Press the button on top of the claw to close the claw or push the front button against the brake pedal.

⚠ Caution: Make sure your fingers are not between the upper and lower half of the claw when you press the button.



To Lock:

4. If the claw is open, you can turn the knob one quarter turn to the left to lock it open.

If the claw is closed, you can turn the knob one quarter turn to the left to prevent it from locking open.

If the claw is locked, turn the knob one quarter turn to the right to unlock it.

Patriot® Braking System

Installation Notes

When installing the Patriot® on hybrids/vehicles with continuous power assist brakes or if the user gets the “REPOSITION BRAKE” error twice in a row while trying to set-up their brake, then they should do the following:

1. With the brake plugged in but powered off, hold down the SET-UP button while powering on the unit. Once it lights up you can release the set-up button.
2. Once it is finished initializing, the screen will read “MODE: FORCE”. Hit the JOG switch to the left so that the screen now reads “MODE: POSITION”. Press SET-UP to select this setting.
3. The next screen will read, “MAX FORCE”. Press SET-UP again at this screen.
4. The brake should read “SETTINGS SAVED!” and automatically restart.

These settings will be stored in the memory and remain until a user goes through this procedure again and changes them. With these settings, the brake will work on ANY vehicle.

For a traditional vehicle, the GAIN setting should be kept between settings 5 and 9.

In a hybrid vehicle, the GAIN setting should be kept between settings 1 and 3.

Operating Instructions

1. Plug the 2-Way RF In-Coach Controller into an available 12 volt outlet.
2. The large number on the display represents the sensitivity setting of the Patriot® Brake; it will automatically be set to 5 when activated.
3. Turn the “GAIN” knob to the left or right to adjust this setting. The lowest setting (0) puts the tow brake on stand-by and will apply no pressure to the brake (except in a breakaway). Settings 1 through 9 will incrementally increase the pressure applied.
4. On the bottom of the RF Controller there is a “MANUAL OVERRIDE” lever. Pressing down on this lever will cause the Patriot® to press down on the brake pedal.

Note: This is a progressive lever; the lever controls the braking according to the level set on the RF controller. This acts like a trailer brake and is useful in wet weather to keep the towed vehicle in line.

5. If the error light turns on, check the display screen on the Patriot® unit and refer to the list of possible display messages for assistance. After addressing the problem, turn off the Patriot® and restart the set-up procedure.
6. If a breakaway switch is installed and plugged in, the “BK / AWAY ON” LED should be on. Follow the instructions provided. The breakaway switch should be installed and plugged in before turning the brake on.
7. Anytime the towed vehicle is started up, the Patriot® needs to be reset.
8. Go through the set-up procedure again if the unit is shut off for any period of time or if the battery in the unit goes dead.

Disconnecting

Perform these steps each time you remove the Patriot®.

1. Turn off the Patriot®. Unplug the Patriot® power cord from the 12-volt accessory outlet.
2. Adjust the driver’s seat as far back as possible.
3. Unhook the brake bracket from the brake pedal. Unplug the breakaway clips from the Patriot® control panel (if applicable).
4. Lift the Patriot® out of the vehicle.



CAUTION: Shut off the unit and unplug the RF when you stop driving for the day. Don’t leave the unit plugged in all night, it could drain your car battery.

Troubleshooting/Error Codes

Issue: If your remote is not receiving a signal or to pair a new or unpaired remote module.

On the Remote:

First, make sure the brake unit is plugged in and turned on. Hold down the “MANUAL OVERRIDE” lever while plugging in the remote cord. Once the unit begins to light up, you can release the lever. A blinking “A” will appear on the Remote LED screen indicating the unit is in “SEARCH MODE”. Once the remote changes from a blinking “A” on the LED to another character the remote is now paired and will remain so until this procedure is repeated.

On the Brake Unit:

Turn power to the brake unit off. Make sure the remote unit is plugged in. Firmly depress the JOG switch to the left AND simultaneously hold down the SET-UP button while powering on the unit. Once the unit begins to light up you can release the buttons. The screen should read “REMOTE SEARCH” and will only accept radio communication from the energized remote device. Once the unit finds the remote the screen will read “REMOTE FOUND”. Then automatically reset and come up in normal operation mode.

Each step should take approximately 10 seconds. Once a set is paired, go through the normal set-up and make sure everything is functioning.

Note: Make sure the GAIN knob on the remote changes the gain displayed on the remote itself and also on the brake, and make sure that the Manual Override actually applies the brakes).

Error Codes:

Error messages DO NOT show up on the RF remote inside the RV but on the brake itself. You are notified of an error on the RF, but the error messages are displayed on the brake. The following chart has details of the error messages in the Patriot. Each error has a corresponding code number that will show up in the remote. Listed below are codes that will show up during normal operation.

| LED Numeric Display Indication | Description |
|--------------------------------------|---|
| Non-flashing “0” through “9” | Control Unit in READY state (normal operation), indicates current braking gain setting. |
| Flashing “0” or “A” | Control Unit in RADIO SEARCH state (looking for Remote Unit radio transmission to store MAC address). |
| Flashing “1” | Control Unit in INITIALIZING state (retract actuator). |
| Flashing “2” | Control Unit in POSITION state (manual jog). |
| Flashing “3” | Control Unit in SETUP state (pump brake pedal 3 times). |
| Flashing “4”, with intermittent beep | Control Unit in CAR BATTERY LOW state (retract actuator, no braking function except breakaway). |
| Flashing “5”, with intermittent beep | Control Unit in UNIT NOT LEVEL state (not currently implemented). |
| Flashing “6”, with intermittent beep | Control Unit in REPOSITION state. |
| Flashing “7”, with intermittent beep | Control Unit in BREAKAWAY state (maximum braking applied). |
| Flashing “8”, with intermittent beep | Control Unit in BRAKING TIMEOUT state (retract actuator, no braking function except breakaway). |
| Flashing “C”, with intermittent beep | Communications error (Remote Unit not receiving radio transmissions from Control Unit). |

Patriot® Braking System

Error Code Explanations:

FLASHING “4” WITH INTERMITTENT BEEP - UNIT IN CAR BATTERY LOW

What does this mean? The car battery low error comes on when the car voltage drops below 10V (unfiltered reading) or the unit battery is low. This means that the brake has detected that the towed car's battery is **very low**. It may not be completely dead yet; however, it is probably close. The brake will go into an idle state and not work for normal braking. ***It will work in the event of a breakaway!***

It is highly recommend, but not mandatory, that you pull over and charge the towed vehicles car battery or charge the unit's battery. Make sure to go through the set-up procedure again prior to resuming driving.

FLASHING “5” WITH INTERMITTENT BEEP - UNIT NOT LEVEL

What does this mean? Brake may be too far off level for the accelerometers to function properly. Adjust the feet on the brake in order to level the unit as much as possible.

FLASHING “6” WITH INTERMITTENT BEEP - UNIT IN REPOSITION STATE

What does this mean? If the user gets the reposition brake error two (2) times in a row while trying to set-up the brake, the following should be done:

- With the brake plugged in, but powered off, hold down the SET-UP button while powering on the unit. Once it lights up you can release the set-up button.
- Once it is finished initializing, the screen will read “MODE: FORCE”. Hit the JOG switch to the left so the screen reads “MODE: POSITION”. Press SET-UP to select this setting.
- The next screen will read “MAX FORCE”. Press SET-UP again at this screen.
- The brake should read “SETTINGS SAVED!” and automatically restart.

These settings will be stored in memory and remain until the user goes through this procedure again and changes them.

FLASHING “7” WITH INTERMITTENT BEEP - UNIT IN BREAKAWAY STATE

What does this mean? Either the car actually did breakaway or the breakaway pin was pulled out and the brake is being fully applied. Pull over, secure the car, reset the brake, go through the set-up again and then continue driving.

FLASHING “8” WITH INTERMITTENT BEEP - UNIT IN BRAKING TIME-OUT STATE

What does this mean? After the brake has been applied for a long duration of time, whether it is due to actual braking or if you hold down the “manual brake lever”, the brake will automatically retract itself and it will give this error code. This is to prevent possible damage to the brakes of the towed vehicle. When this error occurs, the brake will go into an idle state and will not work for normal braking; however, ***it will work in the event of a breakaway!***

It is highly recommended that you pull over and check the towed vehicle. You will need to reset the brake and make sure to go through the SET-UP procedure again prior to driving.

FLASHING “C” WITH INTERMITTENT BEEP - COMMUNICATIONS ERROR

What does this mean? The 2 way RF in coach controller is no longer communicating with the Patriot® Brake. The brake is still fully functional and should return to normal operation within a few seconds. This may be due to the position of the controller, if the problem persists contact Blue Ox® customer care.

Patriot® Braking System

Breakaway Installation

The Breakaway system automatically activates the Patriot® to apply the brakes on your towed vehicle in the event the motor home separates from the towed vehicle. This type of emergency system is required by most states and provinces.

Mounting the Breakaway Switch

1. With the pin facing the motor home, secure the breakaway switch onto the front of the towed vehicle in a sturdy location. This should be a convenient location which can be easily reached, and if possible, on the driver side.
Note: The breakaway switch must be mounted directly on the towed vehicle and not to be installed on the tow bar or bracket. The surface must be strong enough to hold the breakaway switch and allow for the pin to be pulled out cleanly.
2. Make certain that the switch is securely attached, and that the pin can be removed from the switch without any interference. Plug the cable into the breakaway switch.
3. Install the breakaway switch using a bolt and lock nut. Do not use a self tapping screw.

Connecting the Breakaway Switch to the Patriot® Brake

There are two different ways to attach the break-away device to the Patriot® Brake. Use the method which is most convenient for you.

Method 1: Through the firewall

1. Look for a pre-existing hole in the firewall, if no hole exists, drill a ½" diameter hole. Insert a grommet into hole.
Note: Make sure not to damage any components on either side of the firewall while drilling.
2. Find a path for the cable through the engine compartment to the firewall. Use wire ties to secure the cable. Make sure to avoid any hot or moving engine parts.
3. Insert the cable into the grommet and pull the excess slack into the driver's compartment. Seal around and inside of the grommet with silicone sealant.
4. Plug the cable into the Patriot® Brake.
Note: When not in use, the cable can be tucked away .

Method 2: Feeding the cable through the door/window

1. Find a path for the cable through the engine compartment to the rear of the hood/base of the windshield, on the driver's side. Use nylon ties to secure the cable so that it is avoiding any hot or moving engine parts.
2. Either roll down the window and thread the cable through, or open the door and thread the cable through. Make sure excess slack is safely coiled inside the driver's cockpit. Once the cable is through and connected, close the door/window.



Patriot® Braking System

Patriot® Accessories

If you would like to order any of these accessory parts for your Patriot®, please contact a Blue Ox® Dealer or Distributor, or call a member of the Customer Care Team at (402) 385-3051 to order these parts.



BRK2503: The seat stiffener works with any drop in tow brake on the market. It provides a larger surface area on the seat for the brake system to push against. This means you get better, more responsive braking. If you continually get a “reposition brake error” this will help solve that problem.

BRK2502: If the seat can't be moved forward far enough, this brake rod extension is available to be inserted between the brake claw and the actuator arm. Also, if there is a low steering column/dashboard which touches and interferes with the brake, this extension can be used.



BRK2506: In order to protect your Patriot® while not in use and to keep all accessories together, a protective bag is available.

Note: The claw and feet must be removed to fit into the protective bag.

BRK2505: There is one (1) breakaway switch included with your Patriot®. An additional switch for a second vehicle can be used.



Care and Maintenance of your Patriot® Braking System

Your Patriot® unit requires a minimal amount of care and maintenance. If you do not feel confident in your ability to perform the occasional maintenance, consult your Blue Ox® Dealer or Professional Installer, or see a Blue Ox® representative at a rally or race that you plan to attend. The following will inform you of the areas of your Patriot® that will need periodic inspection and/or care and maintenance.

Care

Do **NOT** use any type of solvent or spray cleaner on the Patriot® braking system. The recommended cleaning procedures for the Patriot® are to wipe down the exterior with a damp cloth. Wipe down with a dry cloth.

Store in a clean, dry place.

Maintenance

It may be necessary to occasionally lubricate the brake bracket with silicone spray.

Patriot® units will need approximately 8 hours of charge time over a 3 month period. The car does not need to be on during this time. Also, the unit can be left plugged in for any period of time without causing damage.

- REMINDER -

The maximum current that can be drawn on the Patriot® is 2 amps.

Operating temperature of the Patriot® is between -20°F and 120°F

CUSTOMER SERVICE COMMITMENT

Blue Ox® is committed to providing you with exceptional customer care throughout your lifetime with our products. Our team is here to assist you with any questions you may have regarding the performance of your product. Simply call (402) 385-3051 and you can speak with our customer care team.

Additionally, please visit our website to see which rallies our Destination America team will be attending. For a nominal fee, our service technician will service your towing system to ensure it's in proper working condition. Also, as a commitment to our customers, should you visit our factory, you can stay at our full service Blue Ox® campground at no charge along with enjoying a factory tour.

Again, thank you for being our customer and for the confidence you have shown in the performance of our products. It is because of customers like you we enjoy the success we have today.

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