

<THESE INSTRUCTIONS MUST BE GIVEN TO THE END USER>



B&W Trailer Hitches

1216 Hawaii Rd / PO Box 186
Humboldt, KS 66748
P:800.248.6564
F:620.869.9031

Call or Email us for
Installation Support
hitches@turnoverball.com
bwtrailerhitches.com

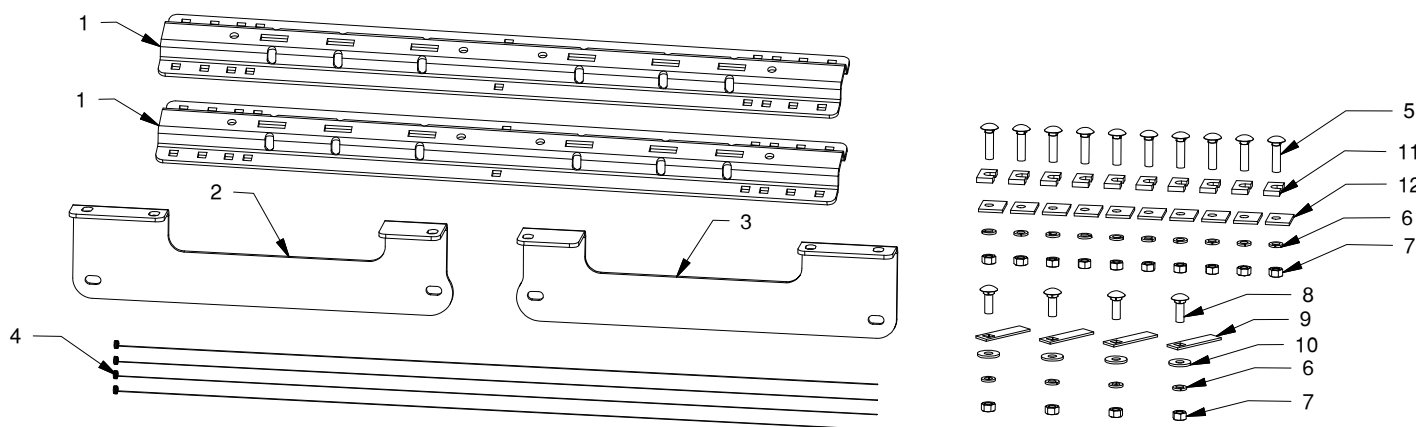
Custom 5th Wheel Hitch Mounting Rail Installation Instructions

MODEL 2404

See Limited Lifetime Warranty at
bwtrailerhitches.com/warranty

2004-2014 Ford F150 Trucks

Except 2004 F150 Heritage Edition



Patriot Rail Box (RVR3210)		
ITEM	DESCRIPTION	QTY
1	Mounting Rail	2

Bracket Set Box (RVR2404)		
ITEM	DESCRIPTION	QTY
2	Driver Side Plate	1
3	Passenger Side Plate	1
4	Fish Wire	4

Bracket Set Bolt Bag #1		
ITEM	DESCRIPTION	QTY
5	1/2" X 2" Carriage Bolt	10
6	1/2" Lock Washer	14
7	1/2" Finish Nut	14
8	1/2" X 1-1/2" Carriage Bolt	4
9	Locking Strap	4
10	1/2" Flat Washer	4

Bracket Set Bolt Bag #2		
ITEM	DESCRIPTION	QTY
11	1/2" U-Shaped Spacer	10
12	Offset Rectangle Washer	10

⚠ WARNING

Failure to comply with the safety information in these instructions could result in serious injury or death.

⚠ Read all installation and operating instructions along with all labels before using this product.

⚠ Adding components to the chassis of any vehicle can be hazardous. There is potential for damage to vehicle, injury from tool usage and many other hazards. This installation must be completed by someone who is aware of the hazards involved. This person must be knowledgeable of proper safety procedures for a vehicle installation of this nature, and for usage of the equipment required to perform the installation.

⚠ Without proper knowledge, towing can be a dangerous activity. Understand all the risks involved with towing before proceeding. For information on towing safety, see **"The Trailer Handbook: A guide to Understanding Trailer and Towing Safety"** from the *National Association of Trailer Manufacturers*, www.NATM.com and your trailer manufacturer's owner's manual.

⚠ Do not exceed tow or tongue rating of coupler, tow or tongue rating of hitch, or tow or weight ratings of truck or trailer. See vehicle and trailer manufacturer information for ratings. Exceeding these ratings may cause damage to towing components or loss of attachment between the trailer and truck.

⚠ Additional caution must be used when towing a wedge car trailer. Towing stability greatly depends on keeping the center of gravity as low as possible. Load heavy cars over the axles. Never tow with a single car on the front of the trailer. When towing a wedge car trailer, never exceed speeds that are reasonable for the roadway conditions (e.g. turns, going around a curve, etc.). Failure to account for proper trailer center of gravity and speeds that are reasonable for the roadway conditions may cause damage to the truck, trailer, towing components, and loss of attachment between the truck and trailer.

⚠ Do not modify this product in any manner. Doing so could alter its integrity and lead to a loss of attachment between the trailer and the tow vehicle.

⚠ Regularly check that all bolted connections are at the correct torque specification. A visual inspection should be performed before each time you tow.

PREPARE TO INSTALL

NOTICE: It may be necessary to remove the spare tire before installation.

NOTICE: If truck is equipped with a removable bed liner or mat, it should be removed or it must be cut to allow the mounting rails to connect directly with the bed. It is acceptable to install the mounting rails over a spray-in bed liner.

1. **Review parts and tools.** Remove all parts from the packaging and familiarize yourself with all the parts and tools required. Use the parts list on the front page to verify that all parts and hardware are present.

Installation of the mounting rails requires several common tools and a few specialized tools. Below is a listing of equipment used during a typical installation.

- Impact Wrench or Ratchet with 3/4" & 13mm Sockets
- 3/4" Box End Wrench
- Drill and 1/8" & 9/16" Drill Bits
- Patriot 5th Wheel or Slider Base
- Hammer
- Flashlight
- Tape Measure
- Eye Protection
- Ear Protection
- Torque Wrench
- Center Punch

2. **Remove axle bumper in trucks older than 2009.** Remove axle bumper bolt, axle bumper, and multi-thread U-nut using a 13mm socket from the underside of the frame on the driver and passenger sides of the vehicle. See Figure A1. This provides an access hole for the fish wire when installing the side plate hardware. The axle bumper and hardware will be re-attached after installation is complete.

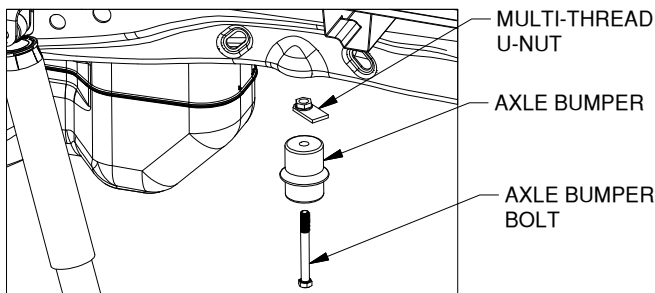


Figure A1: View looking into driver side wheel well.

DRILL REAR MOUNTING HOLES

1. **Layout the rear mounting rail.** Place a mounting rail onto the bed of the truck. Hook a tape measure over the rear edge of the bed (not on any part of the tailgate), measure the location for the mounting rail as shown in Figure B1. Next, center the mounting rail in the bed by measuring the distance on either side from the edge of the rail to the sides of wheel wells. The rail will be centered when both measurements on either side of the rail are the same.

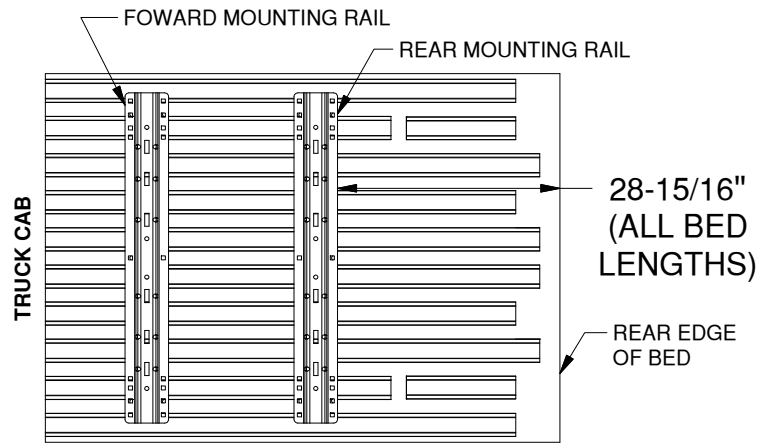


Figure B1: View over bed, showing rail layout.

IMPORTANT: If your truck has a spray-in bed liner you will need to take this into account when you are measuring, and add the thickness of the applied liner that has been sprayed over the end of the bed.

IMPORTANT: The mounting rail is designed to install only at the described location. Failure to place the mounting rail precisely may result in added difficulty during installation and/or property damage.

2. **Mark hole locations.** While carefully ensuring the mounting rail does not move, use a center punch tool to mark the 5 drill locations on the rear rail. See Figure B2 for hole marking locations for this installation (forward rails will install in a later step). Once all 5 rear rail locations are clearly marked, move the bed rail out of the way and drill each location with an 1/8" drill bit.

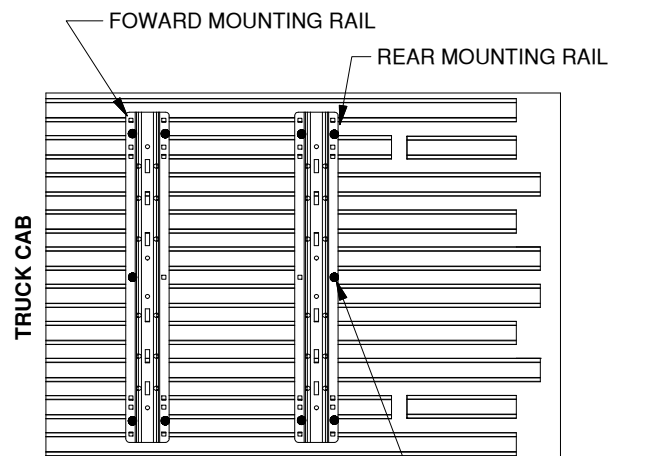


Figure B2: View over bed, showing drill locations for the bed rails.

DRILL LOCATIONS HIGHLIGHTED BY BLACK DOTS

⚠ The fuel tank of the truck may be directly below the area of the bed which needs to be drilled. Always carefully examine the area under the truck where modification will occur. Make certain that the tank, or other equipment, is not damaged during drilling. Damage to the tank may result in property damage, serious injury or death.

3. **Check hole locations.** Align each side plate to the side of the frame where the side plate will be installed, see Figure B3. Check that the 1/8" holes are centered within the slots in the side plates. If the 1/8" drilled holes are not centered re-drill the 1/8" holes until the side plates and the drilled holes are aligned.

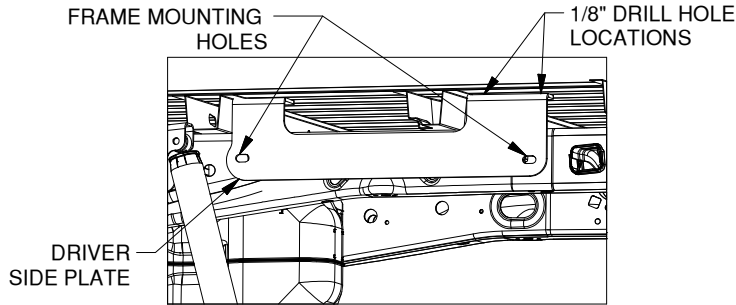


Figure B3: View looking into driver side wheel well.

4. **Enlarge the holes.** Using the 1/8" holes as pilots, drill out each hole with a 9/16" bit.

INSTALL SIDE PLATES:

1. **Prepare for hardware installation.** Locate two 1/2" X 1-1/2" carriage bolts, locking straps, and fish wires. On the driver side of the frame identify the 1" hole and the 7/8" hole where the hardware will mount, see Figure C1. Locate the access hole on the inside of the frame, see Figure C2. (Trucks older than 2009 will use the hole where the axle bumper was removed.)

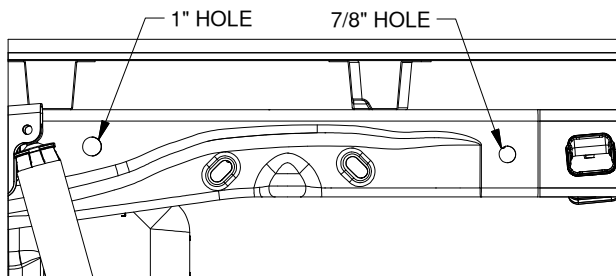


Figure C1: View looking into driver side wheel well.

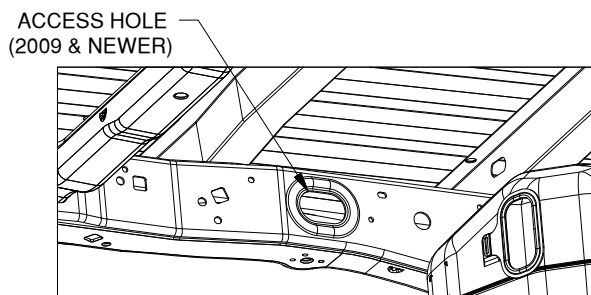


Figure C2: View looking at inside of driver side frame.

2. **Thread fish wire through frame.** Insert the coil end of the fish wire into the 1" hole and pass it through the frame out the access hole. Thread the locking strap onto the fish wire and attach the coil end of the hardware to the carriage bolt, see Figure C3. Push the hardware into the frame. Pull the fish wire until the carriage bolt is through the frame, leave the fish wire attached to the carriage bolt. Repeat with the 7/8" hole.

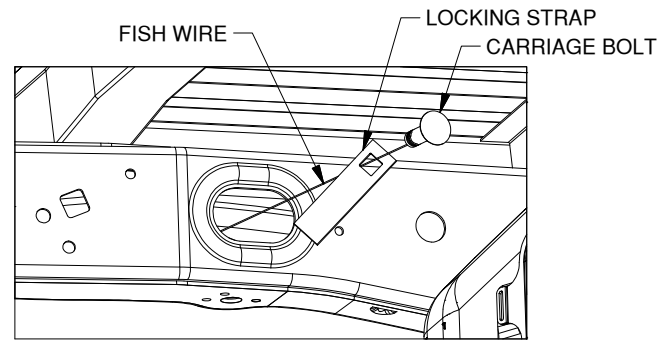


Figure C3: View under bed looking at inside of driver side frame.

3. **Install the driver side plate.** Locate the driver side plate, two 1/2" flat washers, two 1/2" lock washers, and two 1/2" finish nuts. Thread the fish wires through the holes in the side plate. Guide the side plate into position. Use the fish wires to pull the carriage bolts into position and secure with the lock washers, flat washers, and nuts, see Figure C4. Hand tighten each nut.

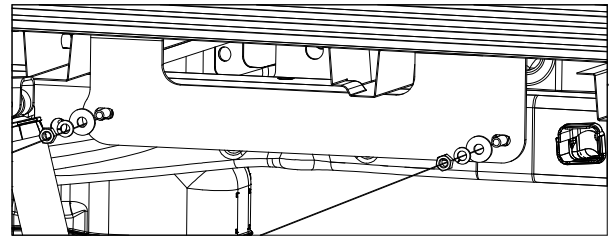


Figure C4: View looking into driver side wheel well.

4. **Install the passenger side plate.** Repeat Steps 1-3 for the passenger side plate.

INSTALL REAR MOUNTING RAIL:

NOTICE: Due to the corrugation in the truck bed, U-shaped spacers are provided to function as space fillers between the mounting rails and the kit attachment hardware. Always place a U-shaped spacer in the gap above the bed (between the mounting rail and the bed). Failure to use U-shaped spacers will result in property damage when hardware is tightened.

1. **Install the rear mounting rail.** Reposition the rear mounting rail over the drilled 9/16" holes in the bed. Install a 1/2" X 2" carriage bolt through the mounting rail into each of the five drilled holes, as shown in Figure D1.

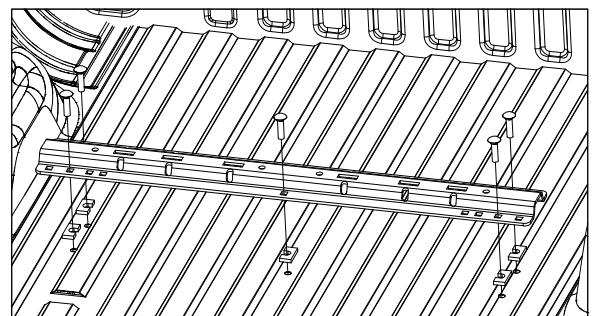


Figure D1: View looking into truck bed from rear of truck.

2. **Install hardware on rear mounting rail.** Under the bed install an offset square washer, 1/2" lock washer, and 1/2" finish nut on each of the carriage bolts, see Figure D2. Place the U-shaped spacers, see notice below "INSTALL REAR MOUNTING RAIL". Hand tighten each nut.

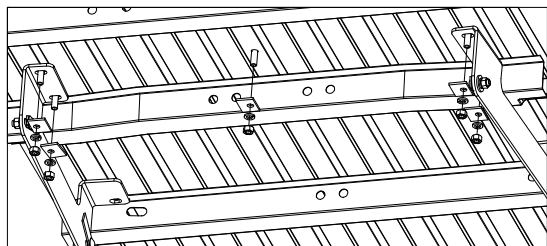


Figure D2: View under bed from rear of truck. (Frame not shown.)

INSTALL FORWARD MOUNTING RAIL

1. **Position the forward mounting rail.** For this step the base which will be used in the mounting rails is required. Place a mounting rail into the truck bed in front of the rear mounting rail. Place the base over the rail attachment points and carefully lower it until the pin tabs pass through the attachment points on the rear mounting rail. See Figure E1. Attach the forward mounting rail to the forward mounting points on the base. The base should rest flat against the top of the rails. With the base still attached ensure that the forward rail is centered in the truck bed.

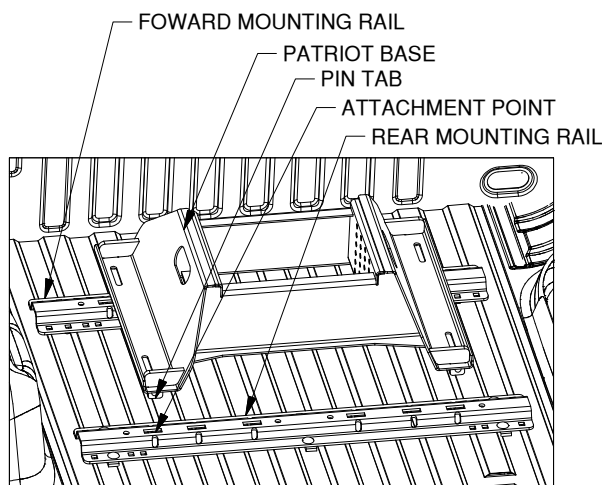


Figure E1: View into truck bed from tailgate.

IMPORTANT: Before drilling forward mounting holes pull the RV base towards the rear of the truck and push the forward rail towards the cab of the truck to correctly space the mounting rails, see Figure E2.

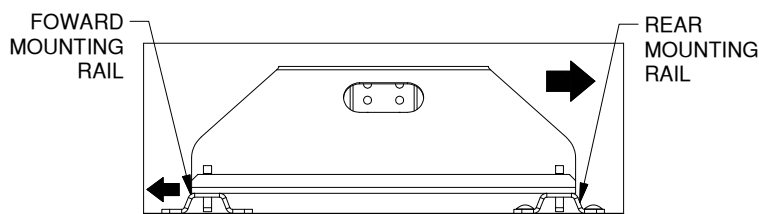


Figure E2: Side view of RV base and mounting rails.

2. **Drill forward mounting holes.** Using the same methods as used for the rear mounting rail mark, drill, check, and enlarge the holes for the forward mounting rail. Refer to "DRILL REAR MOUNTING HOLES" section, Steps 1 through 4, on previous pages. Notice that the hole locations are slightly different than the rear rail, see Figure B2 (on page 2).
3. **Install forward mounting rail.** Reposition the forward mounting rail over the drilled 9/16" holes in the bed. Install a 1/2" X 2" carriage bolt through the mounting rail into each of the five drilled holes, as shown in Figure E3.

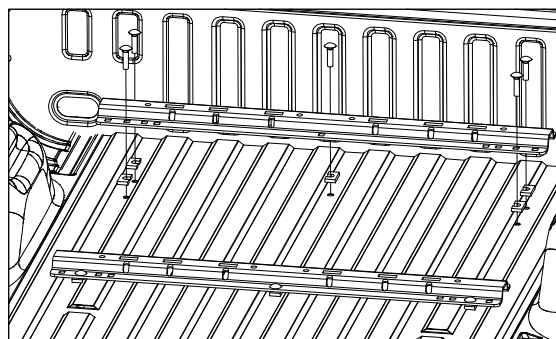


Figure E3: View looking into truck bed from rear of truck.

4. **Install hardware on forward mounting rail.** Under the bed install an offset square washer, 1/2" lock washer, and 1/2" finish nut on each of the carriage bolts, see Figure E4. Place the U-shaped spacers. Hand tighten each nut.

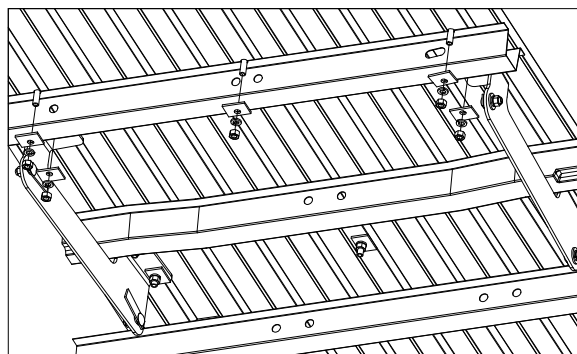


Figure E4: View under bed looking toward rear of truck. (Frame not shown.)

5. **Tighten hardware.** Using a torque wrench, first torque all the 1/2" nuts in the mounting rails to 80 ft-lbs. Second torque all 1/2" nuts in the side plates to 80 ft-lbs.
6. **Reinstall truck components.** Reinstall the spare tire and axle bumper if they were removed during installation at this time.



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