

<THESE INSTRUCTIONS MUST BE GIVEN TO THE END USER>



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Turnoverball® Gooseneck Hitch Installation Instructions

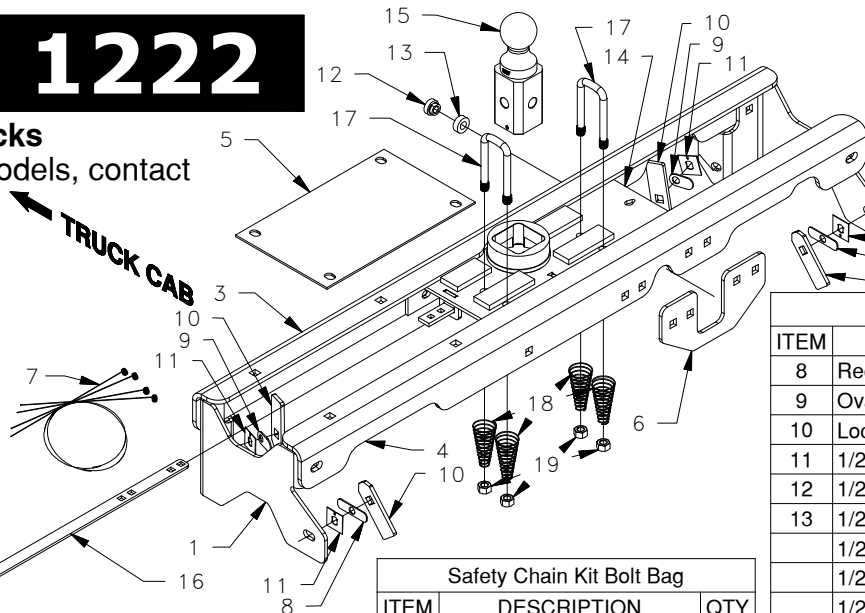
MODEL 1222

2022 Toyota Tundra Trucks
 TDR Pro and Capstone models, contact
 B&W before installation.

Mounting Kit Box (GNRM1222)		
ITEM	DESCRIPTION	QTY
1	Driver Side Plate	1
2	Passenger Side Plate	1
3	Front Cross Member	1
4	Rear Cross Member	1
5	Cross Member Brace	1
6	Cross Member Support	1
7	Fish Wire	4

Center Box (GNRC1252)		
ITEM	DESCRIPTION	QTY
14	Center Section	1
15	2-5/16" Ball	1
16	Latch Pin Handle	1

ATTENTION: Due to the composite construction of the bed, if you intend to use a Companion 5th Wheel RV Hitch, installation of the plastic foot pads is not needed.



Epoxy Envelope Kit		
ITEM	DESCRIPTION	QTY
	Epoxy packet	2
	Stirring Stick	2
	Paint Brush	1

Mounting Kit Bolt Bag		
ITEM	DESCRIPTION	QTY
8	Rectangular Frame Spacer	2
9	Oval Frame Spacer	2
10	Locking Strap	4
11	1/2" Bolt Retainer	4
12	1/2" Threaded Bushing	1
13	1/2" Spacer Ring	1
	1/2" X 2" Carriage Bolt	3
	1/2" X 1-1/2" Carriage Bolt	14
	1/2" X 1-1/2" Cap Screw	3
	1/2" Flat Washer	17
	1/2" Lock Washer	20
	1/2" Finish Nut	19
	5/16" X 3/4" Carriage Bolt	1
	5/16" Lock Nut	1

Safety Chain Kit Bolt Bag		
ITEM	DESCRIPTION	QTY
17	1/2" U-Bolt	2
18	Conical Springs	4
19	1/2" Lock Nut	4
	5/16" X 3/4" Carriage Bolt	1
	5/16" Lock Nut	1

⚠ 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 such as a Turnoverball hitch to the chassis of any vehicle can be hazardous. There is potential for unexpected combustion of fuel, electric shock, burns, shifting or falling of unstable vehicle, 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 modification 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.
- ⚠ 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.
- ⚠ 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.
- ⚠ This product was designed to fit vehicles in their original, "as manufactured" condition. Compatibility with vehicles having replacement parts, or other modifications is not guaranteed. Inspect vehicle for modifications before installation of this product.
- ⚠ The Turnoverball hitch comes equipped with a 2-5/16" ball. Trailers towed with the ball provided must have a 2-5/16" coupler. Towing with a larger coupler could cause loss of attachment between the trailer and the tow vehicle.
- ⚠ A visual inspection of the hitch should be performed before each time you tow. Regularly check that all pinned connections are secure, and that all bolted connections are at the correct torque specification. Check for cracks or damage to the hitch. Do not tow with the hitch if cracks or damage outside of normal wear is found. Towing with a hitch that has cracks or damage could result in damage to the tow vehicle, trailer, towing components or loss of attachment between the tow vehicle and trailer.

PREPARE TO INSTALL

NOTICE: Some installation steps will need two people to complete.

NOTE: 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 Turnoverball hitch requires several common tools and a few specialized tools. Below is a listing of equipment used during a typical installation.

TOOLS REQUIRED

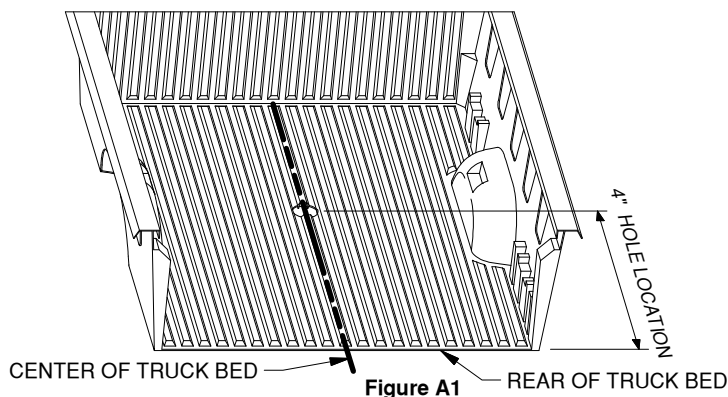
- Impact wrench or ratchet with 3/4" socket.
- 1/2", 3/4", & 12mm box end wrench
- Marking tool (pencil or permanent marker)
- 4" hole saw*
 - Flashlight
- Drill with 1/2" bit
 - Ear protection
- Pry bar
 - Torque wrench
- Tape measure
 - Pilot hole bit
- Gloves, arm protection, eye protection, nose & mouth protection, all rated for use with composite material.

* **NOTE:** The Tundra bed is made of a composite material. Use either a conventional hole saw or an abrasive coated hole saw to cut the 4" hole.

1. **Determine cab clearance.** Measure the trailers to be towed with this hitch to be sure that the location of the 2-5/16" ball listed in Step 2 will provide ample turning clearance between the nose of the trailers and the cab of the truck.

⚠ WARNING: Cab clearance on short bed trucks is very limited when towing certain trailers. Failure to ensure that there will be adequate clearance, may result in significant property damage, or serious injury.

2. **Mark the 4" hole location.** Using a tape measure hooked over the rear edge of the bed (at tailgate end), measure the location for the hole as shown in Figure A1. Next, locate the center of the bed by measuring the distance between the wheel wells and dividing by two. The center of the hole will be at the intersection of the center of the bed and the first distance measured.



4" HOLE LOCATION
8' LONG BED and SHORT BED (BED LESS THAN 8' LONG)
- 43-3/16"

IMPORTANT: The hitch is designed to install only at the described location. Failure to place the 4" hole precisely may result in added difficulty during installation or property damage.

IMPORTANT: If the bed is equipped with a removable bed liner, the hole may be cut through both the liner and the bed. However, the center of truck bed may be more difficult to locate, and the mark may be harder to hit if the liner slides or moves. Failure to cut the hole in the correct location may adversely affect the install and may result in property damage.

IMPORTANT: If your truck has a spray-in bed liner that has been sprayed over the end of the bed, you will need to take this into account when you are measuring. Add the thickness of the applied liner to the 4" hole location measurement.

3. **Cut the 4" diameter hole.** Cut the hole in the marked location using a 4" hole saw. Sand the edge of the cut to remove any burrs or frayed edges. Use a vacuum to remove composite dust.

NOTICE: Step 4 uses epoxy, use the epoxy manufacturer's website to view the material safety data sheet (MSDS) when selecting proper protective equipment. The MSDS can be found at:

<https://theepoxysource.com/epoxy.htm> under "RED EXTRA FAST" & "Reorder #04001".

4. **Seal edge of 4" hole.** Due to the composite construction of the bed, painting the edge of the hole with epoxy will restore the sealed surface finish and cover exposed fibers. Before beginning, place a piece of paper or cardboard under the hole to catch any drips. Put on appropriate protective clothing and equipment. Locate the epoxy kit envelope included in the center kit box. Retrieve one of the epoxy packets. Fold the two parts of the packet together and cut one end. Squeeze the contents together onto the kit envelope and use a stirring stick to mix the liquids together, as shown in Figure A2. Using the provided paint brush, paint the cut edge of the 4" hole until completely covered. Once the epoxy packet is open, it should be mixed and applied within 3 minutes.

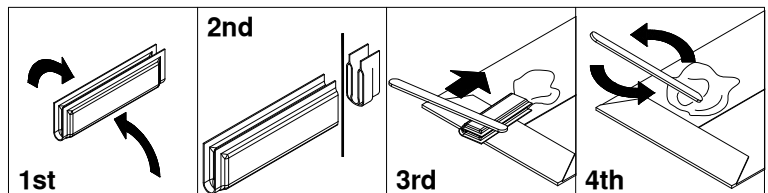


Figure A2: Epoxy preparation steps.

NOTE: Installation can continue while epoxy dries, however, do not install the raised portion of the center section through the 4" hole until the epoxy has dried at least 15 minutes.

IMPORTANT: The epoxy packets have a 24 month shelf life. If the date code on the center box is older than 24 months call B&W for a replacement epoxy kit.

Continued on next page...

5. **Remove the spare tire.** Following the vehicle manufacturer's instructions, remove the spare tire.
6. **Position the vehicle.** Installation of the hitch requires the truck to be lifted up by the frame so the suspension is relaxed. Installation occurs under the bed directly above the axle. Hitch components can not be installed without adequate space between the axle and the bed.

⚠ WARNING: Lift vehicle using only equipment designed for lifting and positioning vehicles for service. Failure to do so may result in property damage, serious injury, or death.

7. **Lower the exhaust.** Locate the three rubber hangers toward the rear of the truck. Use a pry bar to disconnect the rubber hangers from the exhaust, see Figure A3.

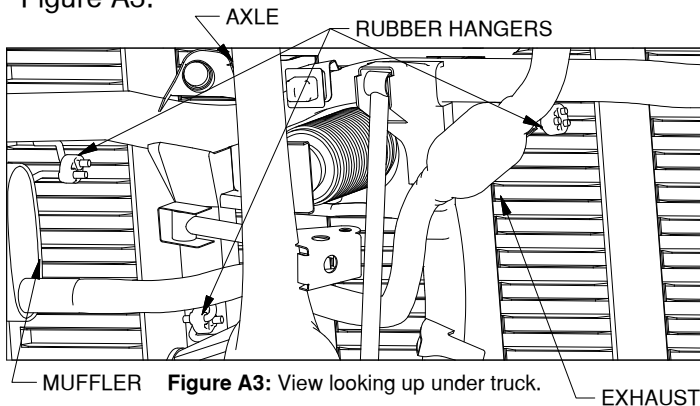


Figure A3: View looking up under truck.

8. **Un-attach the fuel pump control module.** Locate the fuel pump control module on the frame inside the passenger side wheel well. Remove the two screws on the outside of the frame that are holding it in place, see Figure A4. Retain the screws for later replacement. Allow the module to hang freely to give clearance for cross member installation.

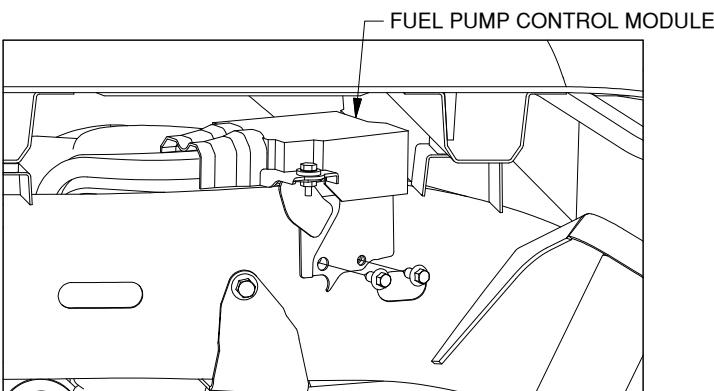


Figure A4: View looking into passenger side wheel well.

9. **Detach tubing.** On the top of the frame cross member directly behind and above the axle, locate the plastic tubing bracket and detach it. Next, disconnect the tubing directly in front of the first tubing bracket from either one of the tubes. See Figures A5 and A6 for bracket locations.

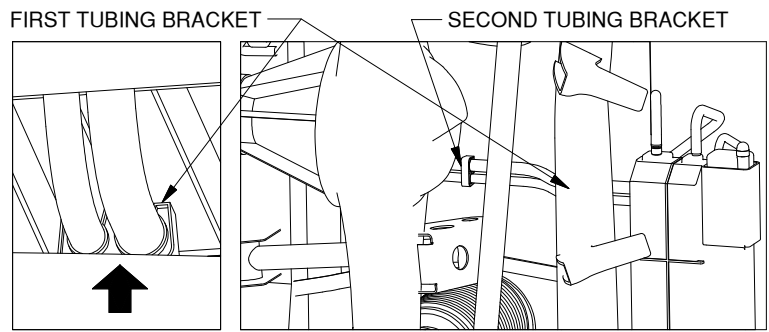


Figure A5

Figure A6: View looking up under truck.

10. **Detach vent tube.** Locate the large canister near the rear of the truck, under the bed. Detach the tube in the middle of the canister using a pair of pliers, see Figure A7.

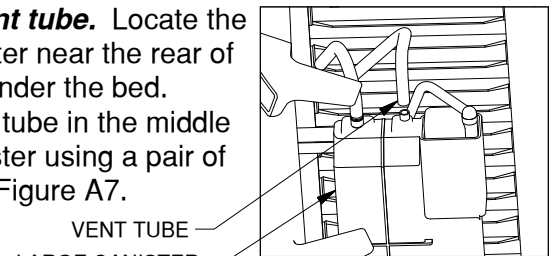


Figure A7

11. **Prepare a lifting device.**

The purpose of the device is to safely hold the hitch in position during part of the installation. See Figure A8 for an example. A simple mechanical lifting device is available for purchase from B&W.

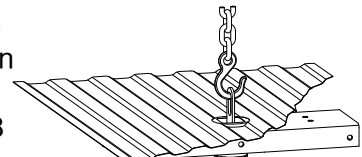


Figure A8

12. **Prepare to install carriage bolts.** Locate the plastic slot covers inside each rear wheel well, as shown in Figure A9. Remove four covers by prying them out of the frame. Discard the covers.

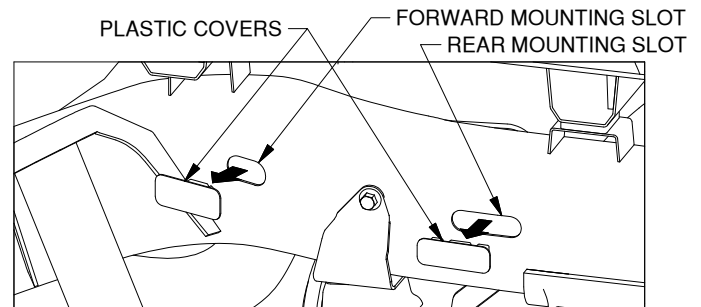


Figure A9: View looking into driver side wheel well.

13. **Fish rear carriage bolt.** Locate the forward and rear mounting slots shown in Figure A9. Thread a 1/2" x 1-1/2" carriage bolt and locking strap onto a fish wire. Pass the fish wire from the forward mounting slot through the frame and out of the rear mounting slot, as shown in Figure A10.

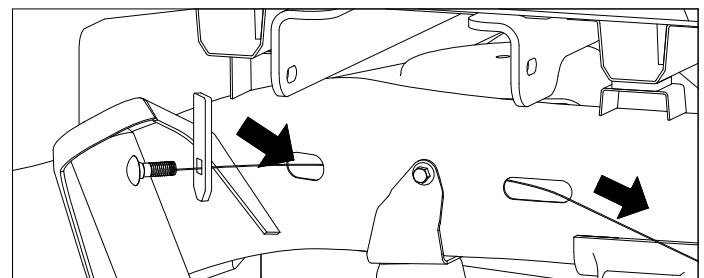


Figure A10: View looking into driver side wheel well.

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14. Install rear carriage bolt. Pass the carriage bolt and locking strap into the frame through the forward mounting slot and pull the fish wire until the threaded end of the carriage bolt is through the locking strap and has passed out of the rear mounting slot. Install a rectangular frame spacer onto the carriage bolt and place it into the slot in the frame. Install a retainer onto the carriage bolt until it is snug, see Figure A11.

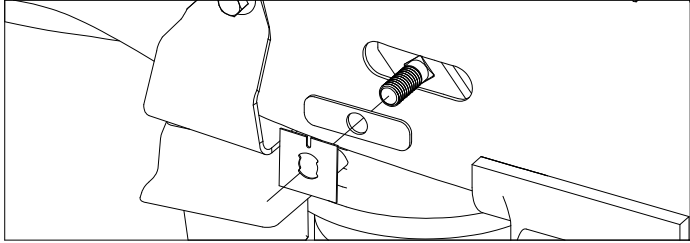


Figure A11: View looking into driver side wheel well.

15. Install forward carriage bolt. Locate the forward mounting slot shown in Figure A9. Thread a carriage bolt and locking strap onto a fish wire. Insert the carriage bolt and locking strap through the mounting hole until both are completely inside the frame and only the carriage bolt is passing through the hole, see Figure A12. Install the oval frame spacer onto the bolt and place it into the slot in the frame, as shown in Figure A13. Thread a retainer onto bolt until it is snug. Repeat Steps 13-15 on other side of truck.

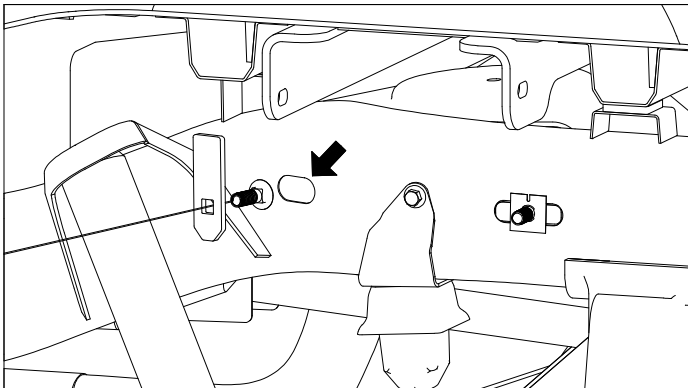


Figure A12: View looking into driver side wheel well.

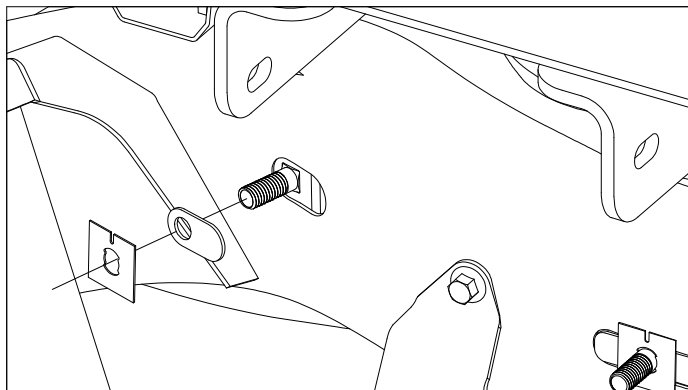


Figure A13: View looking into driver side wheel well.

⚠ WARNING: Turnoverball hitch components are heavy and may be cumbersome to handle. Failure to use proper lifting techniques and caution when handling these items could result in serious injury.

⚠ WARNING: Most trucks have fuel lines, brake lines, electrical wires or other vehicle systems located along the frame rails or in the general area where B&W Turnoverball hitches install. Carefully examine the locations of these systems before installation. Make certain that these are not damaged during positioning hitch components, drilling holes, or tightening fasteners. Damage to these systems may result in property damage, serious injury, or death.

POSITION CENTER SECTION

- 1. Prepare to position center.** Placing the center section into the correct location under the bed is difficult and requires at least two people. While the center section is raised into place the exhaust will need to be moved.
- 2. Raise center section.** Pull down on the exhaust and push it to the driver side. With the latch pin side of the center going forward and the raised portion of the center up, guide the center over the exhaust, see Figure B1. Move the center section to the driver side so that the edge of the center section near the passenger side is past the two tubes which were disconnected earlier. While continuing to pull down, move the exhaust toward the passenger side of the vehicle. The two tubes will need to be pulled down and rotated to make room for the center. Move the center forward and toward the passenger side so that the center passes over the two tubes, see Figure B2. Once the two tubes are under the cutouts in each flange of the center section, move the center back toward the rear of the truck and let it rest on the exhaust and the tubes.

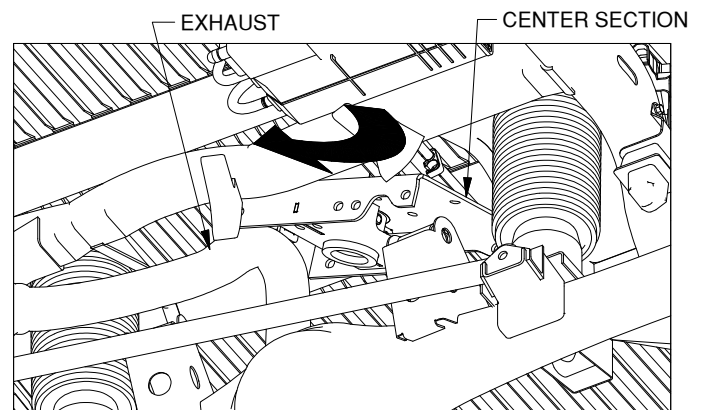


Figure B1: View looking up under truck.

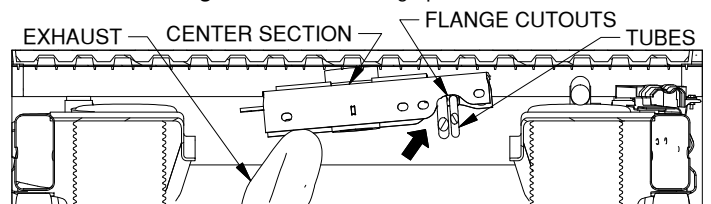


Figure B2: Cutaway view looking at center section.

NOTE: The center section may be difficult to move towards the passenger side over the two tubes. Have a second person carefully pull down on the two tubes to give clearance to the center section.

INSTALL CROSS MEMBERS & CENTER SECTION

1. **Prepare the cross members.** Identify the hitch cross members. Place a 1/2" x 1-1/2" carriage bolt into the two top holes on each cross member. Locate the "D" shaped hole in the front cross member and insert a 1/2" threaded bushing into the outside of the hole, as shown in Figure C1.

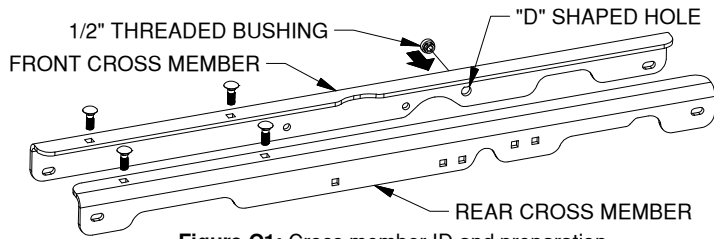


Figure C1: Cross member ID and preparation.

2. **Place front cross member.** The cross member will be installed from the driver side, just in front of the rear tire. Insert the cross member between the bottom of the bed and the top of the frame, as shown in Figure C2. Carefully slide the cross member over the two tubes, and a plastic wire conduit present under the truck bed, see Figure C3. Center the cross member over both frame rails.

NOTE: Have a second person guide the rail over the passenger side frame so rail does not get caught on truck components.

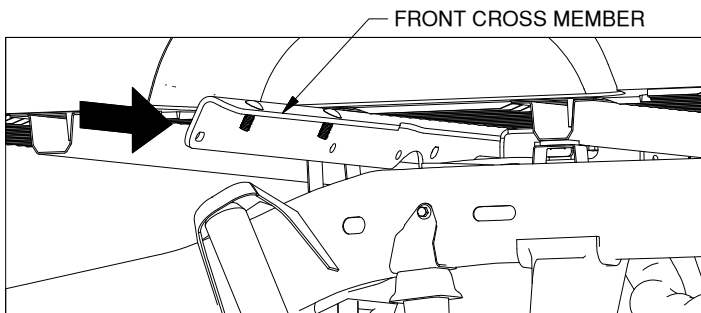


Figure C2: View looking into driver side wheel well.

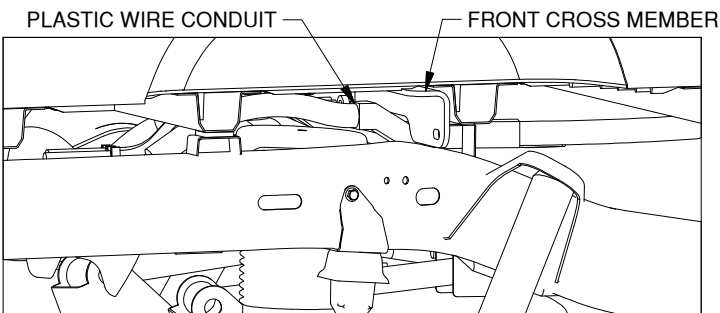


Figure C3: View looking into passenger side wheel well.

NOTE: When rotating the cross members into an upright position the two carriage bolts installed on top of the cross member will pass between the ribs on the bottom of the bed. Once upright the cross member will no longer be able to slide side to side. The cross members must be centered correctly between the bed rails for the carriage bolts to be in the correct position, see Figure C4.

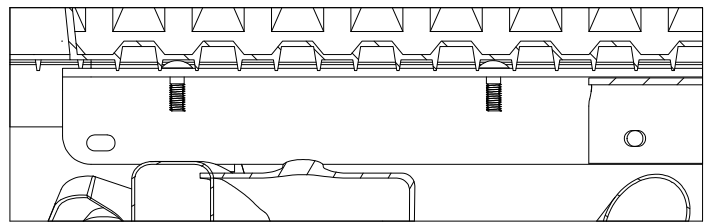


Figure C4: Cutaway view of area under the truck bed.

3. **Attach a lifting device.** Use a lifting device to pull the raised portion of the center section up through the 4" hole in the bed. The center should be against the floor of the bed but not pulled tight.
4. **Attach the center section.** Retrieve three 1/2" x 1-1/2" cap screws, two 1/2" flat washers, three 1/2" split lock washers, two 1/2" finish nuts and the 1/2" spacer ring. Slide the center section forward. Insert two 1/2" cap screws through the front of the cross member and into the center section. Use the washers and nuts to secure the center to the cross member. Insert the remaining 1/2" cap screw into the threaded bushing with the 1/2" spacer ring and a 1/2" split lock washer, see Figure C5. Do not fully tighten hardware at this time.

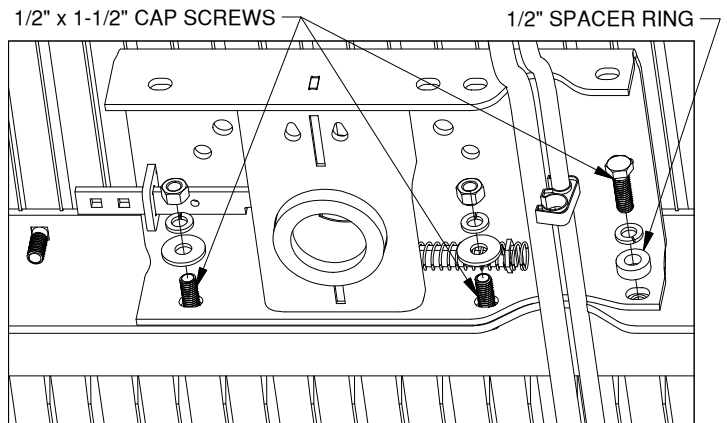


Figure C5: View looking under center section.

5. **Place the rear cross member.** Insert the cross member between the bed and frame and pass it to the other side of the truck, as shown in Figure C6. Center the cross member over both frame rails.

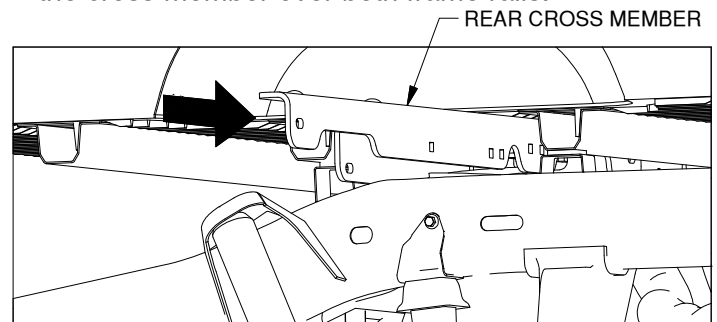


Figure C6: View looking into driver side wheel well.

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6. **Attach the rear cross member.** Retrieve the cross member support, two 1/2" x 1-1/2" carriage bolts, three 1/2" x 2" carriage bolts, five 1/2" flat washers, five 1/2" split lock washers, and five 1/2" finish nuts. Move the top flange of the rear cross member over the center section. The lifting device may need to be temporarily lowered. Attach the cross member support to the rear cross member using three 1/2" x 2" carriage bolts as shown in Figure C7. Use the 1/2" x 1-1/2" carriage bolts in the two remaining holes in the center. Use a flat washer, lock washer, and nut to secure the bolts. Do not fully tighten hardware at this time.

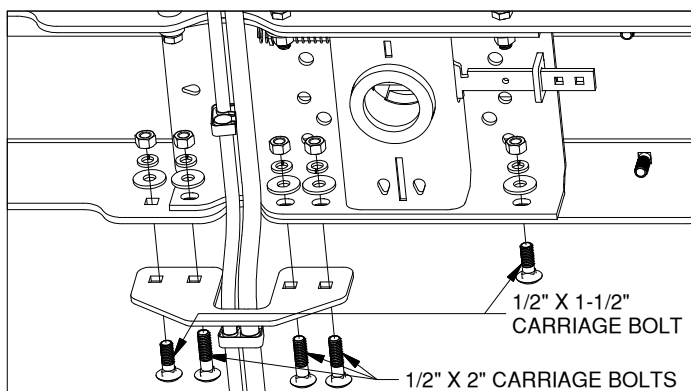


Figure C7: View looking under center section.

7. **Install cross member brace.** The cross member brace will attach to both cross members with the four vertical carriage bolts. Pass the brace through the gap above the frame between the cross members in the driver side wheel well, see Figure C8. Attach the brace with four 1/2" flat washers, 1/2" lock washers, and 1/2" finish nuts. Do not fully tighten hardware at this time.

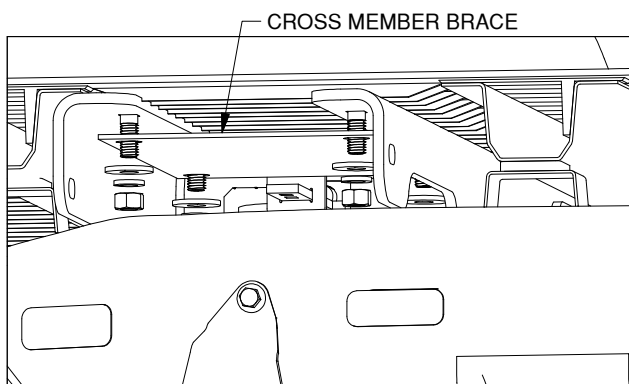


Figure C8: View looking into driver side wheel well.

8. **Reinstall fuel pump control module.** Reinstall the fuel pump control module which was removed in Step 8 of the "PREPARE TO INSTALL" section.

INSTALL SIDE PLATES

1. **Install side plates.** Each side plate (driver and passenger side) will install over the carriage bolts previously placed into the frame. First, verify the frame spacers are completely into the oval & rectangle holes in the frame. Slowly guide the side plate over the carriage bolts and between the cross members. Attach each side plate with two 1/2" lock washers, one 1/2" flat washer, and two 1/2" finish nuts, as shown in Figure D1. Do not fully tighten nuts at this time. Repeat on other side of vehicle.

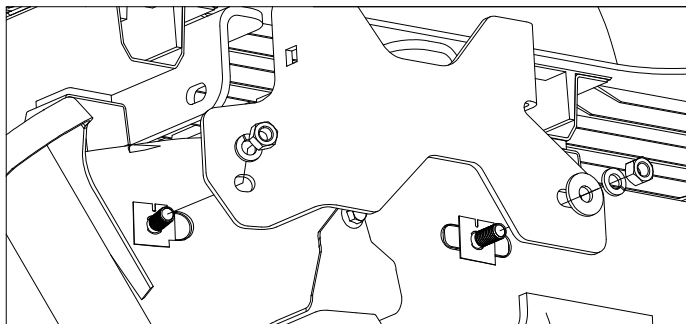


Figure D1: View looking into driver side wheel well.

2. **Attach side plates to cross members.** Attach the side plates to the cross members by passing two 1/2" X 1-1/2" carriage bolts through the side plate and cross members and secure with 1/2" flat washers, 1/2" lock washers, and 1/2" finish nuts, as shown in Figure D2. Do not fully tighten at this time. Repeat on the other side of the truck.

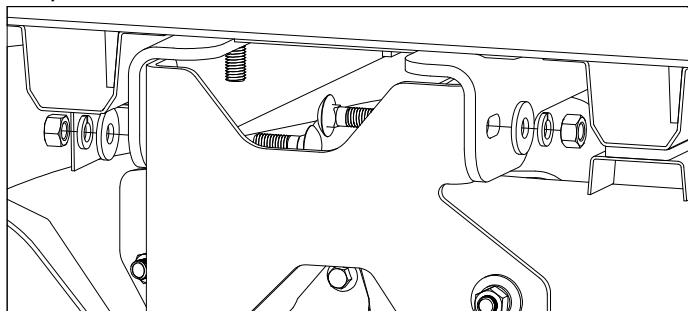


Figure D2: View looking into driver side wheel well.

TIGHTEN HARDWARE

1. **Before tightening.** With the center section tight against the underside of the truck bed, space the hitch cross members equally from side-to-side and front to rear. Position the raised portion of the center section so it is centered in the middle of the 4" hole in the bed.
2. **Tightening sequence.** First, tighten the eight 1/2" bolts holding the center section to the cross members to 110 ft. lbs. Second, tighten the four 1/2" carriage bolts holding the cross member brace to the cross members to 110 ft. lbs. Third, while ensuring the side plates are tight against the frame, tighten the four 1/2" bolts holding the side plates to the cross members to 110 ft. lbs. Finally, tighten the four 1/2" bolts holding the side plates to the frame, torque to 110 ft. lbs.

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⚠ WARNING: Failure to follow the bolt tightening sequence as listed may result in the hitch being misaligned which could affect the performance of the hitch, or result in property damage or serious injury.

3. **Disengage lifting device.** If a lifting device was used to hold the center section in place during the installation, remove it at this time.

DRILL SAFETY CHAIN U-BOLT HOLES

1. **Drill holes.** From under the bed use a drill and a 1/2" drill bit to drill through the bed using the four holes as a guide. Remove any burrs created during the drilling process. **NOTE:** Pull the exhaust toward the passenger side, if needed, while drilling.
2. **Seal edges of the drilled holes.** Put on appropriate protective clothing and equipment. Using the same procedure as Step 4 in the PREPARE TO INSTALL SECTION prepare the second epoxy packet. Use the stirring stick to cover the cut edges of the drilled holes until completely covered.

NOTE: Installation can continue while epoxy dries, however, do not install the safety chain U-bolts until the epoxy has dried at least 15 minutes.

INSTALL LATCH PIN HANDLE

IMPORTANT: The latch pin will not function properly if handle is not installed correctly.

⚠ WARNING: Latch pin will forcefully retract if it becomes unlatched which may cause injury. Use caution when working under the center with the latch pin pulled out.

1. **Install handle.** Pass the handle under the bed between the cross members on the driver side wheel well so the bend in the handle is facing up, as shown in Figure E1. From the top down, insert a 5/16" carriage bolt in each of the square holes in the latching mechanism. Attach the handle to the latching mechanism over the 5/16" carriage bolts with two 5/16" locking flange nuts, see Figure E2. The handle must not interfere with any other components of the vehicle. It may be necessary to adjust the handle position by loosening the 5/16" nuts and re-positioning the handle.

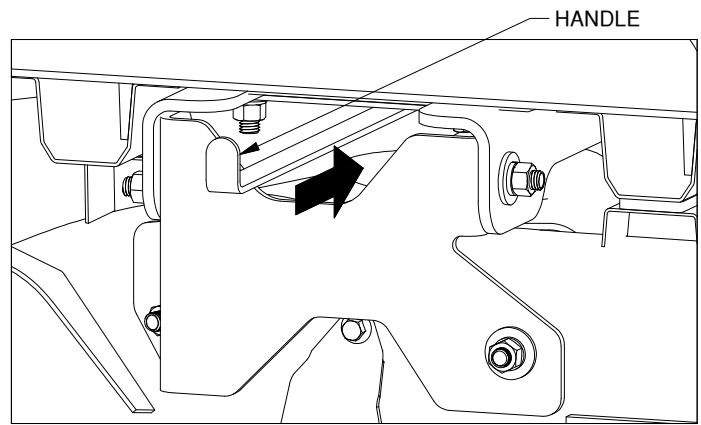


Figure E1: View looking into driver side wheel well.

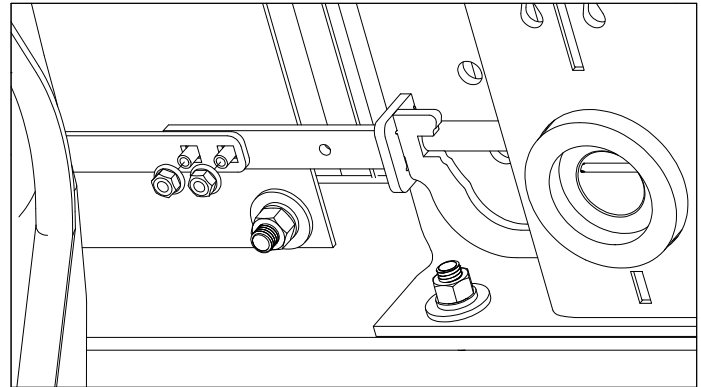


Figure E2: View looking up under bed.

2. **Secure handle.** Torque the nuts to 30 ft. lbs. to secure the handle.

INSTALL SAFETY CHAIN U-BOLTS

1. **Install U-bolts.** From the top side of the truck bed, drop a U-bolt in each set of holes.
2. **Add springs.** Place a conical spring over each leg of the U-bolts and secure with a 1/2" lock nut, see Figure F1. Tighten the lock nut until the nut is flush with the end of the U-bolt.

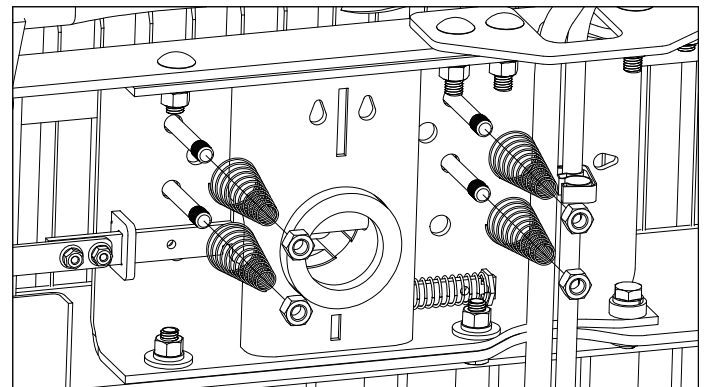


Figure F1: View looking up under bed.

PREPARE FOR TOWING

1. **Re-attach exhaust hangers.** Push the exhaust back up to the exhaust brackets and re-attach. Use soap and water to lubricate the "pin" and the rubber hanger which attach the exhaust hanger to aid in re-attachment.
2. **Re-attach tubing brackets.** Refer to Steps 9 & 10 in section "PREPARE TO INSTALL" to re-attach the two tubing brackets and vent tube. As a precaution, when re-attaching the second tubing bracket, position the soft tube under the hard tube so it doesn't rub on the hitch components.
3. **Replace spare tire.** Replace the tire under the vehicle.
4. **Retract the pin.** Pull the handle out all the way until it stops then slide it toward the cab. The handle should stay in this position. The latch should only be put in this open position when inverting the 2-5/16" ball or installing a B&W towing accessory.
5. **Lubricate 2-5/16" ball.** Apply a light coating of grease to the corners on the square shank of the 2-5/16" ball.
6. **Engage pin.** Move handle toward rear of truck until the handle retracts and engages the 2-5/16" ball.

WARNING: Operating the tow vehicle while the latch is in the open position may allow the handle to come into contact with the rear tire. This may damage the tire or the handle and could lead to serious injury or death.

7. **Check latch pin engagement.** When installed properly, the latch pin should pass through both sides of the ball socket. With the ball removed, push handle toward the rear of the truck until the handle retracts and the latch pin engages. Visually inspect the ball socket and verify that the latch pin has passed completely through both walls of the socket. Make a mark on the latching mechanism where indicated, in Figure G1, to show where the latching mechanism should be when the pin is correctly positioned in the ball socket. Retract the pin, replace the ball, and re-engage the pin. Check the marked location on the latching mechanism. If the mark is in the same location as when the mark was made, then the latch pin has gone completely through the ball socket.

WARNING: Failure of the pin to engage the ball and hitch properly could result in a loss of attachment between the trailer and the tow vehicle

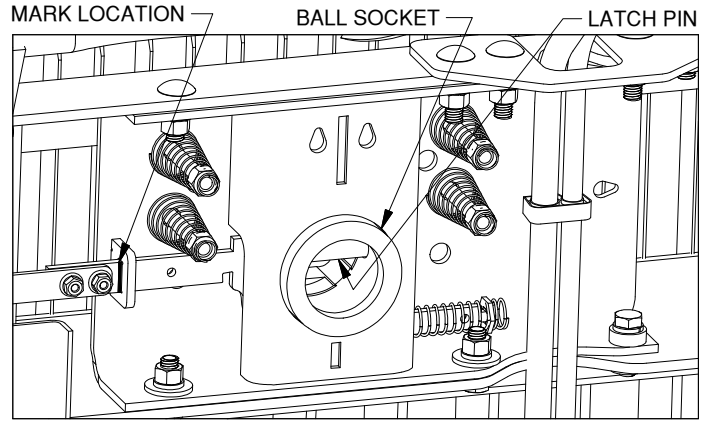


Figure G1: View looking up under bed.

WARNING: Inverting the ball while hauling heavy loads may cause the ball to strike the truck's differential, drive line, or other components. Inspect the relationship between the ball and truck components to ensure the proper clearance. Failure to remove the ball when hauling heavy loads may result in property damage, injury or death. A cover to prevent debris from entering the socket while operating without the ball in place is available from B&W.

8. Re-read all warnings on front page of these instructions. If you are not the end user, make sure that users of this product receive a copy of these instructions.