

<THESE INSTRUCTIONS MUST BE GIVEN TO THE END USER>



B&W Trailer Hitches

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See Limited Lifetime Warranty at
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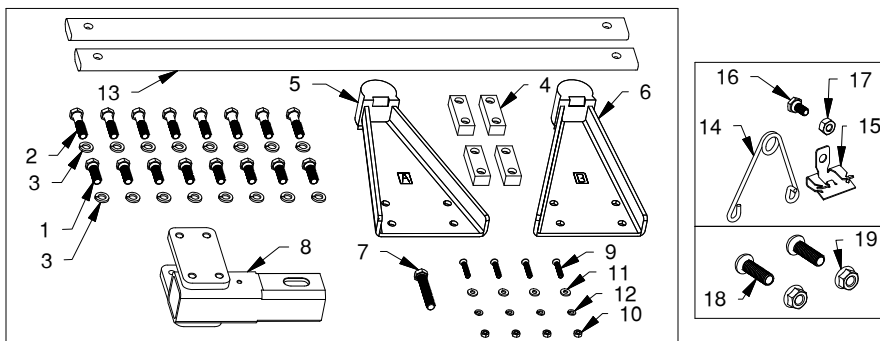
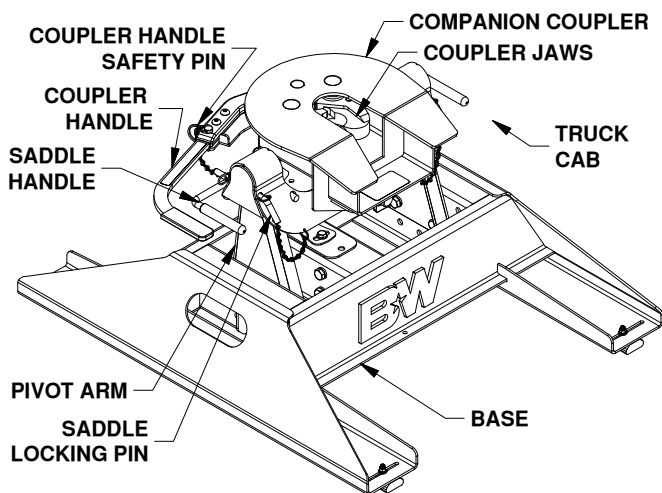
Companion™ 20K Hitch Installation Instructions

20,000 LBS. TRAILER WEIGHT
5,000 LBS. TRAILER TONGUE WEIGHT

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

Model 3500

Fits B&W Turnoverball™ Mounting System



BASE BOLT BAG (RVB3500)			BASE BOLT BAG (RVB3500)		
ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY
1	1/2" X 1 1/2" Hex Cap Screw	8	10	1/4" Finish Nut	4
2	1/2" X 2" Hex Cap Screw	8	11	1/4" Flat Washer	4
3	1/2" Lock Washer	16	12	1/4" Lock Washer	4
4	Threaded block	4	13	Plastic Foot Pads	2
5	Pivot Arm A	1	14	Wire Torsion Spring	1
6	Pivot Arm B	1	15	Mounting Clip	1
7	1/2" X 3" Hex Cap Screw	1	16	1/4" X 1/2" Cap Screw	1
8	Socket Post	1	17	1/4" Lock Nut	1
9	1/4" X 1 1/2" Machine Screw	4	COUPLER BOLT BAG (RVB3006)		
			ITEM	DESCRIPTION	QTY
			18	3/8" Button Head Cap Screw	2
			19	3/8" Lock Nut	2

REQUIRED TOOLS

Installation of the Companion hitch requires a large torque wrench capable of measuring 110 ft-lbs, a 3/4" socket, a 7/16" socket or wrench, a 7/32" Allen wrench, and a hammer.

⚠️ 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.
- ⚠️ 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.

PREPARING TO INSTALL

WARNING: Components of the hitch are heavy and cumbersome to handle. Use proper lifting techniques when moving and handling parts.

NOTE: When installing the base in a Toyota Tundra with a composite bed (GNRK1222 Gooseneck hitch), Remove the polyurethane pads. The pads are not compatible with the bed geometry.

- 1. Attach foot pads.** Locate the two plastic foot pads. Each pad attaches to the base through a slot at the end of the base leg. Before attachment, check the width of your bed rib by setting the wide face of the plastic foot in a bed rib, see Figure A1. If the plastic foot does not reach to the bottom of the bed rib trough, turn the plastic foot over, see Figures A2 & A3. Locate four 1/4" machine screws, 1/4" flat washers, 1/4" lock washers, and 1/4" finish nuts. Insert the machine screw up through the bottom of the foot pad through the slot and attach it with a 1/4" flat washer, 1/4" lock washer and a 1/4" finish nut, see Figure A4. Do not tighten hardware at this time, so that the plastic foot is movable in the slot.

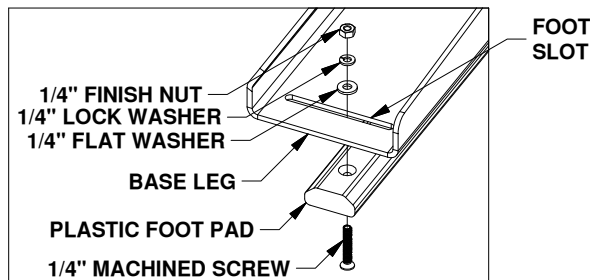
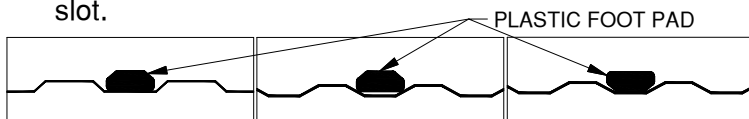


Figure A4: Plastic foot pad installation.

NOTICE: Nissan Titan trucks: Due to the configuration of the bed ribs on Nissan Titan trucks, it will be necessary for the foot pad to be installed on top of a bed rib, see Figure A5.

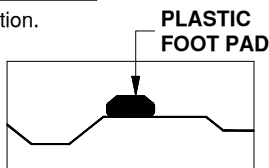


Figure A5: Titan rib configuration.

INSTALL SOCKET POST

NOTICE: If the Companion is to be used in conjunction with a 1257 or 1309 model gooseneck hitch, call the factory for a post that is compatible with these hitches.

- 1. Determine socket post orientation.** The socket post of the Companion hitch has two mounting options. These two options allow the king pin of the trailer to be placed close to the rear axle whether the Turnoverball socket is located in front of, directly over, or slightly behind the rear axle. Position 1 is recommended for trucks where the socket is in front of the axle. Position 2 is recommended for trucks where the socket is directly over or slightly behind the axle. See Figure B1.

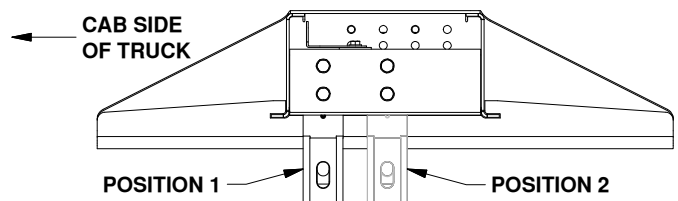


Figure B1: Cutaway view of Companion base with both socket post positions shown.

- 2. Attach socket post.** Once you have established in which orientation the socket post should be installed, locate the socket post, eight 1/2" X 1-1/2" cap screws, and eight 1/2" lock washers. Slide the socket post into the bottom of the Companion base and attach the socket post to the base with the eight 1/2" X 1-1/2" cap screws and lock washers. See Figure B2. Do not fully tighten hardware at this time.

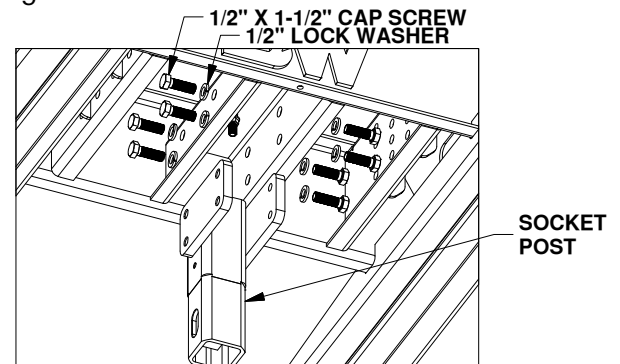


Figure B2: View of base looking up at the bottom.

- 3. Adjust socket adjuster.** Check that the spacer under the locking bracket is turned so that the hole in the spacer is positioned over the socket post. If adjustment is needed, use a tool, such as a screwdriver, to pry up and rotate the spacer. Install the 1/2" x 3" cap screw (draw-down bolt) into the top of the Companion base, as shown in Figure B3. Thread the cap screw into the socket adjuster and hand tighten until the bottom of the slot in the socket adjuster is even with the bottom of the slot in the post, as shown in Figure B4.

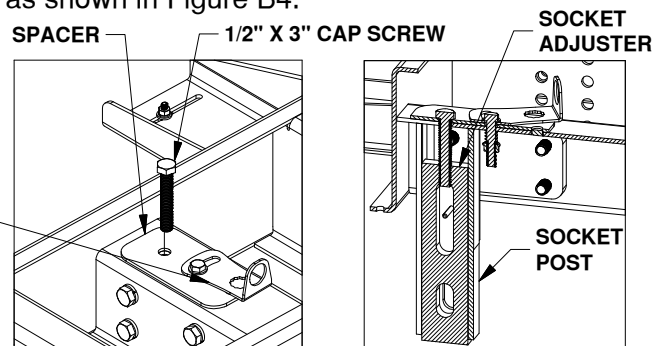


Figure B3: View of center of base

Figure B4: Cutaway view of center of base.

INSTALL COMPANION BASE

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

- 1. Clean bed.** Check that the bed of the truck is clean, and that all debris is removed before beginning installation.

2. **Disengage ball.** Locate the GN latch pin handle of the Turnoverball Gooseneck Hitch in the driver side fender well. Retract the GN latch pin handle all the way to disengage the pin from ball. Remove the Turnoverball from the GN hitch receiver socket.

3. **Position base.** Carefully lift and position the Companion base into the GN hitch socket in the back of the truck bed. Orient the base so that the B&W badge is facing the rear of the truck.

4. **Position pads.** Square the Companion base legs with the ribs of the truck. Position the plastic pads so that they are both in line with the rib along their entire length. Tighten the four 1/4" nuts holding the pads to the base.

5. **Latch GN pin.** Re-engage the GN latch pin handle in the driver side fender.

WARNING: Check the latch pin under the truck. Make sure that the latch pin has passed through both sides of the socket and that the pin is covered up inside the socket by the socket adjuster, see Figure C1.

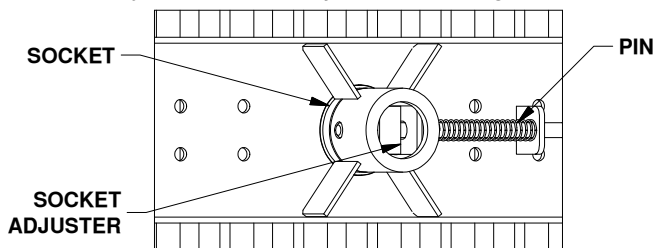


Figure C1: Typical view of Turnoverball under bed.

6. **Secure base.** Secure the base to the truck bed by first tightening the eight 1/2" cap screws attaching the socket post into the center of the base to 80 ft-lbs. Second, tighten the 1/2" x 3" draw-down bolt to 60 ft-lbs. Lock the draw-down bolt in place by swiveling the locking bracket over the draw-down bolt, see Figure C2.

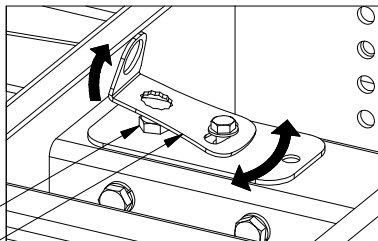


Figure C2: View of top of base.

NOTICE: DO NOT lubricate the draw down bolt, the torque value is for dry threads only.

NOTICE: Failure to "lock" the draw-down bolt with the locking bracket will allow the draw-down bolt to loosen. Property damage may result when the base is not properly clamped to the truck bed.

INSTALL PIVOT ARMS

1. **Mount arms.** Mount the pivot arms using one of the nine different locations illustrated in Table D1. These nine locations allow flexibility in coupler height (vertical adjustment) and distance from the cab (horizontal adjustment). Choose a location so that your trailer will be as level as possible and have adequate turning clearance while towing.

Table D1: Pivot arm position table.

		HORIZONTAL ADJUSTMENT		
		King pin 3" behind post	King pin 5" behind post	King pin 7" behind post
POSITION 1				
POSITION 2		King pin 1" ahead of post	King pin 1" behind post	King pin 3" behind post
VERTICAL ADJUSTMENT	HIGHEST POSITION (18 1/4")			
	MEDIUM POSITION (17 1/4")			
	LOWEST POSITION (16 1/4")			

POSITION 2

2. **Secure arms.** Locate both pivot arms, the four threaded blocks, eight 1/2" X 2" cap screws, and eight 1/2" lock washers. Place the lock washers over the cap screws. Align the flat side of the pivot arm flat against the bolt plate and install four 1/2" X 2" cap screws through the holes on the arm, holding the arm in place. Locate the threaded blocks. Note that the sides of the block have threaded holes on one side and smooth bore holes on the other side. When installing the threaded blocks it is critical that the side with the smooth holes is flat against the bolt plate when installed, see Figure D2. Pass the threaded blocks through the leg and align the blocks with each set of screws and start each screw, see Figure D3. After all screws are started through the arms, torque each bolt to 110 ft-lbs.

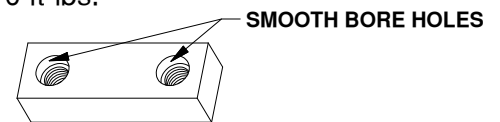


FIGURE D2: Detail of threaded block showing smooth holes.

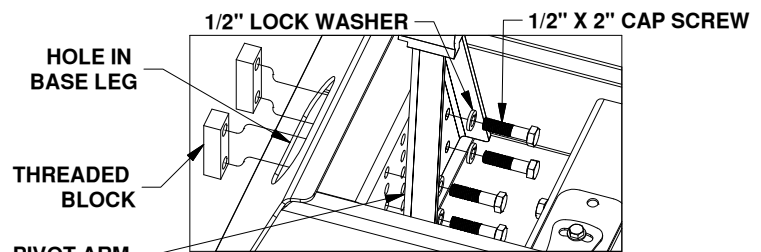


FIGURE D3: View looking at passenger pivot arm mounting location.

WARNING: Installing the threaded blocks backward will not allow the pivot arms to be fully tightened in the base and could lead to hitch failure. Before coupling hitch, be sure that none of the 1/2" x 2" bolts are loose and the pivot arms are securely attached to the bolt plate. Failure to check threaded block orientation could cause serious injury or death.

⚠ WARNING: Towing without adequate clearance between the trailer and the tow vehicle may lead to property damage or serious injury.

- Evaluate clearance.** Determine if there is clearance between each truck and trailer combination before towing. Measure from the center of the coupler to the cab of the truck and from the king pin or pivot point of the trailer to the furthest forward corner of the trailer, see Figure D4. Compare these measurements to ensure proper clearance when towing. Also, inspect the clearance between the bed sides and the underside of the front of the trailer to ensure there is room for the pitch and roll of the trailer while towing.

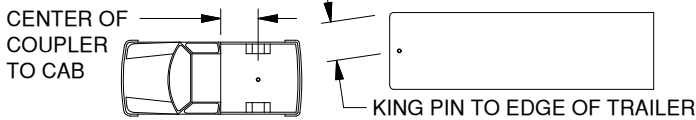


Figure D4: Truck and Trailer

INSTALL LEVELING KIT

- Assemble kit.** Locate the 1/4" cap screw and nut, along with the wire torsion spring and mounting clip. Pass the 1/4" cap screw through the mounting clip and the wire spring, as shown in Figure E1. Thread the 1/4" lock nut onto the 1/4" cap screw. Tighten the lock nut just enough that the spring will stay in place but will still be able to rotate around the bolt if needed, see Figure E2.

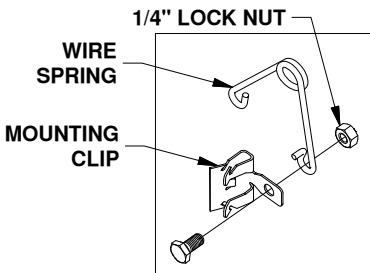


Figure E1:
Leveling kit parts.

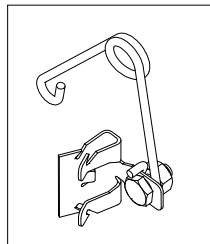


Figure E2:
Assembled leveling kit.

- Attach kit.** Locate the flange which will be closest to the truck cab on the driver side pivot arm, see Figure E3. The clip should be placed so that when the spring's coil is in the line with the edge of the arm there will be 1/2" of clearance between the bottom of the polyurethane bushing and the top of the spring, see Figure E4. Drive the clip securely onto the flange with a hammer.

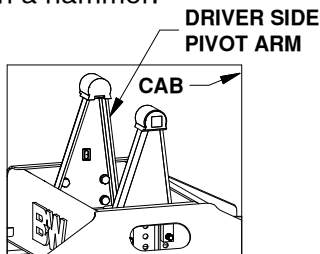


Figure E3:
Base view.

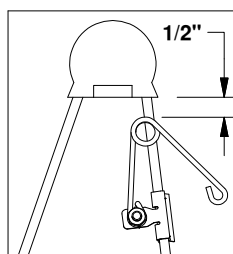


Figure E4: Driver
side pivot arm.

INSTALL COUPLER HANDLE

- Open coupler.** Locate the two 3/8" x 1-1/4" button head cap screws and the two 3/8" flanged lock nuts provided in a bolt bag. Pull out the coupler arm and pin it with the safety locking pin near the base of the arm, as shown in Figure F1.
- CAUTION:** Pulling the arm out away from the coupler creates a pinch point. Use caution when installing the handle to avoid injury.
- Secure handle.** Using the button cap screws and the lock nuts attach the coupler handle to the arm and tighten, see Figure F1. Pull out the coupler handle safety pin.

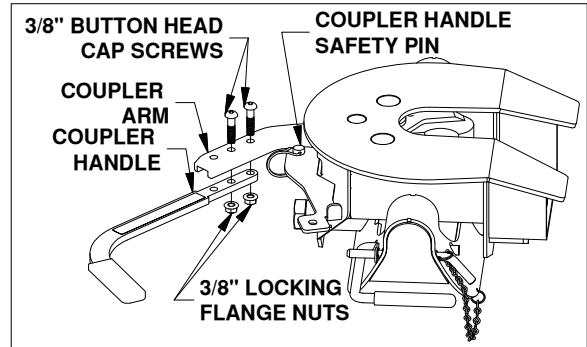


FIGURE F1: View looking down at side of coupler.

INSTALL COUPLER

- Place coupler.** Lubricate the polyurethane bushings on top of pivot arms with high grade lithium grease (available at your local hardware/automotive store). Place the coupler over the pivot arms. (The saddle handles should be parallel with the base in the latched position.) Place the saddle lock pins through the saddle, then insert the hairpins through the holes in the end of the saddle lock pins to secure the coupler to the pivot arms, see Figure G1.

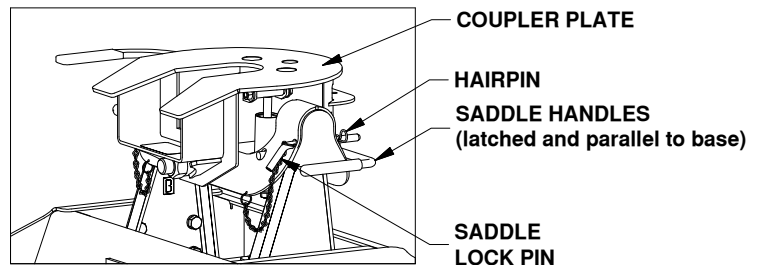


Figure G1: Coupler installed on base.

- Set coupler angle.** Adjust the resting angle of your coupler plate by rotating the spring on the driver side pivot arm. Pulling the top of the spring away from the cab will increase the angle of the coupler plate. Set the angle of the coupler so that it will tilt away from the cab when coupling, see Figure G2. Tighten the 1/4" nut once the spring's orientation is set.

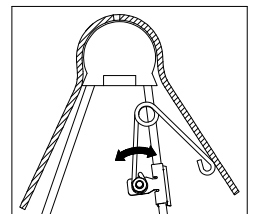


Figure G2: Cutaway view of
driver side pivot arm and saddle.

ATTACHING TRAILER

Remove the safety pin from the coupler handle and open it. Adjust the height of the 5th wheel trailer so that the king pin plate is slightly lower than the top of the coupler. Back the truck toward the trailer, centering the trailer's king pin in the coupler, until the king pin engages the jaws. Close the coupler handle and insert the safety pin through the handle and the coupler. Connect the brake and lighting systems before towing.

⚠ WARNING: Failure to correctly close the handle and attach the safety pin may result in a loss of attachment between the trailer and the tow vehicle, leading to property damage, serious injury, or death.

⚠ WARNING: Do not use the Companion 5th wheel hitch with any device that changes the location of the king pin pivot point. The king pin on your trailer must rotate in the jaws of the Companion coupler, see Figure H1. Preventing the king pin from rotating within the jaws of the Companion coupler with a wedge, see Figure H2, or any other device, such as a Reese Sidewinder® or Reese Revolution®, could result in property damage, serious injury, or death.

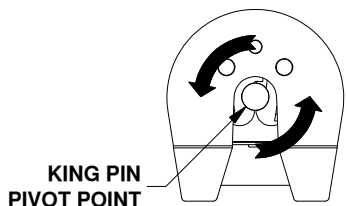


Figure H1:
Top view of coupler.

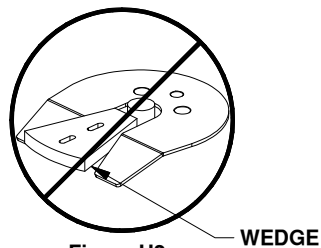


Figure H2:
Coupler with locking wedge.

HELPFUL TIPS:

- Approximately 15%-25% of the trailer weight should be on the hitch.
- The height of the king pin box and pivot arms should be adjusted so that the trailer is approximately level for towing.
- Allow adequate clearance between the bed side and the underside of the front of the trailer for pitch and roll of the trailer.
- Lubricate top surface of coupler with multi-purpose automotive type chassis grease or use a nylon lube plate to provide a lubricated surface.

PULL TEST

Ensure the truck is stationary with the emergency brake engaged and the tailgate down, trailer wheels chocked, and landing gear down, supporting the trailer's weight. Confirm no one is between the truck and trailer. Release the emergency brake and engage the trailer brakes. Gently attempt to pull the trailer forward with the truck. When properly connected, the trailer will prevent the truck from moving. If the truck and trailer are not correctly attached the trailer will separate from the truck.

UNATTACHING TRAILER

Lower landing gear and chock the trailer wheels. Raise the trailer until the tongue weight is removed from the truck. Then, unpin the coupler handle and rotate to the open position to unlatch the jaws. If the jaws do not open, readjusting the landing gear may relieve pressure and allow them to open. Use the safety pin to lock the handle in the open position and when you are sure that the landing gear will support the trailer, move the truck forward to release the jaws from the king pin. The jaws will always open when the pressure of the trailer is taken off the coupler as the truck pulls away.

UNINSTALL HITCH

To uninstall the Companion hitch, remove the saddle lock pins, grab the saddle handles, and lift to remove the coupler from the pivot arms. To remove the Companion base, loosen the draw-down bolt and retract the Turnoverball gooseneck latch pin handle all the way out. Carefully lift and position the Companion base out of the gooseneck hitch socket.

NOTICE: All bolted connections should be checked for the correct torque specification regularly. Always perform a visual inspection before towing.

- The Companion was designed to be used with the Turnoverball mounting system. Other uses will void the warranty and are expressly prohibited by B&W Trailer Hitches.
- Grease jaws with multi-purpose automotive type chassis grease.
- Grease the saddle through the grease zerk approximately every six months with multi-purpose grease. This allows the coupler to pivot freely, see Figure J1.

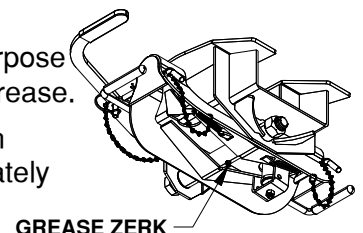


Figure J1: Underside view of coupler.