

INSTALLATION OF WHEEL KIT - STEEL 1999-2004 FORD F-250/350 4X2/4X4

INSTALLATION SAFETY PRECAUTIONS

If any installation problems are encountered, please call G&B Specialties, Inc. for technical assistance before continuing with the installation process.



- Failure to heed to any of the following warnings could result in severe bodily injury and/or equipment damage.
- Read and understand this manual completely before attempting installation of the equipment.
- Installation instructions provided below only address the RAFNA Industries railgear equipment. Applicable railway company procedures and policies must be adhered to.
- The road wheels and tires must be installed before the railgear is installed in order to obtain correct height measurements.
- Do not hit the wheel adapter with any hard objects as this could dent the adapter and cause vibrations when driving. If the adapters do not easily slide onto the hubs, lightly sand the hub and the inside of the adapter.
- Always disconnect the vehicle's battery when welding on the vehicle or railgear in order to protect the vehicle's electrical system.
- Before performing any work under the vehicle or railgear, ensure the engine is turned off and the parking brake is set.
- With the installation of the vehicle road wheels and tires, it is recommended to recalibrate the vehicle's speedometer.

INSTALLATION OF WHEEL KIT

The following procedure details the installation of the road wheels and tires required for the vehicle's tires to ride correctly on the rails and avoid contact with the vehicle. The hardware required for this installation is listed in the table below.

Wheel Installation kit

Part Number	Description	QTY
R-2970	Wheel Adapter Assembly	4
S-201500	19.5" x 6" Wheel 5.35" Offset	5
S-001015H	165 ft-lbs Wheel & 165 ft-lbs Spacer Decal	5
R-G622	Goodyear G22 RSD - 225/70R19.5 (Not Supplied)	5
S-201601	M14 x 2.0 Swiveling Lug Nut	32
R-2413	Turning Stop Block	2
R-5637	Hand Brake Cable Retaining Spring	1
S-204001	Eye Bolt w/ Nut	2
S-204005	Fender Washers	4
S-204010	'P' Clip	2
R-990KIT-008	¼" UNC Bolt x 1" long	2
	¼" UNC Nylon Insert Lock Nuts	4

1. Jack up the vehicle and secure it on jack stands.
2. Remove the original front and rear wheels.
3. Based on rail contact area and load carrying capacity, G&B Specialties, Inc. suggests the use of Goodyear G622 RSD - 225/70R19.5 tires for all wheels on the railgear equipped vehicle. However, at the installer's and/or railroad's discretion, an equivalently sized and rated tire may be used. Mount and balance the tires on the wheels.
4. Affix the supplied wheel and adapter torque decals to the outside face of the wheels.
5. A new location must be found for the spare wheel and the necessary brackets fabricated. It cannot be mounted under the cargo box due to interference with the rear railgear.
6. Install the wheel adapters:
 - a) Start with one wheel adapter on one hub of the vehicle.
 - b) Where fitted, remove all brake drum / disc retaining clips installed on the wheel studs. These clips will prevent the wheel adapter from seating properly.
 - c) Measure and mark each stud at 1.3125" (1 - 5/16") from the hub. Cut the studs at this length $\pm 1/32"$.

- d) Place the wheel adapter on the hub over the OEM wheel studs and fasten in place using the OEM wheel lug nuts. Ensure that at least two threads of each OEM wheel stud pass through the threads of each OEM wheel lug nut. Ensure that the OEM wheel studs do not extend beyond the wheel mounting face of the wheel adapters. Remove the wheel adapter and adjust the stud length if required.
 - e) Tighten and then torque the OEM wheel lug nuts to 165 ft-lbs dry as per the torque sequence provided. Do not over torque.
 - f) Repeat for the remaining wheel adapters.
7. Install the wheels:
- a) Ensure that the OEM wheel studs do not extend beyond the mounting face of the wheel adapters. If they do, this will prevent the wheel from seating properly and could cause vibrations or wheel failure.
 - b) Mount the wheels on the wheel adapters with the supplied swivelling lug nuts.
 - c) Tighten and then torque the lug nuts to 165 ft-lbs dry as per the torque sequence provided. Do not over torque.
8. Install the handbrake cable retaining spring (refer to figure 1):
- a) Hook one end of the spring to the rear axle's left side inboard U-bolt and the other end to the handbrake cable.
 - b) The handbrake cable should be retained away from the rear wheel when installed correctly.
9. Install the front wheel turning stop blocks (refer to figure 2):
- a) Position the turning stop blocks over the original turning stops on the steering knuckle. To verify their position is correct, fully turn the steering wheel until the front hub contacts the knuckle. The boss on the hub should contact the turning stop block squarely on. Repeat for the other side.
 - b) Fully weld the turning stop blocks to the steering knuckles once their position is correct.
10. Due to the modified wheel track on the railgear equipped vehicle, both front and rear tire and wheel clearances must be checked. With the wheels, tires, supplied adapters, and supplied turning stop blocks installed on the vehicle, ensure that the wheels, tires, and/or balance weights do not contact the vehicle suspension or steering components, the brake lines, the ABS lines and/or any other component/obstruction throughout the entire range of motion of the steering and suspension. It may be necessary to add or remove material from the turning stop blocks and/or to relocate brake lines, ABS lines, and/or other equipment in order to gain adequate clearances. Ensure that any vehicle modifications are done in accordance with the vehicle manufacturer's or their representative's approval. The following step provides a possible solution to brake / ABS line interference.
11. The front brake lines can be tied back using the supplied hardware as follows (refer to Figure 3):
- a) Secure the eyebolt in a suitable hole in the frame with two fender washers and one ¼" hex nut (supplied with eyebolt) and one ¼" lock nut.

- b) Insert the brake line and the ABS line (where equipped) in the 'P' clip. Attach the 'P' clip to the eyebolt with $\frac{1}{4}$ " x 1" long bolt, and one $\frac{1}{4}$ " lock nut. Do not tighten, as the 'P' clip must be free to swivel in the eyebolt.
- c) The ABS line can be tied to the brake line between the 'P' clip and the brake caliper.
- d) Check for interference and that the brake line and ABS line are not stretched throughout the entire range or motion of the steering and suspension.
- e) Repeat for the other wheel.

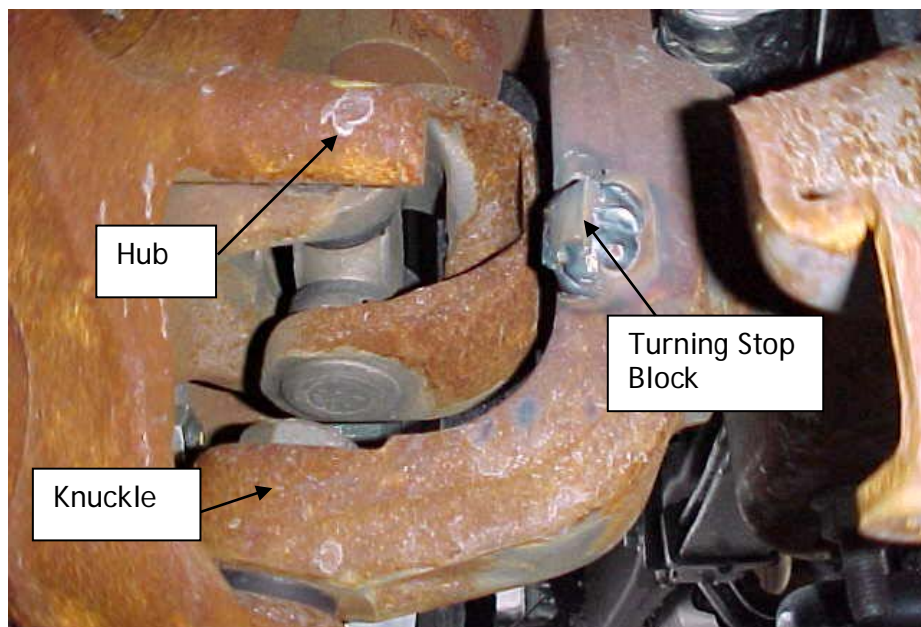
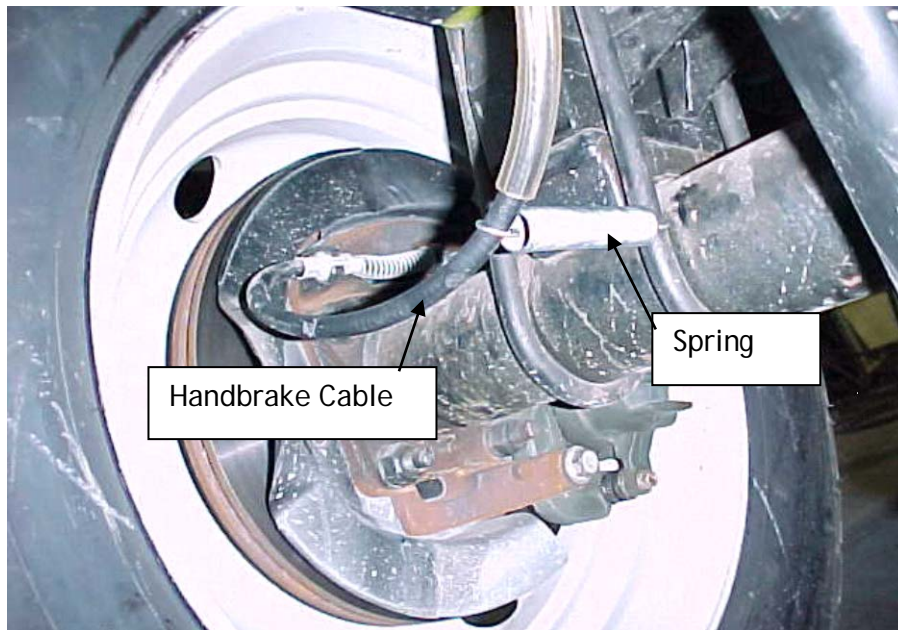


Figure 1:
Installation
of the
handbrake
cable
retaining
spring

Figure 2: Installation of the front wheel turning stop blocks

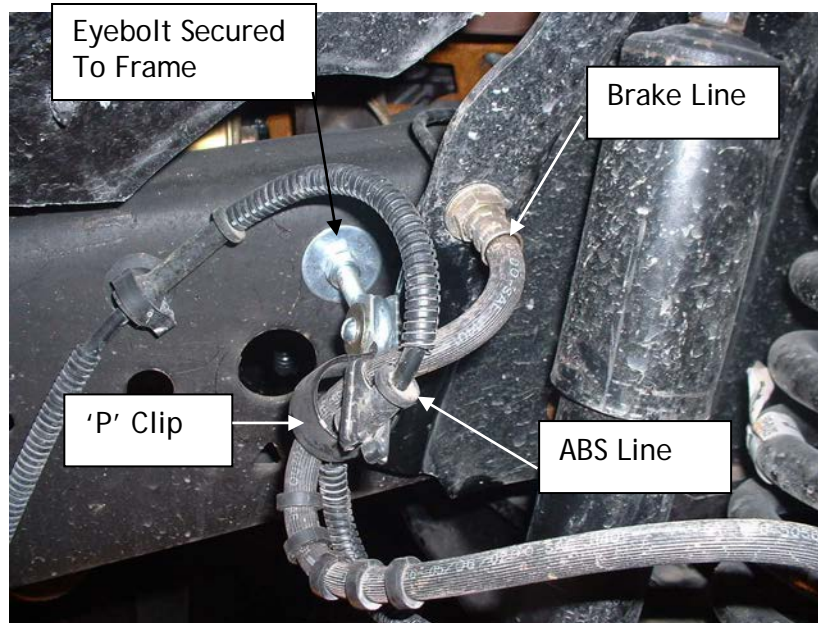
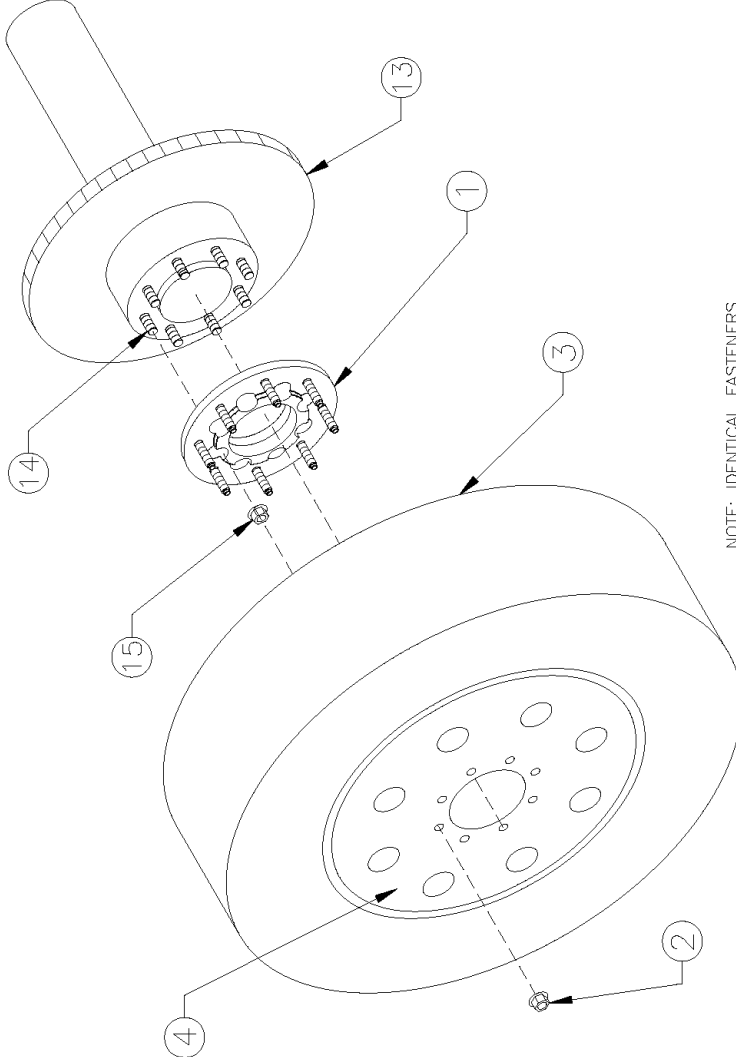
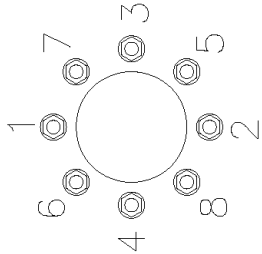


Figure 3: Front brake lines tied back

REV A	CHANGE UPDATED TITLE BLOCK AND BORDER	DATE 5/24/19	BY AB	APPD
----------	--	-----------------	----------	------





LUG NUT TORQUE SEQUENCE

WHEEL LUG NUT TORQUE
165 FT-LBS DRY

SPACER NUT TORQUE
165 FT-LBS DRY


RAFNA P/N S-0010159

DETAIL ITEM 5

NOTE: IDENTICAL FASTENERS NOT SHOWN FOR CLARITY

ITEM	PART NO.	DESCRIPTION	QTY
1	R-2970	WHEEL ADAPTER ASSEMBLY	4
2	S-201601	M14X2.0 SWIVELLING LUG NUT	32
3	R-G124A	GOODYEAR G124 - 225/70R19.5 TIRE (NOT SUPPLIED)	5
4	S-201500	19.5" X 6.0 WHEEL	5
5	S-001015H	165FT-LBS WHEEL & 165FT-LBS SPACER DECAL	5
6	R-2413	TURNING STOP BLOCK (NOT SHOWN)	2
7	R-5637	SPRING (NOT SHOWN)	1
8	S-204001	EYE BOLT (NOT SHOWN)	2
9	S-204010	"P" CLIP (NOT SHOWN)	2
10	S-204005	FENDER WASHER (NOT SHOWN)	4
11	R-990KIT-008	1/4" UNC GR.8 BOLT X 1" LONG (NOT SHOWN)	2
12		1/4" UNC NYLON INSERT LOCK NUT (NOT SHOWN)	4
13	-	OEM HUB	N/A
14	-	OEM WHEEL STUD (CUT)	N/A
15	-	OEM WHEEL LUG NUT	N/A

TOLERANCE ON FINISHED DIMENSIONS UNLESS OTHERWISE SPECIFIED	FRACTIONS	PLACES	DECIMALS	PLACES	FINISH MAX. EXCEPT AS SPECIFIED
UP TO 6 INCHES	± 1/64	2	± .02	3	± .005
ABOVE 6 TO 24	± 1/32	2	± .03	3	± .010
ABOVE 24	± 1/16	2	± .06	3	± .015
ANGULAR DIMENSIONS					± 1/2°



G & B SPECIALTIES INC.
MANUFACTURER OF QUALITY RAILROAD PRODUCTS
BERWICK PENNSYLVANIA (570) 752-5901, FAX (570) 752-6397

DESIGN ~ ENGINEERING ~ MANUFACTURING

DOCUMENT AND ITS CONTENTS AND ITS FINISHED PRODUCTS SHALL BE THE PROPERTY OF G & B SPECIALTIES INC. NO REPRODUCTION OR USE IS PERMITTED WITHOUT THE WRITTEN CONSENT OF G & B SPECIALTIES INC.

WHEEL KIT

K-W25XXF003	12/23/03	1	1	1	1
PART NUMBER				K-W25XXF003	
REVISED				A	

OPERATION AND SERVICE OF WHEEL KIT - STEEL 1999-2004 FORD F-250/350 4X2/4X4

OPERATION SAFETY PRECAUTIONS

If any operating, services or parts problems are encountered, please call G&B Specialties, Inc. for technical assistance.



- Failure to heed to any of the following warnings could result in severe bodily injury and/or equipment damage.
- Read and understand this manual completely before attempting operation of the railgear equipped vehicle.
- Operating instructions provided below only address the RAFNA Industries railgear equipment. Applicable railway company procedures and policies must be adhered to.
- Railway company rules governing rail travel must be observed at all times.
- Before performing any work under the vehicle or railgear, ensure the engine is turned off and the parking brake is set.
- This vehicle has an increased turning radius and decrease stability and braking ability. Use caution when operating both on road and rail.
- Following the first 100 km (62 Miles) of road and rail travel, the road wheel and adapter lug nuts must be retorqued. Refer to the service section of this manual for the procedure.
- Never operate the vehicle if the Gross Vehicle Weight Rating (GVWR), Gross Axle Weight Rating Front or Rear (GAWR), or the wheel or tire load ratings are exceeded.

OPERATION AND SERVICE OF WHEEL KIT

With the wheels and tires installed on this vehicle, it may be operated as normal, however caution must be used as the vehicle now has an increased turning radius and decreased stability and braking ability both on road and rail.

Never operate the vehicle if the Gross Vehicle Weight Rating (GVWR), Gross Axle Weight Rating Front or Rear (GAWR), or the wheel or tire load ratings are exceeded.

The wheels and tires must be serviced regularly to avoid damage to the equipment.

If ever vibrations are felt through the vehicle, inspect the balance and alignment of the road wheels and tires.

SERVICE/INSPECTION REQUIREMENTS

- Visually inspect wheels & tires daily that they are in safe operating condition.
- Check lug nut torque at installation.
- Check the lug nut torque 50 miles (80km) after wheel/tire change and every 6 months thereafter.
- Check/adjust tire pressure as/if required.

TIRE BALANCE/ROTATION

- Balance and Rotate as necessary/recommended by tire manufacturer. Verify that balance weights placed on inside bead of rim are clear of obstructions.

WARNING/CAUTION

- Never use anti-seize on studs or lug nuts.
- Hand torque to specifications, do not use pneumatic tools.
- Always inspect the condition of the wheel before and after service.
- Loose lug nuts can lead to metal fatigue and ultimately to wheel failure or broken studs.

ACCURIDE STEEL WHEEL TORQUE SPECIFICATION: 165 FT-LBS. DRY
STEEL WHEEL ADAPTER TORQUE SPECIFICATION: 165 FT-LBS. DRY
RECOMMENDED TIRE PRESSURE: 85 PSI