



**Gooseneck Trailer
1600 Gallon with Deck
Owner's Manual**

**Manufactured by
Minden Machine Shop Inc.
1302 K Road
Minden NE 68959
1-800-264-6587**

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INTRODUCTION

Thank you for purchasing the 1600 Gallon with Deck Trailer. We hope you will get many years of productive use from it. This trailer is designed to be pulled by a correctly sized tow vehicle. The towing capacity of the tow vehicle, in terms of maximum Gross Trailer Weight (GTW) and maximum Gross Combined Weight Rating (GCWR), can be found in the tow vehicle Owner's manual. The purpose of this trailer is to provide a means to transport liquid product and supporting materials. All product users must read and understand this manual prior to equipment operation. This manual is considered part of your trailer and should remain with the trailer at all times. Do not allow anyone to operate or maintain this equipment that has not fully read and comprehended this manual. Failure to follow the recommended procedures may result in personal injury or death or equipment damage.

Information in this manual is designed to help owners and operators to obtain the best results and safe operation from their investment. The life of any trailer depends largely on the care it is given and we suggest that the manual should be read and understood and referred to frequently. If for any reason you do not understand the instructions and safety requirements, please contact your authorized dealer. The intent of this manual is to provide guidelines to cover general use and to assist in avoiding accidents and injuries.

There may be times when circumstances occur that are not covered in the manual. At those times it is best to use common sense and contact your authorized dealer or our factory.

The requirements of safety cannot be emphasized enough in this publication. We urge you to make safety your top priority when using and maintaining the equipment. We strongly advise that anyone allowed to operate this trailer be thoroughly trained and tested, to prove they understand the fundamentals of safe operation.

Some photographs, diagrams or illustrations in this manual may show doors, guards and shields opened or removed to aid in clarity and understanding of a particular procedure. All guards, shields and safety devices must be in their proper position prior to operation.

SAFETY AND OPERATION RULES

General Safety Statements

Safety precautions are essential when the use of any mechanical equipment is involved. These precautions are necessary when using, storing, and servicing mechanical equipment. Using this equipment with the respect and caution demanded will considerably lessen the possibilities of personal injury. If safety precautions are overlooked or ignored, personal injury or property damage may occur.

The trailer was designed for a specific application. It should not be modified and/or used for any application other than which it was designed. If there are any questions regarding its application, please write or call. Do not use this unit until you have been advised. For more information, call 1-800-264-6587.

Read this entire manual carefully. Know your equipment. Consider the application, limitations, and the potential hazards specific to your unit. Occupational safety is of prime concern to us. This manual was written with the safety of the operator and others who come in contact with the trailer. This manual was written to help you understand the safe operating procedures of the trailer. We want you as our partner in safety. A copy of this manual should be available to all persons who may use this trailer.

It is your responsibility as an owner, operator, or supervisor to know what specific requirements, precautions, and work hazards exist and to make these known to all other personnel working with the trailer or in the area, so that they too may take any necessary safety precautions that may be required. Avoid any alterations of the equipment. Such alterations may create a dangerous situation where serious injury or death may occur and will void warranty.

Why is SAFETY important? Three reasons:

1. Accidents disable and kill
2. Accidents cost money
3. Accidents can be avoided

Note the use of the signal words **DANGER**, **WARNING**, and **CAUTION** with safety messages. The appropriate signal word for each message has been selected using the following guidelines:

DANGER – An immediate and specific hazard which will result in severe personal injury or death if proper precautions are not taken.

WARNING – A specific hazard or unsafe practice which could result in severe personal injury or death if proper precautions are not taken.

CAUTION – Unsafe practices which could result in personal injury if proper precautions are not taken or a reminder of good safety practices.

Safety Alert Symbol



BE ALERT! YOUR SAFETY IS INVOLVED!

The Symbol Shown Above Is Used To Call Your Attention To Instructions Concerning Your Personal Safety. Watch for This Symbol - It Points Out Important Safety Precautions. It Means ATTENTION! Become Alert! Your Personal Safety Is Involved! Read The Message That Follows And Be Alert To The Possibility Of Personal Injury Or Death.

Read this manual before operating or working around the 1600 gallon trailer with deck. This manual must be delivered with the trailer to its owner and operator. Failure to read this manual and its safety instructions is a misuse of equipment.

Safety Equipment

Please, remember safety equipment provides important protection for persons around a trailer that is in operation. Be sure ALL safety shields and protective devices are installed and properly maintained. If you find any shields or guards damaged or missing, contact Patriot Equipment for the correct items.

Safety Procedures



1. Use only lifting equipment with the proper capacity when loading or unloading the trailer. Forklifts with too little capacity may tip towards the front where the lifted weight is.
2. Do not operate unit without safety shields or guards in place.
3. IMPORTANT: Use caution when transporting. Be alert of the transport unit's overall width when approaching obstacles, such as post sign and poles, along the road. Check the transport width of the unit to ensure clearance before entering.
4. Comply with all safety warnings and cautions in this manual.
5. Do not allow any riders on the 1600 Gallon Trailer with Deck.
6. In case of any defect or awareness of potential danger, please contact Patriot Equipment at 1-800-264-6587 immediately.

Operator Qualifications



Operation of this 1600 Gallon Trailer with Deck shall be limited to competent and experienced persons. In addition anyone who will operate or work around the trailer must use good common sense. In order to be qualified, they must also know and meet all other requirements, such as:

1. Some regulations specify that no one under the age of 18 may operate power machinery. This may include the 1600 Gallon Trailer with Deck. It is your responsibility to know what these regulations are in your own area or situation.
2. Current Occupational Safety Health Administration regulations state in part: “At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee or user in the safe operation and servicing of all equipment with which the employee or user is, or will be involved.”
3. Unqualified persons are to stay out of the work area.
4. A person who has not read and understood all operating and safety instruction is not qualified to operate the trailer.

Safety Overview

YOU are responsible for SAFE operation and maintenance of the 1600 Gallon Trailer with Deck. YOU must ensure that you and anyone who is going to operate and maintain or work around the trailer must be familiar with the operating, maintenance, and safety information contained in the manual.

Remember YOU are the key to safety. GOOD PRACTICES protect not only you but also the people around you. Make these practices a working part of your safety program. Be certain EVERYONE operating this trailer is familiar with the procedures recommended and follows safety precautions. Remember, most accidents can be prevented. Do not risk injury or death by ignoring any information addressed.

Trailer owners must give operating instructions to operators before allowing them to operate the Trailer. They must be reviewed at least annually thereafter per OSHA regulation 1928.57.

The most important safety device on the equipment is a SAFE OPERATOR. It is the operator’s responsibility to read and understand ALL instructions in the manual and to follow them. All accidents can be avoided!

Any person who has not read and understood all operation and safety instructions is not qualified to operate the trailer. An untrained operator exposes himself and bystanders to possible serious injury or death.

Do not modify the equipment in any way. Unauthorized modifications may impair the functions and/or safety and could affect the life of the equipment.

Safety Affirmation

1. I have read and understand the operator’s manual and all safety signs before operation, maintenance or adjusting the trailer.
2. I will allow only trained persons to operate the 1600 Gallon Trailer with Deck. *An untrained operator is not qualified to operate this equipment.
3. I have access to a fire extinguisher.
4. I have all guards in place and will not operate the Trailer without them.
5. I will not allow riders on the 1600 Gallon Trailer with Deck.
6. I understand the danger of moving parts (rotating paddle reel, hydraulics, and pinch points) and will stop engine before servicing.
7. I understand that any accidents that occur with the 1600 Gallon Trailer with Deck are my responsibilities.
8. I understand that Patriot Equipment will not be held responsible for any accidents that involve the 1600 Gallon Trailer with Deck.

Sign Off Sheet

(This sheet should be signed annually as part of your safety program)

As a requirement of OSHA, it is necessary for the owner/employer to train the employee in the safe operation and safety procedures with the 1600 Gallon Trailer with Deck. We include this sign off sheet for your convenience and personal record keeping.

DATE	EMPLOYER SIGNATURE	EMPLOYEE SIGNATURE

Machine Inspection

After delivery of your new 1600 Gallon Trailer with Deck and/or completion of assembly, and before each use, inspection of the trailer is mandatory. This inspection should include, but not be limited to:

1. Check to see that all guards are in place, secured and functional.
2. That all fasteners are tight.
3. That all Hydraulic lines are free from leaks and defects.
4. That all electronics are working properly and wires are in good condition.

Lighting and Marking

It is the responsibility of the customer to know the lighting and marking requirements of the local highway authorities and to install and maintain the equipment to provide compliance with the regulations. Add extra lights when transporting at night or during periods of limited visibility if necessary.

Serial Number

To ensure efficient and prompt service, please furnish us with the model and serial number of your 1600 Gallon Trailer with Deck in all correspondence or other contact. The serial number is located on the inside of the gooseneck hitch.

Safety Decals

1. Keep safety decals clear and legible at all times.
2. Replace decals and signs that are missing or have become unreadable.
3. Safety signs are available from your Dealer or the Manufacturer.

How to install Safety Decals

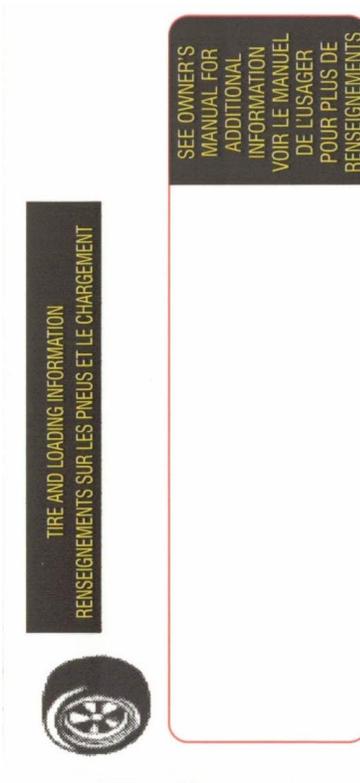
1. Be sure that the installation area is clean and dry.
2. Decide on the exact position before you remove the backing paper.
3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
5. Small air pockets can be pierced with a pin and smoothed out using a piece of decal backing paper.



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1302 K Road Minden, NE
308-832-0220

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Gooseneck Trailer Decals

WARNING



Coupler must be CLOSED securely before towing

Use 2 5/16" ball ONLY

Failure to do so may result in serious injury or death

LABEL 023100 (B) (10/04)

4

READ & UNDERSTAND INSTRUCTIONS BEFORE OPERATING JACK

WARNING

NEVER ATTEMPT TO MOVE, PULL OR INCH TRAILER IS ANY LOAD ON THE JACK. DOING SO COULD CAUSE THE TRAILER TO MOVE SUDDENLY.

SPRING RETURN DROP LEGS WILL NATURALLY RETRACT VERY QUICKLY. NON-SPRING RETURN DROP LEGS WILL NATURALLY FALL. KEEP CLEAR OF MOVING DROP LEGS.

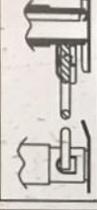


NO CLEARANCE

DROP LEG PULL-PIN ENGAGED (CLOSED)

Spring Return Drop Leg Operation:
WARNING: Drop leg will rapidly retract very quickly. Drop leg will injuriously retract any load.

- Verify that the jack is not supporting any load.
- If necessary, grasp the handle of foot plate and pull down on the drop leg.
- Disengage drop leg pin by rotating to the disengaged position.
- Carefully move the drop leg to the desired position.
- Engage the drop leg pin by rotating it to the engaged position and into the desired adjustment hole.
- Verify that the drop leg pin is fully retracted into the jack by checking for no clearance between the drop leg pin and the jack. If you see clearance, you must adjust the drop leg to fully seat the pin into the hole location. If you are unable to fully seat the pin, DO NOT USE.



DROP LEG PULL-PIN DISENGAGED (OPEN)

Non-Spring Return Drop Leg Operation:
WARNING: Drop leg will rapidly retract any load.

- Verify that the jack is not supporting any load.
- If necessary, grasp the handle of foot plate and pull down on the drop leg.
- Disengage drop leg pin by rotating to the disengaged position.
- Carefully move the drop leg to the desired position.
- Engage the drop leg pin by rotating to the engaged position and into the desired adjustment hole.
- Verify that the drop leg pin is fully retracted into the jack by checking for no clearance between the drop leg pin and the jack. If you see clearance, you must adjust the drop leg to fully seat the pin into the hole location. If you are unable to fully seat the pin, DO NOT USE.

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TOUGH & TRUSTED
BULLDOG

**SCREW/NUT TORQUE MIN 125 FT/LBS
MAX. GTWR 20,000#
MAX. VERTICAL RATING 6,000#
MEETS SAE J2638**

DO NOT DESTROY THIS LABEL
LABEL 023000 (E)

6

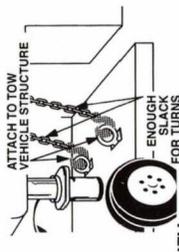
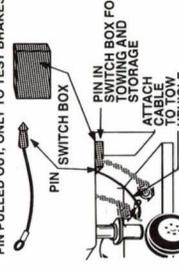
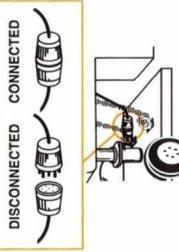
CAUTION



**Pinch Point.
Keep hands and fingers clear.**

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9.950.COM

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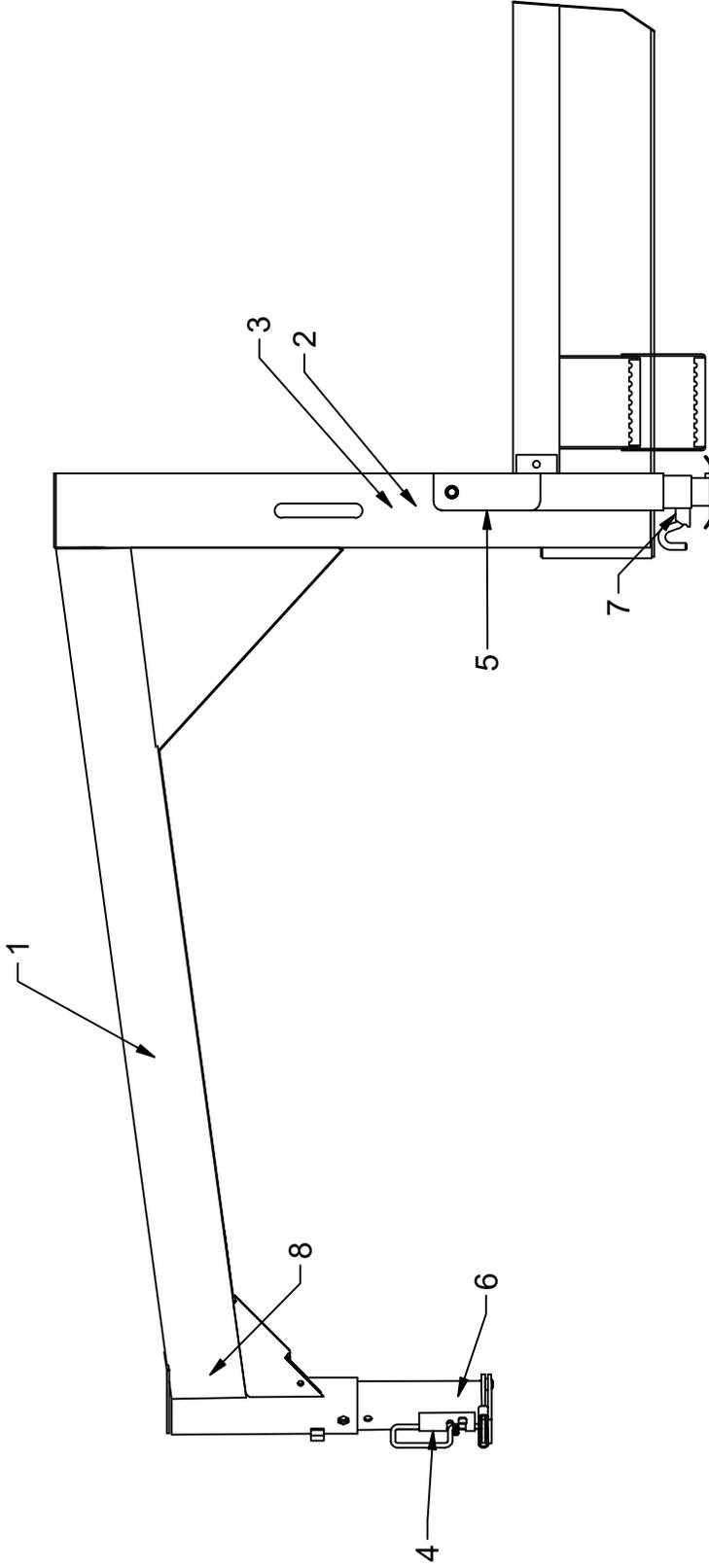
WARNING		WARNING		WARNING	
<p>WARNING</p> <p>ALWAYS use safety chains. Chains hold trailer if connection fails. You must:</p> <ol style="list-style-type: none"> ALLOW slack for trailer to turn. ATTACH chain hooks securely to tow vehicle frame.  <p style="font-size: x-small;">©2002 NATM</p>	<p>WARNING</p> <p>Trailer can roll if it comes loose. Electric safety brake applies when cable pulls pin out of switch box.</p> <ol style="list-style-type: none"> PULL hard to get pin out of switch box. CHECK brake by PULLING TRAILER with tow vehicle. ATTACH pin CABLE to tow vehicle so pin will be pulled out if trailer separates. Promptly REPLACE pin in switch box.  <p style="font-size: x-small;">PIN PULLED OUT, ONLY TO TEST BRAKES</p>	<p>WARNING</p> <p>LIGHTS can prevent trailer from being hit by other vehicles. You must:</p> <ol style="list-style-type: none"> CONNECT trailer and tow vehicle electrical connectors. CHECK all lights: tail lights, turn signal, and brake lights. DO NOT TOW if lights are not working  <p style="font-size: x-small;">DISCONNECTED CONNECTED</p>	<p>WARNING</p> <p>Tire, wheel or lug nut failure can cause loss of control. Before towing, you must CHECK:</p> <ol style="list-style-type: none"> Tire pressure and tread. Tires and wheels for damage. Lug nuts for tightness. <p>For new and remounted wheels, re-tighten lug nuts at the first 10, 25 and 50 miles of driving.</p>  <p style="font-size: x-small;">Lug Nuts TIGHT? Tires and Wheels OK? UT0025</p>		

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Decal Placement Diagram



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Major Hazards



Danger!

Loss of control of the trailer or trailer/tow vehicle combination can result in death or serious injury. The most common causes for loss of control are:

- Incorrect sizing the trailer for the tow vehicle or vice versa
- Driving too fast for the conditions
- Incorrect braking and steering under sway conditions
- Too heavy of a load or incorrect weight distribution
- Lug nuts are not kept tight
- Incorrect driving when towing a trailer
- Incorrect tire pressure
- Using the incorrect coupling of the trailer to the tow vehicle hitch

Improper Sizing of the Trailer to the Tow Vehicle

Trailers which are too heavy for the tow vehicle can cause stability problems. Additionally, the strain put on the tow vehicle could lead to serious vehicle maintenance problems. Never exceed the maximum towing capacity of the tow vehicle. The towing capacity can be found in the tow vehicle owner's manual in terms of Gross Trailer Weight (GTW) and maximum Gross Combined Weight Rating (GCWR).

Driving Too Fast

Under ideal road conditions, the maximum recommended speed for safely towing a trailer is 55 mph. Driving too fast can cause the trailer to sway, which will increase the possibility of losing control. The tires can also overheat which will increase the possibility of a blowout.

Change Driving When Towing a Trailer

When towing a trailer:

- Acceleration will decrease
- Stopping distance will increase
- Increase in turning radius

Tow Vehicle Characteristics that change:

- Increase in sensitivity to steering changes
- More likely to be pushed around in windy conditions or when being passed by large vehicles
- Increased distance to pass due to slower acceleration and increased length

Other driving tips:

- When the trailer sways
 - Take your foot off of the accelerator and steer as little as possible
 - Use small steering adjustments and do not attempt to steer out of the sway as you will only make it worse
 - Do not apply the tow vehicle brakes to correct trailer swaying.
 - Application of the trailer brakes alone will tend to straighten out the combination, especially when going downhill
- Check the review mirrors often to observe the trailer and traffic
- Be aware of the trailer height especially when approaching bridges, trees, or roofed areas.
- Be alert for slippery conditions. The tow vehicle will be affected more by slippery road conditions when it is driving with a trailer attached than it would with no trailer attached.
- Anticipate trailer swaying. The trailer can start to sway from excessive steering, wind gusts, slick road conditions, roadway edges, and from the pressure wave created by passing trucks and buses.
- When driving down steep or long grades, use a lower gear. Use the engine and transmission as a brake. If the brakes are used too much, they can overheat and become ineffective.



Trailer Not Properly Coupled to Hitch Warning!

The trailer has to be securely coupled to the tow vehicle! Safety chains and the emergency breakaway brake lanyard must be correctly attached. Trailer uncoupling may result in death or serious injury to you and to others. Do not move the trailer until:

- Receiver is secured and locked to the hitch
- Safety chains are secured to tow vehicle
- Trailer jack(s) are fully retracted
- Trailer brakes are checked
- Breakaway switch is connected to tow vehicle
- The trailer lights are connected and checked
- Load is secured to trailer.

Correct Use of Safety Chains

Safety chains are provided so that control of the trailer can be maintained if the trailer comes loose from the tow vehicle hitch.

Correct Connection of Breakaway Brake

The trailer will be equipped with a breakaway brake system that can apply the brakes on your trailer if the trailer comes loose from the tow vehicle, if the trailer has brakes installed on it. The breakaway brake system, including the battery, must be in good condition and properly connected to be effective.

Worn Tires, Loose Wheels and Lug Nuts

Inspect all trailer tires before each use.

- Bald spots, bulges, cuts, cracks, or showing any chords
 - Replace the tire before use
- Uneven tread wear
 - Take the trailer to a service center to have it checked
 - Tires could be imbalanced, axle misalignment or the inflation could be incorrect.
- Tires with too little tread
 - Will not provide adequate frictional forces on wet roadways
 - Result in loss of control, leading to serious injury or death
- Incorrect Tire Pressure
 - Causes increased tire wear and may reduce the stability of the trailer
 - Could result in a tire blowout or possible loss of control
 - Tire pressure is listed on the certification/VIN label
 - Check pressure when tires are cold – allow 3 hours of cool down after driving before checking the tire pressure
- Correct torque (tightness) for wheel nuts or bolts
 - Use a torque wrench and tighten in the correct sequence
 - Wheel nuts or bolts are prone to loosen up after being fully assembled
 - Can also loosen up after tires have been removed and remounted
 - Check the torque after the first 10, 25, and 50 miles of use
 - Failure to check can result in a wheel separating from the trailer and a crash which can result in a serious injury or death.

Incorrect Loading

The total weight of the load you put on the trailer, plus the empty weight of the trailer itself, must not exceed the trailer's Gross Vehicle Weight Rating (GVWR). If the empty weight of the trailer plus the load weight is not known, you must weigh the loaded trailer at a commercial scale. Also, the load must be distributed on the trailer such that the load does not exceed the Gross Axle Weight Rating (GAWR).

Unsafe Load Distribution

Incorrect front/rear load distribution can lead to an unstable trailer or poor tow vehicle handling. Poor trailer stability results from tongue weights that are too low and poor tow vehicle stability results from tongue weights that are too high. Normally, 20-25% of the total weight of the trailer plus its cargo should be on the tongue of the trailer. The trailer will have the proper weight distribution if the load is evenly distributed (be sure none of the axles are overloaded). Uneven left/right load distribution can cause tire, wheel, axle, or structural failure. Be sure the trailer is evenly loaded left/right. Towing stability also depends on keeping the center of gravity as low as possible.

Inappropriate Cargo

The trailer is designed for a specific cargo; therefore it is designed to carry that cargo on the trailer. Never allow people to ride on the trailer or containers of flammable substances. Also, the cargo must be correctly secured so that it does not shift while the trailer is traveling down the roads due to roads being rough.

Brakes or Lights

If the trailer is equipped with electric brakes, the tow vehicle will have an electric brake controller that sends power to the trailer brakes.

The brakes should be tested before each use of the trailer. While towing the trailer at less than 5 mph, manually operate the brake controller in the tow vehicle cab. You should feel the operation of the trailer brakes.

Be sure the electric brakes and all of the lights are working on your trailer before you use the trailer. The electric brakes and the lights are controlled from your tow vehicle, usually from a multi-pin connector.

Mirrors must be used to allow the operator to safely observe approaching traffic. Standard mirrors do not provide adequate visibility for viewing traffic to the sides and rear of the trailer.

Trailer Modifications

Modification of the trailer structure or any alterations of the trailer can make the trailer unsafe and will void all warranty options. Discuss with the manufacturer and alterations you are considering.

Trailer Towing

Operating a vehicle with a trailer in tow is vastly different from driving the same vehicle without a trailer in tow. Speeding up, slowing down and maneuvering will take more time when towing a trailer. It will take longer to get up to speed; more distance is required to stop, and more room will be needed to turn and pass when towing a trailer.

The operator will need to spend time adjusting to the different feel and maneuverability of the tow vehicle and trailer that is loaded and unloaded. Due to the differences in all aspects of maneuverability when towing a trailer, the hazards and risks of injury are also much greater than when driving without a trailer.

The operator is responsible for keeping the vehicle and the trailer in control and for all the damage that is caused if you lose control of the vehicle and the trailer.

When practicing for the first time, find an open area with little or no traffic. Be sure to follow the rules for inspecting, testing, loading and coupling. Also, before you start towing, adjust the mirrors so you can see the trailer as well as the area to the rear of it.

Drive slowly at first, 5 mph or so, turn the wheel to get the feel of how the tow vehicle and trailer responds. Now make some right and left hand turns, watch the in the side mirrors to see how the trailer will follow the tow vehicle. Remember that turning a tow vehicle and trailer will take more room.

Stop the tow vehicle and trailer a few times from speeds no greater than 10 mph. If the trailer has brakes, use different combinations of brakes. Note how using only the trailer brakes to stop are different than when using the tow vehicle brakes and trailer brakes. When the brakes are correctly adjusted, the trailer brakes will come on just before the tow vehicle brakes.

Backing up a trailer with a tow vehicle will take practice. Take is slow. Before backing up the trailer, get out of the tow vehicle and look behind the trailer to be sure there are no obstacles in the path. Going in reverse in the tow vehicle, moving the steering wheel counter-clockwise will move the rear of the trailer to the right and conversely, moving the steering wheel clockwise will move the rear of the trailer to the left. To straighten the rig, pull forward or turn the steering wheel in the opposite direction.

Trailer Towing Guidelines

- Before towing, check coupling, safety chains, brakes, tires, wheels and lights
- Check the lug nuts or bolts for tightness
- Recheck the load tie downs to prevent any shifting during transport
- Be sure the receiver is tight after traveling 50 miles
- Adjust the brake controller so that the trailer brakes come on just before the tow vehicles
- Use the mirrors to verify that room is present to change lanes or pull into traffic
- Use the turn signals well before you turn
- Allow for plenty of stopping distance
- Use lower gears for climbing or descending grades
- Do not ride the brakes when descending grades, the brakes may get so hot that they will not function; leading to a runaway to vehicle and trailer
- Do not apply the tow vehicle brakes to correct extreme trailer sway. Instead, lightly apply the trailer brakes with the hand controller.
- Make regular stops to confirm that
 - The receiver is secure to the hitch and is locked
 - Electrical connectors are made
 - There is correct slack in the safety chains
 - There is enough slack in the breakaway lanyard
 - The tires are not visibly low on pressure
 - The cargo is secure and in good condition
- Slow down for bumps and obstructions in the road
- Do not brake while in a curve unless absolutely necessary. Instead, slow down before you enter the curve.

- Do not drive too fast that the trailer begins to sway due to speed. Generally, never drive over 55 mph.
- Allow plenty of room for passing. A good rule to use is that the passing distance with a trailer is 4 times the passing distance without a trailer.



Bulldog® Gooseneck Coupler

Read, Understand, Follow and Save These Instructions

- Read, understand and follow all instructions before installing and using this product. Never allow anyone unfamiliar with these instructions to use this product.
- Read, understand and follow all instructions provided by the manufacturer of the product(s) on which this product will be installed.
- Installation of this product must conform to the following mounting instructions.
- Save these instructions for use as a reference in the future.

WARNING

Failure to follow these warnings and instructions may result in property damage, serious bodily injury, and/or death.

- Purchaser/owner must ensure that product is installed according to these instructions. Purchaser/owner must not alter or modify the product.
- Operator and bystanders should never position any body part under any portion of this product or the load being supported.
- Do not allow children to play on or around this product or the load being supported.
- Weigh your trailer plus added load. Do not exceed the lesser of coupler, hitch, vehicle, ball, or trailer weight ratings (including load).
- Use only a 2 5/16" ball rated equal to or greater than the capacity of this coupler. If uncertain, contact Cequent Performance Products at 1-800-632-3290 or www.cequentgroup.com
- Always secure load, vehicle and trailer (by blocking wheels) before latching/unlatching coupler.
- All hardware must be torqued to 125 ft. lbs. minimum. Periodically check for proper torque and tighten if necessary. Check for wear on inner tube if retightening is needed.
- If equipped with a load bearing pin, it must be fully inserted through both the inner and outer tubes in order for the coupler to support its rated load.
- Do not tow unless the load bearing pin is fully inserted and retaining pin is installed.
- Do not exceed the 8" maximum extension for this gooseneck coupler. Measure the coupler extension as the difference between fully retracted and fully extended positions. Couplers with properly installed load bearing pins and square adjustable gooseneck couplers only extend within this range.
- Keep the ball pocket, latch, and handle clean.
- All welding must be performed by an AWS certified welder.
- This product rated according to SAE J2638.

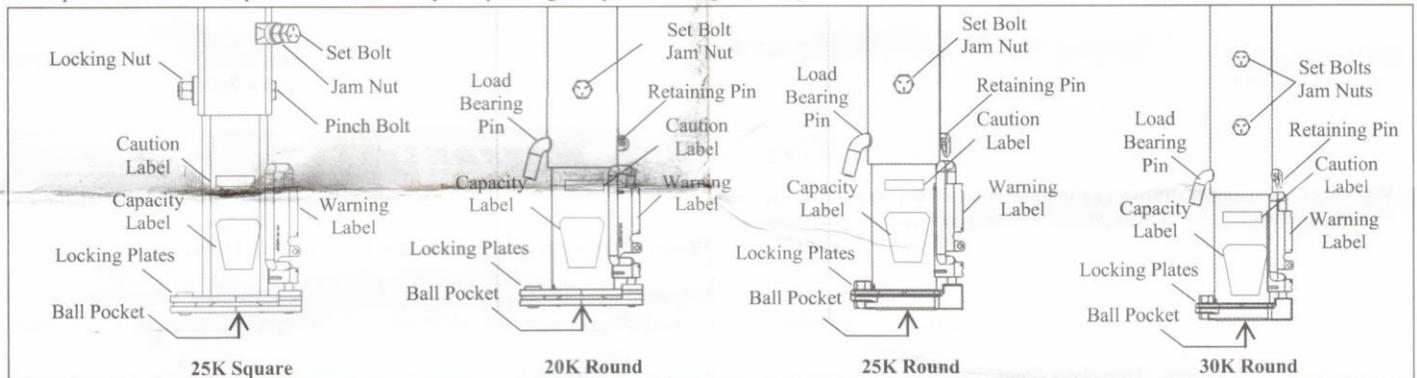
Before Towing:

- Check vehicle, hitch ball and coupler for signs of wear or damage. Ensure that the coupler opens, closes, and the handle springs closed when released.
- Replace bent, broken, or worn parts before using this product.
- Ensure that the hitch ball is fully seated in the coupler ball pocket and the latch is closed.
- Make sure that the trailer safety chains are properly connected to the towing vehicle and trailer.
- Make sure that all trailer lighting is hooked up and working properly.

Installation Instructions

Warning: Failure to follow all installation instructions could result in coupler failure

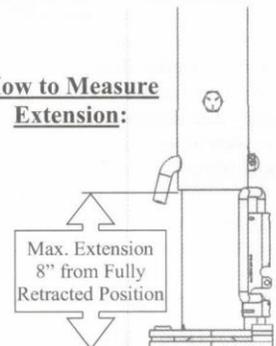
Before mounting the coupler confirm that there will be no interference from the tow vehicle, tongue, ground, and any other mounted accessories while stationary or in motion. The set bolts(s) must be facing the towing vehicle. Before installing, check for interference in extended and retracted positions. Check for interference again after installation is complete. Weld size, gusseting requirements, coupler height, and orientation are dependent on trailer design and customer requirements, however, the outer tube must be supported completely by attaching gussets as low as possible to the outer tube. Avoid heat damage to coupler during welding, and do not weld over or near any holes or hardware on the coupler. All welding must be performed by an AWS certified welder. The outer tube must be rigidly attached to the trailer in order for the coupler to support its maximum rated load according to SAE J2638. Coupler must remain vertical after installation to ensure proper operation. After installation, check to make sure that coupler operation has not been impaired in any way. Do not use coupler if its operation has been impaired. After assembly and painting, but prior to being used, any enclosed labels must be affixed to the coupler and pre-mask removed.

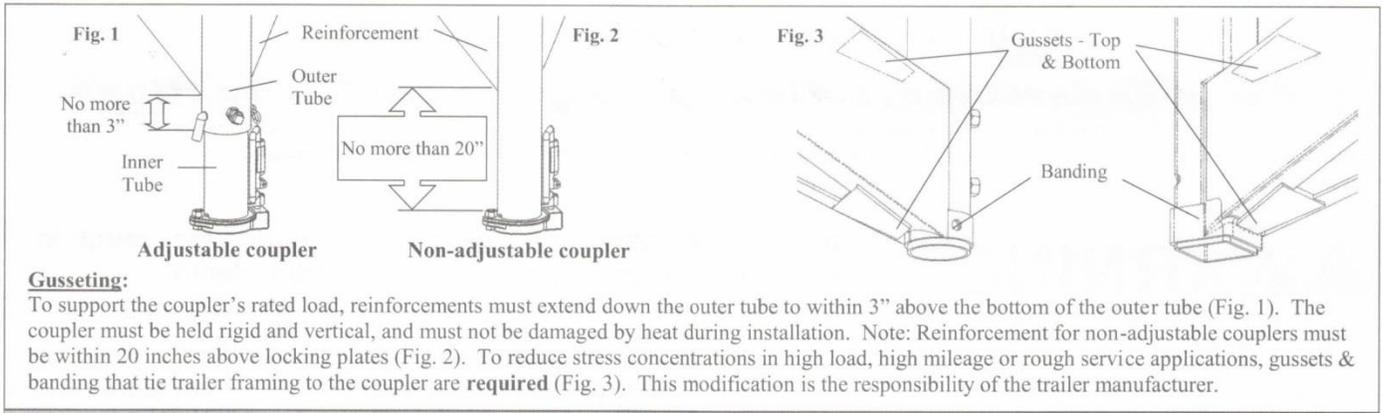


Gooseneck Coupler Installation Guidelines:

- 1) Be sure that the coupler will reach the towing vehicle to couple with the hitch ball while the load bearing pin is installed properly, or within the extension of the coupler if the coupler is a square adjustable gooseneck. If equipped with a load bearing pin/pinch bolt, it must be fully inserted through both the inner and outer tubes and the retaining pin/locking nut installed in order for the coupler to support its rated load.
- 2) Tighten the set bolt(s) and nut(s) to minimize vibrations in the coupler during towing. All hardware must be torqued to 125 ft. lbs. minimum.
- 3) Do not exceed 8" maximum extension for any gooseneck coupler.

How to Measure Extension:





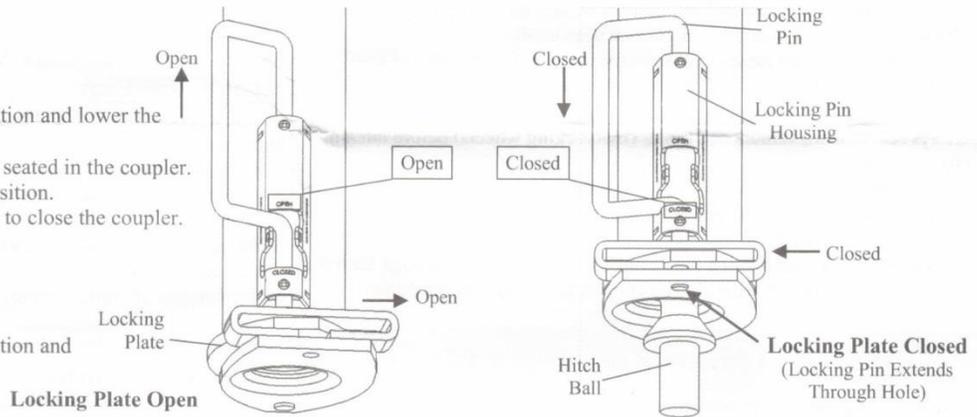
Operation

To Couple:

- 1) Block trailer wheels.
- 2) Align hitch ball beneath coupler.
- 3) Set the locking pin in the open position.
- 4) Slide the locking plate into the open position and lower the trailer onto the hitch ball.
- 5) Visually check that the hitch ball is fully seated in the coupler.
- 6) Slide the locking plate into the closed position.
- 7) Set the locking pin in the closed position to close the coupler.

To Uncouple:

- 1) Block trailer wheels.
- 2) Set the locking pin in the open position.
- 3) Slide the locking plate into the open position and raise the trailer from the hitch ball.



Maintenance

Keep ball pocket and mechanism clean. The following procedures should be performed at least annually:

- Check hardware torque
- Grease ball pocket
- Oil pivot points with SAE 30 wt. motor oil
- Inspect retaining pin and replace if necessary

The Bulldog Gooseneck Coupler section has been provided by Cequent Performance Products, Inc.

Tire Safety Information

1. TIRE SAFETY INFORMATION

This portion of the User's Manual contains tire safety information as required by 49 CFR 575.6.

Section 2.1 contains "Steps for Determining Correct Load Limit - Trailer".

Section 2.2 contains "Steps for Determining Correct Load Limit – Tow Vehicle".

Section 2.3 contains a Glossary of Tire Terminology, including "cold inflation pressure", "maximum inflation pressure", "recommended inflation pressure", and other non-technical terms.

Section 2.4 contains information from the NHTSA brochure entitled "Tire Safety – Everything Rides On It". This brochure, as well as the preceding subsections, describes the following items;

- Tire labeling, including a description and explanation of each marking on the tires, and information about the DOT Tire Identification Number (TIN).
- Recommended tire inflation pressure, including a description and explanation of:
 - A. Cold inflation pressure.
 - B. Vehicle Placard and location on the vehicle.
 - C. Adverse safety consequences of under inflation (including tire failure).
 - D. Measuring and adjusting air pressure for proper inflation.
- Tire Care, including maintenance and safety practices.
- Vehicle load limits, including a description and explanation of the following items:
 - A. Locating and understanding the load limit information, total load capacity, and cargo capacity.
 - B. Calculating total and cargo capacities with varying seating configurations including quantitative examples showing / illustrating how the vehicles cargo and luggage capacity decreases as combined number and size of occupants' increases. This item is also discussed in Section 3.
 - C. Determining compatibility of tire and vehicle load capabilities.
 - D. Adverse safety consequences of overloading on handling and stopping on tires.

1.1. STEPS FOR DETERMINING CORRECT LOAD LIMIT – TRAILER

Determining the load limits of a trailer includes more than understanding the load limits of the tires alone. On all trailers there is a Federal certification/VIN label that is located on the forward half of the left (road) side of the unit. This certification/VIN label will indicate the trailer's Gross Vehicle Weight Rating (GVWR). This is the most weight the fully loaded trailer can weigh. It will also provide the Gross Axle Weight Rating (GAWR). This is the most a particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

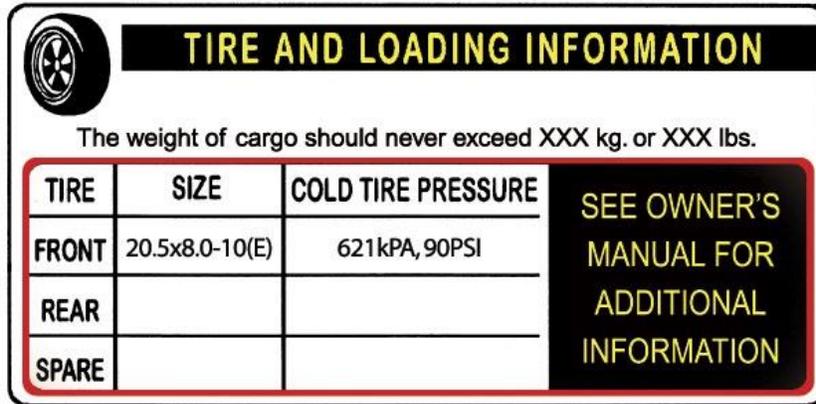
If your trailer has a GVWR of 10,000 pounds or less, there is a vehicle placard located in the same location as the certification label described above. This placard provides tire and loading information. In addition, this placard will show a statement regarding maximum cargo capacity. Cargo can be added to the trailer, up to the maximum weight specified on the placard. The combined weight of the cargo is provided as a single number. In any case, remember: the total weight of a fully loaded trailer can not exceed the stated GVWR.

For trailers with living quarters installed, the weight of water and propane also need to be considered. The weight of fully filled propane containers is considered part of the weight of the trailer before it is loaded with cargo, and is not considered part of the disposable cargo load. Water however, is a disposable cargo weight and is treated as such. If there is a fresh water storage tank of 100 gallons, this tank when filled would weigh about 800 pounds. If more cargo is being transported, water can be off-loaded to keep the total amount of cargo added to the vehicle within the limits of the GVWR so as not to overload the vehicle. Understanding this flexibility will allow you, the owner, to make choices that fit your travel needs.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale. Talk to your dealer to discuss the weighing methods needed to capture the various weights related to the trailer. This would include the weight empty or unloaded, weights per axle, wheel, hitch or king-pin, and total weight.

Excessive loads and/or underinflation cause tire overloading and, as a result, abnormal tire flexing occurs. This situation can generate an excessive amount of heat within the tire. Excessive heat may lead to tire failure. It is the air pressure that enables a tire to support the load, so proper inflation is critical. The proper air pressure may be found on the certification/VIN label and/or on the Tire Placard. This value should never exceed the maximum cold inflation pressure stamped on the tire.

1.1.1. TRAILERS 10,000 POUNDS GVWR OR LESS



Tire and Loading Information Placard – Figure 1-1

1. Locate the statement, “The weight of cargo should never exceed XXX kg or XXX lbs.,” on your vehicle’s placard. See figure 1-1.
2. This figure equals the available amount of cargo and luggage load capacity.
3. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity.

The trailer’s placard refers to the Tire Information Placard attached adjacent to or near the trailer’s VIN (Certification) label at the left front of the trailer.

1.1.2. TRAILERS OVER 10,000 POUNDS GVWR (NOTE: THESE TRAILERS ARE NOT REQUIRED TO HAVE A TIRE INFORMATION PLACARD ON THE VEHICLE)

1. Determine the empty weight of your trailer by weighing the trailer using a public scale or other means. This step does not have to be repeated.
2. Locate the GVWR (Gross Vehicle Weight Rating) of the trailer on your trailer’s VIN (Certification) label.
3. Subtract the empty weight of your trailer from the GVWR stated on the VIN label. That weight is the maximum available cargo capacity of the trailer and may not be safely exceeded.

1.2. STEPS FOR DETERMINING CORRECT LOAD LIMIT – TOW VEHICLE

1. Locate the statement, “The combined weight of occupants and cargo should never exceed XXX lbs.,” on your vehicle’s placard.
2. Determine the combined weight of the driver and passengers who will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds.
4. The resulting figure equals the available amount of cargo and luggage capacity. For example, if the “XXX” amount equals 1400 lbs. and there will be five 150 lb. passengers in your vehicle, the amount of available cargo and luggage capacity is 650 lbs. (1400-750 (5 x 150) = 650 lbs.).
5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage capacity calculated in Step # 4.
6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult the tow vehicle’s manual to determine how this weight transfer reduces the available cargo and luggage capacity of your vehicle.

1.3. GLOSSARY OF TIRE TERMINOLOGY

Accessory weight

The combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

Bead

The part of the tire that is made of steel wires, wrapped or reinforced by ply cords and that is shaped to fit the rim.

Bead separation

This is the breakdown of the bond between components in the bead.

Bias ply tire

A pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90 degrees to the centerline of the tread.

Carcass

The tire structure, except tread and sidewall rubber which, when inflated, bears the load.

Chunking

The breaking away of pieces of the tread or sidewall.

Cold inflation pressure

The pressure in the tire before you drive.

Cord

The strands forming the plies in the tire.

Cord separation

The parting of cords from adjacent rubber compounds.

Cracking

Any parting within the tread, sidewall, or inner liner of the tire extending to cord material.

CT

A pneumatic tire with an inverted flange tire and rim system in which the rim is designed with rim flanges pointed radially inward and the tire is designed to fit on the underside of the rim in a manner that encloses the rim flanges inside the air cavity of the tire.

Curb weight

The weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

Extra load tire

A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Groove

The space between two adjacent tread ribs.

Gross Axle Weight Rating

The maximum weight that any axle can support, as published on the Certification / VIN label on the front left side of the trailer. Actual weight determined by weighing each axle on a public scale, with the trailer attached to the towing vehicle.

Gross Vehicle Weight Rating

The maximum weight of the fully loaded trailer, as published on the Certification / VIN label. Actual weight determined by weighing trailer on a public scale, without being attached to the towing vehicle.

Hitch Weight

The downward force exerted on the hitch ball by the trailer coupler.

Innerliner

The layer(s) forming the inside surface of a tubeless tire that contains the inflating medium within the tire.

Innerliner separation

The parting of the innerliner from cord material in the carcass.

Intended outboard sidewall

The sidewall that contains a white-wall, bears white lettering or bears manufacturer, brand, and/or model name molding that is higher or deeper than the same molding on the other sidewall of the tire or the outward facing sidewall of an asymmetrical tire that has a particular side that must always face outward when mounted on a vehicle.

Light truck (LT) tire

A tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles.

Load rating

The maximum load that a tire is rated to carry for a given inflation pressure.

Maximum load rating

The load rating for a tire at the maximum permissible inflation pressure for that tire.

Maximum permissible inflation pressure

The maximum cold inflation pressure to which a tire may be inflated.

Maximum loaded vehicle weight

The sum of curb weight, accessory weight, vehicle capacity weight, and production options weight.

Measuring rim

The rim on which a tire is fitted for physical dimension requirements.

Pin Weight

The downward force applied to the 5th wheel or gooseneck ball, by the trailer kingpin or gooseneck coupler.

Non-pneumatic rim

A mechanical device which, when a non-pneumatic tire assembly incorporates a wheel, supports the tire, and attaches, either integrally or separably, to the wheel center member and upon which the tire is attached.

Non-pneumatic spare tire assembly

A non-pneumatic tire assembly intended for temporary use in place of one of the pneumatic tires and rims that are fitted to a passenger car in compliance with the requirements of this standard.

Non-pneumatic tire

A mechanical device which transmits, either directly or through a wheel or wheel center member, the vertical load and tractive forces from the roadway to the vehicle, generates the tractive forces that provide the directional control of the vehicle and does not rely on the containment of any gas or fluid for providing those functions.

Non-pneumatic tire assembly

A non-pneumatic tire, alone or in combination with a wheel or wheel center member, which can be mounted on a vehicle.

Normal occupant weight

This means 68 kilograms (150 lbs.) times the number of occupants specified in the second column of Table I of 49 CFR 571.110.

Occupant distribution

The distribution of occupants in a vehicle as specified in the third column of Table I of 49 CFR 571.110.

Open splice

Any parting at any junction of tread, sidewall, or innerliner that extends to cord material.

Outer diameter

The overall diameter of an inflated new tire.

Overall width

The linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

Ply

A layer of rubber-coated parallel cords.

Ply separation

A parting of rubber compound between adjacent plies.

Pneumatic tire

A mechanical device made of rubber, chemicals, fabric and steel or other materials, that, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

Production options weight

The combined weight of those installed regular production options weighing over 2.3 kilograms (5 lbs.) in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

Radial ply tire

A pneumatic tire in which the ply cords that extend to the beads are laid at substantially 90 degrees to the centerline of the tread.

Recommended inflation pressure

This is the inflation pressure provided by the vehicle manufacturer on the Tire Information label and on the Certification / VIN tag.

Reinforced tire

A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Rim

A metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

Rim diameter

This means the nominal diameter of the bead seat.

Rim size designation

This means the rim diameter and width.

Rim type designation

This means the industry or manufacturer's designation for a rim by style or code.

Rim width

This means the nominal distance between rim flanges.

Section width

The linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

Sidewall

That portion of a tire between the tread and bead.

Sidewall separation

The parting of the rubber compound from the cord material in the sidewall.

Special Trailer (ST) tire

The "ST" is an indication the tire is for trailer use only.

Test rim

The rim on which a tire is fitted for testing, and may be any rim listed as appropriate for use with that tire.

Tread

That portion of a tire that comes into contact with the road.

Tread rib

A tread section running circumferentially around a tire.

Tread separation

Pulling away of the tread from the tire carcass.

Treadwear indicators (TWI)

The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.

Vehicle capacity weight

The rated cargo and luggage load plus 68 kilograms (150 lbs.) times the vehicle's designated seating capacity.

Vehicle maximum load on the tire

The load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

Vehicle normal load on the tire

The load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I of CRF 49 571.110) and dividing by 2.

Weather side

The surface area of the rim not covered by the inflated tire.

Wheel center member

In the case of a non-pneumatic tire assembly incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic rim and provides the connection between the non-pneumatic rim and the vehicle; or, in the case of a non-pneumatic tire assembly not incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic tire and provides the connection between tire and the vehicle.

Wheel-holding fixture

The fixture used to hold the wheel and tire assembly securely during testing.

1.4. TIRE SAFETY - EVERYTHING RIDES ON IT

The National Traffic Safety Administration (NHTSA) has published a brochure (DOT HS 809 361) that discusses all aspects of Tire Safety, as required by CFR 575.6. This brochure is reproduced in part below. It can be obtained and downloaded from NHTSA, free of charge, from the following web site:

http://www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires_index.html

Studies of tire safety show that maintaining proper tire pressure, observing tire and vehicle load limits (not carrying more weight in your vehicle than your tires or vehicle can safely handle), avoiding road hazards, and inspecting tires for cuts, slashes, and other irregularities are the most important things you can do to avoid tire failure, such as tread separation or blowout and flat tires. These actions, along with other care and maintenance activities, can also:

- Improve vehicle handling
- Help protect you and others from avoidable breakdowns and accidents
- Improve fuel economy
- Increase the life of your tires.

This booklet presents a comprehensive overview of tire safety, including information on the following topics:

- Basic tire maintenance

- Uniform Tire Quality Grading System
- Fundamental characteristics of tires
- Tire safety tips.

Use this information to make tire safety a regular part of your vehicle maintenance routine. Recognize that the time you spend is minimal compared with the inconvenience and safety consequences of a flat tire or other tire failure.

1.5. SAFETY FIRST—BASIC TIRE MAINTENANCE

Properly maintained tires improve the steering, stopping, traction, and load-carrying capability of your vehicle. Underinflated tires and overloaded vehicles are a major cause of tire failure. Therefore, as mentioned above, to avoid flat tires and other types of tire failure, you should maintain proper tire pressure, observe tire and vehicle load limits, avoid road hazards, and regularly inspect your tires.

1.5.1. FINDING YOUR VEHICLE'S RECOMMENDED TIRE PRESSURE AND LOAD LIMITS

Tire information placards and vehicle certification labels contain information on tires and load limits. These labels indicate the vehicle manufacturer's information including:

- Recommended tire size
- Recommended tire inflation pressure
- Vehicle capacity weight (VCW—the maximum occupant and cargo weight a vehicle is designed to carry)
- Front and rear gross axle weight ratings (GAWR—the maximum weight the axle systems are designed to carry).

Both placards and certification labels are permanently attached to the trailer near the left front.

1.5.2. UNDERSTANDING TIRE PRESSURE AND LOAD LIMITS

Tire inflation pressure is the level of air in the tire that provides it with load-carrying capacity and affects the overall performance of the vehicle. The tire inflation pressure is a number that indicates the amount of air pressure—measured in pounds per square inch (psi)—a tire requires to be properly inflated. (You will also find this number on the vehicle information placard expressed in kilopascals (kpa), which is the metric measure used internationally.)

Manufacturers of passenger vehicles and light trucks determine this number based on the vehicle's design load limit, that is, the greatest amount of weight a vehicle can safely carry and the vehicle's tire size. The proper tire pressure for your vehicle is referred to as the "recommended cold inflation pressure." (As you will read below, it is difficult to obtain the recommended tire pressure if your tires are not cold.)

Because tires are designed to be used on more than one type of vehicle, tire manufacturers list the "maximum permissible inflation pressure" on the tire sidewall. This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

1.5.3. CHECKING TIRE PRESSURE

It is important to check your vehicle's tire pressure at least once a month for the following reasons:

- Most tires may naturally lose air over time.
- Tires can lose air suddenly if you drive over a pothole or other object or if you strike the curb when parking.
- With radial tires, it is usually not possible to determine underinflation by visual inspection.

For convenience, purchase a tire pressure gauge to keep in your vehicle. Gauges can be purchased at tire dealerships, auto supply stores, and other retail outlets.

The recommended tire inflation pressure that vehicle manufacturers provide reflects the proper psi when a tire is cold. The term cold does not relate to the outside temperature. Rather, a cold tire is one that has not been driven on for at least three hours. When you drive, your tires get warmer, causing the air pressure within them to increase. Therefore, to get an accurate tire pressure reading, you must measure tire pressure when the tires are cold or compensate for the extra pressure in warm tires.

1.5.4. STEPS FOR MAINTAINING PROPER TIRE PRESSURE

- Step 1: Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual.
- Step 2: Record the tire pressure of all tires.
- Step 3: If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.
- Step 4: If the tire pressure is too low, note the difference between the measured tire pressure and the correct tire pressure. These "missing" pounds of pressure are what you will need to add.
- Step 5: At a service station, add the missing pounds of air pressure to each tire that is underinflated.
- Step 6: Check all the tires to make sure they have the same air pressure (except in cases in which the front and rear tires are supposed to have different amounts of pressure).

If you have been driving your vehicle and think that a tire is underinflated, fill it to the recommended cold inflation pressure indicated on your vehicle's tire information placard or certification label. While your tire may still be slightly underinflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly underinflated tire. Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.

1.5.5. TIRE SIZE

To maintain tire safety, purchase new tires that are the same size as the vehicle's original tires or another size recommended by the manufacturer. Look at the tire information placard, the owner's manual, or the sidewall of the tire you are replacing to find this information. If you have any doubt about the correct size to choose, consult with the tire dealer.

1.5.6. TIRE TREAD

The tire tread provides the gripping action and traction that prevent your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to 1/16 of an inch. Tires have built-in treadwear indicators that let you know when it is time to replace your tires. These indicators are raised sections spaced intermittently in the bottom of the tread grooves. When they appear "even" with the outside of the tread, it is time to replace your tires. Another method for checking tread depth is to place a penny in the tread with Lincoln's head upside down and facing you. If you can see the top of Lincoln's head, you are ready for new tires.

1.5.7. TIRE BALANCE AND WHEEL ALIGNMENT

To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly. A wheel alignment adjusts the angles of the wheels so that they are positioned correctly relative to the vehicle's frame. This adjustment maximizes the life of your tires. These adjustments require special equipment and should be performed by a qualified technician.

1.5.8. TIRE REPAIR

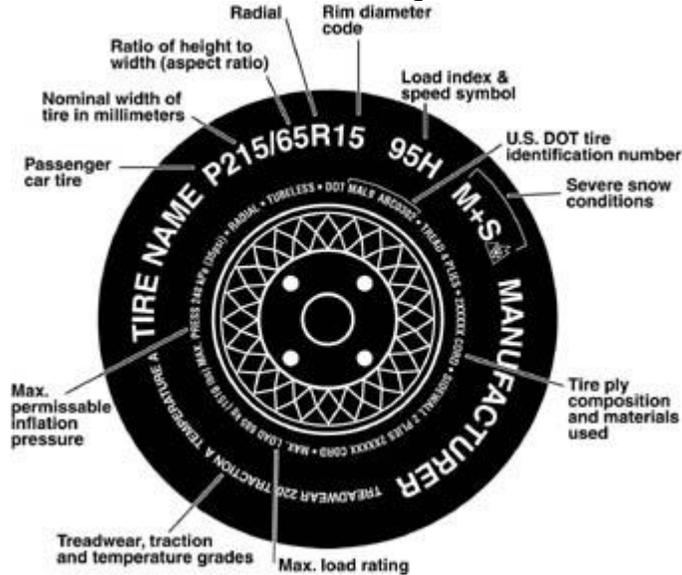
The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be properly inspected before being plugged and patched.

1.5.9. TIRE FUNDAMENTALS

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires. This information identifies and describes the fundamental characteristics of the tire and also provides a tire identification number for safety standard certification and in case of a recall.

1.5.9.1. Information on Passenger Vehicle Tires

Please refer to the diagram below.



P

The "P" indicates the tire is for passenger vehicles.

Next number

This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

Next number

This two-digit number, known as the aspect ratio, gives the tire's ratio of height to width. Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

R

The "R" stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Next number

This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

Next number

This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. You may find this information in your owner's manual. If not, contact a local tire dealer. Note: You may not find this information on all tires because it is not required by law.

M+S

The "M+S" or "M/S" indicates that the tire has some mud and snow capability. Most radial tires have these markings; hence, they have some mud and snow capability.

Speed Rating

The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed below. Note: You may not find this information on all tires because it is not required by law.

Tire Safety Information

Letter Rating	Speed Rating
Q	99 mph
R	106 mph
S	112 mph
T	118 mph
U	124 mph
H	130 mph
V	149 mph
W	168* mph
Y	186* mph

* For tires with a maximum speed capability over 149 mph, tire manufacturers sometimes use the letters ZR. For those with a maximum speed capability over 186 mph, tire manufacturers always use the letters ZR.

U.S. DOT Tire Identification Number

This begins with the letters "DOT" and indicates that the tire meets all federal standards. The next two numbers or letters are the plant code where it was manufactured, and the last four numbers represent the week and year the tire was built. For example, the numbers 3197 means the 31st week of 1997. The other numbers are marketing codes used at the manufacturer's discretion. This information is used to contact consumers if a tire defect requires a recall.

Tire Ply Composition and Materials Used

The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others.

Maximum Load Rating

This number indicates the maximum load in kilograms and pounds that can be carried by the tire.

Maximum Permissible Inflation Pressure

This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

1.5.9.2. UTQGS Information

Treadwear Number

This number indicates the tire's wear rate. The higher the treadwear number is, the longer it should take for the tread to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

Traction Letter

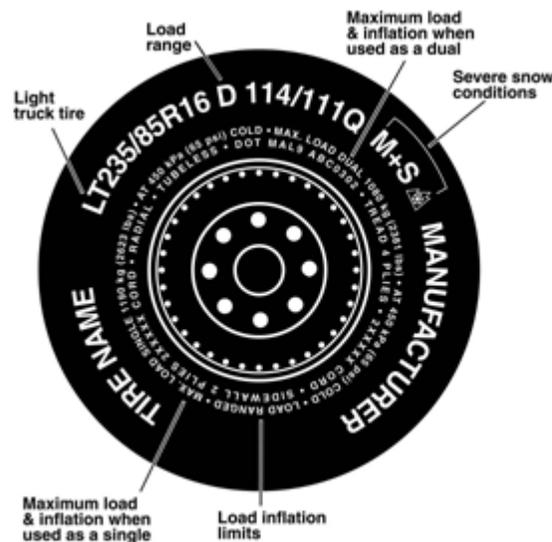
This letter indicates a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your car on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as "AA", "A", "B", and "C".

Temperature Letter

This letter indicates a tire's resistance to heat. The temperature grade is for a tire that is inflated properly and not overloaded. Excessive speed, underinflation or excessive loading, either separately or in combination, can cause heat build-up and possible tire failure. From highest to lowest, a tire's resistance to heat is graded as "A", "B", or "C".

1.5.9.3. Additional Information on Light Truck Tires

Please refer to the following diagram.



Tires for light trucks have other markings besides those found on the sidewalls of passenger tires.

LT

The "LT" indicates the tire is for light trucks or trailers.

ST

An "ST" is an indication the tire is for trailer use only.

Max. Load Dual kg (lbs) at kPa (psi) Cold

This information indicates the maximum load and tire pressure when the tire is used as a dual, that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Max. Load Single kg (lbs) at kPa (psi) Cold

This information indicates the maximum load and tire pressure when the tire is used as a single.

Load Range

This information identifies the tire's load-carrying capabilities and its inflation limits.

1.6. TIRE SAFETY TIPS

Preventing Tire Damage

- Slow down if you have to go over a pothole or other object in the road.
- Do not run over curbs or other foreign objects in the roadway, and try not to strike the curb when parking.

Tire Safety Checklist

- Check tire pressure regularly (at least once a month), including the spare.
- Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- Remove bits of glass and foreign objects wedged in the tread.
- Make sure your tire valves have valve caps.
- Check tire pressure before going on a long trip.
- Do not overload your vehicle. Check the Tire Information and Loading Placard or User's Manual for the maximum recommended load for the vehicle.

Wheel Attachment and Torque Requirements

Patriot Equipment would like to reiterate the extreme importance of properly matching your axles, wheels, and tires when specifying or replacing your trailer wheels. It is of equal importance that you apply and maintain proper wheel mounting torque on your trailer axle. Please follow the wheel selection, torque requirement, and torque sequence guidelines that follow.

Wheel Selection

Wheels are a very important and critical component of your running gear system. When specifying or replacing your trailer wheels it is important that the wheels, tires, and axle are properly matched. The following characteristics are extremely important and should be thoroughly checked when replacement wheels are considered.

1. **Bolt Circle:** Many bolt circle dimensions are available and some vary by so little that it might be possible to attach an improper wheel that does not match the axle hub. Be sure to match your wheel to the axle hub, bolts circle, hub pilot and wheel mount surface to hub face. Also, confirm that proper studs stick out.
2. **Capacity:** Make sure that the wheels have enough load carrying capacity and pressure rating to match the maximum load of the axle tire and trailer.
3. **Offset:** This refers to the relationship of the center line of the tire to the hub face of the axle. Care should be taken to match any replacement wheel with the same offset wheel as originally equipped. Failure to match offset can result in reducing the load carrying capacity of your axle.
4. **Rim Contour.**



CAUTION

Replacement tires must meet the same specifications as the originals. Mismatched tires and rims may come apart with explosive force and cause personal injury to yourself and others. Mismatched tires and rims can also blow out and cause you to lose control and have an accident which can result in serious injury or death.



CAUTION

Do not attempt to repair or modify a wheel. Even minor modifications can have a great effect. Do not install a tube to correct a leak through the rim. If the rim is cracked, the air pressure in the tube may cause the pieces of the rim to explode with great force and can cause serious injury or death.

Torque Requirements

You should always consult with the wheel manufacturer to determine the appropriate torque level for your wheels. It is extremely important to apply and maintain proper wheel mounting torque on your trailer axle. Torque is a measure of the amount of tightening applied to a fastener (nut or bolt) and is expressed as length times force. For example, a force of 90 pounds applied at the end of a wrench one foot long will yield 90 Ft Lbs. of torque. Torque wrenches are the proper method to ensure torque is applied correctly to a fastener.



CAUTION

Wheel nuts or bolts must be tightened and maintained at the proper torque levels to prevent loose wheels, broken studs, and possible dangerous separation of wheels from your axle, which can lead to an accident, personal injuries or death.

Be sure to use only the fasteners matched to the cone angle of your wheel (usually 60 degrees or 90 degrees). The proper procedure for attaching your wheels is as follows:

1. Start all nuts/bolts by hand to prevent cross threading.
2. The tightening should be done in stages;
 - a. Initially snug (10 ft-lb) the nuts/bolts to align and seat the wheel to the hub, in the order described in the torque sequence diagram below.
 - b. Tighten the nuts/bolts performing the wheel torque sequence below.
3. Wheel nuts/bolts should be torqued before first road use and after each wheel removal. Check and re-torque after the first 10 miles, 25 miles and again at 50 miles. Check periodically thereafter, **THIS IS VERY IMPORTANT.**
4. Wheel nuts are designed to have full thread engagement with the wheel stud. Wheel stud threads should be visible outside the wheel nut. There will be varying amounts of thread stick out depending on variables such as center disc thickness and nut thickness. In general, there should be approximately three threads visible past the end of the nut.

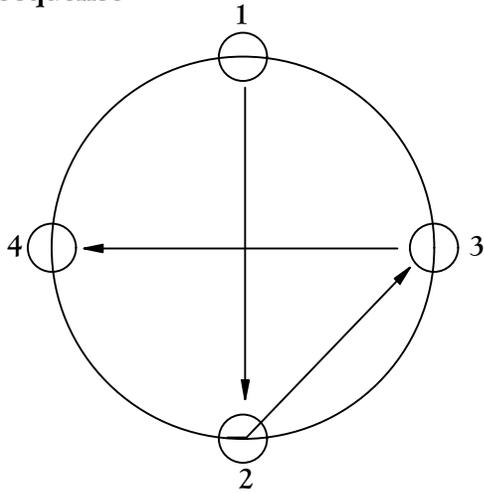
Wheel Attachment and Torque Requirements

Wheel Installation Torque Sequence (Ft. Lbs.)					
Wheel Size	Stud Size	1st Stage	2nd Stage	Final Torque	Cone Nut Degree
12" - 440 BC	1/2"-20	20-25	35-40	60-75	60 Degree Cone Nut
12" - 545 BC	1/2"-20	20-25	35-40	60-75	60 Degree Cone Nut
13" - 440 BC	1/2"-20	20-25	35-40	60-75	60 Degree Cone Nut
13" - 545 BC	1/2"-20	20-25	35-40	60-75	60 Degree Cone Nut
14" - 545 BC	1/2"-20	20-25	50-60	100-120	60 Degree Cone Nut
15" - 545 BC	1/2"-20	20-25	50-60	100-120	60 Degree Cone Nut
15" - 655 BC	1/2"-20	20-25	50-60	100-120	60 Degree Cone Nut
16" - 655 BC	1/2"-20	20-25	50-60	100-120	60 Degree Cone Nut
16" - 865 BC	9/16"-18	20-25	50-60	140-170	60 Degree Cone Nut
16.5" - 655 BC	1/2"-20	20-25	50-60	100-120	60 Degree Cone Nut
16.5" - 865 BC	9/16"-18	20-25	50-60	140-170	60 Degree Cone Nut
16.5" x 9.75" 865 BC	5/8"-18	50-60	120-125	175-225	Special Stud Piloted with 90 degree Cone Nuts
17.5" Hub Pilot 865 BC	5/8"-18	50-60	100-120	190-210	Hub piloted with clamp ring. 90 degree cone nuts and greased threads.
17.5" Hub Pilot 865 BC	5/8"-18	50-60	90-200	275-325	Hub piloted with flange nut
17.5" Hub Pilot 865 BC	5/8"-18	50-60	60-110	150-175	Hub piloted with swivel flange nut

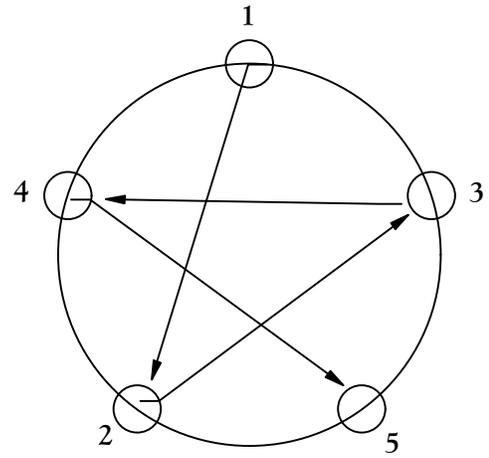
Medium and Heavy Duty Torque Requirements (Ft. Lbs.)				
Description	Part Number	Application	Torque Min. Ft. Lbs.	Torque Max. Ft. Lbs
5/8-19 90 degree Cone	006-109-00	Clamp Ring 033-052-01	190	210 Grease Threads
3/4-10 Hex Nut	006-117-00	Demountable Rim Clamp	210	260
3/4-16 Spherical Nut	006-064-01, 02 006-069-01, 02	Single Wheel Inner Dual	450 450	500 500
1-1/8 - 16 Spherical Nut	006-070-01, 02	Outer Dual	450	500
5/8-18 Non-swiveling Flange Nut	006-058-00	Wheels	275	325
5/8-18 Swiveling Flange Nut	006-209-00	Wheels	150	175
M22-1.5	006-118-00	Swiveling Flange Nut	450	500

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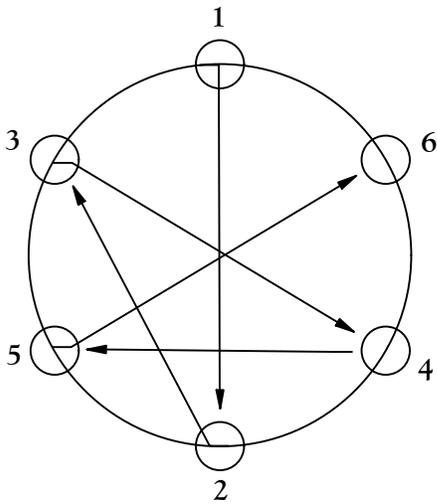
Torque Sequence



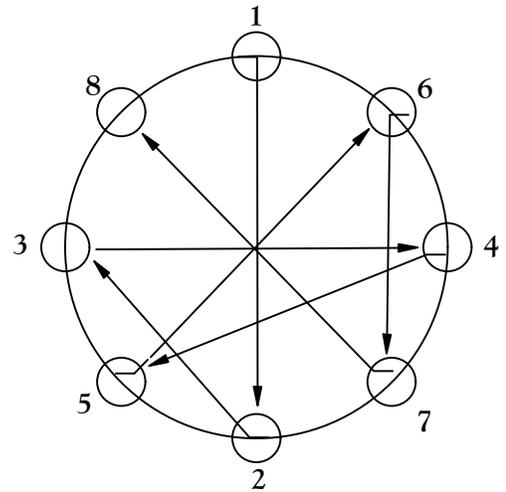
4 Bolt



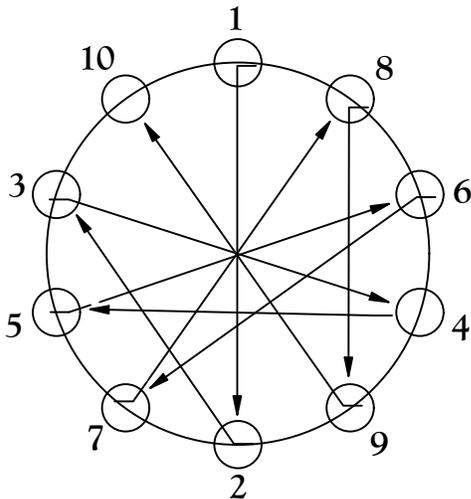
5 Bolt



6 Bolt



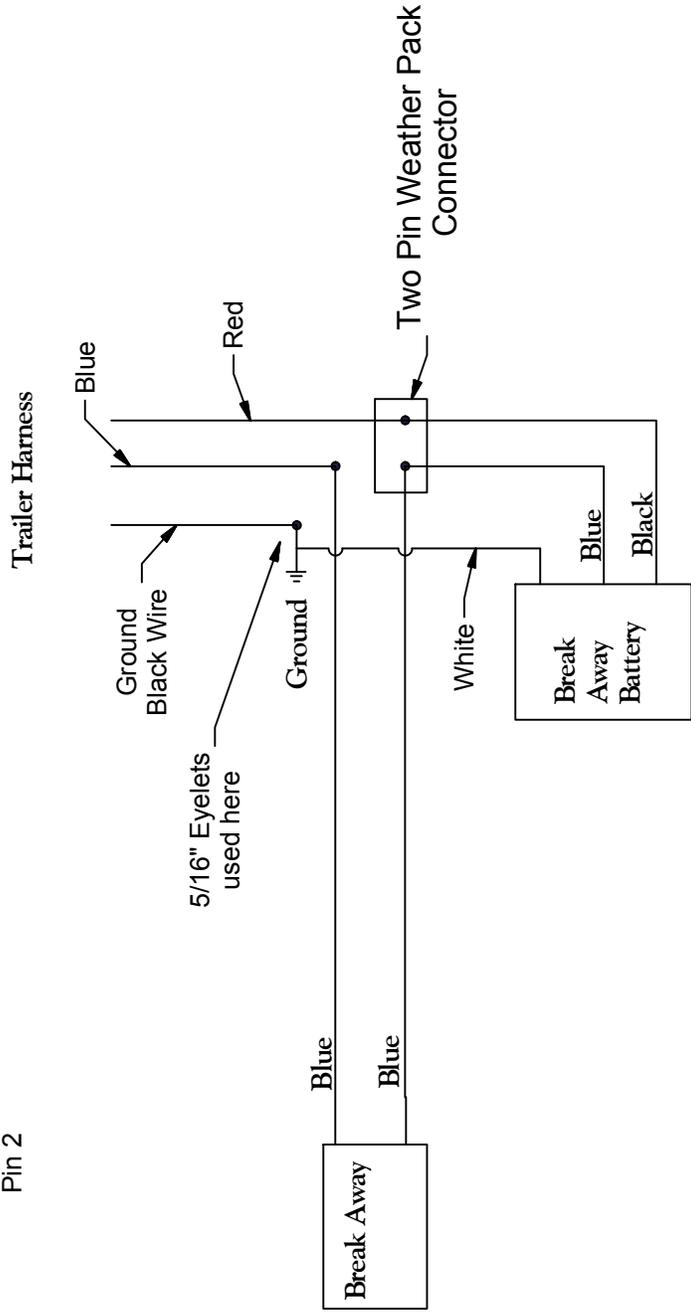
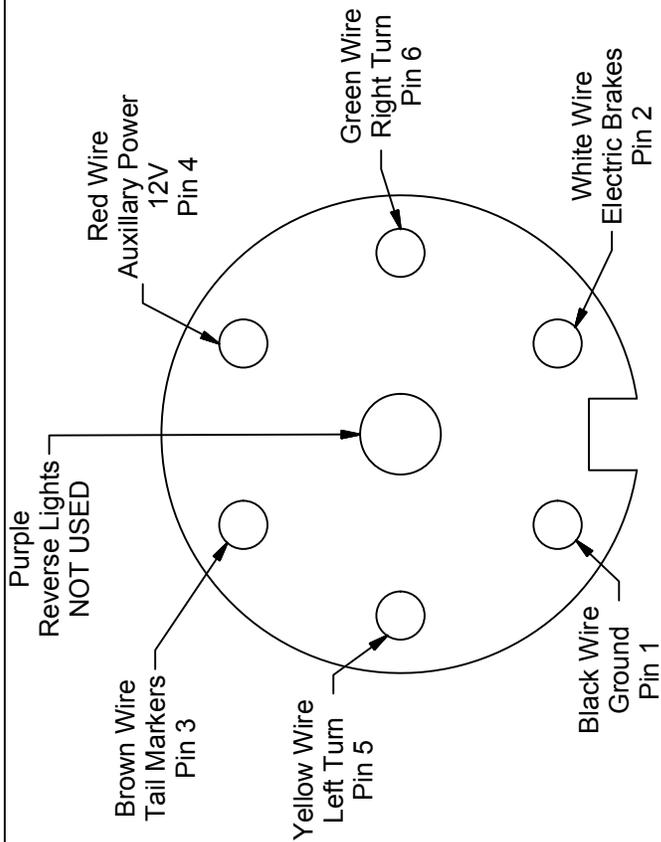
8 Bolt



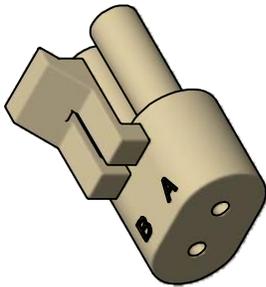
10 Bolt

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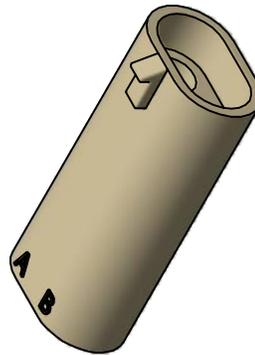
1600 Gallon Trailer With Wood Deck Wiring



1600 GALLON WITH WOOD DECK TRAILER



The two pin plug (male) uses the socket pins (female). The plug is connected to the lights and also the brakes which are added on.



The two pin plug (female) uses the pins (male). The plug is connected to the main wiring loom.

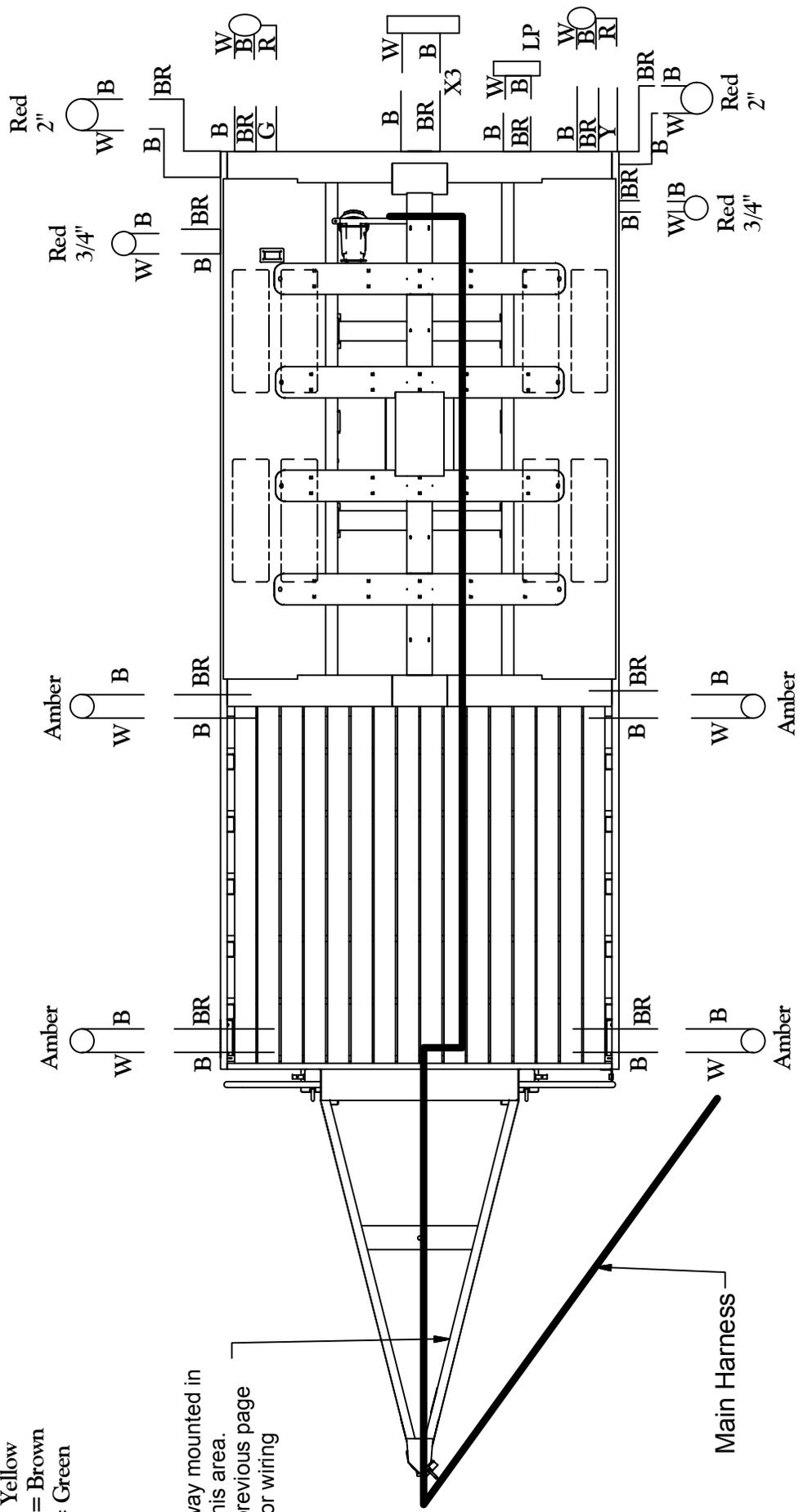


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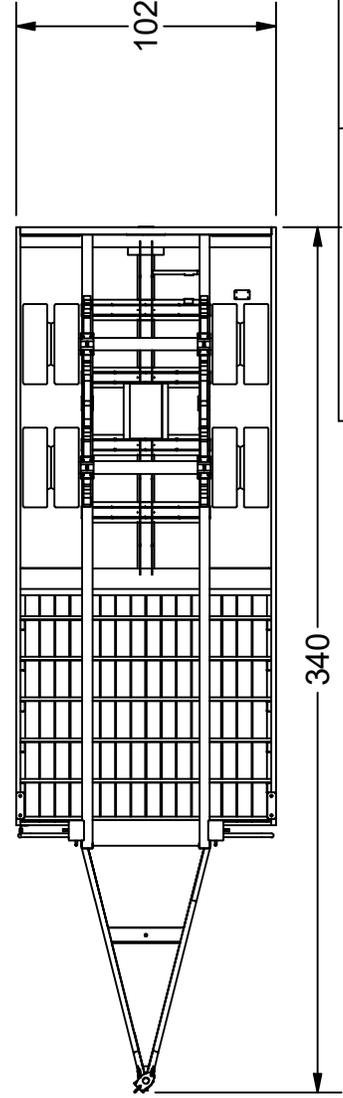
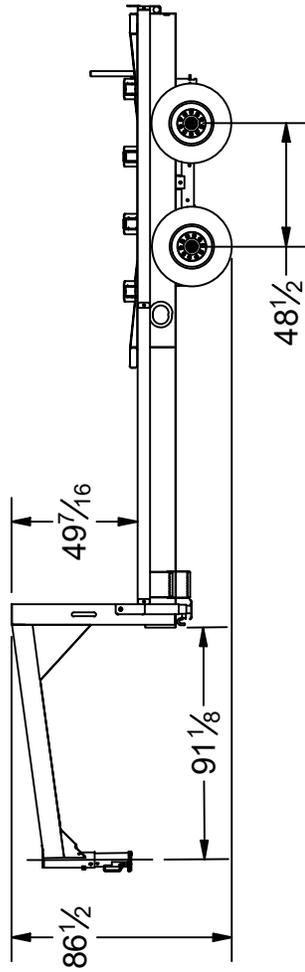
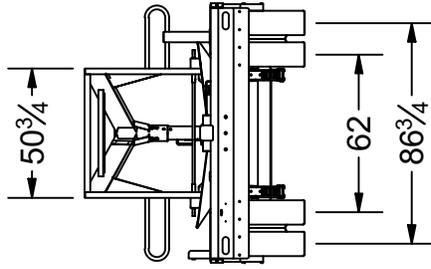
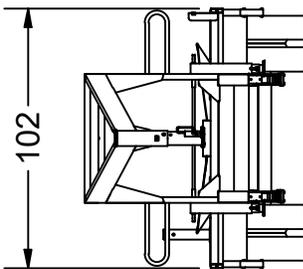
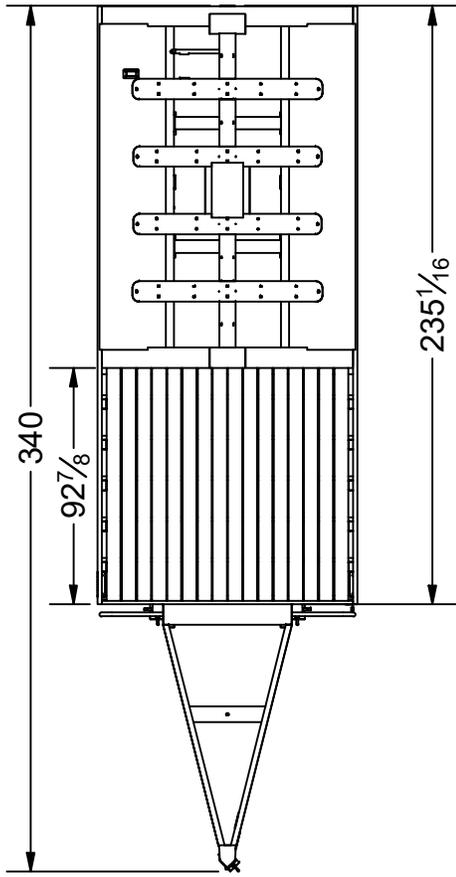
BRAKE WIRING: When wiring the brakes, the wires coming out of the axle don't matter which wire they are attached to as a completed circuit is all that is needed. However, when wiring the blue wire from the brakes are connected to the white wire on the main wire harness. The black wire from the brakes are connected to the black wire on the main wire harness. Use the two pin weatherpack connectors when wiring the axle brakes.

- Key**
- R = Red
 - W = White
 - B = Black
 - BL = blue
 - Y = Yellow
 - BR = Brown
 - G = Green

Breakaway mounted in this area.
See previous page for wiring



1600 Gallon Trailer with Deck Dimensions



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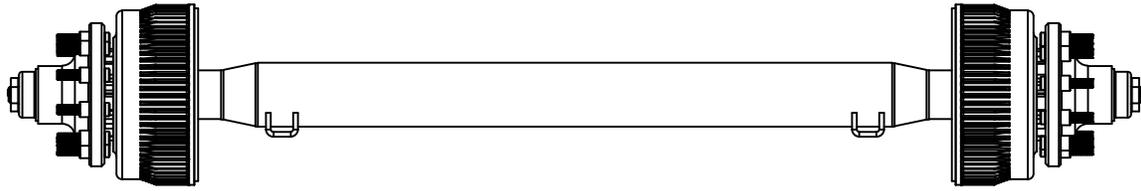
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Inspect And Service Before Each Use	
Item	Inspection/Service
Breakaway Brakes	Check Operation
Breakaway Battery	Fully Charged/Connections Clean
Brakes	Check Operation
Shoes and Drums	Adjust
Safety Chains and Hooks	Check for wear/damage
Receiver and Hitch Ball	Inspect for cracks, pits, and flats. Replace w/ball and receiver having trailer GVW Rating. Grease. Check locking device and replace when worn.
Tires	Check Tire Pressure when cold. Inflate as needed.
Wheels - Lug nuts or bolts and Hub	Check for tightness. Tighten. For new and remounted wheels, check torque after first 10, 25, and 50 miles of driving and after any impact.
Wood Deck	Inspect for any damaged or loose boards. Replace the damaged boards and tighten the loose boards.
Lights	Inspect all lights. Replace broken lamps and covers.

Inspect and Service Every 6 Months or 6,000 Miles	
Electric Brakes Controller	Magnet Check wear and current draw Check power output (amperage) and modulation
Tires	Inspect tread and sidewalls thoroughly. Replace tire when treads are worn, when sidewall has a bulge, or sidewall is worn. Rotate every 5,000 miles.
Brakes - Electric	Check operation
Brake Shoes and Drums	Adjust
Safety Chains and hooks	Inspect for wear and damage.
Receiver and Hitch Ball	Check for cracks, pits, and flats. Replace with receiver and hitch ball having trailer GVW Rating.

Inspect and Service Every Year or 12,000 Miles	
Brakes	Check for scoring and wear. Replace per manufacturer's specifications.
Jack, Drop-Leg	Grease the gears at the top.
Structure Frame Members Welds	Inspect all frame members, bolts and rivets. Repair or replace damaged worn or broken parts. Inspect all welds. Repair as needed.
Wheels Wheel Bearings Rims	Disassemble/inspect/repack and assemble. Replace promptly if immersed in water. Inspect rims for cracks and dents. Replace as needed.
Structure	Check by Dealer

Gooseneck Trailer Axle Components



12K Axle Components	
Part Number	Description
RP-200	Oil Cap Plug
12011	Oil Cap
1201G	Grease Cap
V75340	O-Ring
12011-1	Oil Cap Complete Assembly
CP-3	Cotter Pin
47127	Spindle Nut
47128	Spindle Washer
JM205149	Outer Bearing
JM205110	Outer Race
568216	Swivel Flange Nut, 0.625-18
4738-28	Stud
39520	Inner Race
39590	Inner Bearing
CR31281	Oil Seal
1215BOLT	Hub Attaching Bolt
912865-1475	Drum, 4.75" Pilot
912865-1	Drum, 4.88" Pilot
4741-L	Electric Brake, 12.25" x 5.0" L
4741-R	Electric Brake, 12.25" x 5.0" R
12LN	Brake Attaching Nut
SP-5	Spring Pad
SP-5-ADJ	Adjustable Spring Pad

16K Axle Components	
Part Number	Description
RP-200	Oil Cap Plug
12011	Oil Cap
V75340	O-Ring
12011-1	Oil Cap, Complete Assembly
CP-3	Cotter Pin
47127	Spindle Nut
47128	Spindle Washer
JM205149	Outer Bearing
JM205110	Outer Race
39520	Inner Race
39590	Inner Bearing
CR31281	Oil Seal
1215BOLT	Hub Attaching Bolt
4741-L	Electric Brake, 12.25" x 5.0" LH
4741-R	Electric Brake, 12.25" x 5.0" RH
12LN	Brake Attaching Nut
SP-5	Spring Pad
SP-5-ADJ	Adjustable Spring Pad
916108-1	Brake Drum, 10 on 8.75"
WN7516PTFEC	Swivel Flange Nut 0.75-16
4741-10	Stud Ring
4741-34	Stud
916810-1	Brake Drum, 8 on 275mm
WN33	Swivel Flange Nut, m22-1.5x31
4741-30	Stud

Minden Machine Shop Inc

LIMITED WARRANTY

Minden Machine Shop Inc warrants all products manufactured by it to be free of defect in material and workmanship for a period of one (1) year from the date of purchase.

This Minden Machine Shop Inc. warranty does not cover:

1. Parts and accessories supplied by Minden Machine Shop Inc. but manufactured by others. Minden Machine Shop Inc. will facilitate the other manufacturer warranty for the benefit of the purchaser but will not be bound thereby (example: augers, motors, trailers, tanks, etc.).
2. Products that have been altered by anyone other than a Minden Machine Shop Inc. employee or are used by the purchaser, for purposes other than what was intended at time of manufacture or used in excess of the "built specifications".
3. Products that are custom manufactured by Minden Machine Shop Inc. utilizing the purchaser's design which deviates from Minden Machine Shop Inc. normal production line manufactured or customized features of the products.
4. Malfunctions or damages to the product from misuse, negligence, customer alteration, accidents or product abuse due to incoming material or poor material flow ability or lack of required performance or required maintenance (e.g., poor material flow ability caused by incoming wet fertilizer or hot soybean meal, etc).
5. Loss of time, inconvenience, loss of material, down time or any other consequential damage.
6. Product use for a function that is different than designed intent (e.g., storing soybean meal in grain bin, unacceptable material in the bin such as hot bean meal when product originally designed for other application, etc).
7. Minden Machine Shop Inc is not responsible for any equipment that this product is attached to or mounted on.

To activate this warranty, the purchaser must make contact in writing with Minden Machine Shop Inc. within one (1) year of date of purchase. After contact, Minden Machine Shop Inc. has the right to determine the cause and qualify the legitimacy of the claim. Minden Machine Shop Inc., upon acceptance of a warranty claim, shall have a reasonable time to plan any repair or replacement and may affect repair or replacement out of its factory or through contract with a local repair service. If a purchaser after warranty notice is made, chooses to make the repair itself, Minden Machine Shop Inc. must approve any expenses before they are incurred to be responsible for customer reimbursement. Minden Machine Shop Inc. shall be liable on a warranty claim for repair or replacement of any defective products and this is the purchaser's sole and exclusive remedy. Minden Machine Shop Inc. will not be liable for any other or further remedy including claims for personal injury, property damage or consequential damage. The law of the State of Nebraska shall govern and any such claim and any issues with regard to the same shall be resolved in the Nebraska District Court for the county of Kearney.

RETURN OF MERCHANDISE

Merchandise may not be returned without written approval from the factory. All returns must have a return authorization number. Obtain this number before the return and show it on all return items. A 15% restocking charge is made on merchandise returned. Returned merchandise must be shipped pre-paid.

RECEIVING MERCHANDISE AND FILING CLAIMS

When receiving merchandise it is important to check both the number of parts and their description with packing slip. The consignee must make all claims for freight damage or shortage within 10 days from the date of delivery.

When the material leaves the factory it becomes the property of the consignee. It is the responsibility of the consignee to file a claim on any possible damage or loss. Please list your preferred routing on purchase orders.

MODIFICATIONS

It is the policy of Minden Machine Shop Inc. to improve its products whenever possible and practical to do so. We reserve the right to make changes, improvements and modifications at any time without incurring the obligation to make such changes, improvements and modifications on any equipment sold previously.

CLAIM FILE

Defect: