



Manufactured by Minden Machine Shop Inc. 1302 K Road Minden, NE 68959 308-832-0220 www.patriotequip.com

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INTRODUCTION

Thank you for choosing the Patriot Seed Tender delivery system. This manual covers the operation and maintenance of the Patriot Seed Tender. All information in this manual is based on the latest production information available at the time of printing. For the latest version of this catalog please call: 1-308-832-0220 or visit <u>www.patrioteguip.com</u>

Please become familiar with all safety, operating, maintenance and troubleshooting information. This will ensure your safety and long life for the system.

Minden Machine Shop Inc. reserves the right to make changes at any time without notice and without incurring any obligation.

Purpose:

The Patriot Seed Tender serves as a bulk transfer system for seed and other dry flowable products. It allows the user to move their product from point A to point B via the Patriot Seed Tender on a trailer. This process accelerates delivery and handling time. For example: a mini bulk bag weighing from 1,000 to 3,000 lbs., can be emptied into the Patriot Seed Tender in seconds, the equivalent when transferred in 50 lb. bags would take 20 minutes. The Patriot Seed Tender also allows you to draw seed directly from bins.

The Patriot Seed Tender, full of seed, is transferred to the location where the drill/planter is located. The user parks beside the planter/drill and uses the telescopic movable spout to load the planter/drill. The tender uses a poly cupped auger powered by a gas motor with a clutch system to transfer the product. The auger is activated by a manual switch located at the end of the telescopic spout or remotely depending on the application.

Features:

- 1. Hopper Designed for flow-ability in cone and proper angle of repose on top. All Patriot Seed Tenders are sized to compliment bulk bags or other measuring used in bulk handling.
- 2. Ground Controlled Lid This unique design protects the seed from moisture and is easily opened and closed from the ground
- Transfer auger The poly cupped auger delivers 400 lbs. per minute and is very gentle on the product.
- 4. Ladders Allows the user to look into the hopper and access seed boxes or seed bags.
- 5. Site glass Allows you to monitor the product level within the tanks from eye level.
- 6. Telescopic spout The 3-tier model allows extension of nearly 17 ft. reach, with 15 ft. lateral reach.
- Throttle/Clutch control The switch located at the end of the telescopic spout controls the variable speed actuator. It controls flow and stops and activates the flow without motor shutdown. The throttle can also be controlled remotely if desired.
- 8. Shut off gate The feature allows you to choose which hopper you want to empty and handle different varieties of seed on the same load.

Reference Numbers and Date of Purchase

Seed T	ender
	Serial Number:
	Date of Purchase:
Trailer	
	Serial Number:
	Date of Purchase:

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. with in 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 Sate 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.

WARRANTY REGISTRATION

To register equipment, or file a claim, fill out the appropriate information completely, copy and email it to <u>larry@mindenmachine.com</u> with the subject as EQUIPMENT WARRANTY, or fill it out and fax it to 308-832-1340 or fill the form out and mail to:

Minden Machine Shop, Inc PO Box 356 Minden, NE 68959

Dealer Information: Dealer Name:	Not Applicable, check here: []
Address:	
City:	
State:	
Zip Code:	
Phone #:	
Email:	
End User Information: Purchaser:	
Address:	
City:	
State:	
Zip Code:	
Phone #:	
Email:	
Equipment:	
Serial #:	
Date Of Purchase: /	/
Equipment:	
Trailer Model Number:	
Trailer VIN Number:	
Date Of Purchase: /	/
Dealer Name:	

Please fill out the table below with the tire identification numbers located on the tires on the purchased trailer. The tire identification number is the US DOT Tire Identification Number (see pages 41 and 43 of this manual for location of number on the tire).

QTY	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												

TIRE IDENTIFICATION NUMBERS

Please return within 14 days of purchase

WARRANTY CLAIM FILE

Please Describe the Defect:

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. This unit was designed for specific applications. It should not be modified or/and used for any application other than which it was designed. If there are any questions regarding its application, write or call. Do not use this unit until you have been advised. For more information, call 1-308-832-0220. 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 equipment as our prime concern. The manual presents some of the day-to-day work problems encountered by the operator and other personnel. We wrote this manual to help you understand safe operating procedures for Patriot Seed Tenders. We want you as our partner in safety. A copy of this manual should be available to all persons who may operate this machine.

It is your responsibility as an owner or 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 equipment 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.

Why is SAFETY important to you? **3 BIG REASONS**

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

Signal Words

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



The Symbol Shown Above Is Used To Call Your Attention To Instructions Concerning Your Personal Safety. Watch 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.

Anyone who will operate or work around a Seed Tender shall first read this manual! This manual must be delivered with the equipment to its owner. 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 an auger that is in operation. Be sure <u>ALL safety shields and protective devices are installed and properly maintained.</u> If you find any shields or guards damaged or missing, contact Minden Machine Shop Inc. for the correct items.

SERIAL NUMBER

To ensure efficient and prompt service, please furnish us with the model and serial number of your Patriot Seed Tender in all correspondence or other contact. The Serial Number is located inside the front leg above the battery box.



- 1. Use only lifting equipment with the proper capacity when loading or lifting bulk bags or lifting the Patriot Seed Tender. Forklifts with too little capacity may tip towards the front where the lifted weight is.
- 2. Do not use makeshift systems to handle seed or equipment as you may create an unsafe condition.
- 3. Do not attempt to raise the Patriot Seed Tender unit by hoist or forklift when it is loaded with product.
- 4. When the Patriot Seed Tender is mounted in pickup box it must be secured by bolting to bed or chained into all four corners. Carrying it loose could cause an accident.
- 5. Do not unhook your Patriot Seed Tender Trailer while it is full. Any incline or additional weight placed on the back could tip it over backwards.
- 6. When bulk bag is placed over the Patriot Seed Tender a danger exists when pulling open the pull cord. Hydraulics could fail or operator could make an error causing your arm to be pinned. Do not place a hand or arm into such a position. Extend the pull chord by tying a rope addition or string to lengthen it; this will allow you to pull the string without placing your arm or hand in danger.

- 7. Do not operate unit without safety shields or guards in place.
- 8. Do not allow any riders on the Patriot Seed Tender.
- 9. Do not enter the hoppers when it has product in it as suffocation could result. Do not enter the Patriot Seed Tender when motor is on as the auger could seriously injure.
- 10. Do not place flammable objects close to engine. This could cause a fire.
- 11. Never run engine in an enclosed area. As the exhaust is poisonous.
- 12. Avoid contact with the muffler. It becomes very hot during operation and remains hot for some time after the engine is turned off.
- 13. Refuel in a well-vented area with the engine turned off. Do not smoke or allow flames close to the refueling area.
- 14. Do not overfill gas tank and make sure the cap is properly closed.
- 15. Shut down the engine if clearing an auger plug or obstruction within the auger.
- 16. Always shut down the engine before performing repairs or maintenance on the seed tender or trailer.
- 17. In case of any defect or awareness of potential danger, please contact the plant at 308-832-0220 immediately.

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.

Operation of this Seed Tender shall be limited to competent and experienced persons. In addition anyone who will operate or work around a Seed Tender 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 includes Seed Tenders. It is your responsibility to know what these regulations are in your own area or situation.

2. Current OSHA 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 user defined work area.

4. A person who has not read and understood all operating and safety instruction is not qualified to operate the machine.

SAFETY OVERVIEW

- YOU are responsible for SAFE operation and maintenance of your Patriot Seed Tender.
- YOU must ensure that you and anyone who is going to operate, maintain, or work around the seed tender must be familiar with the operating, maintenance, and safety information contained in the manual. This manual will take you step by step through your working day and alerts you to all good safety practices while operating the tender.
- 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 machine 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.

- Tender owners must give operating instructions to operators before allowing them to operate the tender. 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 seed tender. 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

I have read and understand the operator's manual and all safety signs before operation, maintenance, adjusting or unplugging the tender.

- I will allow only trained persons to operate the Patriot Seed Tender. *An untrained operator is not qualified to operate this equipment.
- I have access to a fire extinguisher.
- I have all guards in place and will not operate the Patriot Seed Tender without them.
- I will not allow riders on the Patriot Seed Tender.
- I understand the danger of moving parts (PTO, auger flighting, and pinch points) and will stop engine before servicing.
- I recognize the danger of the auger coming in contact with power lines.
- I will unload the rear compartment first on two-compartment Patriot Seed Tenders.
- I am aware of the need to secure the Patriot Seed Tender to its base, (truck box or trailer floor).
- I understand the danger of working with bulk bags as they are placed over the Patriot Seed Tender.
- I understand that any accidents that occur with the Patriot Seed Tender are my responsibilities.
- I understand that Minden Machine Shop will not be held responsible of any accidents that involve the Patriot Seed Tender.

SIGN OFF SHEET (this must be signed annually as part of your safety program)

As a requirement of OSHA it is necessary for the employer to train the employee in the safe operation and safety procedures with this Seed Tender. 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 Seed Tender and/or completion of assembly, before each use, inspection of the machine 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. Are all fasteners tight?

3. Check oil levels in the Engine, clutch and auger gearbox. Check the manufacturers owner's manual if unsure of how to perform this inspection.

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 Signs

- 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.

DESIGNATED WORK AREA

WORK AREA DIAGRAM

Before starting the Seed Tender, a designated work area should be established. The work area should be a perimeter in which no persons should be allowed that are not directly involved in the operation of the Seed Tender. Also all persons in the work area must have read and understand this manual.

RULES FOR SAFE WORK AREA

Under no circumstances should persons not involved in the operation be allowed to trespass into the work area. It shall be the duty of all operators to see that children and/or other persons stay out of the work area! Trespass into the work area by anyone not involved in the actual operation, or trespass into hazard area by anyone, shall result in immediate shut down by the operator. It shall be the responsibility of all operators to see that the work area has secure footing, is clean and free of all debris, and tools, which might cause tripping and/or falling. It shall also be their responsibility to keep the work area clean and orderly during the operation.

Reporting Safety Defects

If you believe that your vehicle has a defect which could cause a crash or could cause an injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Minden Machine Shop, Inc.

If NHTSA receives similar complaints, it may open an investigation and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Minden Machine Shop, Inc. To contact NHTSA, you may call the:

- Auto Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153)
- go to <u>http://www.safercar.gov</u>
- Write to: NHTSA, US Department of Transportation,
 - o 1200 New Jersey SE
 - Washington, DC 20590.

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 <u>Glossary of Tire Terminology</u>, 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:

- 1. Cold inflation pressure.
- 2. Vehicle Placard and location on the vehicle.
- 3. Adverse safety consequences of under inflation (including tire failure).
- 4. Measuring and adjusting air pressure for proper inflation.
- 5. Tire Care, including maintenance and safety practices.
- 6. Vehicle load limits, including a description and explanation of the following items:
- 7. Locating and understanding the load limit information, total load capacity, and cargo capacity.
- 8. 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.
- 9. Determining compatibility of tire and vehicle load capabilities.
- 10. Adverse safety consequences of overloading on handling and stopping on tires.

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 cannot 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 <u>is not</u> 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 under inflation 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.

Trailers 10,000 Pounds GVWR or Less

	TIRE	AND LOADING IN	FORMATION
TIRE	weight of carg	o should never exceed X COLD TIRE PRESSURE	XX kg. or XXX lbs.
FRONT	20.5x8.0-10(E)	621kPA, 90PSI	MANUAL FOR
REAR			ADDITIONAL
SPARE			INFORMATION

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.

Trailers over 10,000 Pounds GVWR (Note: These trailers are not required to have a tire information placard on the vehicle)

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.

Locate the GVWR (Gross Vehicle Weight Rating) of the trailer on your trailer's VIN (Certification) label.

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.

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.

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.

СТ

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.

Inner liner

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

Inner liner separation

The parting of the inner liner 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 inner liner 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 of 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.

Tread wear 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.

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.

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.

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:

- 1. Recommended tire size
- 2. Recommended tire inflation pressure
- Vehicle capacity weight (VCW-the maximum occupant and cargo weight a vehicle is designed to carry)

4. 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.

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.

Checking Tire Pressure

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

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

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.

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.

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 tread wear 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.

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 wheeland-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.

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.

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.



Information on Passenger Vehicle Tires

Ρ

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.

Letter Rating	Speed Rating
Q	99 mph
R	106 mph
S	112 mph
Т	118 mph
U	124 mph
Н	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.

UTQGS Information

Tread wear Number

This number indicates the tire's wear rate. The higher the tread wear 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, under inflation 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".

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.

Tire Safety Tips

Preventing Tire Damage

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

Tire Safety Checklist

- 1. Check tire pressure regularly (at least once a month), including the spare.
- 2. Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- 3. Remove bits of glass and foreign objects wedged in the tread.
- 4. Make sure your tire valves have valve caps.
- 5. Check tire pressure before going on a long trip.
- 6. 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.



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.

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.



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 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" - 0 75" 865 PC	5/0" 10	50.60	120 125	175 225	Special Stud Piloted with	
10.3 X 9.73 003 DC	5/8 -18	50-00	120-125	1 (3-223	90 degree Cone Nuts	
					Hub piloted with clamp	
17.5" Hub Pilot 865 BC	5/8"-18	50-60	100-120	190-210	ring. 90 degree cone nuts	
					and greased threads.	
17 5" Hub Dilat 865 BC	5/8" 18	50.60	00.200	275 225	Hub piloted with flange	
	5/8-18	30-00	90-200 273-323		nut	
17 5" H.L. Dilat 965 DC	5/01/10 50.00	60 110	150 175	Hub piloted with swivel		
	N 5/0-10 50-00 00-110		130-173	flange nut		

	Medium and Heavy Duty	7 Torque Require	ements (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
2/4 1 C CL . 1 N 4	006-064-01, 02	Single Wheel	450	500
3/4-16 Sherical Nut	006-069-01, 02	Inner Dual	450	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

Minden Machine Shop Inc. 1302 K Road Minden, NE 800-264-6587 / 308-832-0220











10 Bolt



5 Bolt



8 Bolt

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California Proposition 65

The Safe Drinking Water and Toxic Enforcement Act of 1986 (California Proposition 65, commonly known as Prop 65) applies to companies doing business in the State of California. The regulation is administered by the Office of Environmental Health Hazard Assessment (OEHHA) and mandates that no person in the course of doing business shall knowingly expose any individual to a chemical known to the State of California to cause cancer and/or reproductive toxicity without first giving clear and reasonable warning to individuals. If the business can prove that the exposure level poses no significant risk to the end consumer no warning is necessary.

Minden Machine Shop, Inc. is providing the information below to educate about the chemicals that are or could be found in the products that Minden Machine Shop, Inc. produces or uses in their products.

Material	Chemical	CAS #	Cancer, Reproductive Harm or Both?
Cast Iron	Nickel	7440-02-0	Cancer
	Arsenic	7440-38-2	Both
	Cobalt	7440-48-4	Cancer
	Lead	7439-92-1	Both
Steel	Nickel	7440-02-0	Cancer
Stainless Steel	Nickel	7440-02-0	Cancer
Paint Finishes	Carbon Black	1333-86-4	Cancer
	Toluene	108-88-3	Reproductive Harm
	Lead	7439-92-1	Both
Rubber	Acrylonitrile	107-13-1	Cancer
Compounds	Butadiene	106-99-0	Both
	DEHP	117-81-7	Both
EPDM	Carbon Black	1333-86-4	Cancer
Petroleum	Cadmium		Both
Petroleum	Isoprene	78-79-5	Cancer

Additional information on Proposition 65 can be obtained by visiting the State of California's Proposition 65 website:

https://oehha.ca.gov/proposition-65/about-proposition-65

Summary of Proposition 65 requirements: https://oehha.ca.gov/proposition-65/general-info/proposition-65-plain-language

Clear and reasonable notice requirements: https://oehha.ca.gov/proposition-65/crnr/notice-adoption-article-6-clear-and-reasonable-warnings

Chemicals and substances regulated by Proposition 65: https://oehha.ca.gov/proposition-65/proposition-65-list

Proposition 65 Laws and Regulations: https://oehha.ca.gov/proposition-65/law/proposition-65-law-and-regulations Minden Machine Shop, Inc. has placed this decal on our products to alert the user to the possible exposures.








White Pin Stripes 110





TS2001 White

	Parts List							
ITEM	QTY	PART NUMBER	DESCRIPTION					
85	2	White Pin Stripes 110 ST	110 Pin Stripes					
86	2	DOT White L	Bulk Strip					
87	2	TS2001 White	5x20 Patriot Decal White					
88	1	TS2018	P65 California Decal					
89	2	TS6009	Caution Loading Bags					
90	1	TS6013	Danger Auger in Electrical Lines					
91	1	TS6010	Caution Machine Operation					
92	1	TS2012	Single Pinch Point					
93	1	TS2013	Machine Operating Warning					
94	1	TS6012	Danger Driveline					
95	1	TS6014	Danger Rotating Flighting					
96	1	TS6015	Receiver Power Switch					
97	1	TS2003	Serial Number Decal					
98	22	DOT RW Strip	Bulk Strip					
99	1	TS2017	Read Manual Before Use					
100	1	Tire Information	MMSI Origin					
101	1	VIN GVWR	MMSI Origin					
102	1	TS1005	Handle Lock Style Bumper Pull					
103	1	TS1006	Slide Style Coupler Bumper Pull					
104	2	TS6001	110 Decal					



TS6009





TS6013

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TS6010



TS2012

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 Keep all persons and objects clear while any part of this machine is in motion.



TS2012

ROTATING DRIVELINE • DO NOT OPERATE WITHOUT THIS SHIELD IN PLACE • DRIVELINE MUST BE SECURE ON BOTH ENDS • PTO IS NOT OBSTRUCTED • KEEP HANDS AND FEET FREE OF THIS AREA A DANGER BADANGER ROTATING FLIGHTING HAZARD Keep sway from suger intake. Weep intake thield in piace and in goad working order. Do not medify. FailLine TO HEED WILL RESULT IN SERIOUS INJURY OR DEATH

TS6014

TS2013



TS6015



TS2003



TS2017



TS1005

AWARNING	AWARNING	AWARNING	AWARNING	AWARNING
Unsurghing will cause insider to correla brance forms the statust inside of the english I. CHECK that has LOAD RATING to CAUD RATING. 2. CHECK final has SIZE to assess as a CLASE COUPLER CLAVP on ball. 4. UPT subjets strength to best final it will not appared from ball. 4. UPT subjets assessed to be ball. 4. UPT subjets assessed from ball. 5. UDDS tokens with gar or packbool.	ALRAYS use safety chains. Chains healt traiter II connection tails. You must: 1. CROSS chains undermeath coupler. 3. ALLOW atack for trailer to turn. 4. ATLAW atack for trailer to turn. 1. ATLACH which finances security to toow volkice finans.	Tasko car rol II i conservations. Economic dirity involve applies when the conservation of the conservation 1. PUL, Inter to get the source of antices box. 2. ORCK studie by PALLING TRALER with new validation. 5. ORCK studies by PALLING Conservations. 5. ORCK studies by PALLING applied to the source of the conservation appareture.	Lights can prevent insite from being Init by other vehicles. You must 1. COMECT suite and toe vehicle electrical connectors. 2. CHECK all tights, tall lights, horn signal, and brake lights. 3. DO NOT TOW if lights are not working.	The, wheel or lag not laiture can easure loss of control. Before fouring, you must CHECK: 1. The pressure and bread. 2. These and wherein for damage. 3. Lug muts for tightness. For new and remounted wherein, re-sighten tog puts at the first 10, 25 and 50 million of diving.
Andre stat	ATTICH TO TOW VEHICLE FRAME	PRIPALED COLORS TO THAT REMARK	DISCONNECTED CONNECTED	The and all sets of all sets

TS1006

The TS1005 or the TS1006 may be used on the trailer. The decal that is used will depend on the hitch coupler style that has been placed on the trailer.



Tire Information

GAWR (EACH AXLE)	WITH TIRES RIM	S AT COLD

VIN GVWR



TS6001



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Patriot 110 Seed Tender Dimensions

Empty Weight: 2,812 lbs.

7'-7¹/8"



15'-5³⁄₁₆"



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Torque Data for Standard Nuts, Bolts, and Capscrews

Tighten all bolts to torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt chart as guide. Replace hardware with some grade bolt.

Note: Unless otherwise specified, high-strength Grade 5 hex bolts are used throughout assembly of equipment.

	Doit Torque for Standard Doits									
	Gra	de 2	Gra	Grade 5		de 8				
Bolt Size A	lb-ft	(N.m)	lb-ft	(N.m)	lb-ft	(N.m)				
1/4"	6	8	9	12	12	16				
5/16"	10	13	18	25	25	35				
3/8"	20	27	30	40	45	60				
7/16"	30	40	50	70	80	110				
1/2"	45	60	75	100	115	155				
9/16"	70	95	115	155	165	220				
5/8"	95	130	150	200	225	300				
3/4"	165	225	290	390	400	540				
7/8"	170	230	420	570	650	880				
1"	225	300	630	850	970	1310				

Bolt Torque for Standard Bolts

Torque figures indicated are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

Bolt Torque for Metric Bolts

	Clas	s 8.8	Clas	Class 9.8		10.9
Bolt Size A	lb-ft	(N.m)	lb-ft	(N.m)	lb-ft	(N.m)
6	9	13	10	14	13	17
7	15	21	18	24	21	29
8	23	31	25	34	31	42
10	45	61	50	68	61	83
12	78	106	88	118	106	144
14	125	169	140	189	170	230
16	194	263	216	293	263	357
18	268	363			364	493
20	378	513			515	689
22	516	699			702	952
24	654	886			890	1206

Grade or Class value for bolts and capscrews are identified by their head markings.



OPERATING PROCEDURES

STARTUP AND BREAK-IN PROCEDURES

It is essential to inspect your drive line before adding power and know how to shut it down in an emergency. During the operation of your auger, one person shall be in a position to monitor the operation. Any auger when it is new or after it sets idle for a season should go through a "break-in" period. The auger should be run at partial capacity until several bushels of grain have been augered to polish the flighting assembly and the tube. When the flighting and the tube are polished and smooth the auger can be run full. Never operate the auger empty for any length of time, as excessive wear will result.



During the initial startup and break-in period, the operator shall be aware of any unusual vibrations or noises that would indicate a need for service or repair. Keep all safety shields and devices in place. Keep hands, feet and clothing away from moving parts. The operator should have a full view of the work area and check that all personnel are clear of the designated work area before adding power.



SHUT OFF POWER AND LOCKOUT DRIVE TO ADJUST, SERVICE OR CLEAN!

BULK SEED TENDER INSTALLATION



- 1. Because the center of gravity is much higher with a loaded tender on a truck bed, additional care has to be taken in the way the truck is driven and parked.
- 2. If the tender is to be used in hilly country, do not unhitch a load or partial load as it could roll away and cause it to flip.
- 3. The unit should sit evenly and squarely on the bed of the truck or trailer. It may be necessary to also block the base to keep it from moving around.
- 4. When transporting, keep in mind the auger extends forward, be aware of objects too tall in the towing vehicle. Use caution when passing oncoming traffic or going near obstructions like wires or doors.

OPERATING GUIDELINES

The Patriot Seed Tender is designed to safely and efficiently transport bulk seed to the field to be filled into your planter or drill. Following all safety and operating guidelines should ensure many years of safe and affordable use.

PRE-OPERATION CHECKLIST



When operating this unit for the first time and each time you use it, the following information should be reviewed.

- 1. Make sure the unit is secured to a base and will not slide or roll off.
- 2. Make sure lids are properly latched.
- 3. Make sure the shields are properly installed.
- 4. Make sure the auger is secure before transporting.
- 5. Make sure the throttle cable is free from tangles.
- 6. Make sure you understand the operation of the gas engine.
- 7. Carefully study and understand this manual.
- 8. Do not wear loose-fitting clothing which may catch in moving parts.
- 9. Always wear protective clothing and substantial shoes.
- 10. It is recommended that suitable protective hearing and (eye protection) sight protectors be worn.
- 11. The operator may come in contact with certain materials which may require specific safety equipment, relative to the handling of such materials (examples: extremely dusty, molds, fungus, bulk fertilizers, etc.).
- 12. Keep wheel lug nuts or bolts tightened to specified torque.
- 13. Assure that the tires are inflated evenly and to the proper PSI.
- 14. Give the unit a visual inspection for any loose bolts, worn part or cracked welds, and make necessary repairs. Follow the maintenance safety instructions included in this manual.
- 15. Be sure there are no tools lying on or in the equipment.
- 16. Do not use the unit until you are sure that the area is clear, especially of children and animals.
- 17. Due to the possibility that this equipment may be used in dry areas or in the presence of combustibles, special precautions should be taken to prevent fires and firefighting equipment should be readily available.
- 18. Don't hurry the learning process or take the unit for granted. Ease into it and become familiar with your new equipment.
- 19. Practice operation of your seed tender and its attachments. Completely familiarize yourself and other operators with its operation before using.
- 20. Do not allow anyone to stand between the tongue or hitch and the towing vehicle when backing up to the equipment.
- 21. Securely attach the unit to the towing vehicle using the appropriate ball with the proper rating and always use safety chains.

DURING OPERATION



- 1. Beware of bystanders, **PARTICULARLY CHILDREN!** Always look around to make sure it is safe to start the engine of the unit or the towing vehicle to move the seed tender.
- 2. NO PASSENGERS ALLOWED- Do not carry passengers anywhere on, or in, the equipment.
- 3. Keep hands, clothing, and long hair clear of moving parts.
- 4. Do not clean, lubricate, or adjust your seed tender while the motor is running.
- 5. When halting operation, even periodically, set the towing vehicles brakes, disengages the PTO and shut off the engine, and removes the ignition key.
- 6. Be especially observant of the operating area and terrain look for holes, rocks or other object that may cause you to trip and fall. Always inspect area prior to operation.
- 7. Pick the most level possible route when transporting across fields. Avoid the edges of ditches or gullies and steep hillside.
- 8. Maneuver the Seed Tender at safe speeds.
- 9. Avoid overhead wires or other obstacles. Contact with overhead lines could cause serious injury or death.
- 10. Allow for the units length when making turns.
- 11. Do not walk under or work on raised components or attachment unless securely positioned and blocked.
- 12. Keep all bystanders, pets and livestock clear of the work area.
- 13. Never leave running equipment unattended.
- 14. As a precaution, always recheck the hardware on the equipment following every 100 hours of operation. Correct all problems. Follow the maintenance safety procedures.

OPERATING PROCEDURE

- 1. Start motor (see motor manual)
- 2. Throttle/Clutch control should be in neutral.
- 3. Move telescopic spout above target.
- 4. Activate auger by pushing the up arrow button on the key fob at the end of the spout. This in turn will cause the gas motor to increase in speed engaging the centrifugal clutch attached to the motor. When the desired RPM has been attained let go of the green button.
- 5. Before container is completely filled, return engine to idle by pressing the down arrow button on the key fob until the auger stops turning, as some product may be in spout.
- 6. Move to next target and repeat process.
- 7. When finished empty auger on last box, shut off engine and latch auger.
- 8. Put fuel lever in "off "position prior to transporting the unit.

SHUTDOWN

NORMAL SHUTDOWN

When shutting down the auger to ready for transportation, make certain that the hopper and auger are empty before stopping the unit. Before folding the auger, the power source needs to be turned off.

EMERGENCY SHUTDOWN

If something happens that would cause a need for an emergency shutdown, disengage the auger by slowing the motor to an idle by pressing the red switch at the end of the spout. If for some reason this does not work immediately turn the engine off. Investigate and determine the problem making sure not to put you or anyone in danger. Fix the problem and go through the startup and break-in procedure again.

LOCKOUT

The auger must be stopped and the power source turned off if the operator must leave the work area or whenever servicing or adjusting. Precaution should be made to prevent anyone from operating the auger when the operator is absent from the work area or inside the tender. Never operate the auger with the top auger not folded up or the cleanout door open.

HIGHWAY AND TRANSPORT OPERATIONS

- 1. Always drive at a safe speed relative to local conditions and ensure that your speed is low enough for an emergency stop to be safe and secure. Keep speed to a minimum.
- 2. Reduce speed prior to turns to avoid the risk of overturning.
- 3. Avoid sudden uphill turns on steep slopes.
- 4. Always keep towing vehicle in gear to provide engine braking when going downhill. Do not coast.
- 5. Do not drink and drive.
- 6. Comply with state and local laws governing highway safety and movement of farm machinery on public roads.
- 7. Use approved accessory lighting, flags, and necessary warning devices to protect operators of other vehicles on the highway during daylight and nighttime transport.
- 8. The use of flashing amber lights is acceptable in most localities. However, some localities prohibit there use. Local laws should be checked for all highway lighting and marking requirements.
- 9. When driving the equipment on the road or highway under 20 MPH at night or during the day. Use flashing amber warning lights and slow moving vehicle (SMV) identification emblem.
- 10. Plan your route to avoid heavy traffic.
- 11. Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.
- 12. Be observant of bridge load ratings. Do not cross bridges rated lower than the gross weight at which you are operating.
- 13. Watch for obstructions overhead and to the side while transporting.
- 14. Always operate equipment in a position to provide maximum visibility at all times. Make allowances for increased length and weight of the equipment when making turns, stopping the unit, etc.



- 1. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
- 2. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job
- 3. Inflating or servicing tires can be dangerous. Whenever possible, trained personnel should be called to service and/ or mount tires.
- 4. Always order and install tires and wheels with appropriate capacity to meet or exceed the anticipated weight to be placed on the equipment.



DANGER: Do not transport Seed Tender at speeds in excess of 50 MPH and comply with your state and local regulations governing marking, towing and maximum width. Observe safe driving and operation practices.

ALWAYS LOWER THE AUGER TO TRANSPORT

DANGER: Be alert to overhead obstructions and electrical wires. Failure to do so may result in electrocution. Always lower the auger into the stowed position before moving. Maintain at least ten (10) feet of clearance. Refer to the dimensions chart showing the height of the auger in the up position. Check the chart to determine the height of you auger. Make certain everyone is clear of the work area before moving.

OPERATING & ADJUSTMENT OF VARIABLE SPEED THROTTLE ACTUATOR

The Throttle controller is simple to operate when you keep these few points in mind.

BEFORE STARTING THE ENGINE

- 1. Always keep the battery fully charged. When storing the unit for an extended period of time such, as over winter, you should remove the battery and store it in a place where it can be trickle charged periodically to keep it on good condition. Note: the battery needs to be charged at the start of the season to ensure that you will not have problems when you are in the field.
- Check operation of the actuator before starting the engine. To do this press the green and red buttons on the switch and watch the arm move left or right depending on which button is pressed. Make sure that the actuator arm is closest to the motor before starting engine. This will prevent the motor from being at full throttle and discharging product.
- 3. Make sure that there is no obstruction in the discharge tube.

AFTER STARTING THE ENGINE

- 1. Once the engine is started, let it warm up for a few minutes before operating the actuator. The engine should idle smoothly with the choke in the "off" position, once the engine has warmed up.
- 2. Press the green button on the switch.
- 3. The engine should increase in speed, and the auger should begin to operate.
- 4. To avoid premature wear of the auger, do not operate the unit empty unless cleaning out the auger.
- 5. To adjust the top speed of the engine, adjust the top end RPM screw that the throttle lever comes against when at full throttle. If the motor has a rough bouncy top end RPM screw has been adjusted too much. Turn the top end RPM screw clockwise to get rid of the surging.

TROUBLE SHOOTING THROTTLE CONTROL

- 1. Engine does not come up to speed properly when you press the switch.
 - a. Check the battery to see if it is fully charged.
 - b. Check electrical connections.
 - c. Check for any obstruction at the throttle lever.
 - d. Check that the throttle spring is properly adjusted.
 - e. If you are at a higher altitude you may have to adjust the carburetor (see engine manual).
- 2. Nothing happens when you press the switch.
 - a. Check that the battery is fully charged.
 - b. Check all wire connections and plugs.
 - c. Check the switch.



- 1. The auger should be frequently checked and serviced to operate freely.
- 2. Keep all guards and shields in place. Replace any that are damaged or lost.
- 3. The Patriot Seed Tenders are well made and we are proud of our line of equipment. We would like you, as our customer, to do your part in using caution and good judgment in using the equipment as well as any other machinery.
- 4. Any parts needing replacement should be replaced with parts of the same type and size.
- 5. Do not modify or alter any of the auger components.

TROUBLE SHOOTING

LOW CAPACITY

- 1. The auger may not be getting enough grain.
 - a. Check to see the intake has not "bridged over" restricting the flow.
 - b. Is the gate open to the auger?
- 2. The exposed flighting at the auger intake should be covered with seeds to achieve maximum capacity.
 - a. Is the gate open far enough? Adjust if needed.
 - b. Check the level of seed in the seed tender.
- 3. Check auger speed. A slow speed (below recommended speed) will result in low capacity.
 - a. Is the engine running fast or slow?
 - i. Adjust the engine speed as needed.
- 4. Did the auger connecting bolt break? See manual for part location and replace.

AUGER PLUGS

- The auger may be getting too much grain and be "jamming" inside the housing.
 a. Reduce the amount of grain being fed into the auger using the gate.
- 2. Is the auger free of any foreign material, such as sacks, tarp corners, etc?
- 3. A plug of the discharge end will cause an auger to plug.

EXCESSIVE AUGER NOISE

- 1. Is the auger running full?
- 2. Damage could have occurred to the auger flighting, thus causing noise. Damage usually occurs because of foreign material having been run through the auger. It may be necessary to remove the flighting for inspection.

MOTOR DOES NOT START

- 1. Check gas, old gas will lose octane power.
- 2. Is you fuel valve on the engine turned on? Check your manual for further advice.
- 3. The unit may have been moved while the gas was not shut off, resulting in gas leaking into the oil. An oil change should fix this.

MOTOR VIBRATES ROUGHLY AT TOP SPEED

- 1. Motor may be running to fast. See Engine Manual for setting top speed.
- 2. PTO shaft is not properly aligned or attached.

AUGER DOES NOT TURN

- 1. Check the throttle cable attachments for activate clutch.
- 2. Check for PTO slippage or condition.
- 3. Check to make sure bearings are not frozen.
- 4. Make sure auger is properly aligned.

GENERAL TRAILER MAINTENANCE

BRAKE ADJUSTMENT

Brakes should be adjusted (1) after the first 200 miles of operation when the brake shoes and drums have "seated," (2) at 3000 mile intervals, (3) or as use and performance requires. The brakes should be adjusted in the following manner.

- 1. Jack up trailer and secure on adequate capacity jack stands. Follow the recommendations for lifting and supporting the unit. Check that the wheel and drum rotate freely.
- 2. Remove the adjusting access cover from the adjusting slot on the bottom of the brake backing plate.
- 3. With a flat blade screwdriver or standard adjusting tool, rotate the star wheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out pressure of the linings against the drum makes the wheel very difficult to turn.

Note: With drop spindle axles, a modified adjusting tool with about an 80 degree angle should be used.

- 4. Then rotate the star wheel in the opposite direction until the wheel turns freely with a slight lining drag.
- 5. Replace the adjusting access cover and lower the wheel to the ground. Repeat the above procedure on all brakes.



Never get under the trailer unless it is resting on properly placed jack stands. Follow the recommendations for lifting and supporting the unit. Do not lift or place supports on any part of the suspension system.

BRAKE CLEANING AND INSPECTION

Your trailer brakes must be inspected and serviced at yearly intervals or more often as use and performance requires. Magnets and shoes must be changed when they become worn or scored, thereby preventing adequate vehicle braking. Clean the backing plate, magnet arm, magnet and brake shoes. Make certain that all the parts removed are replaced in the same brake and drum assembly. Inspect the magnet arm for any loose or worn parts. Check shoe return springs, hold down springs, and adjust springs of stretch or deformation and replace if required.



ASBESTOS DUST HAZARD!

Since some brake shoe friction materials contain asbestos, certain precautions need to be taken when servicing brakes:

- 1. Avoid creating or breathing dust.
- 2. Avoid machining, filing or grinding the brake linings.
- 3. Do not use compressed air or dry brushing for cleaning. (Dust can be removed with a damp brush).

Inspections

- Inspect front hitch for wear, replace if wear prevents for correct coupling if ball hitch or oblong hole for trailer hitch pin.
- Check the trailer frame for cracks and/or deformities and have them repaired.
- Inspect lights and repair/replace if broken or damaged.
- Check wheel bearings. Repair or replace if loose or damaged.
- Inspect the suspension system for the trailer. Replace damaged or broken springs or axles.

See tire safety section for tire information.

LUBRICATION & MAINTENANCE

For economical and efficient operation of your auger, maintain regular and correct lubrication. Neglect leads to reduced efficiency, excessive wear and down time.



- 1. Keep all safety shields and devices in place. Never clean, adjust or lubricate a machine that is in operation.
- 2. Make sure there is plenty of ventilation. Never operate the engine in an enclosed building. The exhaust fumes may cause asphyxiation.
- 3. Always use the proper tools or equipment for the job at hand.
- 4. Honda engine refer to manual for information on maintenance products and schedules.
- 5. Gearbox refer to manual for information on maintenance products and schedules.
- 6. Cosmetic any exposed metal where paint or powder has been chipped, gouged, scratched or worn should be lightly sanded, then primed and painted with good enamel paint. If color is hard to match contact Minden Machine Shop, Inc.
- 7. To prevent stone chips on units being pulled by a truck, you should have a set of mud flaps large enough to remedy possible chipping.
- 8. Bearings should be examined annually for wear and tear.
- 9. Replace all shields and guards after servicing and before operation.
- 10. After servicing, be sure all tools, parts and service equipment have been removed.
- 11. Do not allow grease or oil to build up on any step or platform.
- 12. Never replace hex bolts with less than grade five bolts unless otherwise specified. Refer to bolt torque chart for head identification markings.
- 13. Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not claim responsibility for use of unapproved parts and/or accessories and other damages as a result of their use.
- 14. If equipment has been altered in any way from original design, the manufacture does not accept any liability for injury or warranty.
- 15. A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this or any equipment.

Lubricants for Pa	triot Seed Tenders		
	Seed Tender Lubricants		
Equipment	Lubricant Type	Quantity	
Engines			
Honda GX160	SAE 10W-30	0.63 quart	
Honda GX270	SAE 10W-30	1.16 quarts	
Kabler CH2EE	Kohler Pro 10W-50 Synthetic	0.63 quart	
Koniel CH255	or SAE 10W-30		
Kobler CH305	Kohler Pro 10W-50 Synthetic	1.16 quarts	
Kullel Chisas	or SAE 10W-30		
Reducing Gear			
Honda 2:1	SAE 10W-30	17 ounces	
Kohler 2:1	20W-40 or 20W-50	0.52 quart	
Hydraulic Power Unit	ISO 32 Hydraulic Oil	3.0 quarts	
Gearbox			
Dodge 4:1	Synthetic PAG460 Gear Lubricant	28 ounces	



Hydraulic Power Unit (Conveyor Equipped Seed Tenders)



Engine and Reducing Gear (Honda or Kohler)



Gearbox (Auger Type Seed Tenders)

Optional Equipment





	Parts List						
ITEM	QTY	PART NUMBER	DESCRIPTION				
1	1	ST-CP-A0040	Ladder Extension				
2	4	8880T87	U-Bolt 1-7/16x3-1/16x5/16				
3	8	W5/16L	Lock Washer				
4	8	N5/16N	Hex Nut				

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6" Auger Lift							
ITEM	QTY	PART NUMBER	DESCRIPTION				
1	1	ST-CP-A0027	Top Actuator Mount RH				
2	1	ST-CP-A0026	Top Actuator Mount LH				
3	1	ST-CP-P0088	Dual Spring Actuator				
			Bracket Inside				
4	1	ST-CP-P0087	Dual Spring Actuator				
			Bracket Outside				
5	1	ST1160	Actuator to fit 110 or 220				
5.1	1	ST1161	Actuator to fit 100 or 200				
7	2	B1/2X2.5	Hex Bolt				
8	2	N1/2NYL	Nylock Nut				
9	4	B3/8X1.25	Hex Bolt				
10	4	N3/8NYL	Nylock Nut				
12	6	N5/16NYL	Nylock Nut				
13	3	B5/16X2	Hex Bolt				
14	3	B5/16X2.25	Hex Bolt				

	7" Auger Lift						
ITEM	QTY	PART NUMBER	DESCRIPTION				
1	1	ST-CP-A0028	Top Actuator Mount RH				
2	1	ST-CP-A0029	Top Actuator Mount LH				
3	1	ST-CP-P0092	Actuator Bracket Inside				
4	1	ST-CP-P0091	Actuator Bracket				
4			Outside				
5	1	ST1165	Actuator				
7	2	B1/2X2.5	Hex Bolt				
8	2	N1/2NYL	Nylock Nut				
9	4	B3/8X1.25	Hex Bolt				
10	4	N3/8NYL	Nylock Nut				
12	6	N5/16NYL	Nylock Nut				
13	3	B5/16X2	Hex Bolt				
14	3	B5/16X2.25	Hex Bolt				

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Qui	ckta	ch Auger Bracl	kets					
	6 'GT Auger Parts List							
		6" QT Auger	Parts List			7" QT Auger Parts List		
ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION	
1	1	ST-CP-A0043	Circle Lock 6IN Ring Asmbly	1	1	ST-CP-A0057	7" Lock Ring	
2	1	Flex Tubing Example	Flex Spout	2	1	Flex Tubing Example	Flex Spout	
3	1	S5007	6" Bolt On Steel Frame Band	3	1	S5507	7" Steel Band	
4	1	S5006	6" Circle Lock Ring Clamp	4	1	S5506	7" Lock Ring	
5	1	ST-CP-P0152	QT 6 Upper Bracket	5	1	ST-CP-P0148	7" Mount Bracket	
6	1	ST-CP-A0041	6" Leg Mount	6	1	ST-CP-A0042	7" Leg Mount	
8	5	B3/8X1.25	Bolt	8	5	B3/8X1.25	Bolt	
9	5	N3/8N	Nut	9	5	N3/8N	Nut	
10	5	W3/8L	Lock Washer	10	5	W3/8L	Lock Washer	
11	1	B1/4X2	Bolt	11	1	B1/4X2	Bolt	
12	1	N1/4NYL	Nylock Nut	12	1	N1/4NYL	Nylock Nut	

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Parts Diagrams



		ST-110 Seed Tender	r Parts List			ST-110 Seed Tende	r Parts List	
ITEM	QTY	PART NUMBER	DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION	
3	1	ST-110-A0002	110 Lid with 220 Ends	129	2	ST-CP-P0001	PTO Shield Bolt Plate	
5	1	ST-110-A0003	110 Lid Handle	130	4	B5/16X1CB	Carriage Bolt	
6	2	ST-110-P0031	Lid Arm 24 IN_375x1	131	20	N1/2NYL	Nylock Nut	
13	1	S4900	18" Driveshaft	135	1	S4103	Motor Actuator	
20	1	See Poly Spout Page	Varies	135.1	1	S2039	Actuator Rod	
26	1	TR1590	Manual Holder	135.2	1	S4604	Carb Kit Holder	
27	2	S4804	Rubber Foot	135.3	1	S4605	E-Clip	
33	1	W1030	On/Off Switch	135.4	1	4mm x 6mm	Actuator Screw	
33.1	1	S4201	Lift Actuator Potted	135.5	1	WI1031	Paddle Switch	
			Switch	135.6	1	WI1032	Switch Boot	
33.2	1	S4003	DPDT Spout Switch	137	2	B5/8X5	Bolt	
33.3	1	S4521	On/Off Switch Wireless	138	4	W5/8F	Flat Washer	
36	1	S4700 (Hub City) or	Gearbox	139	2	N5/8L	Lock Nut	
		S4710 (Dodge Tiger)		140	4	B1/4X1	Bolt	
37	1	S4601	5.5 HP Electric Start	141	4	W1/4L	Lock Washer	
37.1	1	S4600	5.5 HP Pull Start	142	5	N1/4N	Hex Nut	
37.2	1	S4607	Wet Clutch	143	1	B1/4X2	Hex Bolt	
46	2	ST-CP-A0046	Fender	161	1	S4805	4" Rubber Latch	
47	1	ST-110-A0006	PTO Shield	162	1	S4806	Bent Latch	
49	2	S4803	Locking Clamp	162.1	1	S4809	Lid Latch	
50	1	TR1800	Battery Breakaway	164	2	N3/8NYL	Nylock Nut	
58	6	W5/16N	Nylon Flat Washer	169	2	B3/8X1CB	Carriage Bolt	
63	3	PR316X0.5L	Rivet	171	1	ST-CP-P0008	Auger Stop Tab	
70	20	W1/2F	Flat Washer	177	1	ST-CP-P0005	Throttle Linkage	
88	10	N3/8N	Nut	178	1	N1/4L	Lock Nut	
89	4	S1/4X1.5ST	Self Tapping Screw	185	4	S#10X1M	Machine Screw	
90	16	N5/16N	Nut	186	4	W#10L	Lock Washer	
91	6	W5/16F	Flat Washer	187	4	N#10N	Nut	
92	5	B5/16X1	Bolt	192	1	ST-110-A0001	110 Body Weldment	
93	8	B3/8X1.25CB	Carriage Bolt	193	1	ST-110-A0008	110 Gate Assy New	
95	8	W3/8F	Flat Washer	194	2	ST-CP-P0029	New Hopper Gate Link	
96	10	N5/16NYL	Nylock Nut	195	2	ST-110-P0020	110 Gate Link Bar	
98	8	B5/16X1.5	Bolt	196	1	ST-110-P0021	110 Gate Handle	
99	6	B3/8X1	Bolt	197	1	TR1595	Safety Chain	
100	14	W3/8F	Flat Washer	199	1	TR3004	Rt. Tail/Stop Light	
101	4	B1/2X1CB	Carriage Bolt	200	1	TR3005	Lft.Tail/Stop Light	
102	2	B1/2X2	Bolt	201	1	TR1115	12.5K 2-5/16" Coupler	
103	16	W5/16L	Lock Washer	202	2	B7/16X1.5	Hex Bolt	
104	6	N1/25NYL	Nylock Nut	203	1	TR1600	2K 10" Topwind Jack	
105	4	B5/16X1CB	Carriage Bolt	206	4	TR1095	15" Tire and Rim	
126	1	S4000	Battery				Assembly	
126.1	1	S2044	Battery Tray	207	2	TR1040	3500 lbs. Axle	

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Se	ed T	enc	ders Lo	wer A	ugers ar	nd Gearbox	6" Lower (6	Top Module of	
6" /	Auger	'is 5'	' Diamet	er Mod	ule		Auger		Bottom Auger	
7" /	Auger	is 6'	' Diamet	er Mod	ule	7" Lower	(8)	N BY		
	s	T100	Lower Au	iger Parts	3	Auger		H.		
Part	Numb	er	Qty	Des	cription	Top Module of the		H		
S102	1		1	Тор Мо	dule	Bottom Auger		H		
S102	20		10	Modules	3			H	Auger Modules	
S102	27		1	Bottom	Module			-	(Auger Body)	
	S	T110	Lower Au	ger Parts	5		Y A	Ľ		
Part	Numb	er	Qty	Des	cription	Auger Medules		L		
S102	1		1	Тор Мо	dule	(Auger body)	- FA	J.		
S102	20		12	Module						
S102	7		1	Bottom	Module	\bigcirc	TA TA	J) -		
0102		T200		Ider Parts		$\langle 2 \rangle$		TL)		
Dort	Numb	or			cription	A		•	of Bottom Auger	
9102		ei	1	Top Mo	dule	Ŀ	J.	of Bottom Auger		
S102	<u>'</u> 0		12	Module		\frown	\sim			
S102	7		1	Bottom	Module	(1) U	∕_B	Bottom A	le of the	
0102	., S	T220	Lower Au	ider Parts	6	(1.1)	ST22		uger Parts	
Part	Numb	er	Qtv	Des	cription		Dart Number			
S102	1		1	Тор Мо	dule		S10/1	1		
S1020		9	Module			S1041	7	Module		
S1027 1 E		Bottom	Module		S1045	1	Bottom Module			
Otv	Folding Connector				lion		SI3	30 Lower Au	Jger Parts	
Qiy	Partin	umbe	Poly Auger Cabl				Part Number		Top Module	
1	S1000)	Assembly Male a		e and Female		S1041	7	Modulo	
1	\$1001		Male Connector		with Cable		S1040	1	Bottom Modulo	
1	S1015		Female	Foldina	Connector		01040		Bottom Module	
	• • • • •							1		
					der Lower A			See table	for additional lower	
1			7700		Coarboy (H			flighting pa	art numbers.	
1 1	1	0	34700		Gearbox (D					
2			T-CP-P00	132		ouge) ar Shaft Δdanter	-			
3			T-100-A0	000	Lower Auger 6" Elighting for 100 (2-Box) Seed Tender -			-		
Ŭ			51" Long		51" Long					
4	1	S	T-CP-A0)47	Lower Aug	er for 110 Seed Tender (58" L	-			
5	1	S	T-CP-A0)47	Lower Aug	er for 200 Seed Tender (4 Box	1			
6	1	s	T-220D-A	0002	Lower Auge	er 6" Flighting for 220 Seed Te	1			
7	1	S	T-220-7D	-A0005	Lower Auge	er 7" for 220-7 Seed Tender (4				
8	8 1 ST-CP-A0020 L		Lower Auge	er 7 inch for 330 Seed Tender	1					
9	9 1 S1021 Top of Bottom Module 6" Auger		om Module 6" Auger		1					
12	12 1 S1041 Top of Bottom Module		om Module 7" Auger]					
11	11 1		51077		Top of Botte	om Module 8" Auger				
10 1 \$1020 F		Regular Au	ger Module 6" Auger							
13	1	S	51040		Regular Au	ger Module 7" Auger				
14	1	S	51075		Regular Au	ger Module 8"Auger				
15	1	S	51027		Bottom of E	ottom Module 6" Auger		Minden	Machine Shop Inc.	
16	1	S	51045		Bottom of E	Sottom Module 7" Auger		1302 K	Road Minden, NE	
17	1	S	51078		Bottom of E	ottom Module 8" Auger		3	08-832-0220	

PATRIOT 110 SEED TENDER MANUAL V23.3

Τομ	o Of To Auger			CARDED DE	Seed Tender 6" and 7" Auger Assemblies						
	D										
5		4	6. 6. 6.	4)		GGG	8 13	Bottom Of			
	0 0		6.1		Z	\sim		Top Auger			
D	ETAI	LB									
6" M	lodules	s are 5" [7) Diamet	8 9 (6) er							
7" N	lodules	s are 6" [Diamet	er							
	1	Seed T	ender A	uger Parts			• (2)	Sole -			
QTY	PART	NUMBER		DESCRIPTION							
29	S1	1020	Regula	r Module 6" Auger							
24	S1	1040	Regula	r Module /" Auger							
1	S1	1027	Top of	Top Module 6" Auger							
1	S1	1045	Top of	of Top Module / Auger		7" 6/		Accombly Parts List			
1	S	1022	Bottom	of Top Module & Auger							
-	3		Bollon				FART NUMBER				
						1	S1-CP-A0017	7 Opper Auger			
1 LIVI	1	ST_CP_A		6" Upper Auger	2	1	ST-CP-40021	7" Auger Flighting			
2	1	S1025-1	0011	Auger Pivot Pin	4	1	BR905	Auger Rearing			
3	1	ST-CP-A	0007	6" Auger Flighting	5 3 SP400		SP4007	Auger Bearing Spring			
4	1	BR905		Auger Bearing	6	1	ST-CP-A0004	Push/Pull Handle 52" Long			
5	3	SP4007		Auger Bearing Spring	6.1	1	S2035-1	1/2" Rod End Male			
6	1	ST-CP-A	0004	Push/Pull Handle 52" Long	6.2	1	ST-CP-P0047	1/2" Bushing			
6.1	1	S2035.1		1/2" Rod End Male	6.3	1	B1/2X3.5	Hex Bolt			
6.2	1	ST-CP-P	0047	1/2" Bushing	6.4	1	N1/2NYL	Nut			
6.3	1	B1/2x3.5		Hex Bolt	7	3	B5/16X3.5	Hex Bolt			
6.4	1	N1/2NYL		Nylock Nut	8	10	N5/16NYL	Nylock Nut			
7	3	B5/16X3.	5	Hex Bolt	9	3	W5/16F	Plain Washer			
8	9	N5/16NY	L	Nylock Nut	10	3	B5/16X1.5	Hex Bolt			
9	3	W5/16F		Plain Washer	11	1	S4803	Retaining Clamp			
10	2	B5/16X1.	5	Hex Bolt	12	1	S4802	Replacement U-Bolt			
11	1	S4803		Retaing Clamp	13	4	B5/16X1.0	Hex Bolt			
12	1	S4802		Replacement U-Bolt	14	1	SP1060B	Auger Spring L Hand Black			
13	4	B5/16X1.	0	Hex Bolt	15	1	SP1060R	Auger Spring L Hand Red			
14	1	SP1060E	3	Auger Spring L Hand Black	16	1	SP4003B	Auger Spring R Hand Black			
15	1	SP1060F	<u>.</u>	Auger Spring L Hand Red	17	1	SP4003R	Auger Spring R Hand Red			
16		SP4003E	5	Auger Spring R Hand Black				Minden Machine Shop Inc.			
17	1	SP4003F	K	Auger Spring R Hand Red				1302 K Road Minden, NE 308-832-0220			
18	1	S1002		Female Folding Connector				300-032-0220			



PATRIOT 110 SEED TENDER MANUAL V23.3



ST-CP-A0073R (Red) ST-CP-A0073G (Green) ST-CP-A0073B (Black)

ST-CP-A0073 Parts List								
ITEM	QTY	PART NUMBER	DESCRIPTION					
1	1	ST-CP-A0072	6 in Single Spring Auger Assembly					
2	1	ST-CP-A0061 Push/Pull Clamp Assembly						
3	3 1 ST-CP-A0064 Bolt On Hook Assembly							

Minden Machine Shop Inc. 1302 K Road Minden, NE 308-832-0220

ST-CP-A0064	1		6" Clamp Hook and						
Clamp Hook Assembly Assemblies									
	$\langle \rangle $								
		\frown		Š ,					
		(5)	3						
			ST-CP-A00	64 Parts List					
	ITEN	<i>Ι</i> QTY	PART	DESCRIPTION					
	1	1	ST-CP-A0060) Band Clamp Assembly					
	2	1	ST-CP-A0063	Bolt On Clamp Hook					
	3	6	B5/16x1.5	Hex Bolt					
	4	6	N5/16N	Hex Nut					
	5	6	W5/16L	Lock Washer					
			1						
ST-CP-A0061					4 5				
Push/Pull Clan	n As	semb							
	10 7 10	001110							
		\bigcirc		Tevio					
		(2)							
]			ST-CP-A	0061 Parts List	7				
ITEM QTY PART DESCRIPTION									
1 1 ST-CP-A0060 Band Clamp Assembly									
2 1 ST-CP-A0062 Push/Pull Bottom Clamp Assembly									
	3	6	N5/16N	Hex Nut	1				
	4	6	B5/16x1.5	Hex Bolt	1				
	5	6	W5/16L	Lock Washer	1				

	65			
		P	arts List	
ITEM	QTY	PART NUMBER	DESCRIPTION	
1	1	ST-CP-P0199	Basket Holder Bolt On Bracket	
2	2	ST-CP-P0200	Basket Holder Weld On Leg Bracket	
3	2	S4810	Lid Latch Anchor	
4	2	S4806	7" Rubber Lid Latch	Minden Machine Shop Inc.
5	2	B1/4x2.0	Hex Bolt	1302 K Road Minden, NE
6	2	N1/4NY	Nylock Nut	308-832-0220
_			,	

Seed Tender Flexible Spout Options



6" Flexible Poly Spouts							
Part Number	Length	Description					
S5002	4'	Standard spout					
S5001	4'10"	Spout with no handle					
S5014	4'10"	Spout with handle for					
		Rowe					
S5000	7'19"	Spout with no handle					
85012	7'10"	Spout with handle for					
33012	119	Rowe					

7" Flexible Poly Spouts							
Part Number	Length	Description					
S5502	4'	Standard spout					
S5501	4'10"	Spout with no handle					
85514	4'10"	Spout with handle					
35514	410	for Rowe					
S5500	6'16"	Spout with no handle					
85510	6'16"	Spout with handle					
30012	010	for Rowe					

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Axle Parts											
					Avlo Parte			90			
Axle Size		Hub	G	rease Seal	Inner Bear	ina	Inner Ra		Race	Outer Bearing	
3500#	TR1040	5 on 4.5	5 1	171255TB	L-68149)	L-6811	1 L-44	610	L-44649	
6000#	TR1060	8 on 6.5	5	2233TBN	25580		25520	142	276	14125A	
7000#	TR1074	8 on 6.5	5 2	2333TBN	25580		25520	142	276	14125A	
8000#	TR1095	8 on 6.8	5 2	2333TBN	25580		25520	024	420	02475	
10000#	TR1096	8 on 6.8	5	CR27438	28580		28521	25	520	25580	
12000#	TR1080	8 on 6.5	5 CR31281		39590		39520	JM20	5110	JM205149	
16000#	TR1092	8 on 275 r	nm CR31281		39590 395		39520	JM205110		JM205149	
	_			A	xle Parts				1		
Axle Size	Spindle Washer	Spino	le Nut Cotter Pin		Grease Cap	EZ	Z Lube Cap	Rubber Plug	Cone	e Wheel Nut	
3500#	4753	TR	1045 4755		TR1041	_	TR1044	RP-100		4756	
6000#	4753	TR	1065 TR1070		TR1064	_	TR1072	TR1072-1		4756	
7000#	4753	475	4-12	4755	1605-PL		-	RP-100		4756	
8000#	4753	475	4-12	4755	1605-PL	-		RP-100		4756-1	
10000	4798	47	797	CP-3	12011-1	_	-			568216	
12000#	47128	47	127	CP-3	12011-1	_	-	-		568216	
10000#	4/120	47	127	07-3	12011-1		-	-		SIGFIFEC	
			Axle P	arts							
Axle Size	Brake Drum	Back Plate	Brake	Drum w/ Bea	arings/Seal	Bra	ke Set Up				
3500#	TR1042 (L,	R, 2-1/4"?)		TR1043			-				
6000#	TR1062	(L or R)		TR1063		٦	FR1061				
7000#	4704-L/	4704-R		92865A-1			-				
8000#	4739-L/	4739-R		90865-GF	C		-				
10000#	0000# 4739-L/4738-R			99865-OB	E						
12000# 4741-L/4741-R				912865-OE	BE		-				
16000#	4741-L/	4741-R		916810-OE	BE		-				
	Ayle Parte			Avia Dr	arte						
Descri		art Number	De	scription	Part Numb	er					
1/2" Stud (Sk Axle	21073	9/16-18	B Lua Nut	TR1076						
9/16" Stud	6K Axle TF	R1074	1/2 Stu	Id & Nut	TR1085-1	-+			Min 1	iden Machine Shop 302 K Road - Minden) Inc. NF
1/2-20 Luc	Nut TF	1075	12 x 2" Brake Pad TR1071						800	-264-6587 / 308-832	-0220

ELECTRONICS



PATRIOT 110 SEED TENDER MANUAL V23.3




	THC50708 Assembly								
DETAIL C 10 10 5 5 C 13 11 12 1 15 C 13 11 12 1 15 C 14 DETAIL A DETAIL A DETAIL A DETAIL A DETAIL A									
		Seed Tender Co	biled Wire Assembly	Seed Tender Coiled Wire Assembly					
ITEM	M QTY PART NUMBER		DESCRIPTION	ITEM	QTY	PART NUMBER	DESCRIPTION		
1	1	S4010	Waterproof Reverse Polarity	10	1	TR1939	3/8 Ring Terminal		
			Rocker Switch 3 Position	11	1	ST-CP-P0215	Formed Switch Handle		
2	1	S4015	Coiled Wire 18ga.	12	4	B1/4x1.25BHZINC	Button Head Cap Screw		
3	1	12010974	4 pin Weather Pack Male	13	4	N1/4NYL	Nylock Nut		
4	1	TR1919	4 pin Weather Pack Female	14	2	S8-32x.75PHMS	Machine Screw		
5	1	TR1921	2 Pin Weather Pack Female Shroud	15	2	N8-32NYL	Nylock Nut		
6	6	TR1921	Female Terminal (socket)						
7	4 TR1922 Male Terminal (pin)			This drawing and the information hereon			This drawing, and the information hereon, are the		
8	10	TR1924	Weather Pack Seal (green) Patriot Equipment Instruct Equipment 1302 K Road Minden, NE property of Minden Machine			NE property of Minden Machine Shop Inc., and may be used only as authorized by us. Unpublished - All rights			
9	2	TR1929	5/16 Ring Terminal	:		308-832-0220	reserved under the copyright laws.		

RE6 Radio Controller Parts

RE6 Part Numbers				
Quantity	Part Number	Description		
1	S4520	RE6 Radio Kit Regular		
1	S4523	RE6 Radio Only		
1	S4528	RE6 Harness Only		
1	S4527	RE6 Radio Kit Scale		
1	S4529	RE6 Harness Only for Scale		
1	S4531	RE6 Radio Kit Scale and Conveyor		
1	S4531-1	RE6 Radio Only Scale and Conveyor		
1	S4522	RE6 Harness Only Scale and Convey		
1	S4524	4 Button Key Fob		
1	S4530	6 Button Key Fob		

Radio Kits Include: Associated RE6 Radio, Harness, and Key Fob







Rowe Wiring Harness with Scale PN: S4529



1302 K Road Minden, NE

308-832-0220

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WIRELESS REMOTE INSTRUCTIONS WIRELESS REPROGRAMMING INSTRUCTIONS

WARNING!!!!

THE OPERATOR SHOULD NOT ATTEMPT TO REPAIR ANY RADIO CONTROLLER. IF ANY PRODUCT PERFORMANCE OR SAFETY CONCERNS ARE OBSERVED, THE EQUIPMENT SHOULD IMMEDIATELY BE TAKEN OUT OF SERVICE. DAMAGED AND INOPERABLE RADIO CONTROLLER EQUIPMENT SHOULD BE RETURNED TO PATRIOT EQUIPMENT FOR EVALUATION AND REPAIR. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN DAMAGE TO EQUIPMENT.



NOTE: If your Patriot Seed Tender does not have the electric start option, the electric start on button and electric start off button on the remote transmitter will have no function.

Overview:

The RE6 wireless control is designed to provide highly dependable, consistent wireless performance. Aside from battery replacement, the units are practically maintenance free and built with quality components for durability and reliability.



- 1. Magnetic sensor learn area (side of box)
- 2. Power and status indicator light
- 3. Connector for wire harness
- 4. Mounting holes

Safety:

Ensure that the transmitter is not left unsupervised while the receiver is powered on.

Caution:

Tamping with or using the product in a fashion other than intended can result in product malfunctions leading to injuries or death. Misuse or evidence of tampering will void the warranty.

Power Management/Restrictions:

The RE6 may be used to directly control power to applications. The systems have a maximum current rating which needs to be observed. Individual outputs are rated at 2.5A each. The maximum, combined simultaneous output limit is RE6 7.5Amps. Exceeding the limit will result in damage to the unit. For applications requiring higher output amperages, the RF systems may be used in conjunction with relays.

Rx/Tx Communication/Learning:

When purchased, the communication between the transmitter(s) and the receiver unit will already be established. If communication is lost or additional transmitters are added, the learn procedure is completed by holding the bottom of the key fob transmitter on the "learn" area. The indicator light on the receiver will turn solid red indicating it is ready to pair with the transmitter. Once the light is red, press a button on the transmitter and watch for the receiver indicator light to flash green indicating a successful pairing.

New radios: In idle, the indicator light will be on for one second and then off for one second. To "learn" the remote, hold a magnet in the "learn" area until you get a steady red light, then push a button on the key fob, then remove the magnet while still depressing the button until a solid green light comes on. **Old radios:** In idle, the light will blink every second. To "learn" the remote, hold a magnet on the "learn" area until a steady red light, pull away the magnet and push a button on the key fob.

Power Supply:

An adequate power supply is essential for proper performance. The receiver draws a small amount of current when it is in stand-by mode and can discharge the battery over time. Always disconnect the RF unit when charging the battery or performing any electrical work. The receivers have an internal thermal

fuse that will, in most cases, shut the unit down if it encounters overvoltage situations, but there are some conditions that it cannot protect against. If the thermal fuse does activate, the unit will shut down. Once the unit cools, the RF system will reset and function normally. Should the unit shut down in such a manner, inspect the electrical system that is powering the RF unit.

Mounting: Mount the unit with the electrical plug pointing down in an area that offers as much protection as possible and away from direct sources of high heat, moisture, vibration, and electromagnetic energy. Proper mounting and placement will ensure the best and long lasting performance.

Wiring:

The wire harness is specific to the wireless controller. It has a 7.5 amp fuse incorporated into the power lead going to the receiver. DO NOT REPLACE WITH A HIGHER AMPERAGE FUSE – USE 7.5 AMP FUSE ONLY. The wire harness should be inspected regularly for any damage.

Operation:

Once the unit is powered up by turning on the toggle switch, you are ready to operate. On both the receiver and transmitter unit there is an L.E.D. indicator. On power up, the receiver unit will flash four times. This indicates that the unit is getting power, and that it is ready to operate. The RE6 unit has a line of sight range of 100' feet. Keep in mind that battery condition, receiver mounting location, and multiple obstructions can reduce the effective range.

Battery Replacement:

The battery (#CR2032) in the key fob remotes should be changed annually prior to each operational season. If the transmitter battery voltage has dropped below 2.85 volts, the battery should be replaced. If inconsistent performance or reduced range is observed, the remote battery should be changed. The battery can be changed by removing the small screw on the back of the unit and splitting the transmitter case. Once opened, slide the battery out of its holder, and replace. To prevent damage, do not use screwdrivers or other metal tools inside of the transmitter case. Upon reassembly, <u>apply silicone</u> around the keypad edge and make certain that it is properly seated in the sealing channel and the two case halves are mated correctly. This will prevent water ingress.

Troubleshooting:

The majority of trouble shooting issues can be traced back to a power supply (battery) deficiency.

- 1. replace the remote battery
- 2. check the main power source for 12.4V
- 3. check the power and ground wire connections
- 4. check the fuse in the power wire

If you still are experiencing difficulties, a troubleshooting sheet can be found on our website: <u>www.rowe-electronics.com</u>

Additionally, feel free to contact our customer support center at 515-981-5504.

Rowe Electronics, Inc. 339 Hakes Drive Norwalk, IA, 50211 515-981-5504

Rowe Electronics and Patriot Equipment Seed Tenders

Pull Start Engines

The Rowe controller will not start a pull start engine from the key fob due to the pull start engine having no electric start installed.

Electric Start Engines

The electric start engines that Patriot Equipment uses on the seed tenders will also have a pull start for a backup in the event the electric start will not operate. Due to the electric start, the Rowe key fob can be used to start the engine.



To start the engine with the Rowe key fob, perform the following:

1. Rotate the key switch that is mounted to the engine to the "on" position.



2. Turn the leg switch (located on the leg of the seed tender) to the "on" position.



- 3. Choke the engine as needed.
- 4. Depress the electric start on/start button on the key fob
- 5. The engine should begin to turn over and start
- 6. The key fob can be used to speed up and slow down the engine

Scale Operation

The Rowe system integrates with the scale to enable the user to dispense a predetermined amount of seed. To enable the automated dispensing, the toggle switch located next to the scale needs to be placed in the "auto" position. The "manual" position is for non-automated operation of the seed tender. Please refer to scale manual on the procedure to program the amount of weight of seed to dispense. Once programmed, the Rowe system will slow the engine down (stopping seed dispensing) when the predetermined amount of seed has been dispensed.



Changing Battery in Remote

Remove the small screw on the backside of the case and carefully pry open the two halves of the case. There are four parts that fit together; front side case, membrane, pcb, and backside case. Be careful not to pull out the "learn" magnet.



The front side of the case, membrane and pcb will likely stay together. Use a <u>non-metal</u> object to push the battery out as shown. Using a metal object will damage the board. Insert a new battery carefully with the positive face up.



Gama Electronics

The Gama Electronics wireless control is designed to provide quality wireless performance. The unit is essentially maintenance free with the exception being a battery replacement for the key fob. All of the components are designed to provide a reliable and durable wireless system.



Safety Precautions



Never leave the transmitter (key fob) left unsupervised when the receiver is powered on. The transmitter can be activated which could lead to an accident with severe injuries or death.



If this product is used in a way other than intended, this can result in product malfunctions which can lead to injuries or death.

Any misuse or evidence of tampering will void the warranty.

Power

The Gama Electronics wireless controller may be used to directly control power to applications. An adequate power supply is necessary for correct performance. The radio unit will draw a small amount of power over time when it is in standby mode which can discharge the battery. Disconnect the radio unit when charging the battery or doing any electrical work.

Programming

Please see the "Programming GAMA Electronics"

Mounting

The radio unit should be mounted with the electrical plug pointing down in an area that will protect the radio unit as much as possible. Correct mounting will ensure correct performance as well as a long service life.

Wiring

The wire harness is specific to the radio unit. The wiring harness has a 7.5 amp fuse installed in it. Do Not use a higher amp rated fuse as this can damage the radio unit. Inspect the wire harness regularly for any damage.

Operation

Once the radio unit is powered up, it is ready for operation. The unit has an effective range; however, the range can be decreased depending upon battery condition, receiver mounting location, and numerous obstructions.

Battery Replacement

See "Battery Change Instructions."

Troubleshooting

Most issues will originate with power supply issues.

- 1. Replace the key fob battery
- 2. Check the main power for the radio
- 3. Inspect the power and ground wire connections
- 4. Check the fuse in the power wire

If you are unable to resolve any issue, feel free to contact Patriot Equipment at 308-832-0220.

Key Fob (Transmitter)





Programming GAMA Electronics

Press and hold the black button on the control unit until the red light comes on.



Press any key on the key fob and hold it until the red light blinks once. (Four button model shown)



The key fob is now programmed to the control unit.

GAMA Key Fob Battery Change

Turn the key fob over so that the housing retaining screws are visible. Using a phillips screw driver, remove the screws.



Once the screws have been removed, set them aside. Separate the key fob halves. Inspect the key fob for any internal damage or missing parts. The key fob should look like the below picture.



Remove the old A23 battery and discard in a safe manner. Insert a new A23 battery in the correct manner.

Reassemble the key fob. If the key fob doesn't work, the battery may be installed backwards.





Patriot Seed Treater

Owner's Manual



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





Wet Inoculator Parts List						
ITEM	QTY	PART NUMBER	DESCRIPTION			
1	1	WI1026	Pump Switch Bracket			
2	1	WI1000	Pump			
4	1	WI1030	Toggel Switch - 3 Position Momentary			
5	1	WI1003	3 Gallon Tank			
6	1	WI1025	Leg Base Bracket			
8	1	WI1027	Tank Lid			
14	1	WI1004	Pressure Relief Valve			
16	2	WI1014	1/2 NPT Male x 3/8 Hose Barb			
17	3	WI1009	1/2 Male NPT x 3/8 Hose Barb x 90			
18	1	WI1039	11/16 Nylon Hex Nut			
19	1	WI1015	11/16" Fine Thread x 3/8" HB 90			
20	1	WI1008	Tee 1/2" NPT Female			
21	1	WI1005	0-60 Liquid Filled Pressure Gauge			
22	1	WI1006	Street Elbow 45 deg. 1/4"M x 1/4" F			
26	1	WI1028	U-Bolt			
29	4	S10-24x1"HHS	Pan Head Machine Screw			
30	4	W#10F	Flat Washer			
31	4	N10-24NYL	Nylock Nut			
35	10	W5/16F	Washer			
43	4	B3/8x1	Hex Bolt			
44	4	N3/8N	Nut			
45	4	W3/8L	Lock Washer			
46	4	W3/8F	Washer			
47	2	N5/16N	Nut			
48	4	B5/16x1	Hex Bolt			
49	1	WI1020	Strainer 100 Mesh			
51	1	WI1021	Reducer Nipple 1/2 to 3/8			
54	1	WI1010	3/8" MPT x 3/8" HB x 90			
55	1	WI1011	3/4" NPT X 1/2" NPT REDUCER NIPPLE			
56	1	WI1044	1/2" Union Valve			
58	1	WI1019	Supply Hose			
59	1	WI1019	Pump to Pressure Relief Hose			
60	1	WI1019	Return Line			
61	1	WI1019	Hose to auger			
62	7	WI1035	Hose Clamp Size #6			

Wet Inoculator

Parts List						
ITEM	QTY	MMSI Part Number	PART NUMBER	DESCRIPTION		
1	1	WI1024	210-303 12 FPT Check Valve	PVC Check Valve		
2	1	WI1018	Quick TJ Nozzle Body_25	#QJ 1/4TT-NYB - 1/4" Male NPT		
			MPT_QJ1_4TT-NYB			
3	1	WI1017	Tee Jet Adapter Cap QJ4676-1_4-NYR	#QJ4676-1/4-NYR		
4	1	WI1002	Orifice Plate CP4916_12	Tee Jet Orifice Plate #CP4916_12		
5	1	WI1007	SL025-90	1/4" Street Elbow		
6	1	WI1022	RN050-025	1/2" to 1/4" Reducing Nipple		
7	1	WI1014	HB050-038	1/2" NPT THREAD X 3/8" HOSE BARB		
8	1	WI1001	Gasket CP19438_EPR	Rubber Gasket # CP19438-EPR		



2



The red wire from the pump is positive (+) and will be connected to the white wire from the 2 strand wire loom.

The white wire (+) will be connected to the positive (+) post of the battery with a $\frac{3}{8}$ " ring terminal. The black wire from the pump is negative (-) and will be connected to one side of the on/off switch with a ring terminal.

Attach the 30 amp fuse link wire to the other side of the on/off switch using a ring terminal. The other side of the fuse link will be connected to the black wire from the 2 strand wire loom.

The black wire from the 2 strand wire loom will be connected to one side the paddle switch using a ring terminal.

From the 2 strand wire, continue to use the black wire (-) and connect it to the other side of the paddle switch. The same black wire will be connected to the negative post (-) of the battery with a $\frac{5}{16}$ " ring terminal.

To assemble the Wet Inoculator:

Use sealant tape or paste when assembling parts. The parts are plastic, so be careful when tightening so parts don't break or crack. Refer to the diagrams for assembly to aid in assembly.

1. Locate the 3 gallon tank (5), 11/16" thread x 3/8" HB x 90 fitting (19), and 11/16" nut (18). Drill a 11/16" hole in the corner of the tank. Be sure to locate correct corner (refer to drawing) and drill the hole allowing enough room for the nut to be threaded on. Once the hole is drilled, remove the tank lid and clean out the tank. Next, place the HB fitting into the hole and use the nut to retain the fitting into the tank. The finished product should match the drawing.

2. Locate the 3 gallon tank (5), 3/4" to 1/2" reducer nipple (55), 1/2" valve (56), and the 1/2" MPT x 3/8" HB x 90 fitting. Thread the reducer nipple to the valve, and then the valve to the hose barb fitting. Now thread this assembly into the tank. The assembly will need to match the assembly that is shown.

3. Locate: electric pump (2), 1/2" to 1/4" reducing nipple (51), screen (49), 1/2" MPT x 3/8" hose barb (50), and the 1/4" MPT x 3/8" hose barb x 90 fitting (54). Determine the flow of the pump (should be a flow arrow on the pump)and place the filter on the inlet side of the pump. Thread the parts together as shown. Make sure your assembly matches what is shown.

4. Locate the pressure reducing valve (14), 1/2" FPT tee (20), 1/2" MPT x 3/8" HB fitting (16), 2 each of 1/2" MPT x 3/8" HB x 90 fitting (17), 45 degree 1/4" Street Elbow (22), and 0-60 psi gauge (21). Assemble as shown in the diagram. Set aside.

5. Locate the Base Bracket (6) and the tank assembly from step 2. Mount the tank assembly to the base bracket using 4 ea of 5/16" x 1" bolts (48), 5/16" flat washers (35) and 5/16" lock washers. Tighten the bolts carefully.

6. Locate the pump assembly from step 3. Mount the pump to the base bracket using 4 of the No. 10 pan head screws with washers and nuts (29, 30, and 31). Please note how the pump is mounted on the diagram. The inlet side of the pump will point towards the supply tank. Please note that the inlet side of the pump should also have the filter attached to it. Tighten all fasteners.

7. Locate the pressure relief valve assembly from step 4. Use the 5/16" U-bolt (26), 5/16" nuts (47), and 5/16" washer (35) to mount to the base bracket. Use the diagram to locate where to mount. Be careful when tightening the u-bolt due to the pressure relief valve being made of plastic.

8. Locate the 3/8" hose. Make the supply hose from the valve to the strainer (58). Use two 3/8" hose clamps (62) to keep the hose in place. Tighten the hose clamps.

9. With the 3/8" hose make the hose (59)to connect the outlet side of the pump to the inlet side of the pressure relief valve (bottom). Use two 3/8" hose clamps (62) to keep the hose in place. Tighten the hose clamps.

10. Using the 3/8" hose, make the hose to connect the return line (60) from the pressure relief valve to the corner of the tank with the hose barb fitting. Use two 3/8" hose clamps (62) to keep the hose in place. Tighten the hose clamps.

11. Once the wet inoculator system is mounted to the seed tender using the 4 - 3/8" x 1" bolts (43), flat washers (46), lock washers and nuts (43, 44, 45, 46), make the hose (61) to connect the outlet of the pressure relief valve to the auger inlet system. Use two 3/8" hose clamps (62) to keep the hose in place. Tighten the hose clamps.

12. With the plumbing and mounting completed, next are the electrical connections. Refer to the electrical diagram for assistance. Depending upon the style of seed tender that you have, the mounting positions of the wet inoculation system will be in different locations (usually on the driver's side rear corner of the seed tender), however the wiring is essentially the same.

- 1. Begin at the pump that has a positive (+) red wire and a negative (-) black wire.
- 2. Attach the black wire of the pump to one side of the on/off switch of the wet inoculator.
- 3. Attach one wire of the fuse link to the other side of the on/off switch of the wet inoculator.
- 4. Locate the two strand wire loom. Remove the outer sheath to expose the two wires. Connect the white wire to the red wire of the pump.
- 5. Connect the black wire of the two strand wire to the other wire of the fuse link.
- 6. Route the two strand wire through the wire ties on the inside of the tender. Route the wire to the paddle switch and then end at the battery.
- 7. Where the two strand wire loops at the paddle switch, cut the outer sheath and remove. There should be two wires (one white and one black) that run from the paddle switch to the battery.
- 8. At the paddle switch, cut the black wire (leave enough room to strip the wire) attach the black wire end from the two strand wire to one side of the paddle switch. With the remaining black wire that was cut, attach this to the other side of the paddle switch and route the battery. Attach the black wire to the negative post of the battery with a 5/16" eyelet connector.
- 9. Locate the white wire from the two strand wire and connect this wire to the positive post of the battery using a 3/8" eyelet connector.
- 10. This will complete the wiring of the wet inoculator.

13. Start the engine, turn the wet inoculator switch to on and test the system. The pump should start when the engine rpm is increased.

14. If you experience any difficulty, please contact Patriot Equipment for assistance 1-800-264-6587.

The seed treater comes with a metering disc (orifice) that will help regulate the amount of inoculant that will be applied to the seed. Use the guide below to assist in determining the pressure the treater should be set at.

IF YOU NEED THIS OZ PER 50 LBS	TOTAL OZ PER MINUTE OF LIQUID AT 400 LB PER MINUTE OF SEED FLOW	SET PRESSURE GUAGE AT THIS PSI USING A CP4916-39
1	8	4.4
1.1	8.8	5.3
1.2	9.6	6.3
1.3	10.4	7.4
1.4	11.2	8.5
1.5	12	9.8
1.6	12.8	11.1
1.7	13.6	12.6
1.8	14.4	14.1
1.9	15.2	15.7
2	16	17.4
2.1	16.8	19.2
2.2	17.6	21.1
2.3	18.4	23.0
2.4	19.2	25.1
2.5	20	27.2

Seed Treatment Guide

This chart is only to be used as a guide. Manual calibration must be done to insure that the weight per minute from the auger is known exactly and the ounces per minute from the treater are known exactly.

Dry Inoculator Instructions



FreeFlo Dry Inoculator (By Lundell Plastics Corporation) Manual

For Use on dry inoculants, talc, graphite and blends of these materials. Not for use with unblended peat based inoculants.

Specifications: Voltage: 12VDC Current Draw: 3A Hopper Capacity: 35lb Output: 5-30 lb/hr or 20-80 lb/hr

Mounting

The tank should be mounted in a location that will allow the auger discharge to be just above the auger or conveyor near the center of the seed flow. Mount the tank so it is as vertical as possible. Mounting at an angle will decrease the clean out capabilities. Once the tank is mounted, remove the plug from the bottom of the tee. Slide the auger over the shaft and tighten the set screw ensuring the set screw is seated on the flat portion of the shaft. Once the auger is installed, slide the PVC auger tube over the auger flighting. Fasten the discharge end of the auger tube to the tender frame.

Wiring

Supply 12V power to the red wire and ground the black wire. Be sure not to reverse the polarity as this will damage the unit. The 12V power can come from an intermittent source such as a solenoid value to allow the unit to only run while the auger or conveyor is operating.

Operational Instructions

Calculate the approximate required application rate in lbs./hr. Once the desired application rate is known, set the dry inoculator to the approximate corresponding setting.

Example:

On a 20-80 lb/hr unit, setting 3 will apply approximately 40lb/hr or product.

Once the unit is operating, visually inspect the seed for adequate application. Over application can be detected by excess product blowing off the seed as it is added to the planter just as lack of any dust can be a sign of under application. Once in use, the unit can be fine tuned based off of actual results.

Minden Machine Shop Inc. 1302 K Road Minden, NE 308-832-0220

