



# Patriot Pathfinder 1600™

**Nurse Trailer**

**Owners Manual**



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

**Pathfinder Trailer**

**Serial # \_\_\_\_\_  
Date of Purchase \_\_\_\_\_**

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# INTRODUCTION

## Model: Pathfinder 1600

### **Purpose:**

The Patriot Pathfinder nurse tank trailer serves as a bulk liquid delivery system for your planter or other bulk liquid application systems.

### **Features:**

1. Frame – Rugged built and designed to cradle tank.
2. Telescoping tongue - A telescoping tongue that allows easy hook up.
3. Pathfinder Design – This allows the trailer to follow the row behind the implement.
4. Road Mode – This design allows the pulling of the trailer at speeds up to 25 MPH

**Thank you for choosing the Patriot Pathfinder Trailer. This manual covers the operation and maintenance of the Patriot Pathfinder Trailer. 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 1-800-264-6587.**

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

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

# Minden Machine Shop Inc

## **LIMITED WARRANTY**

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

This Minden Machine Shop Inc. warranty does not cover:

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

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

### **RETURN OF MERCHANDISE**

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

### **RECEIVING MERCHANDISE AND FILING CLAIMS**

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

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

### **MODIFICATIONS**

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

# 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 is 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 1-800-264-6587.

Read this entire manual carefully - know your equipment. Consider the application, limitations, and the potential hazards specific to your unit. Occupational safety is of prime concern to us. This manual was written with the safety of the operator and others who come in contact with the 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 Pathfinder Trailers. 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



## **BE ALERT! YOUR SAFETY IS INVOLVED**

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 Patriot Pathfinder Trailer shall first read this manual! This manual is to 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 and auger that is in operation. Be sure ALL safety shields and protective devices are installed and properly maintained. If you find any shields or guards damaged or missing, contact 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 Pathfinder Trailer in all correspondence or other contact. The Serial Number is located on the driver's side near the tongue.



### **SAFETY PROCEDURES**

1. Use only proper pumping systems when using this trailer.
2. Use only proper pulling equipment with this trailer
3. Do not use makeshift systems to pull or fill this trailer
4. Do not attempt to raise the Patriot Pathfinder Trailer unit by hoist or forklift when it is loaded with product.
5. Check and tighten all necessary bolts and tank straps. Carrying tank loose could cause an accident.
6. Do not park your Patriot Pathfinder Trailer on an incline or leave your machine running unattended.
7. Do not operate unit without safety devices and signs in place.
8. Do not allow any riders on the Patriot Pathfinder Trailer.
9. Do not enter the tank at any time. As seriously injury may occur.
10. In case of any defect or awareness of potential danger, please contact the plant at 1-800-264-6587 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. You may need to add extra lights when transporting at night or during periods of limited visibility.



## OPERATOR QUALIFICATIONS

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

1. Some regulations specify that no one under the age of 18 may operate power machinery. This includes Patriot Pathfinder Trailers. 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 work area as shown in the work diagrams.
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 Pathfinder Trailer.

**YOU** must ensure that you and anyone who is going to operate, maintain, or work around the Patriot Pathfinder Trailer 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 trailer.

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.

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

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

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

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

### **SAFETY AFFIRMATION**

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 Pathfinder Trailer. \*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 Pathfinder Trailer without them.

I will not allow riders on the Patriot Pathfinder Trailer.

I understand the danger of moving parts (PTO, auger flighting, and pinch points) and will stop engine before servicing.

I recognize the danger of coming in contact with power lines.

I am aware of the need to secure the Patriot Pathfinder tank to its trailer.

I understand the danger of working with bulk liquids.

I understand that any accidents that occur with the Patriot Pathfinder Trailer are my responsibilities.

I understand that Minden Machine Shop will not be held responsible of any accidents that involve the Patriot Pathfinder Trailer.

### **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 Patriot Pathfinder Trailer. We include this sign off sheet for you convenience and personal record keeping.

DATE	EMPLOYER SIGNATURE	EMPLOYEE SIGNATURE



## **MACHINE INSPECTION**

After delivery of your new Patriot Pathfinder Trailer and/or completion of assembly, before each use, inspection of the machine is mandatory. This inspection should include, but not be limited to:

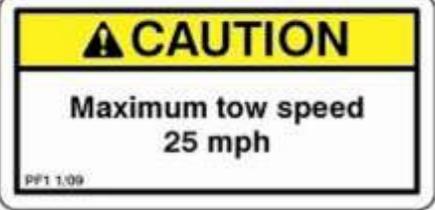
1. Check to see that all guards are in place, secured and functional.
2. Are all fasteners tight?
3. Check all grease points and make sure they have sufficient grease. (See Owners Manuals.)

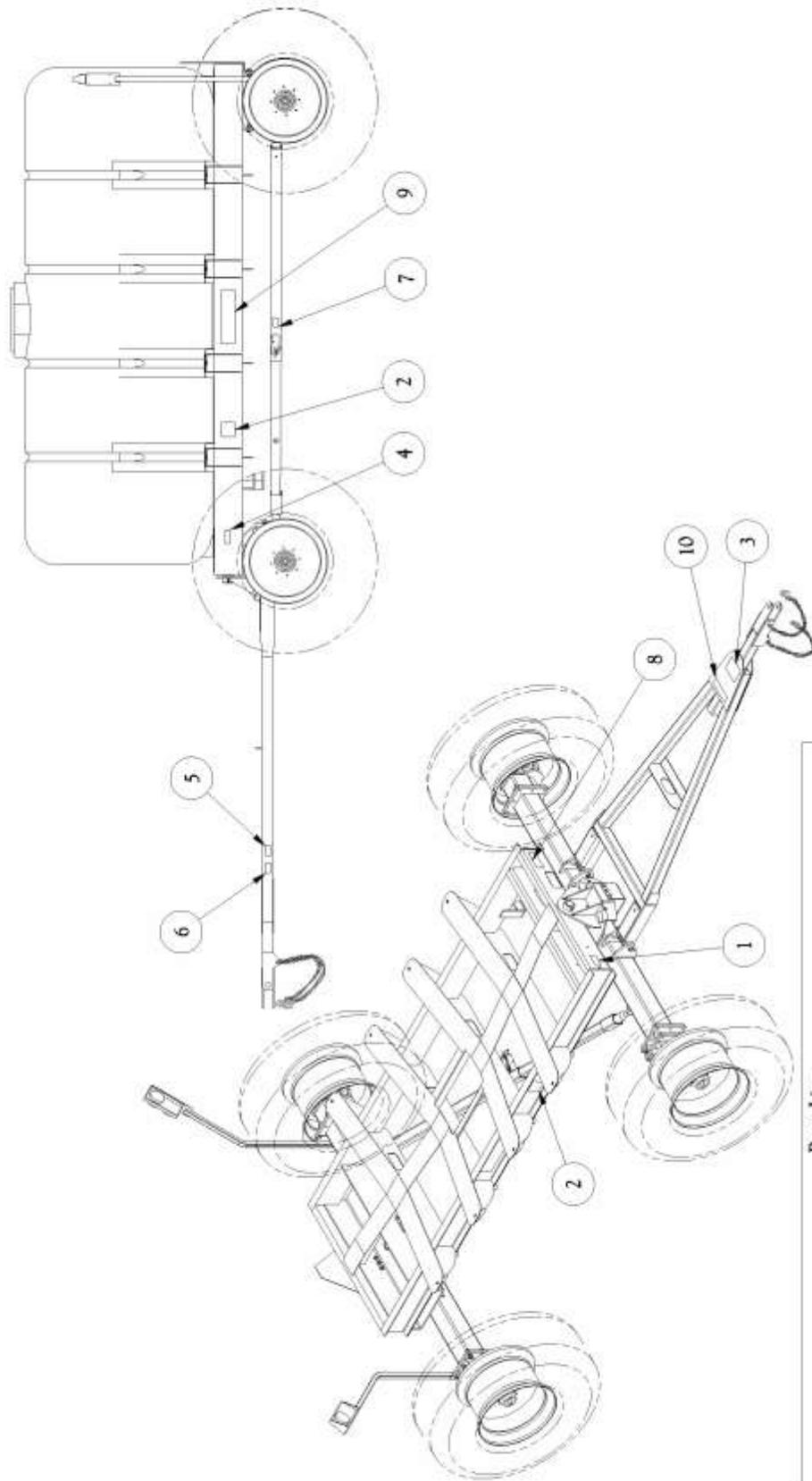
## **SAFETY DECALS**

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.

<p>1</p> 	<p>2</p> 
<p>3</p> 	<p>4</p> 
<p>5</p> 	<p>6</p> 
<p>7</p> 	<p>8</p> 



Parts List

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	W3 Pinch Point	4" x 2"
2	2	Pinch Points	4" x 4"
3	1	C2_Safety Sticker	6" x 4.5"
4	1	Serial Number Plate	4" x 1.5"
5	1	151 tow speed decal	3" x 1.5"
6	1	152 24k capacity decal	3" x 1.5"
7	1	154 cam lock decal	3" x 1.5"
8	1	155 general warnings decal	6" x 2.5"
9	2	Patriot Logo	
10	1	Small 8 x 2 Patriot Logo for Trailer	2" x 8" Patriot Logo



## TIRE SAFETY

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.



## TRANSPORTING PATRIOT PATHFINDER TRAILER

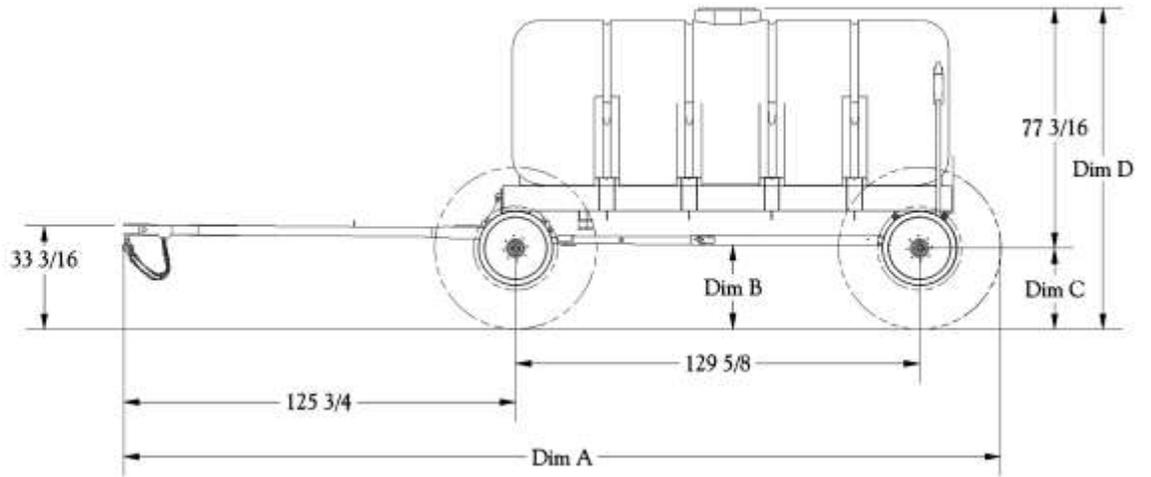
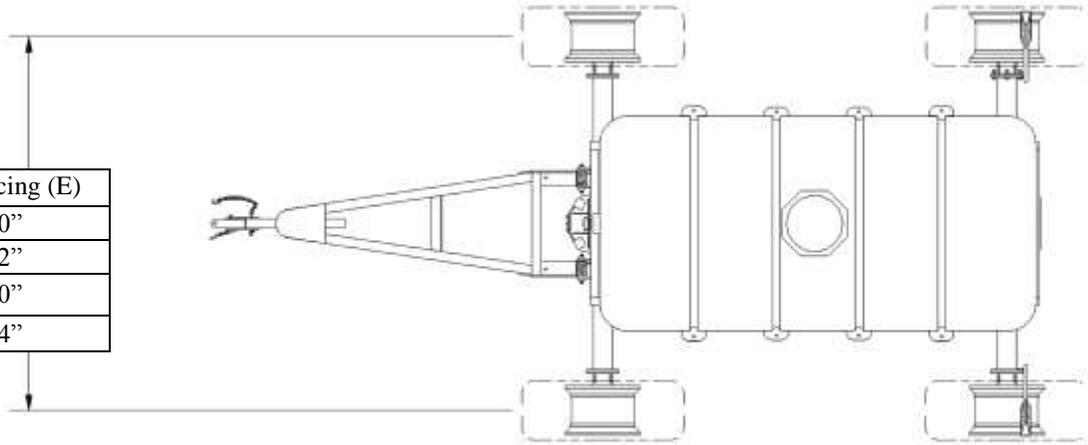
**DANGER:** Do not transport Patriot Pathfinder Trailer at speeds in excess of 25 MPH and comply with your state and local regulations governing marking, towing and maximum width. Observe safe driving and operation practices.



**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. See chart showing the height and width of your trailer.

# DIMENSIONS CHART

Row Spacing	Axle Spacing (E)
20" x 6 Rows	120"
22" x 6 Rows	132"
30" x 4 Rows	120"
36" x 4 Rows	144"



Tire Size	Dim A	Dim B	Dim C	Dim D
19.5 x 24	281"	27"	26"	103"
12.5 x 60	285"	31"	30"	107"

# DESIGNATED WORK AREA

## WORK AREA DIAGRAM

Before filling/using the Patriot Pathfinder Trailer, 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 the operation of the Patriot Pathfinder Trailer. 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.

# OPERATING PROCEDURES

## STARTUP AND BREAK-IN PROCEDURES



It is essential to inspect your Patriot Pathfinder Trailer before each day.

Make sure:

1. All bolts are tight
2. All tires have proper pressure.
3. All pins are complete in and all clip are in the pins.
4. All grease points are greased.

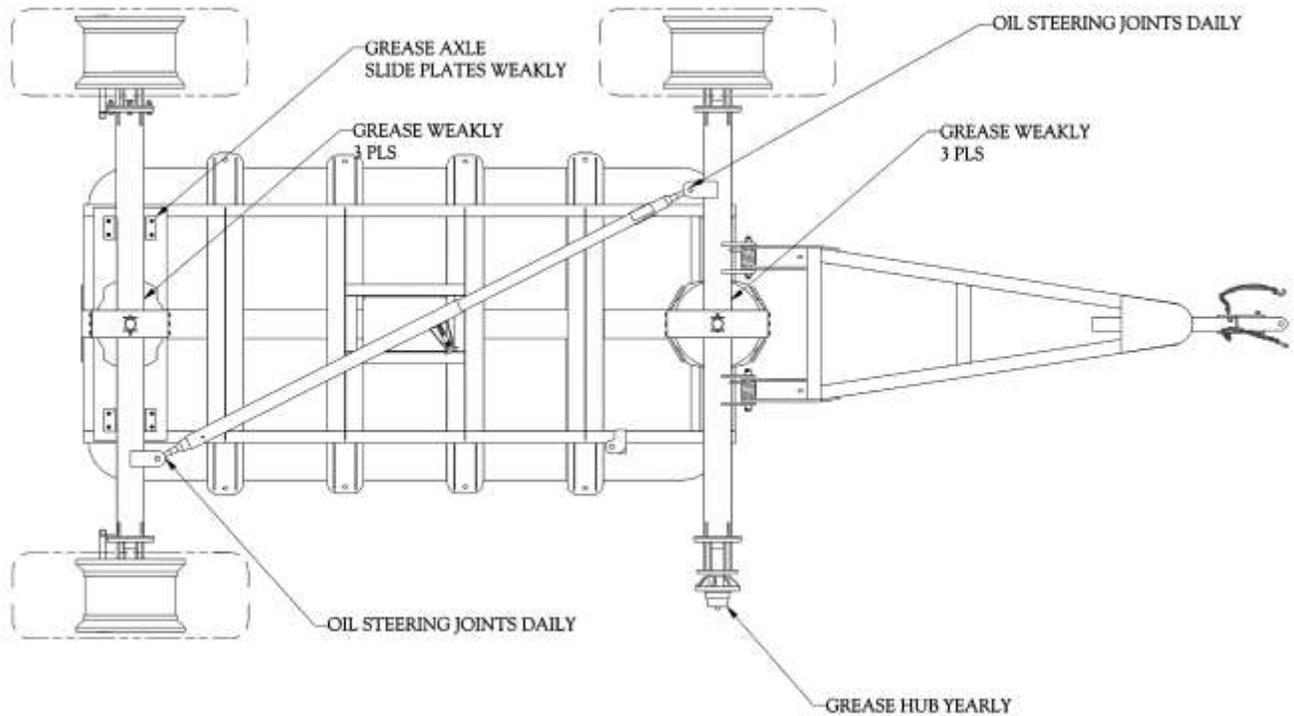
# HIGHWAY AND TRANSPORT OPERATIONS

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 light is acceptable in most localities. However, some localities prohibit their 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 a 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, interceptions, etc.
12. Be observant of bridge loading ratings. Do not cross bridge 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.



## LUBRICATION & MAINTENANCE

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



## BOLT TORQUE

### 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 same grade bolt.

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



#### Torque Specifications

**Bolt Torque for Standard bolts \***

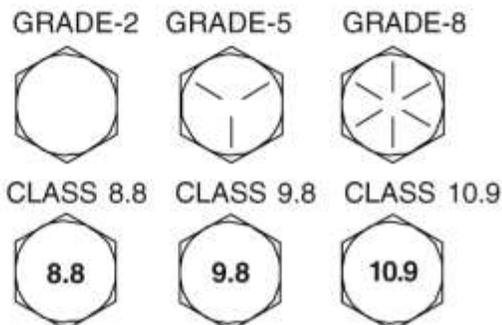
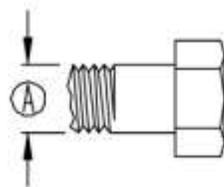
"A"	GRADE 2		GRADE 5		GRADE 8	
	lb-ft	(N.m)	lb-ft	(N.m)	lb-ft	(N.m)
1/4"	6	(8)	9	(12)	12	(16)
5/16"	10	(13)	18	(25)	25	(35)
3/8"	20	(27)	30	(40)	45	(60)
7/16"	30	(40)	50	(70)	80	(110)
1/2"	45	(60)	75	(100)	115	(155)
9/16"	70	(95)	115	(155)	165	(220)
5/8"	95	(130)	150	(200)	225	(300)
3/4"	165	(225)	290	(390)	400	(540)
7/8"	170	(230)	320	(570)	650	(880)
1"	225	(300)	330	(850)	970	(1310)

**Bolt Torque for Metric bolts \***

"A"	CLASS 8.8		CLASS 9.8		CLASS 10.9	
	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)

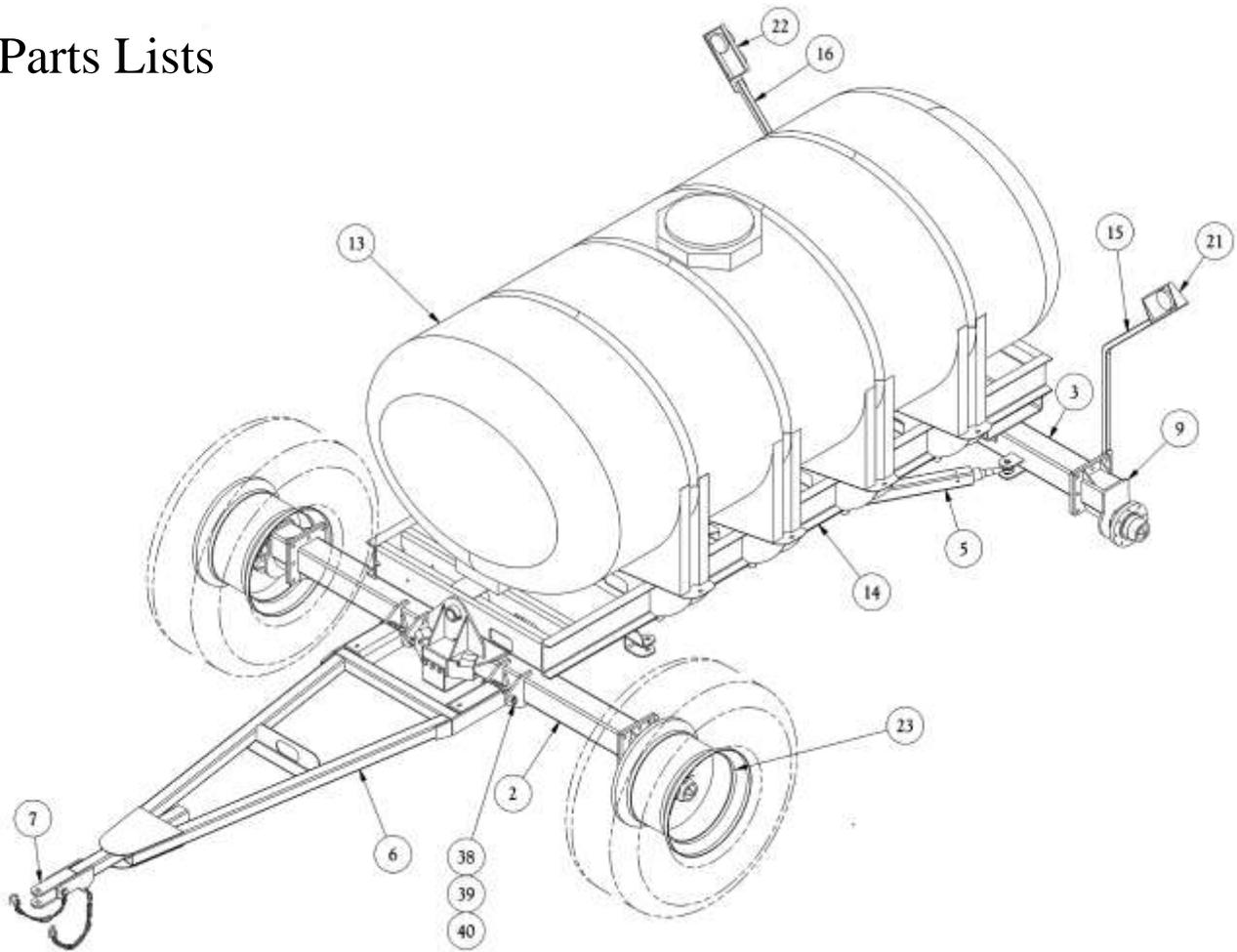
Torque figures indicated are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

\*GRADE or CLASS value for bolts and capscrews are identified by their head markings.



Dry torque on the lug nuts on the 8 bolt spindle is 240 ft-lbs.  
The main 1" Nut need to be torqued to 75 foot lbs and then backed off to 27 foot-lbs

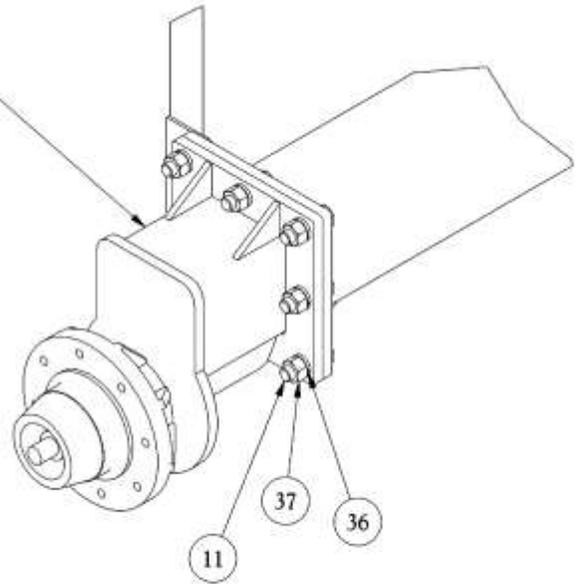
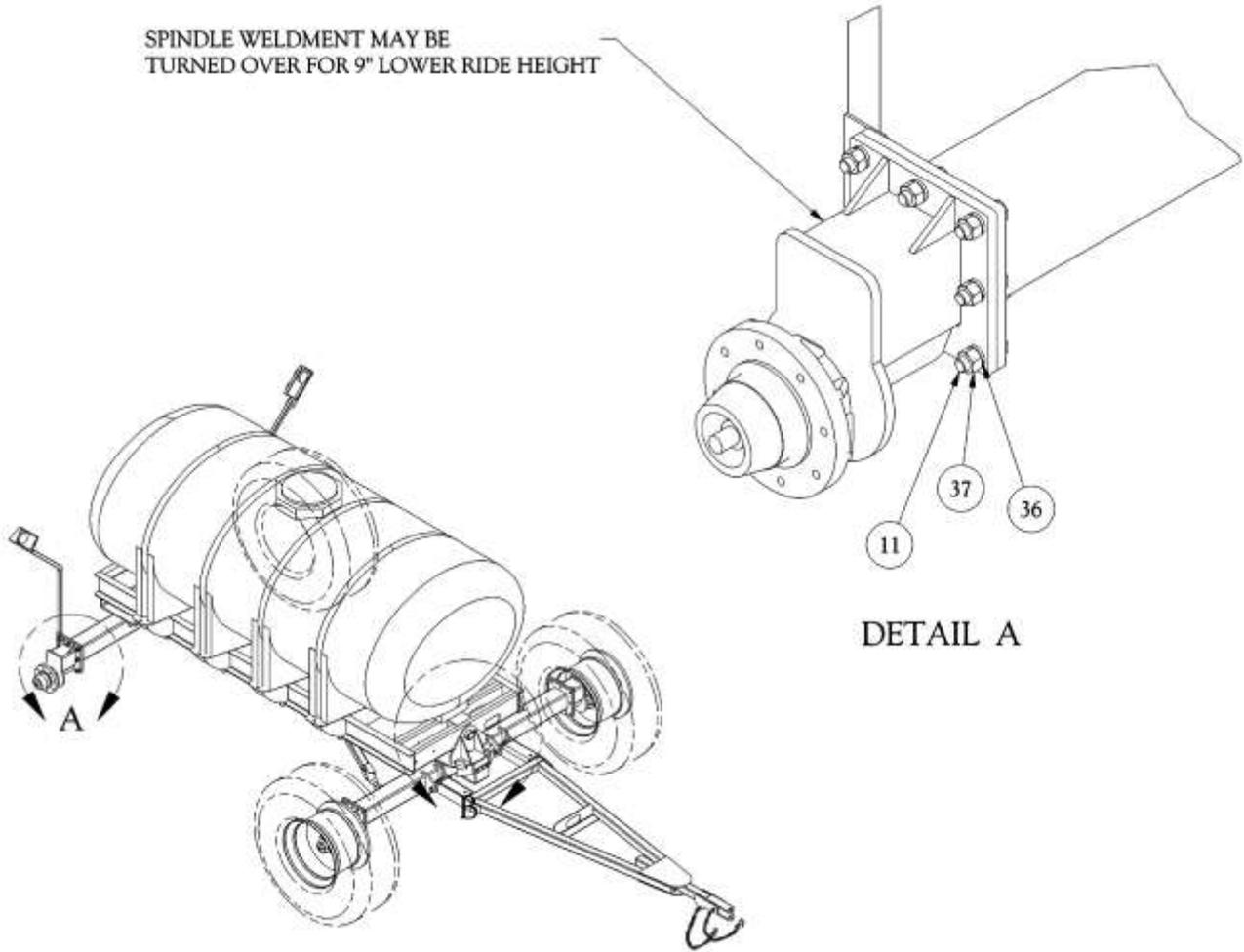
# Parts Lists



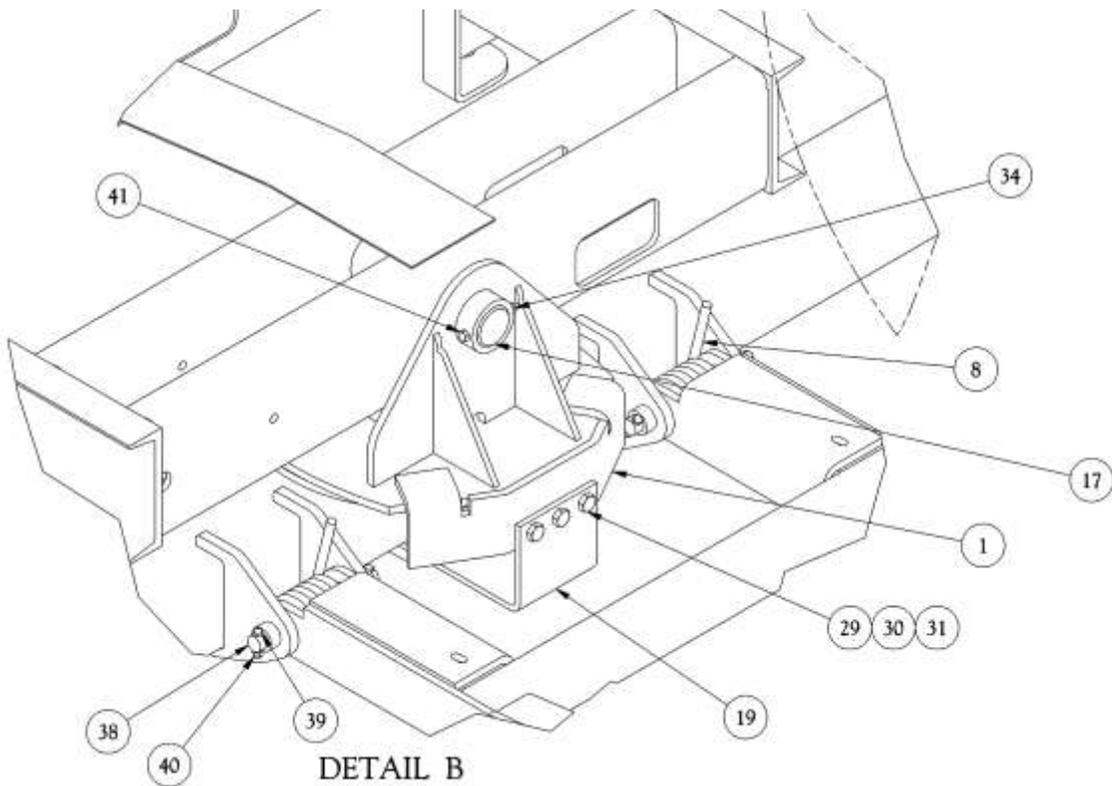
## Patriot Pathfinder Parts List

Item #	Qty	Item Description	Item #	Qty	Item Description
1	1	Front 5 <sup>th</sup> Wheel Upper Weldment	22	1	LH Light Flasher
2	1	Front Axle Weldment	23	4	Tire & Rim Assembly
3	1	Rear Axle Weldment	24	1	SMV Bracket
4	1	2 1/2 x 2 1/2 Tie Tube Weldment	29	12	5/8 x 2 Bolt
5	1	3 x 3 Tie Tube Weldment	30	12	5/8 Lock Washer
6	1	Tongue Receiver Weldment	31	12	5/8 Hex Nut
7	1	Tongue Assembly	33	8	1/2 Nylock Nut
8	2	Torsion Spring	34	6	3/8 Nylock Nut
9	4	Axle Spindle Weldment	35	2	1" x 4" Clevis Pin
10	2	UHMW Axle Pad	36	32	3/4" Lock Washer
11	32	3/4 x 2 1/2 Bolt	37	32	3/4" Hex Nut
12	8	1/2 x 1 1/2 Bolt	38	2	Tongue Pin
13	1	1610 Gal Elliptical Drainable Leg Tank	39	4	5/16 x 1 1/2 Bolt
14	1	Main Frame	40	4	5/16 Nylock Nut
15	1	LH Tail Light Bracket	41	6	3/8 x 4 Bolt
16	1	RH Tail Light Bracket	42	4	Spacer for 22" Row spacing (6" Long)
17	3	Pivot Pin	43	4	Spacer for 36" Row spacing (12" Long)
18	1	Rear Pivot Support Weldment	44	4	Spacer for 38" Row spacing (13.5" Long)
19	1	Front Pivot Support Weldment			
20	4	8 on 8 Hub			
21	1	RH Light Flasher			

SPINDLE WELDMENT MAY BE  
TURNED OVER FOR 9" LOWER RIDE HEIGHT



DETAIL A



DETAIL B

