



# Seed Treater

## Professional Series Operator's Manual



Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference.

Part Number: 4400-90001 R0

Revised: May 2017





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# 1. Introduction

Thank you for purchasing a STORM Seed Treater. This equipment will allow safe and efficient operation when you read and follow all of the instructions contained in this manual. With proper care, your seed treater will provide you with many years of trouble-free operation.

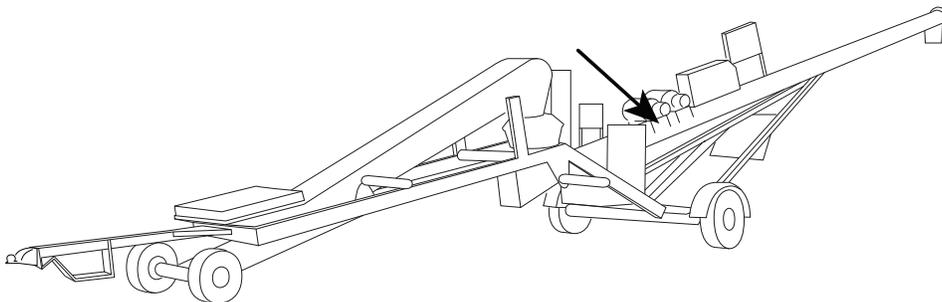
Keep this manual handy for frequent reference and to review with new personnel. A sign-off form is provided on the inside front cover for your convenience. If any information in this manual is not understood or if you need additional information, please contact your local distributor or dealer for assistance.

This manual should be regarded as part of the equipment. Suppliers of both new and second-hand equipment are advised to retain documentary evidence that this manual was provided with the equipment.

## 1.1. Serial Number Location

Always give your dealer the serial number on your seed treater (shown below) when ordering parts or requesting service or other information. Please record this information in the table below for easy reference.

<b>Model Number</b>	
<b>Serial Number</b>	
<b>Date Received</b>	



## 1.2. Intended Use

The seed treater is designed solely for use in customary agricultural or similar operations. Use in any other way is considered as contrary to the intended use. Compliance with and strict adherence to the conditions of operation and maintenance as specified by STORM, also constitute essential elements of the intended use.

The seed treater should be operated, maintained, serviced, and repaired only by persons who are familiar with its particular characteristics and who are acquainted with the relevant safety procedures.

Accident prevention regulations and all other generally recognized regulations on safety and occupational medicine must be observed at all times.

Any modifications made to the seed treater may relieve STORM of liability for any resulting damage or injury.

### The seed treater may be safely used with:

- wheat, barley, oats, peas, flax, lentils, and soybeans.

- temperatures warmer than 32°F (0°C).
- capacity at 22.5-45 bu/min (1350-2700 bu/hr).
- a suitable hopper bin or truck hopper.

Use in any other way is considered as contrary to the intended use and is not covered by the warranty.

### ***1.2.1 Misuse***

Do not use the seed treater for:

- lifting or using as a hoist or crane.
- any purpose other than treating seed.
- treating oilseeds such as canola.
- normal loading or unloading of grain.



# 2. Safety

## 2.1. Safety Alert Symbol and Signal Words

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This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury or death, carefully read the message that follows, and inform others.

**Signal Words:** Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.

 **DANGER** Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death.

 **WARNING** Indicates a hazardous situation that, if not avoided, could result in serious injury or death.

 **CAUTION** Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

 **NOTICE** Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

## 2.2. General Safety

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The safety information in the safety section of this manual applies to all safety practices. Specific safety information (such as Operation Safety), can be found in the appropriate section.

**YOU** are responsible for the **SAFE** use and maintenance of your seed treater. **YOU** must ensure that you and anyone else who is going to work around the seed treater understands all procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program. All accidents can be avoided.

- It is the seed treater owner, operator, and maintenance personnel's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them when assembling, operating, or maintaining the equipment.
- Owners must give instructions and review the information initially and annually with all personnel before allowing them to operate the seed treater. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- The seed treater is not intended to be used by children.
- Use the seed treater for its intended purposes only.
- Do not modify the seed treater in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety, and could affect the life of the seed treater. Any unauthorized modification of the seed treater will void the warranty.



## 2.3. Rotating Flighting Safety

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### DANGER

- KEEP AWAY from rotating flighting.
- DO NOT remove or modify flighting guards, doors, or covers. Keep in good working order. Have replaced if damaged.
- DO NOT operate the seed treater without all guards, doors, and covers in place.
- NEVER touch the flighting. Use a stick or other tool to remove an obstruction or clean out.
- Shut off and lock out power to adjust, service, or clean.



## 2.4. Overhead Power Lines

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### DANGER

- When operating or moving, keep seed treater away from overhead power lines and devices.
- The seed treater is not insulated.
- Electrocutation can occur without direct contact.



## 2.5. Cleated Conveyor Belt Safety

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### WARNING

- KEEP HANDS AWAY from moving cleated conveyor belt.
- DO NOT remove or modify guards, doors, or covers. Keep in place and in good working order. Have replaced if damaged.
- DO NOT operate the conveyor without all guards, doors, and covers in place.
- Shut off and lock out power to adjust, service, or clean.

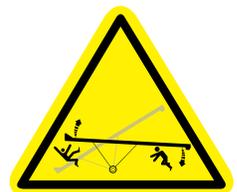


## 2.6. Upending

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### WARNING

- Anchor intake end and/or support discharge end to prevent upending.
- Intake end must always have downward weight. Do not release until attached to tow bar or resting on ground.
- Do not raise intake end above tow bar height.
- Empty the seed treater and fully lower before moving.



## 2.7. Seed Treatment Safety

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Hazards associated with handling, sorting, mixing and storage of treated seed and seed treatments can be minimized by following the safety precautions listed below. The below are guidelines only and vary based on the type of seed treatment being used. Consult the seed treatment information sheets for full details.

### WARNING

- Use personal protective equipment as described on the seed treatment product label. This will normally include, safety glasses, chemically resistant gloves, rubber boots, a respirator, and coveralls.
- Use the seed treater only outdoors, do not use inside a building or structure.
- Thoroughly clean the seed treater after use. Some seed treatments are corrosive and others may plug the equipment. Do not run contaminated water into a stream, public sewer, or in a location where it could contaminate the groundwater or come into contact with people or animals.

## 2.8. Rotating Parts Safety

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### WARNING

- Keep body, hair, and clothing away from rotating pulleys, belts, chains, and sprockets.
- Do not operate with any guard removed or modified. Keep guards in good working order.
- Shut off and remove key or lock out power source before inspecting or servicing machine.



## 2.9. Work Area Safety

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- Have another trained person nearby who can shut down the seed treater in case of accident.
- The work area should be kept clear of bystanders.
- Keep the work area clean and free of debris.

## 2.10. Guards Safety

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### WARNING

- Install guards to prevent contact with moving parts.
- Do not operate the seed treater unless all guards are in place.
- Do not walk or step on guards.
- Lock out power before removing a guard.
- Ensure all guards are replaced after performing maintenance.



## 2.11. Raising and Lowering the Seed Treater

- WARNING**
- Before raising/lowering/moving/adjusting the seed treater, make sure the area around the seed treater is clear of obstructions and/or untrained personnel. Never allow anyone to stand on or beneath the seed treater when it is being placed.
  - Lower the seed treater to its lowest position when not in use.
  - Empty the seed treater before raising or lowering.
  - Do not get on or beneath the seed treater when raising or lowering.
  - Raise and lower seed treater on reasonably level ground only.
  - Never attempt to increase height of the tube by positioning wheels on lumber, blocks, or by any other means. To do so will result in damage to seed treater and/or serious injury.

## 2.12. Seed Treater Stability

- WARNING**
- Transport and place equipment on reasonably level ground when raising, lowering, positioning, or operating.
  - Chock wheels and anchor intake end after placement.

## 2.13. Towing the STORM

- WARNING**
- Check with local authorities regarding transport on public roads. Obey all applicable laws and regulations.
  - Always travel at a safe speed, the seed treater can be transported up to a maximum of 60 mph (100 km/h) where permitted. Reduce speed on rough surfaces. Use caution when turning corners or meeting traffic.
  - Reduce speed on rough surfaces.
  - Do not transport on slopes greater than 20°.
  - Use caution when turning corners or meeting traffic.
  - Do not allow riders on the seed treater or towing vehicle during transport.
  - Always attach safety chain(s) for transport on roadways.
  - Place the seed treater in the transport position before moving on roads.

## 2.14. Drives and Lockout/Tagout Safety

Inspect the power source(s) before using and know how to shut down in an emergency. Whenever you service or adjust your equipment, make sure you shut down your power source and follow lockout and tagout procedures to prevent inadvertent start-up and hazardous energy release. Know the procedure(s) that applies to your equipment from the following power sources.

For example:

- De-energize, block, and dissipate all sources of hazardous energy.



- Lock out and tag out all forms of hazardous energy.
- Ensure that only 1 key exists for each assigned lock, and that you are the only one that holds that key.
- After verifying all energy sources are de-energized, service or maintenance may be performed.
- Ensure that all personnel are clear before turning on power to equipment. For more information on occupational safety practices, contact your local health and safety organization.

### 2.14.1 Diesel Engine Safety

#### **WARNING** Power Source

- Keep guards in place and secure.
- Properly ventilate surrounding area.
- Never overfill the tank or spill diesel fuel. If fuel is spilled, clean it up immediately.
- Ultra-Low Sulfur Diesel (ULSD) poses a greater static ignition hazard than earlier diesel formulations. Avoid death or serious injury from fire or explosion; consult with your fuel or fuel system supplier to ensure the delivery system is in compliance with fueling standards for proper grounding and bonding practices that are crucial when refueling.
- Be sure to replace the fuel fill cap when you are done.

#### **Lockout**

- Remove the ignition key or disconnect the negative battery terminal.



## 2.14.2 Electric Motor Safety

### **WARNING** Power Source

- Electric motors and controls shall be installed and serviced by a qualified electrician and must meet all local codes and standards.
- Guards must be in place and secure.
- Ensure electrical wiring and cords remain in good condition; replace if necessary.

## 2.14.3 Hydraulic Power Safety

### **WARNING** Power Source

- Refer to the rules and regulations applicable to the power source operating your hydraulic drive.
- Do not connect or disconnect hydraulic lines while system is under pressure.
- Keep all hydraulic lines away from moving parts.
- Escaping hydraulic fluid under pressure will cause serious injury if it penetrates the skin surface (serious infection or toxic reaction can develop). See a doctor immediately if injured.
- Use metal or wood as a backstop when searching for hydraulic leaks and wear proper hand and eye protection.
- Check all hydraulic components are tight and in good condition. Replace any worn, cut, abraded, flattened, or crimped hoses.
- Clean the connections before connecting to equipment.
- Do not attempt any makeshift repairs to the hydraulic fittings or hoses with tape, clamps, or adhesive. The hydraulic system operates under extremely high pressure; such repairs will fail suddenly and create a hazardous and unsafe condition.

#### **Lockout**

- Always place all hydraulic controls in neutral and relieve system pressure before disconnecting or working on hydraulic system.



## 2.15. Tire Safety

**WARNING** Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion that may result in serious injury or death.



- DO NOT attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications. Never undersize the replacement tire.
- DO NOT weld to the tire rim with the tire mounted on the rim. This action may cause an explosion which could result in serious injury or death.
- Inflate tires to the manufacturer's recommended pressure.
- Tires should not be operated at speeds higher than their rated speed.
- Keep wheel lug nuts tightened to manufacturer's recommendations.
- Never reinflate a tire that has been run flat or seriously under-inflated without removing the tire from the wheel. Have the tire and wheel closely inspected for damage before remounting.

## 2.16. Battery Safety

- WARNING**
- Wear safety glasses when working near batteries.
  - Make certain the battery or terminal covers are in place and in good working order.
  - Keep all sparks and flames away from batteries; gas given off by electrolyte is explosive.
  - Avoid contact with battery electrolyte. Wash off any spilled electrolyte immediately.
  - Do not tip batteries more than 45° to avoid electrolyte loss.
  - To avoid injury from sparks or short circuits, disconnect battery ground cable before servicing any part of an electrical system.



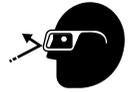
## 2.17. Personal Protective Equipment

The following Personal Protective Equipment (PPE) should be worn at all times when operating or maintaining the equipment.



### Safety Glasses

- Wear safety glasses at all times to protect eyes from debris.



### Coveralls

- Wear coveralls to protect skin.



### Hard Hat

- Wear a hard hat to help protect your head.



### Steel-Toe Boots

- Wear steel-toe boots to protect feet from falling debris.



### Work Gloves

- Wear work gloves to protect your hands from sharp and rough edges.



### Chemically Resistant Gloves

- Wear chemically resistant gloves to protect your hands from chemicals.



### Respirator

- Wear a respirator to prevent breathing potentially harmful dust.



### Hearing Protection

- Wear ear protection to prevent hearing damage.



## 2.18. Safety Equipment

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The following safety equipment should be kept on site:



### Fire Extinguisher

- Provide a fire extinguisher for use in case of an accident. Store in a highly visible and accessible place.



### First-Aid Kit

- Have a properly-stocked first-aid kit available for use should the need arise, and know how to use it.



### Eyewash Kit

- Keep a portable eye wash kit available or make sure a permanent eyewash station is available should the need arise to flush materials from the eyes. Review instructions for use before working with the seed treater.



## 2.19. Safety Decals

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- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Replacement safety decals are available **free of charge** from your distributor, dealer, or factory.

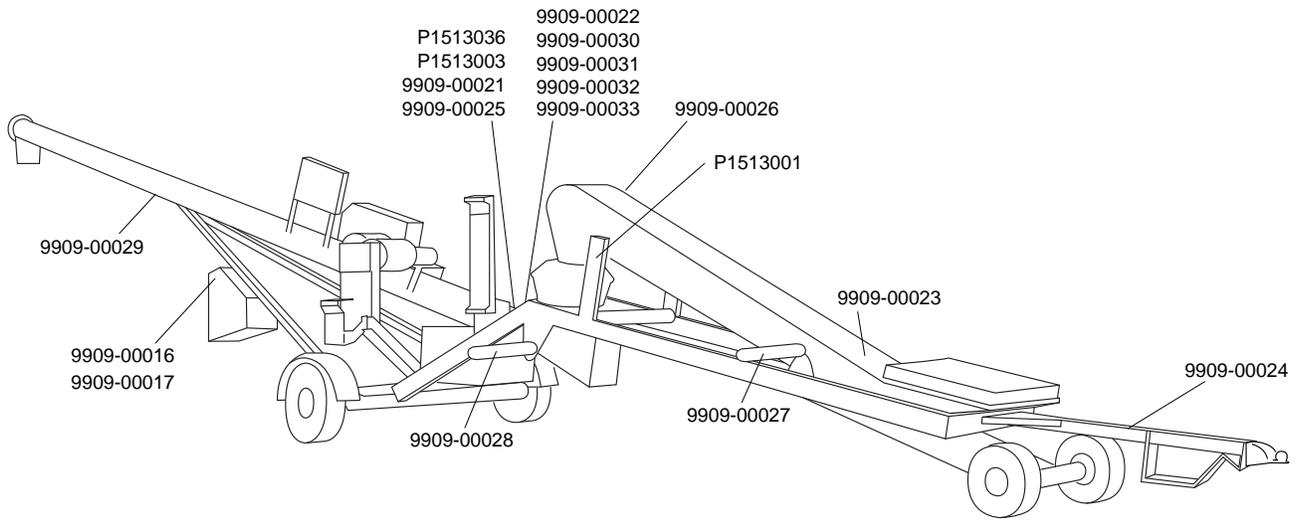
### 2.19.1 Decal Installation/Replacement

1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
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 the sign backing paper.

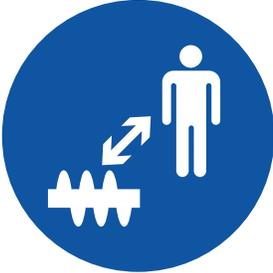
### 2.19.2 Safety Decal Locations and Details

Replicas of the safety decals that are attached to the seed treater and their messages are shown in the figure(s) that follow. Safe operation and use of the seed treater requires that you familiarize yourself with the various safety decals and the areas or particular functions that the decals apply to, as well as the safety precautions that must be taken to avoid serious injury, death, or damage.



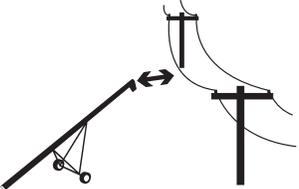


**Table 1. Safety Decals**

Part Number	Description
9909-00021	<div style="border: 1px solid black; padding: 10px;"> <div style="background-color: red; color: white; text-align: center; padding: 5px;">  <b>DANGER</b> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;">   </div> <div style="text-align: center; margin-top: 10px;"> <p><b>ROTATING FLIGHTING HAZARD</b></p> <p>To prevent death or serious injury:</p> <ul style="list-style-type: none"> <li>• KEEP AWAY from rotating auger flighting.</li> <li>• DO NOT remove or modify auger flighting guards, doors, or covers. Keep in good working order. Have replaced if damaged.</li> <li>• DO NOT operate the auger without all guards, doors, and covers in place.</li> <li>• NEVER touch the auger flighting. Use a stick or other tool to remove an obstruction or clean out.</li> <li>• Shut off and lock out power to adjust, service, or clean.</li> </ul> </div> </div>



**Table 1 Safety Decals (continued)**

Part Number	Description
P1513003	<div style="border: 1px solid black; padding: 10px;"> <div style="background-color: red; color: white; text-align: center; padding: 5px;">  <b>DANGER</b> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;">   </div> <div style="text-align: center; margin-top: 10px;"> <p><b>ELECTROCUTION HAZARD</b></p> <p>To prevent death or serious injury:</p> <ul style="list-style-type: none"> <li>• When operating or moving, keep equipment away from overhead power lines and devices.</li> <li>• Fully lower equipment before moving.</li> </ul> <p>This equipment is not insulated.</p> <p>Electrocution can occur without direct contact.</p> </div> </div>
P1513036	<div style="border: 1px solid black; padding: 10px;"> <div style="display: flex; justify-content: space-between; align-items: center; margin-bottom: 10px;"> <div style="text-align: center;">  </div> <div style="background-color: orange; color: black; text-align: center; padding: 5px;">  <b>WARNING</b> </div> </div> <div style="text-align: center; margin-bottom: 10px;"> <p><b>HIGH PRESSURE FLUID HAZARD</b></p> </div> <div style="text-align: center;"> <p>Hydraulic fluid can cause serious injury if it penetrates the skin. If it does, see a doctor immediately.</p> <ul style="list-style-type: none"> <li>• Relieve system pressure before repairing, adjusting or disconnecting.</li> <li>• Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.</li> </ul> </div> </div>

**Table 1 Safety Decals (continued)**

Part Number	Description
P1513001	<div style="border: 2px solid black; padding: 10px;"> <div style="background-color: #f4a460; text-align: center; padding: 5px;">  <span style="font-weight: bold; font-size: 1.2em;">WARNING</span> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p style="margin-top: 10px;">To prevent serious injury or death:</p> <ul style="list-style-type: none"> <li>• Read and understand the manual before assembling, operating, or maintaining the equipment.</li> <li>• Only trained personnel may assemble, operate, or maintain the equipment.</li> <li>• Children and untrained personnel must be kept outside of the work area.</li> <li>• Do not modify the equipment. Keep in good working order.</li> <li>• If the manual, guards, or decals are missing or damaged, contact factory or dealer for replacements.</li> <li>• Lock out power before performing maintenance.</li> <li>• To prevent equipment collapse, support equipment tube while disassembling certain components.</li> <li>• Electric motors must be grounded. Disconnect power before resetting overloads.</li> </ul> </div>



**Table 1 Safety Decals (continued)**

Part Number	Description				
9909-00024	<div style="border: 2px solid black; padding: 10px;"> <div style="background-color: #f4a460; padding: 5px; text-align: center;">  <b>WARNING</b> </div> <div style="text-align: center; padding: 10px 0;"> <b>TRANSPORT HAZARD</b> </div> <p>To prevent serious injury or death:</p> <ul style="list-style-type: none"> <li>• Securely attach equipment to vehicle with correct pin and safety chains.</li> <li>• Use a tow vehicle to move equipment.</li> </ul> </div>				
9909-00023	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; text-align: center; vertical-align: middle;">  </td> <td style="width: 70%; padding: 10px;"> <div style="background-color: #f4a460; padding: 5px; text-align: center;">  <b>WARNING</b> </div> <div style="text-align: center; padding: 5px 0;"> <b>BELT CRUSH HAZARD</b> </div> <p>To prevent serious injury:</p> <ul style="list-style-type: none"> <li>• KEEP HANDS AWAY from moving cleaned conveyor belt.</li> <li>• DO NOT remove or modify guards, doors, or covers. Keep in place and in good working order. Have replaced if damaged.</li> <li>• DO NOT operate the conveyor without all guards, doors, and covers in place.</li> <li>• Shut off and lock out power to adjust, service, or clean.</li> </ul> </td> </tr> <tr> <td style="text-align: center; vertical-align: middle;">  </td> <td></td> </tr> </table>		<div style="background-color: #f4a460; padding: 5px; text-align: center;">  <b>WARNING</b> </div> <div style="text-align: center; padding: 5px 0;"> <b>BELT CRUSH HAZARD</b> </div> <p>To prevent serious injury:</p> <ul style="list-style-type: none"> <li>• KEEP HANDS AWAY from moving cleaned conveyor belt.</li> <li>• DO NOT remove or modify guards, doors, or covers. Keep in place and in good working order. Have replaced if damaged.</li> <li>• DO NOT operate the conveyor without all guards, doors, and covers in place.</li> <li>• Shut off and lock out power to adjust, service, or clean.</li> </ul>		
	<div style="background-color: #f4a460; padding: 5px; text-align: center;">  <b>WARNING</b> </div> <div style="text-align: center; padding: 5px 0;"> <b>BELT CRUSH HAZARD</b> </div> <p>To prevent serious injury:</p> <ul style="list-style-type: none"> <li>• KEEP HANDS AWAY from moving cleaned conveyor belt.</li> <li>• DO NOT remove or modify guards, doors, or covers. Keep in place and in good working order. Have replaced if damaged.</li> <li>• DO NOT operate the conveyor without all guards, doors, and covers in place.</li> <li>• Shut off and lock out power to adjust, service, or clean.</li> </ul>				
					
9909-00022	<div style="border: 2px solid black; padding: 10px;"> <div style="background-color: #f4a460; padding: 5px; text-align: center;">  <b>WARNING</b> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%; text-align: center; vertical-align: middle;">  </td> <td style="width: 50%; text-align: center; vertical-align: middle;">  </td> </tr> </table> </div>				
					

**Table 1 Safety Decals (continued)**

Part Number	Description
9909-00025	<div style="border: 1px solid black; padding: 10px;"> <div style="background-color: #f4a460; padding: 5px; text-align: center; border: 1px solid black;">  <b>WARNING</b> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="text-align: center; margin-top: 10px;"> <p><b>UPENDING HAZARD</b></p> <p>To prevent death or serious injury:</p> <ul style="list-style-type: none"> <li>• Anchor intake end and/or support discharge end to prevent upending.</li> <li>• Intake end must always have downward weight. Do not release until attached to tow bar or resting on ground.</li> <li>• Do not raise intake end above tow bar height.</li> <li>• Empty and fully lower before moving.</li> </ul> </div> </div>
9909-00029	<div style="border: 1px solid black; padding: 10px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  </div> <div style="background-color: #f4a460; padding: 5px; text-align: center; border: 1px solid black;">  <b>WARNING</b> </div> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: center;"> <p><b>CRUSH HAZARD</b></p> <p>To prevent serious injury, engage cylinder lock before transporting.</p> </div> </div> </div>
9909-00026	<div style="border: 1px solid black; padding: 10px;"> <div style="background-color: #f4a460; padding: 5px; text-align: center; border: 1px solid black;">  <b>WARNING</b> </div> <div style="text-align: center; margin-top: 10px;"> <p>Keep guards in place when operating.</p> </div> </div>



**Table 1 Safety Decals (continued)**

Part Number	Description
9909-00028	 <div data-bbox="602 281 1068 621" style="border: 1px solid black; padding: 5px;"> <p> <b>WARNING</b></p> <p><b>CRUSH HAZARD</b></p> <p>To prevent serious injury, engage cylinder lock before transporting.</p> </div>
9909-00027	 <div data-bbox="602 680 1068 1020" style="border: 1px solid black; padding: 5px;"> <p> <b>WARNING</b></p> <p><b>CRUSH HAZARD</b></p> <p>To prevent serious injury, engage lock before clean out of hopper or transporting.</p> </div>
9909-00030	
9909-00031	

**Table 1 Safety Decals (continued)**

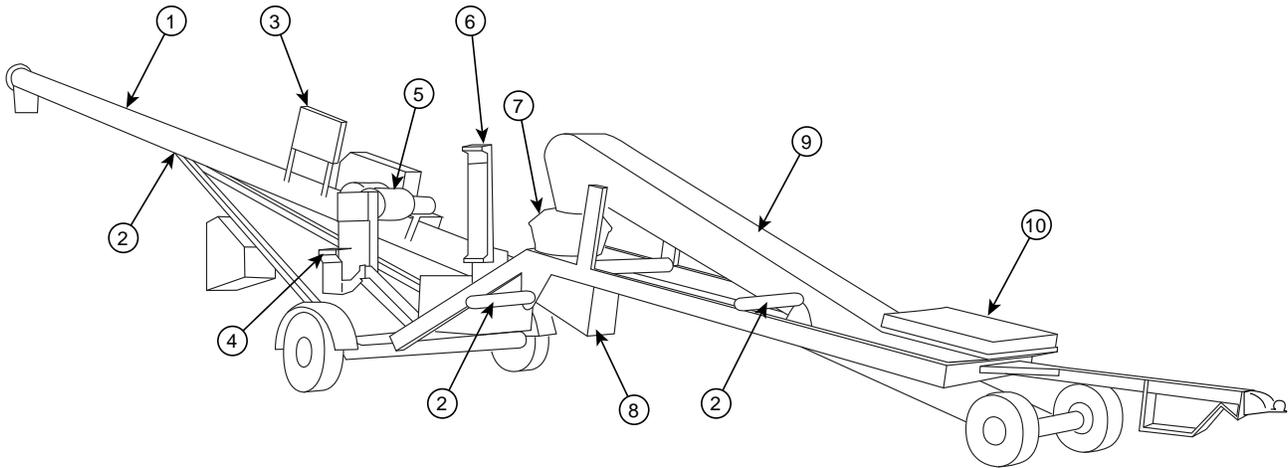
Part Number	Description
9909-00032	
9909-00033	
9909-00016	
9909-00017	



# 3. Features

Below are some of the main features of the STORM Seed Treater.

**Figure 1. STORM Professional Seed Treater**



**Table 2. STORM Professional Features**

Item	Description
1	Mixer Tube (auger tube)
2	Transport Lock
3	Hydraulic Cooler with Fan
4	Controls
5	Seed Treatment Metering Pumps
6	Calibration
7	Atomizing Chamber
8	Mixer Boot
9	Conveyor
10	Hopper



# 4. Transport



Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

## 4.1. Transport Safety

---

### WARNING

- Check with local authorities regarding transport on public roads. Obey all applicable laws and regulations.
- Always travel at a safe speed; the seed treater can be transported up to a maximum of 60 mph (100 km/h) where permitted. Reduce speed on rough surfaces. Use caution when turning corners or meeting traffic.
- Yield to other drivers and allow faster traffic to pass.
- Make sure all the lights and reflectors that are required by local authorities are in place, are clean, and can be seen by all over-taking and oncoming traffic.
- Do not transport during times of limited visibility such as fog, snow, or heavy rain. Take extra precautions at night and at dusk.
- Keep others away from the transport vehicle and seed treater.
- Do not allow riders on the seed treater or towing vehicle during transport.
- Stay away from overhead obstructions and power lines when operating and transporting. Electrocutation can occur without direct contact.
- Fully lower the seed treater before transporting, and only raise when next to storage facility.
- Always attach safety cables for transport on roadways.
- Empty seed treater of all grain before transporting. Transporting a full seed treater will place excessive loads on the tube, frame, axle, hitch, and tow vehicle.
- Do not transport on slopes greater than 20°.
- Do not transport with an under-inflated tire(s).
- If the seed treater wheels are partially or fully buried in snow or grain, failure to clear area around the wheels before transporting may cause damage to the seed treater or result in serious injury.

## 4.2. Transport Procedure

---

The STORM must be set into its transport position by correctly setting three transport locks in place before connecting to a tow vehicle.

Refer to [Figure 2 - Figure 5](#) and [Table 3 - Table 4](#).

1. Adjust the mixer boot to the transport position and engage its transport lock.
2. Adjust the mixer tube height to allow the mixer tube lock to be placed in position, then use the mixer discharge control to lower the mixer tube until it rests on the lock and close the ball valve.
3. Use the conveyor intake control to raise the STORM hitch.
4. Use the joystick to move the STORM and align the hitch and tow vehicle ball hitch.

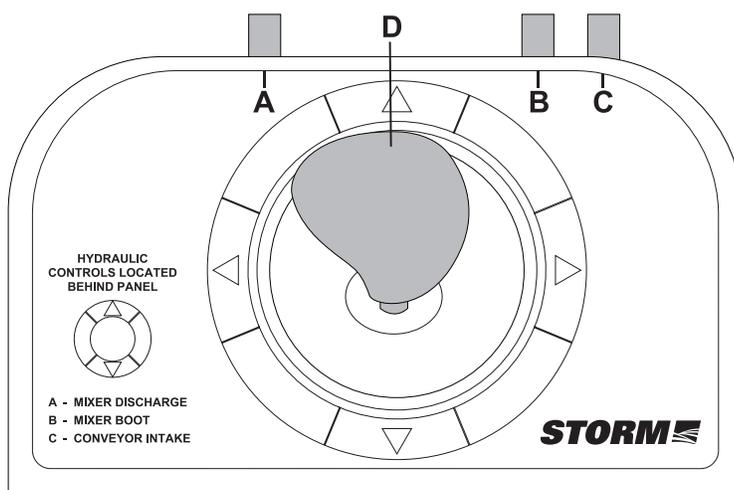


5. Remove the pin and slide the hitch lock into the unlocked position on STORM Pro.
6. Use the conveyor intake control to lower the STORM Pro hitch onto the ball of the vehicle hitch.
7. Slide the hitch lock forward, and replace the square pin.
8. Continue to use the conveyor intake control to lower the STORM Pro hitch until the conveyor transport lock can be engaged.
9. Engage the conveyor transport lock.
10. Turn off engine.
11. Use the levers on each drive wheel to disengage the two hydraulic wheel drive motors.
12. Connect the safety cables securely to the towing vehicle, crossing underneath. Leave cables slack enough for angular movement.

**WARNING** Do not tow with a worn or damaged safety cable.

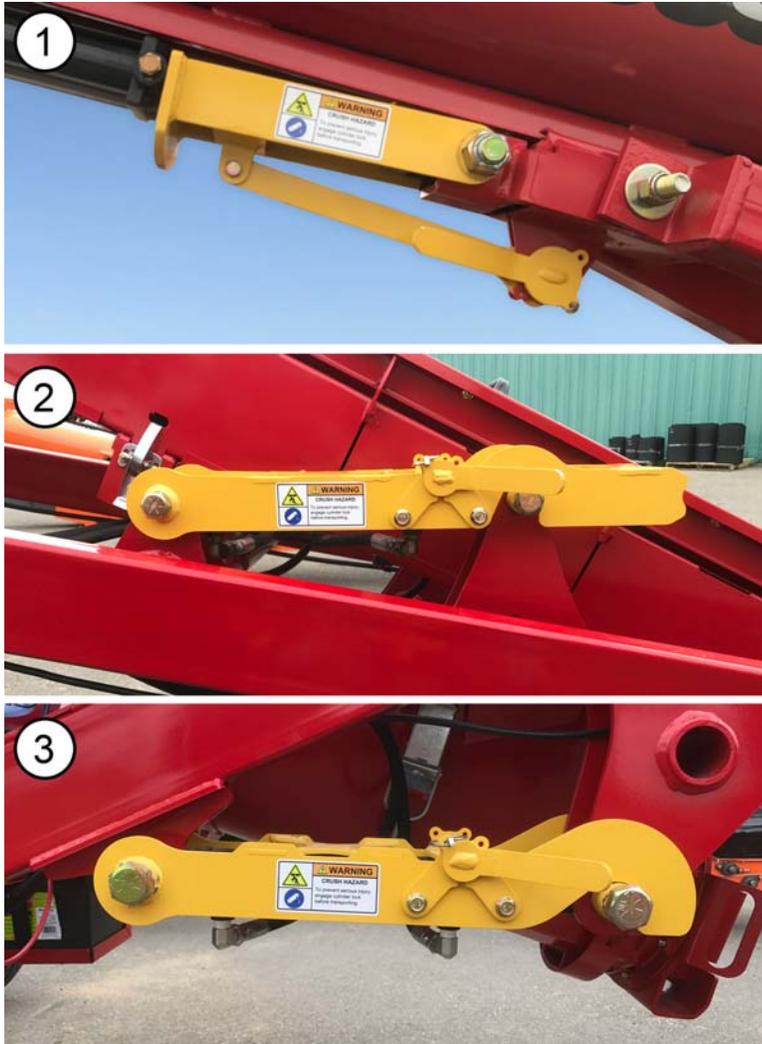
13. Connect the transport lights and test each function before transporting.

**Figure 2. Positioning Controls**



**Table 3. Positioning Controls**

Item	Description
A	Mixer Discharge Control
B	Mixer Boot Control
C	Conveyor Intake Control
D	Mover Wheels Joystick

**Figure 3. Location of Transport Locks****Table 4. Transport Locks**

Item	Description
1	Mixer Tube Transport Lock
2	Conveyor Transport Lock
3	Mixer Boot Transport Lock



**Figure 4. Correct Safety Cable Connection**



**Figure 5. Transport Position**



# 5. Placement



Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

## 5.1. Placement Safety

---

### **WARNING**

- The seed treater is not insulated, keep away from overhead power lines. Electrocutation can occur without direct contact.
- Anchor intake end before using.
- Place the seed treater on reasonably level ground before operating. The seed treater could topple if ground is too uneven.
- Chock the seed treater wheels after placement.
- Empty the seed treater before raising, lowering, or positioning.
- Check that wheels are free to move before raising or lowering the seed treater.
- Never attempt to increase height of the seed treater by positioning wheels on lumber, blocks, or by any other means.
- Do not permit anyone to stand beneath the seed treater when raising or lowering.
- Move the seed treater into position slowly. Do not unhitch and attempt to move by hand.
- Do not leave tube in raised position when not in use.

## 5.2. Position the STORM Professional

---

Refer to [Figure 6](#) and [Table 5](#).

1. Adjust the conveyor to ensure its frame is level with the ground.
2. Use the conveyor intake control (C) and mixer boot control (B) to raise and lower the conveyor to ensure the equipment does not drag on the ground, or impact the bin support legs and foundation.
3. Use the joystick to move the STORM slowly towards the bin.
4. Use the joystick and the conveyor intake control (C) to position the hopper under the bin.
5. Use the mixer boot control (B) to lower the boot to contact the ground.

### **Important**

If you cannot adjust the equipment to ensure the boot contacts the ground, place wheel chocks under the main drive wheels to prevent the equipment from shifting during operation.

6. Use the mixer discharge control (A) to raise the discharge spout above the truck or discharge vessel and close the mixer lock valve to secure the mixer tube. Keep some clearance between the bottom of the discharge spout and the truck or discharge vessel.

### **NOTICE**

Equipment Damage

The discharge spout may lower and cause damage to the STORM or equipment under it if the mixer lock valve is left open.

7. Inspect the position of the atomizing chamber; if the atomizing chamber is not in a vertical position you may:

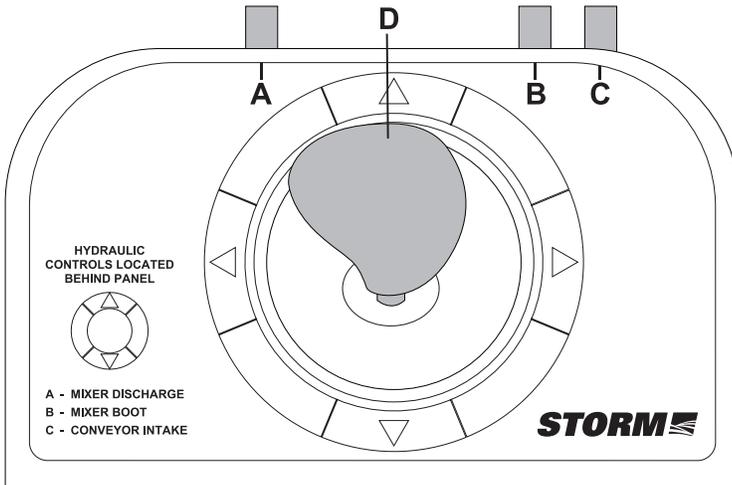


- Manually adjust the atomizing chamber.
- Adjust the position of the hopper, conveyor, and mixer boot until the atomizing chamber is in a vertical position.

**Important**

If the atomizing chamber cannot be positioned vertically, treatment quality will be affected. Treating is not recommended in this case.

**Figure 6. Positioning Controls**



**Table 5. Positioning Controls**

Item	Description
A	Mixer Discharge Control
B	Mixer Boot Control
C	Conveyor Intake Control
D	Mover Wheels Joystick

# 6. Operation



Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

## 6.1. Operation Safety



- Keep away from rotating and moving parts, including the conveyor belt, auger flighting, drive components, shafts, and bearings.
- Do not enter the grain bin while the seed treater is operating.
- Always operate with guards, covers, and shields in place.
- Have another trained person nearby who can shut down the equipment in case of accident.
- Keep the work area clear of bystanders.
- Keep the work area clean and free of debris.
- Ensure maintenance has been performed and is up to date.



Refer to your bin operation manual for specific operating and safety information for your bin.

## 6.2. Break-in Period

### 6.2.1 Conveyor Break-in

Table 6 lists the recommended break-in activities for the conveyor assembly.

**Table 6. Recommended Conveyor Break-in Activities**

Time	Speed	Activity
30 min	70%	Run the conveyor unloaded, check for any problems.
10 min	100%	Run the conveyor at full speed with seed (if possible), but do not run pumps. During this time the mixer should also be run at the highest speed.

It is normal for small chunks of rubber to separate from the intake seals during break-in.

If any unusual noises or vibrations are encountered, determine the source, shut the mixer off, lock out the power source, and adjust. If unsure of the problem, or the procedure to fix it, contact your local dealer.

### 6.2.2 Pump Tubing Break-in

The pump tubing elements require a minimum 30 minute break-in period in order to meter consistently. If proper break-in is not performed, the result will be difficulty in calibrating the pump and failed or inaccurate calibrations.

This procedure must be repeated each time that pump tubing is changed.

For each new pump tubing element:



1. Set the valves to the calibration positions for the pump.
2. Rotate the calibration cylinder down into the calibration position. Ensure the cylinder is clamped tightly in the bracket and that the top plug is fully inserted in the top of the cylinder.
3. Connect a male coupler to the dry-break coupler of the associated pump, and place the couplers in a suitably large-volume container of water.
4. Route the overflow tube found at the top of the calibration cylinder into the water container. Ensure the tube is fully inserted into the black cap found at the top of the calibration cylinder.
5. On the touch screen, at the main menu screen tap Maintenance, Flush Out.
6. Ensure that the pump with the tubing element that is intended for break-in is set to On and in the Forward direction.
7. Ensure that the pump with the tubing not intended for break-in is set to Off.
8. Press Start and run the pump for a minimum of 30 minutes circulating water the entire time.

## 6.3. Mechanical Controls

---

The STORM mixer section has the following mechanical controls:

- Engine throttle: variable RPM
- Mover kit: moves and steers the unit, raises and lowers the mixer tube.
- Calibration valves

In addition to mechanical controls, the STORM is also has a touch-screen interface that is used to:

- operate the flighting
- configure, calibrate, run and stop jobs
- view job information and system status
- prepare pumps and conveyor for treating
- control pumps and conveyor for clean up. On the top of the control box is a physical pause button. Pressing this button stops the pumps and conveyor.

## 6.4. Start-Up

---

1. Ensure that the conveyor is off, and flood the canvas hopper by opening the hopper bin slide-gate until the hopper is fully flooded with seed. The hopper bin slide-gate should be open sufficient to ensure hopper is completely flooded at maximum intended operation.

### **Important**

If the intake hopper is under-filled, metering will be inaccurate.

2. Start the diesel engine and increase the mixer flighting to 400 rpm with no seed in it.

### **Note**

Once operating the mixer with seed running through it, the rpm will decrease from the seed load to roughly 350 rpm which is ideal for treating.

3. Check the touchscreen, and ensure that the control system initializes fully. When fully initialized, the startup screen appears (see [Figure 7](#)). The reset button on the HMI panel will start the machine. Use the power off button on the HMI to shut off the HMI.



4. Software updates are posted to the STORM website. It is recommended that you register at the web address shown in the startup screen as soon as possible so that you will be alerted to software updates and have access to important information about your STORM seed treater.
5. Press Continue to proceed to the Main Menu, and follow the instructions on-screen for proper seed treating.

**Figure 7. Start-up Screen**



### 6.4.1 Treating Seed

The operator is required to complete STORM seed treatment training to be qualified to treat seed. The STORM Professional is a custom designed commercial unit intended for professional operators who have received this training directly from a company authorized trainer. Do not use the STORM Professional if you have not received this specialized training.

## 6.5. Shutdown

---

1. Run the mixer tube until it is empty.
2. When mixer is clear of seed, shut down and lock out power source.

## 6.6. Emergency Stop

---

Although it is recommended that the seed treater be emptied before stopping, in an emergency situation press the emergency stop button. The emergency stop will stop the conveyor, mixer, seed treatment metering pumps, and atomizer.

### 6.6.1 Restarting with a Full Tube

The STORM may be filled with material if the machine is shut down inadvertently or for an emergency. It is recommended that you restart with the following procedure:

1. Shut off the metering conveyor.
2. Run the mixer tube until empty. If that isn't possible, lift the boot, put a vessel underneath, open the boot clean-out, and then run mixer flighting backwards.
3. Close any clean-out doors, return the STORM back to its operating position, re-start the system and resume treating.



## 6.7. Storage

---

**Table 7. Seasonal Storage Activities and Maintenance**

Item	Activity/Maintenance
Grease points	Check all grease points (bearings, zerks, chains), and ensure that they are sufficiently well greased.
Bolts and rivets	Inspect all bolts and rivets. Tighten loose bolts and replace any rivets that are loose or missing.
Control box	Depress emergency stop button.
Conveyor, belt, and rollers	Check chain for grease condition. Ensure the belt is thoroughly clean. Run conveyor forward and backward: check for tracking problems, unusual noise, and stiff rollers. Inspect edge of lacing with contact cement or cyanoacrylate based adhesive. Place into transport position and lock in place.
Pumps and hoses	Flush all lines, blow out with compressed air. Disassemble and clean treatment filters. Fill plumbing with antifreeze. Ensure pump shoes are open to remove pressure on pump tubing elements.
Storm components	Cover unit using supplied covers.



# 7. Maintenance



Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

## 7.1. Maintenance Safety

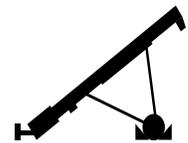
### ⚠ WARNING

- Keep components in good condition. Follow the maintenance procedures.
- Ensure the service area is clean, dry, and has sufficient lighting.
- Do not modify any components without written authorization from the manufacturer. Modification can be dangerous and result in serious injuries.
- Shut down and lock out power before maintaining equipment.
- After maintenance is complete, replace all guards, service doors, and/or covers.
- Use only genuine STORM replacement parts or equivalent. Use of unauthorized parts will void warranty. If in doubt, contact STORM or your local dealer.



### Before attempting maintenance of any kind:

- Lower the seed treater fully.
- Chock wheels.
- Support tube if performing maintenance on the undercarriage assembly.
- **If equipped with hydraulics:** Before applying pressure to a hydraulic system, make sure all components are tight and that hoses and couplings are in good condition.



## 7.2. Maintenance Schedule

Table 8. STORM Maintenance Schedule

Item	8 h	Daily	Weekly	Two Weeks	Yearly	Post-Flush	Action
ELECTRIC MOTORS		x					Check electrical cables for damage.
PUMPS					x		Ensure pump rotors and rollers are spinning free.
PUMP HOSES					x		Replace.



**Table 8 STORM Maintenance Schedule (continued)**

CHAIN COUPLER					X		Clear of debris and spray with chain oil.
CONVEYOR BELT	X						Check belt tracking, adjust with tracking bolts on all four bearings.
				X	X		Check belt tension, adjust if needed.
				X	X		Inspect belt for cracks and wear on edges, both sides of belt.
					X		Remove belt lacing and inspect for damage, replace if needed.
		X					Thoroughly clean belt and lacing from outside with high pressure water.
CONVEYOR ROLLERS					X	Inspect rollers and lagging. Ensure that rollers spin freely. If damaged replace lagging/roller.	
CONVEYOR BEARINGS					X	Apply grease.	
ATOMIZER CUP				X		X	Remove the bolt at bottom of the cup to clean the atomizer.
FILTER STRAINERS				X		X	Unscrew cap and rinse residue from strainer, replace same cartridge. Replace cartridge only if damaged.
ENGINE							Consult Perkins Manual.
MIXER LOWER BEARING	X					X	Apply grease.

### 7.3. Visually Inspect the Equipment

Check the following during a visual inspection:

1. Ensure all guards are in place and in good working order.
2. Examine the seed treater for damage or unusual wear.
3. Check tightness of bolts/nuts, fasteners, and hardware (re-torque if necessary).
4. Be sure all safety decals are in place and are legible.
5. Check that the discharge and intake area are free of obstructions.
6. Inspect all moving or rotating parts to see if anything has become entangled in them. Remove any entangled material.
7. Inspect hydraulic hoses and fittings for leaks and wear. Fix or replace where necessary.
8. Examine tires for gashes, uneven wear, or loss of air pressure. Maintain pressure according to tire sidewall recommendations.
9. Check all operating, lifting, and transport components. Replace damaged or worn parts before using the seed treater.

10. Make sure access, service, and cleanout covers are in place and secure.

## 7.4. Pre-Season Maintenance

---

See [Table 9](#) for a list of activities recommended to prepare the STORM for use after seasonal storage.

**Table 9. Pre-Season Maintenance**

Item	Activity/Maintenance
Grease points	Check all grease points (bearings, zerks, chains), and ensure that they are sufficiently well greased.
Bolts and rivets	Inspect all bolts and rivets. Tighten loose bolts and replace any rivets that are loose or missing.
Control Box	Release emergency stop button. Check for software updates and upgrade system software if available.
Conveyor, belt, and rollers	Check chain for grease condition. Ensure the belt is thoroughly clean. Run conveyor forward and backward: check for tracking problems, unusual noise, and stiff rollers. Inspect edge of lacing with contact cement or cyanoacrylate based adhesive
Pumps and hoses	Drain and collect antifreeze from treatment lines and filters. Store the antifreeze for further use or dispose of safely. Flush all hoses and lines with water, and dispose of rise-water safely (it will contain anti-freeze if proper storage precautions were taken). Check all connectors and hoses for kinks, leaks, or wear. Ensure pump shoes are closed. Run pumps forward and backward, and check for any unusual noise or actions. Change pump tubing annually or when it appears deformed.



# 8. Specifications

**Table 10. Specifications**

<b>CAPACITY</b>	
Seed Flow	22.5 to 45 bu/min with 70 lb/bu
Treatment Application Rate	10 to 1200 ml/100kg
Treatment Application Coverage Accuracy	+/- 5% (typical)
Tube Size of Mixer	10" (254 mm)
<b>DIMENSIONS</b>	
Transport	Length 42' (12.8 m)
	Width 8'6" (2.59 m)
	Height 11'6" (3.51 m)
Discharge Clearance	Min 9'5" (2.87 m)
	Max 23'7" (7.19 m)
<b>TIRES</b>	
Size/Type	15" Radial
Inflation Pressure	20-24 PSI (137-165 kPa)
<b>WEIGHT</b>	
Hitch Tongue Weight	500 lb (318 kg)
Total Weight	3700 lb (1542 kg)
<b>POWER REQUIREMENTS</b>	
Diesel Engine	30-35 HP (22.5-26.3 KW)
DC Power	12 VDC for diesel motor
<b>PART SPECIFICATIONS</b>	
Fuel Tank Capacity	14 US Gal (53 L)
Hydraulic System Capacity	40 L (Trans-Hydraulic 56 or Universal Tractor Hydraulic Oil Types)

## 9. STORM Warranty

Ag Growth International (AGI) warrants products of its manufacture against defects in materials or workmanship under normal and reasonable use for a period of one year after date of delivery to the original purchaser.

Our obligation under this warranty is limited to repairing, replacing, or refunding defective part or parts which shall be returned to a distributor or a dealer of our Company, or to our factory, with transportation charges prepaid. This warranty does not obligate AGI to bear the cost of labor in replacing defective parts. Any defects must be reported to the Company before the end of the one year period.

This warranty shall not apply to equipment which has been altered, improperly assembled, improperly maintained, or improperly repaired so as to adversely affect its performance. AGI makes no express warranty of any character with respect to parts not of its manufacture.

The foregoing is in lieu of all other warranties, expressed or implied, including any warranties that extend beyond the description of the product, and the IMPLIED WARRANTY of MERCHANTABILITY is expressly excluded.



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