



# VENTURE 120/220 OPERATOR'S MANUAL

S/N: 2018036179 & Above

**Congratulations** on the purchase of your Ground Logic, Inc. machine. This product has been carefully designed and manufactured to be a dependable piece of equipment that will provide years of trouble-free operation.

**BEFORE OPERATING YOUR MACHINE, CAREFULLY READ AND UNDERSTAND THIS MANUAL IN ITS ENTIRETY.**

For future reference, place the serial number of the machine and date of purchase below:

Serial Number: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

GROUND LOGIC, INC.  
VEN-12024-1 & VEN-22024-1

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# 1. MACHINE SPECIFICATIONS

## 1.1 TABLE OF SPECIFICATIONS

### VENTURE 120

### VENTURE 220

<b>MODEL NUMBER</b>	This manual is for model number 5901727 (VEN-12024-1).	This manual is for model number 5901728 (VEN-22024-1).
<b>ENGINE</b>	<ul style="list-style-type: none"> <li>• Engine Model: Subaru EX40</li> <li>• Engine specifications: See your Subaru engine owner's manual.</li> <li>• RPM: Full speed: 3600 rpm (no load) Idle: 1400 rpm.</li> </ul>	<ul style="list-style-type: none"> <li>• Engine Model: Subaru EX40</li> <li>• Engine specifications: See your Subaru engine owner's manual.</li> <li>• RPM: Full speed: 3600 rpm (no load) Idle: 1400 rpm.</li> </ul>
<b>FUEL SYSTEM</b>	<ul style="list-style-type: none"> <li>• Capacity: 2.5 gal (9.5 L).</li> <li>• Type of fuel: Regular unleaded gasoline, 87 octane or higher.</li> <li>• Fuel shut-off valves: Located on engine.</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity: 2.5 gal (9.5 L).</li> <li>• Type of fuel: Regular unleaded gasoline, 87 octane or higher.</li> <li>• Fuel shut-off valves: Located on engine.</li> </ul>
<b>TRANSMISSION</b>	<ul style="list-style-type: none"> <li>• Transmission Model: Hydro-Gear ZT-3100 series</li> <li>• Gear selections: Infinite forward and rearward</li> <li>• Speed: 8.0 mph (12.9 km/hour) forward (maximum), 5.0 mph (8.0 km/hour) rearward (maximum).</li> </ul>	<ul style="list-style-type: none"> <li>• Transmission Model: Hydro-Gear ZT-3100 series</li> <li>• Gear selections: Infinite forward and rearward</li> <li>• Speed: 8.0 mph (12.9 km/hour) forward (maximum), 5.0 mph (8.0 km/hour) rearward (maximum).</li> </ul>
<b>TIRES AND WHEELS</b>	<ul style="list-style-type: none"> <li>• Front tires: 13 x 650 – 6</li> <li>• Rear tires: 20 x 800 – 8</li> </ul>	<ul style="list-style-type: none"> <li>• Front tires: 13 x 650 – 6</li> <li>• Rear tires: 20 x 800 – 8</li> </ul>
<b>SPREADER</b>	<ul style="list-style-type: none"> <li>• Spreader model: Spyker 120 Series</li> <li>• Capacity: 120 lb.</li> </ul>	<ul style="list-style-type: none"> <li>• Spreader model: Spyker 220 Series</li> <li>• Capacity: 220 lb.</li> </ul>
<b>SPRAYING SYSTEM</b>	<ul style="list-style-type: none"> <li>• Spray Pump: 4.0 GPM electric diaphragm pump.</li> <li>• Tank: Two 12-gallon tanks.</li> <li>• Nozzles: Turbo TeeJet TT11003VP.</li> <li>• Spray Patterns: 8' or 6' or 4' or 2' spray width options.</li> <li>• Spray Pressure: Regulated to 20 psi (138 kPa) to match ground speed with tip output.</li> </ul>	<ul style="list-style-type: none"> <li>• Spray Pump: 4.0 GPM electric diaphragm pump.</li> <li>• Tank: Two 12-gallon tanks.</li> <li>• Nozzles: Turbo TeeJet TT11003VP.</li> <li>• Spray Patterns: 8' or 6' or 4' or 2' spray width options.</li> <li>• Spray Pressure: Regulated to 20 psi (138 kPa) to match ground speed with tip output.</li> </ul>

# 1. MACHINE SPECIFICATIONS CONTINUED

## 1.1 TABLE OF SPECIFICATIONS CONTINUED

	VENTURE 120	VENTURE 220
<b>DIMENSIONS</b>	<ul style="list-style-type: none"><li>• Overall length: 67" (170 cm).</li><li>• Overall width: 36" (91 cm).</li><li>• Overall height: 48" (122 cm).</li><li>• Weight: 540 lb. (245 kg) dry.</li></ul>	<ul style="list-style-type: none"><li>• Overall length: 67" (170 cm).</li><li>• Overall width: 36" (91 cm).</li><li>• Overall height: 48" (122 cm).</li><li>• Weight: 540 lb. (245 kg) dry.</li></ul>
<b>ELECTRICAL SYSTEM</b>	<ul style="list-style-type: none"><li>• Charging system: 20A</li><li>• Battery: U1 style</li><li>• Electric engine start</li></ul>	<ul style="list-style-type: none"><li>• Charging system: 20A</li><li>• Battery: U1 style</li><li>• Electric engine start</li></ul>

## 1.2 OPERATOR CONTROLS

- The handlebars provide access to most of the machine controls.
- Pushing the motion control levers forward moves each drive wheel proportionally forward.
- Pulling the motion control levers rearward moves each drive wheel proportionally rearward.
- Moving the motion control levers differing amounts provides steering and speed control.
- The throttle lever controls engine speed.
- The choke lever engages the engine choke.
- The gate lever controls the flow of granular product out of the hopper.
- The console spray switch provides constant pump operation.
- The foot platform spray switch provides intermittent pump operation.
- The engine ignition switch controls the operation or shutdown of the engine.
- The spray pressure relief valve controls spray system pressure.
- The spray toggle valves control which nozzle(s) are operational.
- The spread control lever controls the center of the spread pattern of granular product.
- The gate stop on the front of the hopper controls the maximum gate opening for granular product.
- The park brake lever engages and releases the parking brake feature on the transmissions.

# 2. GENERAL OPERATIONAL SAFETY

## 2.1 PROPOSITION 65 STATEMENT



This product can expose you to chemicals including gasoline engine exhaust, which is known to the State of California to cause cancer, and carbon monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

Read these safety rules and follow them closely. Failure to obey these rules could result in loss of control of the unit, severe personal injury or death to you, or bystanders, or damage to property or equipment.

## 2. GENERAL OPERATIONAL SAFETY CONTINUED

### 2.2 OPERATING SAFELY

The safety alert triangle (  ) in text signifies important cautions or warnings which must be followed.

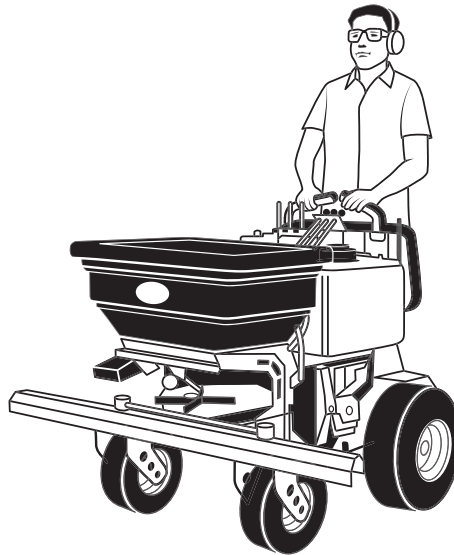


Figure 1

Congratulations on purchasing a superior-quality piece of lawn and garden equipment. Our products are designed and manufactured to meet or exceed all industry standards for safety.

Do not operate this machine unless you have been trained. Reading and understanding this operator's manual is a way to train yourself.

Keep both feet on the operator platform at all times. Power equipment is only as safe as the operator. If it is misused, or not properly maintained, it can be dangerous! Remember, you are responsible for your safety and that of those around you.

Use common sense, and think through what you are doing. If you are not sure that the task you are about to perform can be safely done with the equipment you have chosen, ask a professional: contact your local authorized dealer.

### 2.3 CHEMICAL SAFETY

#### **WARNING**

Chemicals used in this machine such as herbicides and pesticides may be hazardous to apply and produce gasses that are hazardous if inhaled or with contact to your skin. Caustic liquid or chemical burns could occur if chemicals are not used properly.

- Read and follow all the instructions and warnings on Material Safety Data Sheets (MSDS) from manufacturer for all chemicals used.
- Become familiar with and follow all warnings, recommendations, instructions and procedures for: first aid measures, safe use, mixing, handling, applying, spills clean-up, storage and disposal of all chemicals as listed on the manufacturer's label or MSDS of any herbicides, pesticides or other chemicals.
- Wear all personal protective equipment as recommended on the manufacturer's label or MSDS of any herbicides, pesticides or other chemicals. Personal protective equipment may include safety glasses or goggles and/or face shields, chemical resistant gloves, rubber boots, and a respirator or air purifying filter mask.

## 2. GENERAL OPERATIONAL SAFETY CONTINUED

### 2.3 CHEMICAL SAFETY CONTINUED

- Before working on this machine, be sure the sprayer / valve system and hopper has been thoroughly rinsed according to the recommendations of the chemical manufacturer (see MSDS and product labels).
- Obtain the proper training before using or handling any chemicals. Follow all local, state and federal requirements for the handling and spreading or spraying of chemicals.
- Be sure to verify there is an adequate supply of clean water and soap nearby and immediately wash off any chemicals that may contact you.
- Handle chemicals in a well-ventilated area.
- Keep clean water available for immediate rinsing off and clean-up of any spilled chemicals, especially when filling the sprayer tank.
- Do NOT attempt to clean spray nozzles by blowing through them or placing in or near your mouth.
- Never enter the spray tank or hopper with your unprotected hands, or place your mouth or face over or into these openings. Chemicals and fumes may be hazardous to your health.

#### WARNING

- Reduce your speed and minimize the weight of your load (in the hopper and volume in the tanks) when operating on hills or rough terrain to avoid possible instability, tipping or rollover of the machine.
- Liquid in the tanks and granular materials in the hopper may shift during operation. This is most common while turning, going up, down or across hills, when suddenly changing speed, or operating on rough terrain. This shift in load may cause possible instability, tipping or rollover of the machine. Reduce your speed in these situations.
- The sprayer hand wand may trap liquid under high pressure even when the engine is off. Accidental high pressure spray discharge is hazardous and could cause serious injury to you or bystanders.
  - Do NOT point the hand wand or spray near people.
  - Always stay clear of the sprayer hand wand nozzle and never point it at anything you do not intend to spray.
  - The hand wand is pressurized anytime the sprayer pump is activated with the shutoff valve open.
  - Take care to relieve the pressure in the hand wand every time after shutting off the engine by squeezing the trigger while pointing it in a safe direction.
  - Do NOT point the hand wand or spray electrical components or wires.
  - Do NOT attempt to disconnect the spray wand from the unit while the system is pressurized

### 2.4 TRAINING

- Read, understand, and follow all instructions in the manual and on the unit before starting. If the operator(s) or mechanic(s) cannot read English it is the owner's responsibility to explain this material to them.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.

## 2. GENERAL OPERATIONAL SAFETY CONTINUED

### 2.4 TRAINING CONTINUED

- All operators and mechanics should be trained. The owner is responsible for training the users.
- Only allow responsible adults, who are familiar with the instructions, to operate the unit. • Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
- The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people or property.

### 2.5 PREPARATION

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Use only accessories and attachments approved by the manufacturer.
- Wear appropriate clothing including safety shoes, safety glasses and ear protection. Long hair, loose clothing or jewelry may get tangled in moving parts.
- Inspect the area where the equipment is to be used and remove all objects such as rocks, toys and wire, which can be thrown by the machine.
- Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
- Use only an approved container for gasoline.
- Never remove fuel cap or add fuel with the engine running. Allow engine to cool before refueling. Do not smoke. Never refuel or drain the machine indoors.
- Check that safety switches and shields are attached and functioning properly. Do not operate unless they function properly.
- Become familiar with and follow all warnings, recommendations, instructions and procedures for safe use, handling, applying, storage and disposal of all chemicals as listed on the manufacturer's label of any herbicides, pesticides or other chemicals.
- Wear all personal protective equipment as recommended on the manufacturer's label or MSDS of any herbicides, pesticides or other chemicals. Personal protective equipment may include safety glasses or goggles and/or face shields, chemical resistant gloves, rubber boots and a respirator or filter mask.

#### **WARNING**

It is a violation of California Public Resource Code, Section 4442, to use or operate the engine on any forest-covered, brush-covered or grass-covered land unless the exhaust system is equipped with a spark arrester, as defined in Section 4442, maintained in effective working order. Other states or federal jurisdictions may have similar laws. Contact an Authorized Service Dealer to obtain a spark arrester designed for the exhaust system installed on this engine.

- OSHA regulations may require the use of hearing protection when exposed to sound levels greater than 85 dBA for an 8 hour time period

#### **CAUTION**

This machine produces sound levels in excess of 85 dBA at the operator's ear and can cause hearing loss though extended periods of exposure. Wear hearing protection when operating this machine.

## **2. GENERAL OPERATIONAL SAFETY CONTINUED**

### **2.6 CHILDREN**

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the unit and the operating activity. Never assume that children will remain where you last saw them.

- Keep children out of the operating area and under the watchful care of another responsible adult.
- Be alert and turn unit off if children enter the area.
- Before and during reverse operation, look behind and down for small children.
- Never carry children, even with spreader spinner and sprayer pump off. They may fall off and be seriously injured or interfere with safe unit operation. Children who have been given rides in the past may suddenly appear in the operation area for another ride and be run over or backed over by the machine.
- Never allow children to operate the unit.
- Use extra care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

### **2.7 SAFE HANDLING OF GASOLINE**

To avoid personal injury or property damage, use extreme care in handling gasoline. Gasoline is extremely flammable and the vapors are explosive.


- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only approved gasoline containers.
- Never remove the gas cap or add fuel with the engine running. Allow the engine to cool before refueling.
- Never fuel the machine indoors.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light such as near a water heater or other appliance.
- Never fill containers inside a vehicle or on a truck bed with a plastic bed liner. Always place containers on the ground away from your vehicle before filling.
- Remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment on a trailer with a portable container, rather than from a gasoline dispenser nozzle.
- Keep nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
- If fuel is spilled on clothing, change clothing immediately.
- Never over-fill the fuel tank. Replace gas cap and tighten securely.
- Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.
- If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until fuel vapors have dissipated.
- Replace all fuel tank caps and fuel container caps securely.






### 3. SAFETY AND INSTRUCTIONAL DECALS

#### 3.1 INTRODUCTION TO SAFETY ALERT SYMBOLS AND SIGNAL WORDS

Before operating your unit, read the safety decals. The cautions and warnings are for your safety. To avoid a personal injury or damage to the unit, understand and follow all safety decals.

The safety alert symbol  is used to identify safety information about hazards that can result in personal injury. A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to indicate the likelihood and the potential severity of injury. In addition, a hazard symbol may be used to represent the type of hazard.

-  **DANGER** indicates a hazard which, if not avoided, will result in death or serious injury.
  -  **WARNING** indicates a hazard which, if not avoided, could result in death or serious injury.
  -  **CAUTION** indicates a hazard which, if not avoided, could result in minor or moderate injury.
- NOTICE** indicates a situation that could result in damage to the product.

#### 3.2 SAFETY ICONS AND WARNING DECALS

##### Safety Icons

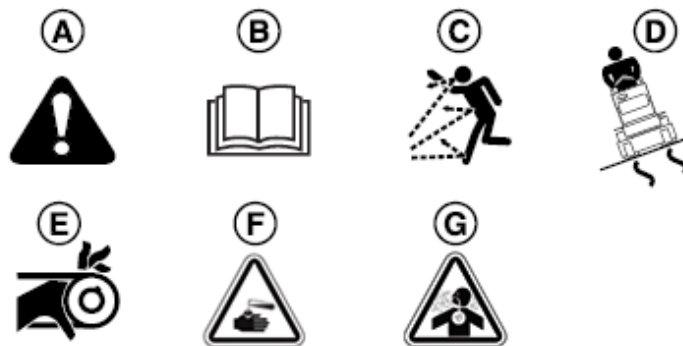


Figure 2: Safety Icons

Explanation of Icons in Figure 2	
Callout	Description
A	Alert
B	Read the Manual
C	Thrown Objects
D	Slope Direction for Safe Operation
E	Amputation - Rotating Parts
F	Caustic Liquid/Chemical Burn
G	Gas Inhalation Hazard

Figure 3: Explanation of Icons in Figure 2

### 3. SAFETY AND INSTRUCTIONAL DECALS

#### 3.2 SAFETY ICONS AND WARNING DECALS CONTINUED



Figure 4: Danger Decal (P/N 5105766)

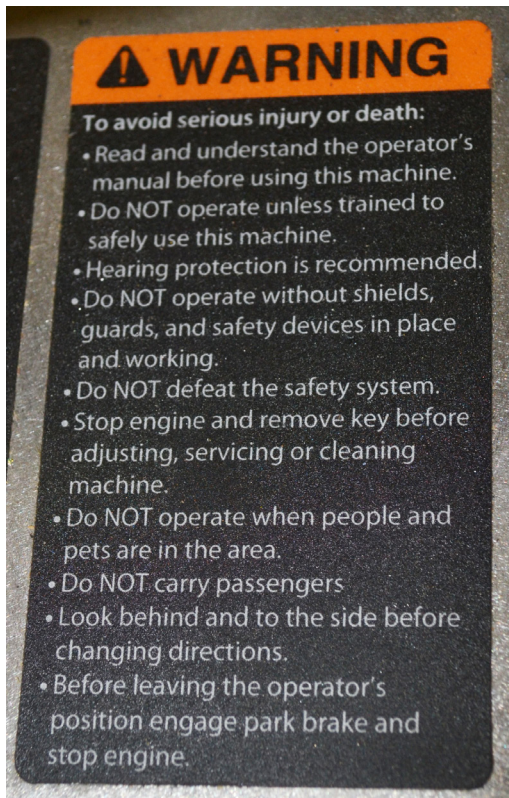


Figure 5: Serious Injury or Death Warning Decal



Figure 6: Moving Parts Warning Decal



Figure 7: Amputation and Pinch Point Hazard Decal (P/N 5103184)



Figure 8: Muffler Caution Decal

### 3. SAFETY AND INSTRUCTIONAL DECALS

#### 3.3 INSTRUCTIONAL DECALS



Figure 9: Parking Brake Decal (P/N 5105777)

**(P) Parking Brake:** Pull the parking brake lever rearward and down to disengage the parking brake. Move the lever forward and up to engage the parking brake.



	Disengage	Releases the parking brake.
	Engage	Locks the parking brake.

Figure 10: Explanation of Parking Brake Decal



Figure 11: Spray Pressure Relief Valve Adjustment Decal (P/N 5105769)

**Spray Pressure Relief Valve:** See section 4.2 CONTROLS for Spray Pressure Relief Valve operating instructions.

Turning the knob clockwise increases spray pressure and turning the knob counter clockwise decreases spray pressure.

### 3. SAFETY AND INSTRUCTIONAL DECALS

#### 3.3 INSTRUCTIONAL DECALS CONTINUED

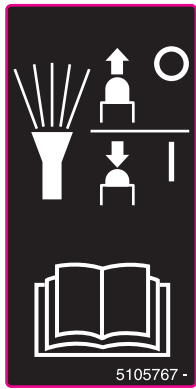


Figure 12: Foot Platform Spray Switch Decal (P/N 5105767)

**Foot Platform Spray Switch decal:** See section **4.2 CONTROLS** for foot platform spray switch operating instructions.



Releasing the foot platform spray switch (with no pressure applied to the switch) turns the spray pump off (OFF position).



Depressing the foot platform spray switch (with continuous pressure applied to the top of the switch) turns the spray pump on (ON position).



Figure 13: Spray Toggle Valves Decal (P/N 5105768)

Spray Toggle Valves Decal: See section **4.2 CONTROLS** for Spray toggle valves operating instructions.



The left toggle valve controls the left spray nozzle and is ON when flipped down (or valve lever is forward).



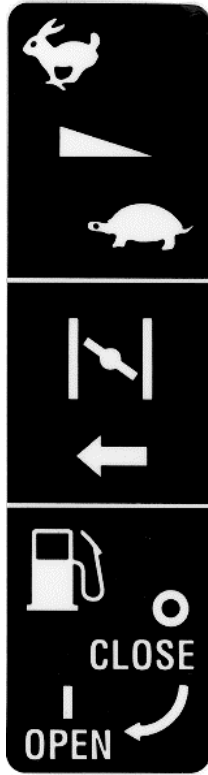
The middle toggle valve controls the middle spray nozzle and is ON when flipped down (or valve lever is forward).



The right toggle valve controls the right spray nozzle and is ON when flipped down (or valve lever is forward).

### 3. SAFETY AND INSTRUCTIONAL DECALS

#### 3.3 SUBARU ENGINE DECALS AND ENGINE CONTROLS



	Read the owner's manual.		
	Stay clear of the hot surface.		
	Exhaust gas is poisonous. Do not operate in an unventilated area.		
	Stop the engine before refueling.		
	Fire, open flame and smoking prohibited.		
	On (Run)	+	Plus ; Positive polarity
○	Off (Stop)		Battery
	Engine oil		Engine start (Electric start)
	Add oil		

### 4. OPERATING INSTRUCTIONS

#### 4.1 OPERATION

- Keep both feet on the operator platform at all times.
- Never run an engine in an enclosed area.
- Operate only in the daylight or with good artificial light, keeping away from holes and hidden hazards.
- Be sure all drives are in neutral and parking brake is engaged before starting engine. Only start engine from the operator's position.
- Be sure of your footing while using pedestrian controlled equipment, especially when backing up. Walk, don't run. Reduced footing could cause slipping.
- Slow down and use extra care on hillsides. Be sure to travel in the recommended direction on hillsides. Turf conditions can affect the machines stability. Use caution when operating near drop-offs.
- Do not operate in reverse unless absolutely necessary. Always look down and behind before and while traveling in reverse.
- Slow down and use caution when making turns and when changing directions on slopes.

## **4. OPERATING INSTRUCTIONS**

### **4.1 OPERATION CONTINUED**

- Never leave a running unit unattended. Always disengage the spreader spinner and sprayer pump, set parking brake, stop engine, and remove keys before dismounting. Keep hands and feet away from the rotating parts.
- Turn off the switches to disengage the spreader spinner and sprayer pump when not operating.
- Never operate with guards not securely in place. Be sure all switches are attached, adjusted properly and functioning properly.
- Do not change the engine governor setting or overspeed the engine.
- Stop on level ground, lower implements, disengage spreader spinner and sprayer pump, engage parking brake, shut off engine before leaving the operator's position for any reason.
- Look behind and down before backing up to be sure of a clear path.
- Never carry passengers and keep pets and bystanders away.
- Do not operate the unit while under the influence of alcohol or drugs.
- Slow down and use caution when making turns and crossing roads and sidewalks. Disengage spreader spinner and sprayer pump if not operating.
- Use care when loading or unloading the machine into a trailer or truck.
- Use care when approaching blind corners, shrubs, trees or other objects that may obscure vision.
- To reduce fire hazard, keep unit free of grass, leaves & excess oil. Do not stop or park over dry leaves, grass or combustible materials.

### **4.2 CONTROLS**

The user should become familiar with all controls before operating the machine.

- Motion Control Levers: The motion control levers provide steering and speed control of the machine and should be grasped with the hands at the location of the foam grips. Moving the motion control levers forward engages the drive wheels in a forward direction. Moving the motion control levers rearward engages the drive wheels in a rearward direction. The speed and direction of the machine may be controlled by varying the position of each motion control lever relative to the stationary handlebar.
- Throttle lever: The throttle lever controls the speed of the engine. Moving the throttle lever forward increases the engine speed. Moving the throttle lever rearward decreases the engine speed.
- Choke lever: The choke lever adjusts the choke setting on the engine for starting and operating the engine when cold. The choke is engaged by moving the choke lever forward. The choke is disengaged by moving the choke lever rearward.
- Gate lever: The gate lever is located on the front of the console and controls the opening at the bottom of the hopper. Pushing forward on the gate lever causes the gate to close so that no granular product will flow out of the bottom of the hopper. Pulling backward on the gate lever causes the gate to open so that granular product will flow.
- Console spray switch: The console spray switch turns the pump on and off. The pump is off when the switch is in the "OFF" position. The pump runs continuously when the switch is in the "ON" position.

## 4. OPERATING INSTRUCTIONS CONTINUED

### 4.2 CONTROLS CONTINUED

The user should become familiar with all controls before operating the machine.

- **Foot platform spray switch:** The foot platform spray switch turns the pump on and off. The pump is off when no pressure is applied to the switch. The pump is on when pressure is applied to the top of the switch. This switch is intermittent and only operates the pump when pressure is applied to the switch.
- **Engine ignition switch:** The engine ignition switch is located on the right side of the console and controls the ignition circuit of the engine. The engine will only run when the switch is in the “ON” position. The engine will not start or will shut down if the switch is in the “OFF” position. The engine will start when the key is rotated to the “START” position.
- **Spray pressure relief valve:** The spray pressure relief valve is located in front of the left side of the console. This relief valve controls the spray system pressure. Screwing in the adjustment knob increases pressure as noted on the pressure gauge. Unscrewing the adjustment knob decreases pressure as noted on the pressure gauge. For a normal spray rate of ¼ gallon per thousand square feet, the system pressure should be adjusted to 20 psi when spraying.
- **Spray toggle valves:** The spray toggle valves control which spray nozzles receive flow from the pump. The left toggle valve controls the left spray nozzle, the right toggle valve controls the right nozzle, and the middle toggle valve controls the middle nozzle(s). Spray liquid flows to a specific nozzle when its corresponding toggle valve is flipped down.
- **Gate stop:** The gate stop controls the maximum opening of the hopper gate and is located on the front of the hopper. The knob is rotated one direction or the other until the desired maximum gate opening is obtained.
- **Parking brake:** The parking brake is located on the left side of the console pedestal. Actuating this brake engages a locking feature in the transmissions. To engage the brake the park brake lever is rotated forward. To disengage the brake the park brake lever is rotated rearward.

### 4.3 BEFORE FIRST TIME OPERATION

- Be sure to read all information in the Operator Safety and Operation sections before attempting to operate this unit.
- Become familiar with all of the controls and how to stop the unit.
- Drive in an open area without operating the spreader and sprayer to become accustomed to the unit.



Never operate on slopes greater than 12°.

- Select slow ground speed before driving onto a slope. Use extra caution when operating on slopes with any accessories attached to the unit.
- Operate across slopes, NOT up and down slopes. Use caution when changing direction on slopes and do NOT start or stop on a slope.

## **4. OPERATING INSTRUCTIONS CONTINUED**

### **4.4 PRE-START**

- Fill the fuel tank. For best results use only fresh, clean regular grade unleaded gasoline with an octane rating of 87 or higher. Do not add oil to the gasoline.
- Do not overfill the fuel tank. Never fill the fuel tank so that the fuel level rises above a level that is ½" below the bottom of the filler neck. This will allow for fuel expansion and will help to prevent fuel spillage.
- Understand the controls, their locations, their functions, and their safety requirements.
- Refer to Maintenance, Section 7, and perform all the necessary inspection and maintenance steps.

### **4.5 STARTING THE MACHINE**

- Position the machine on a flat and level surface.
- Ensure that the motion control levers are in the neutral position and that the parking brake is engaged.
- Open the fuel shut-off valves located on the engine and below the fuel tank.
- If the engine is cold, activate the choke lever located on the console. If the engine is warm, it may not be necessary to activate the choke lever.
- Turn the key switch to the "ON" position and then to the "START" position to engage the engine starter. Do not run the starter for more than 5 seconds at a time. If the engine does not start after several attempts, see the troubleshooting section in this manual. Operating the engine starter for excessive amounts of time can damage the starter and engine.
- Once the engine has started, gradually deactivate the choke lever.
- Carefully step onto the operator platform.
- Disengage the parking brake.
- Slowly squeeze the motion control levers toward the stationary handlebar to start the machine moving.

### **4.6 STOPPING THE MACHINE**

- Position the machine on a flat and level surface.
- Move the throttle lever to the idle position.
- Move the motion control levers to the neutral position.
- Engage the park brake.
- Move the engine ignition switch to the "OFF" position.

### **4.7 TRANSPORTING THE MACHINE**

- Use a heavy-duty trailer or hitch-mounted rack to transport the machine. Securely fasten the machine to the trailer or rack with straps, chains, cable, or ropes. Make sure that the trailer or rack has all of the necessary lighting and markings that are required by law. If using a trailer, make sure that the safety chains are secured.



## **4. OPERATING INSTRUCTIONS CONTINUED**

### **4.7 TRANSPORTING THE MACHINE CONTINUED**

- Use extreme caution when loading the machine on a trailer or rack. The ramps should be long enough so that the angle between the ramp and the ground does not exceed 12°. A steeper angle may cause the machine to lose traction and slide out of control.
- Always load the machine with the machine driving forward.
- Only use first gear (1) when loading the machine.
- Limit throttle and machine speed when loading the machine.
- Engage the park brake once it has been properly loaded and shut off. This will help to minimize movement of the machine on the trailer or rack during transportation.

### **4.8 OPERATING THE SPREADER**

- The spreader has a variable spread width that can be adjusted from 0-25'. The spread width is adjusted by varying the speed of the spinner platter motor with the variable speed potentiometer located on the left side of the console. For normal fertilizer spreading applications, the spinner platter should be adjusted so that the granular product is thrown approximately 14'. This spread width allows for a double overlap of product when machine passes are made on 7' centers.
- Adjust the gate stop to the desired setting. A setting of 4.5 – 5.0 is a good starting setting.
- Completely close the hopper gate and add fertilizer to the hopper.
- Install the hopper shower cap if necessary.
- Carefully step onto the operator platform.
- Disengage the park brake.
- Slowly squeeze the motion control levers toward the stationary handlebar to start the machine rolling forward.
- Pull the gate lever to the OPEN position.
- To stop the spreading operation, push the gate lever to the CLOSED position.

### **4.9 OPERATING THE SPRAYER**

- The sprayer has a pattern width of over 8 feet when all of the spray nozzles are activated. The effective pattern width is approximately 7 feet wide which allows the same pass width as the spreader. For this reason, the spreader and spraying systems may be operated at the same time.
- Add the required materials to the spray tank. The standard spray rate of the machine is ¼ gallon per thousand square feet. At this rate, each spray tank will cover 48,000 square feet (each tank is 12 gallons). Product should be mixed in the tank at a rate that matches this coverage area, not the spray tank size. Because the machine has two tanks, the total coverage area of the machine is 96,000 square feet.
- Each spray tank has a suction line and a return line for agitation. It is recommended that only one tank be used at a time for spraying. To operate the left tank, turn the suction and return valves to the "ON" position. Turn the right tank valves to the "OFF" position. When the left tank is drained, shut the left tank valves off and turn the right tank valves on.

## **4. OPERATING INSTRUCTIONS CONTINUED**

### **4.9 OPERATING THE SPRAYER CONTINUED**

- Flip down the toggle valves that correspond with the desired spray nozzles.
- Set the pressure relief valve to 20 psi when the machine is at full throttle and the system is spraying. This spray pressure setting is necessary to get the correct spray rate for a ¼ gallon per thousand square feet. It is common for the system pressure to rise above 20 psi if the pump is activated but the toggle valves are all shut off so that no spray is coming from the nozzles.
- Note the direction of the wind and plan an application path that allows the spraying to occur downwind.
- Avoid spraying in windy conditions as the spray may carry to non-target areas.
- Carefully step onto the operator platform.
- Disengage the park brake.
- Slowly squeeze the motion control levers towards the stationary handlebar to start the machine rolling forward.
- Activate the spray system by either activating the pump switch on the console or the intermittent pump switch on the foot platform.
- To stop the spraying operation, deactivate the spray switches.

### **4.10 SETTING THE GROUND SPEED**

- The Venture has a maximum speed of 8 mph. However, the application speed of the machine should be adjusted to 5 mph when spreading and spraying.
- To adjust the ground speed, the stationary handlebar can be moved so that it limits the travel of the motion control levers to limit the overall machine speed.
- To adjust the stationary handlebar, the rubber knobs on each side of the machine should be loosened so that the handlebar can be rotated forward or back. Once the handlebar is in the correct location, the rubber knobs can be retightened to lock the handlebar in place.
- The stationary handlebar should be adjusted so that the machine travels 73' in 10 seconds. This rate of travel corresponds to a ground speed of 5 mph.

## 4. OPERATING INSTRUCTIONS CONTINUED

### 4.10 SETTING THE GROUND SPEED

- Operating the machine at a higher or lower speed when applying products can greatly alter the application rate of both granular and spray products.

## 5. SLOPE OPERATIONAL SAFETY

### 5.1 SLOPE IDENTIFICATION GUIDE

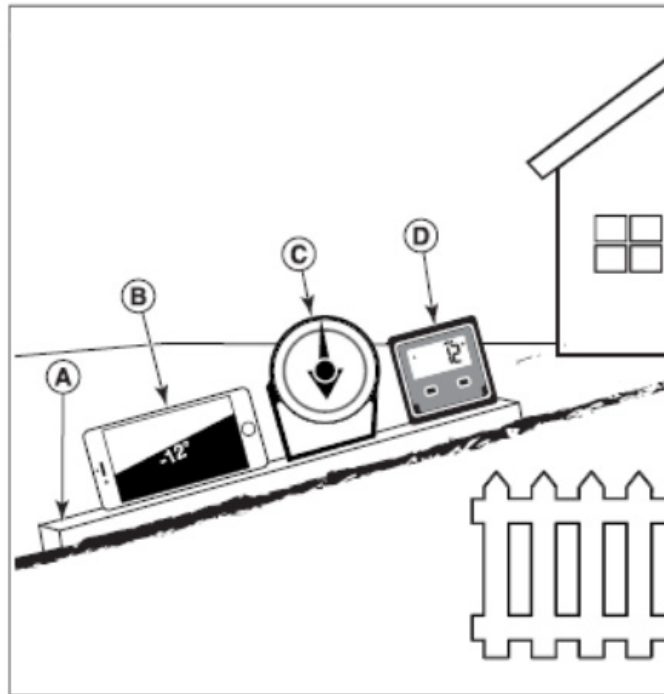


Figure 14

**Measure the slope of a lawn surface with a smartphone or angle finder tool:**

**⚠ WARNING:** Do not operate on slopes greater than 12 degrees.

1. Use a straight edge at least two (2) feet long (A, Figure 14). A 2x4 or a straight piece of metal works well.
2. Angle finder tools.
  - a) Use your smartphone: Many smartphones (B, Figure 14) have an inclinometer (angle finder) located under the compass application (app). Or, search an app store for an Inclinometer app.
  - b) Use angle finder tools: Angle finder tools (C & D, Figure 14) are available at local hardware stores or online (also called inclinometer, protractor, angle meter, or angle gauge). Dial type (C) or digital type (D) work, others may not. Follow user instructions with the angle finder tool.
3. Place the two (2) feet long straight edge along the steepest part of the lawn slope. Place the board up and down the slope.
4. Lay the smartphone or angle finder tool on the straight edge and read the angle in degrees. This is the slope of your lawn.

## 5. SLOPE OPERATIONAL SAFETY CONTINUED

### 5.2 SLOPE OPERATION

Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not drive on it.

#### **DANGER: LOSS OF CONTROL**

Operating on slopes can be hazardous and cause loss of control.

- Avoid sudden turns or rapid speed changes.
- If machine stops forward motion on a slope, stop. Get off and walk the machine slowly off the slope.
- Go across slopes, NOT up and down.
- Reduce speed and use extreme caution on slopes.
- Do NOT operate on slopes when grass is wet.
- Do NOT operate on slopes over 12\* degrees.
- Reduce your speed and minimize the weight of your load (in the hopper and volume in the tanks) when operating on hills or rough terrain to avoid possible instability, tipping or rollover of the machine.

#### **DANGER**

Wet or soft slope hazard:

- Wet or soft slopes can cause sliding and loss of control
- Do NOT operate on slopes when grass is wet. Tires may lose traction and cause sliding and loss of control.
- Do NOT operate on slopes when soil is soft (such as after heavy rains). Tires may lose traction and cause sliding and loss of control.

#### **DANGER**

Water, retaining walls and drop-off hazard:

- Wheels dropping over edges may result in serious injury, death and drowning.
- Do NOT operate near water, retaining walls, drop-offs or embankments. The machine could suddenly roll over if a wheel goes over the edge or the edge breaks away.
- Reduce your speed when operating over rough terrain or near these hazards.
- Give yourself a minimum of two machine widths of clearance around these hazards.

\* This limit was determined per International Standard ISO 5395-3:2013, Section 4.6 and is based on the ISO 5395-3 Stability Test procedure described in Annex A. The 12 degree “limit of stability” is equal to 60% of the angle at which machine lift-off occurred in static tests. Actual dynamic stability may vary depending on operating conditions.

## 5. SLOPE OPERATIONAL SAFETY CONTINUED

### 5.2 SLOPE OPERATION CONTINUED

Do:

- Operate across slopes, NOT up and down.
- Remove obstacles such as rocks, tree limbs, etc.
- Watch for holes, ruts, or bumps. Uneven terrain could overturn the unit. Tall grass can hide obstacles.
- Use slow speed. Choose a slow speed so that you will not have to stop or change speed while on the slope.
- Use extra care with accessories. These can change the stability of the unit.
- Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction.
- See your authorized dealer for recommendations of available weights to improve stability.

Do NOT:

- Avoid starting, stopping, or turning on a slope. If tires lose traction (i.e. machine stops forward motion on a slope), stop. Get off and walk the machine slowly off the slope.
- Do not turn on slopes unless necessary, and then, turn slowly and gradually uphill, if possible. Never operate straight down slopes.
- Do not operate near drop-offs, ditches, or embankments. The operator could lose footing or balance or machine could suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.
- Do not operate on wet grass. Reduced footing or traction could cause sliding.
- Do not try to stabilize the unit by putting your foot on the ground (ride-on units).
- Do not operate excessively steep slopes.
- Do not operate on slopes if you cannot back up them.

### 5.3 OPERATING ON SLOPES

Learn how to operate the Venture on slopes and use your body position to improve traction and control of the machine.

Operation on slopes can be dangerous. Slopes are a major factor related to accidents, which can result in severe injury or death. Using the unit on a slope that is too steep where you do not have adequate wheel traction (and control) can cause sliding, loss of steering, control, and possible rollover. If you feel unsure about operating the unit on a slope, don't do it. It's not worth the risk.

- This machine has a high center of gravity and may become unstable on slopes. Always lean towards the slope of a hill when operating on slopes and lean towards the center of turn when changing directions on slopes.
- Operation on wet grass especially when going up and down slopes can cause loss of traction, sliding, loss of steering, control, and possible rollover.

## 5. SLOPE OPERATIONAL SAFETY CONTINUED

### 5.3 OPERATING ON SLOPES CONTINUED

Operate across slopes, NOT up and down slopes:

- Lean your body slightly rearward and towards the uphill side drive wheel, while keeping a firm grip on the control levers. This body position adds more weight to the uphill side drive wheel to maximize traction and control.
- Do NOT accelerate quickly, as this may cause the machine's front wheels to come off the ground.

Operate across slopes (only if you cannot operate up and down the slope):

- It is recommended to operate up or down slopes only when you cannot operate across slopes.
- Operation down slopes can be dangerous and cause sliding, loss of steering, control, and possible rollover. Do NOT operate down a slope unless absolutely necessary.
- Operate up the slope and lean your body forward (towards the control panel), while keeping a firm grip on the control levers. This body position helps keep the front wheels on the ground.
- Operate down the slope and lean your body rearward with your arms out-stretched, while keeping a firm grip on the handlebar. This body position adds more weight to the drive wheels and improves traction, downhill braking, and control.
- Always be very gentle operating the controls, travel at a slower speed than normal.
- Do NOT accelerate quickly or change speed or direction suddenly while operating, as this may cause the machine's front wheels to come off the ground (up slopes) and to reduce the tendency to cause the machine to slip and slide (down slopes).

## 6. CALIBRATION

### 6.1 SPREADER FLOW RATE CALIBRATION

- The following instructions provide a method for adjusting the flow of fertilizer from the hopper so that the correct amount of fertilizer is applied to a 1000 ft<sup>2</sup> area. The machine is designed to apply fertilizer evenly by overlapping each pass by 50 percent. The spread width for most products is approximately 14 feet. This means that the center of each pass should be approximately 7 feet from the center of the previous pass. The effective material spread width is 7 feet and is the basis for calibration.
- Measure a distance of 143 feet on a flat paved surface. Using a paved surface will allow the fertilizer to be recollected and will prevent burning the turf if the application rate is largely different from what is intended. Traveling 143 feet with the machine equates to covering approximately 1000 ft<sup>2</sup> with fertilizer (7 ft x 143 ft = 1001 ft<sup>2</sup>).

## 6. CALIBRATION CONTINUED

### 6.1 SPREADER FLOW RATE CALIBRATION CONTINUED

- Set the gate stop to a setting of 5. This will be used as the starting setting for dialing in the correct gate stop setting for the particular material that is being used. Note that the spreader will have to be recalibrated for each different type of material that is spread. Make sure to record the final gate stop setting once the correct application rate has been achieved.
- Place the spreader gate lever in the CLOSED position. Place enough material in the hopper to cover 1000 ft<sup>2</sup>.
- Begin the spreading operation while moving toward the 143 foot marker. With the machine moving at full speed, the hopper should just empty out as the machine passes the marker. If the hopper empties before the marker is reached, turn the gate stop dial to a slightly lower setting and repeat the process. If the hopper empties after the marker is reached, turn the gate stop dial to a slightly higher setting and repeat the process. Continue this process until the proper dispensing rate is achieved.
- When the calibration is complete, collect the fertilizer that has been dispensed for reuse. Never leave the fertilizer on the pavement where it can wash away in runoff.

### 6.2 CENTERING THE SPREAD PATTERN

- The following instructions provide a method for adjusting the center of the spread pattern so that fertilizer is evenly distributed over the width of the spread area.
- Obtain the following items:
  - Eleven collection pans, 3 to 4 inches tall and 12 inches square (e.g. aluminum roasting pans).
  - Clear tube, ½" internal diameter, 4 inches tall. Use a permanent marker to mark the tube at ¼" increments all of the way up the tube. This will act as a measuring device for the collected fertilizer prills.
  - A ruler or tape measure.
  - A method of recording the collection amounts.
- Set the gate stop to a setting of 5.
- Move the gate lever to the OPEN position (the hopper must initially be empty).
- Turn the spread control lever counterclockwise to release the lock and move the lever in or out so that the baffle can be seen centered just below the opening of the gate in the bottom of the hopper. Turn the spread control lever clockwise to lock into position.
- Move the gate lever to the CLOSED position.
- Load the hopper with the fertilizer to be used for calibration.
- Place the eleven collection pans on a flat paved surface in a straight line on two-foot centers. Using a paved surface will allow the fertilizer to be recollected and will prevent burning the turf if the application pattern is largely different from what is intended.
- Make at least three passes traveling directly over the center pan in a path perpendicular to the row of pans. NOTE: All of the passes must be made in the same direction.
- Pour the contents of the first pan on the left into the graduated tube and record the amount of material that is in the tube. Repeat this measurement for each of the eleven collection pans.

## 6. CALIBRATION CONTINUED

### 6.2 CENTERING THE SPREAD PATTERN CONTINUED

- Add together all of the eleven numbers to find the total material that was dispensed.
- Divide the amount caught in each pan by the total amount. This is the percentage that was caught in each pan.
- The distribution should increase towards the center pan and decrease toward the outside pans. The distribution should also be approximately the same on each side. If it appears that the left side is receiving more material, pull the spread control lever out slightly and repeat the process. If it appears that the right side is receiving more material, push the spread control lever in slightly and repeat the process. Only slight adjustments are needed to make spread pattern changes.
- Once the correct distribution is achieved, measure the distance from the console surface to the top of the spread control lever. Record this measurement as the setting to be used for the particular fertilizer being evaluated. Note that the spreader will have to be recalibrated for each different type of material that is spread.
- When the calibration is complete, collect the fertilizer that has been dispensed for reuse. Never leave the fertilizer on the pavement where it can wash away in runoff.

### 6.3 CALIBRATING THE SPRAY FLOW RATE

- The following instructions provide a method for verifying the amount of flow being dispensed from the spray nozzles.
- Fill the spray tank with water.
- Adjust the system pressure so that the pressure gauge reads 20 psi when the machine is spraying and the engine is at full throttle.
- Engage the parking brake on the machine and ensure that the motion control levers are in the neutral position.
- Place a container in a position beneath one of the spray nozzles so that all of the spray being dispensed by the nozzle can be captured in the container.
- Move the pump switch to the “ON” position. Run the pump for exactly one minute.
- Measure the collected water. The amount collected for each tip should approximately be as follows:
  - Blue Turbo Teejet tip (TT11003) = 27 ounces per minute
- If the output from the nozzles is slightly different from the values listed above, adjust the pressure relief valve slightly. Unscrewing the valve knob will decrease the system pressure and will decrease the output from the tips. Screwing the valve knob in will increase the system pressure and will increase the output from the tips.
- If the output from the nozzles is drastically different from the values listed above, there may be other problems with the system. Refer to section 8, FAULT ISOLATION.



## **7. MAINTENANCE, STORAGE, AND SERVICE**

### **7.1 MAINTENANCE AND STORAGE SAFETY**

- Always observe safe refueling and fuel handling practices when refueling the unit after transportation or storage.
- Always follow the engine manual instructions for storage preparations before storing the unit for both short and long term periods.
- Always follow the engine manual instructions for proper start-up procedures when returning the unit to service.
- Never store the machine or fuel container inside where there is an open flame, such as in a water heater. Allow unit to cool before storing.
- Shut off fuel while storing or transporting. Do not store fuel near flames or drain indoors.
- Keep all hardware tight and keep all parts in good working condition. Replace all worn or damaged decals.
- Never tamper with safety devices. Check their proper operation regularly.
- Disengage spreader spinner and sprayer pump, set parking brake, stop engine and remove key or disconnect spark plug wire. Wait for all movement to stop before adjusting, cleaning or repairing.
- Clean grass and debris from moving parts, drives, mufflers, and engine to prevent fires. Clean up oil or fuel spillage.
- Let engine cool before storing and do not store near flame.
- Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
- Park machine on level ground. Never allow untrained personnel to service machine.
- Use jack stands to support components when required.
- Carefully release pressure from components with stored energy.
- Disconnect battery or remove spark plug wire before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Charge batteries in an open well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothes and use insulated tools.
- Check brake operation frequently. Adjust and service as required.
- Use only factory authorized replacement parts when making repairs.
- Always comply with factory specifications on all settings and adjustments.
- Only authorized service locations should be utilized for major service and repair requirements.
- Never attempt to make major repairs on this unit unless you have been properly trained. Improper service procedures can result in hazardous operation, equipment damage and voiding of manufacturer's warranty.

## **7. MAINTENANCE, STORAGE, AND SERVICE CONTINUED**

### **7.1 MAINTENANCE AND STORAGE SAFETY CONTINUED**

- Units with hydraulic pumps, hoses, or motors: **WARNING:** Hydraulic fluid escaping under pressure may have sufficient force to penetrate skin and cause serious injury. If foreign fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result. Keep body and hands away from pin holes or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard, and not hands, to search for leaks. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system. If leaks occur, have the unit serviced immediately by your authorized dealer.
- **WARNING:** Stored energy device. Improper release of springs can result in serious personal injury. Springs should be removed by an authorized technician.
- Always disengage the sprayer pump and spreader spinner and close the hopper gate before maintaining or storage.
- Empty the sprayer tank and fertilizer hopper before lifting or tilting the machine for maintenance or storage.
- Take care to relieve the pressure in the hand wand after shutting off the engine by squeezing the trigger while pointing it in a safe direction.

### **7.2 PERIODIC SERVICE INTERVALS**

#### **Daily Inspections:**

- Check engine oil level. See the Engine Owner's Manual.
- Check the air filter. See the Engine Owner's Manual.
- Spray the shaft bushing in the bottom of the hopper with a light oil lubricant such as WD-40.
- Check the entire machine for loose hardware or other problems. Resolve any issues before operating the machine.

#### **One Month or 20 Hour Maintenance Period:**

- Change the engine oil the first month or after 20 hours, whichever comes first. Change the engine oil every 100 hours after that. See the Engine Owner's Manual.

#### **25 Hour Maintenance Interval:**

- Check the tire pressure in all four tires. Inflate the front drive tires to 15 psi. Inflate the rear tires to 10 psi.
- Clean debris from the engine and muffler.
- Inspect the spray system filter located right below the tank.
- Grease the wheel bearings on the caster wheels.
- Wash the machine with low pressure water.
- Apply a light oil lubricant such as WD-40 to all moving parts except for belts and pulleys.

## **7. MAINTENANCE, STORAGE, AND SERVICE CONTINUED**

### **7.2 PERIODIC SERVICE INTERVALS CONTINUED**

#### **50 Hour Maintenance Interval:**

- Clean the air filter. When operating in dusty conditions, the air filter may require more frequent cleaning.
- Check the park brake. Adjust if necessary.
- Grease the caster pivot tube bearings.

#### **100 Hour Maintenance Interval:**

- Change the engine oil. See the Engine Owner's Manual.
- Clean the sediment cup on the engine. See the Engine Owner's Manual.
- Check and adjust the spark plug. See the Engine Owner's Manual.
- Clean the spark arrester on the engine. See the Engine Owner's Manual.
- Inspect the fuel tank for debris. Clean if necessary.
- Inspect the fuel filter. Clean or replace as necessary.
- Inspect the belts. Replace if necessary.
- Flush and clean the spray tank.
- Check the spray system output rate. Replace spray tips and/or adjust pressure setting as necessary.

#### **200 Hour Maintenance Interval:**

- Replace the air filter. See the Engine Owner's Manual.
- Clean the fuel cup. See the Engine Owner's Manual.
- Clean and adjust spark plug and electrodes. See the Engine Owner's Manual.

#### **500 Hour Maintenance Interval:**

- Replace spark plug. See the Engine Owner's Manual.
- Remove carbon from cylinder head. See the Engine Owner's Manual.
- Check and adjust valve clearance. See the Engine Owner's Manual.
- Clean and adjust carburetor. See the Engine Owner's Manual.

## 8. FAULT ISOLATION

This section provides a method for troubleshooting machine problems. Before utilizing the following procedures, check the machine for obvious signs of damage or failure. This includes missing or loose components, components that have failed, or physical damage. Do not attempt to operate the machine until the machine has been repaired.

### 8.1 MACHINE DOES NOT START

FAILURE MODE	CAUSE OF PROBLEM	CORRECTIVE ACTION
Machine does not start.	The fuel level in the tank is low.	Add fuel to the fuel tank.
	The fuel shutoff valve is in the closed position.	Make sure that the fuel shut off valve is open. This valve is located on the engine.
	The fuel line is clogged.	Clean the fuel line.
	The fuel tank has contamination.	Clean out the fuel tank and install fresh fuel.
	The choke setting is incorrect.	Ensure that the choke setting is correct for the starting conditions. Cold starts will require the choke to be activated while warm starts may not require the choke.
	The ignition switch is in the "OFF" position.	Move the ignition switch to the "ON" position and then to the "START" position.

## 8. FAULT ISOLATION CONTINUED

### 8.2 SPREADING SYSTEM OPERATES INCORRECTLY

FAILURE MODE	CAUSE OF PROBLEM	CORRECTIVE ACTION
Spreader pattern is uneven or spreader does not operate.	The gate opening in the bottom of the hopper is blocked.	Remove the material from the hopper and dislodge any clumps around the gate opening. Inspect the agitator wire and make sure that it is not worn, damaged, or missing.
	The spread control baffle is positioned incorrectly.	Follow the procedure outlined in Section 4.2 for centering the spread pattern.
	The input shaft of the spinner gear-box is not turning.	Make sure that the spinner gear-motor spins freely by hand. Inspect the gearmotor fuse located under the console to ensure it is not blown.
	The spinner is dirty, worn or damaged.	Inspect the spinner and clean or replace if necessary.
	The spinner clip is damaged or missing.	Inspect the spinner clip on the bottom of the spinner. If it is damaged or missing, the spinner may not spin even though the spinner shaft is rotating. Replace the spinner clip if necessary.

## 8. FAULT ISOLATION CONTINUED

### 8.3 SPAYING SYSTEM OPERATES INCORRECTLY

FAILURE MODE	CAUSE OF PROBLEM	CORRECTIVE ACTION
Spraying pattern is uneven or spraying system does not operate.	The spray nozzle tips are out of position.	Make sure the spray nozzles are not damaged or that the nozzle mounting tab is not bent.
	The pressure relief valve is set incorrectly.	Verify that the pressure gauge reads approximately 20 psi at full engine speed when spraying. Adjust the pressure relief knob in or out to obtain this pressure. Tighten the locking nut against the pressure relief knob.
	The strainer or tip is clogged.	Remove the spray nozzle tip and inspect the tip orifice and the strainer to make sure they are not clogged. Clean or replace these components as necessary.
	The filter is clogged.	Remove the sediment bowl from the filter housing and inspect the filter screen. Clean or replace the screen as necessary.
	The pump won't operate.	Inspect the pump fuse located in the fuse holder by the battery box. Replace the fuse if necessary. Ensure that either the console switch or the foot platform switch actuates the pump.
	The spray tank volume is low.	Refill the spray tank. Note that in very rough or hilly conditions, the liquid in the spray tank may slosh around and the tank discharge tube may starve when the tank level is low. This can cause poor spraying performance.
	The engine speed is too low.	Operate the machine at full engine speed. The spray system is designed to operate most efficiently at full engine speed.
	The pump is worn or damaged.	Loosen the suction fitting on the pump to verify that there is liquid flow to the pump. Tighten the suction fitting and loosen the discharge fitting to verify that the pump is operating correctly. If there is no flow, replace the pump.

## 9. WARRANTY INFORMATION

### BRIGGS & STRATTON WARRANTY POLICY (November 2017) LIMITED WARRANTY

Briggs & Stratton warrants that, during the warranty period specified below, it will repair or replace, free of charge, any part that is defective in material or workmanship or both. Transportation charges on product submitted for repair or replacement under this warranty must be borne by purchaser. This warranty is effective for and is subject to the time periods and conditions stated below. For warranty service, find the nearest Authorized Service Dealer in our dealer locator map at [www.groundlogicinc.com](http://www.groundlogicinc.com). The purchaser must contact the Authorized Service Dealer, and then make the product available to the Authorized Service Dealer for inspection and testing.

There is no other express warranty. Implied warranties, including those of merchantability and fitness for a particular purpose, are limited to the warranty period listed below, or to the extent permitted by law. Liability for incidental or consequential damages are excluded to the extent exclusion is permitted by law. Some states or countries do not allow limitations on how long an implied warranty lasts, and some states or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state or country to country.\*

Covered Parts	Standard Warranty	Rental Warranty Period
Spreader-Sprayer and Spreaders	1 Year (12 Months)	90 Days
<ul style="list-style-type: none"><li>• Belts</li><li>• Tires</li><li>• Brake Pads</li><li>• Hoses</li><li>• Battery</li></ul>	90 Days	90 Days
Accessories	1 Year (12 Months)	90 Days
Engine*	See Engine Operator's Manual	See Engine Operator's Manual

\* Emissions-related components are covered by the Emissions Warranty Statement.

The warranty period begins on the date of purchase by the first retail or commercial customer. To ensure prompt and complete warranty coverage, register your product at the website shown above or at [www.groundlogicinc.com/support/warranty-registration/](http://www.groundlogicinc.com/support/warranty-registration/), or mail the completed registration card (if provided), or call 1-877-423-4340 (in USA).

Save your proof of purchase receipt. If you do not provide proof of the initial purchase date at the time warranty service is requested, the manufacturing date of the product will be used to determine the warranty period. Product registration is not required to obtain warranty service on Briggs & Stratton products.

## **ABOUT YOUR WARRANTY**

Warranty service is available only through Ground Logic Authorized Service Dealers. This warranty only covers defects in materials or workmanship. It does not cover damage caused by improper use or abuse, improper maintenance or repair, normal wear and tear, or stale or unapproved fuel.

**Improper Use and Abuse** - The proper, intended use of this product is described in the Operator's Manual. Using the product in a way not described in the Operator's Manual or using the product after it has been damaged will not be covered under this warranty. Warranty coverage will also not be provided if the serial number on the product has been removed or the product has been altered or modified in any way, or if the product has evidence of abuse such as impact damage, or water/chemical corrosion damage.

**Improper Maintenance or Repair** - This product must be maintained according to the procedures and schedules provided in the Operator's Manual, and serviced or repaired using genuine Briggs & Stratton parts or equivalent. Damage caused by lack of maintenance or use of non-original or non-equivalent parts is not covered by warranty.

**Normal Wear and Tear** - Like all mechanical devices, the unit is subject to wear even when properly maintained. This warranty does not cover replacement or repairs when normal use has exhausted the life of a part or the equipment. Except as noted in the warranty period, maintenance and wear items such as filters, belts, and brake pads (except engine brake pads) are not covered by warranty due to wear characteristics alone, unless the cause is due to defects in material or workmanship.

**Stale or Unapproved Fuel** - In order to function correctly, this product requires fresh fuel that conforms to the criteria specified in the Operator's Manual. Engine or equipment damage caused by stale fuel or the use of unapproved fuels (such as E15 or E85 ethanol blends) is not covered by warranty.

**Other Exclusions** - This warranty excludes damage due to accident, abuse, modifications, alterations, improper servicing, freezing or chemical deterioration. Attachments or accessories that were not originally packaged with the product are also excluded. This warranty does not include used, reconditioned, second-hand, or demonstration equipment or engines. This warranty also excludes failures due to acts of God and other force majeure events beyond the manufacturer's control.