

# GROUND FORCE

WORLDWIDE

WORLD'S FINEST MINE SUPPORT EQUIPMENT

## ***CAB GUIDE***

# **WATER TRUCK OPERATION**

***Keep this guide in the chassis cab at all times.  
For more information, refer to the Operation & Maintenance Manual.***

### **Ground Force Worldwide**

6001 E. Seltice Way

Post Falls, Idaho 83854

1 (208) 664-9291

info@gfworldwide.com | www.gfworldwide.com

VERSION 2.2

© Copyright 2018, by Ground Force Worldwide. All rights reserved. No part of this manual may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Ground Force Worldwide as governed by the United States and International Copyright Laws.

## **1: PRE-SHIFT INSPECTION**

- ▶ **Inspect the area around the truck for leaks and repair all leaks found. Include the interior of any compartments.**
- ▶ **Inspect all hydraulic connections and tighten all loose fittings.**
- ▶ **Inspect hoses and wiring harnesses. Secure any loose items.**
- ▶ **Inspect body mounts daily and tighten any loose mounts.**
- ▶ **Inspect the body pins. Verify the retaining bolt(s) are in place and properly tightened.**
- ▶ **Inspect pump mounts and guards.**
- ▶ **Check the diesel-fired heating system, if equipped. Verify the coolant level is adequate and fuel tank is full, and electrical controls are functional.**
- ▶ **Test all hydraulic controls for proper function.**
- ▶ **Verify all safety equipment is present and functional.**
- ▶ **Perform all other pre-operation inspections as required by the chassis manufacturer and local procedures.**

### **NOTICE**

Refer to the Maintenance section of the Operation & Maintenance and the Parts & Schematics manuals for more information, specifications and drawings.

## 2: GROUND FORCE WATER TRUCK OPERATION

The Ground Force water truck features a water delivery system with cab controls to regulate and adjust spray patterns for high performance and maximum efficiency. All cab controls are located within easy reach for the convenience and safety of the operator.

The hose reel and some maintenance, inspection and commissioning operations must be done outside the cab.

This cab guide features basic operating instructions for Ground Force water systems. For more extensive instructions, refer to the Operations & Maintenance Manual.

1. Water Control System display
2. Water Control System controller
3. Water cannon control \*

\* *Optional equipment.*





### 3: WATER CONTROL SYSTEM DISPLAY

The Ground Force Water Control System (WCS) display features some touch-screen functions. These are highlighted in this graphic.

Spray heads, dump valves, water cannons and drip bars can be controlled via touch screen. Tap each item once to activate or deactivate. The valve on the screen will appear green when active, and red when deactivated.

Optional items such as work lights, safety beacons, Ground Speed Control or an onload pump will appear above the program list. If they are active, the symbol will appear yellow. If the truck is not equipped with those features, they will not be visible.

The symbols for timed  or staggered  spray patterns are only indicators that function is active. They are not touch-screen enabled.

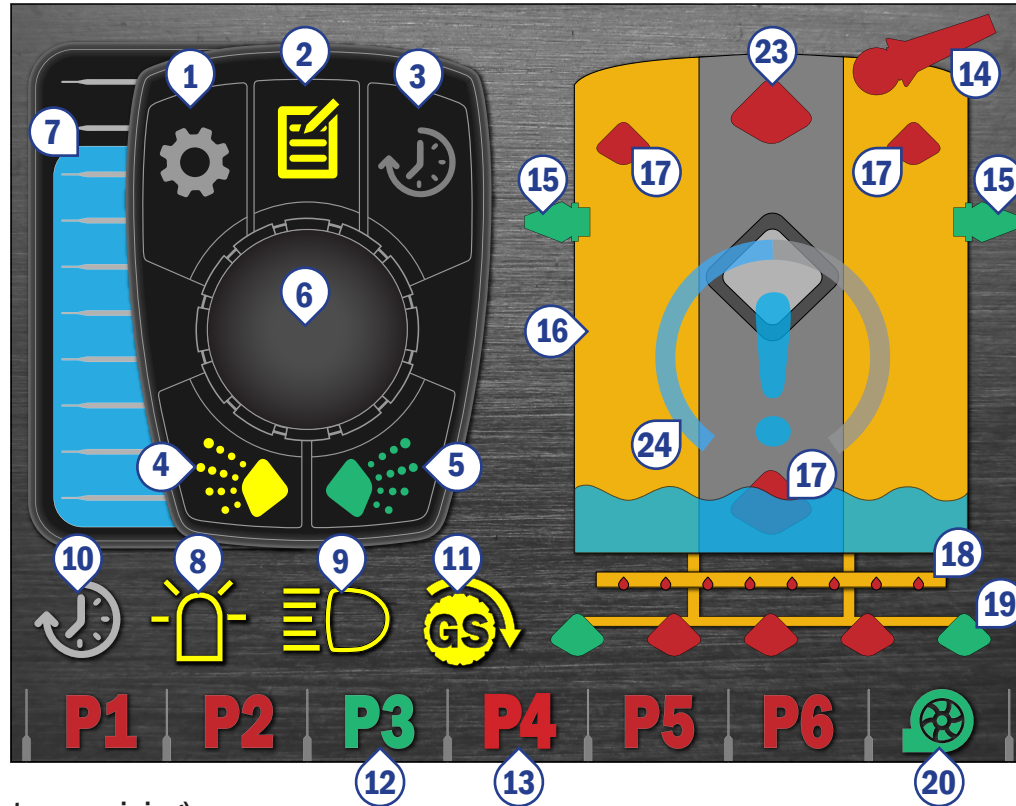
Rotate the center button of the controller to choose options not accessible via touch screen, such as program numbers and water pump controls.

The WCS display will power on with the chassis ignition.



### 3: WATER CONTROL SYSTEM DISPLAY

1. System options (Button 1)<sup>1</sup>
2. Settings menu (Button 2)<sup>1</sup>
3. Timer control (Button 3)<sup>1</sup>
4. Left side spray pause (Button 4)<sup>1</sup>
5. Right side spray pause (Button 5)<sup>1</sup>
6. Center button
7. Water level bar graph<sup>2</sup>
8. Work lights<sup>2</sup>
9. Safety beacon<sup>2</sup>
10. Timed mode
11. Ground speed<sup>2</sup>
12. Active program
13. Highlighted program
14. Water cannon<sup>2</sup>
15. Side spray
16. Water tank
17. Gravity drain valve<sup>2</sup>
18. Drip bar<sup>2</sup>
19. Rear spray head
20. Water pump indicator
21. Staggered mode
22. Onload pump<sup>2</sup>
23. Center drain
24. Low-level warning (10 seconds of water remaining)

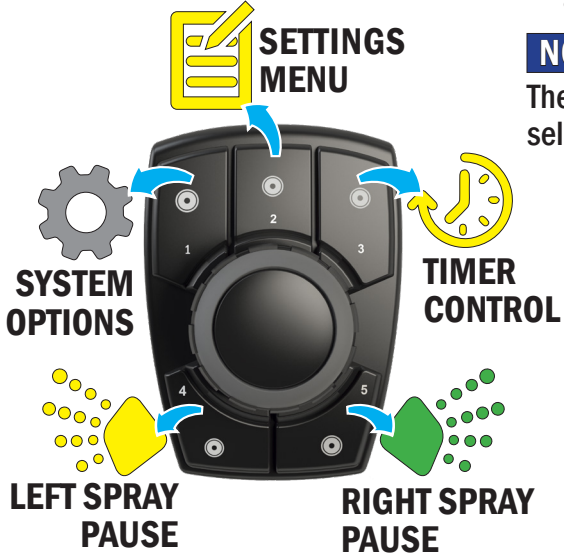


1. Represents the functions of main controller on the display. | 2. Optional feature. The display will show available functions.

## 4: CONTROLLER

The Water Control System controller is a 5-button encoder with a rotating center knob.

Refer to the corresponding section in this guide for specific instructions on each function.



## 5: KEYPAD \*

The optional 8-button keypad may control components such as lights, spray valves or a water cannon. The keypad will be labeled. Press a button once to enable a component, and once again to disable it.

### NOTE

The keypad will override the program selected on the WCS display.



## 6: LIGHTS \*

Work lights and safety beacons may have one or more of these controls:

1. **WCS display:** If there is a Work Light or Safety Beacon icon on the WCS display screen, press the touch-screen button.

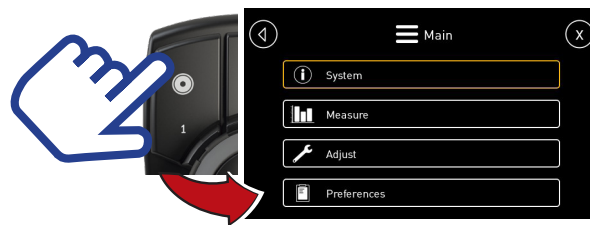


2. **Keypad:** press the button labeled WORK LIGHTS or SAFETY BEACON.
3. **Switch:** A separate switch may be installed in the cab of the chassis.

\* Optional feature. The display will show available functions.

## 7: MAIN MENU

Press System Options (Button 1) on the controller to access the main menu. Navigate using the controller or the touch screen. The **X** and **◀** buttons on the menu screens are touch-screen only.



### ► PREFERENCES MENU

The Preferences menu allows the operator to adjust display brightness and screen saver, set date and time, and select the language for the WCS display. Press **X** or **◀** to return to the main display screen.

### NOTE

The Water Control System cannot retain date and time settings after disconnecting battery power.

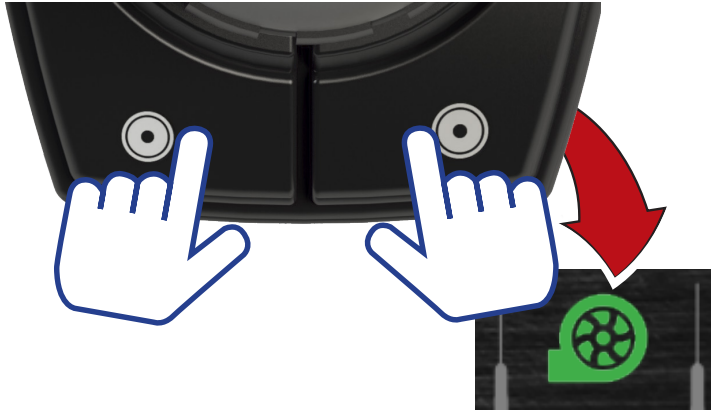
### ► ADJUST, MEASURE & SYSTEM MENUS

For assistance with the Adjust, Measure and System menus, refer to the Operation & Maintenance Manual.



## 8: START WATER PUMP

Press and hold the two lower buttons of the controller, Button 4 and Button 5, for at least two seconds until the water pump icon in the lower right corner of the display screen turns green.



## 9: TANK FILLING & PUMP PRIMING

The Ground Force water tank features a low center of gravity for safety. Due to this design, the water pump may require priming after emptying the tank.

If it is difficult to establish water pump flow, follow the process below to prime the water pump.

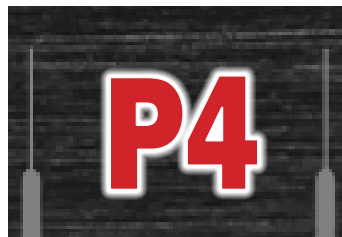
### ► **WATER PUMP PRIMING PROCEDURE:**

1. Park the truck facing uphill.
2. Start the water pump
3. Open the water cannon valve.
4. Increase the engine speed.
5. Observe the water flow from the water cannon. Once a clear stream (no air bubbles) is established, shut the water cannon valve.
6. If the water pump will not reliably prime, please contact Ground Force for additional troubleshooting and tips.



## 10: SELECT PROGRAM

Rotate the center button on the controller to select a program. The active program is green. An inactive program is red. A white highlight indicates the selected program. Press the center button to select.



**HIGHLIGHTED PROGRAM**  
(PRESS CENTER BUTTON TO SELECT)



**ACTIVE PROGRAM**



**INACTIVE PROGRAM**

## 11: BEGIN SPRAYING WATER

1. Perform pre-shift checks
2. Fill tank
3. Start water pump
4. Select program

The Ground Force water truck is now ready for operation.

### **BEGIN SPRAYING**

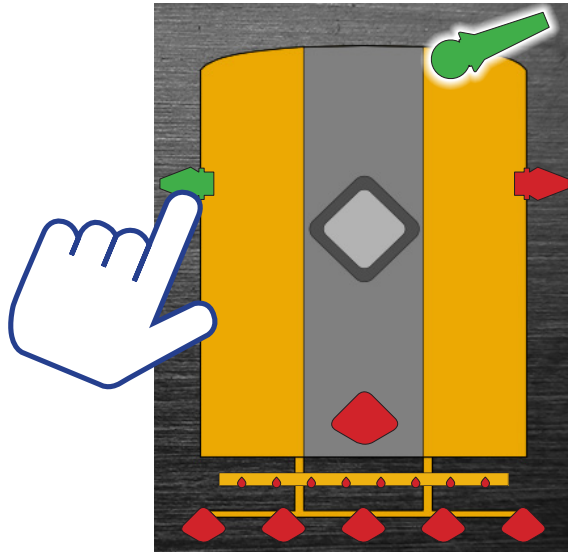
Press the center button to begin water delivery.



## 12: VALVE QUICK-ADD

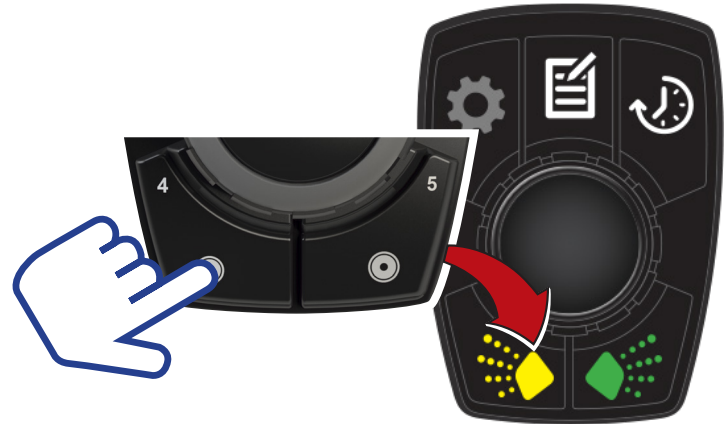
To temporarily add or remove a spray valve to an existing program, select it on the WCS touch screen.

The selected valves will not remain active if the operator chooses another program.



## 13: PAUSE SPRAY

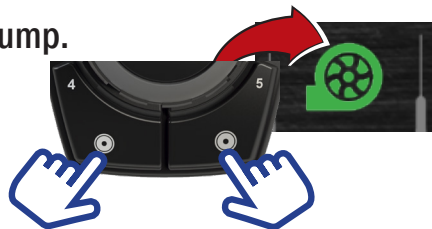
To temporarily stop water delivery, select one or both of the lower buttons on the controller (Buttons 4 and 5). The button(s) will turn yellow on the WCS display screen until pressed again.



To resume operation, press the button again. To stop both sides at the same time, press the center button once.

## 14: HOSE REEL \*

1. Ensure the water tank has adequate water.
2. Start the water pump.



3. If the water body is equipped with a high-idle switch, engage the high idle prior to dispensing water.

### NOTICE

The chassis parking brake must be set before engaging the high idle.

4. Remove hose from the reel by pulling the hose away from the reel. Maintain positive control of the hose at all times. The hose will lock in place when the hose reel ratchet latches.

5. Open the ball valve and begin spraying.
6. When finished using the hose reel, close the ball valve.
7. Rewind the hose by pulling on the hose to release the ratchet latch, and slowly guiding the hose back to the reel.

### ⚠ CAUTION

Always guide a hose back into a spring-rewind hose reel; do not allow the hose to rewind on its own. Maintain positive control of the hose at all times.

Prior to releasing tension on the hose, the ball stop on the hose must contact the fairlead rollers.

\* Optional feature.

## 15: WATER CANNON \*

1. Make sure the water tank is full and the water pump primed and started.
2. If there is a program for the water cannon, select the program using the Water Control System or the keypad.
3. If there is no program, use the Water Control System to create a new program.
4. Once the water cannon is active, use the cannon's controls (typically a joystick or push-button remote) to direct the stream of water.

### ⚠ CAUTION

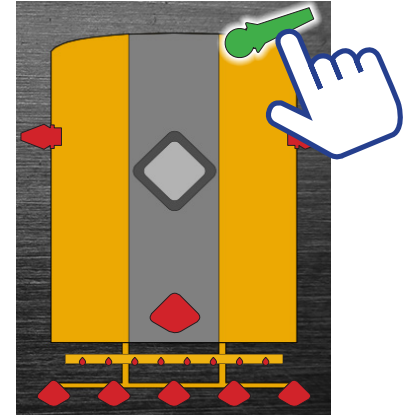
The water stream from the water cannon is very powerful. Before operation, aim the water cannon away from all equipment and personnel.

5. Raise the engine speed to increase the range of the water cannon.
6. Use engine speed and the joystick or remote to direct the water stream.

### NOTE

Some water cannon controls are programmable. Refer to the manufacturer's manual for programming information.

\* Optional feature. The display will show available functions.



## 16: EDIT PROGRAM

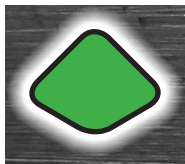
The Ground Force WCS has 6 editable programs.

1. To create or edit a water control program, rotate the controller to highlight a program number (P1 - P6). A white highlight will appear. Press the center button once to select, and the program number will change to green with a white highlight.

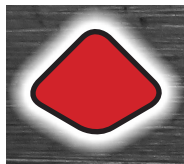
2. Press Settings Menu (Button 2) on the controller. The symbol on the display screen will turn yellow.



### ► VALVE INDICATOR KEY



VALVE IS ACTIVE



SELECTED VALVE



AVAILABLE TO SELECT



HIGHLIGHTED VALVE  
PUSH CENTER BUTTON TO SELECT

3. Choose spray valves to add to the program. Use the controller or the touch screen to add spray valves to the program.
  - a. If using the center button, rotate to each available valve. A yellow box will surround the valve as the knob rotates. Press the center button once to add the valve to the program, or rotate to move to the next valve.
  - b. If using the touch screen, tap each valve.
4. When finished, press Settings Menu (Button 2) to save changes and return to operating mode.

## 17: ADDITIONAL PROGRAM OPTIONS

To access more options for a program, before exiting edit mode, select the clipboard icon in the center of the controller on the WCS display.

Use the touch screen or controller to navigate menu screens.



Additional options include:

- **PIN protection**
- **Timed mode (ON - OFF - ON)**
- **Staggered mode (LEFT - RIGHT - LEFT)**

After setting options for a program, press the Settings Menu button again or select **X** or **◀** to return to the main display screen. Repeat as necessary to create up to 6 programs.

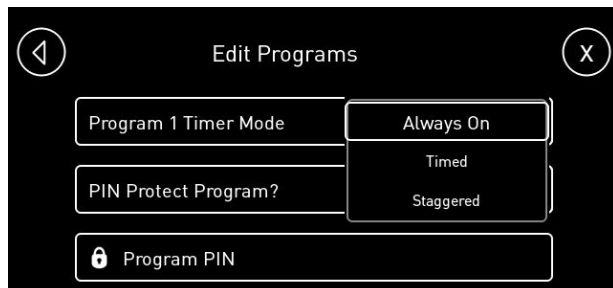
### ► **SET PIN CODE**

PIN codes allow on-site personnel to lock a programmed spray pattern. Navigate to “PIN Protect Program?” and select “Yes.” Choose a 4-digit PIN code and enter it in the Program PIN field.

After setting the code, turn off the chassis key, then turn the battery power off for a minimum of 10 seconds, then restart.

### ► **TIMED & STAGGERED MODES**

Select Program Timer Mode and choose Always On, Timed (ON-OFF-ON) or Staggered (RIGHT-LEFT-RIGHT).



## 18: ADJUST TIMERS

To adjust the delay for Timed and Staggered modes, press the Timer Control button on the controller. A dial will appear on the WCS display.



### ► ADJUST STAGGERED MODE

In staggered mode, the center dial will appear yellow.

Rotate the controller to select **on** and **off** intervals.

After setting the first interval, press the center button to accept the selection and move to the next setting. Press the center button again to accept the second setting.



When finished, press Timer Control to exit the Settings Menu.

### ► ADJUST TIMED MODE

In timed mode, **on** and **off** intervals can be adjusted separately from a minimum of 5 seconds to a maximum of 40 seconds. The dial will appear green for **on** and red for **off**.

Press the center button to accept the setting and move to the next setting. Press the center button again to accept the second setting.

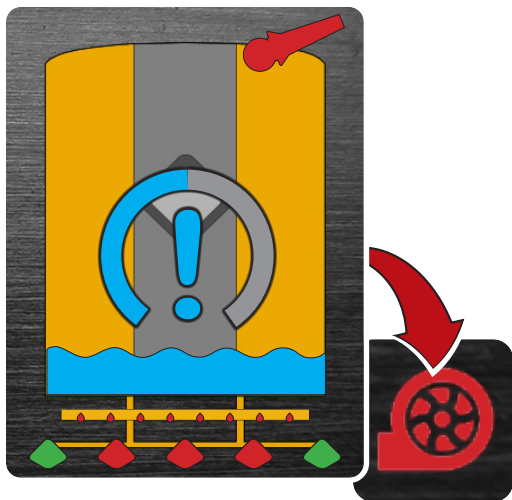


## 19: LOW-LEVEL WARNING

When less than 10 seconds of water remains at the current delivery rate, a warning will appear on the main WCS display.

When the water level reaches the low-level shutoff set point, the water pump will automatically shut down to prevent damage.

When the water level is above the low-level shut-off set point, the water pump will be enabled again.



## 20: LOW-LEVEL BYPASS

The bypass function will turn the water pump on again for 15 seconds after the low-level shutoff turns it off. To engage the bypass, press Button 2 (Settings Menu).

Use the controller or the touch screen to select the red water pump symbol and restart the pump for 15 seconds.

Press Settings Menu again to return to the main display.





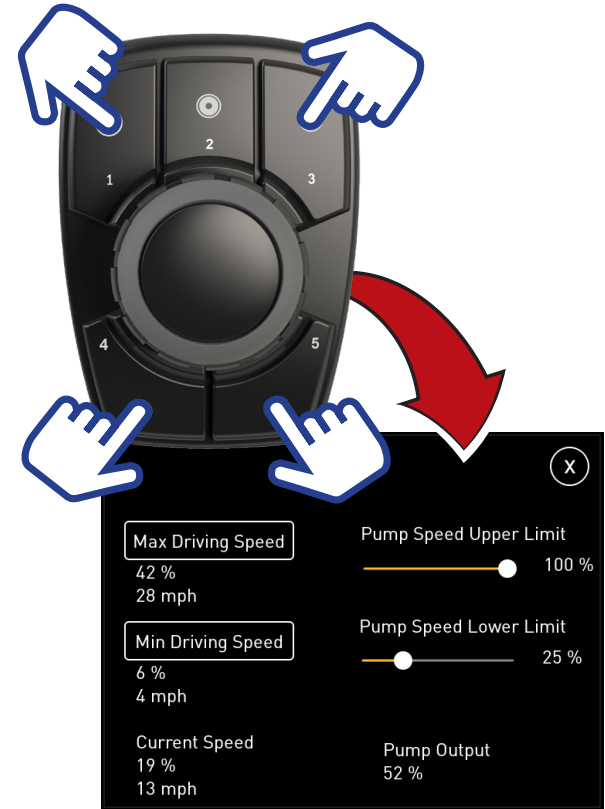
## 21: GROUND SPEED CONTROL \*

Ground Speed Control allows the operator to set water distribution to match the ground speed of the chassis.

### NOTE

To adjust variable speed settings, the chassis engine must be running and the parking brake set.

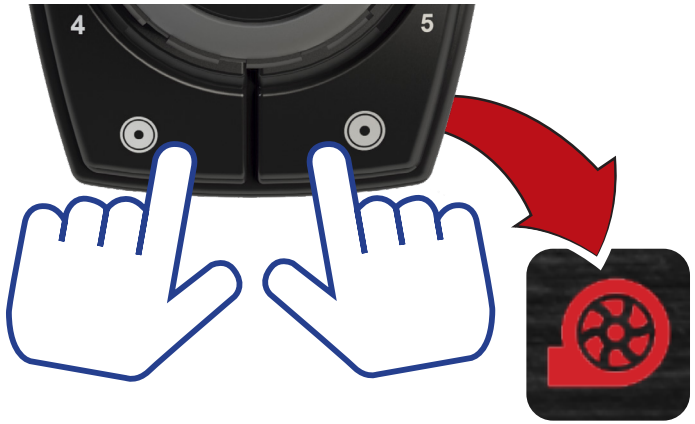
1. Press buttons 1, 3, 4 & 5 at the same time to open the calibration settings page.
2. Release the parking brake and drive forward at the slowest speed desired for watering.
3. Press the **Min Driving Speed** button.
4. Accelerate to the fastest speed desired.
5. Press the **Max Driving Speed** button.
6. Using the sliding bar, adjust the upper and lower water pump output limits.
7. After setting speed and pump levels, press **X** in the upper right corner of the menu page to return to the main screen. The Water Control System will save the settings.



\* Optional feature. The display will show available functions.

## 22: STOP WATER DELIVERY

Press and hold the two lower buttons on the controller to turn off the water pump. Hold for at least two seconds until the water pump icon in the lower right corner of the display screen turns red.



### NOTE

The water pump is designed to operate continuously during water delivery. It will stop automatically once the low level shut-off set point has been reached.

## 23: STABILITY

When operating any machine on grade, the following criteria must be considered: machine configuration and model, maintenance condition, operating speed, conditions of the terrain, fluid levels, and tire inflation pressures. The skill and judgment of the operator are of primary importance.

<u>Operating restrictions</u>	<u>Grade</u>
Maximum working grade:	20%
Maximum side grade:	10%

## 24: DAILY MAINTENANCE SCHEDULE

### ▶ Visually inspect the following:

- Hydraulic fluid level
- Check hoses and fittings for leaks
- Hoses and wiring harnesses are secured
- Fluid levels for heater system fuel & expansion tanks
- Pump mounting bolts
- Body mounts
- Rear body pins
- Tank mounts

### ▶ Verify hydraulic control valves operate properly

### ▶ Verify safety equipment is present and functional

### ▶ Verify proper operation of all valves

### ▶ Verify proper operation of the auxiliary heating system

### NOTE:

For all non-Ground Force components, see the manufacturer's manual for maintenance, safety and operation information. To request manufacturer's manuals, contact Ground Force.

## 25: FREEZE PROTECTION

---

If the water truck will be parked during freezing weather, empty the tank and drain all components to prevent freeze damage.

1. Pump out as much water as possible and move the truck to an area with adequate drainage.
2. Open the gravity dump valve(s).\*
3. Select the water cannon\* on the WCS display. Aim the water cannon nozzle down to drain any trapped water.
4. Open any low-point drain valves and petcocks. They may be located in the following areas:
  - Rear spray head standpipes
  - Tank low-point drain port
  - Water pump drain
  - Oil cooler
  - Any other drains in the water tank and components

5. Clear the hose reel.\*
  - a. Close the hose reel ball valve.
  - b. Connect compressed air to the fitting.
  - c. Blow out all water trapped in the hose.
  - d. Reopen the ball valve.
6. Leave all valves open any time the truck is idle in freezing weather.
7. Close all valves before placing the water truck back in service.

### NOTICE

Failure to perform these procedures for cold weather will void all warranties.

---

\* Optional feature. The display will show available functions.

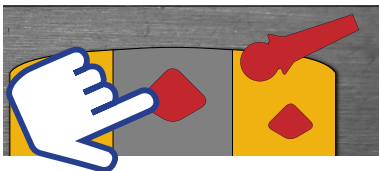
## 26: ELECTRIC DRAIN SYSTEM \*

The electric drain system opens all drain valves to completely drain the tank and spray components.

### NOTE

The hose reel must be blown out separately.

1. Turn off the water pump.
2. Select the center drain icon on the WCS display using the touch screen or the controller.



3. Allow the tank to completely drain before turning off chassis key power.
4. The drains should automatically close when the chassis is turned on and hydraulics engage.

### NOTE

Ensure drain valves are closed before filling tank.

\* Optional feature. The display will show available functions.

## 27: TROUBLESHOOTING

If problems arise, Call any time to speak to one of our Product Support Representatives at +1 (208) 664-9291. Before calling, it is helpful to have some basic information available to assist in determining the nature of the problem.

1. What is the serial number of your machine?
2. Describe the problem. What are the symptoms? Is there a pattern to their occurrence?

Provide as much information as possible.

- **Hydraulic:**  
What are the hydraulic oil and ambient air temperatures? Are there signs of overheating? Are functions weak or slow?
- **Electrical:**  
What is the main system voltage? Are there error indications at the control panel?
- **Mechanical:**  
Provide pictures and descriptions of the affected components.

## **GROUND FORCE MANUFACTURING, LLC**

6001 E. Seltice Way

Post Falls, ID 83854 USA

Phone: +1 (208) 664-9291

Fax: +1 (208) 664-9475

Parts & Product Support E-mail: [PPSR@gfworldwide.com](mailto:PPSR@gfworldwide.com)

Service Department E-mail: [Service@gfworldwide.com](mailto:Service@gfworldwide.com)

General E-mail: [info@gfworldwide.com](mailto:info@gfworldwide.com)

Web: [www.gfworldwide.com](http://www.gfworldwide.com)