



# M268171C.2

ITEM NUMBER: 268171

SERIAL NUMBER: \_\_\_\_\_

## Owner's Manual

Instructions for Assembly, Testing, Operation, Servicing, and Storage

**Broadcast Spray Kit:** For outdoor use with agricultural pesticides and other liquids\*\*

### **⚠ WARNING**

**READ and UNDERSTAND the Owner's Manual completely before using this kit.**  
Assemble, test, and use only in accordance with the Owner's Manual instructions.

**READ and FOLLOW chemical label instructions.** Pesticides are hazardous chemicals.

**KNOW emergency procedures BEFORE handling chemicals.** Sprayer leaks, bodily chemical contact, poisoning, and spills require immediate response.

**AVOID inhaling, ingesting, or coming into contact with any chemicals.**

**WEAR personal protective gear when filling, using, cleaning, and servicing the sprayer and this accessory.**

**KEEP sprayer and spray materials away from children and pets.** Pesticides are especially toxic to them.

**DO NOT TURN ON POWER to sprayer until ready to spray** in order to avoid unintentional spray release.

**Improper use of sprayer accessories or handling of chemicals could result in serious injury or illness to the operator or nearby persons/animals, or could cause damage to the environment.**

\*\* This spraying kit is recommended for use in spraying non-flammable liquids such as pesticides, water for plants/trees or dust control, or ice control chemicals. However, WE RECOMMEND THAT SPRAYER ACCESSORIES NOT BE USED FOR OTHER PURPOSES ONCE IT HAS BEEN USED FOR SPRAYING PESTICIDES. Any chemical will leave some residual in sprayer components, even after proper cleaning. These residual chemicals can have unexpected effects on future uses. For example, spraying water or other liquids that are contaminated with residual pesticide may result in unforeseen hazards to plant or animal life.

**Any Questions, Comments, Problems, or Parts Orders**

***Call NorthStar Product Support 1-800-270-0810***

## Hazard Signal Word Definitions






	<p>This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.</p>
	<p>DANGER (red) indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.</p>
	<p>WARNING (orange) indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.</p>
	<p>CAUTION (yellow) indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.</p>
	<p>CAUTION (yellow) used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.</p>

fig01453

# Table of Contents

<b>Intended Use .....</b>	<b>4</b>
<b>Summary of Important Safety Information .....</b>	<b>5</b>
During Assembly	
During Operation	
• General Chemical Safety	
• Chemical Application Safety	
• Chemical Accident Procedures	
<b>Component Inventory .....</b>	<b>7</b>
Unpacking.....	7
Unpacking the Manual Bag .....	8
<b>Assembly .....</b>	<b>9</b>
Step One: Remove plug from regulator manifold .....	9
Step Two: Thread fittings into manifold .....	9
Step Three: Install fittings into solenoid valve .....	10
Step Four: Fasten solenoid valve to frame .....	10
Step Five: Build nozzle bracket assembly .....	11
Step Six: Install boom mounts .....	11
Step Seven: Install nozzle bracket .....	12
Step Eight: Build Y-valve assembly .....	12
Step Nine: Connect Y-valve hoses.....	13
Step Ten: Connect solenoid valve hoses .....	13
Step Eleven: Apply decal.....	14
Step Twelve: Connect solenoid valve to 12V DC power source .....	14
Step Thirteen: Check and test completed assembly .....	17
<b>Machine Components .....</b>	<b>18</b>
<b>Operation .....</b>	<b>19</b>
<b>Important Safety Information - Operation.....</b>	<b>19</b>
• General Chemical Safety	
• Chemical Application Safety	
• Chemical Accident Procedures	
<b>Preparing the Broadcast Kit for Each Use .....</b>	<b>23</b>
<b>Using the Broadcast Kit .....</b>	<b>24</b>
Step One: Assess wind conditions and clear work area .....	24
Step Two: Fill the sprayer .....	24
Step Three: Operate the broadcast kit .....	24
Step Four: Clean sprayer and decontaminate after use.....	27
<b>Storage .....</b>	<b>28</b>
Preparing for storage	
Removing from storage	
<b>Troubleshooting .....</b>	<b>29</b>
<b>Specifications .....</b>	<b>30</b>
<b>Parts Breakdown – Exploded View .....</b>	<b>31</b>
<b>Appendix A: Broadcast Spray Calibration Tables .....</b>	<b>32</b>
<b>Limited Warranty .....</b>	<b>33</b>

## Intended Use

The broadcast spray kit is intended for use in spraying agricultural pesticides and other non-flammable liquids.

### **SPRAYING PESTICIDES:**

Pesticides are hazardous chemicals that must be handled with caution as directed throughout this manual and on the pesticide label. Pesticides are regulated by the United States Environmental Protection Agency (EPA) and defined as:

*Any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Though often misunderstood to refer only to insecticides, the term pesticide is a comprehensive term that applies to insecticides, herbicides, fungicides, and various other substances used to control pests.*

The broadcast spray kit is intended for use in spraying pesticides in liquid form only. The broadcast spray kit is NOT intended for use in spraying pesticides in dry or aerosolized form, or for use with fumigants.

This broadcast spray kit prayer comes equipped with broadcast nozzles. Use them when you wish to spray large ground areas.

### **SPRAYING OTHER LIQUIDS:**

In addition to spraying pesticides, this sprayer accessory may be used to spray other non-flammable liquids. Example uses include: watering plants/trees or spraying water for dust control, or applying ice control chemicals.

However, **WE RECOMMEND THAT THE SPRAYER COMPONENTS NOT BE USED FOR OTHER PURPOSES ONCE IT HAS ALREADY BEEN USED FOR SPRAYING PESTICIDES.** Any chemical will leave some residual in the sprayer components, even after they have been properly cleaned. These residual chemicals can have unexpected effects on future uses. For example, spraying water or other liquids that are contaminated with residual pesticide may result in unforeseen hazards to plant or animal life.

**Contact NorthStar Product Support at 1-800-270-0810 for any questions about the appropriate use of the sprayer and/or optional accessories.**

# Summary of Important Safety Information

## WARNING

Read and understand **this owner's manual** completely before using the broadcast kit.  
Read each **chemical label's instructions** before handling the chemical.

*Improper use of the sprayer kit or handling of chemicals could result in serious injury or illness for the operator or nearby persons/animals, or cause damage to the environment.*

LISTED BELOW is a summary of safety information of particular importance. See individual sections of this owner's manual for more details.

### ----- DURING ASSEMBLY -----

- **EXERCISE CAUTION** when attaching remote switch to battery terminals. Follow the steps listed in the Assembly section of this manual in *exact sequence* when connecting the broadcast kits' remote switch battery clamps to the battery terminals. *Caution must be exercised to avoid contact with battery acid and to prevent sparking.*
- **CHECK and TEST** completed assembly as directed in this manual. Serious injury could result from chemical leaks if broadcast kit is improperly assembled.
- **DO NOT MODIFY** broadcast kit design.

### ----- DURING OPERATION -----

#### General Chemical Safety

- **READ and FOLLOW** each chemical label's instructions and warnings.
- **AVOID** inhaling, ingesting, or coming into contact with any chemicals.
- **KNOW** applicable licensing and regulatory requirements for the chemical you plan to use.
- **KNOW** emergency procedures before handling chemicals. Carefully review "Chemical Accident Procedures" listed below and later in this manual. Also see First Aid instructions on the chemical label.
- **WEAR** protective clothing, eye protection, and chemical resistant gloves when filling, using and cleaning the broadcast kit. Wear additional protective gear, such as facemask or apron, as recommended on the chemical label.
- **EXERCISE EXTRA CAUTION** around children and pets. Pesticides are especially toxic to them. Keep broadcast kit and spray materials away from them at all times.
- **DO NOT MIX OR POUR** chemicals in an enclosed, unventilated area
- **DO NOT USE** flammable or corrosive chemicals in the broadcast kit.
- **FLUSH** the sprayer and broadcast kit before switching chemicals in order to prevent dangerous chemical interactions.
- **STORE** pesticides in a correctly labeled container and in a secure location.
- **MONITOR** the health of operators frequently exposed to pesticides, as recommended by the chemical label or local/federal regulations.

#### Chemical Application Safety

##### Before Spraying

- **INSPECT and PREPARE** the broadcast kit before each use as directed in this manual.
- **DO NOT TURN ON POWER** to broadcast kit until ready to spray in order to avoid unintentional spray release.
- **MAKE SURE BROADCAST NOZZLES ARE ORIENTED** to spray straight down before starting the sprayer. An incorrectly positioned broadcast nozzle may spray chemicals on you or others.
- **DO NOT SPRAY** when wind speed exceeds 4 MPH in order to minimize spray drift.
- **CLEAR** work area of people/ pets and **POST** warning notices to restrict access for the period recommended on chemical label.
- **KEEP** spray materials away from children/pets. Pesticides can be especially toxic to children and animals.
- **DO NOT ALLOW** anyone younger than 16 to operate the broadcast kit since pesticides are especially toxic to children.

##### During Spraying

- **DO NOT OVERAPPLY** pesticide. Apply at rate recommended by chemical manufacturer. Excess pesticide can be dangerous to humans/animals, damage desirable plants, and contaminate soil and water sources.

## Summary of Important Safety Information (continued)

- **DO NOT EAT, DRINK, SMOKE, RUB YOUR EYES, or TOUCH YOUR BARE SKIN** while handling chemicals and spraying.
- **EXERCISE EXTRA CAUTION** when spraying near areas accessible to children and pets.
- **CLEAN up spills immediately** per instructions on the chemical label.
- **TURN OFF power and RELIEVE system pressure** before leaving sprayer or broadcast kit unattended.
- **SEE Troubleshooting section of this manual before attempting any repairs.** Wear personal protective equipment and follow safety instructions.

### After Spraying

- **CLEAN broadcast kit immediately after use** according to the directions provided in this manual.
- **DECONTAMINATE yourself after you are done spraying** and have cleaned the sprayer and broadcast kit. Wash all exposed areas of the body with soap and water, and remove and launder clothing.
- **DISPOSE OF or STORE remaining chemicals in secure storage with correctly marked container.**

## Chemical accident procedures

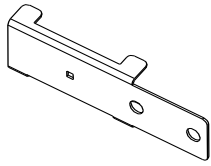
Immediate response is necessary in the event of sprayer leaks, bodily chemical contact, poisoning, or spills. See instructions below:

<b>Sprayer leak</b>	<b>If the broadcast kit develops a leak, <i>immediately stop spraying</i>.</b> Turn off power to the sprayer and follow directions below, as applicable.
<b>Bodily chemical contact</b>	<p><b>Personal contamination can occur when chemicals splash, spill, or spray directly onto a person.</b></p> <ol style="list-style-type: none"> <li>1. Immediately follow First Aid instructions on <u>chemical label</u>.  <u>General procedures can include:</u> <ol style="list-style-type: none"> <li>a) Eyes – immediately flush with water.</li> <li>b) Skin – wash all contaminated skin surfaces with soap and water.</li> <li>c) Clothing – remove contaminated clothing. Dispose of heavily contaminated clothing per chemical label instructions.</li> </ol> </li> <li>2. Seek medical advice if instructed on the label or the victim experiences symptoms of harmful effects. Bring the chemical label for reference.</li> </ol>
<b>Poisoning by ingestion or inhalation</b>	<p><b>In case of poisoning from ingestion or inhalation:</b></p> <p><b><i>If the victim has collapsed or is not breathing, call 911.</i></b> Otherwise:</p> <ol style="list-style-type: none"> <li>1. If you are the victim, immediately seek assistance from nearby personnel because you may become incapacitated.</li> <li>2. Immediately follow first aid instructions on <u>chemical label</u>.</li> <li>3. Call a poison control center for further advice. <b>In the U.S., call 1-800-222-1222.</b> Have the chemical label available for reference.</li> </ol>
<b>Chemical spills</b>	<p><b>Chemical spills must be quickly contained and properly cleaned up.</b></p> <p>Refer to the chemical label for any specific clean-up instructions.</p> <p><u>General procedures include:</u></p> <ol style="list-style-type: none"> <li>1. <b>Controlling</b> the spill by stopping the source of the spill.</li> <li>2. <b>Containing</b> the spill so that it does not spread and get into water sources.</li> <li>3. <b>Cleaning up</b> the spill immediately.</li> <li>4. <b>Seeking additional advice</b> from: <ul style="list-style-type: none"> <li>- <u>Chemical manufacturer</u>. See chemical label for contact information.</li> <li>- <u>State pesticide regulatory agency</u>. In the U.S., call the National Pesticide Info. Ctr. at 800-858-7378 for assistance in contacting your state's agency.</li> </ul> </li> </ol>

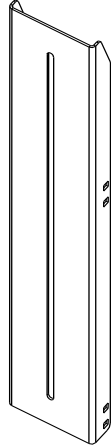
# Unpacking

**Closely inspect all contents in the shipping carton.**

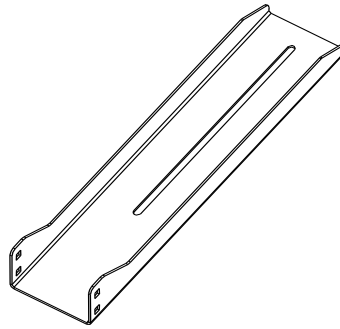
- If you have missing or damaged components: Contact NorthStar Product Support at 1-800-270-0810.



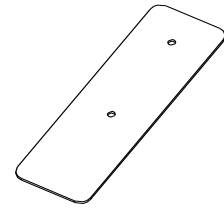
Nozzle Bracket



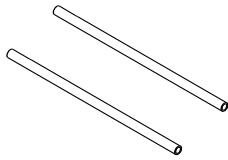
Vertical  
Boom Mount



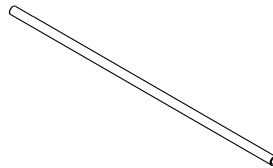
Horizontal  
Boom Mount



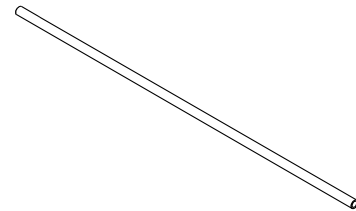
Reinforcement  
Plate



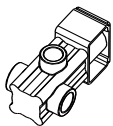
9.5" Hose (2)



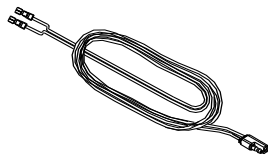
14" Hose



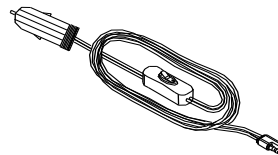
22.5" Hose



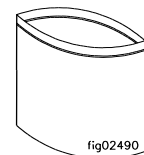
Solenoid  
Valve



Solenoid Valve  
Power Cord



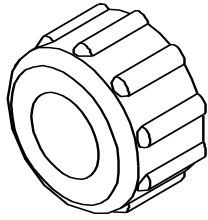
Remote Switch  
Power Cord



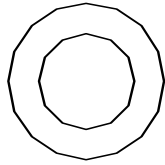
Manual Bag

# Unpacking the Manual Bag

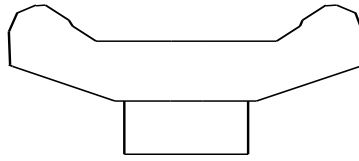
The following items are found in the manual bag.



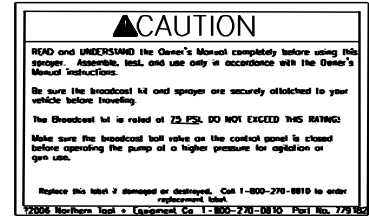
3/4" Swivel  
Nut (2)



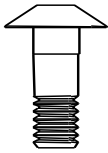
Rubber  
Washer (2)



Tee Handle  
Knob (3)



Caution Decal



5/16 x 1"  
Carriage Bolt (3)



5/16 x 3/4"  
Carriage Bolt (4)



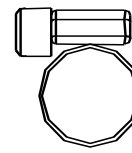
5/16 Flange  
Nut (4)



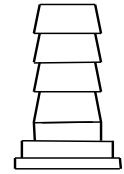
#10 Lock  
Washer (2)



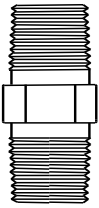
#10 x 1/2"  
Screw (2)



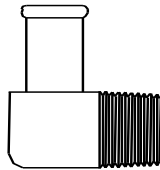
Hose  
Clamp (8)



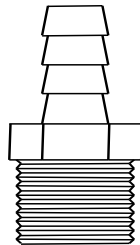
1/2" Flat Seat  
Hose Barb (2)



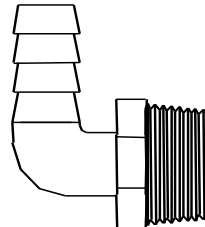
Steel 3/8" MPT  
Hex Nipple



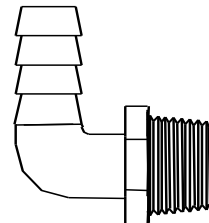
Brass 3/8" MPT  
x 1/2" Hose  
Barb Elbow



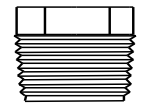
3/4" GHT x  
1/2" Hose Barb



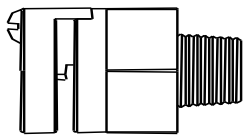
3/4" MPT x 1/2"  
Hose Barb Elbow



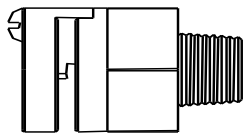
1/2" MPT x 1/2"  
Hose Barb Elbow



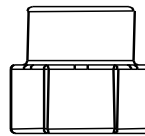
3/4" MPT  
Plug



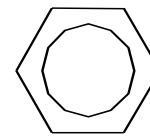
Right Broadcast  
Nozzle-1870PSR



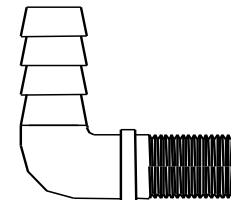
Left Broadcast  
Nozzle-1870PSL



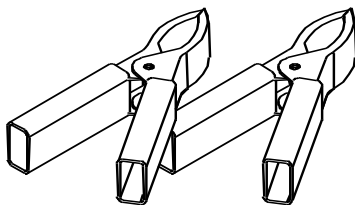
Nozzle  
Adapter (2)



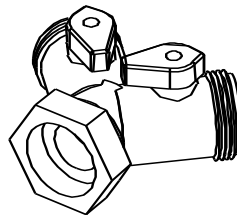
Nozzle Nut (2)



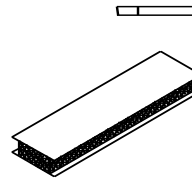
Nozzle Hose  
Barb Elbow (2)



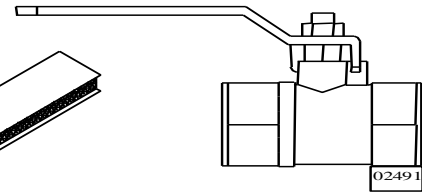
Battery Clamps



Y-Valve



Velcro™



3/8" Ball Valve  
(Broadcast kit ball valve)



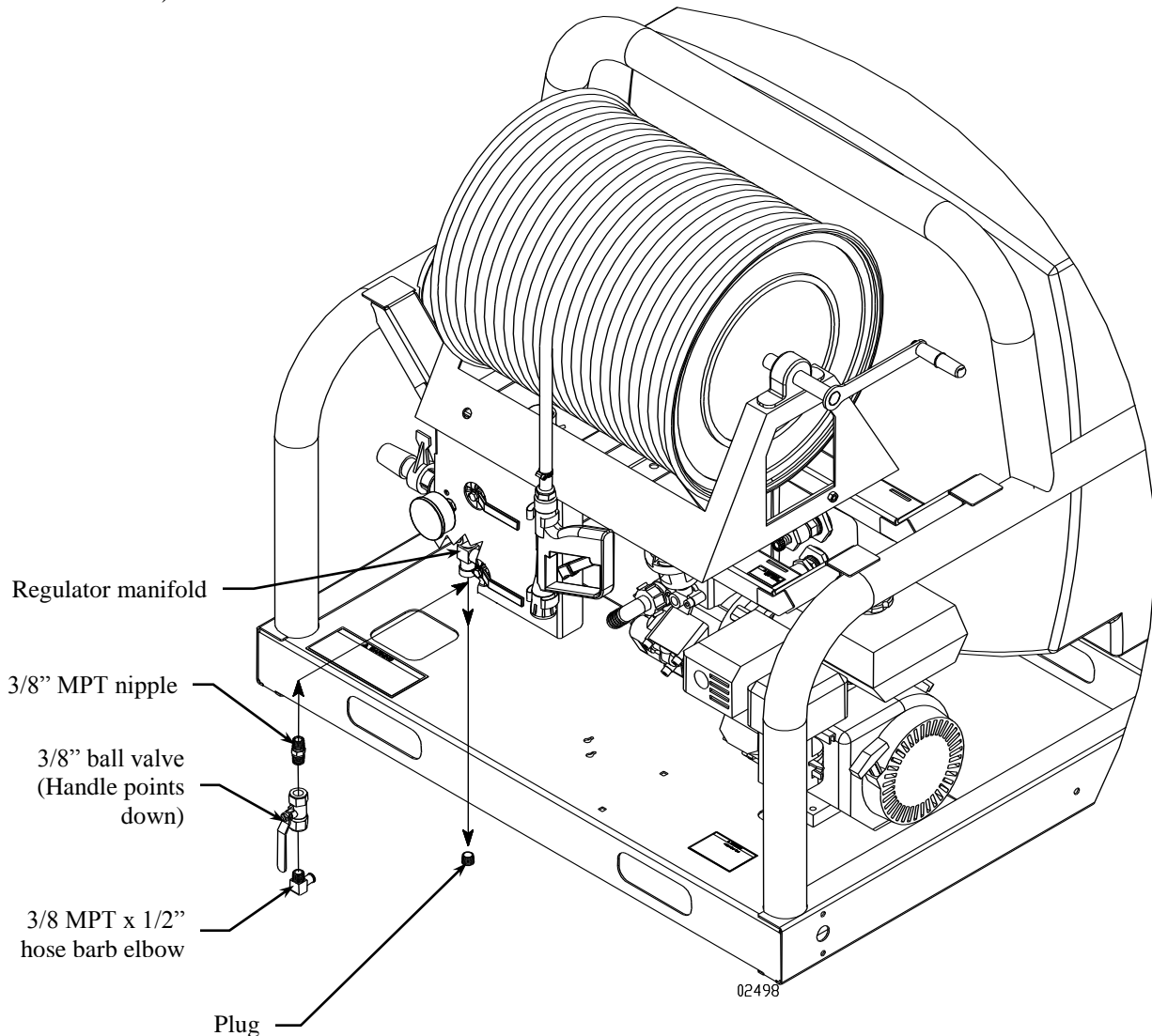
# Assembly

## **Step One: Remove plug from regulator manifold**

Use a hex wrench to remove the plug from the regulator manifold. Discard the plug.

## **Step Two: Thread fittings into manifold**

1. Thread the steel 3/8" MPT nipple into the manifold. Tighten hand tight, then at least one additional full turn with a wrench.
2. Thread the 3/8" ball valve onto the steel 3/8" MPT nipple. Tighten hand tight, then at least one additional full turn with a wrench. Orient the handle of the 3/8" ball valve to face forward and point down in the open position. (See illustration)
3. Thread the brass 3/8" MPT x 1/2" hose barb elbow into the 3/8" ball valve. Tighten hand tight, then at least one full turn with a wrench. Point the hose barb towards the tank. (See illustration)



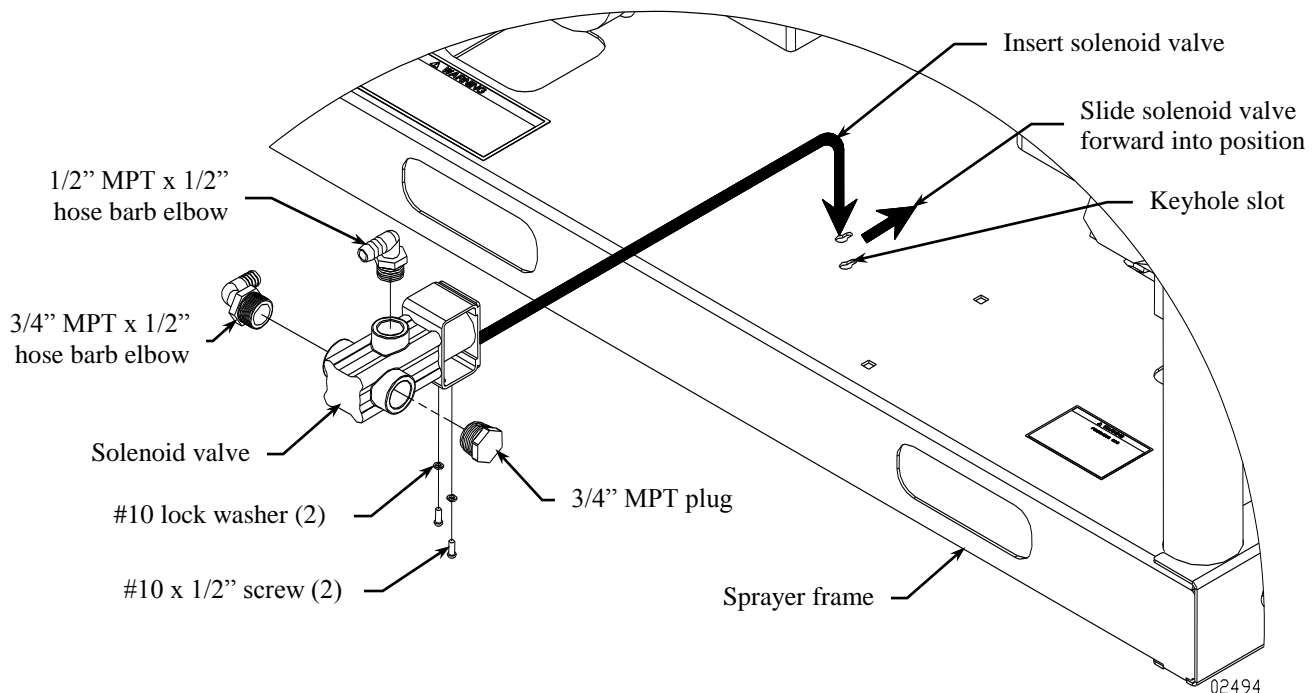
# Assembly

## **Step Three: Install fittings into solenoid valve**

1. Install the 3/4" MPT x 1/2" hose barb elbow into the inlet port of the solenoid valve. Tighten hand tight, then two full turns with a wrench. Point the hose barb toward the back of the solenoid valve. (See illustration)
2. Install the 3/4" MPT plug into the bypass port of the solenoid valve. Tighten hand tight, then two full turns with a wrench.
3. Install the 1/2" MPT x 1/2" hose barb elbow into the outlet port on the top of the solenoid valve. Tighten hand tight, then two full turns with a wrench. Point the hose barb toward the front of the solenoid valve. (See illustration)

## **Step Four: Fasten solenoid valve to frame**

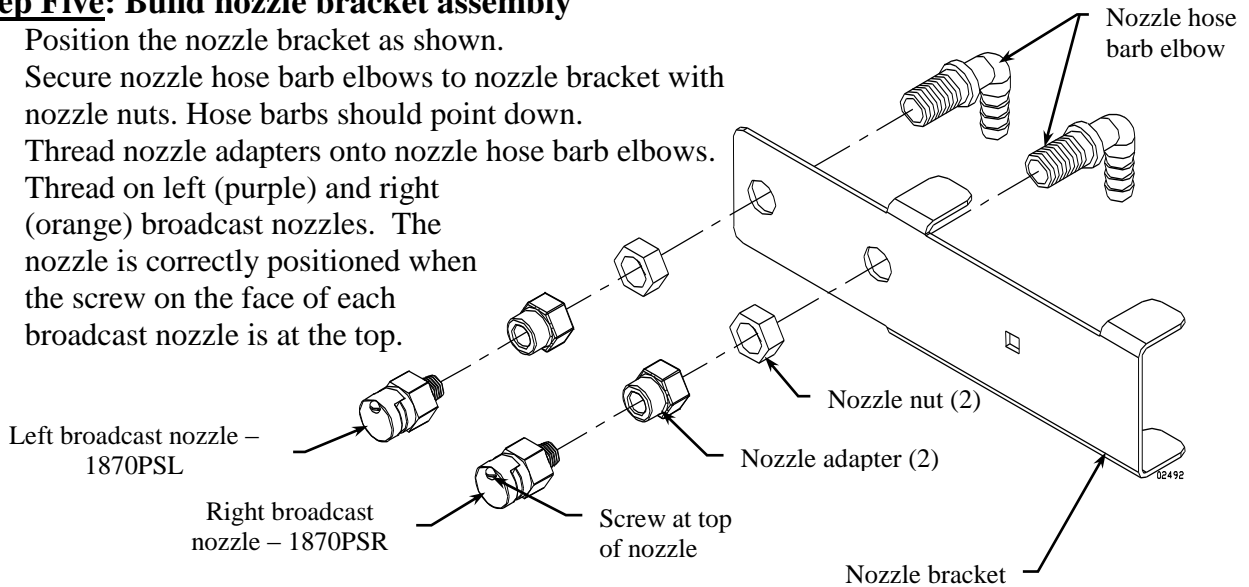
1. Use the #10 lock washers and thread the #10 x 1/2" screws halfway into the bottom of the solenoid valve.
2. Locate the keyhole slots in the sprayer frame. Insert the heads of the screws into the large portion of the keyhole slot, then push the solenoid forward so the screws slide into the narrow portion of the keyhole slot. Tighten the screws.



# Assembly

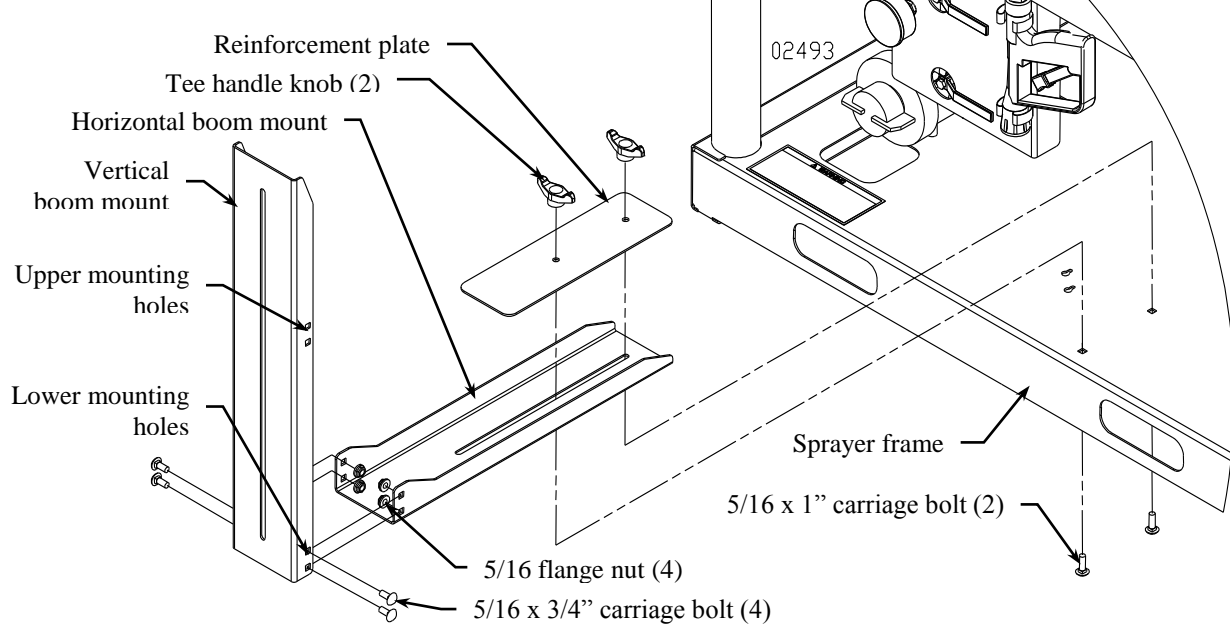
## Step Five: Build nozzle bracket assembly

1. Position the nozzle bracket as shown.
2. Secure nozzle hose barb elbows to nozzle bracket with nozzle nuts. Hose barbs should point down.
3. Thread nozzle adapters onto nozzle hose barb elbows.
4. Thread on left (purple) and right (orange) broadcast nozzles. The nozzle is correctly positioned when the screw on the face of each broadcast nozzle is at the top.



## Step Six: Install boom mounts

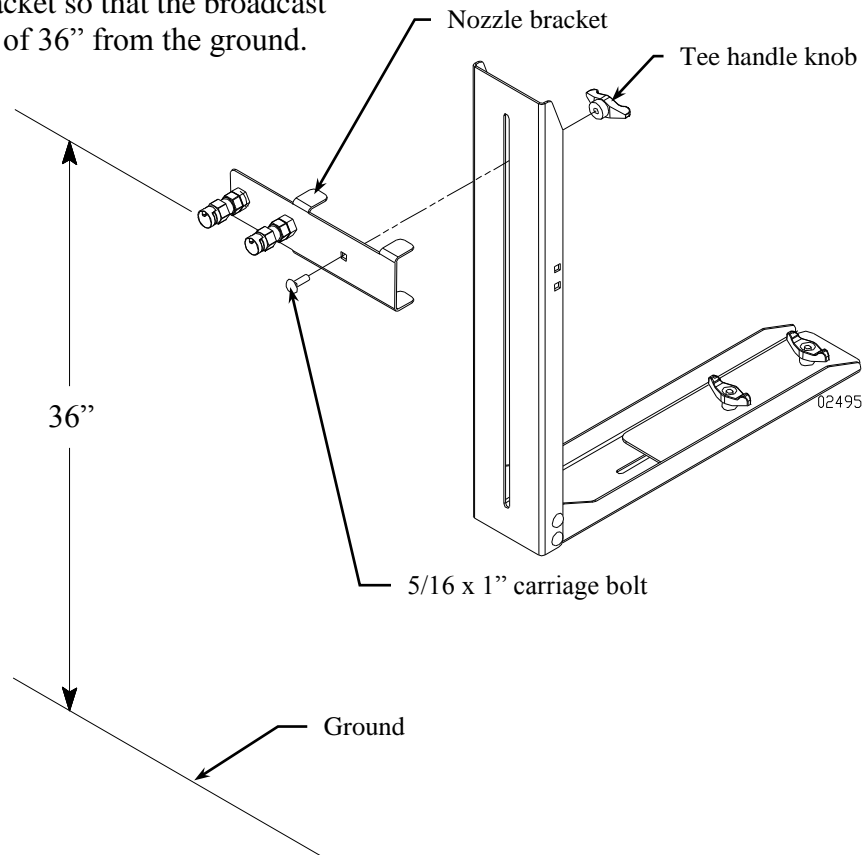
1. Use the reinforcement plate and fasten horizontal boom mount to sprayer frame with (2) 5/16 x 1" carriage bolts and (2) tee handle knobs. The horizontal boom mount position is adjustable. Slide it forward or back to best suit the sprayer installation.
2. Install the vertical boom mount to the horizontal boom mount with (4) 5/16 x 3/4" carriage bolts and (4) 5/16 flange nuts.
  - a. If the sprayer will be mounted in a pickup, use the upper mounting holes on the vertical boom mount.
  - b. If the sprayer will be used with our trailer kit 268175, use the lower mounting holes on the vertical boom mount.



# Assembly

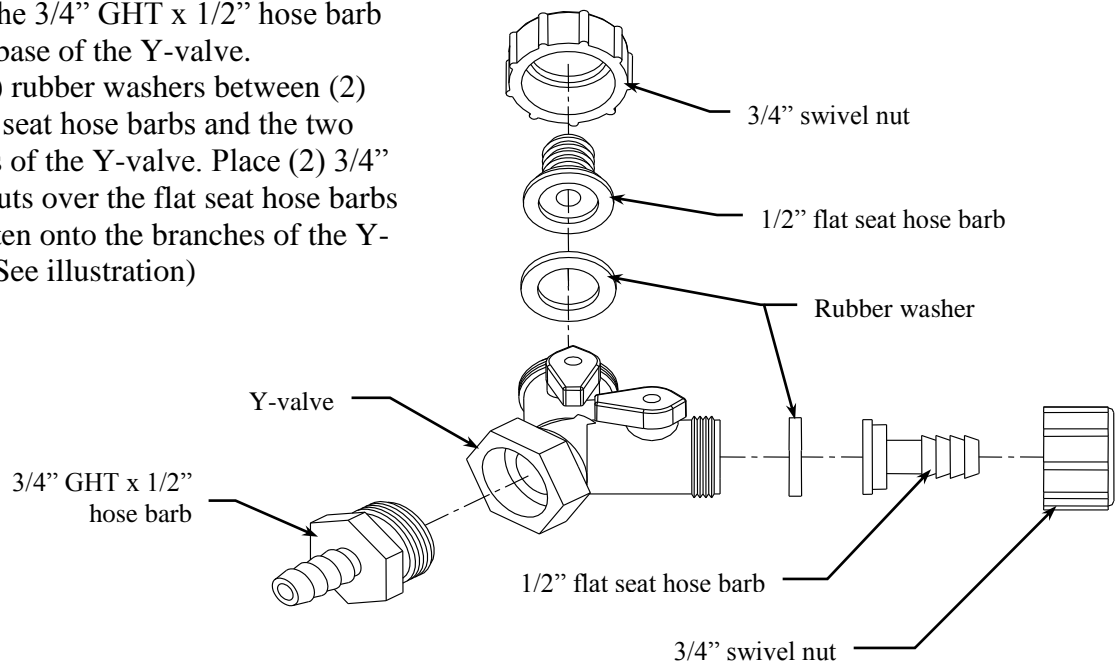
## Step Seven: Install nozzle bracket

1. Position the nozzle bracket so that the broadcast nozzles are at a height of 36" from the ground.
2. Attach the nozzle bracket to the vertical boom mount with a 5/16 x 1" carriage bolt and tee handle knob.



## Step Eight: Build Y-valve assembly

1. Thread the 3/4" GHT x 1/2" hose barb into the base of the Y-valve.
2. Place (2) rubber washers between (2) 1/2" flat seat hose barbs and the two branches of the Y-valve. Place (2) 3/4" swivel nuts over the flat seat hose barbs and tighten onto the branches of the Y-valve. (See illustration)



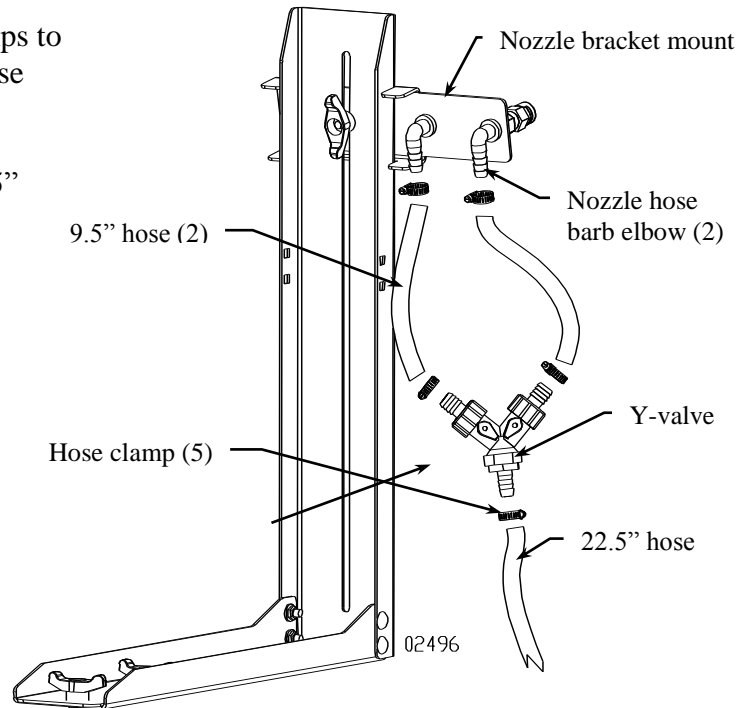
## Assembly

### **Step Nine: Connect Y-valve hoses**

1. Use (2) 9.5" hoses and (4) hose clamps to connect the Y-valve to the nozzle hose barb elbows. Follow hose clamp installation instructions.
2. Use a hose clamp to connect the 22.5" hose to the Y-valve.

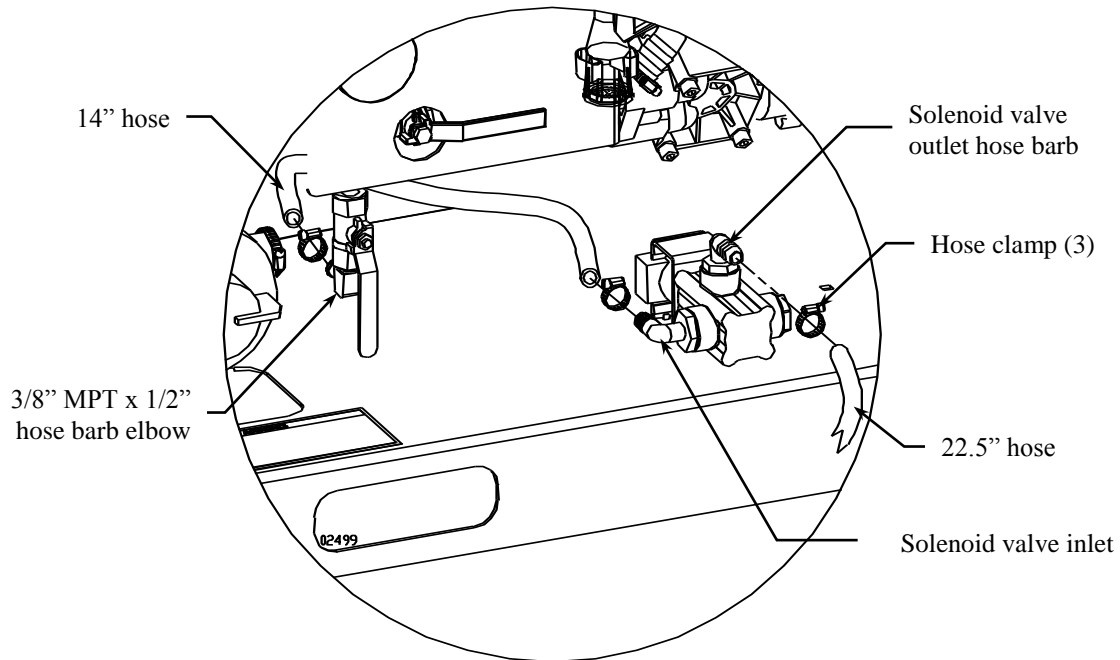
Hose clamp installation instructions:

- a) Slide hose clamp over the end of the hose.
- b) Push the hose onto the hose barb.
- c) Slide the hose clamp over the hose barb.
- d) Tighten the hose clamp



### **Step Ten: Connect solenoid valve hoses**

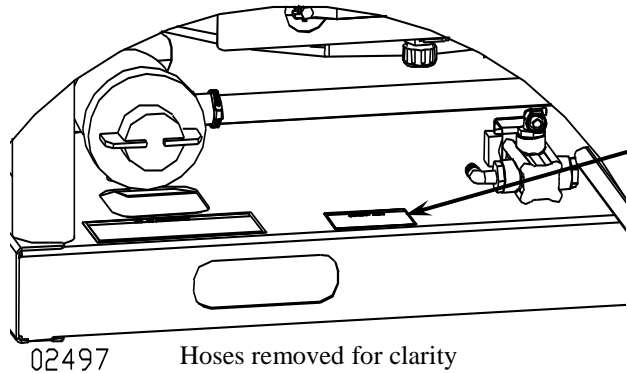
1. Connect the loose end of the 22.5" hose from the Y-valve to the solenoid valve outlet with a hose clamp.
2. Use the 14" hose and (2) hose clamps to connect the 3/8" MPT x 1/2" hose barb elbow to the solenoid valve inlet.



## Assembly

### **Step Eleven: Apply decal**

Affix the Caution decal to the frame in the location shown.



### **⚠ CAUTION**

READ and UNDERSTAND the Owner's Manual completely before using this sprayer.

Be sure the broadcast kit and sprayer are securely attached to your vehicle before traveling.

The Broadcast kit is rated at 75 PSI. DO NOT EXCEED THIS RATING!

Make sure the broadcast ball valve on the control panel is closed before operating the pump at a higher pressure for agitation or gun use.

### **Step Twelve: Connect solenoid valve to 12V DC power source**

### **⚠ WARNING**

Batteries are hazardous because they contain caustic acid, can emit explosive gases, and can cause electric shock.

*Caution must be exercised when making connections to a battery to avoid shock and contact with the acid, and to prevent any sparking that could lead to an explosion.*

ALWAYS follow the safety instructions and steps listed below in *exact sequence* when connecting the sprayer's remote switch to the battery terminals.

#### **1. Preparatory safety**

#### **Preparatory safety steps:**

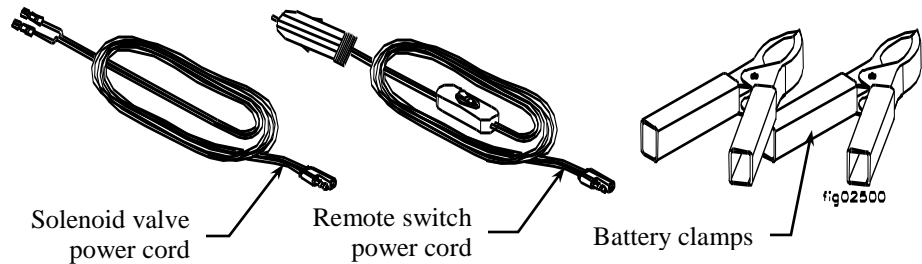
- ALWAYS use eye protection
- NEVER smoke or work near sparks or other sources of ignition.
- NEVER touch both battery terminals at the same time or with any non-insulated tools.
- If battery acid contacts skin or clothing, flush immediately with water and neutralize with baking soda.

# Assembly

## 2. Identify broadcast kit's wiring components

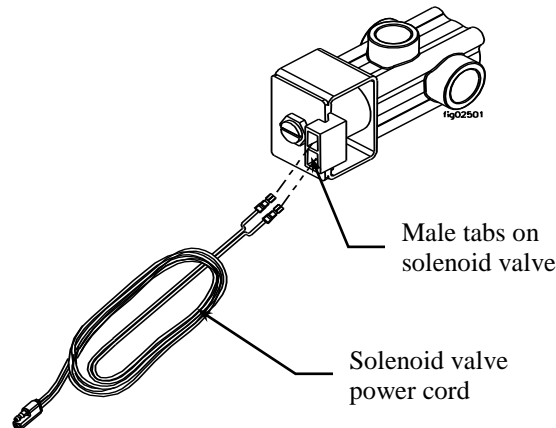
### Identify the wiring components shipped with the broadcast kit.

There are two power cords (solenoid valve power cord and remote switch power cord) and two battery clamps you will connect to power the solenoid valve.



## 3. Connect the solenoid power cord

### Connect the solenoid valve power cord to the male tabs on the back of the solenoid valve.



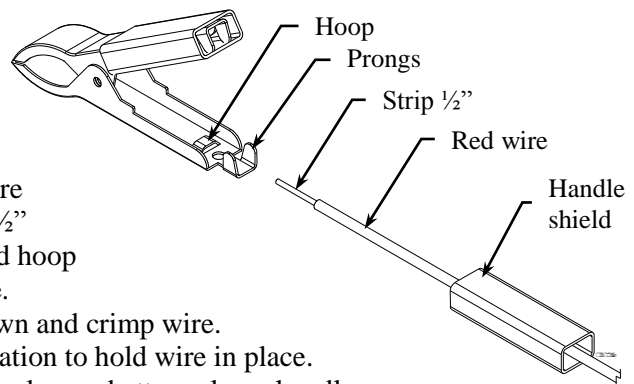
## 4. Prepare wire ends

### Prepare the wire ends of the remote switch power cord for connection to a 12V DC power supply:

- If you will connect the remote switch power cord to a 12V car adapter, the remote switch power cord will not have to be modified.
- If you choose to connect the remote switch power cord directly to a battery, cut off the car adapter plug and install battery clamps (supplied) or end connectors of your choosing on the bare ends of the remote switch power cord wires.

#### To install battery clamps:

- Cut off car adapter plug.
- Remove red plastic handle shield from red battery clamp and slide onto red wire
- Strip red battery cord wire  $\frac{1}{2}$ "
- Insert bare wire under raised hoop on red battery clamp handle.
- Use pliers to press hoop down and crimp wire.
- Fold prongs over wire insulation to hold wire in place.
- Push plastic handle shield back over battery clamp handle.
- Repeat for black wire and black battery clamp.

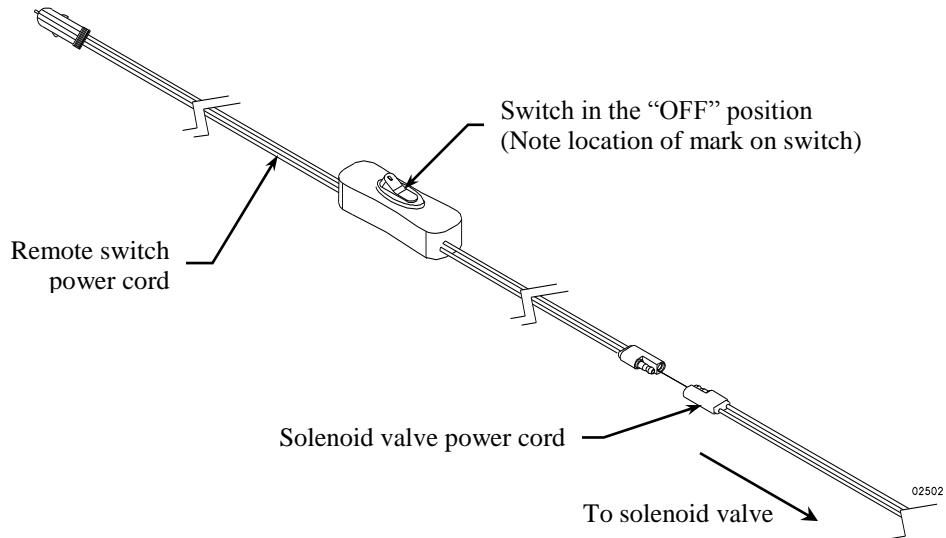


# Assembly

## 5. Connect the power cords together

### Connect the power cords together.

- a) Check to be sure the power switch is in the “OFF” position on the remote switch power cord.
- b) Connect the remote switch power cord to the solenoid valve power cord.



## 6. Connect remote switch power cord to 12V DC power source

1. Insert the car adapter plug on the remote switch power cord into a car adapter, or
2. Connect the remote switch power cord to the vehicle battery using the following procedure:
  - a) Disconnect the vehicle battery ground wire.
  - b) Connect the remote switch's red battery clamp or red wire connector to the **positive(+)** terminal of the battery.
  - c) Connect the remote switch's black battery clamp or black wire connector to the **negative(-)** terminal of the battery.
  - d) Reconnect the vehicle battery ground wire.

**WARNING:** Always connect in this sequence to avoid possible shock.

## 7. Verify connection

**Verify a complete connection has been made** by turning the remote switch to the “ON” position and listening for a click from the solenoid valve.

## 8. Attach remote switch to vehicle

**Using supplied Velcro pads, affix remote switch to vehicle in a position that is easily reached from the driver's seat.**

## 9. Disconnect after use

**AFTER EACH USE, disconnect power to the solenoid valve.**

***NOTE:** It is important to disconnect power to the solenoid valve when not in use, both for safety reasons and to prevent the solenoid valve from draining the battery. ALWAYS verify that the power has been disconnected before servicing the sprayer.*



# Assembly

## 10. To disconnect permanently

**When it is necessary to disconnect the remote switch power cord from the battery, use the following procedure:**

1. Disconnect the remote switch power cord from the solenoid valve power cord.
2. Disconnect the remote switch power cord from the vehicle battery as follows:
  - a) Disconnect vehicle battery ground wire.
  - b) Disconnect the battery cord's black battery clamp or black wire connector from the *negative(-)* terminal of the vehicle battery.
  - c) Disconnect the battery cord's red battery clamp or red wire connector from the *positive(+)* terminal of the vehicle battery.
  - d) Reconnect the vehicle battery ground wire.

**WARNING:** Always connect in this sequence to avoid possible shock.

## Step Thirteen: Check and test completed assembly

### **WARNING**

#### Check and test completed assembly

Serious injury could result from chemical leaks if broadcast kit is improperly assembled or the design of the broadcast kit is modified.

Follow the steps below to ensure the broadcast kit is properly assembled.  
Never modify the broadcast kit design.

## 1. Check assembly

**Check assembly to assure the broadcast kit is properly assembled and in safe working condition:**

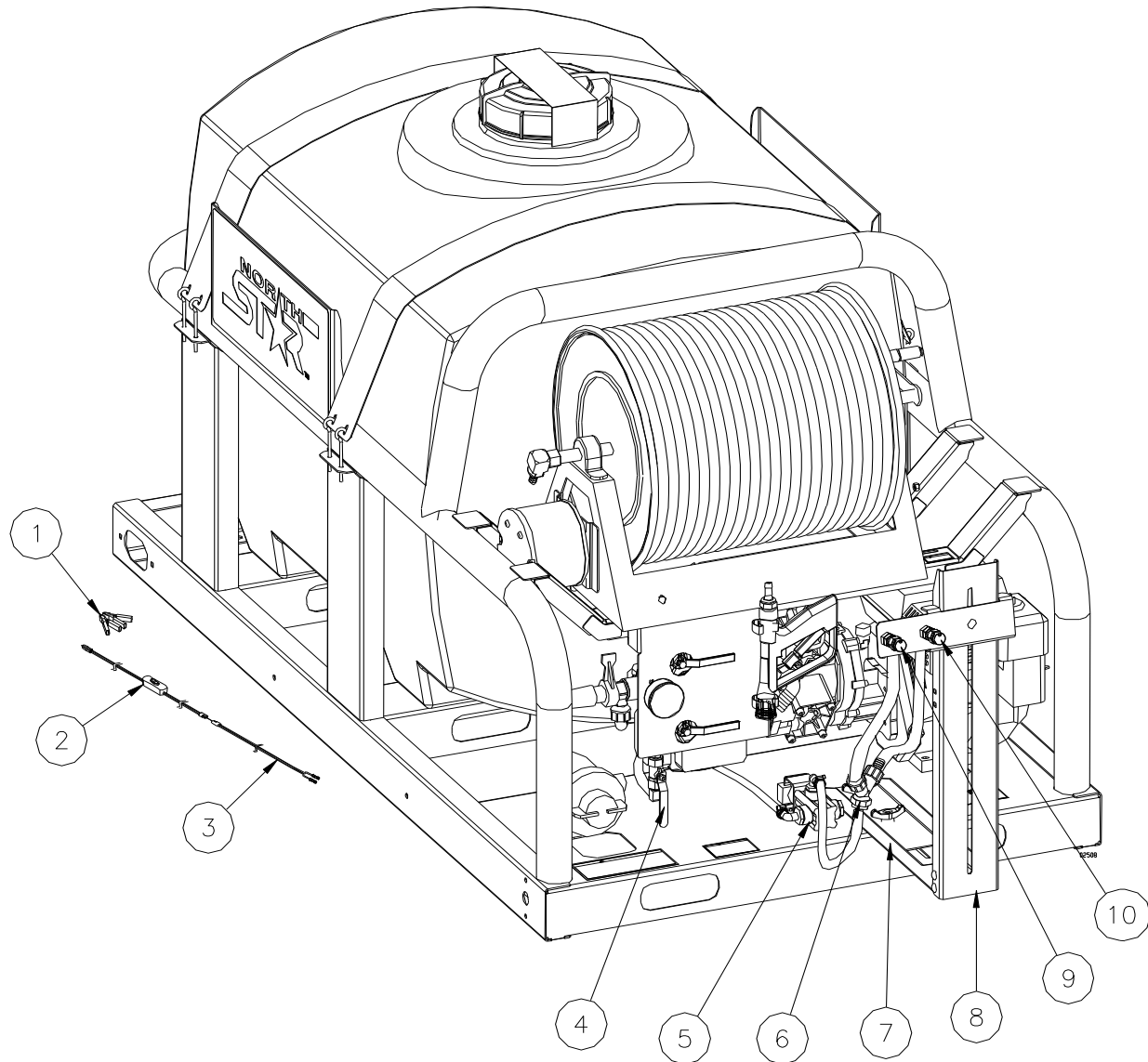
- a) Check that all fittings and fasteners are tight, hose clamps are secure, and electrical connections are properly attached.
- b) While it is unlikely that factory assembled components become loose, they should also be checked to make sure they are tight.

## 2. Test with water

**Test the system for leaks with water:**

- a) Partially fill the tank with water.
- b) Close the broadcast kit ball valve. (See operation instructions.)
- c) Connect the remote switch to a 12V power source. (See assembly instructions.) Make sure remote switch is in OFF position.
- d) Start the sprayer. (See sprayer operation instructions.)
- e) Ensure pressure is less than 75psi. (See sprayer operation instructions.)
- f) Open the broadcast kit ball valve. (See operation instructions.)
- g) Open the valve levers on the Y-valve.
- h) Turn the remote switch on.
- i) Check for leaks throughout the system. If a leak is detected, fix the leak and re-test the system with water.

## Machine Components



- 1.) **Battery Clamps.** The battery clamps connect the remote switch power cord to the battery.
- 2.) **Remote Switch Power Cord.** The remote switch allows the operator to safely turn ON/OFF the solenoid valve from the driver's seat.
- 3.) **Solenoid Valve Power Cord.** The solenoid valve power cord connects the solenoid valve to the remote switch power cord.
- 4.) **Broadcast Kit Ball Valve.** When operating the sprayer at pressures above 75psi, the broadcast kit ball valve must be closed to protect the solenoid valve and Y-valve.
- 5.) **Solenoid Valve.** The solenoid valve controls the flow to the broadcast nozzles.
- 6.) **Y-Valve.** The Y-valve shuts off chemical to the left, right, or both broadcast nozzles.
- 7.) **Horizontal Boom Mount.** The horizontal boom mount connects the nozzle bracket to the sprayer frame.
- 8.) **Vertical Boom Mount.** The vertical boom mount allows nozzle bracket height adjustments.
- 9.) **Left Broadcast Nozzle.** The broadcast nozzle sprays a wide pattern for broadcast spraying.
- 10.) **Right Broadcast Nozzle.** The broadcast nozzle sprays a wide pattern to broadcast spraying.

## Operation – Important Safety Information

Now that you have completed and tested your assembly, there is some important safety and health information you need to know with regard to handling and spraying chemicals.

### WARNING

Carefully read and make sure you understand the following safety information before using the broadcast kit.

### General Chemical Safety:

### WARNING

Pesticides are hazardous chemicals.  
Heed the warnings below and follow all instructions carefully.  
Improper handling of chemicals can result in serious injury or illness, or cause damage to the environment.

- **Chemical label.** ALWAYS READ and FOLLOW all chemical label instructions.
- **Licensing/regulation.** Refer to any applicable licensing restrictions or state/federal regulations with regard to the application of the particular chemical you plan to use.
- **Emergency procedures.** Before handling chemicals, carefully review the “Chemical Accident Procedures” listed later in this section, as well as the “Statement of Practical Treatment” on the chemical label.
- **Inhalation/contact.** ALWAYS take precautions to avoid inhaling or coming into contact with the chemical.
- **Personal protective equipment.** ALWAYS wear protective clothing, eye protection, and chemical-resistant gloves when filling, using and cleaning the broadcast kit. Wear additional protective gear (such as facemask or apron) as recommended on the chemical label.
- **Children/pets.** Pesticides can be especially toxic to children and animals. ALWAYS exercise extra caution around children. Keep sprayer and all spray materials away from children and animals.
- **Ventilation.** ALWAYS ensure there is adequate ventilation when mixing, pouring, or spraying.
- **Flammables.** NEVER use any flammable chemicals in the sprayer or broadcast kit.
- **Corrosives.** DO NOT use corrosive chemicals in the broadcast kit. They can weaken the broadcast kit components, resulting in leaks. Check with the chemical manufacturer to ensure chemical is compatible with all components of the broadcast kit.
- **Chemical interaction.** ALWAYS flush the broadcast kit before switching chemicals. Different chemicals may interact dangerously with each other.
- **Chemical storage.** ALWAYS store pesticides in a properly labeled container and in a secure location per the manufacturer’s recommendations.
- **Health monitoring.** Monitor the health of operators who are frequently exposed to pesticides, as recommended by the chemical label or local/federal regulations.

# Operation – Important Safety Information

## Chemical Application Safety:

### **WARNING**

Caution must be used when spraying chemicals to avoid unsafe exposure to humans and the environment.

Heed the warnings below and follow all instructions carefully.

#### Before Spraying

- **Sprayer prep.** ALWAYS inspect and prepare the broadcast kit before use according to the directions provided in this manual.
- **Keep sprayer off.** Do not start the sprayer until ready to spray in order to avoid unintentional spray release.
- **Broadcast nozzles down.** Make sure broadcast nozzles are oriented to spray straight down before starting the sprayer. An incorrectly positioned broadcast nozzle may spray chemicals on you or others.
- **Wind speed.** NEVER spray when wind speed exceeds 4 MPH in order to minimize spray drift.
- **Clear area/post.** ALWAYS keep the work area clear of people and pets. POST warning notices to restrict access by the public for the period recommended on chemical label.
- **Operator age.** You must be 16 years of age or older to operate this broadcast kit. Pesticides are especially toxic to children.

#### During Spraying

- **Over application.** DO NOT over apply pesticide. Apply at a rate recommended by chemical manufacturer. Excess pesticide can be dangerous to humans, damage desirable plants, and contaminate soil and water sources.
- **Children/pets.** ALWAYS exercise extra caution when spraying near areas accessible to children and pets.
- **Eating/smoking.** DO NOT eat, drink, smoke, rub your eyes, or touch any part of your bare skin while handling chemicals and spraying.
- **Heat/flames.** DO NOT spray near open flames or sources of heat.
- **Spills.** ALWAYS clean up spills immediately per instructions on the chemical label.
- **Unattended.** ALWAYS turn off vehicle and set brake or block wheels, turn off sprayer, and relieve system pressure before leaving sprayer and broadcast kit unattended.
- **Troubleshooting.** ALWAYS refer to the safety instructions in the Troubleshooting Section before attempting any repairs.

#### After Spraying

- **Clean sprayer.** ALWAYS clean the broadcast kit immediately after use according to the directions provided in this manual.
- **Decontaminate.** ALWAYS decontaminate yourself immediately after you are finished spraying and handling chemicals. Wash all exposed areas of the body with soap and water and remove and launder clothing.
- **Chemical disposal/storage.** ALWAYS dispose of or store remaining chemicals properly as recommended on the chemical label.

## Operation – Important Safety Information

### Chemical accident procedures:

#### **WARNING**

Before you fill the sprayer, review the following information with regard to handling accidents.

Chemical spills, sprayer leaks, personal contamination, and poisoning are accident situations which you may encounter. **All require an immediate response – See instructions below.**

<b>Sprayer leak</b>	<p><b>In the event that the sprayer or broadcast kit develops a leak while spraying chemicals, you must <i>immediately stop spraying</i>.</b></p> <p>Turn off the sprayer and follow the directions below, as applicable.</p>
<b>Bodily chemical contact</b>	<p><b>Personal contamination can occur when chemicals splash, spill, or spray directly onto a person.</b></p> <ol style="list-style-type: none"> <li>Follow the emergency first aid instructions on the chemical label listed in the “First Aid” or “Statements of Practical Treatment” section.</li> </ol> <p><u>General procedures include:</u></p> <ol style="list-style-type: none"> <li>Eyes – immediately flush with water or follow other directions as specified on the chemical label.</li> <li>Skin – immediately wash all contaminated skin surfaces with soap and water, or follow directions as specified on the chemical label.</li> <li>Clothing – remove contaminated clothing immediately. Dispose of heavily contaminated clothing per the instructions on the chemical label for safe chemical/container disposal.</li> </ol> <ol style="list-style-type: none"> <li>Seek medical advice if instructed on the label, or if the victim experiences symptoms of harmful effects such as burning, swelling, nausea, chest pain, difficulty breathing, dizziness or confusion. When seeking medical advice, be sure to bring the chemical product label.</li> </ol>
<b>Poisoning by ingestion or inhalation</b>	<p><b>In case of poisoning from ingestion or inhalation:</b></p> <p><b>IF THE VICTIM HAS COLLAPSED OR IS NOT BREATHING, <u>CALL 911</u>.</b> Otherwise:</p> <ol style="list-style-type: none"> <li>If you are the victim, immediately seek assistance from nearby personnel because you may become incapacitated.</li> <li>Follow the emergency first aid instructions on the chemical label in the “First Aid” or “Statement of Practical Treatment” section.</li> <li>Call a poison control center for further advice. <b>In the U.S., call 1-800-222-1222 to be automatically linked to the nearest certified poison control center.</b> Have the chemical label available for reference.</li> </ol>

## Operation – Important Safety Information

### Chemical spills

#### Chemical spills must be quickly contained and properly cleaned up.

Refer to the chemical label for any specific clean-up instructions with regard to the chemical spilled.

#### General procedures include:

1. **Control** the spill by stopping the source of the spill. If the source of the spill is a container leak, place the leaking container in a larger, watertight container. Keep unprotected people away from the spill site.
2. **Contain** the spill so that it does not spread and get into water sources. Use a shovel or other tool to make a dike around the spill with soil, sod, or absorbent material.
3. **Clean up** the spill immediately -- Absorbent materials like ground corncobs or pet litter should be spread on the spill area to soak up the pesticide. The contaminated material should then be shoveled into a leak proof container. Do not flush the spill area with water until you receive advice as directed below.
4. **Seek additional advice** from the chemical manufacturer and your state's pesticide regulatory agency regarding decontamination of the spill site:
  - *Chemical manufacturer.* The chemical label provides contact information for the chemical manufacturer.
  - *State pesticide regulatory agency.* In the U.S., call the National Pesticide Information Center at 1-800-858-7378 for assistance in determining how to contact your state's pesticide regulatory agency.

## Operation – Preparing the Broadcast Kit for Each Use

If the broadcast kit has been used previously, it must be prepared BEFORE EACH SUBSEQUENT USE.

### **WARNING**

Read instructions below carefully for inspecting and preparing the broadcast kit.  
 Damaged or clogged equipment could result in leaks or uncontrolled spray.  
 Leaks could result in injury to the operator or bystanders from chemical exposure,  
 or cause damage to the environment.

#### **Important safety rules:**

- **Power off.** Make sure all power is OFF before cleaning, inspecting, or servicing the broadcast kit.
- **Guards / shields.** Make sure all guards and shields are replaced after servicing the broadcast kit.
- **Replacement parts.** If a part needs replacement, only use parts that meet the manufacturer's specifications. Replacement parts that do not meet specifications may result in a safety hazard or poor operation of the sprayer.

<b>1. Ensure broadcast kit is attached</b>	<b>Ensure the boom mounts and nozzle bracket are securely attached to the frame.</b>
<b>2. Ensure components are clean</b>	<b>Ensure the broadcast kit has been thoroughly flushed and drained of all residual chemicals from prior uses.</b>
<b>3. Inspect &amp; repair</b>	<b>Inspect and test the broadcast kit thoroughly:</b> <ol style="list-style-type: none"> <li>a) Inspect hoses for exposed mesh and holes. Replace all worn or damaged hoses.</li> <li>b) Inspect fittings for cracks and leaks. Replace all damaged fittings with original NorthStar parts.</li> <li>c) Check to be sure that broadcast nozzles are pointed down.</li> <li>d) Check to be sure that all other nuts, bolts, and screws are tight.</li> <li>e) Ensure remote switch and solenoid valve are operational.</li> <li>f) Partially fill tank with plain water and spray to test for leaks. Repair as needed.</li> </ol> <p><b><i>IMPORTANT: After any repair work has been done, ALWAYS test for leaks with water one final time before using.</i></b></p>

## Operation – Using the Broadcast Kit

### **Step One: Assess wind conditions and clear work area.**

Before you decide to spray, you must determine whether wind conditions are suitable. You must also restrict access to the work area to ensure the safety of bystanders.

#### **WARNING**

Do not spray if wind speeds are greater than 4 MPH or if there are bystanders in the intended spray area.

<b>1. Assess wind speed</b>	<p><b>Assess weather conditions to ensure that it is not too windy to spray.</b></p> <p><b>DO NOT SPRAY if wind speeds are greater than 4 MPH.</b></p> <p><i>Visible indication of wind speed:</i> If leaves are in constant motion or there is any branch movement, DO NOT spray because the wind is too strong.</p>
<b>2. Clear work area</b>	<p><b>Clear the work area of all bystanders and pets.</b></p> <p>Restrict access by the public for the period recommended on chemical label.</p>

### **Step Two: Fill the sprayer.** See Operation Instructions in the Sprayer's Manual

### **Step Three: Operate the broadcast kit.**

#### **WARNING**

ALWAYS wear personal protective equipment as directed on the chemical label when spraying.

Long pants and sleeves, chemical-resistant gloves, and eye protection are strongly recommended. Additional protective gear may be required depending on the particular pesticide.

<b>1. Review safety information</b>	<b>Review the “Operation – Important Safety Information” related to <u>Chemical Application Safety</u> provided in this manual.</b>
<b>2. Wear personal protective equipment</b>	<b>Wear personal protective equipment as directed on the chemical label.</b>
<b>3. Connect power cords</b>	<p><b>Connect the solenoid valve to a 12V DC power source.</b></p> <ol style="list-style-type: none"> <li>1. Verify the remote switch is connected to the solenoid valve power cord.</li> <li>2. Turn the remote switch to the “OFF” position.</li> <li>3. Connect the remote switch to a 12V DC power source.</li> </ol>

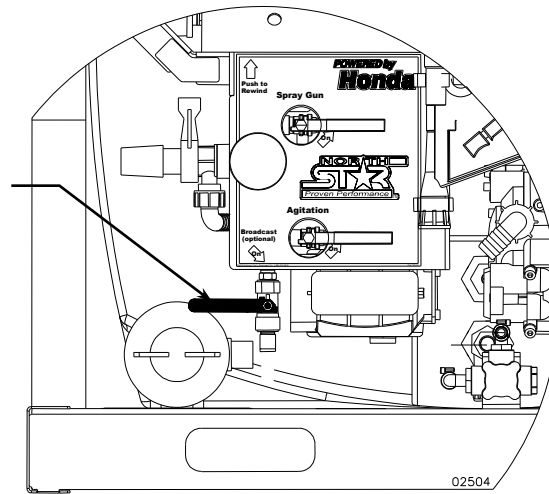


## Operation - Using the Broadcast Kit (continued)

### 4. Close broadcast kit ball valve

Rotate broadcast kit ball valve handle to the Closed position.

Broadcast kit ball valve handle in Closed position



### 5. Operate the sprayer

**Start the sprayer.** See Sprayer Owner's Manual for instructions.

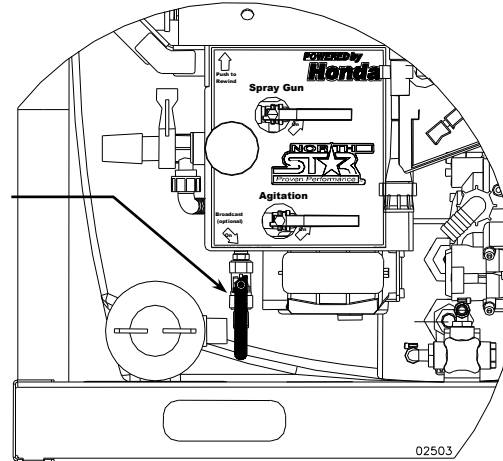
**Caution:** Do not exceed 75psi when operating the broadcast kit.

### 6. Open broadcast kit ball valve

Rotate broadcast kit ball valve handle to the Open position.

**Caution:** Do not exceed 75psi when operating the broadcast kit

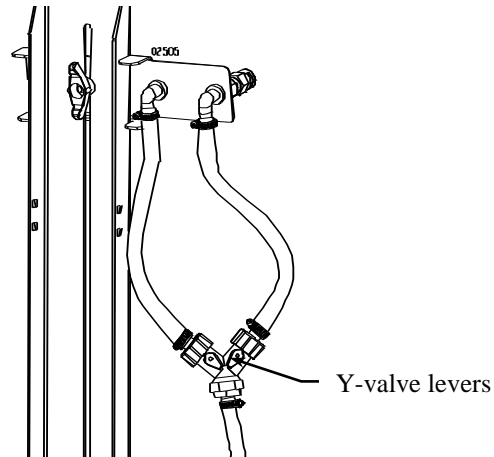
Broadcast kit ball valve handle in open position



### 7. Operate broadcast nozzles

#### A. Open Y-valve levers

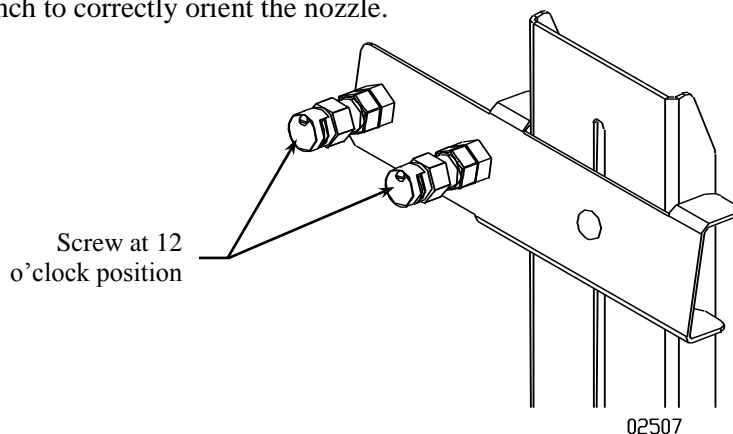
Open the left, right, or both Y-valve levers as desired.



## Operation - Using the Broadcast Kit (continued)

### B. Ensure correct spray pattern

Make sure both broadcast nozzles are pointed toward the ground. The screw on the face of the nozzle should be in the 12 o'clock position. If it is not, use a wrench to correctly orient the nozzle.

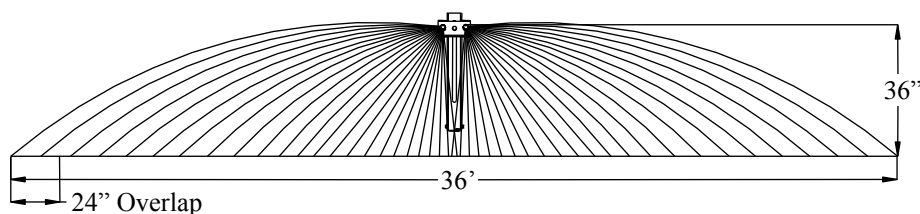


**IMPORTANT:** Make sure broadcast nozzle is oriented to spray straight down before you start. An incorrectly positioned broadcast nozzle may spray chemicals on you or others.

Note: It is not unusual for the operator to be exposed to chemical drips while adjusting the broadcast nozzle. Chemical resistant gloves should be worn.

### C. Ensure uniform coverage

To ensure proper coverage, the height of the broadcast nozzles should be 36 inches from the ground. Using both broadcast nozzles, the spray pattern is 36 feet wide. However, the spray pattern should be overlapped 24 inches. Use the tables in Appendix A to determine what speed to drive your vehicle for the desired application rate.



### D. Begin to spray

Turn the remote switch ON to begin spraying.

#### 8. Leaving unattended

**If the sprayer or broadcast kit must be left unattended at any time:**

- Turn off the sprayer.
- Relieve system pressure.
- Turn off the vehicle. Set brake.

#### 9. Discontinue use if clogged or inoperative

**If the broadcast kit becomes clogged or inoperative during use, *discontinue use immediately.***

- DO NOT attempt to service while chemicals are in the sprayer or broadcast kit and the engine is running.
- Return to service area to review instructions for troubleshooting before attempting to service.

## Operation - Using the Broadcast Kit (continued)

### **Step Four: Clean sprayer and decontaminate after use.**

When done using the sprayer, it is important to clean the sprayer and decontaminate yourself. Do not store the sprayer with chemicals in the tank, as it is unsafe and could also result in damage to the equipment.

#### **WARNING**

Clean-up and decontamination procedures must be followed after each use.

Improper equipment clean-up and disposal of chemicals can result in dangerous chemical exposure to humans and the environment, as well as equipment damage.

Personal decontamination is required after spraying to minimize unsafe exposure to chemicals and potential illness.

<b>1. Drain tank</b>	<b>If there is excess pesticide left in the tank, drain the tank:</b> a) See Sprayer Owner's Manual for instructions.
<b>2. Unused chemical</b>	<b>Properly store or dispose of unused chemical:</b> a) <u>If the unused pesticide is to be stored for future use:</u> Store all unused pesticide in its original, or a suitably marked, container in a secure location out of the reach of children & animals. b) <u>If remaining pesticide is to be disposed:</u> Properly dispose of the remaining chemical and its container per the chemical manufacturer's recommendation and according to local hazardous waste disposal regulations.
<b>3. Flush sprayer</b>	<b>Flush the sprayer and broadcast kit per the chemical manufacturer's recommendations.</b> A general procedure is as follows: a) Add fresh water to the tank. b) Start the sprayer. c) Operate the broadcast kit and spray gun (if used) and discharge all rinse water onto an area that can accept dilute pesticide application. d) Add 5 gallons of the chemical manufacturer's recommended cleaning solution. Operate the broadcast kit and spray gun (if used), collecting the discharged solution if recommended by the manufacturer. e) After flushing, turn off the sprayer and be sure all system pressure is relieved. f) Dispose of cleaning solution discharge as recommended by the manufacturer of the solution.
<b>4. Decontaminate &amp; launder</b>	<b>Decontaminate yourself after you are finished handling chemicals:</b> a) Remove all clothing worn during spraying and chemical handling. b) Wash all exposed parts of the body with soap and water. c) Launder clothing separately from other wash.

## Storage

Prepare the broadcast kit for end-of-season storage by running RV antifreeze through the system. This will keep internal parts lubricated, protect against corrosion, and keep the unit from freezing.

### CAUTION

The broadcast kit will be damaged if it freezes.

Protect the broadcast kit from freezing during storage by following the instructions below.

### **Preparing for storage:**

<b>1. Add antifreeze</b>	Pour 2 gallons of RV antifreeze into the tank. <i>Note: RV antifreeze is non-toxic and biodegradable and generally safer for the environment than automotive antifreeze.</i>
<b>2. Spray briefly</b>	Turn on the sprayer and operate the broadcast kit until fluid sprays. See Sprayer Owner's Manual and this manual for operation instructions.

### **Removing from storage:**

<b>1. Drain</b>	Drain the antifreeze left in the tank into a suitable container.
<b>2. Flush with water</b>	Fill the tank with fresh water and run through the system. Operate the broadcast kit until the system is completely flushed. Be sure to set up containers to capture the antifreeze flush water.
<b>3. Disposal</b>	Dispose of the antifreeze and flush water properly.

# Troubleshooting

## **WARNING**

Before troubleshooting or attempting to service, read the following safety rules to avoid accidental exposure to chemical and also risk of electric shock.

### **Before attempting to service the sprayer:**

<b>1. Personal protective equipment</b>	<b>Wear personal protective equipment as directed on the chemical label while servicing your sprayer.</b>
<b>2. Review troubleshooting table</b>	<b>Review the Troubleshooting Table below for the type of problem you are experiencing.</b> However, DO NOT attempt to repair until the steps listed below are followed.
<b>3. Disconnect power/relieve pressure</b>	<b>Turn off the sprayer and be sure all system pressure is relieved.</b>
<b>4. Perform repairs</b>	<b>Follow the directions provided in the troubleshooting table to repair the broadcast kit.</b> <i>NOTE: Never try to unclog a broadcast nozzle by blowing through it.</i>
<b>5. Test after servicing</b>	<b>After servicing, ALWAYS test the sprayer and broadcast kit for leaks with plain water before using.</b>

<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
Solenoid valve will not operate	Bad electrical connection	Check battery connections
	Short in wires	Check condition of wires
	Low voltage	Check voltage
Poor spray distribution	Nozzle(s) oriented incorrectly	See assembly instructions
	Suction strainer clogged	See Sprayer Owner's Manual
	Worn broadcast nozzle	Replace broadcast nozzle

## Specifications

### Electrical System Requirements

Electrical connection..... 12 VDC  
Amp draw from solenoid valve..... 2.5 Amps

### Broadcast Kit Specifications

Maximum GPM..... 8.6 GPM (both nozzles @ 40psi)  
Maximum Pressure..... 75 PSI  
Overall Spray Width..... 36 ft.  
Recommended Overlap..... 2 ft. (24 in.)

### Component Materials\*

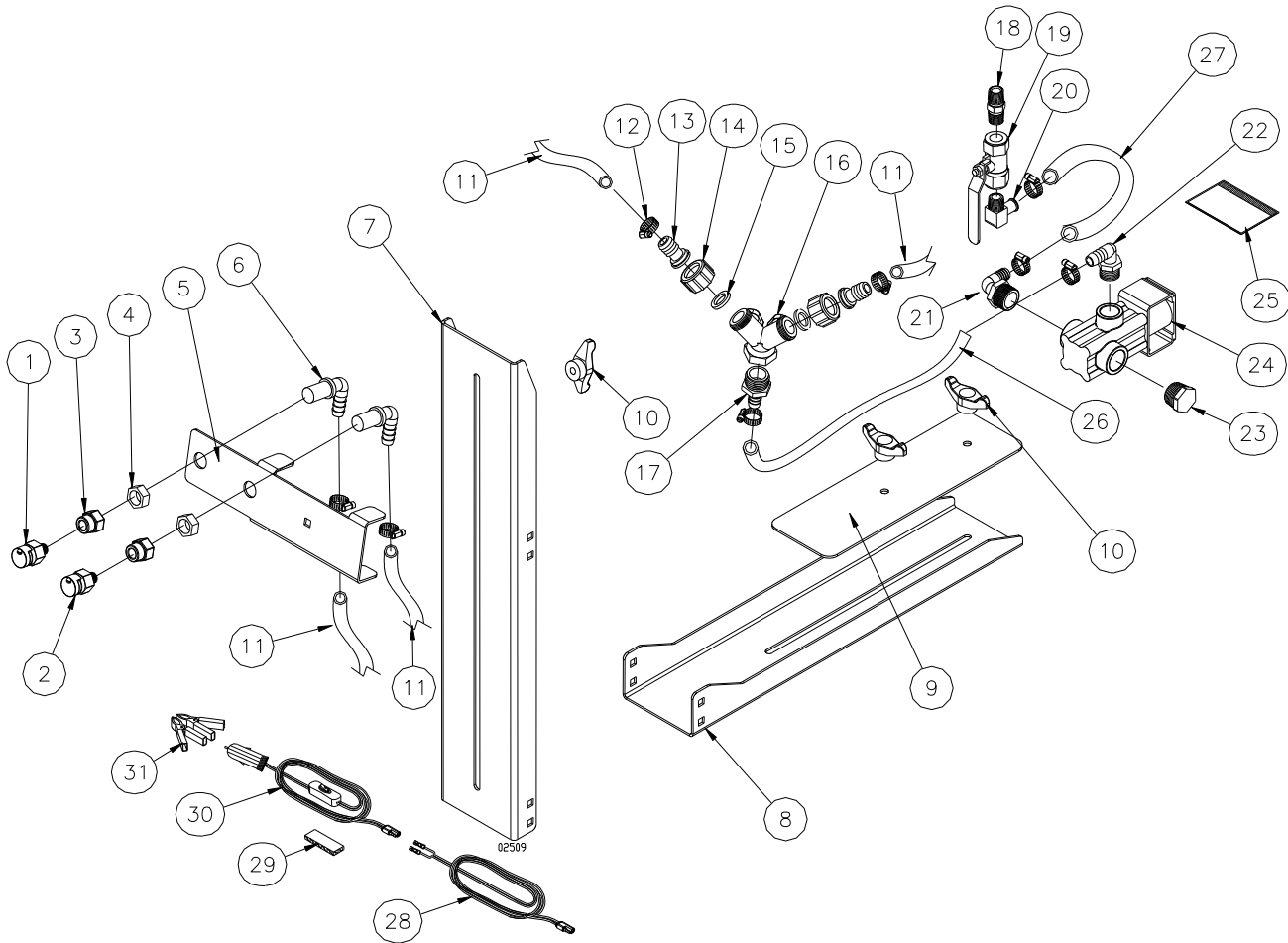
Fittings..... Brass, Stainless Steel, Teflon, Nylon  
Solenoid valve..... Polypropylene, Stainless Steel, EPDM  
Hose..... PVC  
Y-valve..... Cycolac (ABS), Buna-N  
Broadcast nozzles..... Polypropylene, Stainless Steel

\*Before using any chemical, check to ensure the chemical is compatible with all materials in the system.

The manufacturer reserves the right to make improvements in design and/or changes in specifications at any time without incurring any obligation to install them on units previously sold.

**Any Questions, Comments, Problems or Parts Orders**  
***Call NorthStar Product Support 1-800-270-0810***

## Exploded View – 268171 – Rev. C.2



Item	Part#	Description	Qty
1	779181	Left broadcast nozzle – 1870PSL	1
2	779180	Right broadcast nozzle – 1870PSR	1
3	38545	Nozzle adapter	2
4	5230	Nozzle nut	2
5	779125	Nozzle bracket	1
6	777851	Nozzle hose barb elbow	2
7	779124	Vertical boom mount	1
8	779123	Horizontal boom mount	1
9	779259	Reinforcement plate	1
10	38578	Tee handle knob	3
11	30160	1/2" braided PVC hose, 9.5"	2
12	777119	Hose clamp	8
13	5212	1/2" flat seat hose barb	2
14	777850	3/4" swivel nut	2
15	5232	Rubber washer	2
16	777849	Y-valve	1

Item	Part#	Description	Qty
17	5222	3/4" GHT x 1/2" hose barb	1
18	2296	Steel 3/8" MPT hex nipple	1
19	34696	3/8" ball valve	1
20	32808	Brass 3/8" MPT x 1/2" hb elbow	1
21	5379	3/4" MPT x 1/2" hose barb elbow	1
22	5282	1/2" MPT x 1/2" hose barb elbow	1
23	5301	3/4" MPT plug	1
24	30844	Solenoid Valve	1
25	779182	Caution decal	1
26	30160	1/2" Braided PVC hose, 22.5"	1
27	30160	1/2" Braided PVC hose, 14"	1
28	779178	Solenoid valve power cord	1
29	35363	Velcro™ set	1
30	779179	Remote switch power cord	1
31	778259	Battery clamps	1

**Any Questions, Comments, Problems or Parts Orders**  
***Call NorthStar Product Support 1-800-270-0810***

## Appendix A – Broadcast Spray Calibration Tables

Below are guidelines to help you calibrate your broadcast spray kit. This is a very important step in operating the broadcast kit such that too much or too little chemical may be applied.

1. Using **Table 1**, find a table that corresponds with the chemical manufacturer's suggested application rate (gallons per acre, gallons per 1000 sq. ft., or gallons per 100 sq. ft.).
2. Find the application rate that is closest to the chemical manufacturer's recommendations.
3. The speed to drive is listed above the application rates.

**TABLE 1**

Spray Height	Pressure (PSI)	Flow (GPM)	SPEED (MPH)										
			2	3	4	5	6	7	8	9	10	11	12
			GALLONS PER ACRE - based on 36 foot spray pattern										
36"	20	3.0*	41	28	21	17	14	12	10	9	8	7.5	7
36"	30	3.5*	48	32	24	19	16	14	12	11	10	9	8
36"	40	4.3*	59	39	30	24	20	17	15	13	12	11	10

Spray Height	Pressure (PSI)	Flow (GPM)	SPEED (MPH)										
			2	3	4	5	6	7	8	9	10	11	12
			GALLONS PER 1000 SQ.FT. - based on 36 foot spray pattern										
36"	20	3.0*	.94	.64	.48	.39	.32	.28	.23	.21	.18	.17	.16
36"	30	3.5*	1.10	.73	.55	.44	.37	.32	.28	.25	.23	.18	.18
36"	40	4.3*	1.35	.90	.69	.55	.46	.39	.34	.30	.28	.25	.23

Spray Height	Pressure (PSI)	Flow (GPM)	SPEED (MPH)										
			2	3	4	5	6	7	8	9	10	11	12
			GALLONS PER 100 SQ.FT. - based on 36 foot spray pattern										
36"	20	3.0*	.094	.064	.048	.039	.032	.028	.023	.021	.018	.017	.016
36"	30	3.5*	.110	.073	.055	.044	.037	.032	.028	.025	.023	.018	.018
36"	40	4.3*	.135	.090	.069	.055	.046	.039	.034	.030	.028	.025	.023

\*Approximate flow from one nozzle

4. Use **Table 2** to choose a throttle setting if you lack a speedometer.

**TABLE 2**

Speed (MPH)	Time required in seconds to travel a distance of:		
	100 ft.	200 ft.	300 ft.
1	68	136	205
2	34	68	102
3	23	45	68
4	17	34	51
5	14	28	41
6	11	23	34
7	9.5	19	29

5. The coverage area can be found by dividing tank size by the application rate.

**Example:** 200 gallons divided by 12 gallons/acre = 16.7 acres of coverage per tank.



# Limited Warranty

Dear Valued Customer:

The NorthStar Product you just purchased is built with the finest material and craftsmanship. Use this product properly and enjoy the benefits from its high performance. By purchasing a NorthStar product, you show a desire for quality and durability.

Like all mechanical equipment this unit requires a due amount of care. Treat this unit like the high quality piece of machinery it is. Neglect and improper handling may impair its performance. Please thoroughly read the instructions and understand the operation before using your product.

## Limited Warranty

NorthStar shall warranty any piece of equipment manufactured, or parts of equipment manufactured, to be free from defects in material or workmanship for a period of 1 year from the date of purchase by user. This warranty applies to the original purchaser of the equipment and is non transferable. Verification of purchase is the responsibility of the buyer. Parts will be replaced or repaired at no charge, except when the equipment has failed due to lack of proper maintenance. Any misuse, abuse, alteration or improper installation or operations will void warranty. Determining whether a part is to be replaced or repaired is the sole decision of NorthStar.

**NOTE:** Some services performed by parties other than NorthStar may void warranty.

**This warranty covers parts only. It will not provide for replacement of complete products due to defective parts. Components not manufactured by NorthStar such as engines are guaranteed by their manufacturer and can be serviced at factory-authorized locations near you. Any costs incurred due to replacement or repair of items outside of a NorthStar approved facility is the responsibility of the buyer and not covered under warranty. NorthStar can supply you with the service center location in your area.**

This warranty specifically excludes the following; failure of parts due to damage caused by accident, fire, flood, windstorm, acts of God, applications not approved by NorthStar in writing, corrosion caused by chemicals, use of replacement parts which do not conform to manufacturer's specifications, and damage caused by vandalism. Additional exclusions: loss of running time, inconvenience, loss of income, or loss of use, including any implied warranty of merchantability of fitness for a specific use.

Warranty does not cover items subject to normal wear such as tires, receptacles or any part subject to direct physical contact by the public. This warranty does not cover any personal injury or damage to surrounding property caused by failure of any part.

This warranty is in lieu of any other warranty expressed or implied and NorthStar assumes no other responsibility or liability outside that expressed within this warranty.

Please fill in the following information and have it on hand when you call in a warranty claim.

Customer Number: \_\_\_\_\_

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

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

Item Number: \_\_\_\_\_



Manufactured by  
Northern Tool + Equipment Co.,  
2800 SouthCross Drive West  
P.O. Box 1499 Burnsville, MN 55337-0499