



# OPERATOR'S MANUAL

## BLUMHARDT

**500 Gallon 3-Pt Hitch Full Mount  
and  
500/750 Gallon 3-Pt Hitch Semi Mount  
Field sprayers**

**Read This Manual  
Before Operating**

**P/N 74210**  
ISSUE DATE 7/97  
PRINTED IN U.S.A.

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## WARRANTY

The only warranty Wil-Rich gives and the only warranty the dealer is authorized to give is as follows:

We warranty products sold by us to be in accordance with our published specifications or those specifications agreed to by us in writing at time of sale. Our obligation and liability under this warranty is expressly limited to repairing, or replacing, at our option, within 12 months after date of retail delivery, any product not meeting the specifications. ***We make no other warranty, express or implied and make no warranty of merchantability or of fitness for any particular purpose.*** Our obligation under the warranty shall not include any transportation charges or costs or installation or any liability for direct, indirect or consequential damage or delay. If requested by us, products or parts for which a warranty claim is made are to be returned transportation prepaid to our factory. Any improper use, operation beyond rated capacity, substitution of parts not approved by us, or any alteration or repair by others in such manner as in our judgement affects the product materially and adversely shall void this warranty. ***No employee or representative is authorized to change this warranty in any way or grant any other warranty.***

Wil-rich reserves the right to make improvement changes on any of our products without notice.

***When warranty limited or not applicable:*** Warranty on hoses, cylinders, hubs, spindles, engines, valves, pumps or other trade accessories are limited to the warranties made by the respective manufactures of these components. Rubber tires and tubes are warranted directly by the respective tire manufacturer only, and not by Wil-Rich.

Warranty does not apply to any machine or part which has been repaired or altered in any way so as in our judgement to affect its reliability, or which has been subject to misuse, negligence or accident.

***A Warranty Validation and Delivery Report Form must be filled out and received by Wil-Rich to initiate the warranty coverage.***

### WARRANTY CLAIMS PROCEDURE

1. The warranty form must be returned to Wil-Rich within fifteen (15) working days from the repair date.
2. Parts returned to wil-Rich without authorization will be refused. The parts must be retained at the dealership for ninety (90) days after the claim has been filed. If the Service Department would like to inspect the parts, a packing slip will be mailed to the dealer. The packing slip must be returned with the parts. The parts must be returned prepaid within thirty (30) days of receiving authorization. After the parts are inspected and warranty is verified, credit for the return freight will be issued to the dealer.
3. Parts that will be scrapped at the dealership will be inspected by a Wil-Rich Sales Representative, District Sales Manager or Service Representative within the ninety (90) day retaining period.

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## TO THE OWNER

Before using your Blumhardt Field Sprayer, it is the responsibility of the owner and/or user to read this Operator manual and comply with the safe and correct operating procedures, adjustments, lubrication and maintenance of the product as outlined in this manual.

**Do not** operate or permit others to operate or service this product until you or other persons have read this manual. Use only trained operators who have demonstrated the ability to operate and service this product correctly and safely.

The Blumhardt Sprayer, with standard equipment and authorized attachments is intended to be used for normal Ag field application of liquid fertilizers, herbicides and pesticide operations. **Do not** use this sprayer for any application or purpose other than those described in this manual.

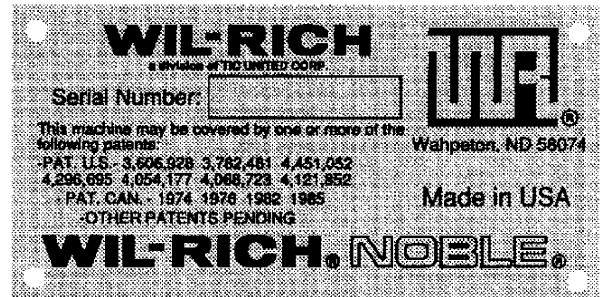
The user is responsible for inspecting the equipment daily and for having parts repaired or replaced when continued use of the equipment would cause damage, excessive wear to other parts or make equipment unsafe for continued operation.

Throughout this manual reference may be made to the left hand (LH) or right hand (RH) side of the machine. These terms are used as viewed from a position behind and facing the machine. The left hand and right hand side will be the same as your left hand and right hand.

The word **NOTE**, as used in this manual is used to convey information that is out of context with the manual text; special information and other information of a supplementary nature.

The word **IMPORTANT**, is used in the text when immediate damage will occur to the machine due to improper technique or operation. **IMPORTANT** will apply to the same information as specified by NOTE, only of an immediate and urgent nature.

Be sure this manual is complete, in good condition and available to all operators of this equipment. Contact your dealer or Wil-Rich to obtain replacement or additional manuals or for any additional information or assistance about your field sprayer that may be required.



When in need of replacement parts for your machine, always provide your dealer with the model and serial number of the machine. The Product Identification Number (P.I.N.) plate is located on the left front corner of the main frame. Record the number in the space provided in the above replica for future reference.

### SPRAYER CONTROLLERS

Your Blumhardt Sprayer may be supplied with one of the following controllers; a Spray Systems 744A, Target Master, Raven 440 or a TeeJet 844 Controller. Installation and operating instructions for these controllers are supplied under separate cover with each sprayer. Read and follow these instructions carefully.

**NOTE:** Most late model tractors have provisions for providing auxiliary power and mounting brackets in the cab for monitors and controllers.

Refer to your tractors Operator Manual for detailed information on installing controllers.

# SAFETY/DECALS



**THIS SAFETY ALERT SYMBOL IS USED TO CALL YOUR ATTENTION TO IMPORTANT SAFETY MESSAGES. CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.**

The signal words CAUTION, WARNING or DANGER are used to indicate the degree of hazards and to warn against unsafe practices that may cause personal injury and are used with appropriate safety instructions. These signal words are not to be ignored; your safety and the safety of others is involved.

Every possible circumstance that might involve a potential hazard cannot be anticipated. The safety messages and instructions found in this manual and on the machine are therefore not all inclusive.

## **⚠ SAFETY SUGGESTIONS ⚠**

- **Do not** permit riders on the equipment.
- **Always** perform a daily inspection of equipment for loose bolts, leaks, or other damage that may cause a potential safety hazard and/or machine damage.
- **Replace** any shield, guard or cover removed to perform maintenance or repair on the equipment. Replace any missing, damaged or unusable shields and safety decals.
- **Always** disconnect power, shut down the engine and apply the park brake before leaving the operator seat or allowing other persons to perform maintenance or service of any kind.
- **Always** remember you are operating a wide machine, use caution when turning.
- **Do not** use your hands to locate high pressure fluid leaks, use wood or cardboard. Fluids under pressure can be nearly invisible and can penetrate the skin causing serious personal injury. If fluid appears to have penetrated the skin, get emergency medical treatment at once. Do not treat as a simple cut.
- **Never** transport the field sprayer on public roadways with the tank filled with water or active chemical. Check and obey all local regulations regarding field sprayer transport on public roadways.
- **Be sure** the slow moving vehicle (SMV) emblem is clean and properly displayed, all lights, reflectors, flashers or other devices required by local regulations are in place, clean and operational before transporting on public roadways.
- **Keep** all hydraulic and sprayer liquid fittings and hoses tight and in good condition. **Do not** attempt to tighten fittings or stop leaks while these systems are under pressure.
- **Always** face the machine and use the steps and hand rails provided when mounting or dismounting the sprayer.
- **Be sure** boom wings are folded and securely latched in transport position before transporting on public roadways.
- **Do not** perform any maintenance or service under a raised sprayer. **Always** lower and pin the support stands provided or use adequate blocking before performing service of any kind under the sprayer.

## CHEMICAL SAFETY

Some agricultural chemicals are among the most toxic substances known to man and they can be dangerous when mishandled or when accidents occur. Wind drift, accidental spills, excessive rates or carelessness can cause pesticide contact with the user or with their clothing. Clothing that comes in contact with a toxic chemical is considered to be contaminated. When absorbed through the skin they enter the blood stream and are translocated throughout the entire body resulting in serious illness or death.

- **Treat all chemicals as though they were toxic.** Always read and understand the entire chemical label. Look for signal words on the label that indicate the human toxicity level of the chemical and the precautions for use. One of the following three signal words is on each chemical container label:
- **CAUTION**, which means the chemical is in the low toxicity category.
- **WARNING**, which indicates the chemical is moderately toxic.
- **DANGER or POISON**, which indicates the chemical is highly toxic to humans and animals.
- **Be sure** all operators know and obey all federal, state and local regulations regarding sprayer operator responsibility for pesticide and herbicide usage, storage, disposal, accident or loss reporting and applicator certification requirements. Your local Agricultural Extension Service can be helpful to you in keeping abreast of rules and regulations regarding pesticides and herbicides.
- **Mix** only enough chemical to complete the job to avoid unused disposal.
- **Triple** rinse empty chemical containers imme-

diately, add the rinse to the spray tank. Store or dispose of empty pesticide containers in accordance with label directions and in a manner which will not endanger humans, animals or the environment.

- **Rinse and flush** the sprayer after each use while still in the field. Spray the rinse thinly over the field already sprayed. Rinse according to label directions. Never contaminate the farmyard water or drainage systems with sprayer rinse.
- **Always** wear chemical label prescribed face or respiratory protection, unlined rubber gloves and boots, disposable outer wear or rubber apron when handling chemicals. Rinse and wash all protective clothing and gear after each use. Always follow label directions.
- **Discard** contaminated leather items, such as watch bands, gloves and boots. Leather items cannot be decontaminated.
- **Never** store contaminated clothing with other family laundry. Always launder contaminated garments separately from family wash. Clean your washer after laundering contaminated clothing by running a complete wash cycle with hot water and heavy duty detergent.



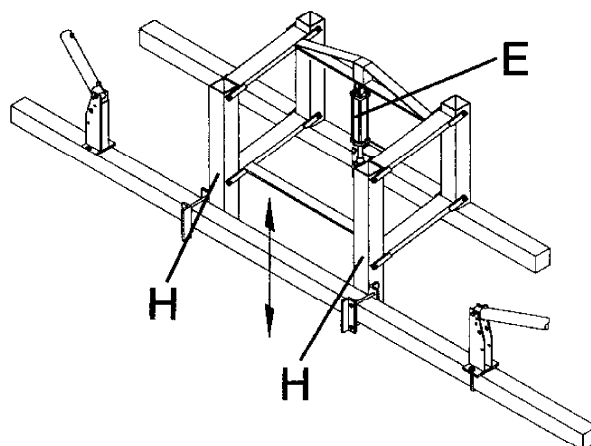


## DECALS

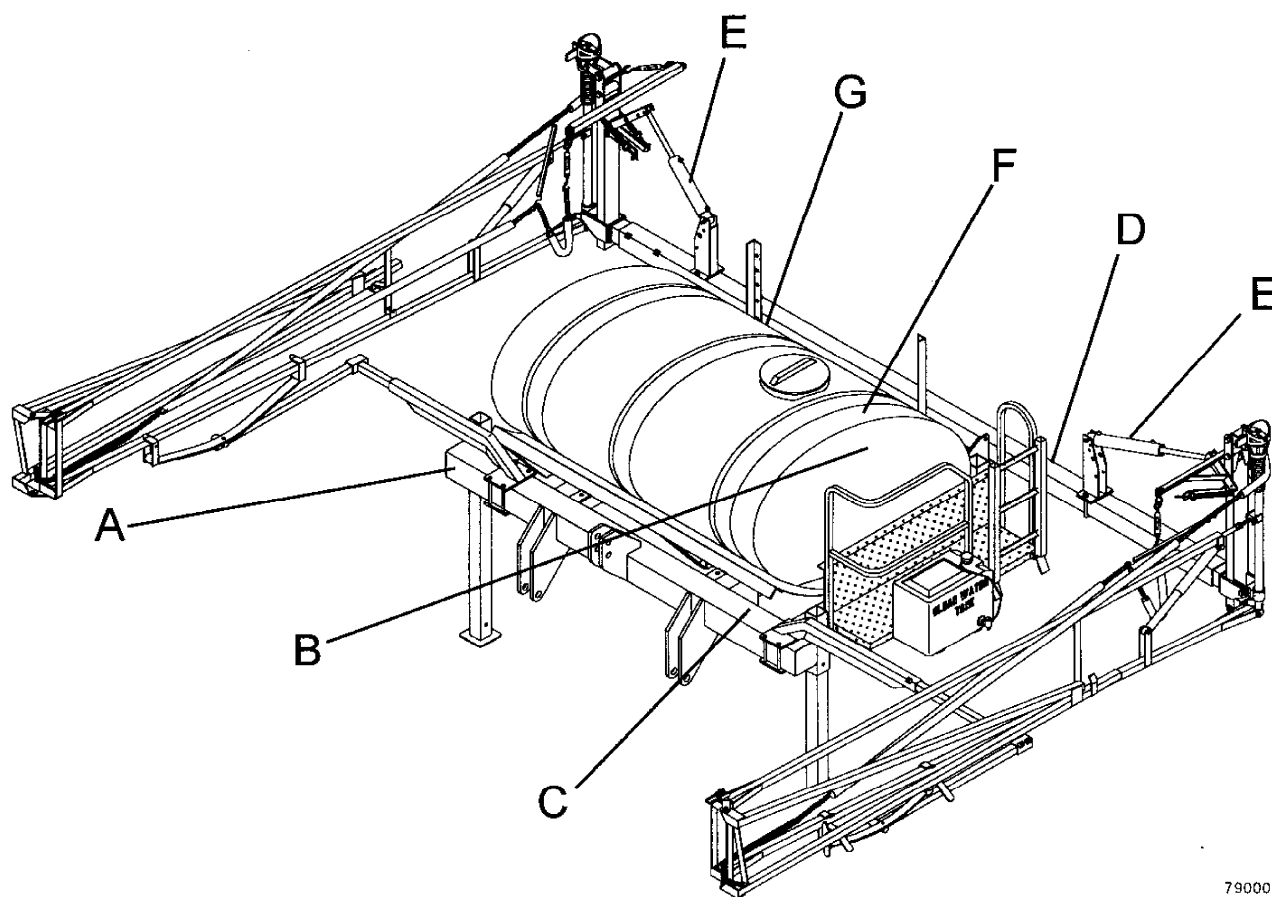
Install new decals if the old decals are destroyed, lost, painted over or cannot be read. When parts are replaced that have decals, be sure you install a new decal with the new part. New decals are available from your dealer or Wil-Rich.

To clean decals, use only a cloth, water and soap. Do not use solvent, gasoline, fuel or other abrasive type materials.

## DECAL LOCATION



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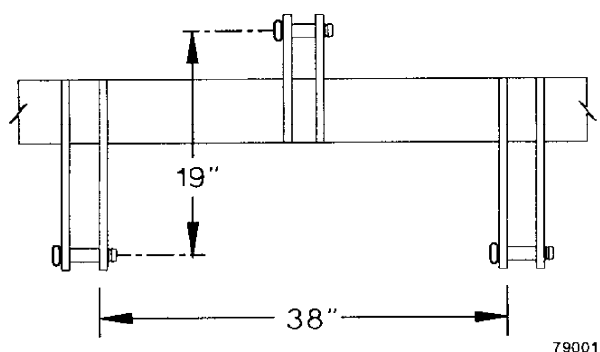


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# GENERAL INFORMATION

## TRACTOR REQUIREMENTS

The tractor must be equipped with a Category III hitch conforming to SAE and ASAE standard dimensions for Category III implements.



The tractor must have sufficient power to pull the sprayer fully loaded at a constant ground speed and engine RPM required for correct chemical application rates under all field conditions.

## WHEEL SPACING

The distance between the centers of the rear tractor wheels should be twice the row width. Wide front adjustable wheels should also be set accordingly.

## TRACTOR BALLASTING

To maintain tractor balance, stability and steering control, it may be necessary to add additional front ballast to compensate for the added weight of 3 Pt hitch mounted sprayer with a full tank. (Refer to your tractor Operator Manual for ballasting recommendations and correct procedures.)

## HYDRAULIC REQUIREMENTS




The tractor hydraulic system can be a CLOSED center or an OPEN center type with at least two remote directional control valve circuits. the hydraulic system must have a minimum capacity of 10 to 12 Gpm (38 to 45 Lpm) at 2000 PSI.

## NEW SPRAYER REQUIREMENTS

The Blumhardt Field Sprayer is delivered setup and field ready except for final adjustments and sprayer calibration that may be required for specific applications. However, it is always a good practice to inspect the machine for any damage, loose hardware or leaks before using the sprayer for the first time.

On new machines, it is important that all nuts, bolts and tank straps be rechecked after the first 8 to 10 hours of operation. If the sprayer is semi-mounted, wheel lug nuts must also be checked to be sure they are tight.

When checking bolts and clamps they must be tightened to the correct torque value according to bolt size and grade as indicated in the following table. When replacing a bolt, use only a bolt of the same grade or higher, except in shear bolt applications where you must use the same grade bolt. Bolts are identified according to grade by radial marking on the bolt head as shown in the chart. All U-bolts are grade 5.

| GRADE 2   |      | GRADE 5   |       | GRADE 8   |        |       |
|---|------|---|-------|---|--------|-------|
|  |      |  |       |  |        |       |
| TORQUE IN FOOT POUNDS   |      |   |       |   |        |       |
| BOLT DIA  | 3/8  | 1/2   | 5/8   | 3/4   | 7/8    | 1     |
| HEX HEAD  | 9/16 | 3/4   | 15/16 | 1-1/8   | 1-5/16 | 1-1/2 |
| UNC GR2   | 18   | 45  | 89    | 160   | 252    | 320   |
| UNC GR5   | 30   | 68  | 140   | 240   | 360    | 544   |
| UNC GR8   | 40   | 100   | 196   | 340   | 528    | 792   |
| UNF GR2   | 21   | 51  | 102   | 178   | 272    | 368   |
| UNF GR5   | 32   | 70  | 168   | 264   | 392    | 572   |
| UNF GR8   | 48   | 112   | 216   | 368   | 792    | 840   |

## APPLICATION RATES

The volume of chemical mixture applied to a given area depends on nozzle flow rate, ground speed of the sprayer and the sprayed width per nozzle. Each variable must be determined when developing calibration procedures.

### Nozzle Flow Rate

Nozzle flow rate varies with nozzle capacity, nature of the fluid and fluid pressure.

### Nozzle Capacity

Select the nozzle that will best fit the requirements of application volume, pressure and ground speed.

### Nature of the Fluid

If the spray mixture will be altered considerably by the addition of adjuvants, compare the flow rate of the spray mixture to that of water. If the flow rate difference is 5% or more, adjust the actual spray mixture in the calibration.

### Fluid Pressure

A constant pressure must be maintained to achieve uniform application. Flow rate is generally proportional to the square root of pressure drop across the nozzle.

### Ground Speed

Spray volume has an inverse relationship to ground speed. Ground speed is the easiest factor to change for minor corrections in application rate. Ground speed must be constant for uniform application.

**NOTE:** *Calibration is not a one time occurrence! Sprayers must be calibrated at the start of the season and recalibrated periodically during the season, particularly when changing chemicals or solutions. Calibration can be done during application if field dimensions are accurately known.*

## DETERMINING TRACTOR GROUND SPEED/TIME

For accurate chemical application rate and optimum spraying results, it is important to maintain a consistent tractor ground speed. Because of wheel slippage and other factors, tractor speedometer readings are not reliable speed indicators at lower travel speeds.

If your tractor is not equipped with a true ground speed indicator or radar horn, use the following procedure to determine ground speed.

1. Fill the sprayer tank at least half full of water.
2. Mark off a distance of 100, 200 or 300 feet in the field to be sprayed.
3. Drive the tractor at a consistent engine speed past the first marker over the test run, record the engine rpm.
4. Record the time required to travel the measured distance.
5. From the Tractor Ground Speed chart (page 12), determine the average actual tractor ground speed. Adjust engine rpm if necessary to arrive at your desired ground speed.

# GENERAL INFORMATION

## TRACTOR GROUND SPEED

| Speed |        | Time in Seconds to Travel |                     |                     | Time to Travel<br>1/2 mi (800 m)<br>(minutes:seconds) |
|-------|--------|---------------------------|---------------------|---------------------|---|
| mph   | (km/h) | 100 Ft.<br>(30.5 m)       | 200 Ft.<br>(61.0 m) | 300 Ft.<br>(91.4 m) |   |
| 3.0   | (4.8)  | 22.7                      | 45.5                | 68.2                | 10:00   |
| 3.4   | (5.0)  | 22.0                      | 44.0                | 66.0                | 9:41  |
| 3.6   | (5.6)  | 19.5                      | 39.0                | 58.4                | 8:34  |
| 3.7   | (6.0)  | 18.4                      | 36.9                | 55.3                | 8:07  |
| 4.0   | (6.4)  | 17.0                      | 34.1                | 51.1                | 7:30  |
| 4.3   | (7.0)  | 15.9                      | 31.7                | 47.6                | 6:59  |
| 4.5   | (7.2)  | 15.2                      | 30.3                | 45.5                | 6:40  |
| 5.0   | (8.0)  | 13.6                      | 27.3                | 40.9                | 6:00  |
| 5.5   | (8.9)  | 12.4                      | 24.8                | 37.2                | 5:27  |
| 5.6   | (9.0)  | 12.2                      | 24.4                | 36.5                | 5:21  |
| 6.0   | (9.7)  | 11.4                      | 22.7                | 34.1                | 5:00  |
| 6.2   | (10.0) | 11.0                      | 22.0                | 33.0                | 4:50  |
| 6.5   | (10.5) | 10.5                      | 21.0                | 31.5                | 4:37  |
| 6.8   | (11.0) | 10.0                      | 20.1                | 30.1                | 4:23  |
| 7.0   | (11.3) | 9.7                       | 19.5                | 29.2                | 4:17  |
| 7.5   | (12.0) | 9.1                       | 18.2                | 27.3                | 4:00  |
| 8.0   | (12.9) | 8.5                       | 17.0                | 25.6                | 3:45  |
| 8.1   | (13.0) | 8.4                       | 16.8                | 25.3                | 3:42  |
| 8.5   | (13.7) | 8.0                       | 16.0                | 24.1                | 3:32  |
| 8.7   | (14.0) | 7.8                       | 15.7                | 23.5                | 3:27  |
| 9.0   | (14.5) | 7.6                       | 15.2                | 22.7                | 3:20  |
| 9.3   | (15.0) | 7.3                       | 14.7                | 22.0                | 3:14  |
| 9.5   | (15.3) | 7.2                       | 14.4                | 21.5                | 3:09  |
| 9.9   | (16.0) | 6.9                       | 13.8                | 20.7                | 3:02  |
| 10.0  | (16.1) | 6.8                       | 13.6                | 20.5                | 3:00  |

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## NOZZLE DELIVERY RATES

The Application Rate metering charts on pages 15 thru 18 are based on water at 8.3 lbs per gallon and 20 and 30 inch nozzle spacings. When spraying solutions that are heavier or lighter than water, multiply the tabulated gallonage figure from the chart by the appropriate conversion factor shown.

| WEIGHT OF SOLUTION           | CONVERSION FACTOR |
|------------------------------|-------------------|
| 7.0 Lbs. per gallon          | 1.09              |
| 8.0 Lbs. per gallon          | 1.02              |
| 8.34 Lbs. per gallon - water | 1                 |
| 9.0 Lbs. per gallon          | 0.96              |
| 10.0 Lbs. per gallon         | 0.91              |
| 11.0 Lbs. per gallon         | 0.87              |
| 12.0 Lbs per gallon          | 0.83              |

**NOTE:** This table is based on theoretical solution densities only and may vary in actual practice because of differing solution characteristics.

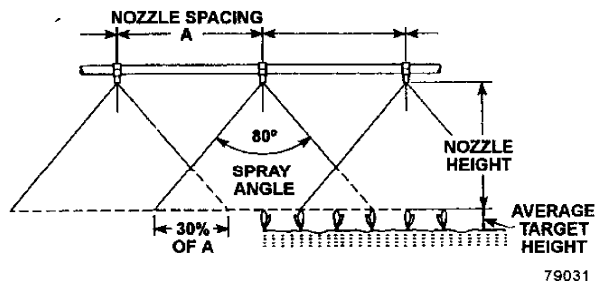


**CAUTION:** To insure personal safety, never add chemicals to the sprayer when performing nozzle flow checks. Whenever possible, avoid working with active chemical. Always follow chemical manufacturers label directions when working with chemicals.

## GENERAL INFORMATION

### Suggested Minimum spray Heights

Adjust spray height in the field to overlap approximately 30% of each edge of spray pattern.



| Nozzle Type         | Nozzle Height |             |             |
|---------------------|---------------|-------------|-------------|
|                     | Spray Angle   | 20" Spacing | 30" Spacing |
| TeeJet (Flat Spray) | 65°           | 22-24"      | 33-35"      |
| TeeJet, XR TeeJet   | 80°           | 17-19"      | 26-28"      |
| TeeJet, XR TeeJet   | 100°          | 15-18"      | 20-22"      |

### Blumhardt Nozzles

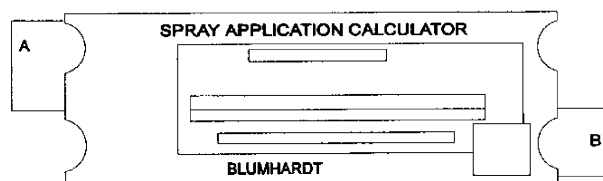
| RECOMMENDED SPRAY HEIGHTS |             |
|---------------------------|-------------|
| 20" SPACING               | 30" SPACING |
| 20" TO 40"                | 30" TO 40"  |

**IMPORTANT:** For uniform spray patterns and even application rates, always inspect all spray tips to be sure they are identical. Never mix spray tips.

# GENERAL INFORMATION

## CALIBRATION

After the nozzles have been calibrated, the entire system must be calibrated. The spray tip metering charts must be used to get an approximate application rate for choosing proper tip size. Once you have the desired tip installed in the sprayer, it will be necessary to calibrate the sprayer to get an exact rate. Use the calibration bottle, and spray application calculator, for this purpose. If not available use the method described.



CL-78013

### Calibration instructions without Blumhardt bottle and calculator.

**Equipment:** A bottle with 1 ounce graduations on it, a watch with a second hand, pencil, paper and calculator.

**Procedure:** Determine desired gallons per acre and speed in miles per hour. Choose a level in graduated bottle, any level can be used however greater accuracy exists by using a higher level. Figure from the equation the amount of seconds it should take to fill the bottle to the desired number of ounces in the calculated amount of time.

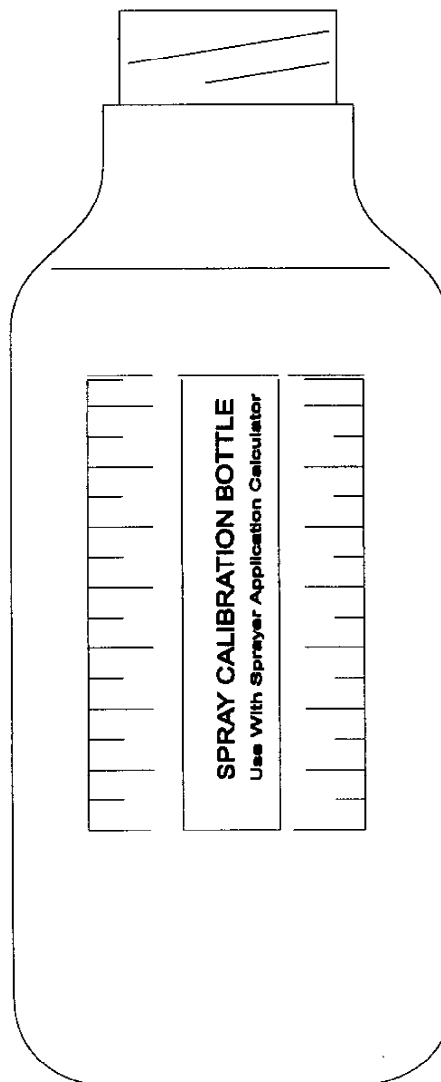
### Equation:

$$\text{Seconds} = \frac{2589 \times \text{level (liquid ounces)}}{\text{MPH} \times \text{gal. per acre} \times \text{nozzle spacing}}$$

Example: Determine 10 gallons per acre, 5 miles per hour speed of travel, 30" nozzle spacing and 8 ounces to be collected.

$$\frac{2598 \times 8}{5 \times 10 \times 30} = 13.808 \text{ seconds}$$

It should take 13.8 seconds to fill the bottle to 8 ounces.



CL-78014

## CAUTION

Agricultural chemicals can be dangerous. Improper selection of use can seriously injure persons, animals, plants, soil or other property. **BE SAFE.** Select the right chemical for the job. Handle it with care. Follow the instructions on the container label and instructions from the equipment manufacturer.

58005

# GENERAL INFORMATION

## BLUMHARDT HOLLOW CONE SPRAY TIP METERING CHART (Gallons Per Acre)

| CONE TIP     | PSI | GPM   | 20" SPACING |       |       |       |        |        | 30" SPACING |       |       |       |        |        |
|--------------|-----|-------|-------------|-------|-------|-------|--------|--------|-------------|-------|-------|-------|--------|--------|
|              |     |       | 4 MPH       | 5 MPH | 6 MPH | 8 MPH | 10 MPH | 14 MPH | 4 MPH       | 5 MPH | 6 MPH | 8 MPH | 10 MPH | 14 MPH |
| 45680 RED    | 40  | 0.044 | 3.3         | 2.8   | 2.2   | 1.8   | 1.3    | 0.9    | 2.2         | 1.8   | 1.5   | 1.1   | 0.8    | 0.6    |
|              | 60  | 0.052 | 3.9         | 3.1   | 2.6   | 1.9   | 1.6    | 1.1    | 2.6         | 2.1   | 1.7   | 1.3   | 1      | 0.7    |
|              | 80  | 0.061 | 4.6         | 3.7   | 3     | 2.3   | 1.8    | 1.3    | 3           | 2.4   | 2     | 1.5   | 1.2    | 0.9    |
|              | 100 | 0.073 | 5.4         | 4.3   | 3.6   | 2.7   | 2.2    | 1.5    | 3.6         | 2.9   | 2.4   | 1.8   | 1.4    | 1      |
| 45681 WHITE  | 40  | 0.059 | 4.4         | 3.6   | 2.9   | 2.2   | 1.7    | 1.2    | 2.9         | 2.3   | 1.9   | 1.5   | 1.2    | 0.8    |
|              | 60  | 0.071 | 5.3         | 4.2   | 3.5   | 2.7   | 2.1    | 1.5    | 3.5         | 2.8   | 2.4   | 1.8   | 1.4    | 1      |
|              | 80  | 0.084 | 6.3         | 5     | 4.2   | 3.1   | 2.5    | 1.8    | 4.2         | 3.4   | 2.8   | 2.1   | 1.7    | 1.2    |
|              | 100 | 0.098 | 7.3         | 5.9   | 4.9   | 3.7   | 2.9    | 2.1    | 4.9         | 3.9   | 3.3   | 2.4   | 2      | 1.4    |
| 45682 BLUE   | 40  | 0.082 | 6.1         | 4.9   | 4.1   | 3.1   | 2.6    | 1.8    | 4.1         | 3.3   | 2.7   | 2     | 1.6    | 1.2    |
|              | 60  | 0.108 | 8           | 6.4   | 5.3   | 4     | 3.2    | 2.3    | 5.4         | 4.3   | 3.6   | 2.7   | 2.1    | 1.5    |
|              | 80  | 0.124 | 9.2         | 7.4   | 6.2   | 4.8   | 3.7    | 2.6    | 6.2         | 4.9   | 4.1   | 3.1   | 2.5    | 1.8    |
|              | 100 | 0.14  | 10.4        | 8.3   | 7     | 5.2   | 4.2    | 3      | 7           | 5.6   | 4.6   | 3.5   | 2.8    | 2      |
| 45683 GREEN  | 40  | 0.12  | 8.9         | 7.2   | 6     | 4.5   | 3.6    | 2.6    | 6           | 4.8   | 4     | 3     | 2.4    | 1.7    |
|              | 60  | 0.154 | 11.5        | 9.2   | 7.7   | 5.7   | 4.6    | 3.3    | 7.7         | 6.1   | 5.1   | 3.8   | 3.1    | 2.2    |
|              | 80  | 0.18  | 13.5        | 10.8  | 9     | 6.7   | 5.4    | 3.8    | 9           | 7.2   | 6     | 4.6   | 3.6    | 2.6    |
|              | 100 | 0.203 | 15.2        | 12.1  | 10.1  | 7.6   | 6.1    | 4.3    | 10.1        | 8.1   | 6.7   | 5.1   | 4      | 2.9    |
| 45684 YELLOW | 40  | 0.148 | 11          | 8.8   | 7.4   | 5.5   | 4.4    | 3.2    | 7.4         | 5.9   | 4.9   | 3.7   | 2.9    | 2.1    |
|              | 60  | 0.179 | 13.3        | 10.7  | 8.9   | 6.7   | 5.3    | 3.8    | 8.9         | 7.1   | 5.9   | 4.4   | 3.6    | 2.5    |
|              | 80  | 0.217 | 16.2        | 12.9  | 10.8  | 8.1   | 6.5    | 4.6    | 10.8        | 8.6   | 7.2   | 5.4   | 4.3    | 3.1    |
|              | 100 | 0.271 | 20.2        | 16.2  | 13.5  | 10.1  | 8.1    | 5.8    | 13.5        | 10.8  | 9     | 6.7   | 5.4    | 3.8    |
| 45685 PURPLE | 40  | 0.205 | 15.3        | 12.2  | 10.2  | 7.8   | 6.1    | 4.4    | 10.2        | 8.2   | 6.8   | 5.1   | 4.1    | 2.9    |
|              | 60  | 0.252 | 18.8        | 15    | 12.5  | 9.4   | 7.5    | 5.4    | 12.5        | 10    | 8.4   | 6.3   | 5      | 3.6    |
|              | 80  | 0.306 | 22.6        | 18.3  | 15.2  | 11.4  | 9.3    | 6.6    | 15.2        | 12.2  | 10.1  | 7.6   | 6.1    | 4.3    |
|              | 100 | 0.372 | 27.7        | 22.2  | 18.5  | 13.9  | 11.1   | 7.9    | 18.5        | 14.8  | 12.3  | 9.2   | 7.4    | 5.3    |
| 45686 BLACK  | 40  | 0.286 | 21.3        | 17.1  | 14.2  | 10.7  | 8.5    | 6.1    | 14.2        | 11.4  | 9.5   | 7.1   | 5.7    | 4.1    |
|              | 60  | 0.372 | 27.7        | 22.2  | 18.5  | 13.9  | 11.1   | 7.9    | 18.5        | 14.8  | 12.3  | 9.2   | 7.4    | 5.3    |
|              | 80  | 0.448 | 33          | 26.4  | 22    | 16.5  | 13.2   | 9.4    | 22          | 17.6  | 14.7  | 11    | 8.8    | 6.3    |
|              | 100 | 0.504 | 37.6        | 30.1  | 25.1  | 18.8  | 15     | 10.7   | 25.1        | 20    | 16.7  | 12.5  | 10     | 7.2    |
| 45687 PINK   | 40  | 0.386 | 29.5        | 23.6  | 19.7  | 14.8  | 11.8   | 8.4    | 19.7        | 15.8  | 13.1  | 9.8   | 7.9    | 5.6    |
|              | 60  | 0.497 | 37.1        | 29.6  | 24.7  | 18.5  | 14.8   | 10.6   | 24.7        | 19.8  | 16.5  | 12.4  | 9.9    | 7.1    |
|              | 80  | 0.6   | 44.8        | 35.8  | 29.8  | 22.4  | 17.9   | 12.8   | 29.8        | 23.9  | 19.9  | 14.9  | 11.9   | 8.5    |
|              | 100 | 0.706 | 52.7        | 42.1  | 35.1  | 26.3  | 21.1   | 15.1   | 35.1        | 28.1  | 23.4  | 17.6  | 14     | 10     |
| 45688 BROWN  | 40  | 0.488 | 36.4        | 29.1  | 24.3  | 18.2  | 14.6   | 10.4   | 24.3        | 19.4  | 16.2  | 12.1  | 9.7    | 6.9    |
|              | 60  | 0.63  | 47          | 37.6  | 31.3  | 23.5  | 18.8   | 13.4   | 31.3        | 25.1  | 20.9  | 15.7  | 12.5   | 9      |
|              | 80  | 0.783 | 58.9        | 45.5  | 37.9  | 28.4  | 22.8   | 16.3   | 37.9        | 30.3  | 25.3  | 19    | 15.2   | 10.8   |
|              | 100 | 0.844 | 62.9        | 50.4  | 42    | 31.5  | 25.2   | 18     | 42          | 33.6  | 28    | 21    | 16.8   | 12     |
| 45689 ORANGE | 40  | 0.635 | 47.4        | 37.9  | 31.6  | 23.7  | 19     | 13.5   | 31.6        | 25.3  | 21.1  | 15.8  | 12.6   | 9      |
|              | 60  | 0.828 | 61.8        | 49.4  | 41.2  | 30.9  | 24.7   | 17.7   | 41.2        | 32.9  | 27.5  | 20.6  | 16.5   | 11.8   |
|              | 80  | 0.969 | 72.3        | 57.8  | 48.2  | 36.1  | 28.9   | 20.6   | 48.2        | 38.5  | 32.1  | 24.1  | 19.3   | 13.8   |
|              | 100 | 1.18  | 88          | 70.4  | 58.7  | 44    | 35.2   | 25.1   | 58.7        | 46.9  | 39.1  | 29.3  | 23.5   | 16.8   |
| 45690 OLIVE  | 40  | 0.797 | 59.4        | 47.6  | 39.6  | 29.7  | 23.8   | 17     | 39.6        | 31.7  | 26.4  | 19.8  | 15.9   | 11.3   |
|              | 60  | 1.02  | 75.8        | 60.6  | 50.5  | 37.9  | 30.3   | 21.6   | 50.5        | 40.4  | 33.7  | 25.3  | 20.2   | 14.4   |
|              | 80  | 1.21  | 90.3        | 72.3  | 60.2  | 46.2  | 36.1   | 25.8   | 60.2        | 48.2  | 40.1  | 30.1  | 24.1   | 17.2   |
|              | 100 | 1.34  | 100.2       | 80.2  | 66.8  | 50.1  | 40.1   | 28.6   | 66.8        | 53.5  | 44.6  | 33.4  | 26.7   | 19.1   |

# GENERAL INFORMATION

## D-TYPE FLOOD TIP METERING CHART: WATER

| Flood Tip                   | PSI | GPM  | 20" SPACING |       |       |        |        | 30" SPACING |       |       |        |        |
|-----------------------------|-----|------|-------------|-------|-------|--------|--------|-------------|-------|-------|--------|--------|
|                             |     |      | 4 MPH       | 5 MPH | 6 MPH | 10 MPH | 15 MPH | 4 MPH       | 5 MPH | 6 MPH | 10 MPH | 15 MPH |
| D 2.5<br>45767<br>DARK BLUE | 10  | 0.25 | 18.6        | 14.85 | 12.46 | 7.5    | 4.95   | 12.4        | 9.9   | 8.3   | 5      | 3.3    |
|                             | 20  | 0.35 | 26.3        | 21    | 17.5  | 10.5   | 7      | 17.5        | 14    | 11.7  | 7      | 4.7    |
|                             | 30  | 0.43 | 32.1        | 26.7  | 21.4  | 12.8   | 8.6    | 21.4        | 17.1  | 14.3  | 8.6    | 5.7    |
|                             | 40  | 0.5  | 37.1        | 29.7  | 24.8  | 14.9   | 9.9    | 24.8        | 19.8  | 16.5  | 9.9    | 6.6    |
| D3<br>45768<br>DARK GREEN   | 10  | 0.3  | 22.35       | 17.85 | 14.85 | 8.66   | 6      | 14.9        | 11.9  | 9.9   | 5.9    | 4      |
|                             | 20  | 0.42 | 31.5        | 25.2  | 21    | 12.6   | 8.4    | 21          | 16.8  | 14    | 8.4    | 5.6    |
|                             | 30  | 0.52 | 39          | 31.2  | 26    | 15.6   | 10.4   | 26          | 20.8  | 17.3  | 10.4   | 6.9    |
|                             | 40  | 0.6  | 45          | 36    | 30    | 18     | 12     | 30          | 24    | 20    | 12     | 8      |
| D5<br>45769<br>TAN          | 10  | 0.5  | 37.5        | 29.7  | 24.75 | 14.85  | 9.9    | 25          | 19.6  | 16.5  | 9.9    | 6.6    |
|                             | 20  | 0.71 | 52.5        | 42    | 35    | 21     | 14     | 35          | 28    | 23.3  | 14     | 9.3    |
|                             | 30  | 0.87 | 64.5        | 51.6  | 43    | 25.8   | 17.2   | 43          | 34.4  | 28.7  | 17.2   | 11.6   |
|                             | 40  | 1    | 75          | 60    | 50    | 30     | 20     | 50          | 40    | 33.3  | 20     | 13.3   |
| D7<br>45770<br>LIGHT BLUE   | 10  | 0.75 | 56.5        | 45    | 37.5  | 22.35  | 14.85  | 37          | 30    | 25    | 14.9   | 9.9    |
|                             | 20  | 1.1  | 78.8        | 63    | 52.5  | 31.5   | 21     | 52.5        | 42    | 35    | 21     | 14     |
|                             | 30  | 1.3  | 96.2        | 76.9  | 64.1  | 38.5   | 25.6   | 64.1        | 51.3  | 42.7  | 25.6   | 17.7   |
|                             | 40  | 1.5  | 111         | 88.8  | 74    | 44.4   | 29.6   | 74          | 59.2  | 49.3  | 29.6   | 19.7   |
| D10<br>45766<br>LIGHT GREEN | 10  | 1    | 75          | 60    | 49.5  | 29.7   | 19.8   | 50          | 40    | 33    | 19.8   | 13.2   |
|                             | 20  | 1.4  | 105         | 84    | 70    | 42     | 28     | 70          | 56    | 46.7  | 28     | 18.7   |
|                             | 30  | 1.74 | 129.3       | 103.5 | 85.2  | 51.7   | 34.5   | 86.2        | 69    | 57.5  | 34.5   | 23     |
|                             | 40  | 2    | 148.5       | 118.8 | 99    | 59.4   | 39.6   | 99          | 79.2  | 66    | 39.6   | 26.4   |



# GENERAL INFORMATION

## D-TYPE FLOOD TIP METERING CHART: FERTILIZER

| FLOOD TIP     | PSI | GPM   | 20' SPACING |       |       |       |        |        | 30' SPACING |       |       |       |        |        |
|---------------|-----|-------|-------------|-------|-------|-------|--------|--------|-------------|-------|-------|-------|--------|--------|
|               |     |       | 4 MPH       | 5 MPH | 6 MPH | 8 MPH | 10 MPH | 14 MPH | 4 MPH       | 5 MPH | 6 MPH | 8 MPH | 10 MPH | 14 MPH |
| D 25<br>45767 | 20  | 0.221 | 15.4        | 13.1  | 10.9  | 8.2   | 6.6    | 4.7    | 10.9        | 8.8   | 7.3   | 5.6   | 4.4    | 3.1    |
|               | 25  | 0.259 | 19.3        | 15.4  | 12.8  | 9.6   | 7.7    | 5.5    | 12.8        | 10.3  | 8.6   | 6.4   | 5.1    | 3.7    |
|               | 30  | 0.302 | 22.4        | 17.9  | 15    | 11.2  | 9      | 6.4    | 15          | 12    | 10    | 7.5   | 6      | 4.3    |
|               | 35  | 0.344 | 25.5        | 20.4  | 17    | 12.8  | 10.2   | 7.3    | 17          | 13.6  | 11.3  | 8.5   | 6.8    | 4.9    |
| D 3<br>45768  | 20  | 0.281 | 21          | 18.8  | 14    | 10.5  | 8.4    | 6      | 14          | 11.2  | 9.3   | 7     | 5.6    | 4      |
|               | 25  | 0.341 | 25.4        | 20.3  | 16.9  | 12.7  | 10.2   | 7.3    | 16.9        | 13.6  | 11.3  | 8.5   | 6.8    | 4.8    |
|               | 30  | 0.392 | 29.2        | 23.4  | 19.5  | 14.6  | 11.7   | 8.4    | 19.5        | 15.6  | 13    | 9.7   | 7.8    | 5.6    |
|               | 35  | 0.436 | 32.5        | 26    | 21.7  | 16.3  | 13     | 9.3    | 21.7        | 17.3  | 14.5  | 10.8  | 8.7    | 6.2    |
| D 5<br>45769  | 20  | 0.48  | 35.8        | 28.7  | 23.9  | 17.9  | 14.3   | 10.2   | 23.9        | 19.1  | 15.9  | 11.9  | 9.6    | 6.8    |
|               | 25  | 0.591 | 44.1        | 35.2  | 29.4  | 22    | 17.6   | 12.6   | 29.4        | 23.5  | 19.6  | 14.7  | 11.7   | 8.4    |
|               | 30  | 0.681 | 50.8        | 40.7  | 33.9  | 25.4  | 20.3   | 14.5   | 33.9        | 27.1  | 22.6  | 16.9  | 13.6   | 9.7    |
|               | 35  | 0.759 | 56.7        | 45.3  | 37.8  | 28.3  | 22.7   | 16.2   | 37.8        | 30.2  | 25.2  | 18.9  | 15.1   | 10.8   |
| D 7<br>45770  | 20  | 0.665 | 49.4        | 39.5  | 32.9  | 24.7  | 19.7   | 14.1   | 32.9        | 26.3  | 21.9  | 16.5  | 13.2   | 9.4    |
|               | 25  | 0.766 | 56.8        | 45.5  | 37.9  | 28.4  | 22.7   | 16.2   | 37.9        | 30.3  | 25.3  | 18.9  | 15.2   | 10.8   |
|               | 30  | 0.896 | 66.5        | 53.2  | 44.3  | 33.2  | 26.6   | 19     | 44.3        | 36.5  | 29.6  | 22.2  | 17.7   | 12.7   |
|               | 35  | 0.969 | 71.9        | 57.6  | 48    | 36    | 28.8   | 20.6   | 48          | 38.4  | 32    | 24    | 19.2   | 13.7   |
| D 10<br>45766 | 20  | 1.14  | 84.6        | 67.7  | 56.4  | 42.3  | 33.9   | 24.2   | 56.4        | 45.1  | 37.6  | 28.2  | 22.6   | 16.1   |
|               | 25  | 1.24  | 92.1        | 73.7  | 61.4  | 46    | 36.8   | 26.3   | 61.4        | 49.1  | 40.9  | 30.7  | 24.6   | 17.5   |
|               | 30  | 1.34  | 99.6        | 79.8  | 66.5  | 49.9  | 39.9   | 28.5   | 66.5        | 53.2  | 44.4  | 33.3  | 26.6   | 19     |
|               | 35  | 1.47  | 109.1       | 87.3  | 72.8  | 54.6  | 43.7   | 31.2   | 72.8        | 58.2  | 48.5  | 36.4  | 29.1   | 20.8   |

# GENERAL INFORMATION

## TEEJET METERING CHART

### Extended Range Flat Spray Tips

| Tip Color | Tip No.<br>(Strainer Screen Size) |                        | Liquid Pressure<br>in psi | Capacity<br>1 Nozzle<br>in GPM | Capacity<br>1 Nozzle<br>in oz./min. | Gallons Per Acre<br>20' spacing |       |       |       | Gallons Per Acre<br>30' spacing |       |       |       |
|-----------|-----------------------------------|------------------------|---------------------------|--------------------------------|-------------------------------------|---------------------------------|-------|-------|-------|---------------------------------|-------|-------|-------|
|           | 80' Series                        | 100' Series            |                           |                                |                                     | 5 mph                           | 6 mph | 7 mph | 8 mph | 5 mph                           | 6 mph | 7 mph | 8 mph |
| ORANGE    | XR8001<br>(100 Mesh)              | XR11001<br>(100 Mesh)  | 15                        | .06                            | 8                                   | 3.6                             | 3.0   | 2.5   | 2.2   | 2.4                             | 2.0   | 1.7   | 1.5   |
|           |                                   |                        | 20                        | .07                            | 9                                   | 4.2                             | 3.5   | 3.0   | 2.8   | 2.8                             | 2.3   | 2.0   | 1.7   |
|           |                                   |                        | 30                        | .09                            | 12                                  | 5.3                             | 4.5   | 3.8   | 3.6   | 3.6                             | 3.0   | 2.5   | 2.2   |
|           |                                   |                        | 40                        | .10                            | 13                                  | 5.9                             | 5.0   | 4.2   | 4.0   | 4.0                             | 3.3   | 2.8   | 2.5   |
|           |                                   |                        | 60                        | .12                            | 15                                  | 7.1                             | 5.9   | 5.1   | 4.8   | 4.8                             | 4.0   | 3.4   | 3.0   |
| GREEN     | XR8001S<br>(100 Mesh)             | XR11001S<br>(100 Mesh) | 15                        | .09                            | 12                                  | 5.3                             | 4.5   | 3.8   | 3.6   | 3.6                             | 3.0   | 2.5   | 2.2   |
|           |                                   |                        | 20                        | .11                            | 14                                  | 6.5                             | 5.4   | 4.7   | 4.4   | 4.4                             | 3.6   | 3.1   | 2.7   |
|           |                                   |                        | 30                        | .13                            | 17                                  | 7.7                             | 6.4   | 5.5   | 4.8   | 5.1                             | 4.3   | 3.7   | 3.2   |
|           |                                   |                        | 40                        | .15                            | 19                                  | 8.9                             | 7.4   | 6.4   | 5.6   | 6.0                             | 5.0   | 4.2   | 3.7   |
|           |                                   |                        | 60                        | .18                            | 23                                  | 10.7                            | 8.9   | 7.6   | 6.7   | 7.1                             | 5.9   | 5.1   | 4.5   |
| YELLOW    | XR8002<br>(50 Mesh)               | XR11002<br>(50 Mesh)   | 15                        | .12                            | 15                                  | 7.1                             | 5.9   | 5.1   | 4.5   | 4.8                             | 4.0   | 3.4   | 3.0   |
|           |                                   |                        | 20                        | .14                            | 18                                  | 8.3                             | 6.9   | 5.9   | 5.2   | 5.5                             | 4.6   | 4.0   | 3.5   |
|           |                                   |                        | 30                        | .17                            | 22                                  | 10.1                            | 8.4   | 7.2   | 6.3   | 6.7                             | 5.6   | 4.8   | 4.2   |
|           |                                   |                        | 40                        | .20                            | 26                                  | 11.9                            | 9.9   | 8.5   | 7.4   | 7.9                             | 6.6   | 5.7   | 5.0   |
|           |                                   |                        | 60                        | .24                            | 31                                  | 14.3                            | 11.9  | 10.2  | 8.9   | 9.5                             | 7.9   | 6.8   | 5.9   |
| BLUE      | XR8003<br>(50 Mesh)               | XR11003<br>(50 Mesh)   | 15                        | .18                            | 23                                  | 10.7                            | 8.9   | 7.6   | 6.7   | 7.1                             | 5.9   | 5.1   | 4.5   |
|           |                                   |                        | 20                        | .21                            | 27                                  | 12.5                            | 10.4  | 8.9   | 7.8   | 8.3                             | 6.9   | 5.9   | 5.2   |
|           |                                   |                        | 30                        | .25                            | 33                                  | 15.4                            | 12.9  | 11.0  | 9.7   | 10.3                            | 8.6   | 7.4   | 6.4   |
|           |                                   |                        | 40                        | .30                            | 38                                  | 17.8                            | 14.9  | 12.7  | 11.1  | 11.9                            | 9.9   | 8.5   | 7.4   |
|           |                                   |                        | 60                        | .37                            | 47                                  | 22                              | 18.3  | 15.7  | 13.7  | 14.7                            | 12.2  | 10.5  | 9.2   |
| RED       | XR8004<br>(50 Mesh)               | XR11004<br>(50 Mesh)   | 15                        | .24                            | 31                                  | 14.3                            | 11.9  | 10.2  | 8.9   | 9.5                             | 7.9   | 6.8   | 5.9   |
|           |                                   |                        | 20                        | .28                            | 36                                  | 16.6                            | 13.9  | 11.9  | 10.4  | 11.1                            | 9.2   | 7.9   | 6.9   |
|           |                                   |                        | 30                        | .35                            | 45                                  | 21                              | 17.3  | 14.9  | 13.0  | 13.9                            | 11.6  | 9.9   | 8.7   |
|           |                                   |                        | 40                        | .40                            | 51                                  | 24                              | 19.8  | 17.0  | 14.9  | 15.8                            | 13.2  | 11.3  | 9.9   |
|           |                                   |                        | 60                        | .49                            | 63                                  | 29                              | 24    | 21    | 18.2  | 19.4                            | 16.2  | 13.9  | 12.1  |
| BROWN     | XR8005<br>(50 Mesh)               | XR11005<br>(50 Mesh)   | 15                        | .31                            | 40                                  | 18.4                            | 15.3  | 13.2  | 11.5  | 12.3                            | 10.2  | 8.8   | 7.7   |
|           |                                   |                        | 20                        | .35                            | 45                                  | 21                              | 17.3  | 14.9  | 13.0  | 13.9                            | 11.6  | 9.9   | 8.7   |
|           |                                   |                        | 30                        | .43                            | 55                                  | 25                              | 21    | 18.2  | 16.0  | 17.0                            | 14.2  | 12.2  | 10.6  |
|           |                                   |                        | 40                        | .50                            | 64                                  | 30                              | 25    | 21    | 18.6  | 20                              | 16.5  | 14.1  | 12.4  |
|           |                                   |                        | 60                        | .61                            | 78                                  | 36                              | 30    | 25    | 23    | 24                              | 20    | 17.3  | 15.1  |
| GRAY      | XR8006<br>(50 Mesh)               | XR11006<br>(50 Mesh)   | 15                        | .37                            | 47                                  | 22                              | 18.3  | 15.7  | 13.7  | 14.7                            | 12.2  | 10.5  | 9.2   |
|           |                                   |                        | 20                        | .42                            | 54                                  | 25                              | 21    | 17.8  | 15.6  | 16.6                            | 13.9  | 11.9  | 10.4  |
|           |                                   |                        | 30                        | .52                            | 67                                  | 31                              | 26    | 22    | 19.3  | 21                              | 17.2  | 14.7  | 12.9  |
|           |                                   |                        | 40                        | .60                            | 77                                  | 36                              | 30    | 25    | 22    | 24                              | 20    | 17.0  | 14.9  |
|           |                                   |                        | 60                        | .73                            | 93                                  | 43                              | 36    | 31    | 27    | 29                              | 24    | 21    | 18.1  |
| WHITE     | XR8008<br>(50 Mesh)               | XR11008<br>(50 Mesh)   | 15                        | .49                            | 63                                  | 29                              | 24    | 21    | 18.2  | 19.4                            | 16.2  | 13.9  | 12.1  |
|           |                                   |                        | 20                        | .57                            | 73                                  | 34                              | 28    | 24    | 21    | 23                              | 18.8  | 16.1  | 14.1  |
|           |                                   |                        | 30                        | .69                            | 88                                  | 41                              | 34    | 29    | 26    | 27                              | 23    | 20    | 17.1  |
|           |                                   |                        | 40                        | .80                            | 102                                 | 48                              | 40    | 34    | 30    | 32                              | 26    | 23    | 20    |
|           |                                   |                        | 60                        | .96                            | 125                                 | 58                              | 48    | 42    | 36    | 38                              | 32    | 28    | 24    |
|           | XR8010SS                          | XR11010SS              | 15                        | .61                            | 78                                  | 36                              | 30    | 26    | 23    | 24                              | 20    | 17.3  | 15.1  |
|           |                                   |                        | 20                        | .71                            | 91                                  | 42                              | 35    | 30    | 26    | 28                              | 23    | 20    | 17.6  |
|           |                                   |                        | 30                        | .87                            | 111                                 | 52                              | 43    | 37    | 32    | 34                              | 29    | 25    | 22    |
|           |                                   |                        | 40                        | 1.00                           | 128                                 | 59                              | 50    | 42    | 37    | 40                              | 33    | 28    | 25    |
|           |                                   |                        | 60                        | 1.22                           | 156                                 | 72                              | 60    | 52    | 45    | 48                              | 40    | 35    | 30    |
|           | XR8015SS                          | XR11015SS              | 15                        | .92                            | 118                                 | 55                              | 46    | 39    | 34    | 36                              | 30    | 26    | 23    |
|           |                                   |                        | 20                        | 1.06                           | 136                                 | 63                              | 52    | 45    | 39    | 42                              | 36    | 30    | 26    |
|           |                                   |                        | 30                        | 1.30                           | 166                                 | 77                              | 64    | 55    | 48    | 51                              | 43    | 37    | 32    |
|           |                                   |                        | 40                        | 1.60                           | 192                                 | 89                              | 74    | 64    | 56    | 59                              | 50    | 42    | 37    |
|           |                                   |                        | 60                        | 1.84                           | 236                                 | 109                             | 91    | 78    | 68    | 73                              | 61    | 52    | 46    |

# OPERATING INFORMATION

## HITCHING TO THE TRACTOR

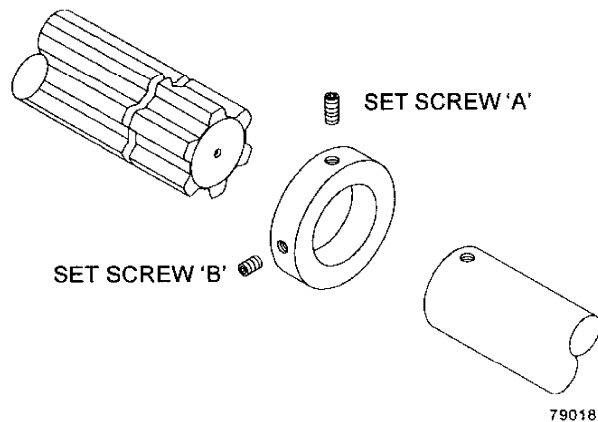
The sprayer is connected to the tractor 3 Pt hitch. The sprayer may be connected directly to the hitch linkage or to a hitch quick-coupler.

The tractor hitch **must** be adjusted to lock out sway when the hitch is raised to the transport position. when the hitch is in the operating position, the hitch must be adjusted to allow side to side (sway) movement.

Most tractors have an adjustment on the hitch lift links that will allow each lift link to FLOAT a small amount independently of each other. This adjustment should be made to allow the lift links some vertical movement in uneven ground conditions (Refer to your tractor Operator Manual for exact hitching and adjusting procedures.)

## PTO DRIVEN PUMP MOUNTING (IF EQUIPPED)

The 9000C pump must be installed on the tractor PTO shaft using a locking collar kit to hold the pump driveshaft securely on the tractor PTO shaft. To install the centrifugal pump and locking collar use the following procedures:



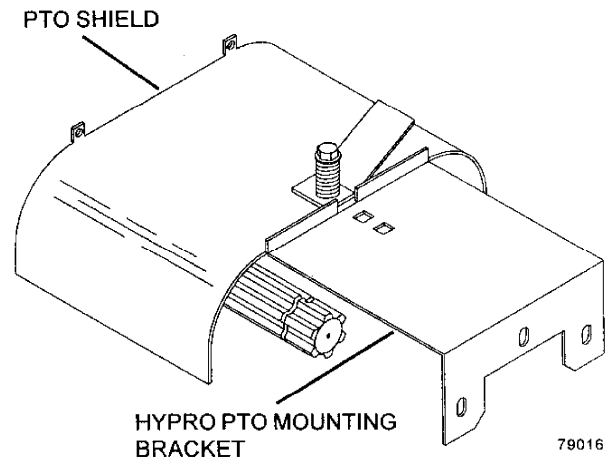
1. Slide the collar on the pump drive shaft.

2. Thread the longer set screw "A" through the locking collar and partially through the threaded hole in the pump drive shaft.

**IMPORTANT:** Allow a minimum of 1/8 inch clearance between the locking collar and pump drive shaft at set screw "A".

3. Thread the shorter set screw "B" into the opposite threaded hole in the locking collar.
4. Slide the pump driveshaft over the PTO shaft. Be sure the groove in the PTO shaft is aligned under set screw "A".
5. Tighten set screw "A" very securely using a 3/16 inch Allen wrench.
6. Tighten set screw "B" securely with the same wrench. This will bind set screw "A" to prevent it from coming loose.

**NOTE:** The locking collar is off-center on the pump driveshaft when properly installed.

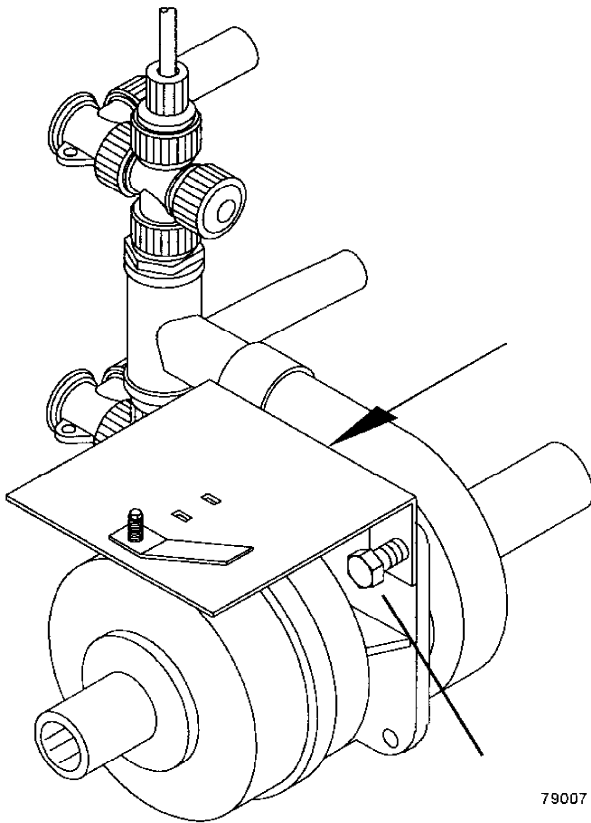


The pump must be secured to the tractor using the Hypro PTO Pump Mounting Bracket, which is designed to accommodate most tractor PTO shields. When installed correctly, the bracket prevents the pump from rotating, reduces the weight on the pump driveshaft, and in most cases replaces the need for a torque chain and provides additional shielding.

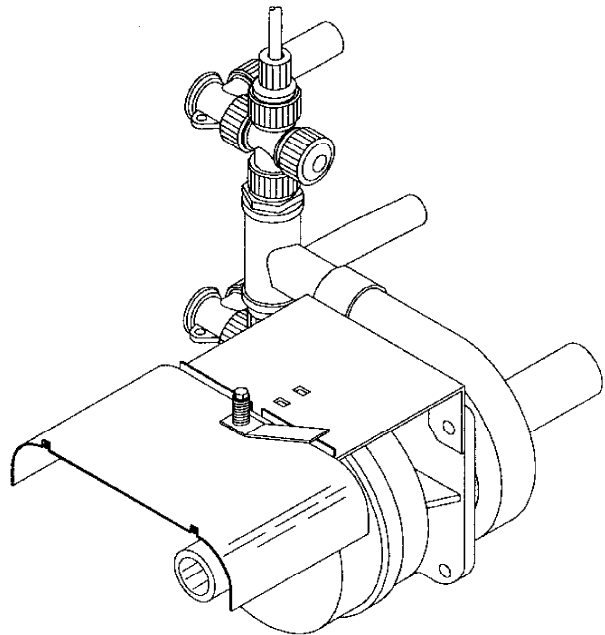
# OPERATING INFORMATION

To install the pump mounting bracket do the following:

**IMPORTANT:** *The tractor PTO shield must not be bent or damaged. If bent or damaged, repair or replace the shield if required.*



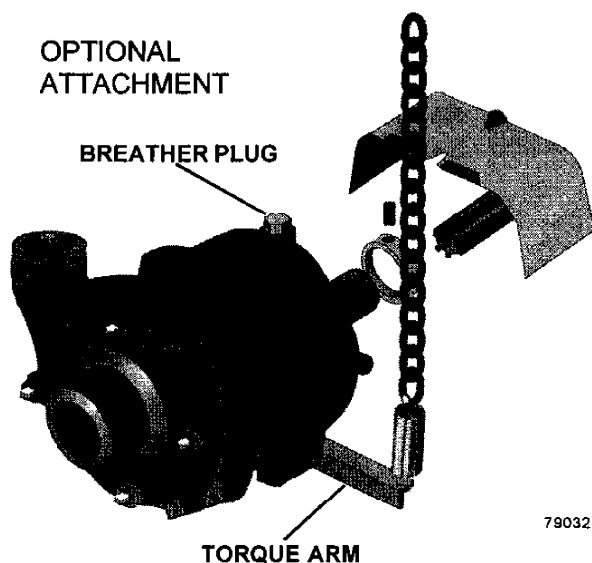
1. Attach the bracket to the pump by removing and using the two upper bolts in the pump housing. Do not tighten the bolts at this time.



2. Slide the mount bracket under the tractor PTO shield as shown. If necessary, loosen the set screws on the pump driveshaft to position the pump correctly on the PTO shaft. Tighten the set screws securely as outlined previously.
3. When the pump is aligned and secured on the PTO shaft and the mount bracket is firmly located on the PTO shield, tighten the two bolts on the pump housing.

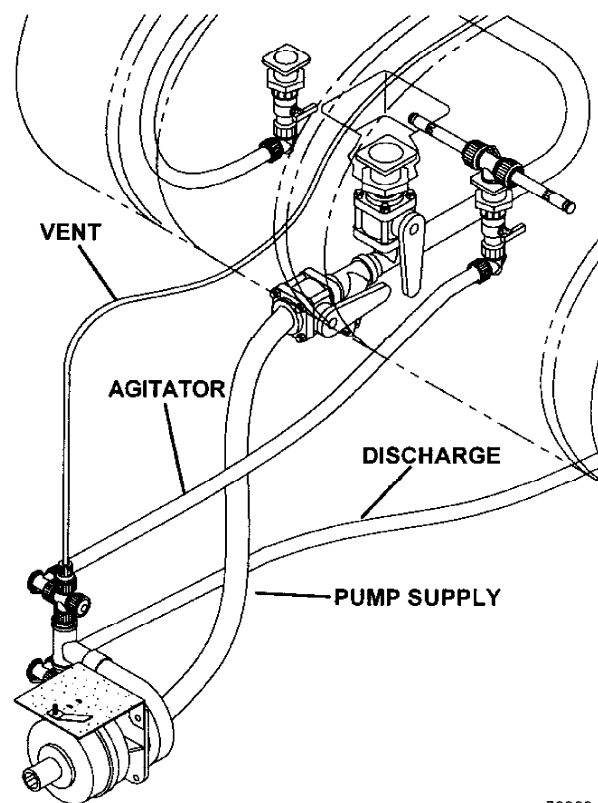
**NOTE:** *If the tractor is equipped with a flat surface PTO shield, it will be necessary to drill a 5/16 inch center hole in the shield to mount the pump bracket.*

## OPERATING INFORMATION



4. If the pump mounting bracket cannot be used, the pump must be prevented from rotating on the PTO shaft while in operation by attaching a torque arm to the base of the pump or gear case and attaching it to the tractor with a spring and chain. The chain may be fastened to the tractor directly below the pump or above the pump as close to vertical as possible to avoid fore or aft pull on the pump.

**IMPORTANT:** Be sure the breather plug is installed in the top drain port in the pump gear case.



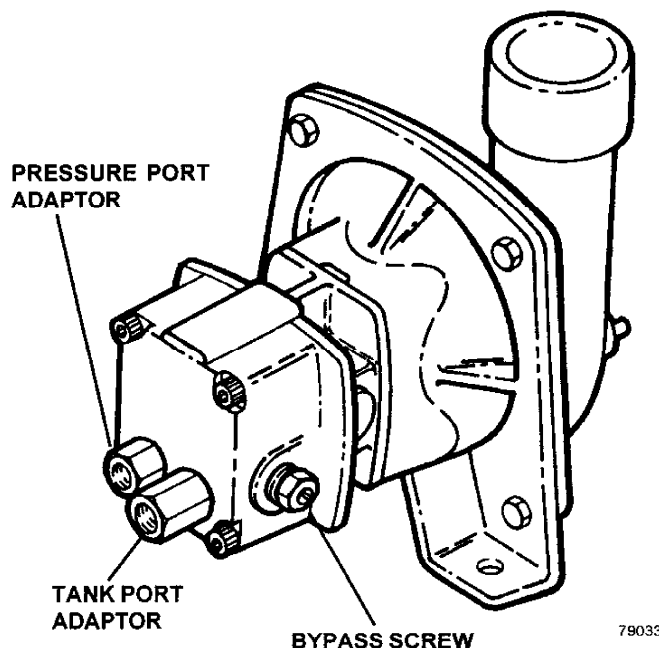
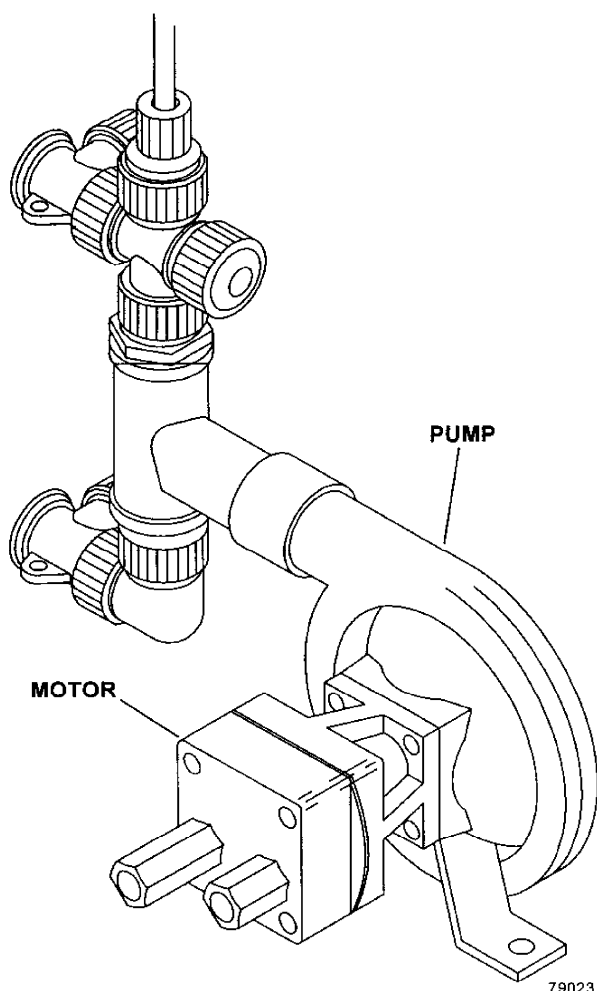
5. If required, connect the suction, discharge, agitator and vent line to the pump.

**IMPORTANT:** The pump must not be run dry or the mechanical seals will be damaged.

# OPERATING INFORMATION

## HYDRAULIC MOTOR DRIVEN PUMP CONNECTION (IF EQUIPPED)

the sprayer pump motor to a remote valve circuit with a "float" position. When using hydraulic motors, do not put the remote valve in neutral when the motor is in operation because oil flow in both directions will be blocked and can cause damage.

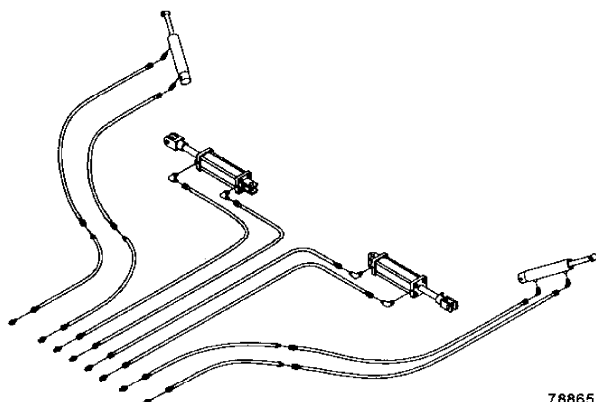


**IMPORTANT:** The hydraulic motor must have the correct pressure and return oil flow connection. **Do not** connect the hydraulic motor to a remote control valve circuit that has load checks. The motor will be damaged because return oil flow will be blocked.

If equipped with a Hypro 9303C Centrifugal Pump and HM-4 Hydraulic Motor, which can be connected to either "open center" or "closed center" hydraulic systems, refer to your tractor Operator Manual for instructions regarding connection and operation of continuous operation hydraulic motors. Some tractors are equipped with a hydraulic motor circuit. If the tractor is not equipped with a hydraulic motor circuit, connect

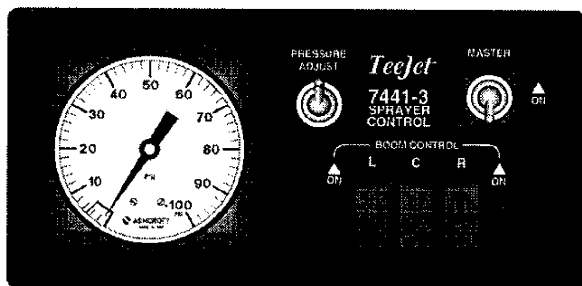
# OPERATING INFORMATION

## HYDRAULIC BOOM CONNECTIONS (IF EQUIPPED)

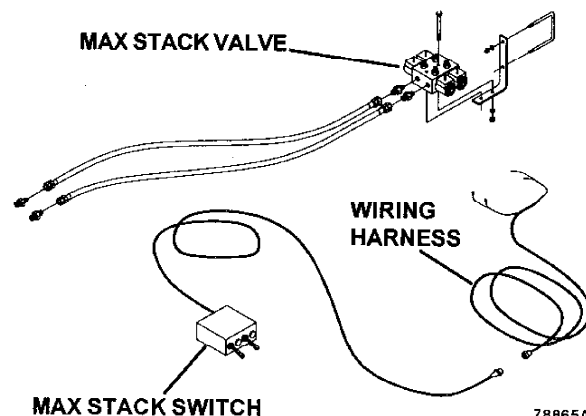


If the sprayer is equipped with optional hydraulic boom fold, height or tilt functions, one or more remote circuits must be provided depending on sprayer configuration. Consult your dealer for assistance for your sprayer configuration.

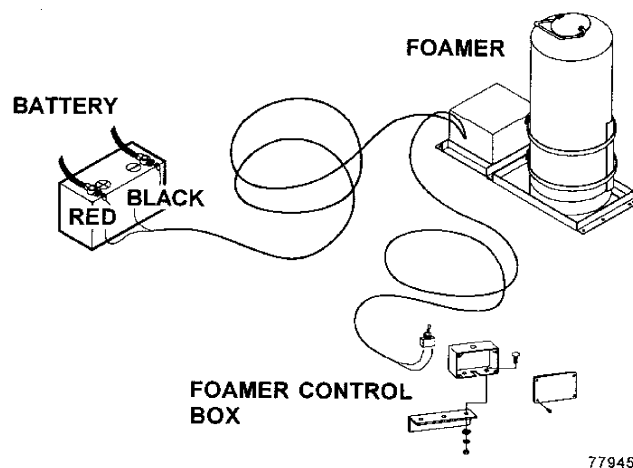
## ELECTRICAL SUPPLY



Route and connect the sprayer controller electrical supply wire harness and pressure gauge tube from the tractor to the sprayer as described in the instructions supplied with the controller. Be sure to route the wire harness and pressure tube away from any pinch points.



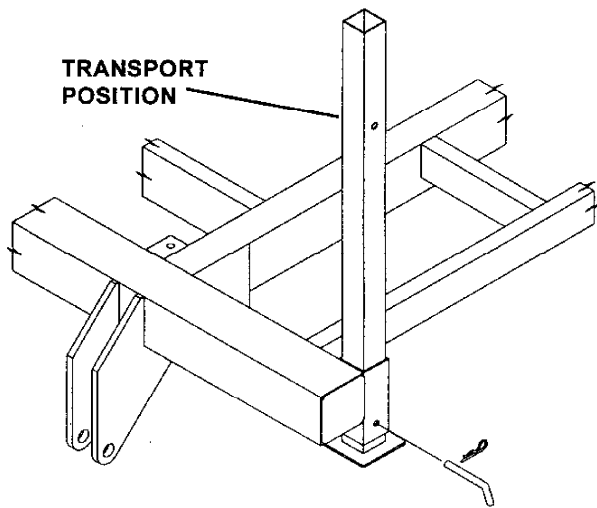
If equipped, connect the solenoid operated hydraulic Max Stack valve switch electrical supply.



If equipped, connect the foam marker control box electrical supply harness connector.

# OPERATING INFORMATION

## SPRAYER SUPPORT LEGS



79019

After the sprayer is securely hitched to the tractor 3-Pt linkage or quick-coupler, and all electrical supply and hydraulic connections have been made. Raise the hitch high enough to support the weight of the sprayer. Remove the pins and raise each of the four support legs all the way to the top, install the lock pins and retainer clips to secure each leg in the transport position.

## HITCH LINKAGE ADJUSTMENTS



**WARNING:** To avoid injury or death, use extreme care when adjusting or checking hitch linkage when the engine is running and when the hitch is under mechanical or hydraulic load. Study the hitch linkage and hitch travel. Keep hands, arms, legs and feet out of the travel arc of the hitch and linkage.

Make all hitch linkage adjustments when the unit is parked on a solid and level surface. Adjust the lift links equally to the same length so the sprayer main frame is level and parallel to the ground when the sprayer is at the desired working height.

Adjust the top (center) link on the hitch to level the sprayer fore and aft when the sprayer is at the desired working height.

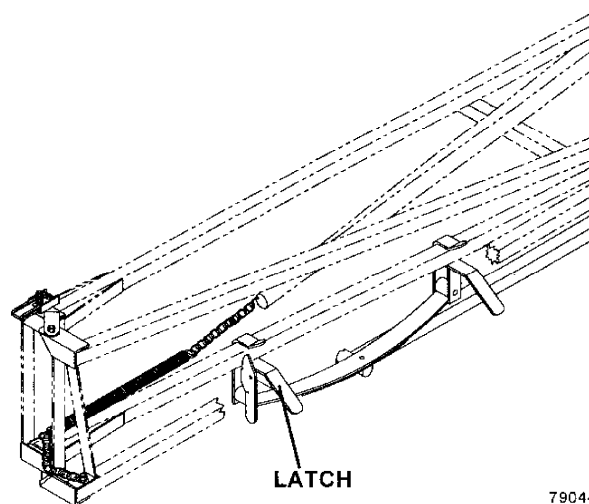
Most late model tractors provide in-cab control for the 3-Pt hitch DROP rate. To prevent machine damage, the hitch must be adjusted to lower as slow and smooth as practical when the sprayer tank is full. Raise and lower the hitch several times until the desired drop speed adjustment is correct. (Refer to the tractor Operator Manual for detailed hitch drop speed adjustment procedures).



**WARNING:** To prevent personal injury or death, always lower and pin the sprayer support legs before performing maintenance or service of any kind under a raised sprayer.

## BOOM UNFOLDING

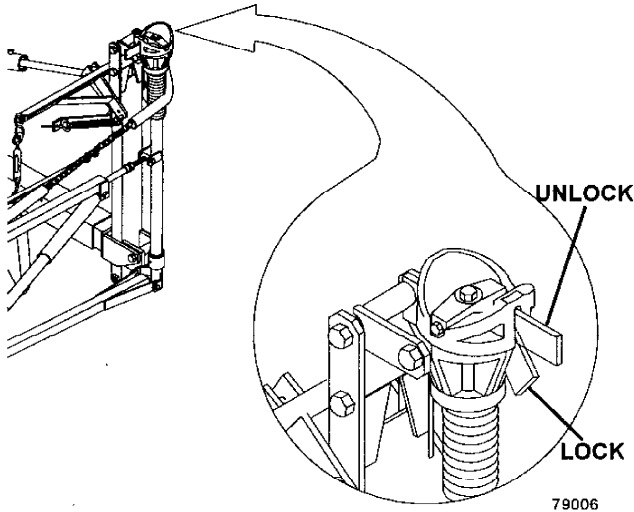
To unfold the sprayer booms, do the following:



79044

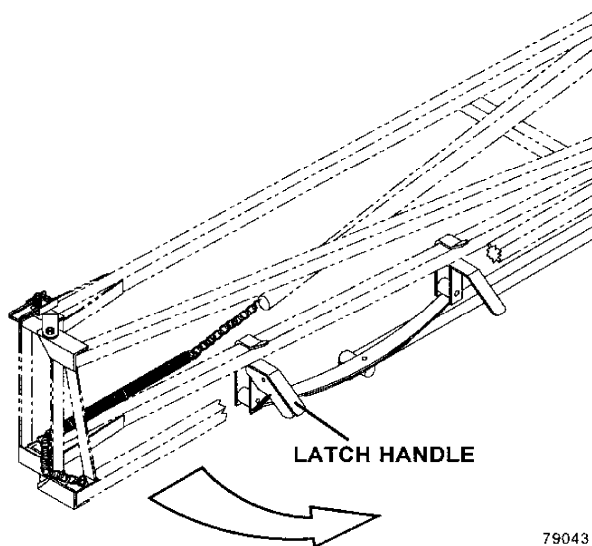


# OPERATING INFORMATION

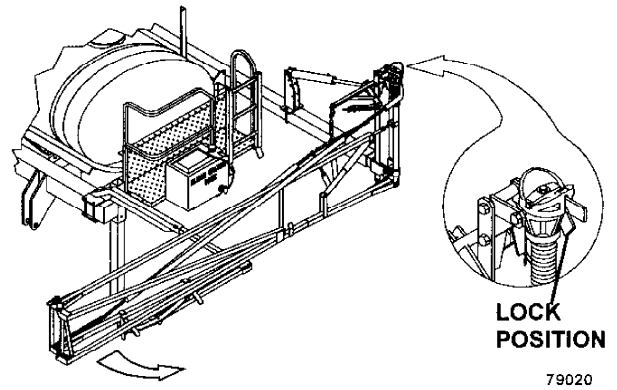


1. Lift upwards and pull outwards on the anti-swing clutch handle to the unlock position.

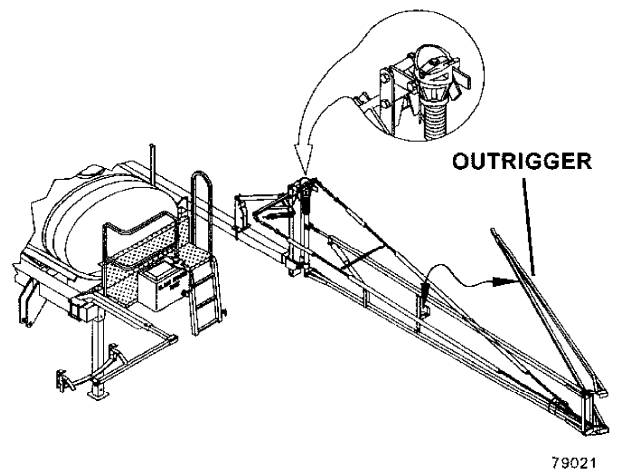
**NOTE:** If equipped with hydraulic folding booms, the anti-swing clutch handle must be in the down and locked position at all times when using hydraulic folding booms.



2. Push upwards on the spring loaded transport latch handle to release the boom.



3. Walk (or use hydraulics if equipped) the boom back until it is perpendicular to the sprayer main frame. If equipped with manual fold/unfold, move the anti-swing clutch lock handle down into the lock position.

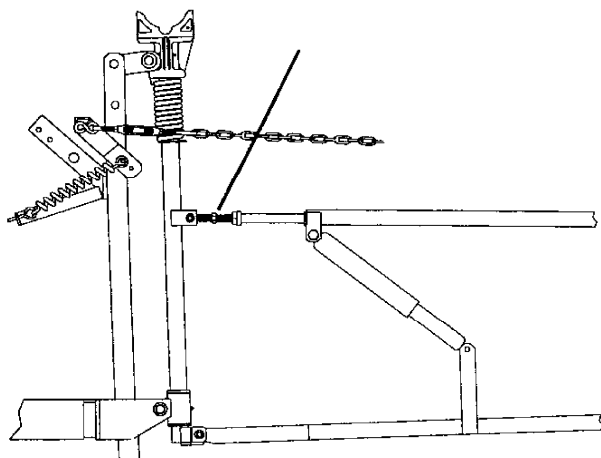


4. Lift the boom outrigger out of the transport support bracket. Walk the outrigger around until it locks into the operating position.

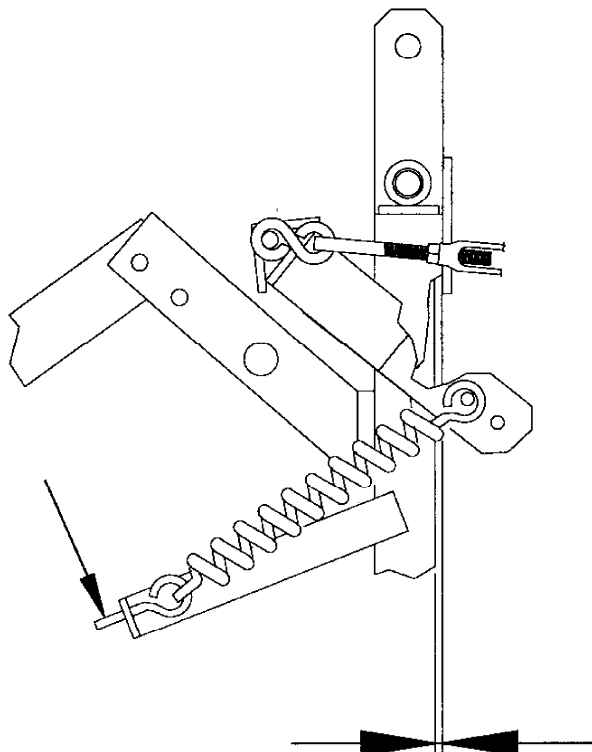
# OPERATING INFORMATION

## BOOM ADJUSTMENTS

To check and/or make boom adjustments, the sprayer must be parked on level ground, the boom swivel joints must be lubricated and moving freely.



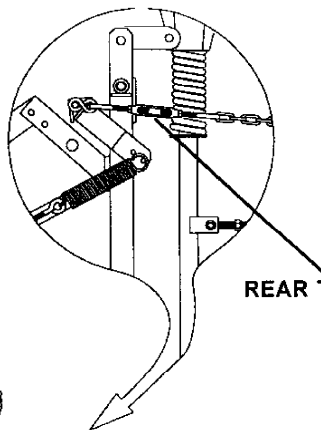
78799A



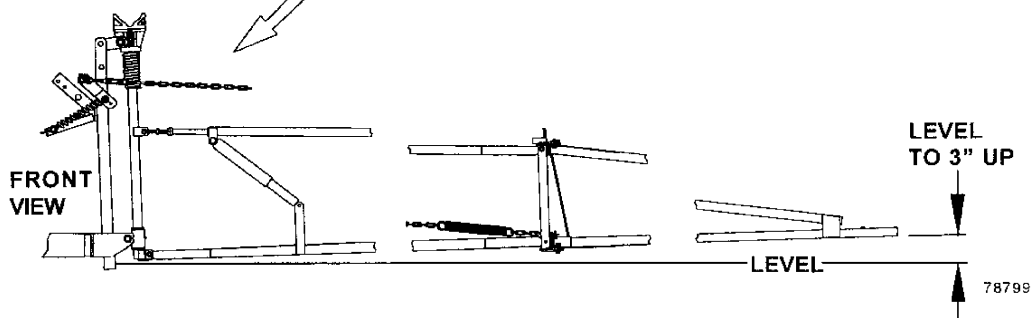
78799B

1. The boom outrigger must be adjusted so that it is level with the first section of the main boom by adjusting the nut on the boom outrigger adjustment.

2. Check the boom flotation by pushing down where the outrigger and main boom arms join. The boom must float back up to the level position when released. If the booms do not float back up, adjust the eye bolts on the rocking link equalizer springs evenly and equally until there is approximately a 1/8 inch gap between the rocking link and the boom upright post.

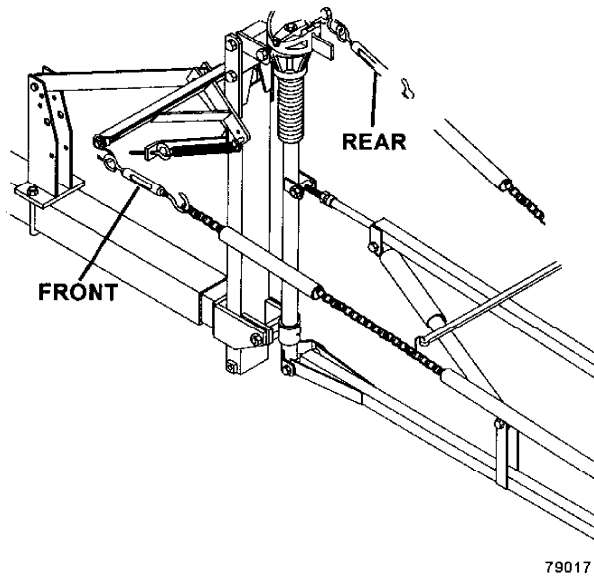


REAR TURNBUCKLE

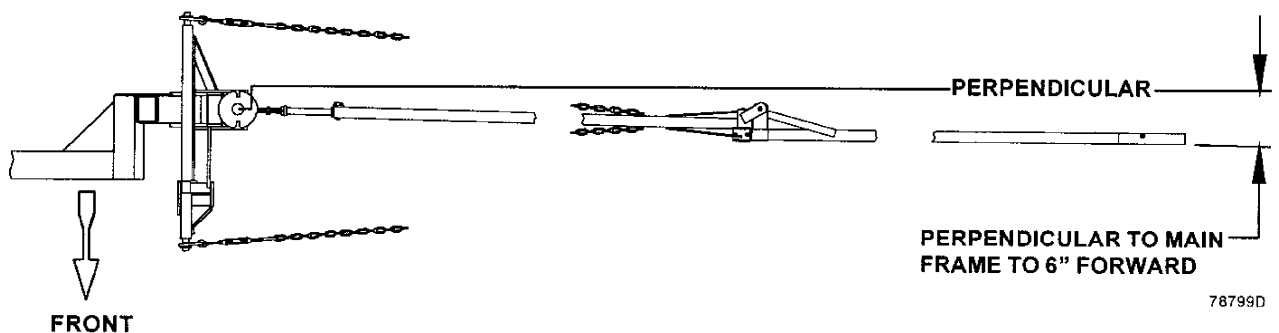


78799

## OPERATING INFORMATION



3. Adjust the rear chain turnbuckle for adjusting the boom level. The main boom and outrigger must be level to 3 inches above the level of the main frame.

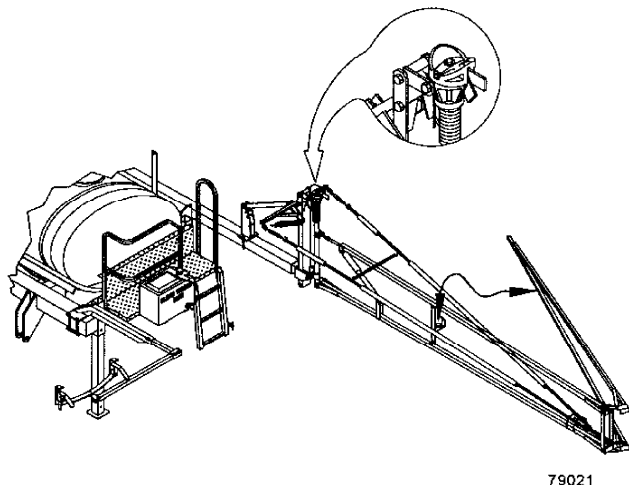


4. Adjust the front chain turnbuckle so that the main boom and outrigger are perpendicular to 6 inches forward of the main frame.

# OPERATING INFORMATION

## BOOM FOLDING

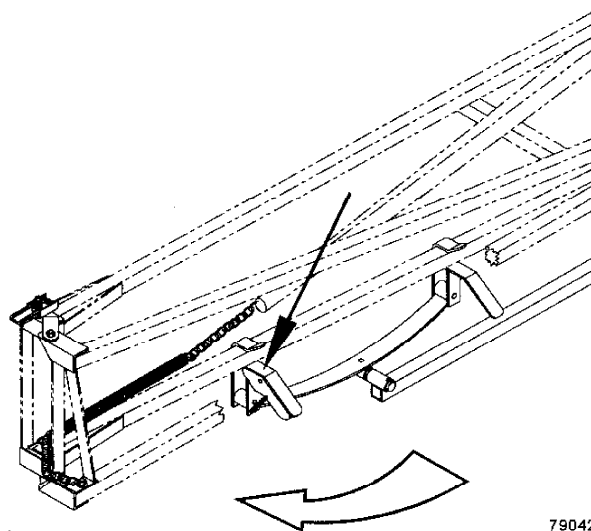
To fold the booms to the transport position do the following:



1. Release the outrigger and fold back against the main boom. Lift and install the outrigger to rest in the transport support bracket.

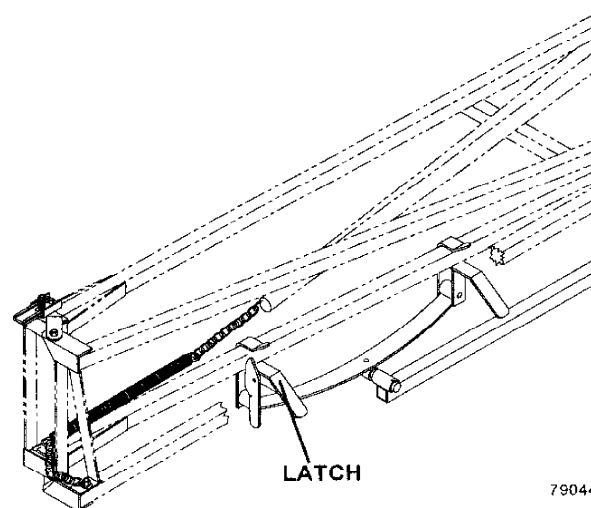
**IMPORTANT:** To prevent main boom damage, the boom outrigger must always be in the folded position during transport.

2. If manual fold, unlock the anti-swing clutch handle.



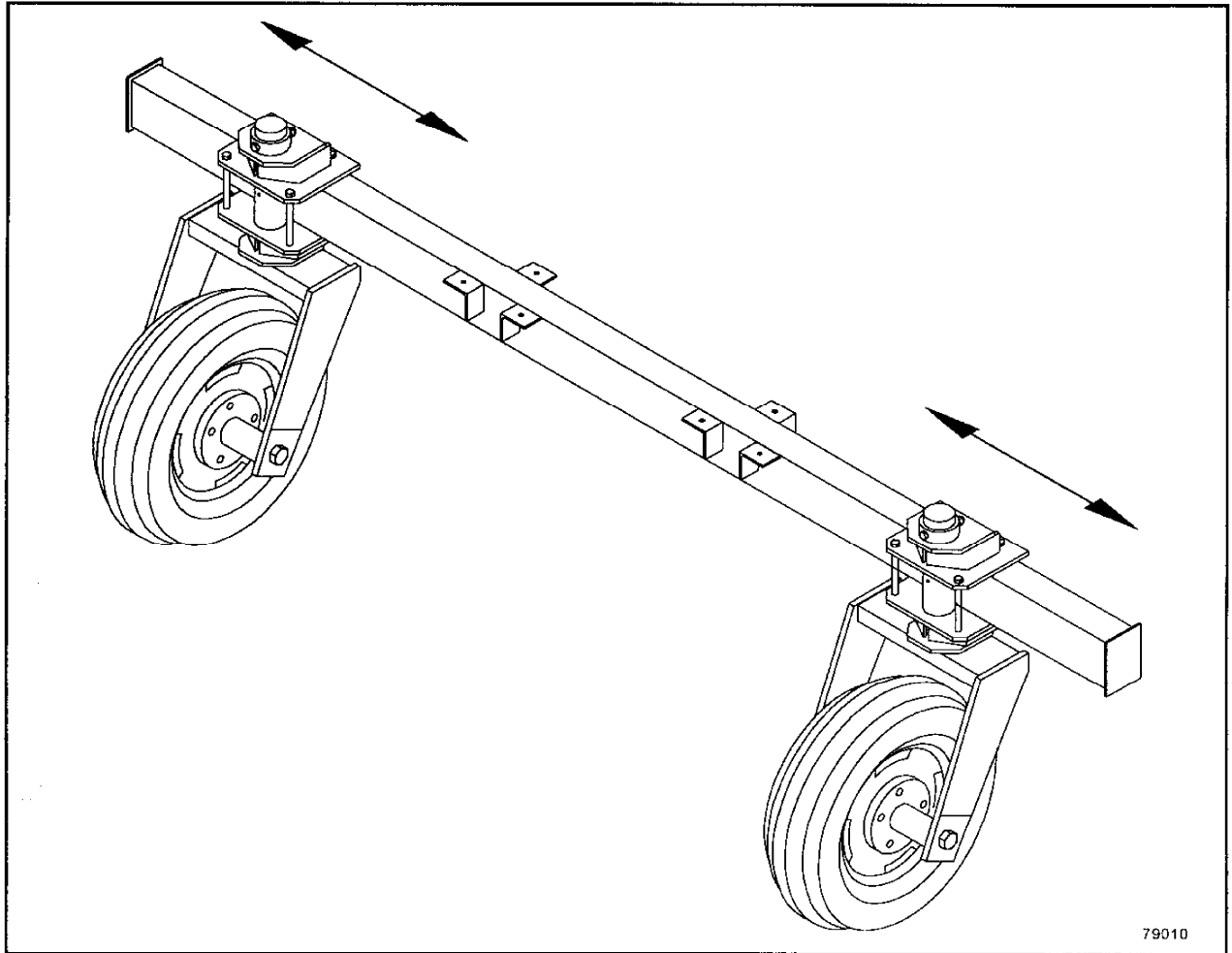
3. Walk (or use hydraulics) the boom assembly back perpendicular to the main frame to engage the transport latch.

**IMPORTANT:** Before transporting, be sure the booms are securely latched.



# OPERATING INFORMATION

## SEMI-MOUNTED SPRAYER AXLES



The two castering wheel axle assemblies can be adjusted along the beam of the main frame from 60 through 132 inches to accomodate 20 through 40 inch rows. The castering wheels should be set out as wide as possible. To adjust the castering wheel axle spacing do the following:

1. Loosen the clamping bolts securing the axle to the main frame.
2. Raise the sprayer until the wheels clear the ground.

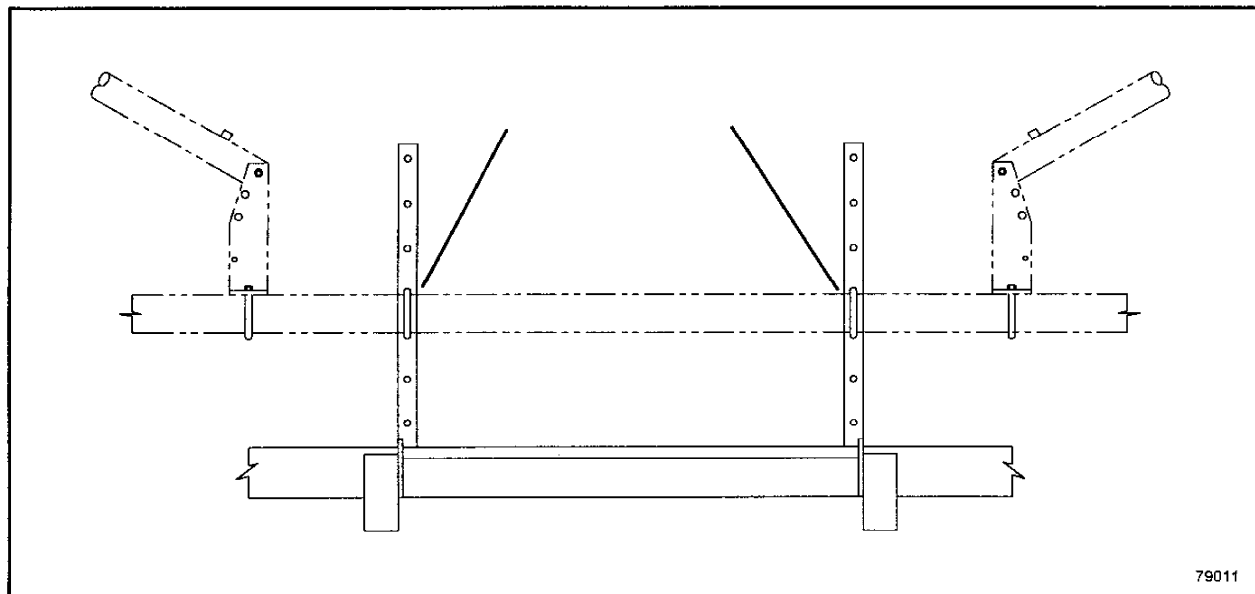
3. Slide the axle assembly along the main frame to the desired position and tighten the clamping bolts.

**NOTE:** *Adjust the castering wheels equally from side to side. Be sure to tighten the clamping bolts to the correct torque value as specified in the bolt torque chart on page 10.*

**IMPORTANT:** *Check the bolt torque again after the first 8 to 10 hours of operation.*

# OPERATING INFORMATION

## BOOM HEIGHT ADJUSTMENT



If required, the standard sprayer boom height can be adjusted up or down on the main frame boom support uprights. This can be done by supporting the boom assembly at the center uprights with an overhead lifting device and removing the bolts securing the boom to the main frame uprights. The boom assembly can then be lifted and positioned in one of six different vertical positions on the main frame uprights. Be sure to tighten the clamping bolts to the correct torque value as specified in the torque chart on page 10.

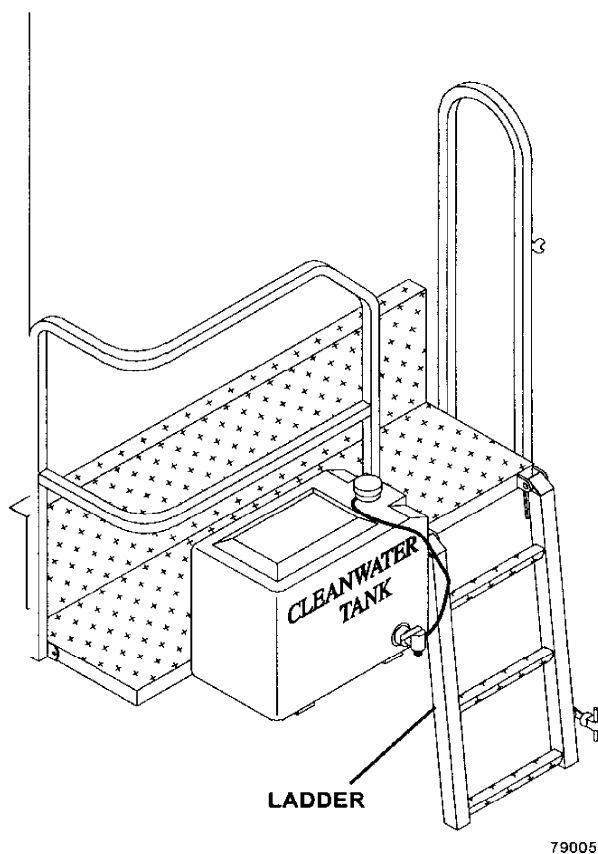
**IMPORTANT:** Check the bolt torque again after the first 8 to 10 hours of operation.

# OPERATING INFORMATION

## TANK FILLING

**IMPORTANT:** Before starting the sprayer pump for any reason, fill the tank at least 1/4 full with clean water. The pump supply line and pump housing must be filled with fluid. If the pump is run dry for more than a few seconds the seal will be damaged.

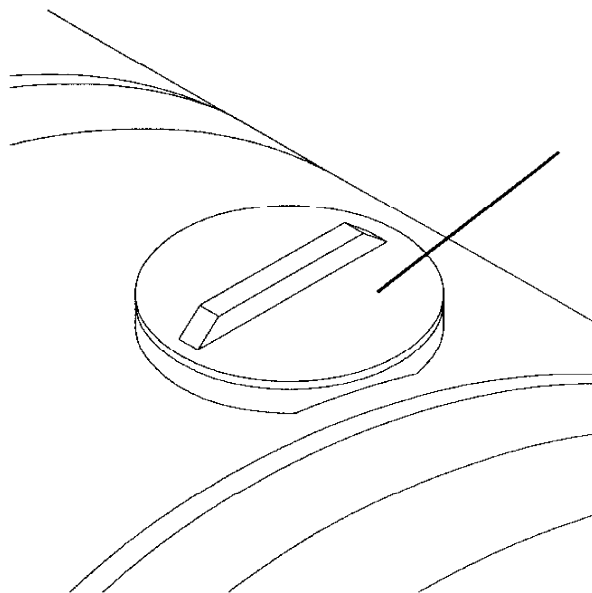
## SAFETY PLATFORM LADDER LADDER



When it becomes necessary to mount the sprayer to remove the tank top cover for top filling, adding chemicals or other requirements, release the rubber strap and pull outward on the ladder to lower the ladder. Always use the ladder and hand rails to mount and dismount the sprayer.

**IMPORTANT:** To prevent damage, the ladder must be folded up and secured before field operation or transporting the sprayer.

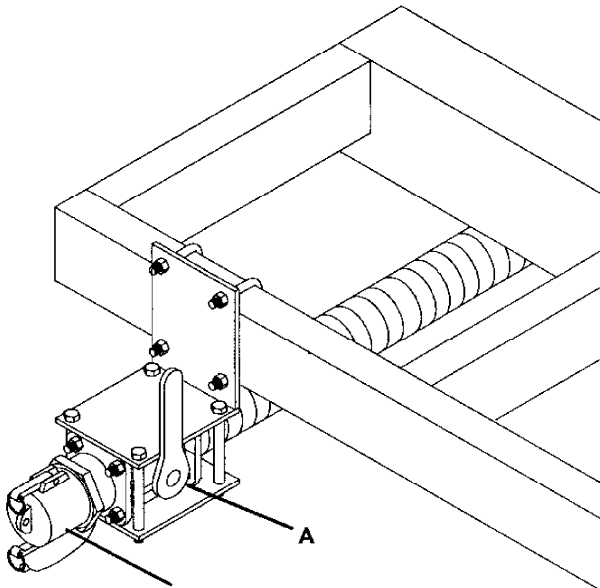
The spray tank can be filled in one of two ways; **A** - Top Filling or **B** - bottom Filling.



### A. Top Filling

- Remove the lid from the top of the tank.
- Extend the transfer hose from the supply source into the tank.
- Start the pump and run until the tank is at the desired fill level.
- Stop the pump, remove the transfer hose and close the lid.

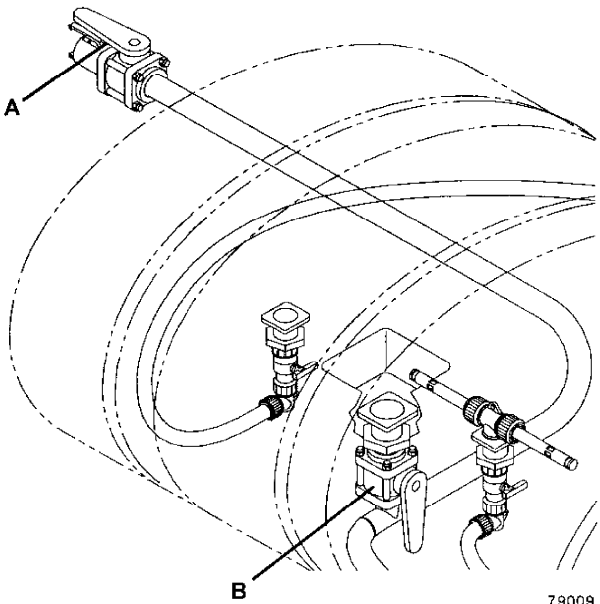
# OPERATING INFORMATION



79014

## B. Bottom Filling

- Remove the bottom fill transfer valve (A) cam locks and remove the cap.
- Connect the transfer hose from the supply tank to the coupler and secure the cam locks.

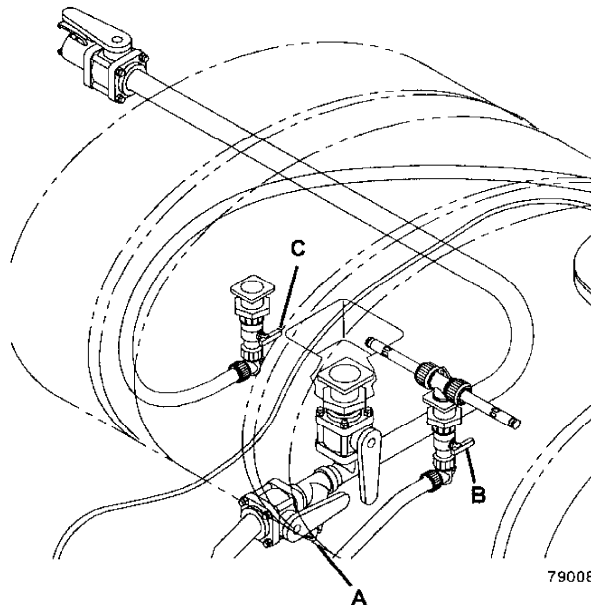


79009

- Open tank valve (B) and transfer valve (A).
- Start the water source pump to fill the tank to the desired level.
- Shut down water source pump and close transfer valve (A).
- Disconnect the transfer hose and install the cam lock cap on the transfer valve (A).

## PTO DRIVEN PUMP OPERATION

**IMPORTANT:** Before starting, be sure the pump is connected correctly to the PTO shaft and all shields are in place.

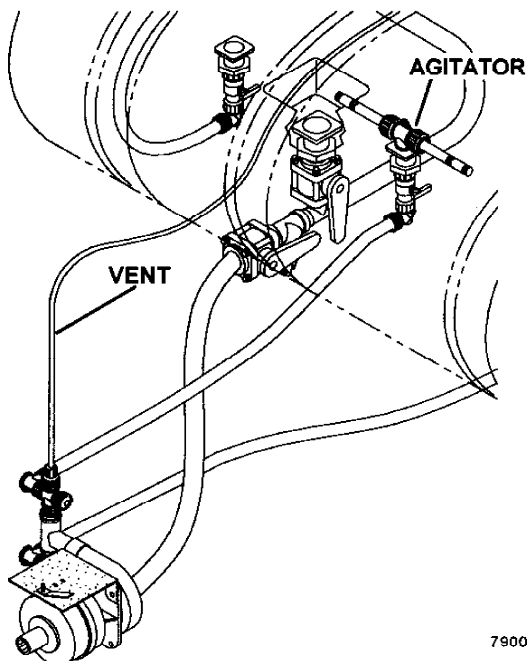


79008

1. Open pump supply valve (A), agitator valve (B) and throttling valve (C) to full open.



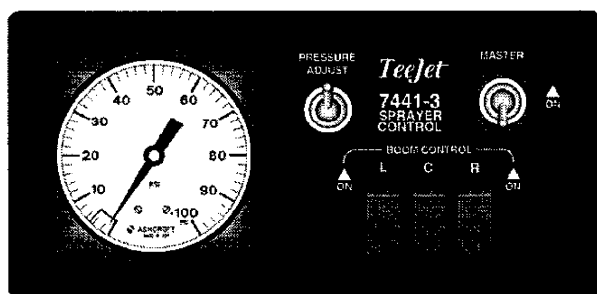
## OPERATING INFORMATION



79003

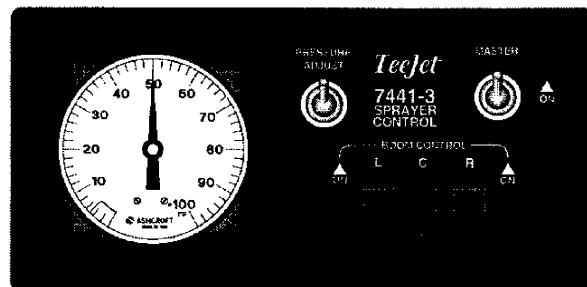
2. Run tractor engine at low idle, engage the PTO drive slowly and smoothly. Increase PTO speed to 1/2 desired RPM. Check pump for prime, this will be indicated by a stream of water out of the vent line and out of the agitator assembly on the bottom of the tank.

**NOTE:** If agitation is not seen, check to be sure the ball valve in the agitation line is open.



79034

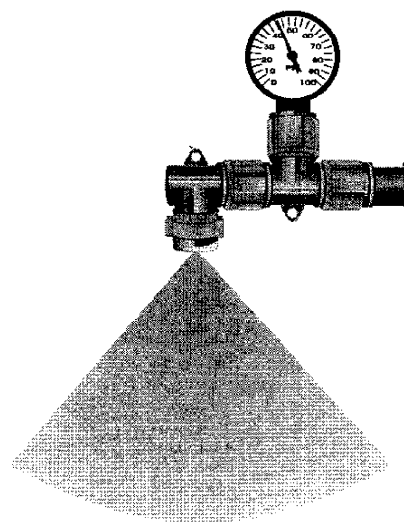
3. For initial system check, increase the tractor engine speed to the desired RPM for rated PTO shaft speed. With the boom section switches on the controller set in the ON position, turn the master switch to the ON position. Spray should begin on each boom section.



79035

4. Adjust the pressure to 50 PSI using the spring loaded to center pressure adjustment switch on the controller.

**NOTE:** The regulator valve used for by-passing liquid has a full circulating butterfly type valve. If the valve goes beyond full by-pass it will continue around and begin acting as a throttling valve.

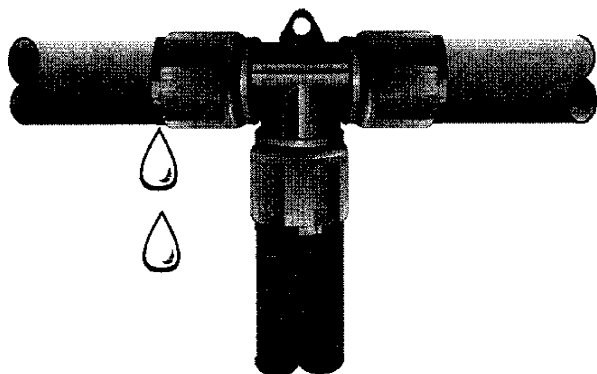


79036

5. The pressure reading on the controller pressure gauge is measured at the solenoids. For an accurate pressure reading at the nozzles, a remote gauge may be mounted directly on the nozzle(s) as shown.

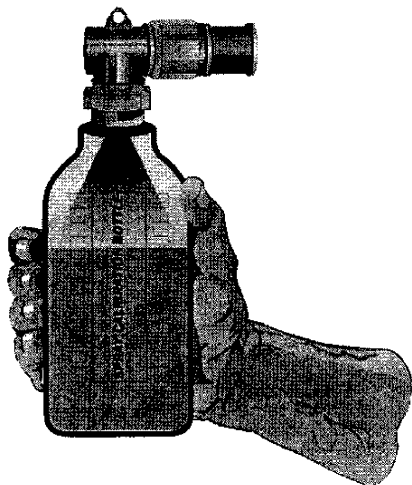
# OPERATING INFORMATION

**NOTE:** A pressure drop of 5 to 15 PSI is common between the solenoids and nozzles. This pressure drop is caused by line loss, fittings and nozzles. The greater the volume the greater the pressure difference will be.



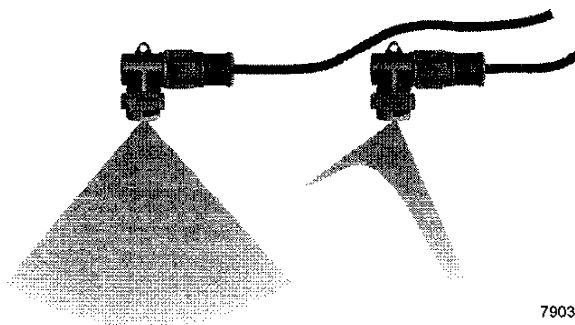
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6. Check all connections on the boom, pump and solenoids for leaks.



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7. Check the spray pattern and volume output of each nozzle assembly. Use the calibration bottle for volume output check.



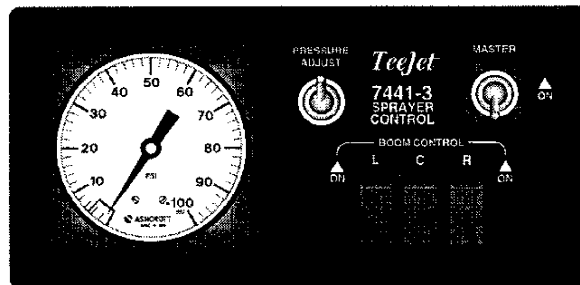
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8. If a nozzle has an irregular spray pattern. Clean the screens in the nozzle assemblies and clean or replace all worn nozzle tips.

**IMPORTANT:** Do not use a metal probe to clean a nozzle orifice. Wash the tips with clean water or a cleaning solution. If the nozzle remains plugged, clean it with a fine bristle brush or a toothpick.



**CAUTION:** Never put nozzles or tips in your mouth to clean tips by blowing through them.



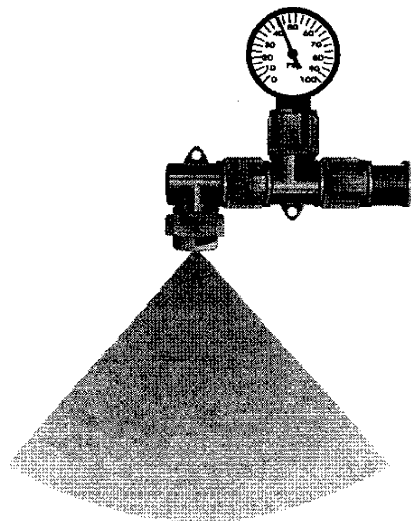
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9. Use the controller switches to turn each boom section OFF and ON to check the function of each of the solenoid valves. Spray at the nozzles should shut off and on.

# OPERATING INFORMATION

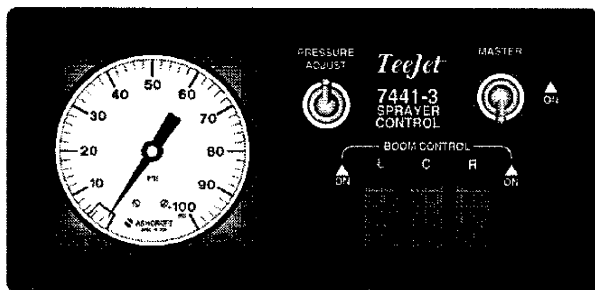
## SETTING PTO DRIVE PUMP VOLUME

**NOTE:** The volume of the pump must be set so the required pressure can be obtained at the tips and adequate agitation in the tank occurs.



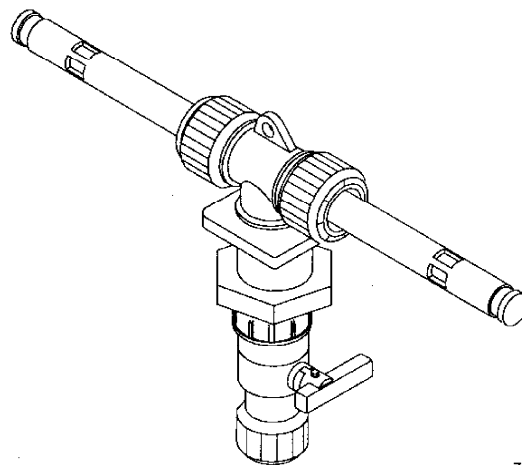
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10. Select the correct spray tip and application rate for the chemical you choose. Operate the tractor engine at the desired field operating RPM.



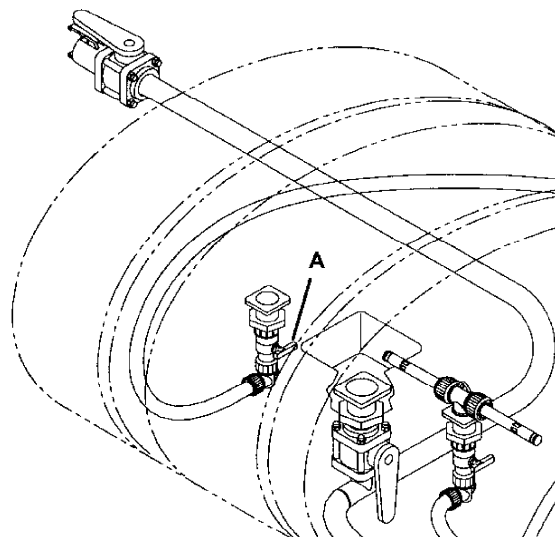
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11. Adjust the regulator valve to maximum pressure using the pressure switch on the controller console.



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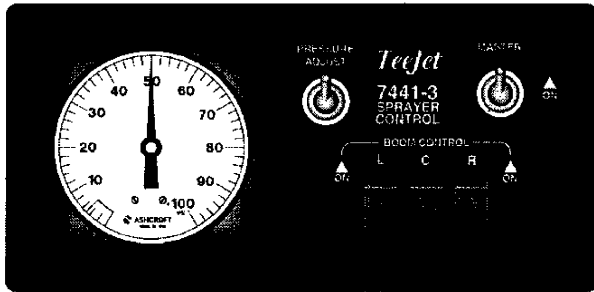
12. Close the agitation adjustment valve until the desired agitation circulation occurs in the tank.



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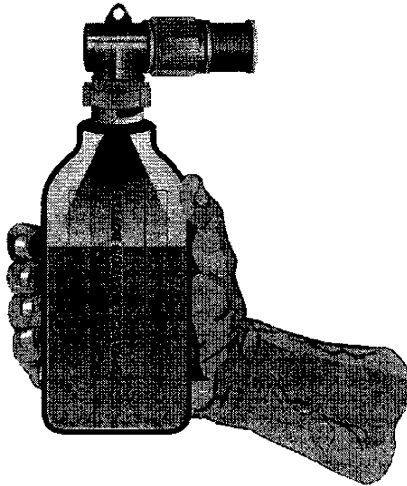
13. Set pump volume output by closing the throttling valve (A) to the desired volume output. Note the pressure reading on the controller console.
14. To compensate for pressure drop at the nozzles, increase the volume output approximately 10 PSI above the pressure reading for the desired volume output by regulating the throttling valve. This will set your maximum output for field operation.

# OPERATING INFORMATION



79035

15. Use the pressure adjustment switch on the controller to decrease pressure to the desired volume output.



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16. Each nozzle must be checked for the proper application rate. Replace all tips that test 5% ABOVE average or those with visibly distorted spray pattern. Clean all tips 5% BELOW average and recheck.

## Setting the Field Spray Rate

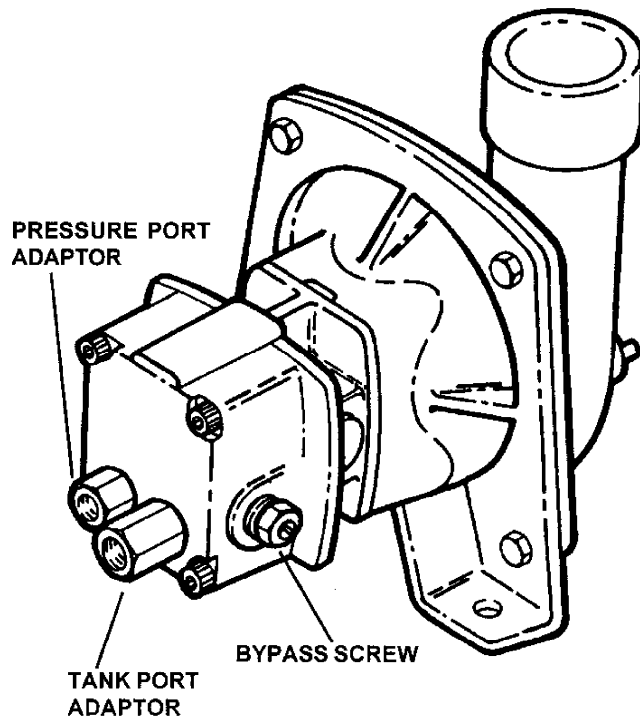
17. Carefully study the label on the chemical container and determine the correct application rate for the chemical/water mixture.
18. Be sure of the nozzle tip size. Examine one of the tips, every tip is color coded and stamped with the tip number.

19. Refer to the Nozzle Delivery Rates Charts in the General Information Section of this manual and determine speed and pressure required to deliver the correct rate for your tips.

20. Do a physical nozzle flow rate check, ground speed/engine rpm check, and sprayer calibration as outlined in the General Information Section **before going to the field**. This will ensure the proper application rate of chemicals.

**IMPORTANT:** Calibration is not a one time occurrence. Sprayers must be recalibrated seasonally and periodically during the season and when changing chemicals.

## HYDRAULIC MOTOR DRIVEN PUMP OPERATION



79033

## OPERATING INFORMATION

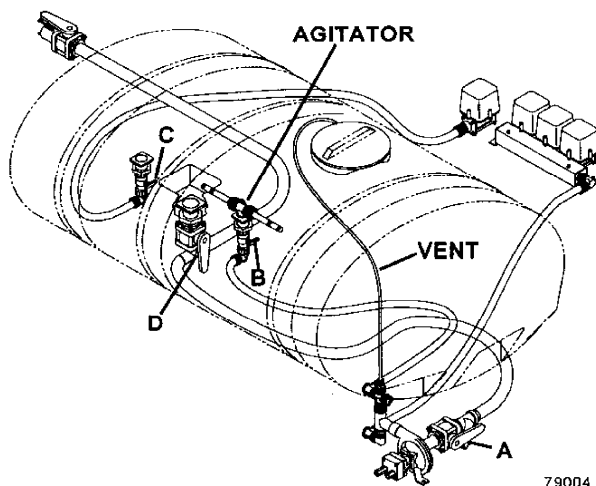
Pump pressure is determined by the speed of the hydraulic motor. To change pump pressure increase or decrease the flow of oil through the hydraulic motor. A decrease in flow through the motor will turn the pump slower causing a decrease in pump pressure. An increase in flow will turn the pump faster thus increasing pump pressure. Control and adjustment of the hydraulic motor will be determined primarily by the type of hydraulic system the tractor is equipped with.

**IMPORTANT:** Refer to the Hypro Pump Operation Manual (Form 325C) supplied under separate cover with your sprayer for complete instructions to match pump operation to your tractor's hydraulic system.

### SETTING HYDRAULIC DRIVE PUMP VOLUME

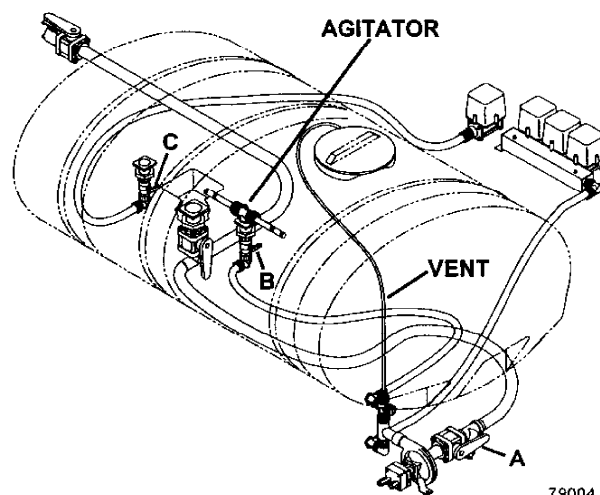
Before operating the pump for any reason, fill the tank at least 1/4 full with clean water only.

**IMPORTANT:** The pump **must not be run dry!**



To set pump volume do the following:

1. Open the pump supply valve (A), Agitator Valve (B), Throttling Valve (C) and Tank Valve (D) fully open.



2. Start the hydraulic pump, check for prime, this will be indicated by a steady stream of water out of the pump vent line and to the agitator on the bottom of the tank.

**NOTE:** Reverse the motor hydraulic hose connections if the motor will not run. The motor return (tank) port has a built-in check valve to guard against reverse operations.

**IMPORTANT:** Do not connect to remote circuits that have load checks, return oil flow will be blocked causing damage to the motor.

3. Adjust hydraulic flow to the motor as outlined in the Hypro Operation Manual and your tractor Operator Manual for matching the motor to the tractor hydraulic system.
4. Adjust sprayer pressure, check connections for leaks, spray pattern and volume output of the spray nozzles as described in Steps 4 through 20 of the PTO Driven Pump Section of this manual.

### FIELD OPERATION

After all sprayer calibration procedures have been completed in the yard using water, the sprayer is now ready to transport to the field and filled with water and chemical.

# OPERATING INFORMATION

## TRANSPORTING THE SPRAYER

Avoid transporting the sprayer with active chemical solution or water in the tank. When transporting on public roadways, be sure the Slow Moving Vehicle Emblem (SMV) is clean and properly displayed. If required, be sure all marker lamps, reflectors or other equipment required by local regulations are in good working order.

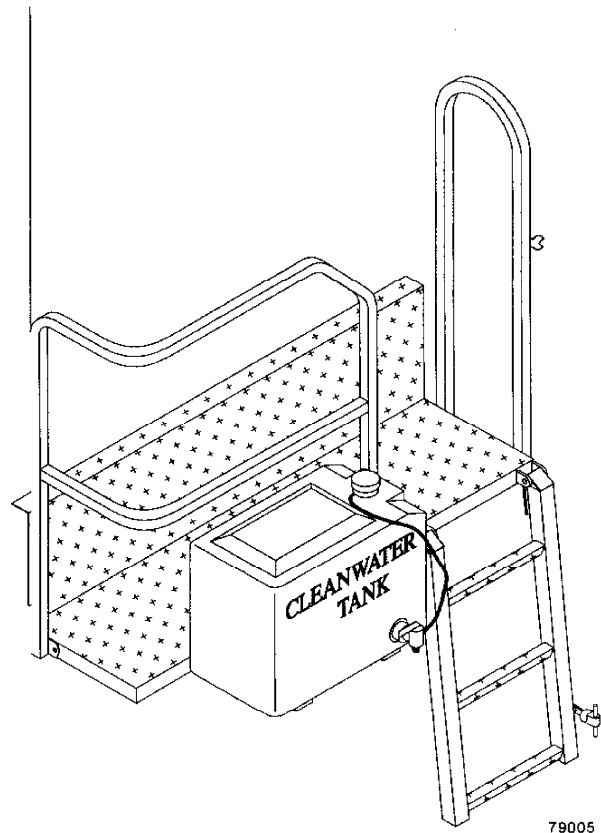
The ladder, boom wings and outriggers must be folded and secured in the transport position and 3-PT hitch sway must be locked out when the hitch is in the transport mode.

**IMPORTANT:** *Know the sprayer transport width (See page 48) and boom height before transporting on public roadways. Maximum transport speed must not exceed 20 MPH.*



**CAUTION:** Always watch for oncoming traffic, overhead power lines or other obstructions when transporting.

## CLEAN WATER WASH TANK



Fill the clean water wash tank before handling the chemicals in the event of accidental personal contamination.



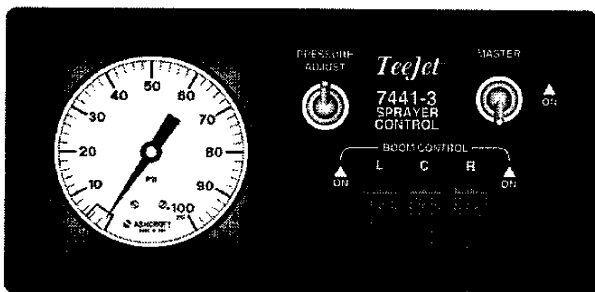
**WARNING:** *Always wear chemical label prescribed face or respiratory protection, unlined rubber gloves, boots and disposable outer wear or rubber apron when handling chemicals. Always follow chemical label directions exactly.*

The clean water wash tank is to be used for rinsing your hands and face in the event of contact with chemical. **Do not use as drinking water.** The clean water wash tank should always be full of clean water when in field operation.

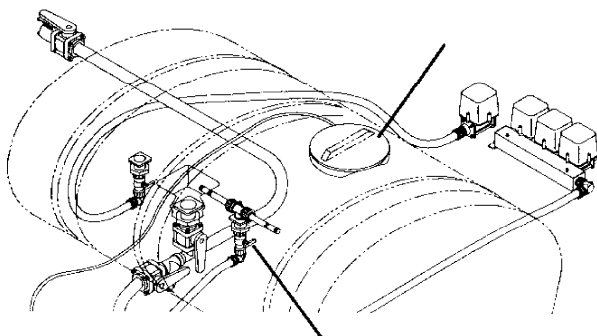
# OPERATING INFORMATION

## ADDING CHEMICALS

1. Before adding chemical by any method, be sure the sprayer tank is 1/4 or more filled with water. Be sure the pump supply line valve is open and the boom solenoid valves are turned off. Start the pump to agitate the solution as chemical is added.



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2. Remove the large cover on top of the tank. Add chemical through the large cover opening as instructed on the product label. Be sure the agitator is turned on to agitate the solution as the chemical is added. **Triple rinse** empty chemical containers immediately, add the rinse to the tank.



**WARNING:** Dispose of empty chemical containers in accordance with product label directions. Mix only enough chemical solution to complete the job to avoid unused chemical disposal.

3. After the correct amount of chemical has been added to the spray tank, fill the tank to the correct level with clean water. Close the water

transfer valve, disconnect the transfer hose and install the top cover on the tank. Run the pump to agitate the solution for 5-10 minutes before field application.



**CAUTION:** Be careful not to overfill the tank and cause spillage when the tank is filled with active chemical.

## USING WETTABLE POWDERS

4. If using wettable powders, it is recommended to pre-mix the powder in hot water before adding to the spray tank. This will prevent clumps of powder from plugging the strainer and nozzle screens. If pre-mixing in hot water is not possible, add the powder very slowly in a **sifting** manner to prevent clumps from forming. Be sure the pump and agitator are turned on before adding powder. Run the pump to agitate the solution for 5-10 minutes before field application.

**NOTE:** If foaming occurs while mixing chemical, add a commercially available anti-foaming additive to the tank.

5. Unfold the boom wings from transport to field position as previously instructed.



**CAUTION:** Obey chemical label label instructions for safe use of chemicals.

- Do not spray if wind is blowing toward a sensitive crop, shelter belt or garden.
- Do not spray in dead calm near sensitive plants.
- Spray drift increases with higher spraying pressure.

## OPERATING THE TRACTOR FOR SPRAYING

**IMPORTANT:** After the tank is filled and before field operation, check to be sure the tractor front ballast is adequate to maintain tractor stability and steering control.

# OPERATING INFORMATION

6. It is important that chemical be uniformly applied over a field. Accurate and consistent tractor ground speed and maintaining correct nozzle pressure is essential to obtain uniform application results. Once the tractor speed and nozzle pressure have been determined from yard calibration procedures, maintain that speed and pressure throughout the spraying operation.

**IMPORTANT:** Always monitor spray pressure. If pressure fluctuates or drops off suddenly, it could indicate the tank is empty or the screen is plugged and the pump is losing prime. Shut the pump off immediately to prevent pump seal damage.

## SPRAYER CLEANING

7. When spraying is completed or when switching chemicals, the machine should always be rinsed. This is especially important when using wettable powders to prevent the solenoid valves from sticking. To rinse the sprayer:
- Add 25 to 50 gallons of clean water to the tank.
  - Run the pump and agitator to circulate and rinse the inside of the tank.
  - Spray the rinse water thinly over the previously sprayed field.

**IMPORTANT:** Do not dispose of rinse water in the farm yard or in drainage ditches.

**NOTE:** When spraying is finished for the season or when switching chemicals, wash the sprayer using household ammonia or the salt and amine method. See Maintenance Section of this manual for more information.

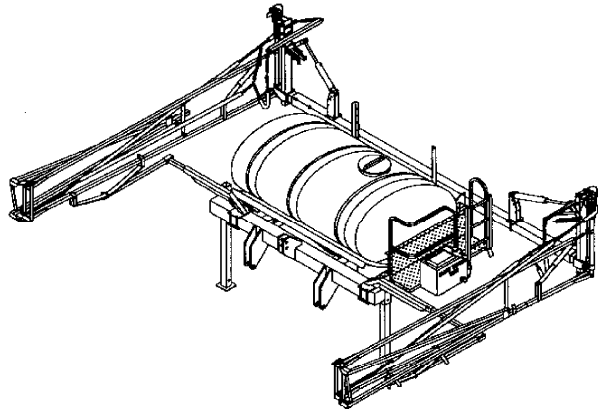
## POSTING

Some chemicals require posting the field after spraying. Be sure to check regulations and/or chemical labels for the chemical you are using for posting requirements before leaving the spray area. Post as required.

## UNHITCHING THE SPRAYER



**CAUTION:** Do not unhitch and park the sprayer with liquid in the tank. The sprayer may become unstable if liquid is left in the tank.



79000

To unhitch the sprayer do the following:

1. Park the tractor and sprayer on a solid and level surface.
2. The booms must be folded and locked in the transport position.
3. Remove the locking pins and lower each of the four sprayer support legs to the park (support) position and install the locking pins and retainer clips.
4. Disconnect the sprayer electrical supply.
5. Disconnect all remote hydraulic lines if equipped.
6. Disconnect and remove the PTO driven pump if equipped.
7. Unlatch and disconnect the sprayer from the tractor 3-Pt hitch linkage.



# TROUBLESHOOTING

| SYMPTOMS                          | PROBABLE CAUSE  | CORRECTIVE ACTION   |
|-----------------------------------|---|---|
| No pressure                       | Pump is not primed.   | Open ball valve in suction line. Fill tank to level higher than pump.   |
|                                   | Air vent plugged.   | Check that restriction orifice at pump vent fitting at top of tank is properly installed.   |
|                                   | Pressure gauge not functioning.   | Check connection of 1/8 pressure tube to gauge. Replace if faulty.  |
|                                   | Hydraulic hose connections on tractor and hydraulic pump, or improper oil flow to pump. | Check hydraulic hose connections and/or oil flow direction. Note pressure port location on hydraulic pump.  |
| Low pressure                      | Air leak in suction line.   | Check for tightness and seal on all fittings in suction line strainer bowl.   |
|                                   | Restriction in suction line.  | Check that ball valve is completely open. Clean line strainer screen.   |
|                                   | Too much bypass from pump.  | Check operation of pressure control valve. Make sure that it is properly controlling bypass. Check that restricting orifice at pump vent fitting on top of the tank is properly installed. Check that agitation orifice is installed. |
| Pressure will not adjust.         | Return line is closed.  | Open ball valve in return line.   |
|                                   | Pressure control valve is not functioning.  | Check electrical connections to vehicle, control panel and valve. Check fuse, master switch and pressure switch on control panel.   |
| One or both booms will not spray. | No pressure from pump.  | Follow corrective actions listed above for a sprayer with no pressure.  |
|                                   | No electrical power to solenoids.   | Check electrical connections to vehicle, control panel and solenoid valves. Check fuse, master switch and boom switches on control panel.   |
|                                   | Coil assembly on solenoid not functioning.  | Clean plunger, spring and inside of coil. Replace faulty coil.  |
|                                   | Solenoid valve not functioning.   | Disassemble and clean valve and diaphragm. Replace swollen diaphragm or replace complete solenoid valve.  |

# LUBRICATION/MAINTENANCE

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## CLEANING AND NIGHTLY STORAGE

Wash the entire sprayer as often as possible to help reduce the chemical build up on the sprayer.

Inspect plumbing daily for cracked or pinched hoses and examine each nozzle assembly for proper working order.

At the end of each days spraying, the entire sprayer system must be flushed with clean water.

As an added precaution when changing chemicals and before storing, the sprayer should be cleaned with household ammonia. this is added to the clean water used for flushing (1 quart per 25 gallons of water) and will neutralize most chemicals used in spraying.

If the sprayer system is to be stored overnight during freezing temperatures, the entire system must be thoroughly flushed with permanent type RV antifreeze (using a 50% solution).

During periods of use with freezing temperatures or when the sprayer is to be stored, the swivel nut on all nozzles must be loosened or removed to prevent freezing and damage to the nozzles.

**NOTE:** *The above steps must be performed nightly if the sprayer is to be used during periods with freezing temperatures.*

## SEASONAL STORAGE

**NOTE:** *If possible store your sprayer inside.*

At the end of a season, rinse with ammonia, drain, flush with antifreeze and remove caps and tips. Clean the sprayer thoroughly to remove any trash, soil or dirty grease which could hold moisture and cause premature rusting. Repaint any chipped, bare or rusted areas to prevent any further deterioration. Inspect the machine for any worn or broken parts and adjust or replace as required.

**SEE YOUR BLUMHARDT DEALER FOR ANY PARTS AND/OR SERVICE WHICH MAY BE NEEDED.**

Thoroughly lubricate all grease fittings at the end of the season use and again before the first operation of the next season.

**NOTE:** *Check with your local or county extension office, state chemical association, or chemical dealer for local laws pertaining to washing and flushing the sprayer. Run off can contaminate ground water supplies.*

# LUBRICATION/MAINTENANCE

Service your sprayer at the intervals given in the Lubrication/Maintenance chart. Use only high quality NLGI No. 2 Multi-Purpose Lithium Grease for all grease fittings.

| Service Points                           | Frequency in Hours |       |                   |
|--|--------------------|-------|-------------------|
|  | Inspect/<br>Check  | Clean | Grease/<br>Change |
| Wheel Lug Nuts (first 30 hours)          | 10                 |       |                   |
| General Sprayer Inspection (see Note)    | 10                 |       |                   |
| Suction Strainer                         |                    | 10    |                   |
| Tire Pressure (semi-mount)               | 100                |       |                   |
| Caster Wheel Bearings (semi-mount)       | 200                |       | 10                |
| PTO Driven Pump Gear Case Lube           |                    |       | 250               |
| Boom Main Hinge Points                   |                    |       | 10                |
| Boom Outrigger Hinge Points              |                    |       | 10                |
| Caster Wheel Pivot Bearings (semi-mount) |                    |       | 10                |
| Tank(s)                                  | 100                | 10    |                   |
| *Nozzle Screens                          |                    | AN    |                   |
| Boom Adjustment                          | 50                 |       |                   |
| Sprayer                                  |                    | AN    |                   |
| Nozzle Assemblies                        | 10                 | AN    |                   |

\*AN = As Needed

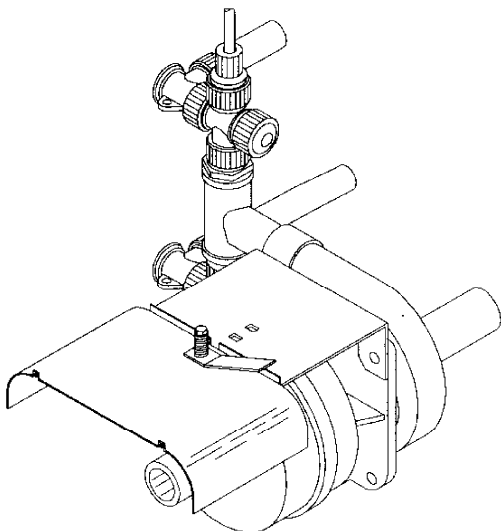
**NOTE:** Check the sprayer for leaks, damaged hoses, loose bolts, loose tank straps or other damage. Repair all leaks, hoses, loose bolts or damage before operation.

# LUBRICATION/MAINTENANCE

## PTO DRIVEN PUMP GEAR CASE LUBRICATION (If equipped)

Drain and install new oil in the pump gear case after every 250 hours of operation or at the start of each season. Fill the gear case with 6 oz of Phillube 80W90 or equivalent.

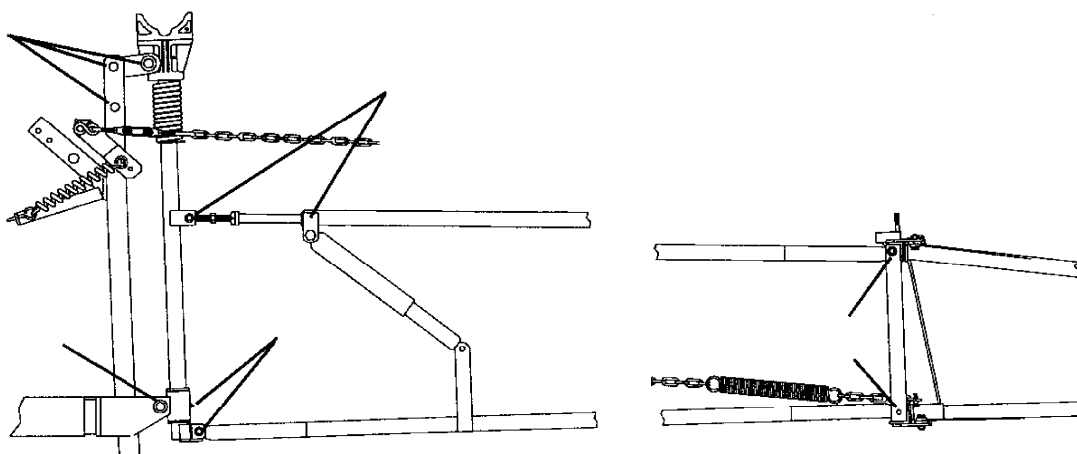
**IMPORTANT:** *Be sure the breather plug is installed in the top drain port in the gear case.*



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## BOOM LUBRICATION

Lubricate the boom hinge grease fittings at the points shown every 10 hours (daily).

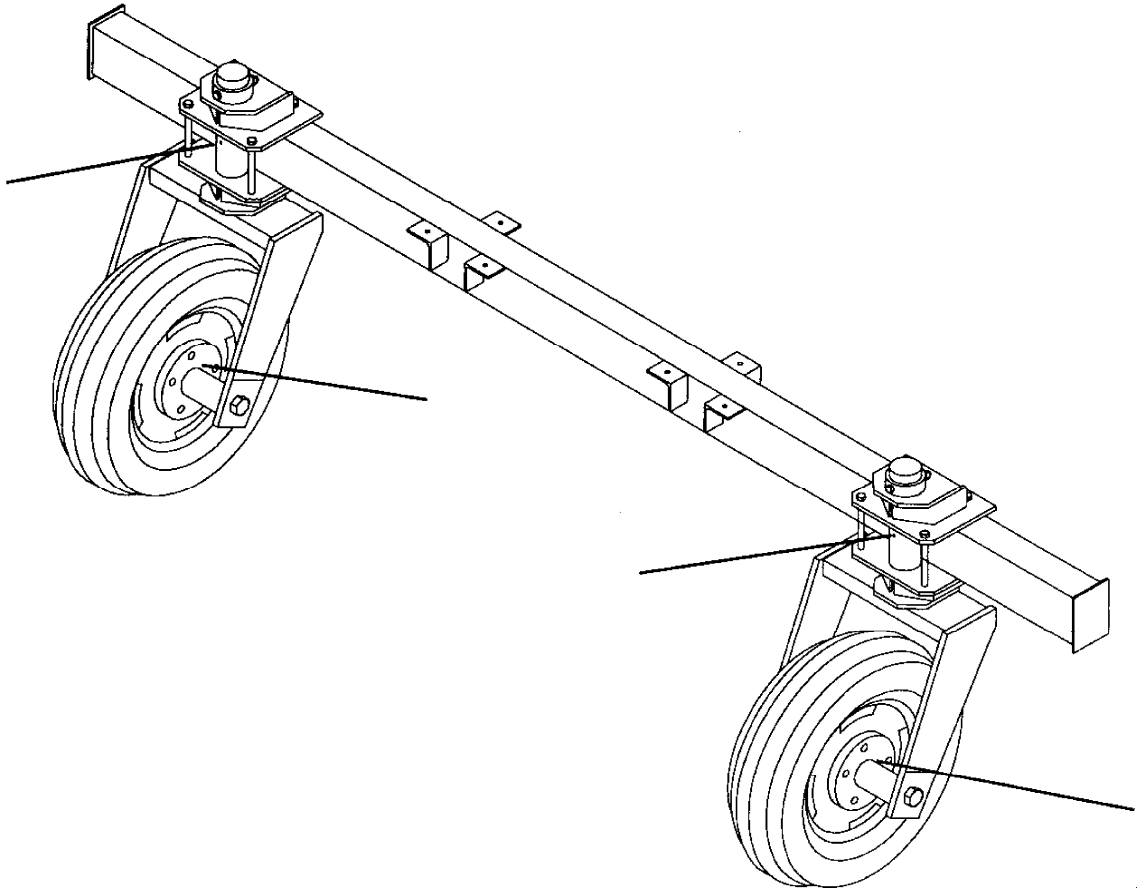


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# LUBRICATION/MAINTENANCE

## CASTER WHEEL LUBRICATION (If Equipped)

Lubricate the caster wheel swivel bearing and wheel bearing grease fittings every 10 hours. Remove and inspect wheel bearings and seals every 200 hours or at the start of each season.



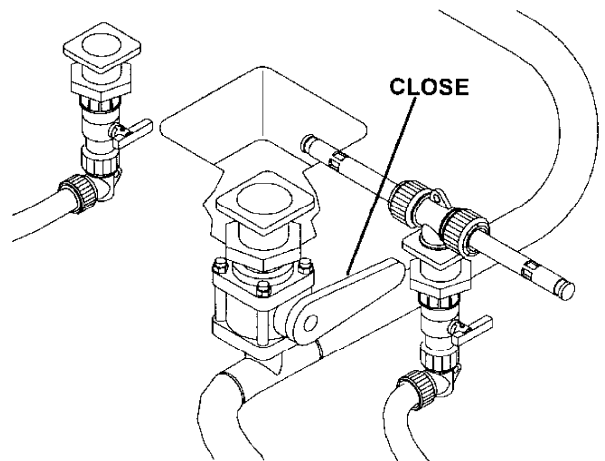
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## STRAINER CLEANING

The solution in the sprayer is continuously re-circulated through a screen filter located in the pump suction line whenever the pump is operating. The sprayer must have clean water to prevent clogging of the nozzle screens and valves when operating. This screen must be cleaned daily or more often as needed.

### Procedure:

Clean the screen at the start of each day before the water and chemicals are added to the tank.



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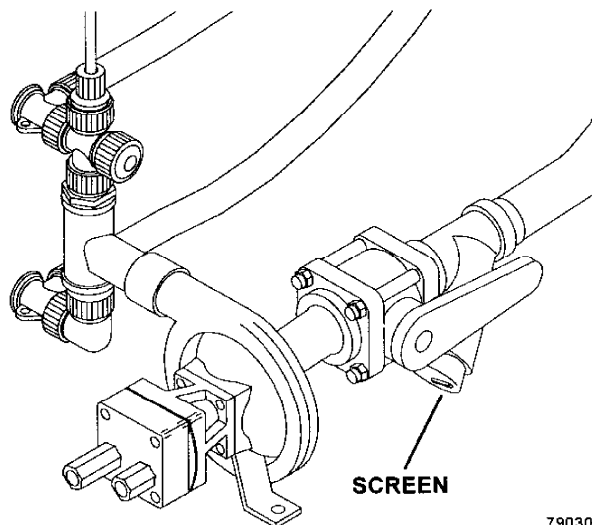
# LUBRICATION/MAINTENANCE

1. If there is water or chemical solution in the sprayer, close the tank ball valve to isolate the filter screen.

**NOTE:** *Drain the screen bowl before storage to prevent freezing.*



**WARNING:** *Always wear pesticide label prescribed face protection, unlined rubber gloves and rubber apron before removing and/or cleaning the filter screen.*



2. Loosen and remove the filter bowl.
3. Remove the screen, inspect for holes or damage. If damage is evident, replace it. If there is no damage, clean the screen using clean water. Clean the bowl.
4. Install the cleaned screen in the bowl. Inspect the bowl seal, replace the bowl seal if cracked or damaged. Install the screen and bowl assembly on the filter head by hand until the bowl contacts the seal and tighten an additional 3/4 turn.

**IMPORTANT:** *Do not use a wrench or over-tighten the bowl to prevent damage to the filter head.*

5. Open the tank ball valve to prime the pump and allow the solution to circulate.

# GENERAL SPECIFICATIONS

## TANK

Type: ..... Elliptical, Low Profile Polypropylene  
Capacity: ..... 500 U.S. Gal (Std) 750 U.S. Gal (Opt)  
Bottom Fill Size: ..... 2 inch  
Sump Size: ..... 12 inch x 6 inch x 4 inch Deep  
Agitation: ..... Double Agitator Type

## CLEAN WATER (SAFETY) TANK

Capacity: ..... 8 U.S. Gal.  
Type: ..... Polypropylene

## RINSE/FLUSH TANK (OPTIONAL)

Capacity: ..... 50 U.S. Gal  
Type: ..... Polypropylene

## MAIN FRAME

Type: ..... 6 inch x 4 inch Tubing with 6 inch x 6 inch Center tube  
Mounting: ..... Full Mount or Semi-Mounted 3-Pt Hitch Type  
..... conforming to Category III Dimensions

## CASTER WHEELS (IF EQUIPPED)

Tire Size: ..... 31 x 13.5 - 8 Ply  
Tire type: ..... Implement  
Pressure: ..... 15 to 32 PSI  
Wheel Bolt Torque: ..... 55 lb ft

## SPRAYER PUMP (HYDRAULIC DRIVEN)

Make: ..... Hypro  
Type: ..... Centrifugal  
Model: ..... 9300C  
Flow Rate (Max): ..... 114 GPM  
Pressure (Max): ..... 180 PSI  
Inlet Port Size: ..... 1-1/2 inch NPT  
Outlet Port Size: ..... 1-1/4 inch NPT

## PUMP PERFORMANCE TABLE

| HYDRAULIC PRESSURE | GPM at 30 PSI | GPM at 40 PSI | GPM at 50 PSI | GPM at 60 PSI | GPM at 70 PSI | GPM at 80 PSI | GPM at 100 PSI |
|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| 1400 PSI           | 67            | 55            | 48            | 38            | 29            | 15            |                |
| 1600 PSI           | 79            | 69            | 60            | 50            | 43            | 34            | 20             |
| 1800 PSI           | 90            | 80            | 70            | 60            | 54            | 44            | 30             |
| 2000 PSI           | 95            | 90            | 82            | 73            | 64            | 57            | 44             |

# GENERAL SPECIFICATIONS

## PUMP HYDRAULIC DRIVE MOTOR

Make: ..... Hypro  
 Model: ..... HM-4  
 Operating Pressure (Max): ..... 2000 PSI  
 Flow (Max): ..... 7 GPM

## SPRAYER PUMP (PTO DRIVEN)

Make: ..... Hypro  
 Model: ..... 9000C  
 Type: ..... Gear Driven Centrifugal  
 Flow Rate (Max): ..... 118 GPM  
 Pressure (Max): ..... 80 PSI  
 Speed (Max): ..... 1000 RPM  
 Inlet Port Size: ..... 1-1/2 inch NPT  
 Outlet Port Size: ..... 1-1/4 inch NPT  
 Gear Case Lube Capacity ..... 6 oz.  
 Gear Case Lube Type: ..... Phillube 80W90

## PUMP PERFORMANCE TABLE

| SPEED<br>(RPM) | 9000C PUMP OPERATING PRESSURE |      |        |      |        |      |        |      |        |      |        |      |
|----------------|-------------------------------|------|--------|------|--------|------|--------|------|--------|------|--------|------|
|                | 20 PSI                        |      | 30 PSI |      | 40 PSI |      | 50 PSI |      | 60 PSI |      | 70 PSI |      |
|                | GPM                           | HP   | GPM    | HP   | GPM    | HP   | GPM    | HP   | GPM    | HP   | GPM    | HP   |
| 500            | 97                            | 4.11 | 86     | 3.89 | 71     | 3.57 | 47     | 2.96 |        |      |        |      |
| 540            | 106                           | 5.15 | 96     | 4.78 | 87     | 4.63 | 70     | 4.22 | 47     | 3.51 |        |      |
| 600            | 117                           | 6.86 | 113    | 6.77 | 104    | 6.47 | 96     | 6.17 | 82     | 5.79 | 63     | 5.14 |

| SPEED<br>(RPM) | 9002C PUMP OPERATING PRESSURE |      |        |      |        |      |        |      |        |      |        |      |
|----------------|-------------------------------|------|--------|------|--------|------|--------|------|--------|------|--------|------|
|                | 20 PSI                        |      | 30 PSI |      | 40 PSI |      | 50 PSI |      | 60 PSI |      | 70 PSI |      |
|                | GPM                           | HP   | GPM    | HP   | GPM    | HP   | GPM    | HP   | GPM    | HP   | GPM    | HP   |
| 800            | 82                            | 2.8  | 70     | 2.62 | 53     | 2.28 |        |      |        |      |        |      |
| 900            | 96                            | 4.05 | 88     | 3.8  | 76     | 3.6  | 60     | 3.21 | 24     | 2.12 |        |      |
| 1000           | 110                           | 5.57 | 102    | 5.42 | 96     | 5.21 | 89     | 5    | 70     | 4.42 | 46     | 3.57 |

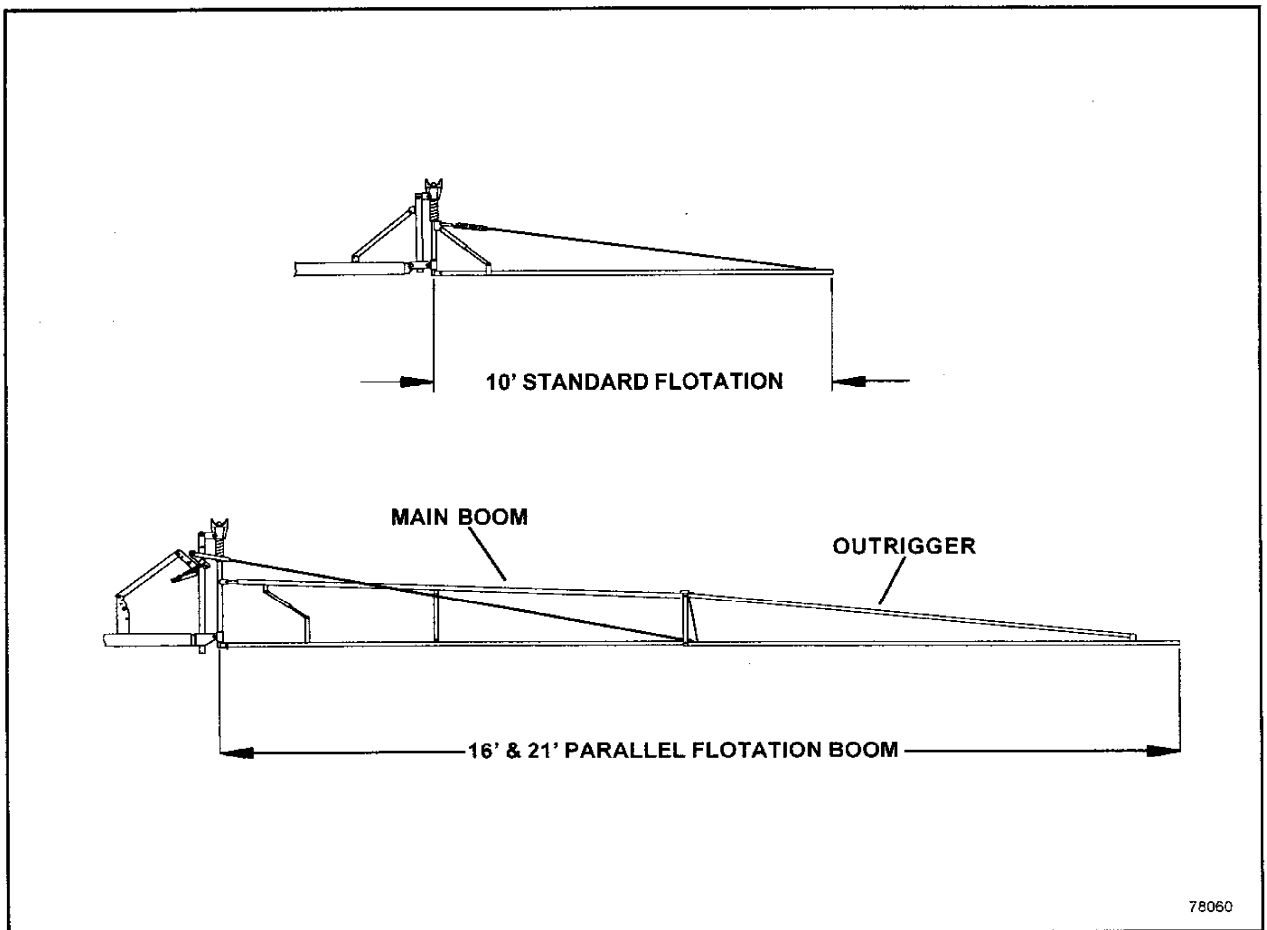


# GENERAL SPECIFICATIONS

## BOOM

|                            |  |
|----------------------------|--|
| Type:                      | 2-Section Dry Boom, Parallel Flotation with Dual Breakaway |
| Center Tube Width:         | 153 inch (Std), 193 inch (Opt)                             |
| Boom Section Length:       | Variable, 10, 16, 21 or 33 ft.                             |
| Nozzle Spacing:            | 20 inch (Std), 30 inch (Opt)                               |
| Transport Width:           |  |
| 153 in. Parallel Flotation | 13.5 ft.   |
| 153 in. Hydraulic Fold     | 14.9 ft.   |
| 193 in. Parallel Flotation | 16.8 ft.   |
| 193 in. Hydraulic Fold     | 18.3 ft.   |

**NOTE:** Boom lengths stated are approximate and do not include boom extensions. All measurements are from the center of the LH and RH boom swivel post.



# GENERAL SPECIFICATIONS

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## BOOM SHUT OFF VALVES

Make: ..... Spraying System  
Model: ..... AA344AEC  
Type: ..... Electric Ball Valve  
Operating Pressure (Max): ..... 0 - 300 PSI  
Power Requirement: ..... 12 VDC  
Current Draw: ..... 1.0 Amp

## PRESSURE REGULATOR VALVE

Make: ..... Spraying Systems  
Model: ..... 344AE-2PR  
Type: ..... Linear  
Power Requirement: ..... 12 VDC  
Current Draw: ..... 1.0 Amp  
Operating Pressure (Max): ..... 0 - 300 PSI

## BOOM HEIGHT CYLINDER (OPTIONAL)

Type: ..... Double Acting  
Size: ..... 3 in. x 8 in.

## BOOM TILT CYLINDERS (OPTIONAL)

Type: ..... Double Acting  
Size: ..... 1.5 in. x 8 in.

## BOOM FOLD CYLINDERS (OPTIONAL)

Type: ..... Double Acting  
Size: ..... 2 in. x 8 in.

## HYDRAULIC CIRCUIT CONTROL VALVE (OPTIONAL)

Make: ..... Max-Stack  
Type: ..... 2 or 5 outlet, Electric 12 VDC Solenoid Operated Manifold Valve

## METRIC CONVERSION FACTORS

|   | Multiply                 | By      | To Obtain              |
|---|--------------------------|---------|------------------------|
| <b>Length</b>                             | inches                   | 25.4    | millimeters (mm)       |
|   | inches                   | 2.54    | centimeters (cm)       |
|   | feet                     | 0.03048 | meters (m)             |
|   | miles                    | 1.609   | kilometers (km)        |
| <b>Area</b>                               | acres                    | 4046.7  | square meters (m)      |
|   | acres                    | 0.4047  | hectares (ha)          |
| <b>Volume</b>                             | gallons                  | 3.785   | cubic decimeters (dm)  |
|   | gallons                  | 3.785   | liters (L)             |
|   | Imperial gallons         | 4.546   | liters (L)             |
| <b>Flow Rate</b>                          | gallons/hour (gph)       | 3.785   | liters/hour (L/h)      |
|   | gallons/minute (gpm)     | 3.785   | liters/minute (L/min)  |
| <b>Appl. Rate</b>                         | gallons/acre (gpa)       | 9.353   | liters/hectare (L/ha)  |
| <b>Pressure</b>                           | pounds/square inch (psi) | 6.895   | kilopascals (kPa)      |
| <b>Speed</b>                              | miles/hour (mph)         | 1.609   | kilometers/hour (km/h) |
|   |                          |         |                        |
| <b>Imperial Gallon Conversion Factors</b> |                          |         |                        |
|   | Multiply                 | By      | To Obtain              |
| <b>Volume</b>                             | Imperial gallons         | 1.201   | U.S. gallons           |
|   | U.S. gallons             | 0.833   | Imperial gallons       |

43,560 Square Feet = 1 Acre

### Volume and Liquid Measure

8 fluid ounces = 16 tablespoons = 1 cup = 236.6 mL

2 cups = 32 tablespoons = 1 pint = 473.1 mL

2 pints = 64 tablespoons = 1 quart = 946.2 mL

4 quarts = 256 tablespoons = 1 gallon = 3785 mL

128 fluid ounces = 1 gallon = 3785 mL