

OPERATOR'S MANUAL

BLUMHARDT 300 GALLON 3PT SPRAYER

Printed in USA (/4196)JM-200 11/96

WIL-RICH
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Wahpeton, ND 58074
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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 warrant 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 judgment 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 the our judgment 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

The Blumhardt 300 Gallon 3PT Sprayer has as standard equipment a clearance lighting package. If your sprayer is not equipped with this package, it can be ordered by contacting your local dealer or the factory direct.

It is the responsibility of the user to read the Operator's Manual and comply with the safe and correct operating procedures as pertains to the operation, lubrication and maintenance of the product according to the information outlined in the Operator's Manual.


If this machine is used by an employee or is loaned or rented, make certain that the operator(s), prior to operating, is instructed in safe and proper use and reviews and understands the Operator's Manual.

The user is responsible for inspecting his/her machine and for having parts repaired or replaced when continued use of this product would cause damage or excessive wear to the other parts. The word NOTE is used to convey information that is out of context with the manual text; special information such as specifications, techniques, reference information of supplementary nature.



WIL-RICH
a division of TFC UNITED CORP.


Serial Number:



®
Wahpeton, ND 58074

This machine may be covered by one or more of the following patents:
 -PAT. U.S. - 3,806,928 3,782,481 4,451,052
 4,296,695 4,054,177 4,068,723 4,121,852
 -PAT. CAN. - 1974 1976 1982 1985
 -OTHER PATENTS PENDING

Made in USA



When in need of parts, always specify the model and serial number. Write this number in the space provided. The serial number plate is located on the main frame (left front corner).




Before using the Blumhardt sprayer, a careful inspection must become routine. A check must be made to insure that all hardware is securely tightened and moving parts are properly lubricated.

Wherever the terms "left" and "right" are used, it must be understood to mean from a position behind and facing the machine.


Lubricate all bearings and moving parts as you proceed and make sure they work freely.

When tightening bolts, they must be torqued to the proper number of foot-pounds as indicated in the table unless specified. It is important that all bolts be kept tight.

On new machines, all nuts and bolts must be rechecked after a few hours of operation.

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
UNCGR2	18	45	89	160	252	330
UNCGR5	30	68	140	240	360	544
UNCGR8	40	100	195	340	528	792
UNFGR2	21	51	102	178	272	368
UNFGR5	32	70	168	264	392	572
UNFGR8	48	112	216	368	792	840


TORQUE.EPS



WARNING

To Prevent Serious Injury or Death:

- Avoid unsafe operation or maintenance.
- Do not operate or work on this machine without reading and understanding the operator's manual.
- If manual is lost, contact your nearest dealer for a new manual.



3W40A

3PT DECALS

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 with no markings are grade 2

Grade 5 bolts furnished with the machine are identified by three radial lines on the head.

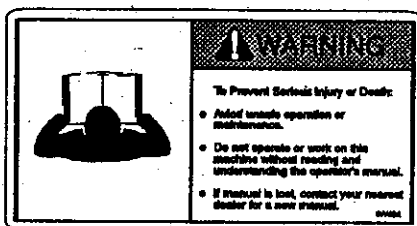
Grade 8 bolts furnished with the machine are identified by six radial lines on the head.

All U-bolts are grade 5.

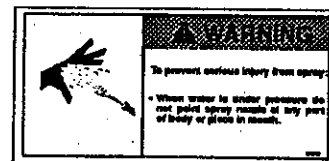


THIS SYMBOL USED TO CALL YOUR ATTENTION TO INSTRUCTIONS CONCERNING YOUR PERSONAL SAFETY. BE SURE TO OBSERVE AND FOLLOW THESE INSTRUCTIONS

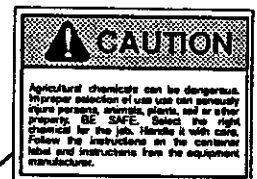
49165.EPS



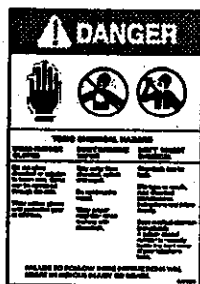
60712 READ WARNING DECAL



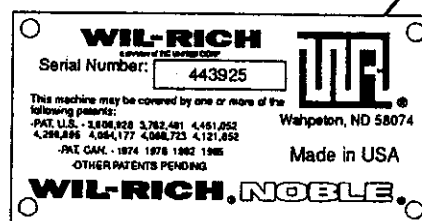
61404 PRESSURE DECAL



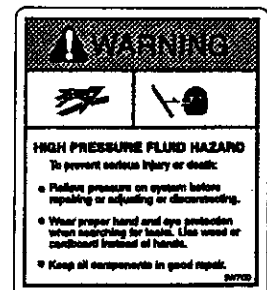
58005 CAUTION DECAL



61403 TOXIC CHEMICAL DECAL



SERIAL NUMBER PLATE



60711 OIL WARNING DECAL

LOADING

Tractor Preparation

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

Most late model tractors have some adjustment on the hydraulic lift rods to allow the lift arms to operate independently. This adjustment should be made to enable the sprayer to follow rough terrain better. This adjustment is usually an adjustable collar on the lift rod, a pin in an elongated hole to turn, a pin to remove, or some other adjustment to allow lift arms some independent vertical movement. (See your tractor Operator's Manual for more detail.)

Some tractors should be equipped with additional front weight for easier and safer operation. The front end of the tractor should not be allowed to bounce when turning at the end of a row or rear up when starting out on the road.

Hitching to the Tractor

The sprayer is hitched rigid to the tractor.

The tractor hitch should be set to lock out sway, when raised for transport. When operating, the tractor hitch must be set to allow side to side movement. (See your tractor Operator's Manual for more details.)

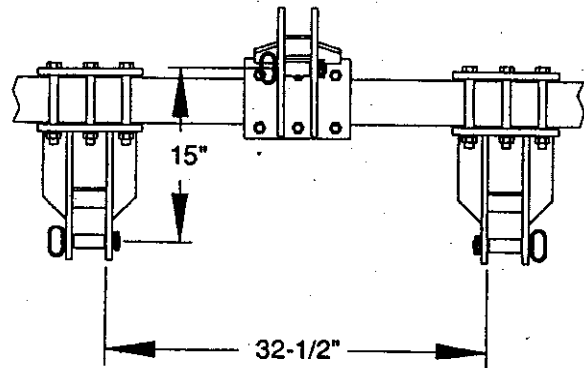
Adjust the bypass of the tractor hydraulic lift as a precaution against the sprayer dropping too fast. Raise and lower the sprayer until the proper adjustment is made.

By using a combination of the hitch pin and bushings, the sprayer will hitch to a Quick-hitch category II or III.

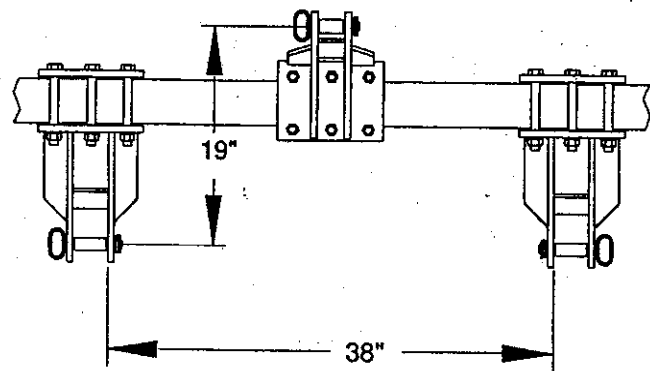
Refer to your tractors Operator's Manual for exact hitching procedures.

Level the sprayer so the tool bar is parallel to the ground when the sprayer is at working height. Use the top adjustment on the 3-point hitch of the tractor to level the sprayer front to rear. Adjust the tractor's lift arms so they are the same length to level the sprayer side to side.

Quick Hitch Cat. II



Quick Hitch Cat. III



PTO PUMP MOUNT

On series 9000C units, install the pump using a Hypro PTO Mounting clip, which is designed to accommodate most PTO tractor shields. When properly installed, the clip prevents the pump from rotating, reduces weight on pump shaft (reducing excessive wear on bearings), and in most cases replaces the torque chain. It also covers the PTO and pump shaft as an added safety precaution when pump is in operation.

STEP 1. When mounting the pump clip to the PTO shield, make sure the shield is not bent down. This will cause an additional burden on the pump bearings. It may be necessary to bend the shield back to its original position (or higher) to allow the clip to slide under the shield as shown.

STEP 2. Attach the clip to the pump by using bolts in the pump housing - **DO NOT TIGHTEN DOWN** the bolts at this time. First align the pump on the PTO shaft to make the proper height and depth adjustments.

STEP 3. When the pump clip is firmly located on the PTO shield, tighten the bolts on the pump housing.

Note: It will be necessary to drill a 5/16" center hole in all flat surface shields to properly secure the clip to the PTO shield.

If mounting clip cannot be used, the pump should be prevented from rotating on the PTO shaft while in operation by attaching a torque arm to pump base and tying it to the tractor with a chain. Fasten chain to tractor directly below the pump gear case or as close to vertical as possible to avoid backward or forward pull on the pump.

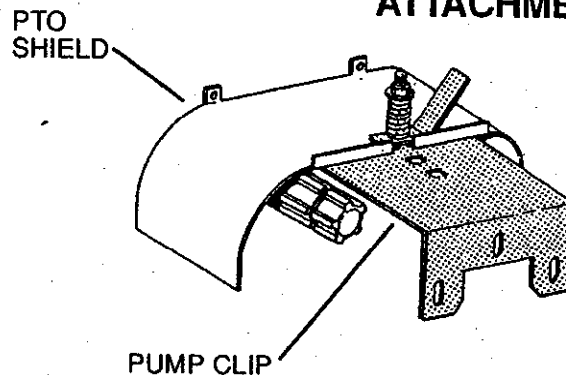
Lubrication

Pump gear case is lubricated at the factory. Re-lubricate after 250 hours of operation or at the start of each season. Also lubricate when ever gear case is opened for repair. To lubricate, fill gear case with 6 oz. of Phillube SAE 80W90 or equivalent. **DO NOT** overfill.

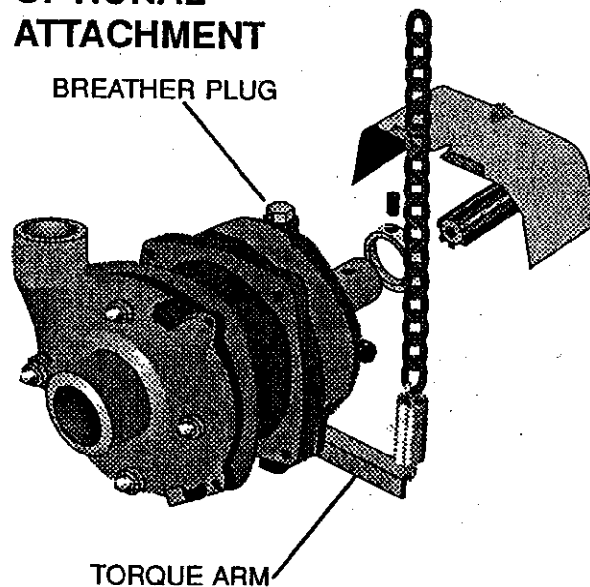
Note: Make sure breather plug is installed in the *top drain port* in gear case.

Mechanical seal in pump is lubricated by liquid being pumped. **DO NOT RUN PUMP DRY.** Pump bearings are factory lubricated and do not require further lubrication in the field.

PREFERRED METHOD OF ATTACHMENT

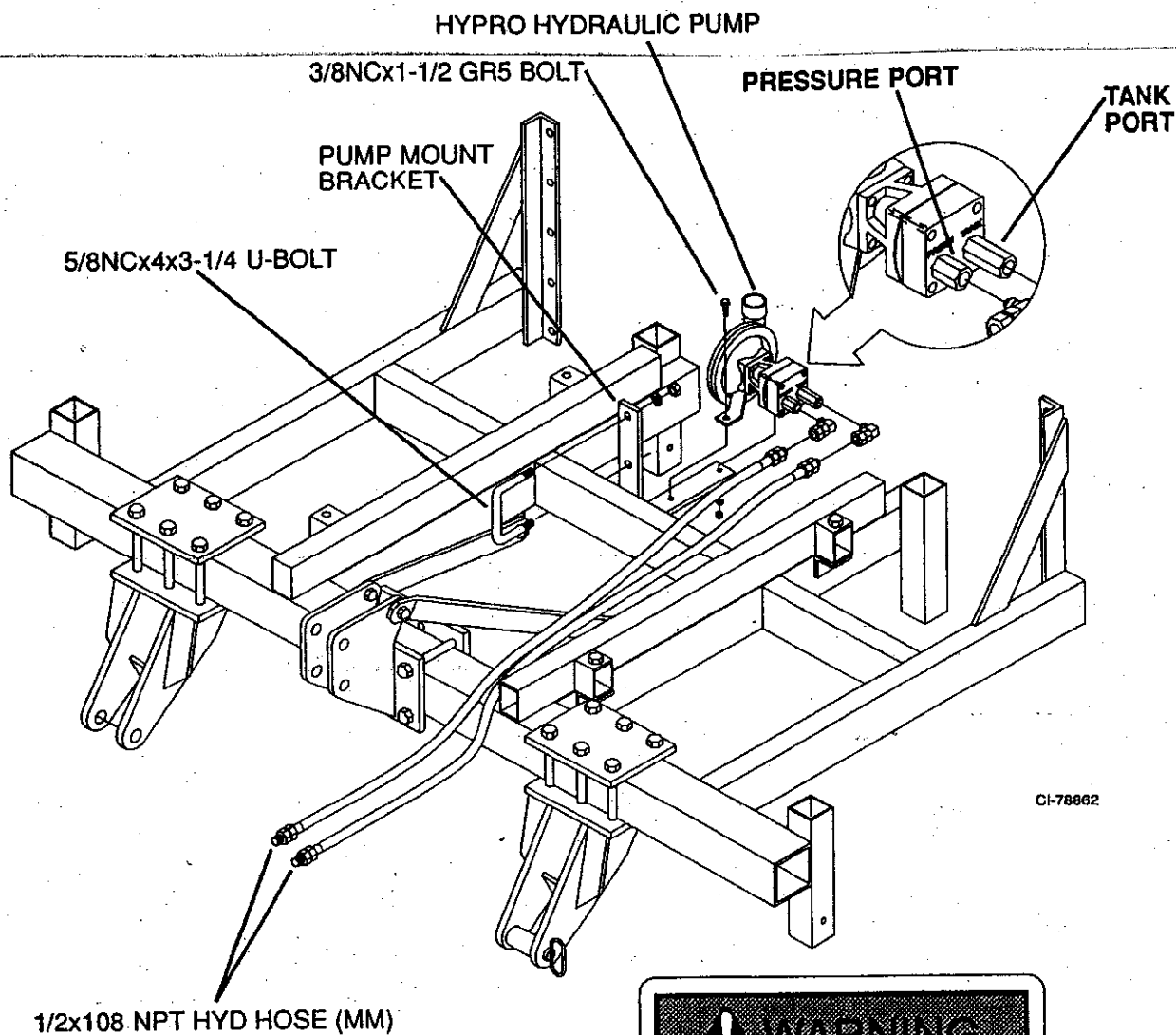


OPTIONAL ATTACHMENT



HYDRAULIC PUMP MOUNT

Note: The hydraulic pump must have correct oil flow to work properly. Note pressure port (feed) and tank port (return) on hydraulic drive on pump.



Note: Route hydraulic hoses from pump to tractor in an area where they will not be pinched, kinked or drag on the ground.

WARNING

HIGH PRESSURE FLUID HAZARD

To prevent serious injury or death:

- Relieve pressure on system before repairing or adjusting or disconnecting.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Keep all components in good repair.

SW700

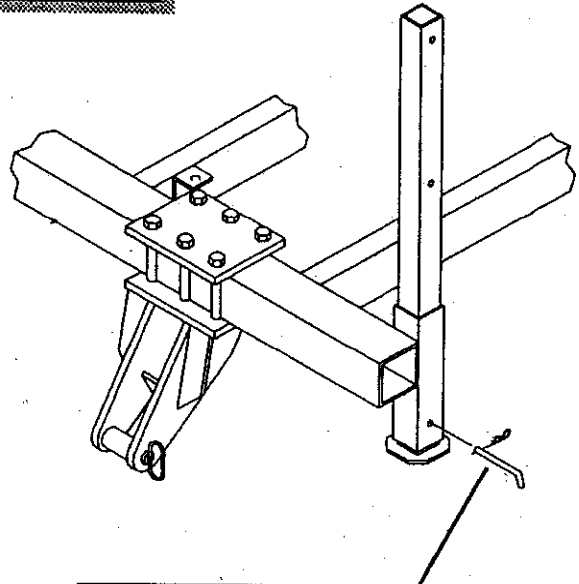
UNLOADING

Note: When unloading the 3PT, sprayer, the sprayer may become unstable if there is more than 50 gallons of liquid left in tank.

STEP 1. Sprayer must be unloaded on level ground.

STEP 2. Disconnect the electrical supply and PTO or hydraulic lines, whichever is used.

Transport position

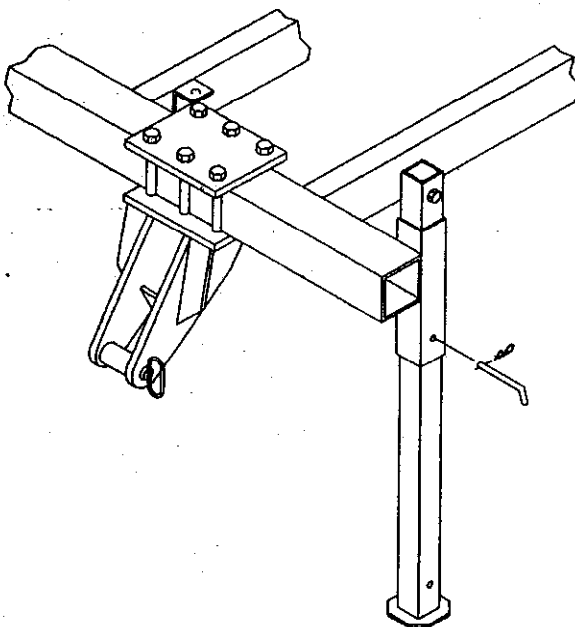


STEP 3. Remove the parking stand locking pins (4) and lower the parking stand legs (4). Reinstall locking pins.

STEP 4. Before unhitching the 3PT, the operator must lock the booms in transport position and make sure the sprayer is stable.

STEP 5. Unhitch sprayer.

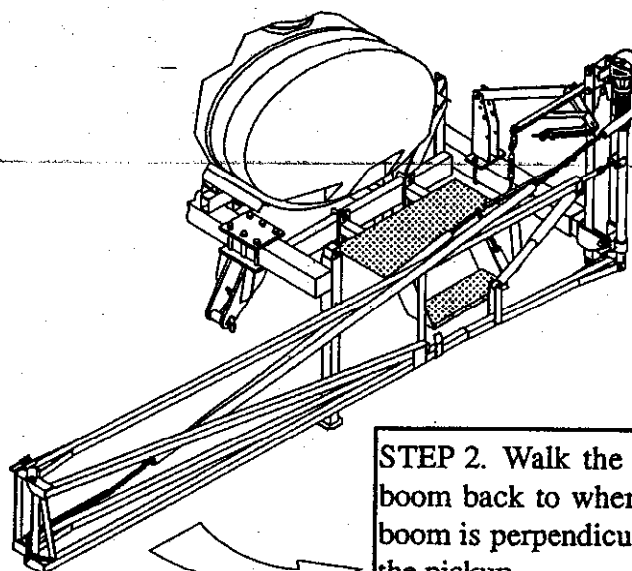
Storage (unloaded) position



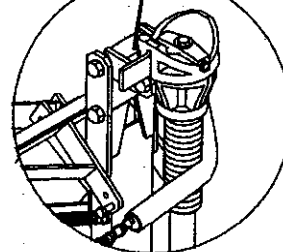
BOOMS

Unfolding

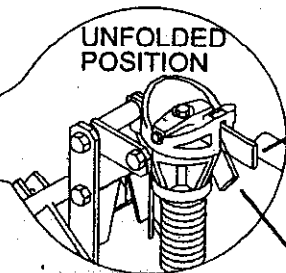
STEP 1. Move anti-swing clutch handle to the unlock position.



STEP 2. Walk the main boom back to where the boom is perpendicular to the pickup.

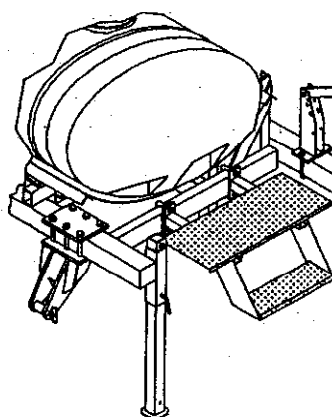


STEP 4. Lock the anti-swing clutch handle.



ANTI-SWING CLUTCH HANDLE IN UNLOCK POSITION

ANTI-SWING CLUTCH HANDLE IN LOCK POSITION



TARP STRAP

OUTRIGGER

STEP 3. Lift the outrigger away from the main boom and walk the outrigger around till it locks in place.

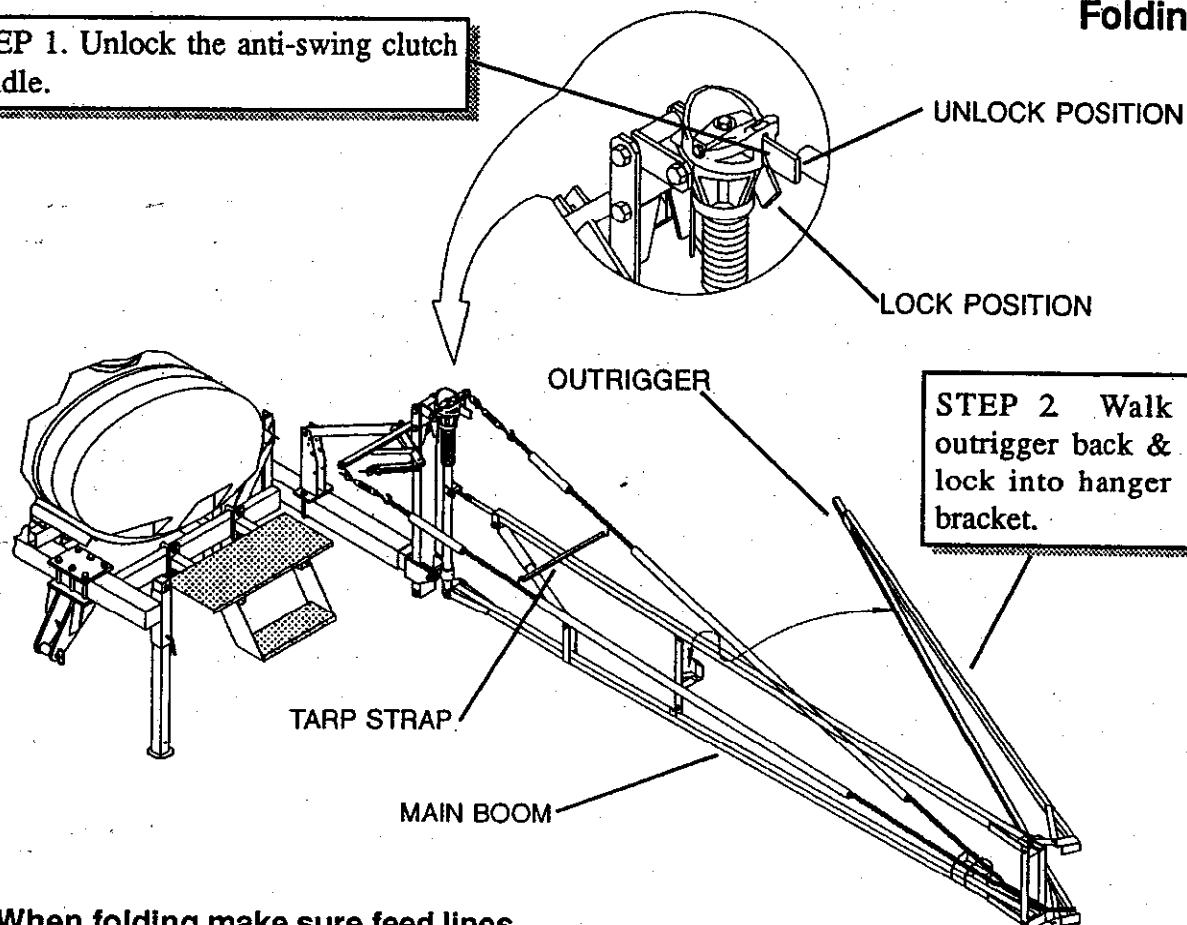
MAIN BOOM

CI-78814

BOOMS

Folding

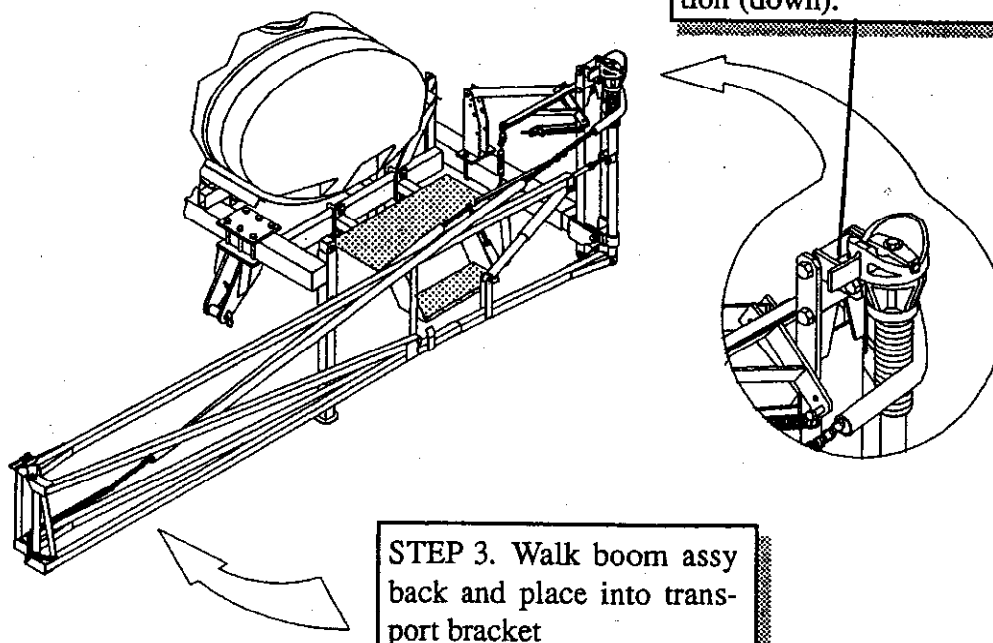
STEP 1. Unlock the anti-swing clutch handle.



STEP 2 Walk outrigger back & lock into hanger bracket.

Note: When folding make sure feed lines do not kink and sprayer nozzles don't hit the boom or other nozzles being folded into them.

STEP 4. Move anti-swing clutch handle to the lock position (down).



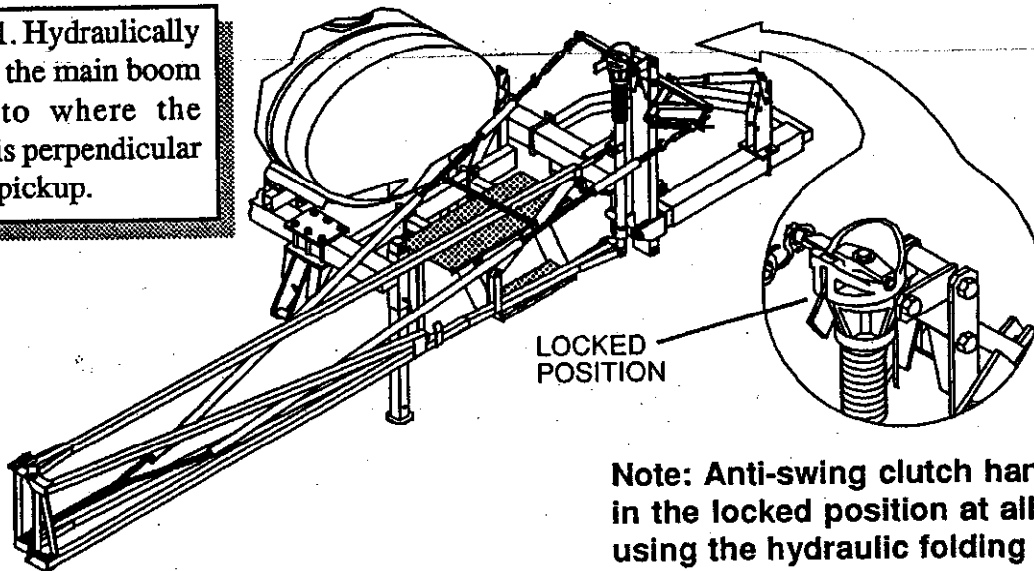
STEP 3. Walk boom assy back and place into transport bracket

CI-78814A

HYDRAULIC FOLDING BOOMS

Folding & Unfolding

STEP 1. Hydraulically unfold the main boom back to where the boom is perpendicular to the pickup.

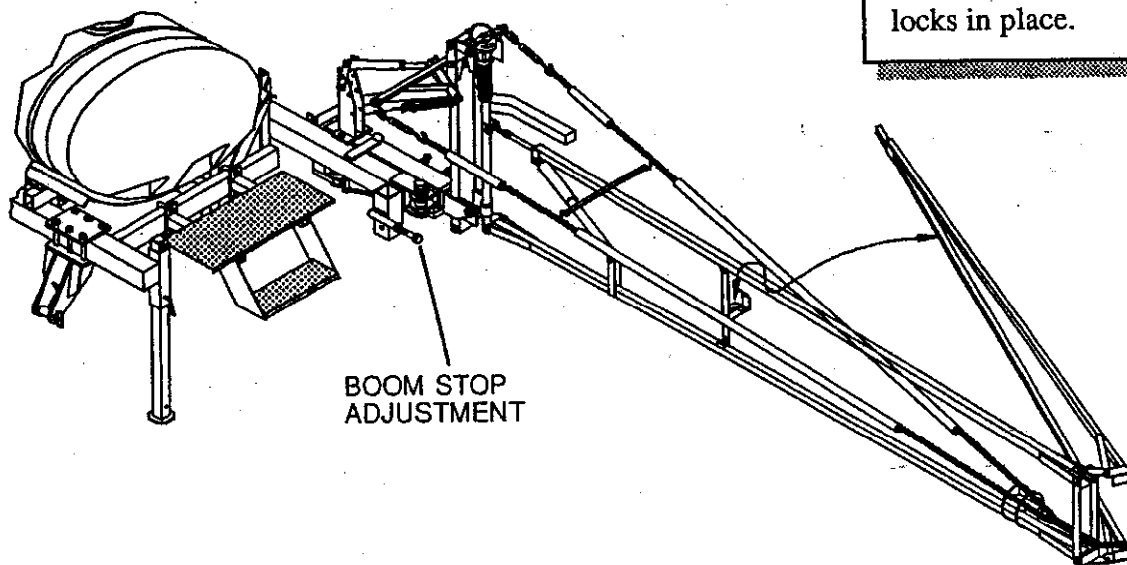


Note: The boom outrigger must be in the folded position during transport. Failure to do this may result in damage to the boom if boom flotation occurs.

Note: Anti-swing clutch handle must be in the locked position at all times when using the hydraulic folding booms.

Reverse steps 1 & 2 to fold implement.
If boom does not fold 90° to center tube,
check the boom stop adjustment on next
page.

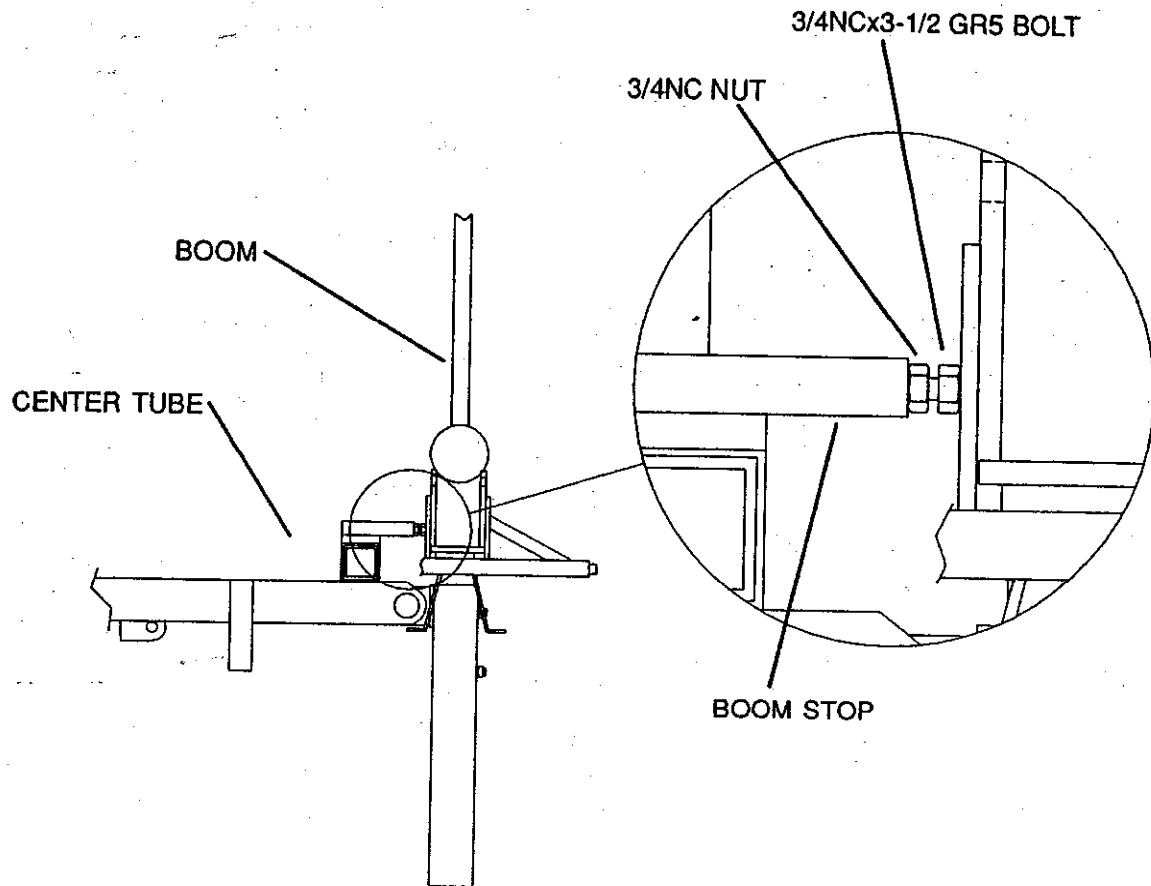
STEP 2. Lift outrigger away from the main boom and walk the outrigger around till it locks in place.



HYDRAULIC FOLDING BOOMS

Boom Stop Adjustment

Note: 3PT booms require a fold stop to help stabilize boom in the folded position. Adjust fold stop bolt (3/4NCx3-1/2) so the boom folds 90° to center tube.



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BOOM SET UP

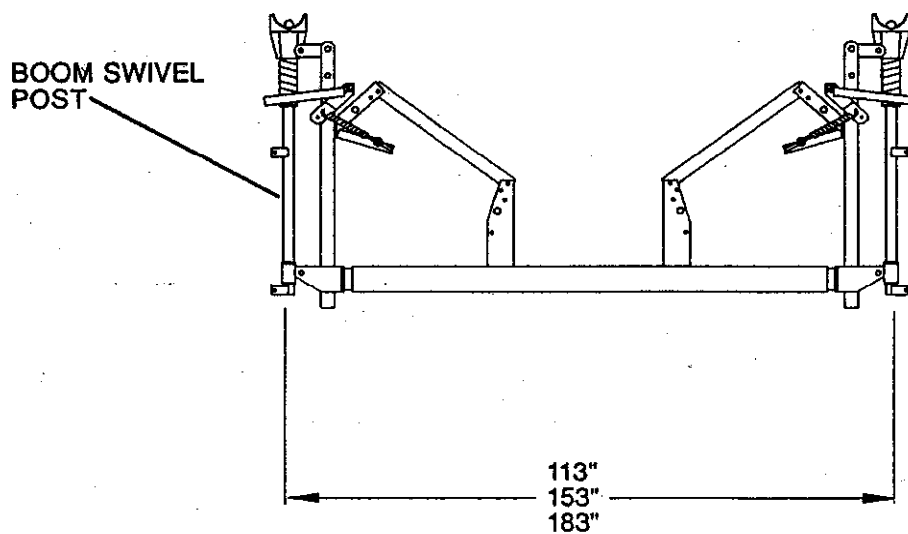
Boom Arms

The Blumhardt 300 Gallon 3PT sprayer is available with a 10' standard flotation and 16' & 21' parallel flotation booms. The size stated are for the main boom and outrigger assembled and do not include the boom extension.

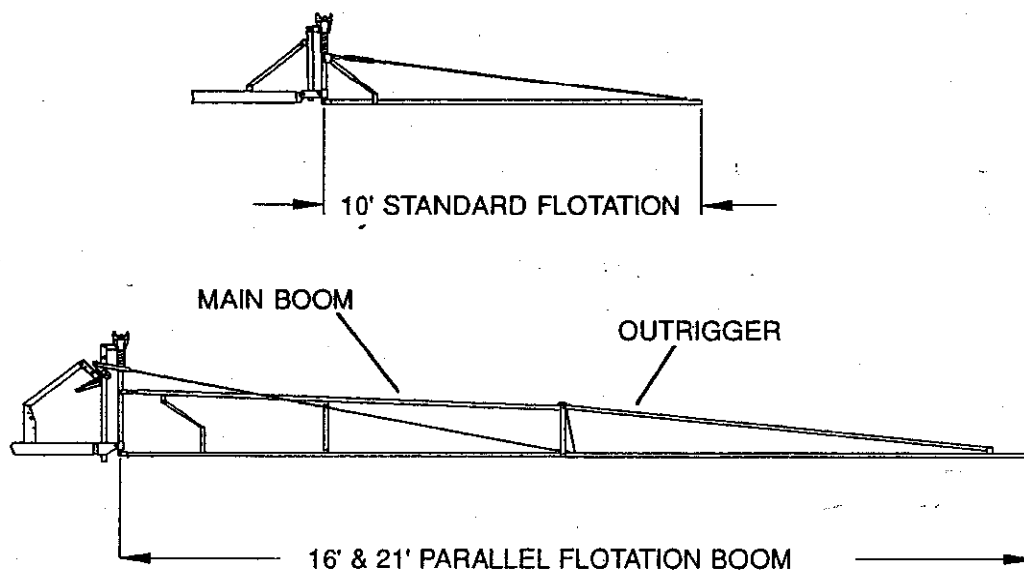
Note: All boom lengths are given in approximate lengths.

The center section is measured from the center of the left boom swivel post to the center of the right boom swivel post.

The booms are measured from the center of the boom swivel post to the end of the outrigger.



CI-78798



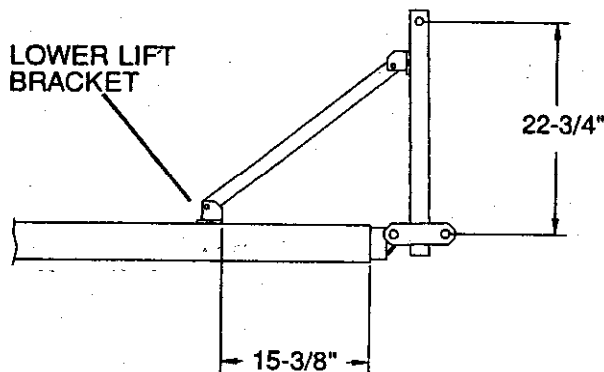
CI-78060

BOOM TILT

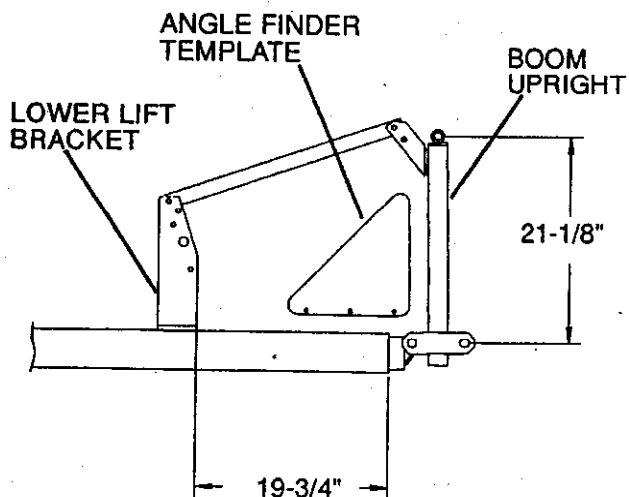
With the straight brace support arm, the support arm mount must be positioned so the boom upright is angled slightly inward at the top. An angle finder template (provided) is used as a guide between the upper frame and the boom upright. The boom upright should then be tilted inward until it matches the angle finder template.

When the correct angle is found, tighten the support arm mount.

10' BOOM POST ASSEMBLY STRAIGHT BRACE SUPPORT ARM (STANDARD)

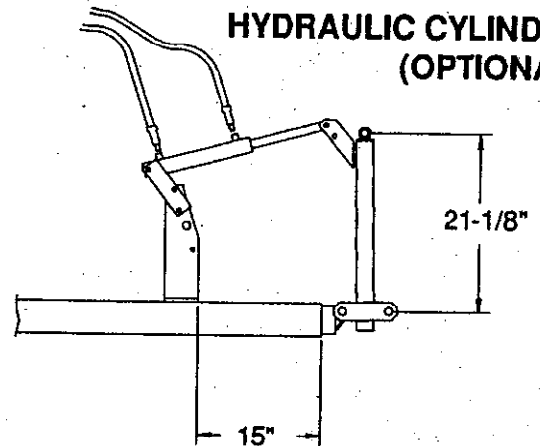


16' BOOM POST ASSEMBLY STRAIGHT BRACE SUPPORT ARM (STANDARD)

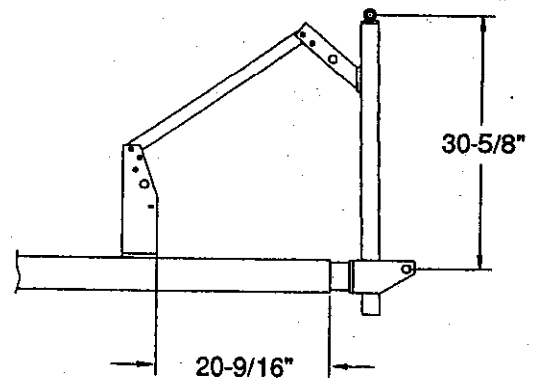


16' BOOM POST ASSEMBLY

HYDRAULIC CYLINDER (OPTIONAL)

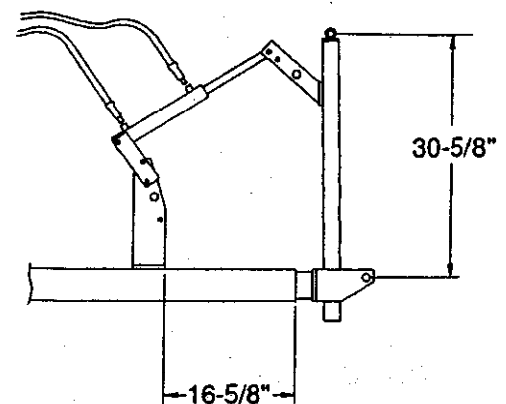


21' BOOM POST ASSEMBLY STRAIGHT BRACE SUPPORT ARM (STANDARD)



21' BOOM POST ASSEMBLY

HYDRAULIC CYLINDER (OPTIONAL)



RIGGING THE BOOMS

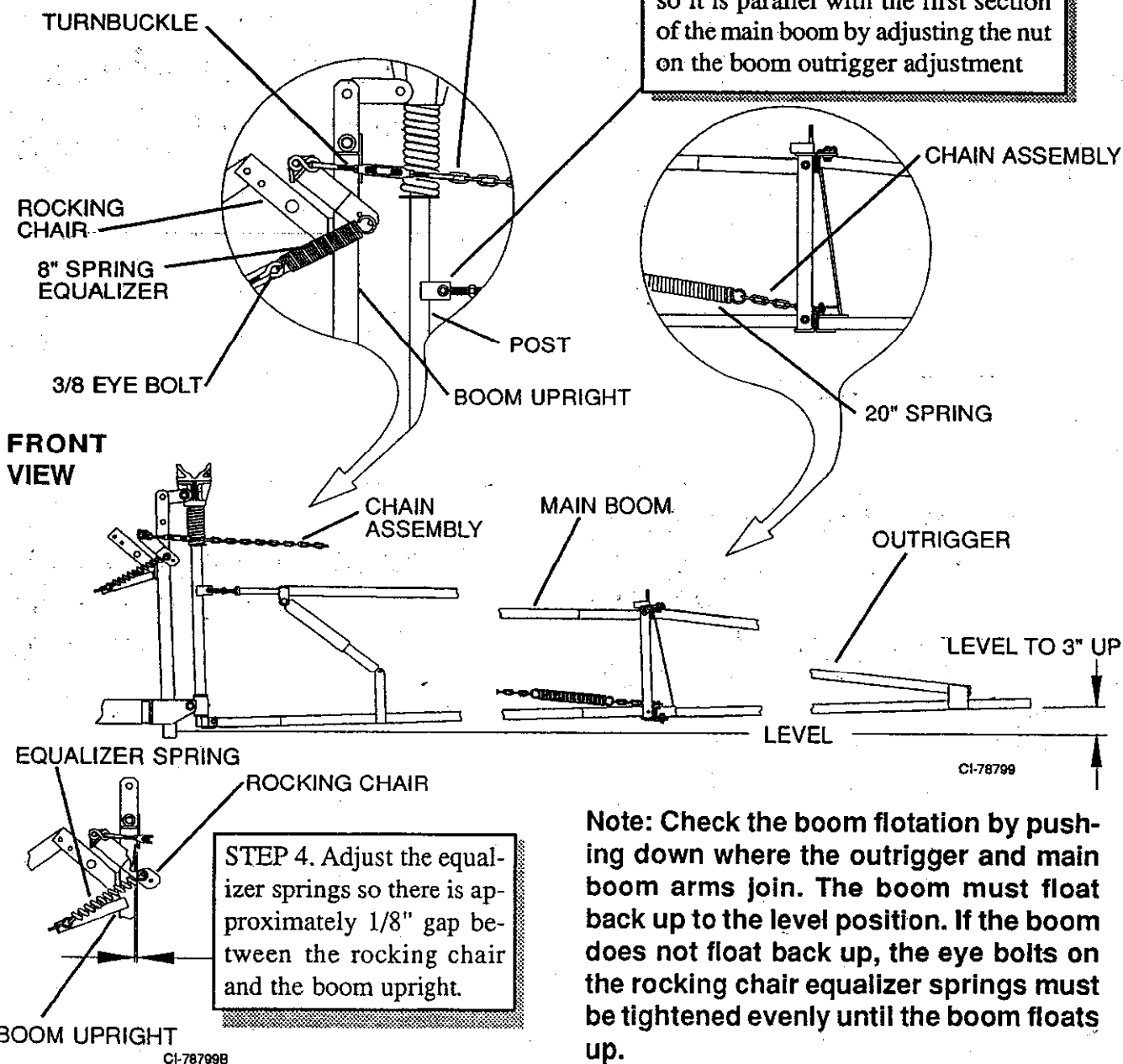
Note: Before starting adjustments, boom must be completely assembled, all joints well lubricated and moving freely, boom post set and the sprayer must be setting on level ground.

Note: If setting chain length is required see steps 1 & 2 . If chain is assembled go to step 3.

STEP 2. Install chain assemblies from the rocking mechanism to the boom outrigger so that it holds the boom in its resting position.

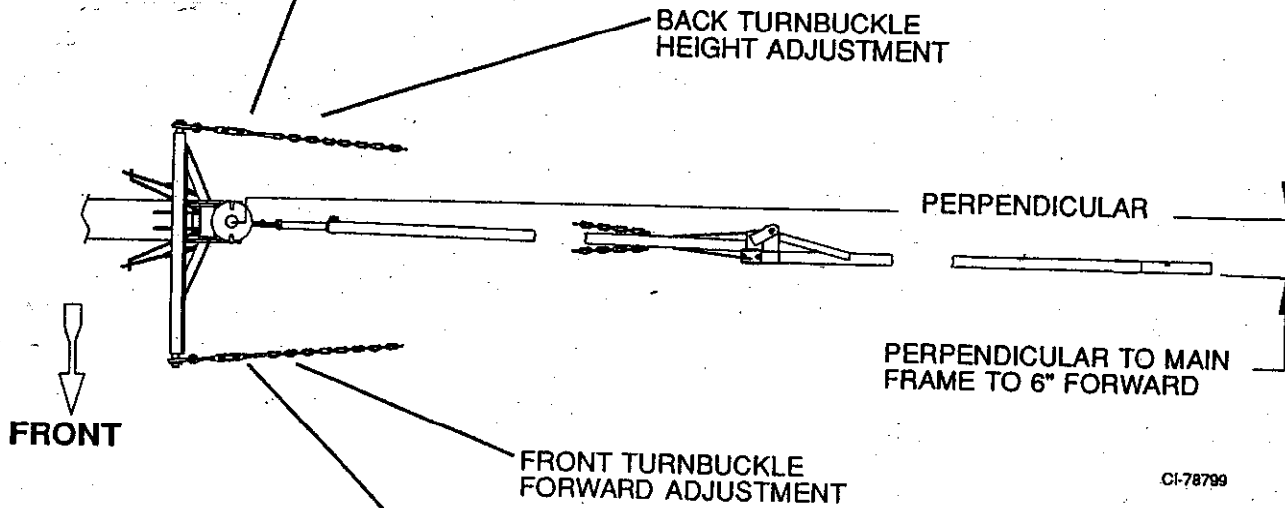
STEP 1. Main boom must be resting on a stand, level or slightly down and turnbuckles loose so that no threads are showing in turnbuckle body.

STEP 3. Adjust the boom outrigger so it is parallel with the first section of the main boom by adjusting the nut on the boom outrigger adjustment



Note: 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. If the boom does not float back up, the eye bolts on the rocking chair equalizer springs must be tightened evenly until the boom floats up.

STEP 6. Adjust the back turnbuckle for adjusting levelness. The main boom and outrigger must be level to 3" above level of the main frame.



STEP 5. Adjust the front turnbuckle so that the main boom and outrigger are perpendicular to the main frame to 6" forward.

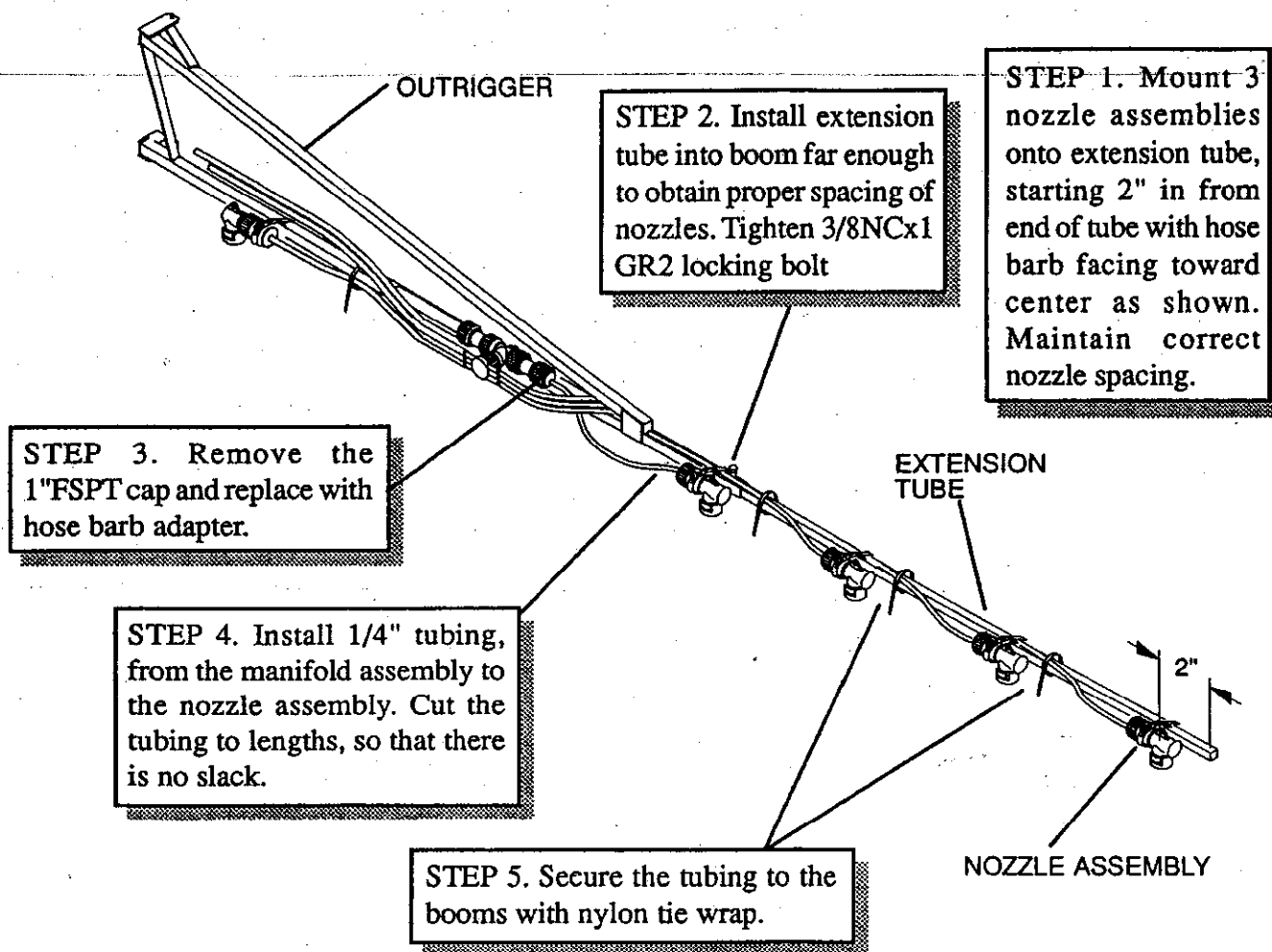


Note: To prevent serious injury from pinching: Keep all persons and objects clear while any adjusting is being done on machine.

BOOM EXTENSION

Note: Extension tubes may be added on all booms. This extension tube is adjustable out to 5' beyond the outrigger.

Note: Boom extension tube must be inserted a minimum of 12 inches.



CI-78001

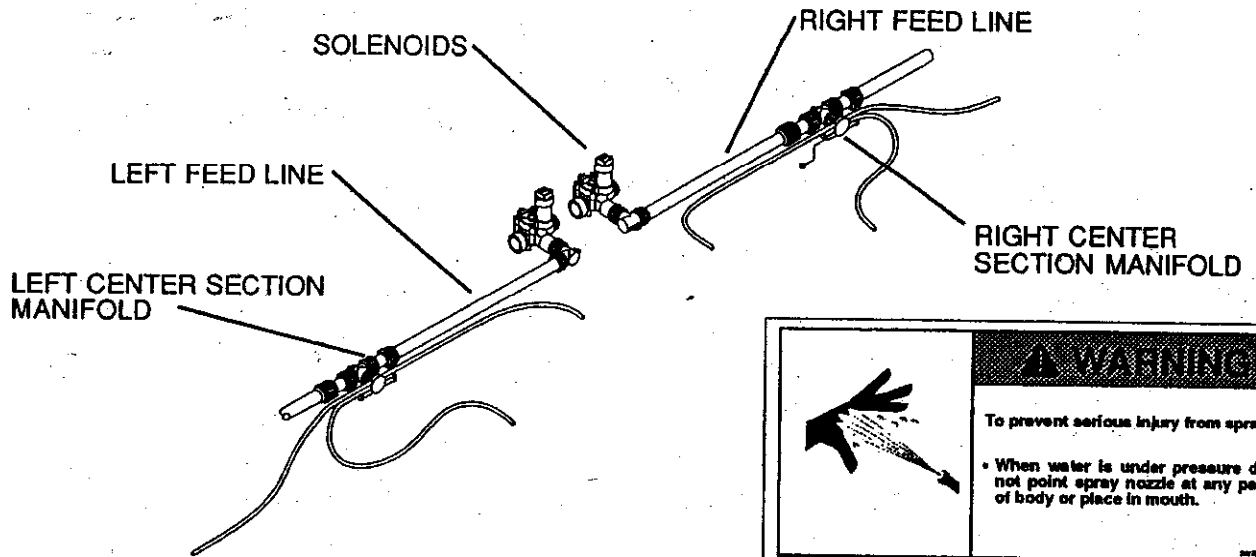
Note: When using extensions, care must be taken when booms are in a folded position. The extension will stick out behind the sprayer, which can be dangerous when backing up.

FEEDLINE HOOK UP

2 Solenoid Setup

Each solenoid feeds a boom and splits the center section feed.

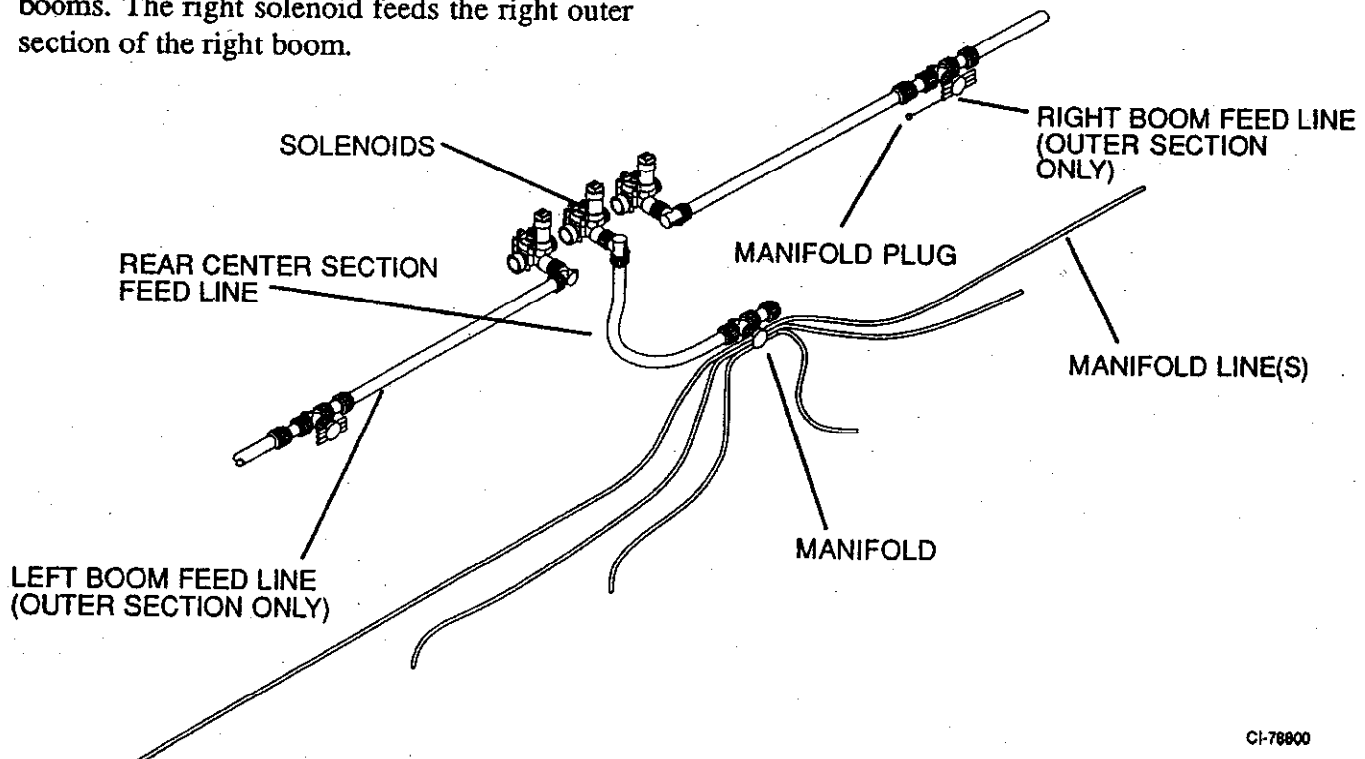
Note: The optimum setting would be to have each solenoid feed an equal amount of nozzles.



3 Solenoid Setup

Each solenoid feeds a specific area of the boom. The left solenoid feeds the outer section of the left boom. The center solenoid feeds the center section and the inside sections of the left and right booms. The right solenoid feeds the right outer section of the right boom.

Note: Try to keep feed lines and nozzle lines symmetrical from side to side to prevent uneven pressure drop.



CI-76800

APPLICATION RATES

The application Rate Chart on pages 25 & 26 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 factor shown below.

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	.83

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

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

CALIBRATION

Pre Calibration Check: Be sure that all sprayer parts are free of foreign material and are functioning properly. Inspect nozzle tips and internal parts for obvious wear, defects, proper size and type. Check the flow rate of each nozzle using water at the planned operating pressure for uniform output, and uniform appearance of spray pattern. Replace any nozzle tips having flow 5% more or less than average of the other nozzles checked and/or having obvious different patterns. Check the flow rate of new nozzles.

This engineering practice provides information on the calibration of boom type field sprayers used for broadcast, band or row applications.

This engineering practice sets forth guidelines for those who prepare field sprayer calibration procedures. The purpose is to encourage practices that will improve uniformity, accuracy and safety of pesticide application with field sprayers.

Never use chemical to calibrate the sprayer. Always use clean water.

Use water alone to calibrate the sprayer unless the flow rate of the actual spray mixture varies more than 5% from the flow rate of water.

Calibration with actual spray mixture. Wear suitable, approved safety equipment and protective clothing. Avoid contact of spray.

Avoid contamination of area. Calibrate only when wind speed is below 5 m.p.h. (8km/h).

General Calibration information. The volume of spray material 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 a specific calibration procedure.

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 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 of sprayer. 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.

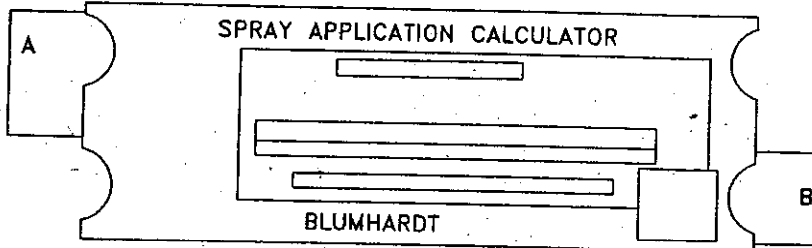
(Reference: ASAE Standards ASAE EP 367.1 Guide for Preparing Field Sprayer Calibration Procedures.)

Note: Calibration is not a one time occurrence! Sprayers must be periodically be calibrated during the season, particularly when changing chemicals. You can calibrate during application if field dimensions are accurately known

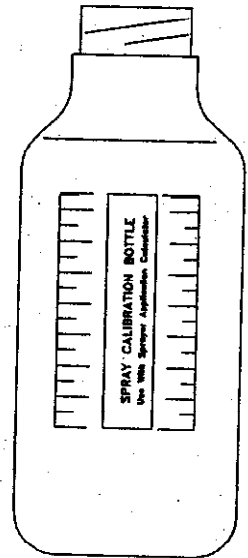
CONE TIP CALIBRATION

SPRAYER CALIBRATION

The tip 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 below.



CI-78013



CI-78013A

Calibration instructions without Blumhardt bottle and calculator.

Equipment: A bottle with 1 ounce graduations on it, a watch with a second hand, pencil and paper 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. Adjust the sprayer pressure accordingly to fill the bottle to the desired number of ounces. Adjust the sprayer pressure accordingly to fill the bottle to desired level in the proper amount of time.

Equation:

$$\text{Seconds} = \frac{2589 \times \text{level (liquid ounces)}}{\text{MPH} \times \text{Gallons Per Acre} \times \text{nozzle spacing}}$$

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.



CAUTION

Agricultural chemicals can be dangerous. Improper selection of use 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.

FLOOD TIP CALIBRATION

Broadcast Application Rate

Although total sprayer capacity is determined by nozzle flow rate and the number of nozzles, the volume of liquid applied per acre is a function of flow rate, nozzle spacing, and sprayer speed as defined in the following formula:

$$\frac{\text{Gallons per acre (gpa)}}{\text{or}} = \frac{5940 \times \text{gpm per nozzle}}{\text{Nozzle Spacing-inches} \times \text{m.p.h.}}$$

$$\text{GPM} = \frac{\text{GPA} \times \text{M.p.h.}}{5940} \times \text{Nozzle Spacing-Inches}$$

Note: The performance of any agricultural chemical depends upon the proper application of the correct amount... based on chemical manufacture's equipment recommendation. Be sure that your equipment has been properly calibrated before spraying.

This information on Flood Tips is taken from the Delavan Ag Spray Products Catalog #1609P.

Broadcast Nozzle Spacing Conversion Factors

To calculate GPA capacities for nozzle spacings other than those shown in capacity charts, note on what nozzle spacing the capacity chart is based and use the corresponding conversion table. Multiply capacities from chart on pages 25 & 26 by the proper factor indicated.

FACTORS FOR 20" SPACING CAPACITIES

NOZZLE SPACING	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"
FACTOR	2	1.67	1.43	1.25	1.11	1	0.91	0.86	0.77	0.71	0.67

FACTORS FOR 30" SPACING CAPACITIES

NOZZLE SPACING	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"
FACTOR	1.88	1.67	1.5	1.36	1.25	1.15	1.07	1	0.94	0.88

Hypro 9000C Pump Performance Tables

9000C MODEL NUMBERING

9000 C -0
 CAST IRON OIL BATH

9006	540RPM	1-3/8" HOLLOW PTO SHAFT, VITON SEALS
9016	540RPM	1" SOLID SHAFT, VITON SEALS
9008	1000RPM	1-3/8" HOLLOW PTO SHAFT, VITON SEALS
9018	1000RPM	1" SOLID SHAFT, VITON SEALS

SPEED (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 (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

Note: All information is taken from the Hypro Series 9000 centrifugal pumps form 20.

See Hypro series pump manuals for more specific operation, maintenance and performance tables.

Hypro 9300C Pump Performance Tables

9300C MODEL NUMBERING

9300

C

-HM1

CAST IRON

HM1= OPEN CENTER, 10 GPM MOTOR

HM2= CLOSED CENTER, 5 GPM MOTOR

HM3= LARGE OPEN CENTER, 20 GPM MOTOR

HM4= CLOSED/LOAD SENSING, 7GPM MOTOR

	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
9300C HM1	1000 PSI	76	67	56	49	38	26	15
	1400 PSI		98	92	83	72	63	53
	1800 PSI				105	97	90	84
	2000 PSI				114	107	100	94
9300C HM2	1400 PSI	54	40	28	18	10		
	1600 PSI	64	53	42	30	20	12	
	1800 PSI	75	64	53	44	36	26	10
	2000 PSI	82	73	62	54	46	36	18
9300C HM3	600 PSI	74	60	49	28	10		
	800 PSI	96	85	74	63	80	45	18
	1000 PSI		106	100	90	80	70	50
9300C HM4	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

Note: All information is taken from the Hypro Series 9000 centrifugal pumps form 20.

See Hypro series pump manuals for more specific operation, maintenance and performance tables.

1. The first part of the document is a list of the names of the members of the committee who have been appointed to study the problem of the distribution of the public lands of the State of California.

2. The second part of the document is a list of the names of the members of the committee who have been appointed to study the problem of the distribution of the public lands of the State of California.

3. The third part of the document is a list of the names of the members of the committee who have been appointed to study the problem of the distribution of the public lands of the State of California.

4. The fourth part of the document is a list of the names of the members of the committee who have been appointed to study the problem of the distribution of the public lands of the State of California.

CONE SPRAY TIP METERING CHART

(Gallons Per Acre)

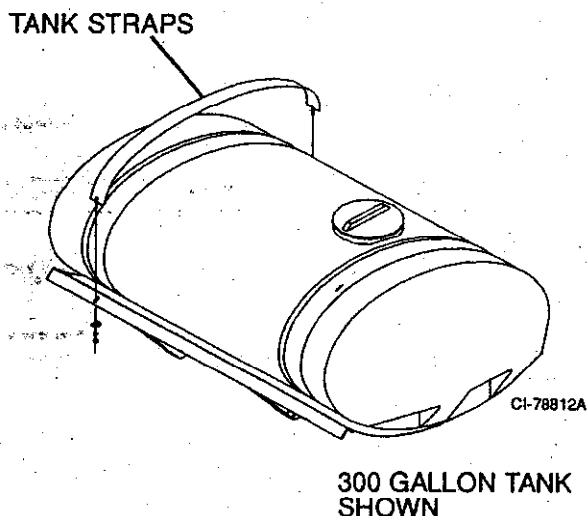
CONE TIP	PSI	GPM	20' SPACING						30' SPACING					
			4 MPH	5 MPH	6 MPH	8 MPH	10 MPH	14 MPH	4 MPH	5 MPH	6 MPH	8 MPH	10 MPH	14 MPH
45680 RED	40	0.044	3.3	2.6	2.2	1.6	1.3	0.9	2.2	1.8	1.6	1.1	0.9	0.6
	60	0.052	3.9	3.1	2.6	1.9	1.6	1.1	2.6	2.1	1.9	1.3	1.1	0.7
	80	0.061	4.6	3.7	3	2.3	1.8	1.3	3	2.4	2	1.5	1.2	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	3.5	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	2.5	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	4.6	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	4.5	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	7.6	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	22.8	18.3	15.2	11.4	9.1	6.5	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	0.443	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	0.396	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	0.763	56.9	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	2.8	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	45.2	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

HYDRAULIC PUMP OPERATION

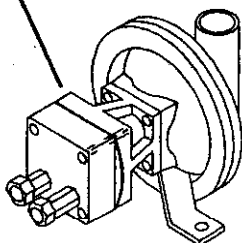
Note: The following setup is referring to the standard RC-1B control panel. Please refer to the controls manufacturer for optional Micro-Trak or Raven control operations.

STEP 1. Hydraulic pump must be connected so the oil flows the correct direction, Check for leaks.

STEP 2. Before filling the chemical tank, check to be sure the tank straps and/or mounting hardware is secure to the tank frame. This should be done again after the first day of field use and weekly after that.



HYPRO HYDRAULIC PUMP



Note: Always consult Hypro hydraulic motor driven centrifugal pump selection guide for matching pump to tractor hydraulic system.

Note: Centrifugal pumps need the liquid level to be above the top of the pump to create a prime. The amount to create a prime will vary with each tank size.

STEP 3. Check your sprayer equipment to be sure that all components are clean and in good condition. Even if the sprayer is new or used and has been properly stored, it must be checked and tested.

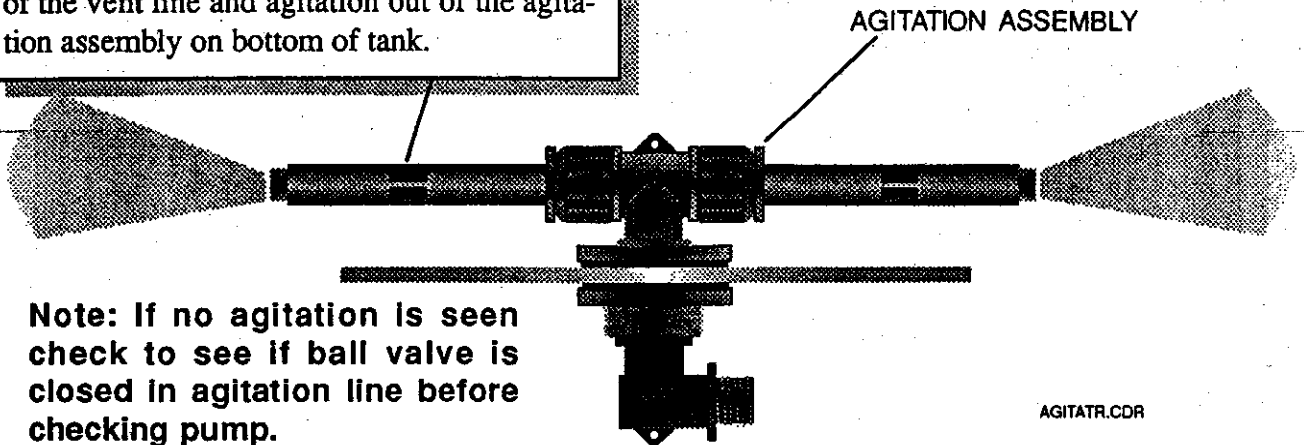
We suggest before any use new or used to wash the tank to remove dust or oil.

For the initial use of the sprayer, USE WATER ONLY, to check hoses for holes, weathering and places that are worn. Check the pump to be certain that it turns freely. Check strainer screens.

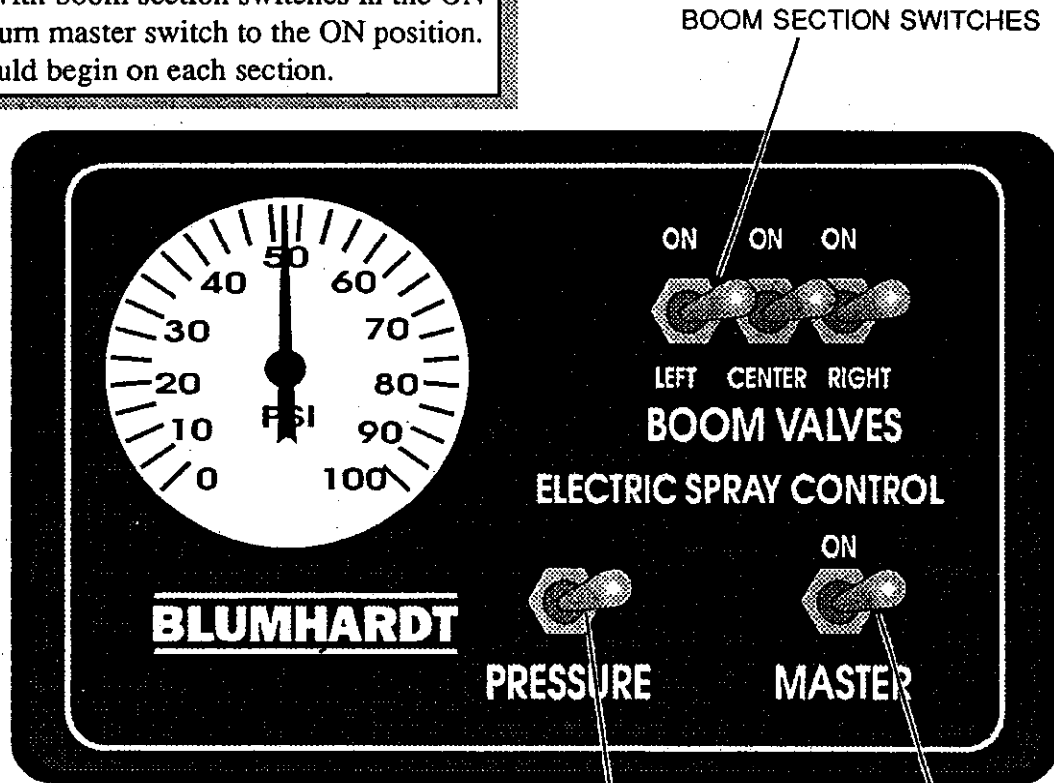
Clean and replace or repair any defective parts. Doing all of these steps with **WATER** will prevent loss of chemical and enable you to test the mechanical functions of the sprayer in a safe manner.

STEP 4. Start hydraulic pump, check for prime, this will be indicated by a stream of water out of the vent line and agitation out of the agitation assembly on bottom of tank.

Note: Pump must NOT BE RUN DRY! See Hypro Operation Manual for details.



STEP 5. With boom section switches in the ON position, turn master switch to the ON position. Spray should begin on each section.



RC-1B.CDR

STEP 6. Adjust pressure using the spring loaded pressure adjustment switch. The servo valve used for bypassing liquid in the RC-1B has a full circulating butterfly valve. Once the valve goes passed full bypass it will continue around and begin acting as a throttle valve.

STEP 7. For initial start up and system check, set pressure at 50 PSI at RC-1B console, using pressure adjust switch. The reading on the console is measured at the solenoids. For an accurate pressure reading at the nozzles a remote gauge may be mounted on the nozzle(s) as shown.

REMOTE PSI GAUGE

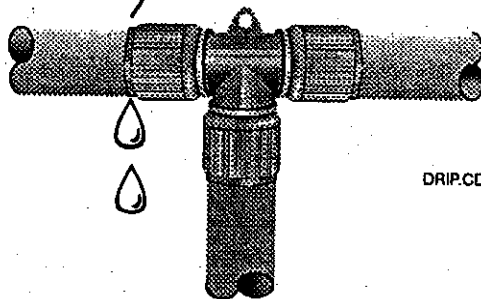
NOZZLE BODY



PSI.CDR

Note: A pressure drop of 5-15 PSI is common from solenoids to nozzles. The PSI drop is caused by solenoids, line loss, fittings and nozzles. The greater the total volume the greater the PSI difference. The pressure loss is directly proportional to volume.

STEP 8. Check all connections on the boom, pump and solenoids for leaks.



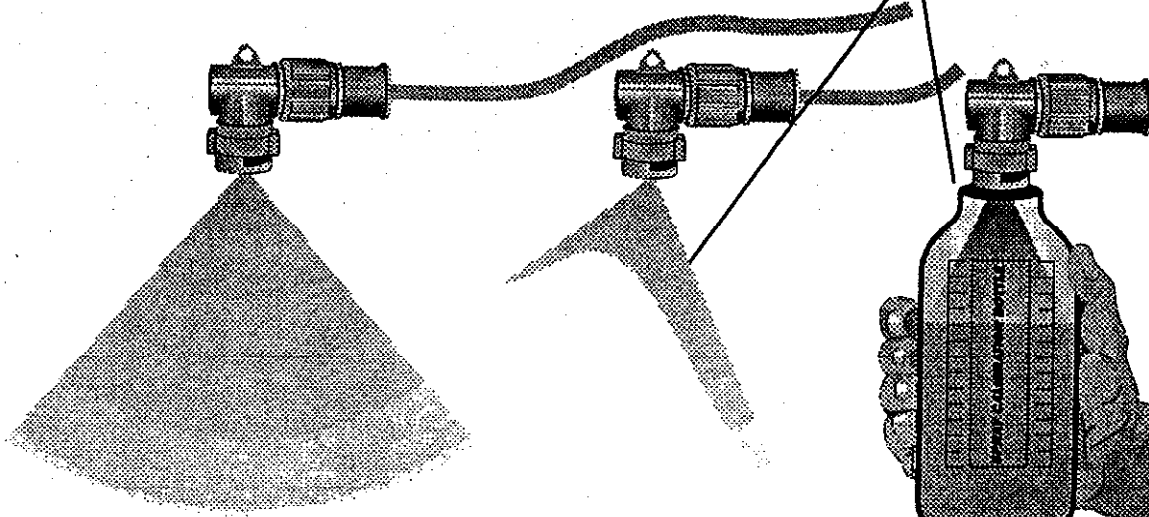
DRIP.CDR



CAUTION

Agricultural chemicals can be dangerous. Improper selection of use 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.

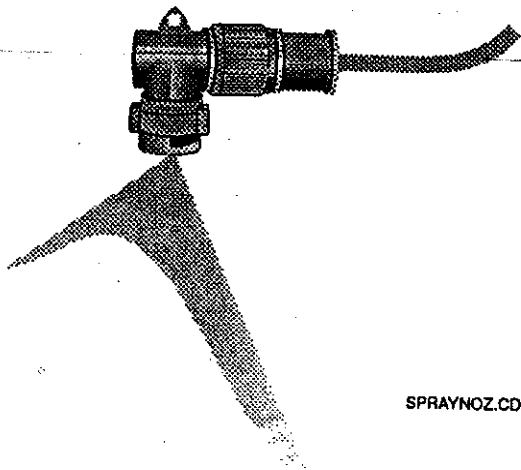
STEP 9. Check spray pattern and volume output of each nozzle assembly. Use the calibration bottle for volume output check. See page 19.



SPRAYNOZ.CDR

CALIBRAN.CDR

STEP 10. If nozzle has an irregular spray pattern. Clean screens in nozzle assemblies and clean or replace all worn tips.



WARNING: Do not use a metal probe when cleaning a nozzle orifice. Wash the tips thoroughly with water or a cleaning solution. If the orifice remains clogged or plugged, clean it with a fine bristle brush or toothpick, being careful not to damage the orifice. Rinse with water and dry. Do not attempt to clean tips by blowing through them.

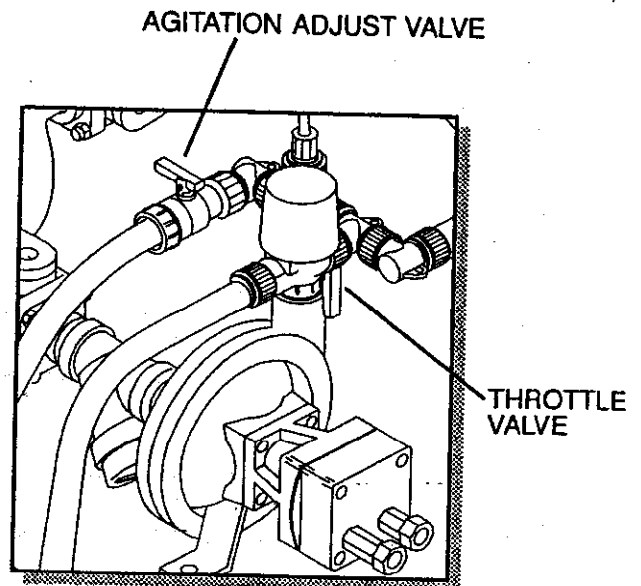
STEP 11. Turn each boom OFF and ON to check proper function of each of the solenoid valves (spray at nozzles should shut off and on).

STEP 12. Select applicable tip and application rate for the chemical you choose. (Refer to the rate charts on page 21 & 22).

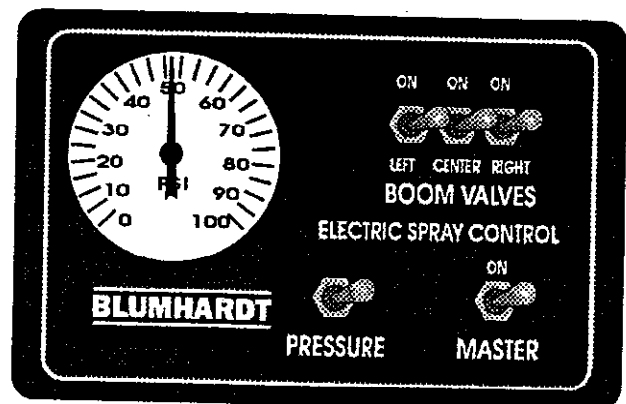
SETTING PUMP VOLUME OUTPUT

Note: The volume of the pump needs to be set so that the required pressure can be obtained at the tips and adequate agitation occurs.

Step 13. Set agitation and throttle valves to full open.

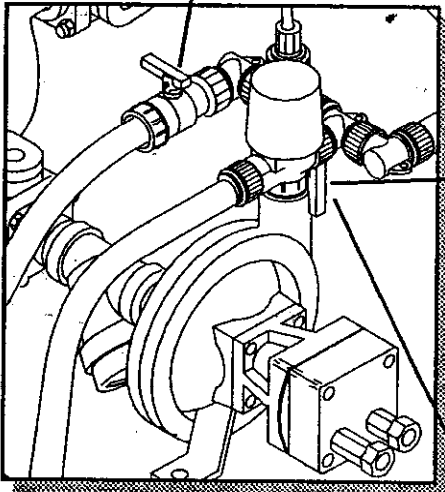


STEP 14. Adjust servo valve to maximum pressure using the pressure switch adjustment on RC-1B console.



RC-1B.CDR

STEP 15 Set agitation to desired circulation in tank using agitation adjust valve.

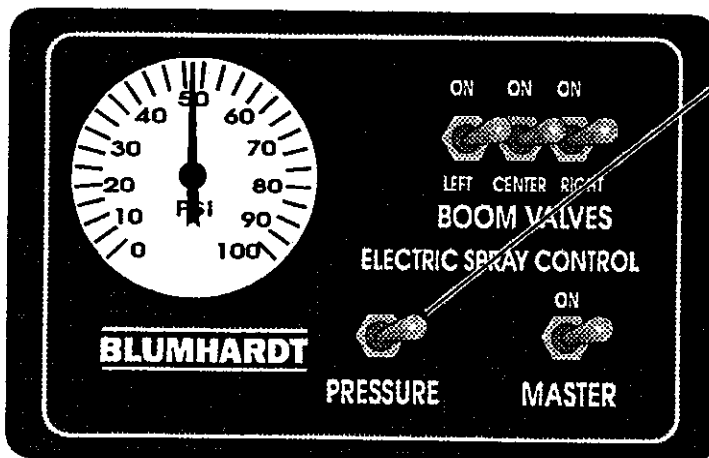


Note: A pressure drop of 5-15 PSI is common from solenoids to nozzles. The PSI drop is caused by solenoids, line loss, fittings and nozzles. The greater the total volume the greater the PSI difference. The pressure loss is directly proportional to volume.

STEP 16. Operate tractor at normal field operating RPM. Consult Hypro Operation Manual for pump operations & adjustments. Set volume output using throttle valve adjustment on top of pump to the desired volume output, verify output at tips. Note the pressure reading on the console.

STEP 17. Increase volume output approximately 10 PSI above pressure reading for the desired volume output by opening ball valve (throttle valve).

This will set your maximum output for field operation. If you require a higher maximum adjustment range, increase at this time. **NOTE:** that increasing maximum adjustment will normally increase the minimum volume limit also.



RC-1B.CDR

STEP 18. Decrease pressure using the pressure adjustment switch to desired volume output, verify output at the tips. Note pressure reading on console for a reference point.

STEP 19. Each nozzles must now be checked for proper application rate.

If nozzle flow rate (gpm) is higher than specified. Replace the tip.

Repeat this test for *each* nozzle.

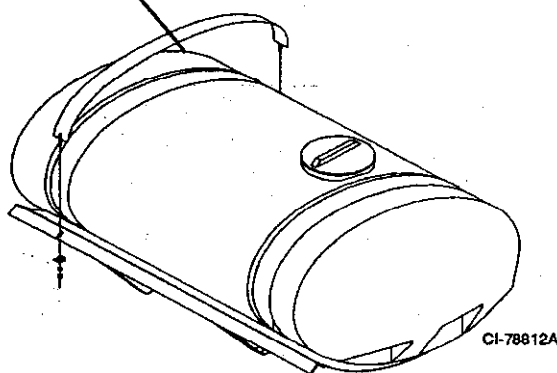
PTO PUMP OPERATION

Note: The following setup is referring to the standard RC-1B control panel. Please refer to the controls manufacturer for optional Micro-Trak or Raven control operations.

STEP 1. With PTO pump correctly connected to the PTO shaft, make sure all shields are in their proper place.

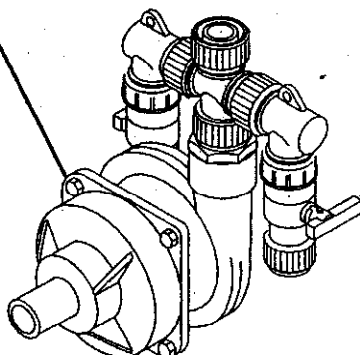
Note: Centrifugal pumps need the liquid level to be above the top of the pump to create a prime. The amount to create a prime will vary with each tank size.

TANK STRAPS



300 GALLON TANK
SHOWN

HYPRO PTO PUMP



STEP 2. Before filling the chemical tank, check to be sure the tank straps and/or mounting hardware is secure to the tank frame. This should be done again after the first day of field use and weekly after that.

STEP 3. Check your sprayer equipment to be sure that all components are clean and in good condition. Even if the sprayer is new or used and has been properly stored, it must be checked and tested.

We suggest before any use new or used to wash the tank to remove dust or oil.

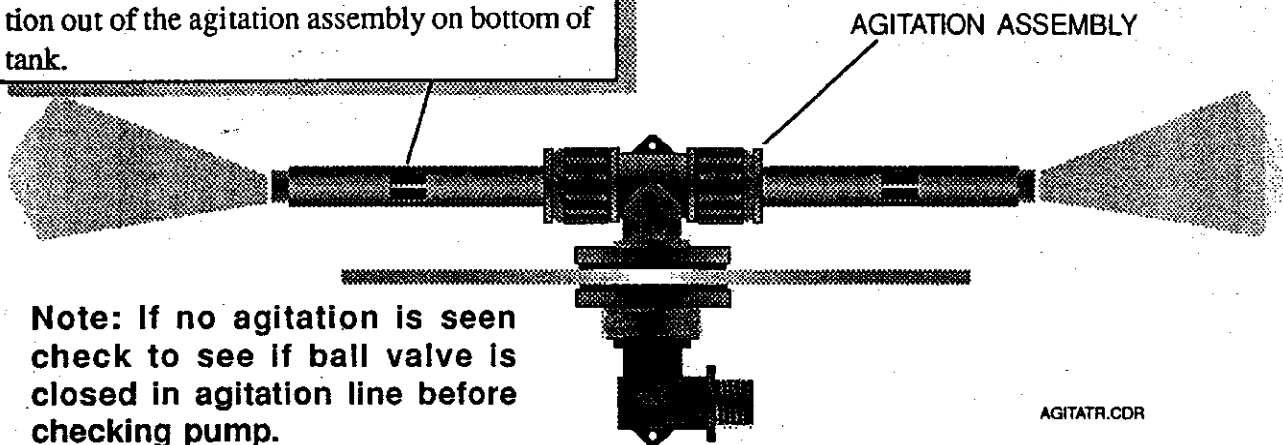
For the initial use of the sprayer, USE WATER ONLY, to check hoses for holes, weathering and places that are worn. Check the pump to be certain that it turns freely. Check strainer screens.

Clean and replace or repair any defective parts. Doing all of these steps with **WATER** will prevent loss of chemical and enable you to test the mechanical functions of the sprayer in a safe manner.

Note: Always consult Hypro PTO driven centrifugal pump selection guide for matching pump to tractor hydraulic system.

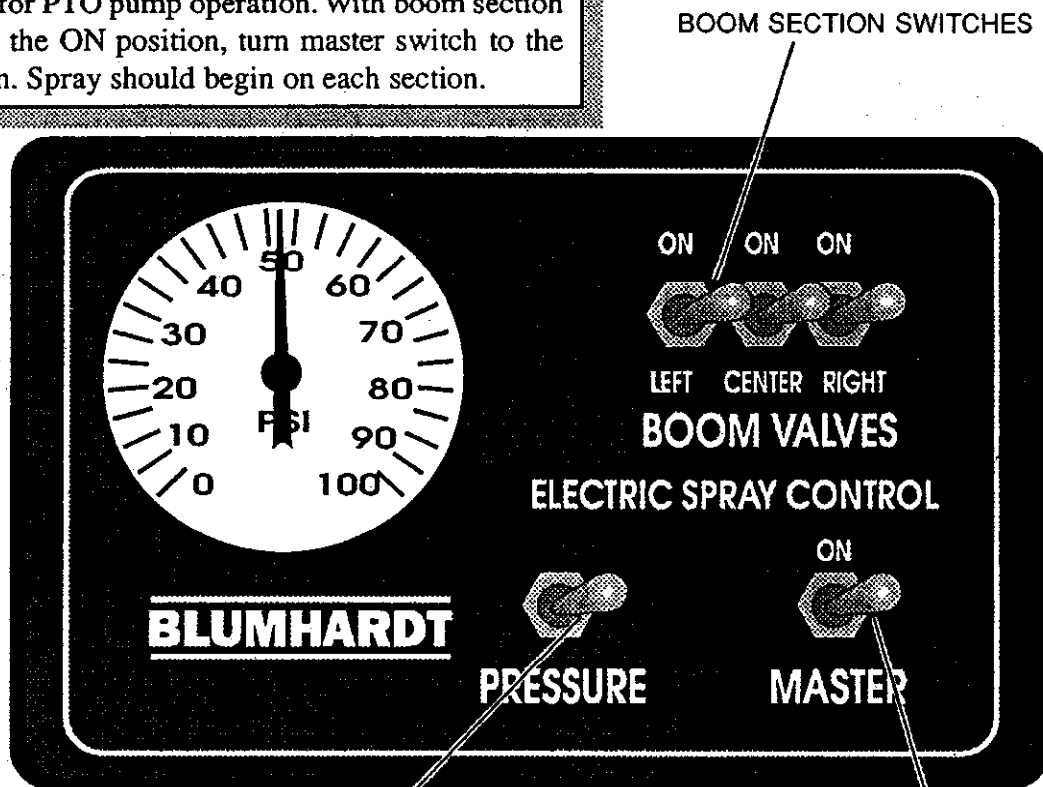
STEP 4. PTO running at 1/2 the desired RPM, check for prime, this will be indicated by a stream of water out of the vent line and agitation out of the agitation assembly on bottom of tank.

Note: Pump must NOT BE RUN DRY! See Hypro Operation Manual for details.



Note: If no agitation is seen check to see if ball valve is closed in agitation line before checking pump.

STEP 5. Increase tractor engine speed to obtain sufficient RPM for PTO pump operation. With boom section switches in the ON position, turn master switch to the ON position. Spray should begin on each section.



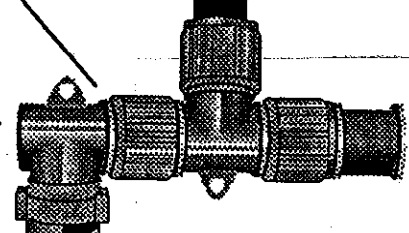
STEP 6. Adjust pressure using the spring loaded pressure adjustment switch. The servo valve used for bypassing liquid in the RC-1B has a full circulating butterfly valve. Once the valve goes passed full bypass it will continue around and begin acting as a throttle valve.

MASTER SWITCH

STEP 7. For initial start up and system check, set pressure at 50 PSI using pressure adjustment switch on RC-1B console. The reading on the console is measured at the solenoids. For an accurate pressure reading at the nozzles a remote gauge may be mounted on the nozzle(s) as shown.

REMOTE PSI GAUGE

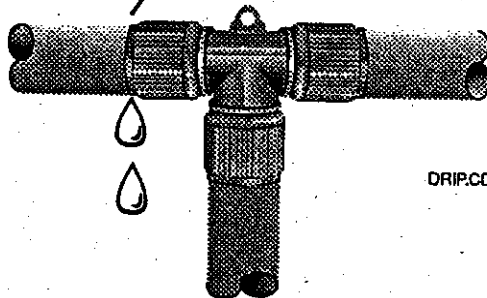
NOZZLE BODY



PSI.CDR

Note: A pressure drop of 5-15 PSI is common from solenoids to nozzles. The PSI drop is caused by solenoids, line loss, fittings and nozzles. The greater the total volume the greater the PSI difference. The pressure loss is directly proportional to volume.

STEP 8. Check all connections on the boom, pump and solenoids for leaks.



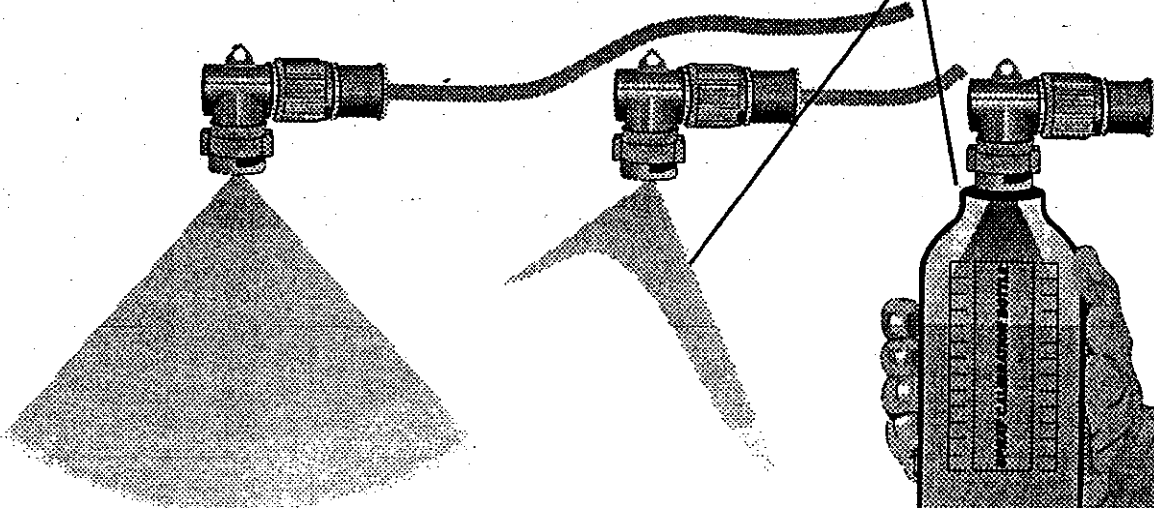
DRIP.CDR



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.

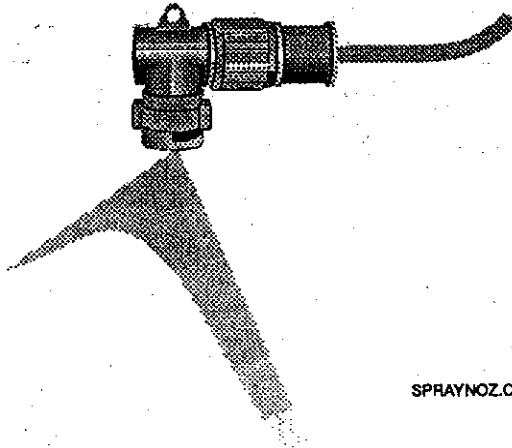
STEP 9. Check spray pattern and volume output of each nozzle assembly. Use the calibration bottle for volume output check. See page 19.



SPRAYNOZ.CDR

CALIBRAN.CDR

STEP 10. If nozzle has an irregular spray pattern. Clean screens in nozzle assemblies and clean or replace all worn tips.



WARNING: Do not use a metal probe when cleaning a nozzle orifice. Wash the tips thoroughly with water or a cleaning solution. If the orifice remains clogged or plugged, clean it with a fine bristle brush or toothpick, being careful not to damage the orifice. Rinse with water and dry. Do not attempt to clean tips by blowing through them.

STEP 11. Turn each boom OFF and ON to check proper function of each of the solenoid valves (spray at nozzles should shut off and on).

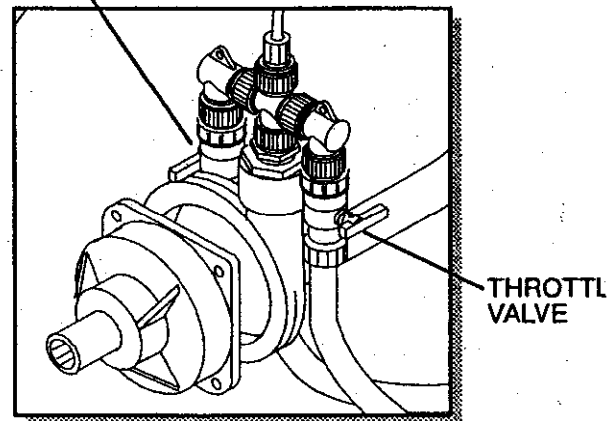
STEP 12. Select applicable tip and application rate for the chemical you choose. (Refer to the rate charts on page 21 & 22).

SETTING PUMP VOLUME OUTPUT

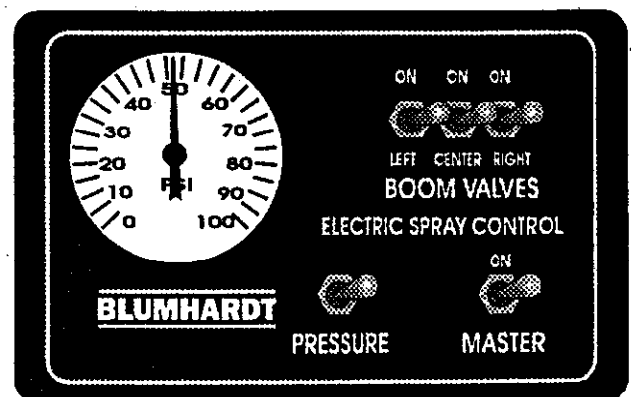
Note: The volume of the pump needs to be set so that the required pressure can be obtained at the tips and adequate agitation occurs.

Step 13. Set agitation and throttle valves to full open.

AGITATION ADJUST VALVE



STEP 14. Adjust servo valve to maximum pressure using the pressure switch adjustment on RC-1B console.



RC-1B.CDR

Tank Cleaning

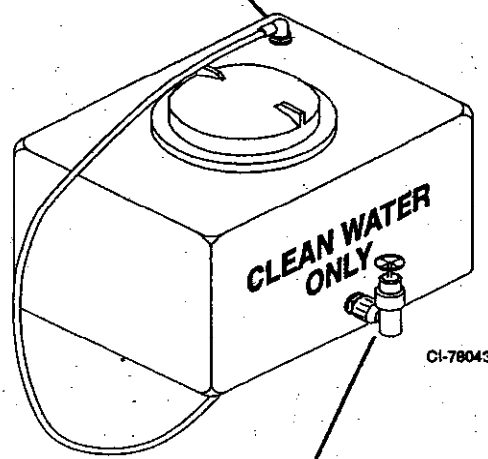
Tanks must be kept clean.

Materials will need to be removed before storage or mixing additional materials using incompatible formulas. Extra precaution is needed when spraying crops of different species which require different crop protection materials.

Clean Water Tank

All 3PT sprayers are supplied with an 8 gallon clean water tank that is mounted onto the center tube assembly. This tank is to be used for rinsing your hands and face in the event of contact with chemical. **Do not use as drinking water.**

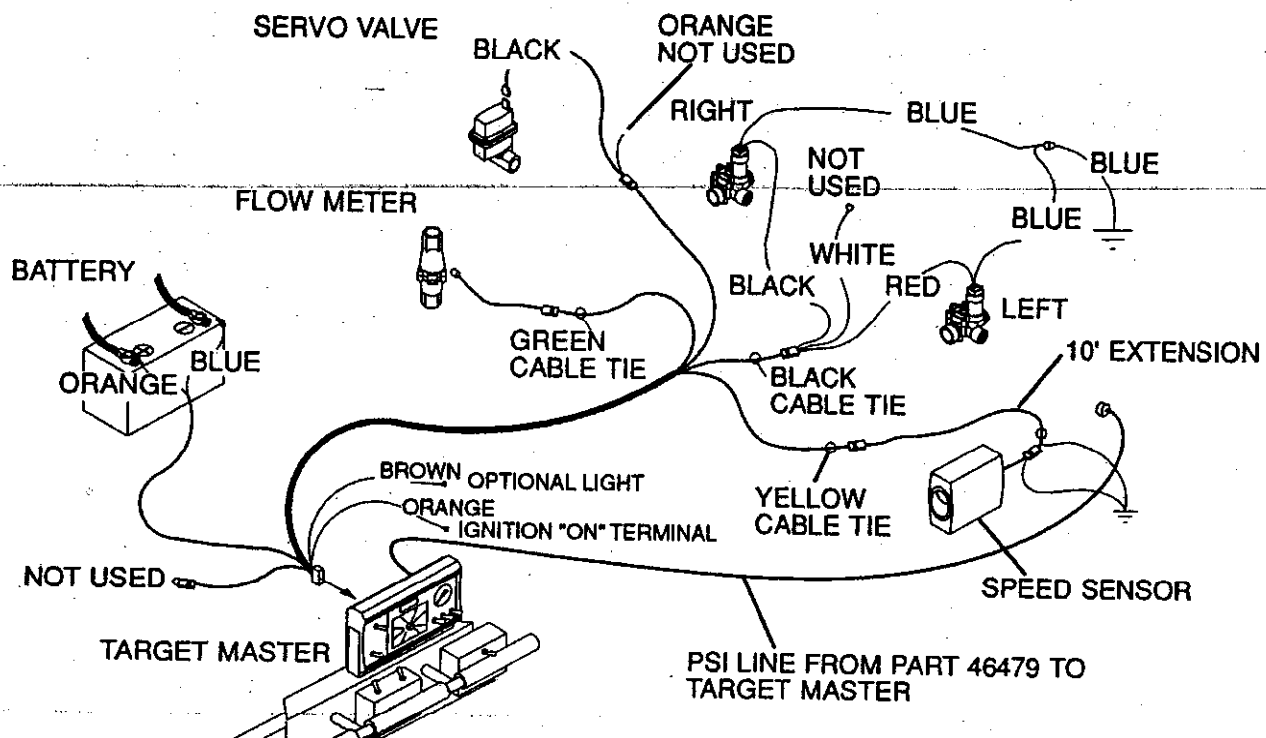
FOR QUICK ACCESS, PULL TUBE OUT OF FITTING AND HOLD BELOW WATER LEVEL



FOR LARGER QUANTITY OF WATER, USE SPICKET

TARGET MASTER 2 SOLENOID WIRING

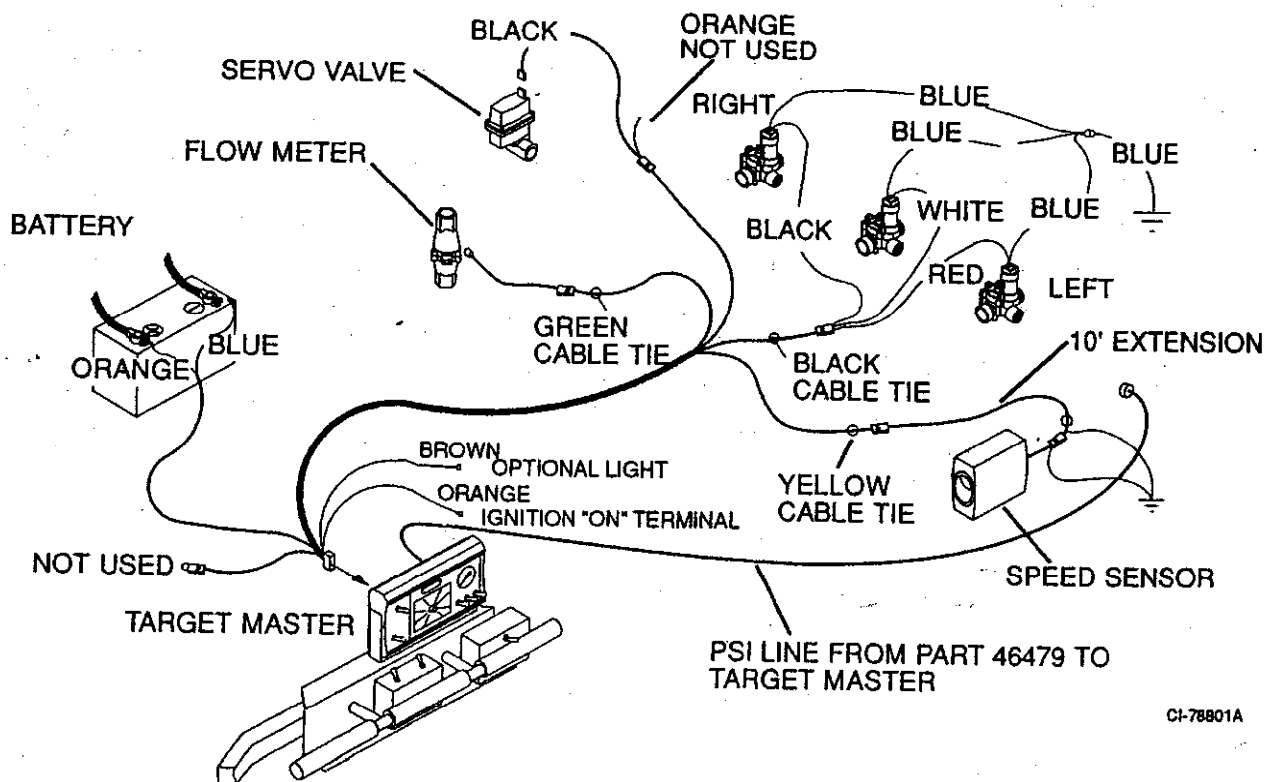
Remcor Solenoid



CI-78801

TARGET MASTER 3 SOLENOID WIRING

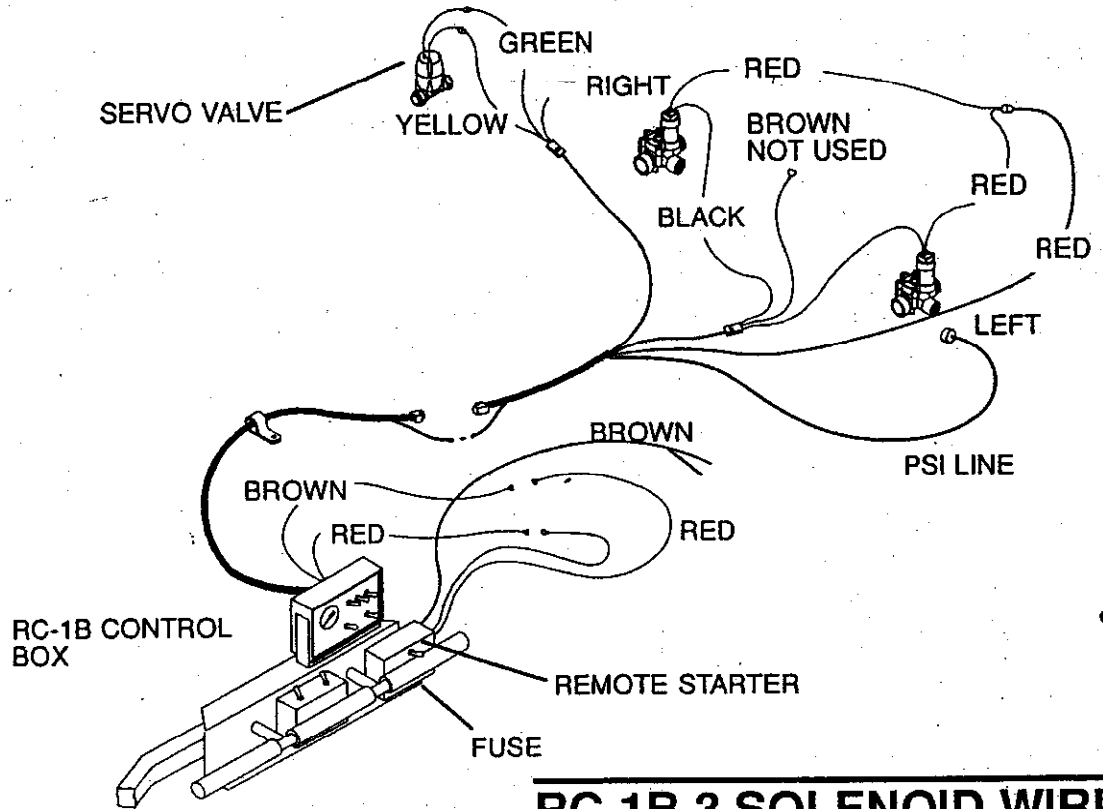
Remcor Solenoid



CI-78801A

RC-1B 2 SOLENOID WIRING

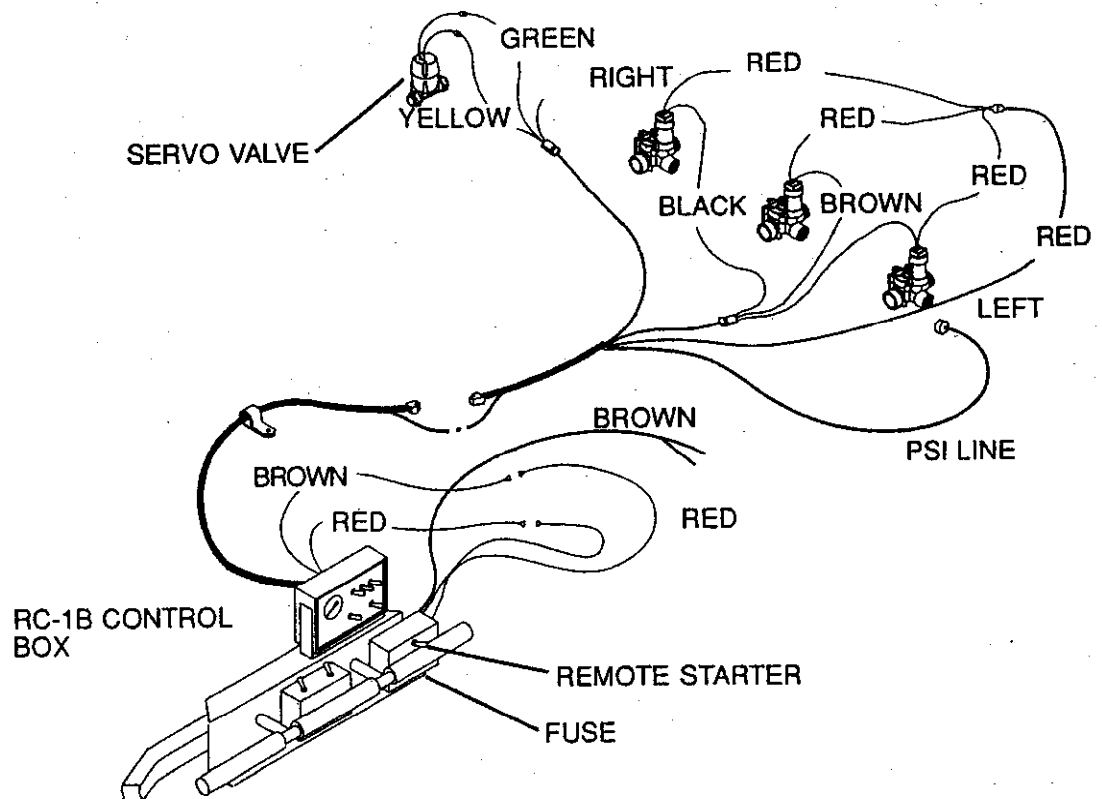
Remcor Solenoid



CI-78801B

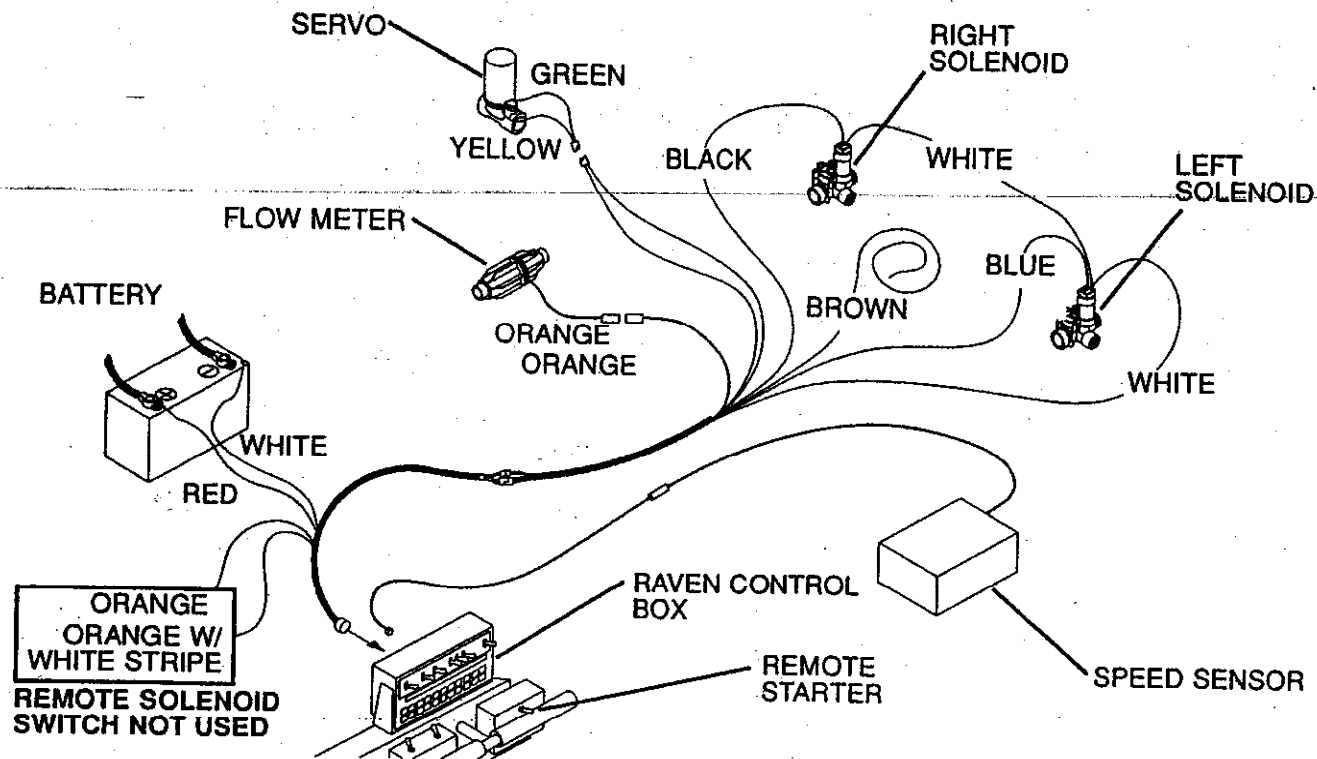
RC-1B 3 SOLENOID WIRING

Remcor Solenoid



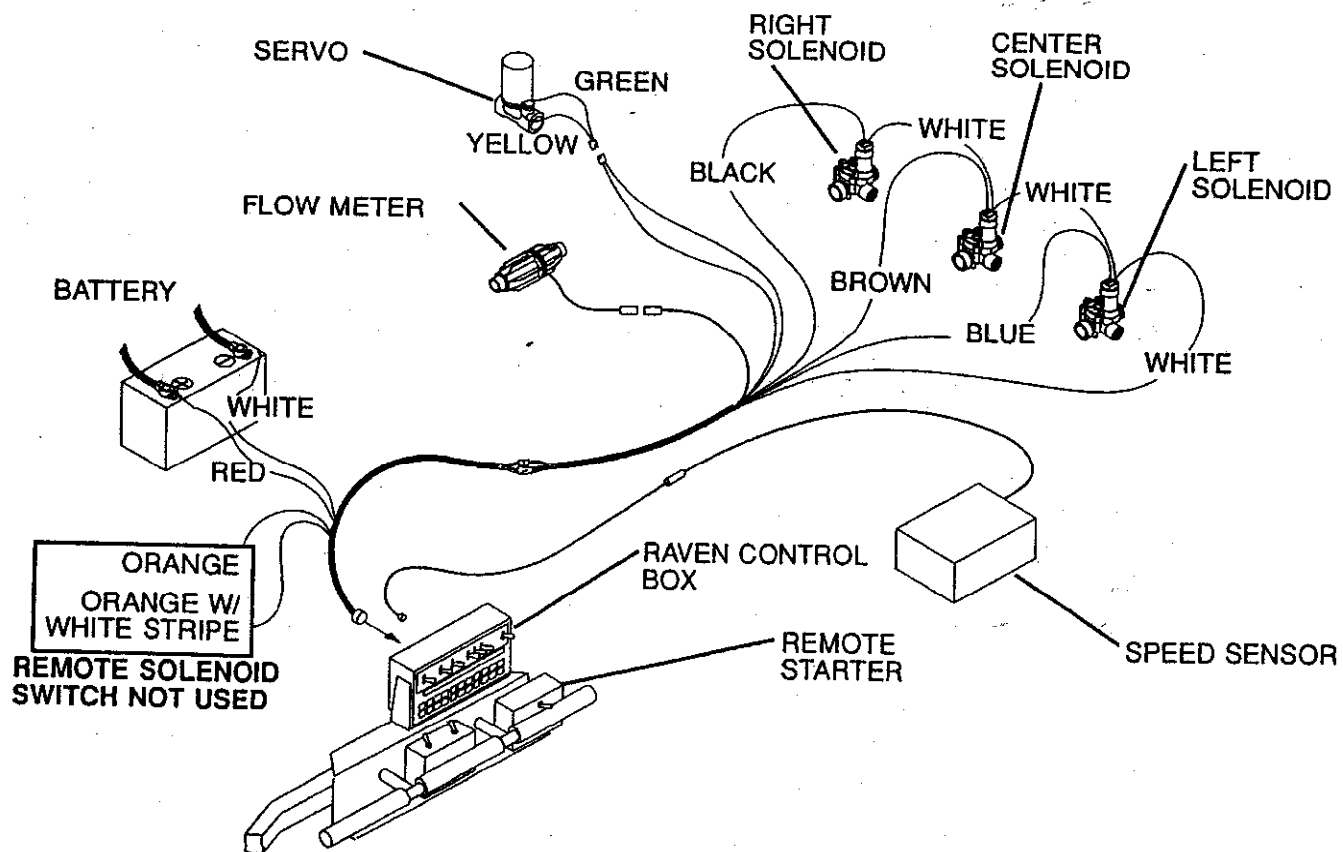
CI-78801C

RAVEN 2 SOLENOID WIRINGREMCOR SOLENOID

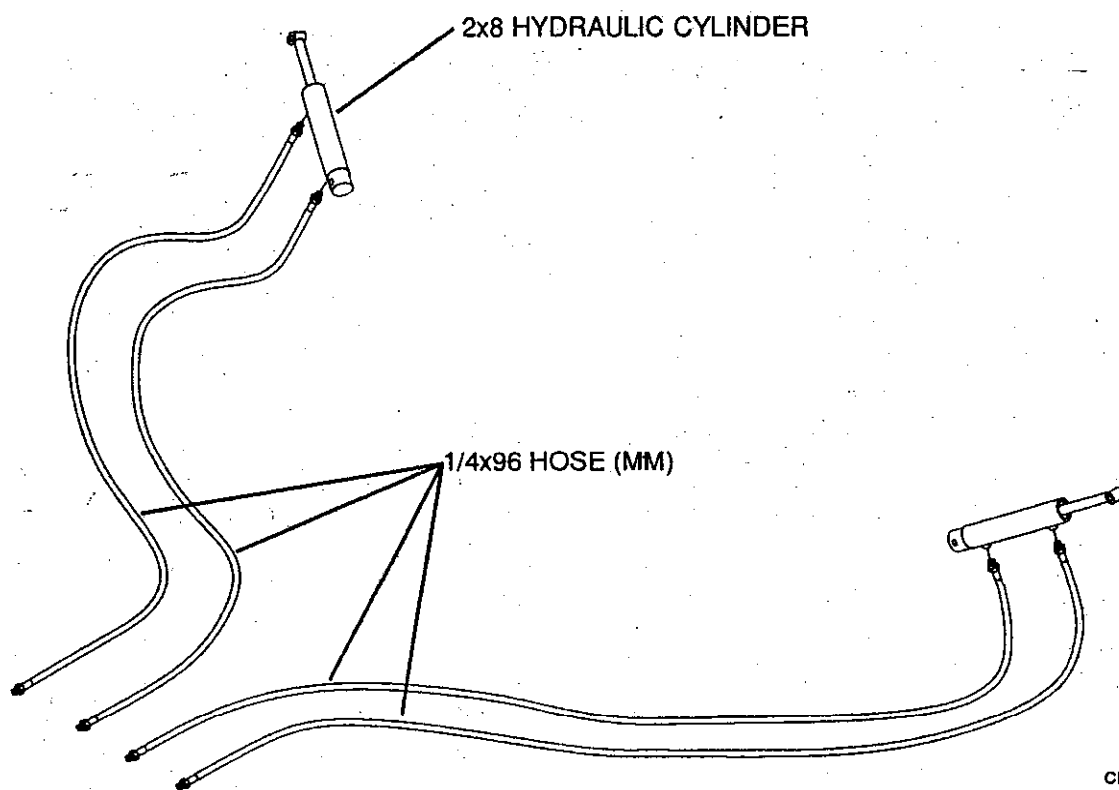



RAVEN 3 SOLENOID WIRING



REMCOR SOLENOID



BOOM TILT



**WARNING**

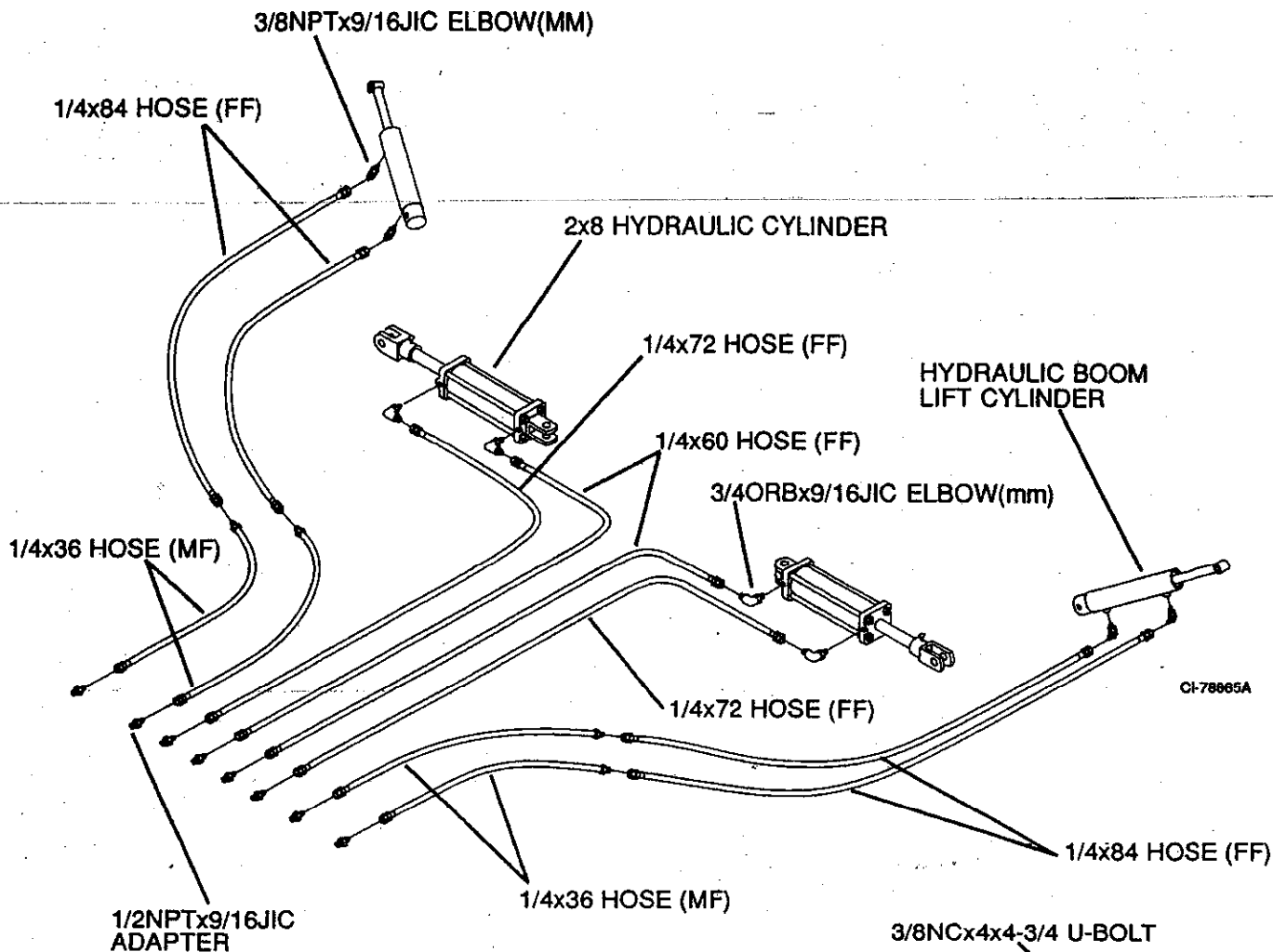


HIGH PRESSURE FLUID HAZARD
To prevent serious injury or death:

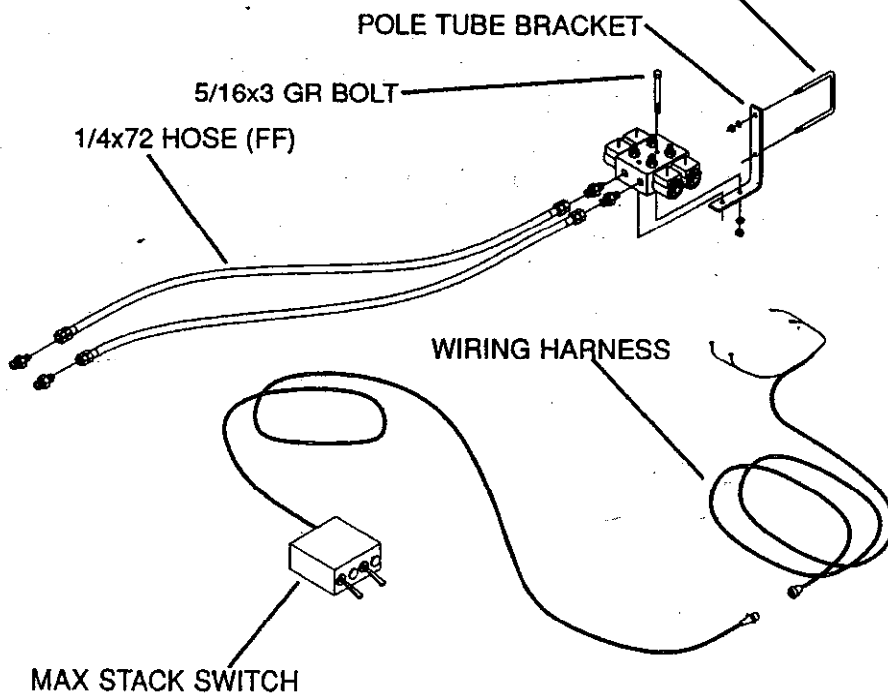
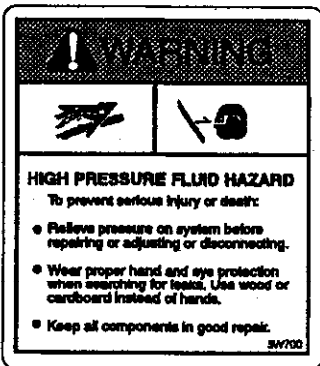
- Relieve pressure on system before repairing or adjusting or disconnecting.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Keep all components in good repair.

SW700

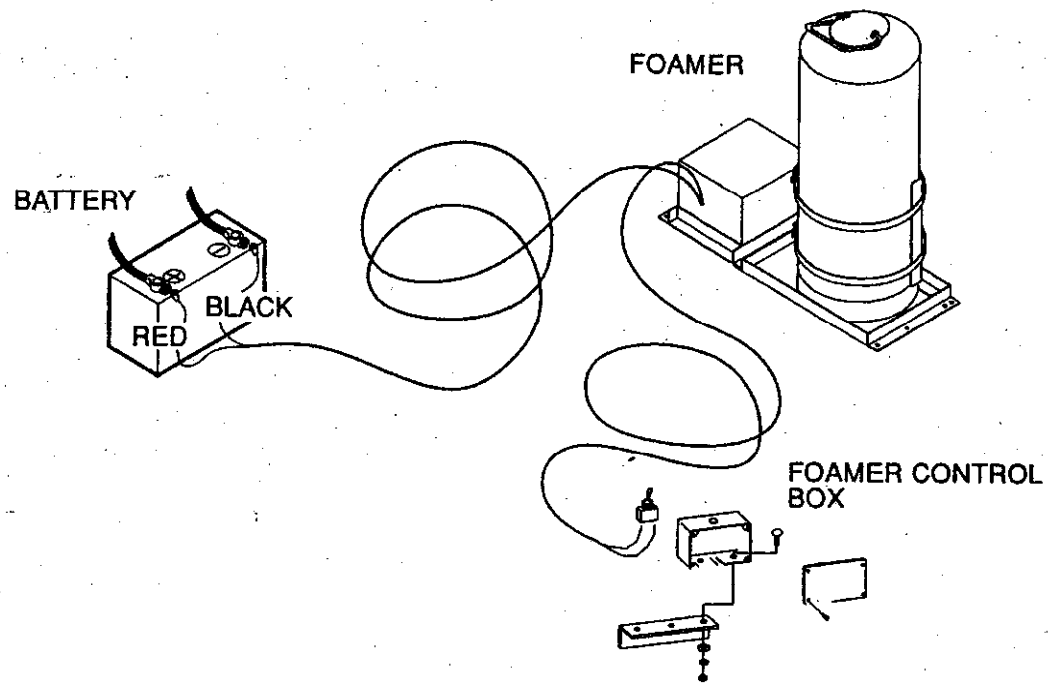
HFB FOLD & TILT COMPONENTS



MAX STACK 2



FOAMER WIRING



CI-77945

MAINTENANCE

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 chemical 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.

Lubrication

Grease booms daily or every 10 hours.

Seasonal Storage

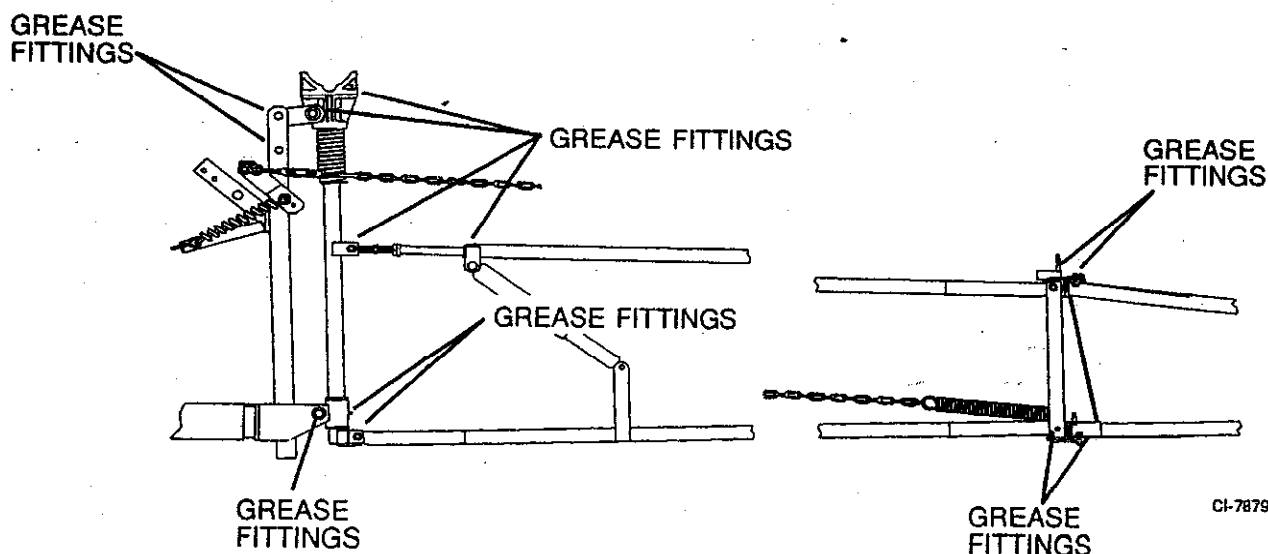
Note: If possible store your sprayer inside.

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.

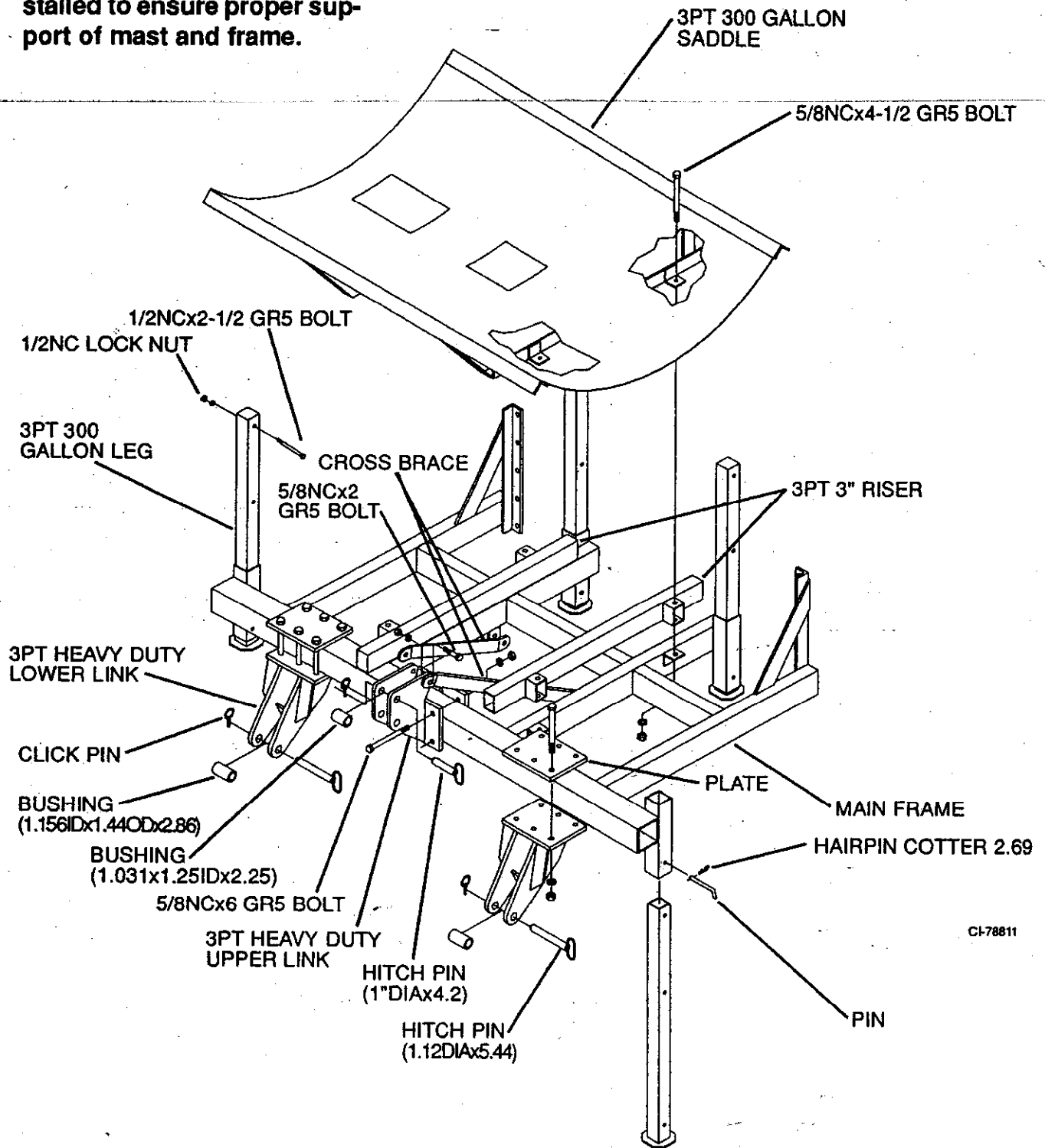


TROUBLESHOOTING

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.

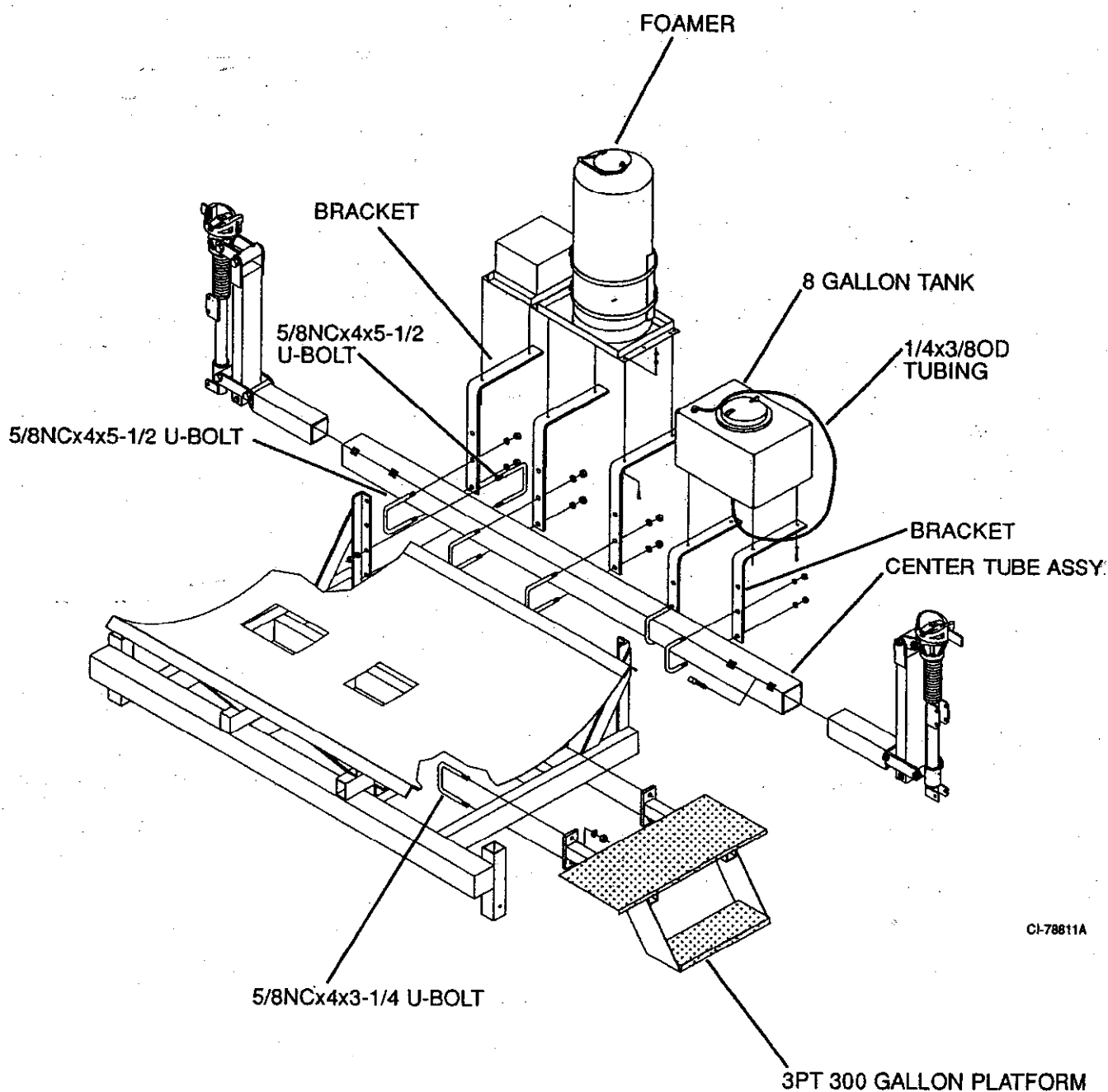
MAIN FRAME ASSEMBLY

Note: 3PT bolt together CROSS BRACES must be installed to ensure proper support of mast and frame.



CI-78811

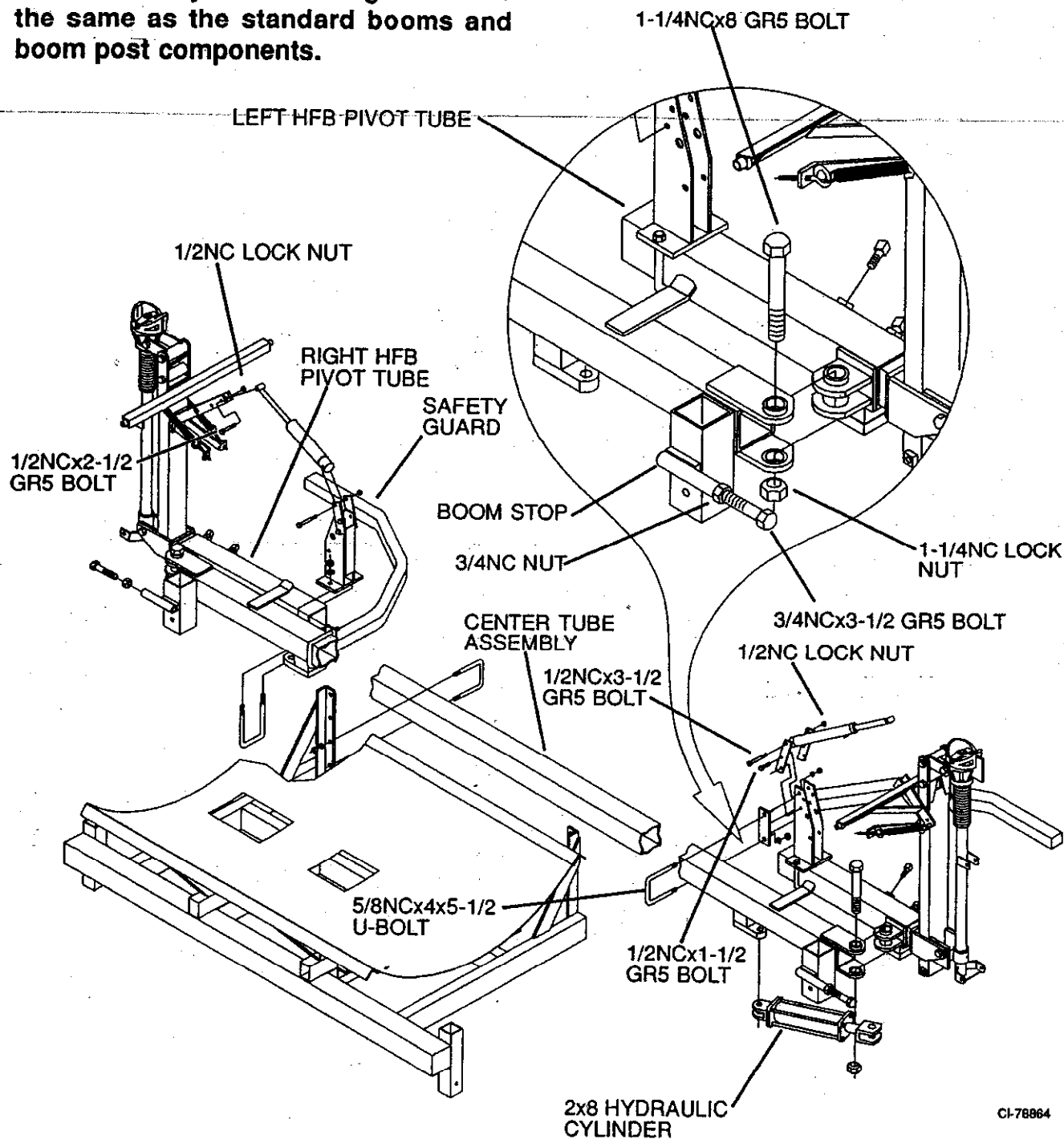
CLEAN WATER & FOAMER ASSEMBLY



CI-78811A

HYDRAULIC FOLDING BOOM

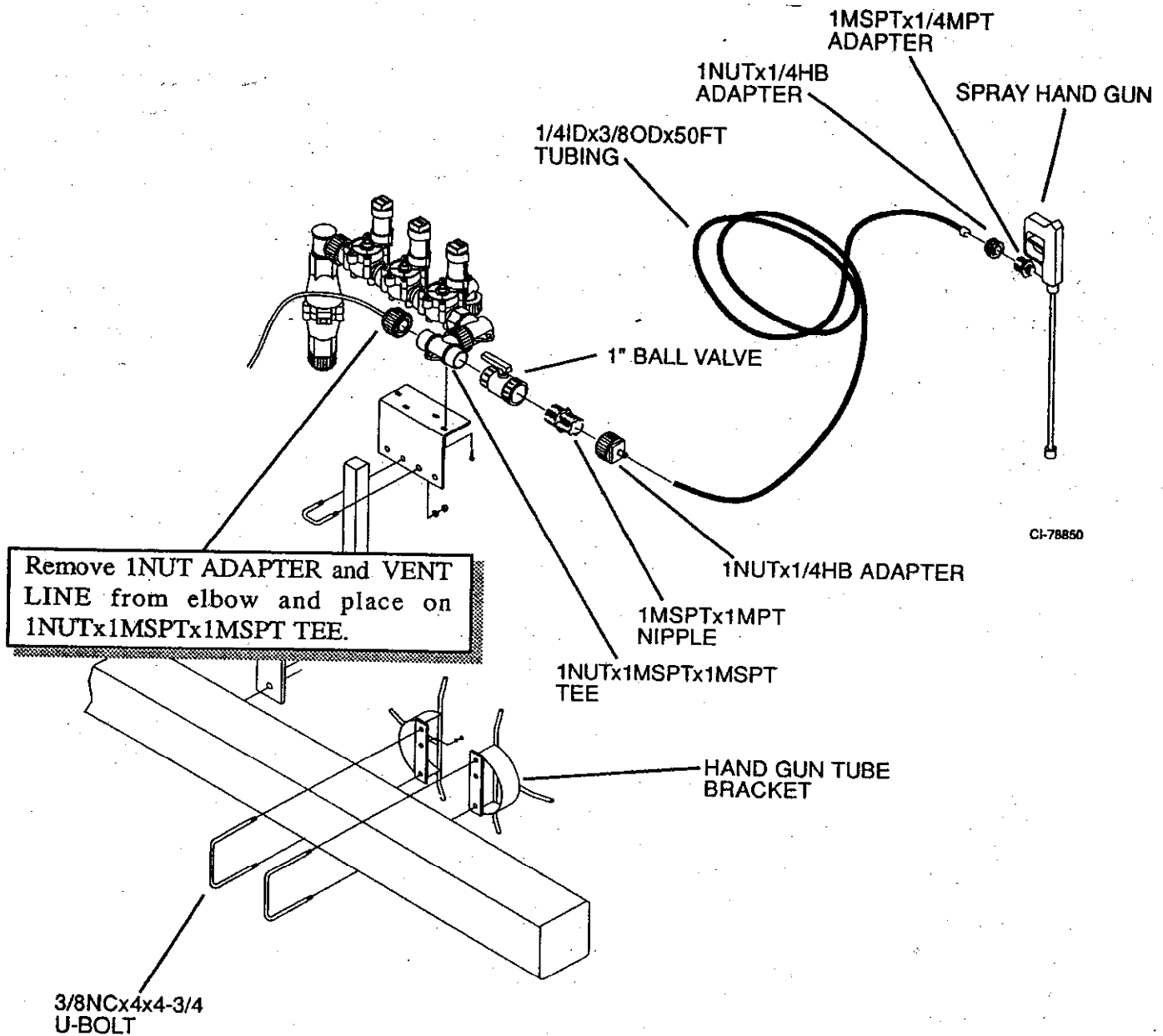
Note: Booms and boom post components for the hydraulic folding booms are the same as the standard booms and boom post components.



CI-78864

CHEMICAL WAND ASSEMBLY

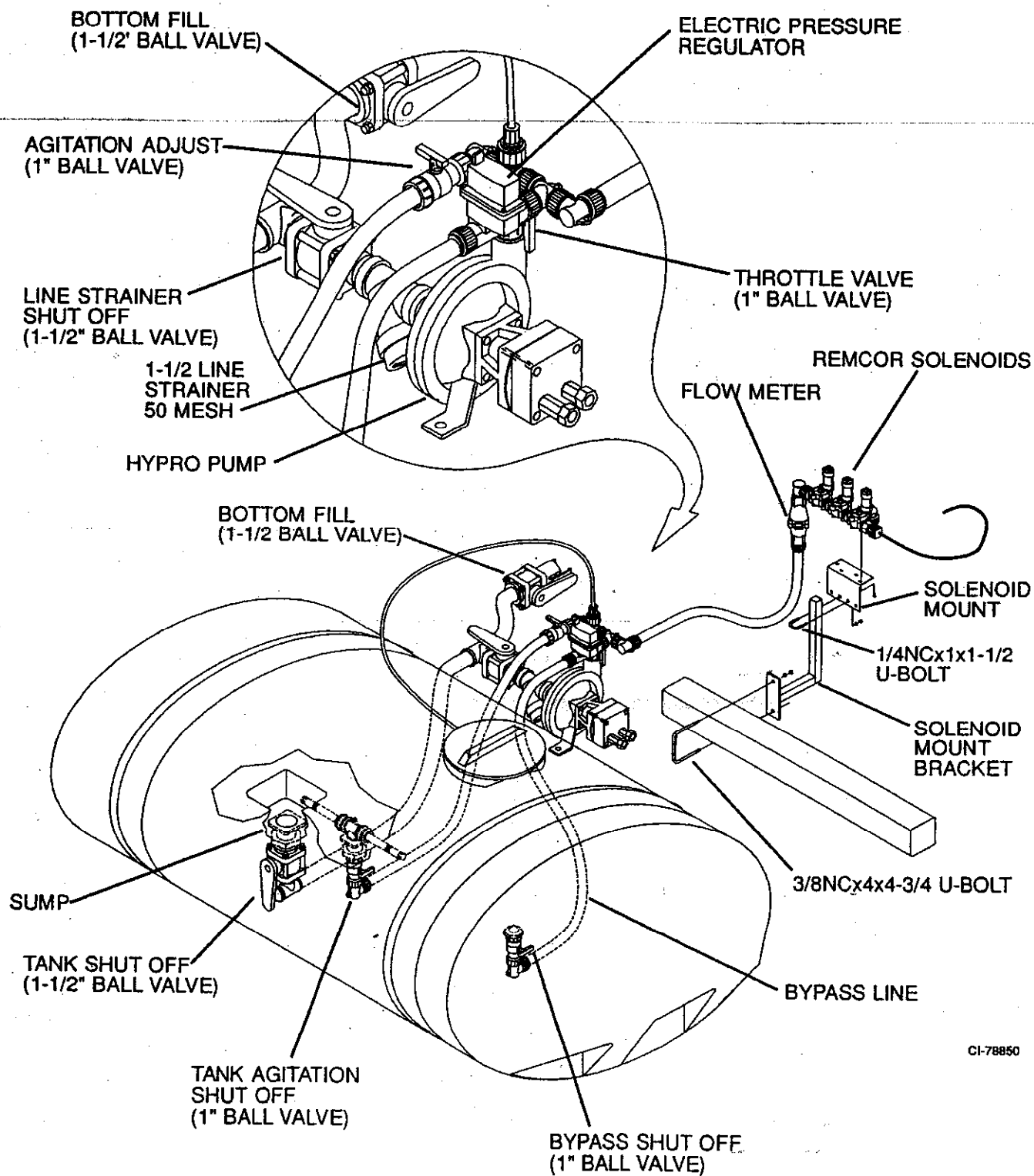
Note: Hand gun tube brackets should be placed on center tube assy in an easily accessible location.



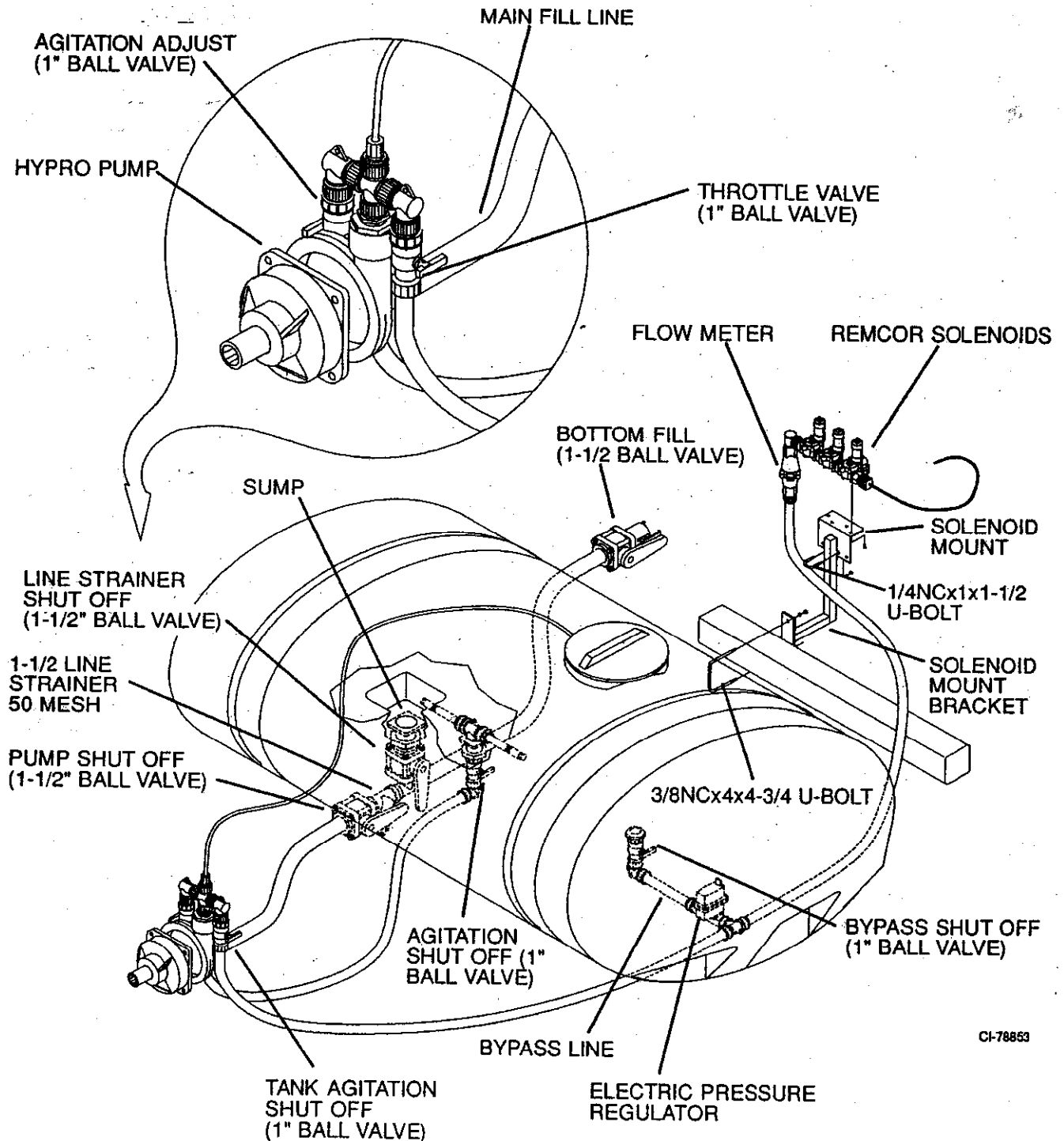
	<p>WARNING</p> <p>To prevent serious injury from spray:</p> <ul style="list-style-type: none"> • When water is under pressure do not point spray nozzle at any part of body or place in mouth.
--	--

300 GALLON TARGET MASTER PLUMBING

HYDRAULIC DRIVE

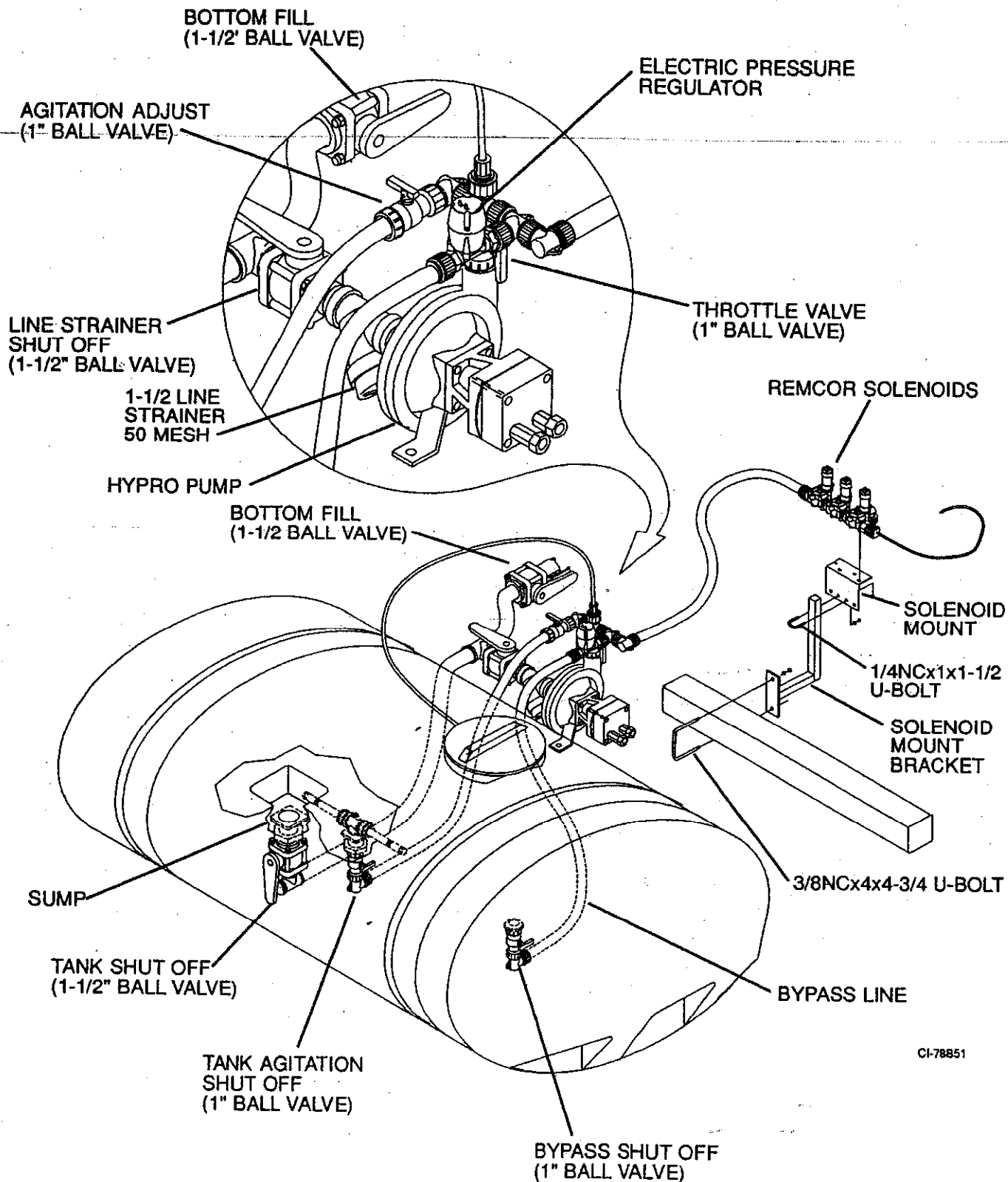


CI-78850

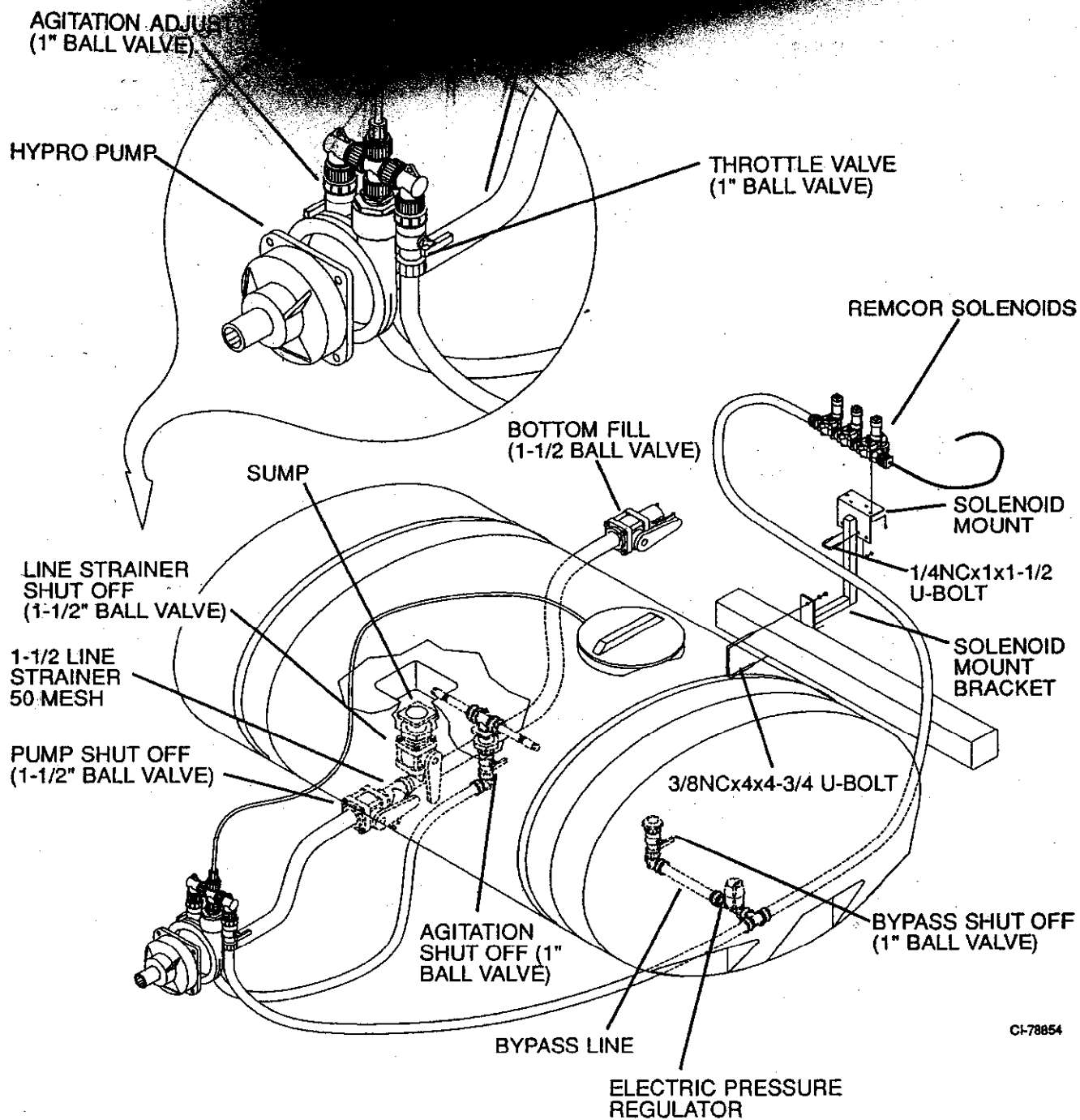


300 GALLON RC-1B PLUMBING

HYDRAULIC DRIVE



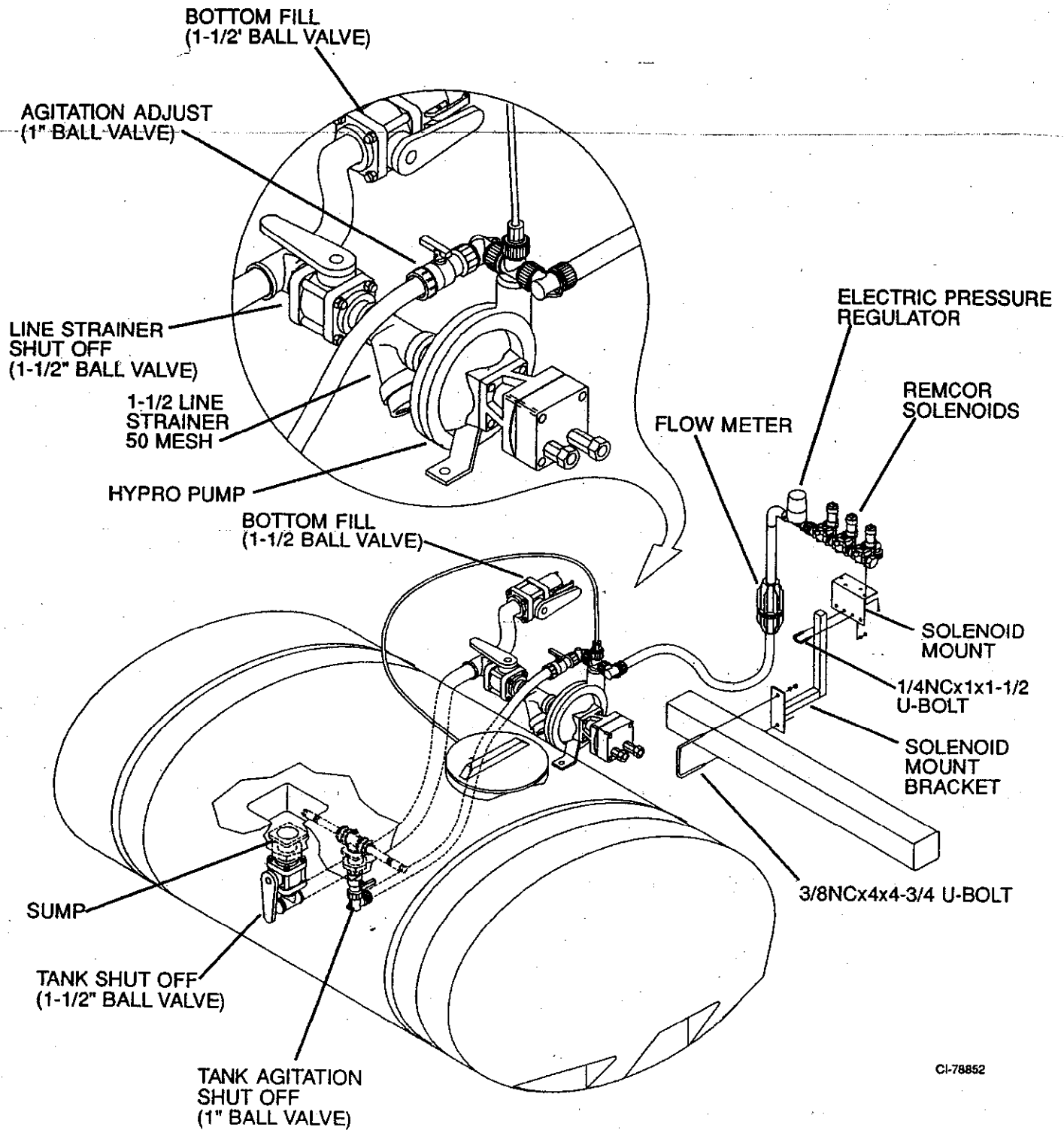
CI-78851



CI-78854

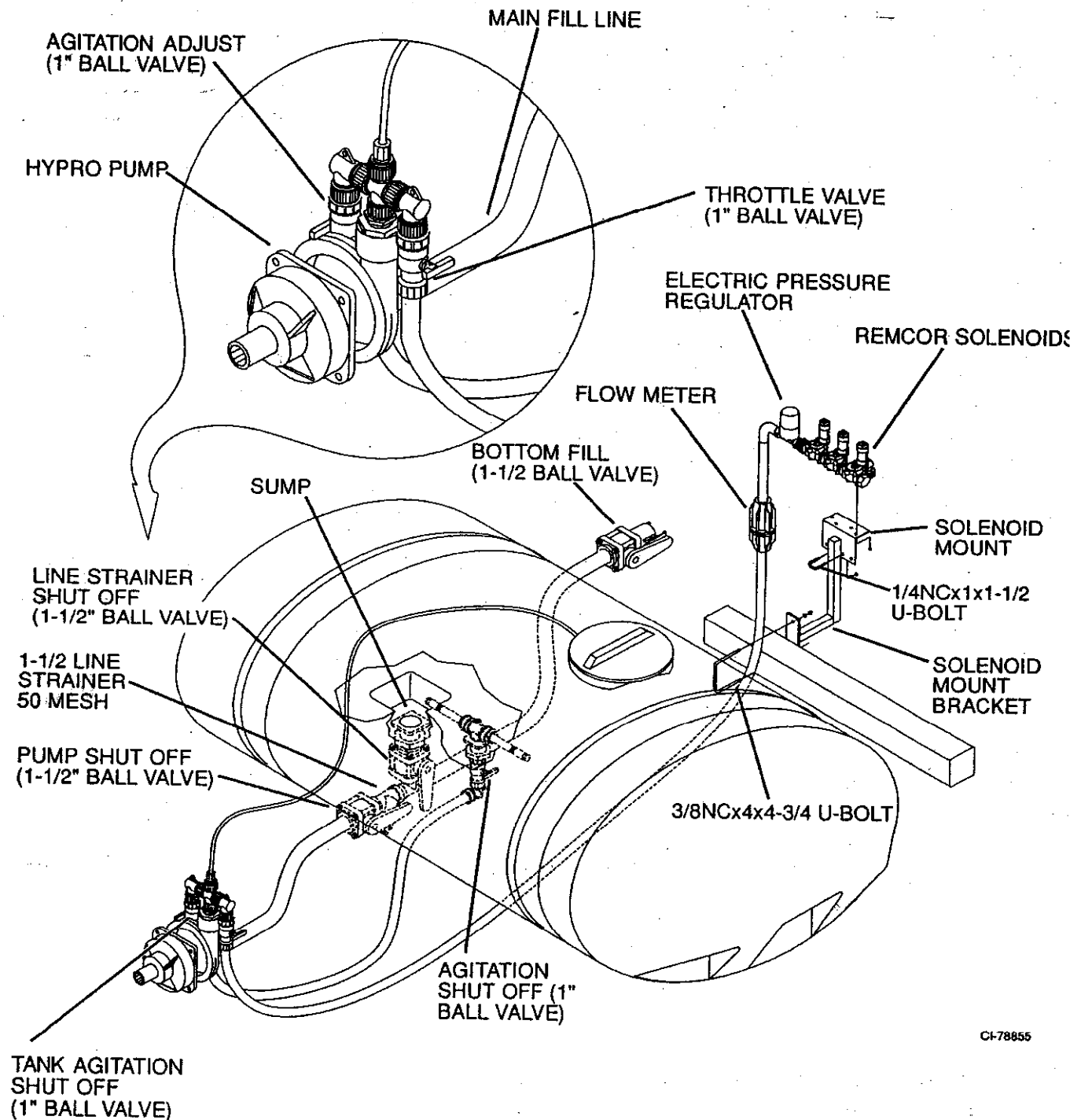
300 GALLON RAVEN PLUMBING

HYDRAULIC DRIVE



300 GALLON RAVEN PLUMBING

PTO DRIVE

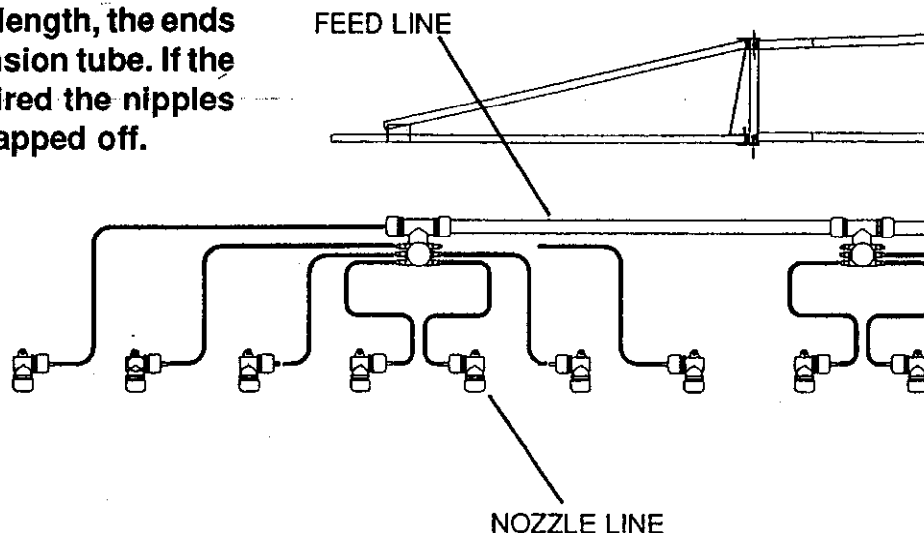


CI-78855

NOZZLE AND MANIFOLD PLACEMENT

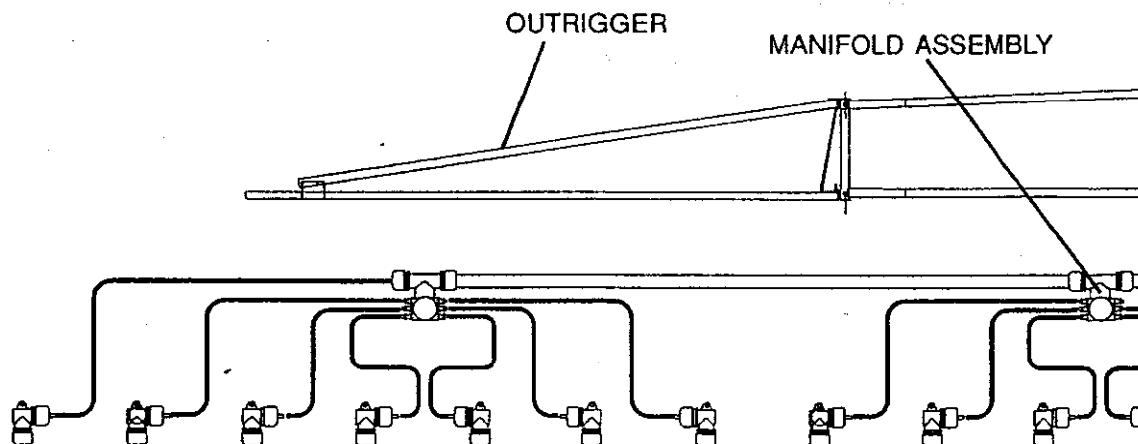
TYPICAL 3PT SPRAYER W/3 SECTION CONTROL

NOTE: For models requiring the 3 nozzles beyond the standard boom length, the ends are mounted onto the extension tube. If the extension tube is not required the nipples on the manifold must be capped off.

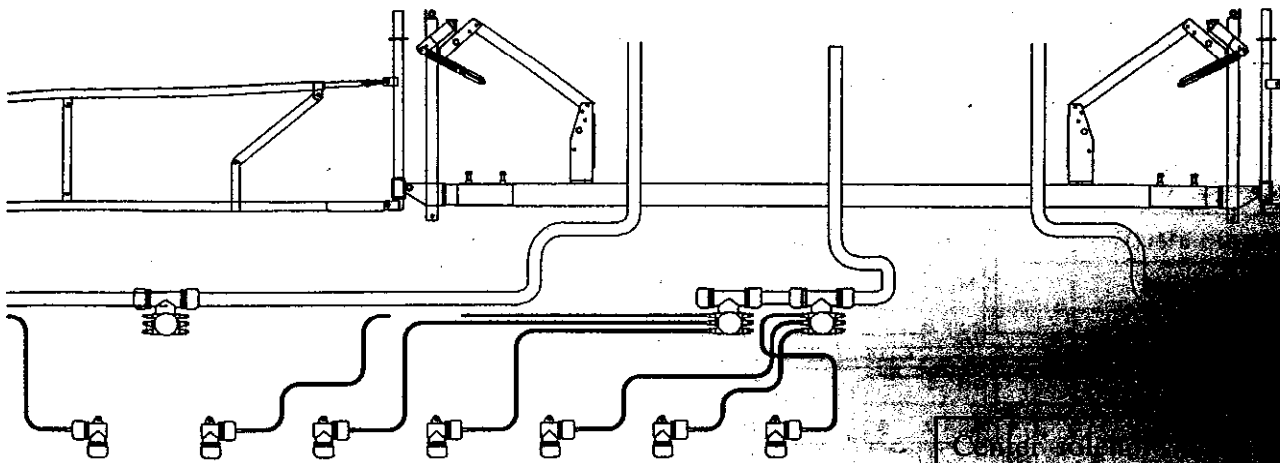


Note: Booms are shown from the back.
The nozzle and manifolds have been **enlarged** for ease of viewing

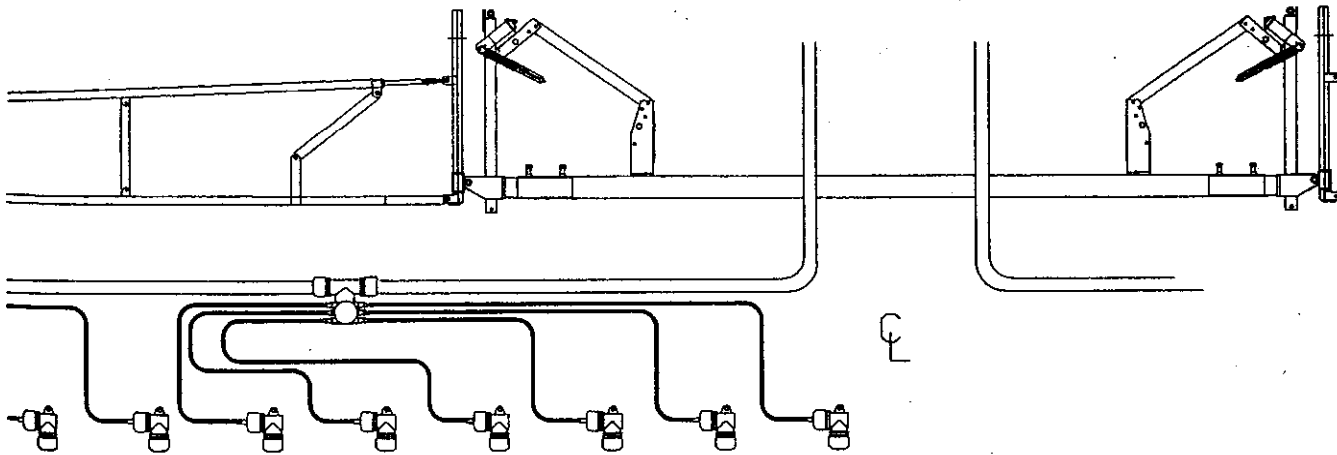
TYPICAL 3PT SPRAYER W/2 SECTION CONTROL



NOTE: Some nozzles and feed lines may have to be turned around or slightly moved to clear obstructions.



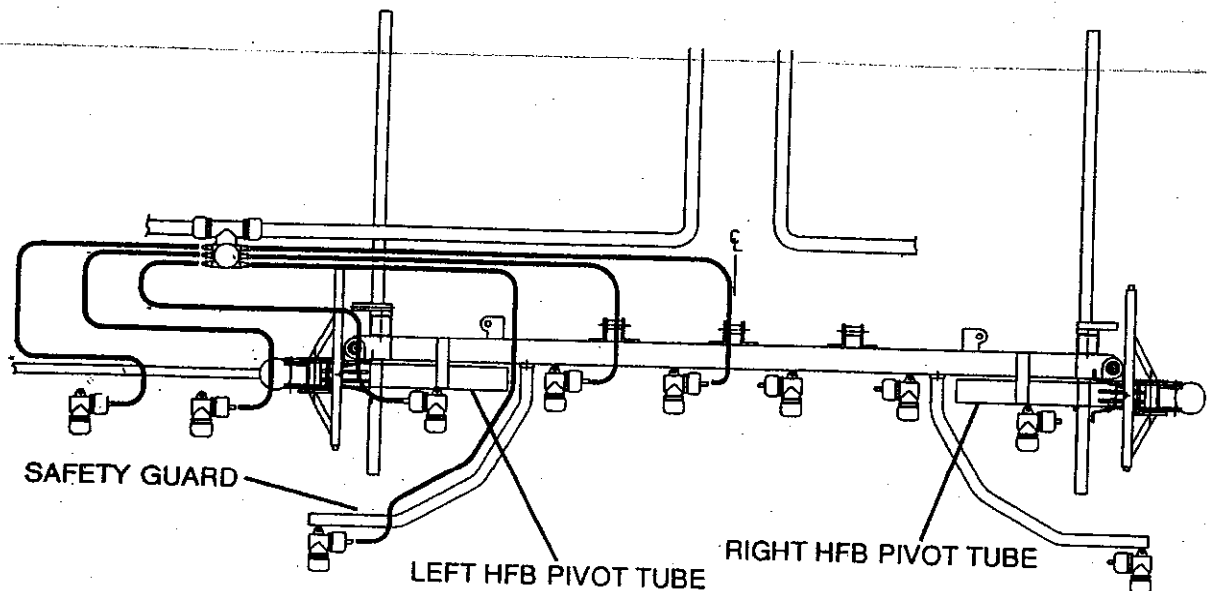
center section nozzle
inner nozzles of left and
right booms.



HFB CENTER TUBE NOZZLE PLACEMENT

2 Section

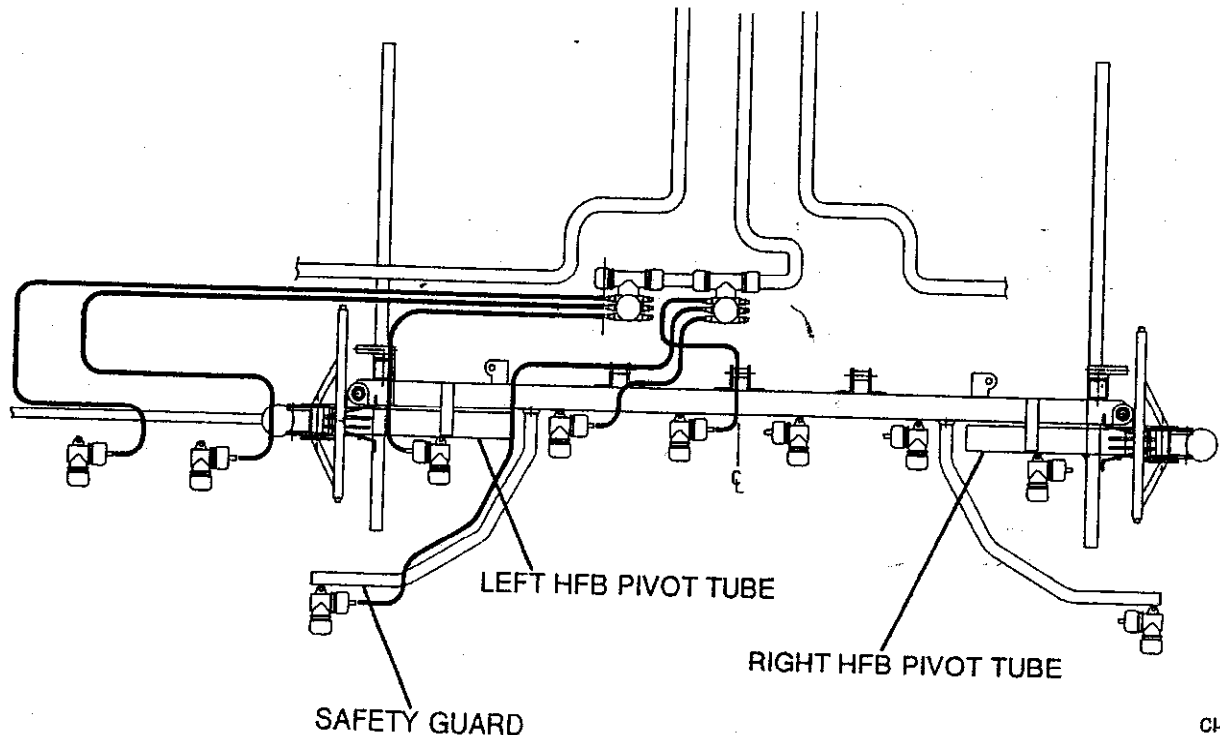
Note: Nozzle placement on center sections require nozzles to be mounted onto the safety guards, pivot tubes and center tube.



CI-78619A

3 Section

Notes: 2 manifolds are used on the center tube of the booms. The center manifold assemblies should feed approx. the same number of nozzles as the right and left manifold assemblies, this may include nozzles mounted on the left and right booms.



CI-78619

METRIC CONVERSION FACTORS

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