SUMMERS®

Operator's Manual

PULL TYPE

SUPERSPRAYER

IMPORTANT
THE OPERATOR IS RESPONSIBLE FOR ADJUSTING THE MACHINE SINCE MACHINE DOES NOT COME "FIELD READY" FROM THE FACTORY.

⚠ CAUTION
READ AND UNDERSTAND OPERATOR'S MANUAL BEFORE USING MACHINE.

SUMMERS MANUFACTURING CO., INC.

MADDOCK, NORTH DAKOTA 58348 (701) 438-2855
DEVILS LAKE, NORTH DAKOTA 58301 (701) 662-5391

8Z1104S

Printed in USA

Warranty

Summers warrants only products of its manufacture against operational failure caused by defective materials or workmanship which occur during normal use within 12 months from the date of purchase by the end user from Summers' dealer.

Summers' obligation is to replace free of charge any part of any product that Summers inspection shows to be defective excluding transportation charges to Maddock, ND or Devils Lake, ND and return and also excluding all transportation costs from Summers' dealer to the dealer's customer and all other costs such as removal and installation expense.

Summers shall not be liable for loss of time, manufacturing costs, labor, material, loss of profits, consequential damages, direct or indirect, because of defective products whether due to rights arising under the contract of sale or independently thereof, and whether or not such claim is based on contract, tort or warranty.

Written permission for any warranty claim return must be first obtained from authorized Summers' personnel. All returns must be accompanied with a complete written explanation of claimed defects and the circumstances of operational failure.

Written warranty for all component parts used in the manufacture of Summers products is available upon request. Warranty of such component parts will be determined by said component manufacturer upon their inspection of the claimed defective part.

This express warranty is the sole warranty of Summers. There are no warranties which extend beyond the warranty herein expressly set forth. The sales for products of Summers under any other warranty or guarantee express or implied is not authorized. This warranty voids all previous issues.

SUMMERS MANUFACTURING CO. INC.
MADDOCK, NORTH DAKOTA 58348
DEVILS LAKE, NORTH DAKOTA 58301

INTRODUCTION

This manual provides the following information about your Summers Pull Type SuperSprayer:

TABLE OF CONTENTS

Section 1 - **SAFETY** explains important safety precautions and familiarizes the Operator with the decals and their locations.

Section 2 - **GENERAL INFORMATION** describes standard and optional features of the sprayer.

Section 3 - **SPRAYER OPERATION** provides all necessary information for the operation and adjustment of the sprayer.

Section 4 - **MAINTENANCE** covers both spraying system and mechanical maintenance plus proper cleaning and storage.

Section 5 - **TROUBLESHOOTING** provides a quick reference to solving problems.

Section 6 - **SPECIFICATIONS** lists important dimensions, capacities and other technical information.

Section 7 - **PARTS**

OTHER ITEMS OF IMPORTANCE :

A. Summers Mfg. Co., Inc. strongly recommends that each SuperSprayer Operator read and understand Operator's Manual before using machine. In addition,this Operator's Manual should be reviewed at least annually thereafter.

B. It is the policy of this company to improve its products whenever possible and practical to do so. We reserve the right to make changes or improvements in the design or construction of parts at any time without incurring obligation to install such changes on products previously delivered.

C. Reference to "right" and "left" in this manual is determined when machine is viewed from the rear.

OWNER REGISTER

Name _____ Size _____

Address _____ Serial Number _____

City _____ Date Purchased _____

State/Prov. _____ Dealer _____

Mail Code _____

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OTHER MANUALS AND INFORMATION PROVIDED:

Hydraulic or PTO Pump manual

Directovalve manual

Raven Sprayer Control Systems manual (for Raven SCS-203 Control)

Raven SCS-440 manual (for Raven SCS-440 Control)

English/Metric Application Rate Chart

1.1 SAFETY-ALERT SYMBOL

This symbol is an alert to the potential for personal injury. This symbol means

ATTENTION! BECOME ALERT! YOUR PERSONAL SAFETY IS INVOLVED!

DEFINITION OF EACH SIGNAL WORD USED IN CONJUNCTION WITH THE SAFETY-ALERT SYMBOL:

DANGER — indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme hazards.

WARNING — indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION — indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

USING CHEMICALS?

PROTECT YOURSELF!

HIGH HAZARD
REQUIRES:
*goggles
*respirator
*avoid fumes
*rubber gloves and skin protection

MODERATE HAZARD
REQUIRES:
*goggles
*avoid fumes
*rubber gloves and skin protection

LOW HAZARD
REQUIRES:
*avoid fumes
*rubber gloves and skin protection

1. REFER TO SIGNAL WORD AND REQUIRED PERSONAL PROTECTIVE EQUIPMENT WHEN USING CHEMICALS.
2. ALWAYS READ AND FOLLOW CHEMICAL MANUFACTURERS' WARNINGS, INSTRUCTIONS AND PROCEDURES BEFORE USING.
3. HANDLE CHEMICALS WITH EXTREME CARE.
4. IN CASE OF POISONING, GET IMMEDIATE MEDICAL ATTENTION. A CONTAINER LABEL MAY BE BENEFICIAL FOR QUICK TREATMENT.
5. BE SAFE!

1.2 GENERAL SAFETY PRACTICES

1. READ AND UNDERSTAND Operator's Manual before using machine. Review at least annually thereafter.
2. VERIFY all safety devices and shields are in place before using machine.
3. KEEP hands, feet, hair and clothing away from moving parts.
4. STOP engine, place all controls in neutral, set parking brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, maintaining or unplugging.
5. BE CAREFUL when working around high pressure hydraulic system.
6. DO NOT ALLOW RIDERS.
7. USE EXTREME CARE when cleaning, filling or making adjustments.
8. ALWAYS READ chemical container label carefully and follow chemical manufacturers' WARNINGS, instructions and procedures before using.
9. AVOID having excess chemical stored after spraying.
10. ONLY STORE chemicals in their original containers in a locked area.
11. KEEP CHILDREN AWAY from chemicals and sprayer equipment.
12. ALWAYS make sure that pressure is relieved from hydraulic circuits before servicing or disconnecting from tractor.

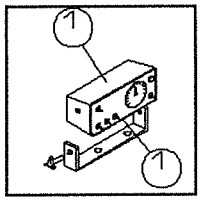
1.3 SAFETY DURING TRANSPORT

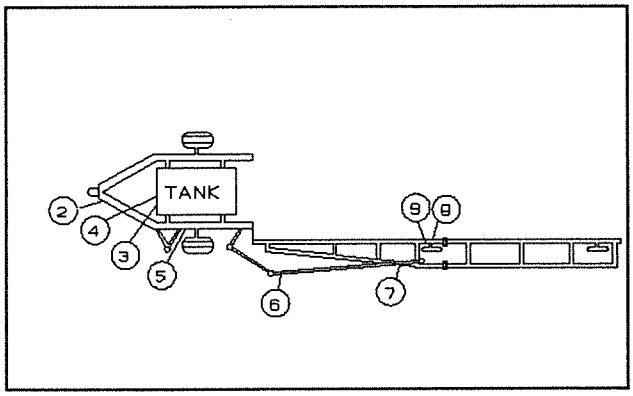
1. ONLY TOW at a safe speed. Use caution when making corners or meeting traffic.
2. USE a safety chain between tractor drawbar and sprayer hitch when transporting on public roads.
3. ALWAYS use hydraulic cylinder transport locks when transporting on public roads.
4. DISCONNECT boom pull tubes to narrow machine width when transporting on public roads. Secure pull tubes to drawbar and engage auto fold jaws into latch mechanism.

1.4 SAFETY DECALS

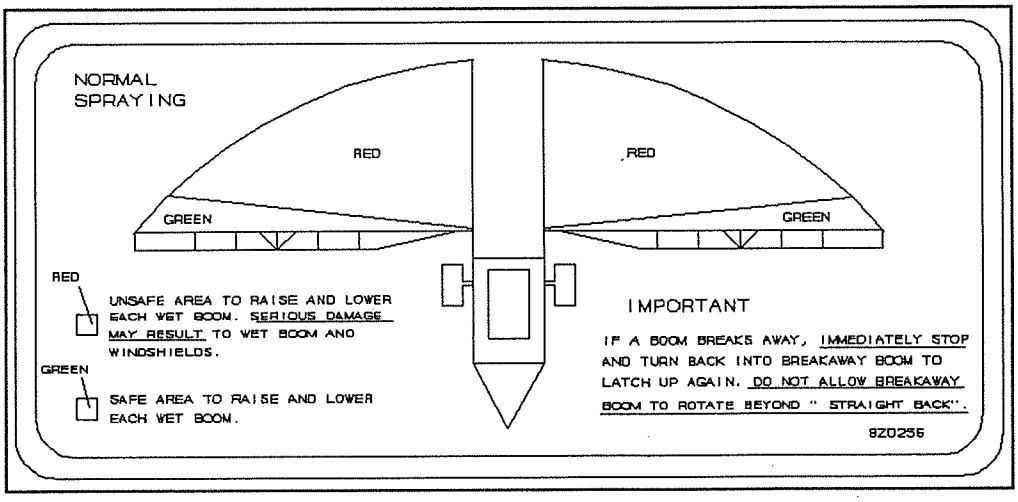
1. KEEP SAFETY DECALS CLEAN.
2. REPLACE missing or unreadable decals. New decals are available from your Summers dealer by stating correct part number (PN) located in lower right hand corner.

1.5 DECAL LOCATIONS

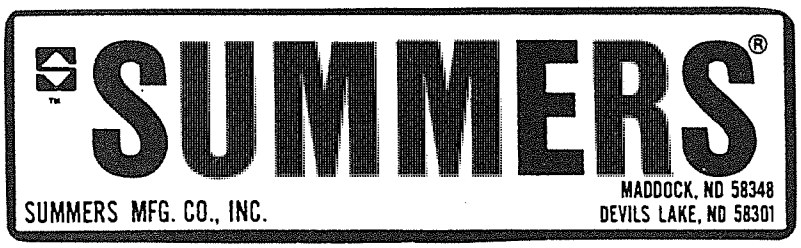




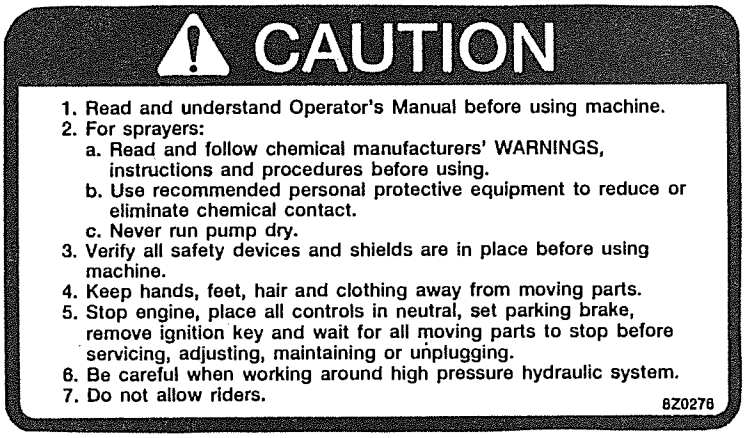
1. DECAL FOR RAVEN SCS-203 OR SCS-440 CONTROL (PN 8Z0256).



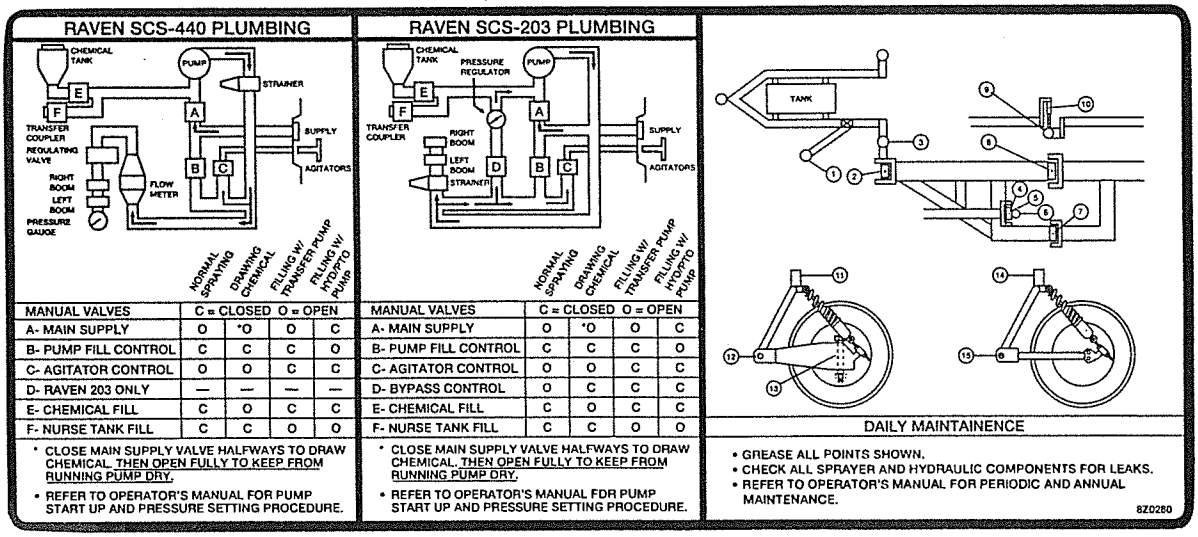
2. DECAL FOR COMPANY IDENTIFICATION (PN 8Z0079).



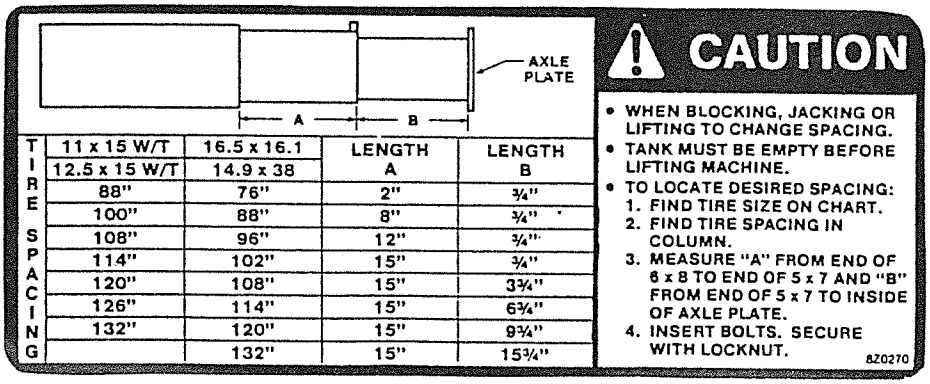
3. DECAL FOR GENERAL CAUTION (PN 8Z0276).



4. DECAL FOR PLUMBING INSTRUCTIONS AND DAILY MAINTENANCE (PN 8Z0280).



5. DECAL FOR TELESCOPING AXLE (PN 8Z0270).



TIRE SPACING	11 x 15 W/T 12.5 x 15 W/T	16.5 x 16.1 14.9 x 38	LENGTH A	LENGTH B
	88"	76"	2"	¾"
	100"	88"	8"	¾"
	108"	96"	12"	¾"
	114"	102"	15"	¾"
	120"	108"	15"	3¾"
	126"	114"	15"	6¾"
	132"	120"	15"	9¾"
		132"	15"	15¾"

6. DECAL FOR AUTO FOLD/LOCKING BOOM WHEEL GENERAL OPERATION (PN 8Z0260).

- AFTER BACKING UP SPRAYER INTO FIELD POSITION, LOWER BOOM HYDRAULICALLY TO:
  1. LOOSEN CABLE SYSTEM WHICH ALLOWS SPRING LOADED JAW TO SNAP INTO LATCHED POSITION.
  2. ALLOW CAM TO ROTATE THEREBY RAISING SPRING LOADED LOCKING PIN TO UNLOCK BOOM WHEEL.
- NEVER MANUALLY FORCE THE SPRING LOADED JAW INTO LATCHED POSITION WITHOUT VISUALLY CHECKING TO MAKE SURE THAT LOCKING BOOM WHEEL IS UNLOCKED AND WILL REMAIN UNLOCKED. FAILURE TO DO SO MAY RESULT IN SERIOUS DAMAGE TO THE LOCKING BOOM WHEEL, BOOM & AUTOFOLD.
- CABLE SYSTEM IS PRESET AT THE FACTORY BUT MAY NEED PERIODIC ADJUSTMENT. TO MAKE MINOR CABLE ADJUSTMENT: 1. LOOSEN NUTS ON TURNBUCKLE. 2. ADJUST TO OBTAIN ABOUT 1/2" OF CLEARANCE BETWEEN BOTTOM OF JAW AND TOP OF LATCH WHEN BOOM IS FULLY RAISED. 3. SECURE NUTS.
- REFER TO OPERATOR'S MANUAL FOR MAJOR CABLE ADJUSTMENT AND ADJUSTMENT OF SPRING LOADED BREAKAWAY LATCH.

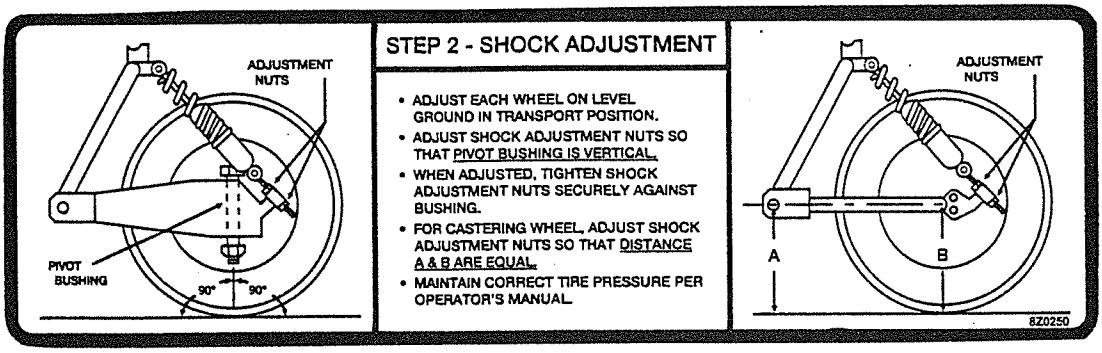
8Z0260

7. DECAL FOR HYDRAULIC CYLINDER (PN 8Z0252).

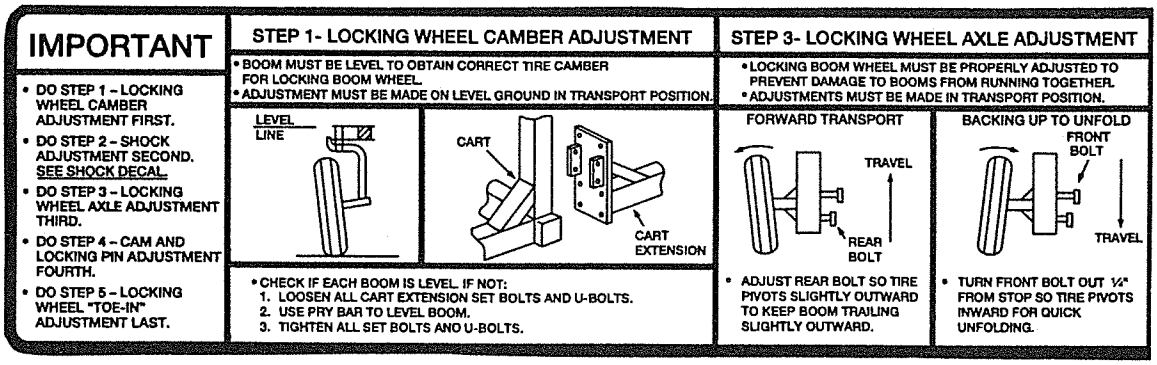
- STROKE CONTROL ADJUSTING NUT ON HYDRAULIC CYLINDER IS FACTORY SET TO ALLOW 18" SPRAY HEIGHT ABOVE GROUND. TO INCREASE SPRAY HEIGHT, TURN ADJUSTING NUT COUNTER CLOCKWISE.
- FOR SPRAYERS WITH WINDSHIELD, DO NOT OPERATE LOWER THAN 18" SPRAY HEIGHT DUE TO REDUCED CLEARANCE BETWEEN BOOM TIRES AND WINDSHIELD.

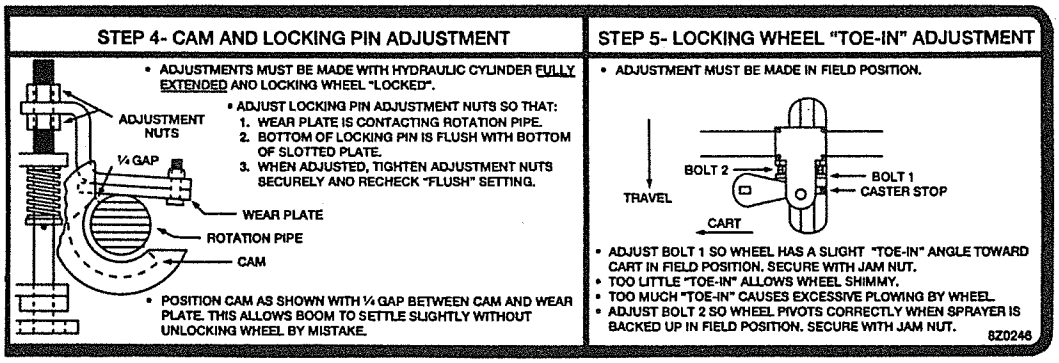
8Z0252

8. DECAL FOR LOCKING BOOM WHEEL SHOCK ADJUSTMENT (PN 8Z0250).



9. DECAL FOR LOCKING BOOM WHEEL MISCELLANEOUS ADJUSTMENTS (PN 8Z0246).





2.1 STANDARD FEATURES

* Raven 203 Control provides pressure reading and adjustment plus on/off control of each boom.
* Rugged 3 x 6 rectangular tube cart frame.
* Single hitch piece with replaceable wear bushing.
* Tip-up platform provides excellent access to filter, valves and pump plus protects components from the elements.
* Modular plumbing design operates in four modes: 1. Normal spraying. 2. Drawing chemical. 3. Filling with transfer pump. 4. Filling with hydraulic or PTO pump.
* Four jet agitators on a separate valve.
* Adjustable cart wheel spacings to match small grains or row crops.
* Summers Auto Fold allows folding for transport or opening for field position without leaving the tractor cab.
* Boom break away reduces damage should booms collide with fixed objects or other obstacles causing excessive boom pull.
* Narrow transport width.
* Two boom system (no center boom).
* Heavy duty boom hinge and rotation pipe knuckle provide flexibility to follow ground contours plus reduce boom sag.
* Locking boom wheel (5.00x15) with spring/shock suspension locks during transport to keep booms trailing properly and unlocks during field operation for 180 degree castering. Locking boom wheel is easily moved along drawbar to match small grains or row crops.
* Castering boom wheel (5.00x15) with spring/shock suspension is free to caster 360 degrees during both transport and field operation. Castering boom wheel is easily moved along drawbar to match small grains or row crops.
* Spray boom is hydraulically adjusted to desired spray height of 18" to 50" above ground. Adjustable stroke control locks boom at selected height.
* Left boom and right boom hydraulic cylinders are plumbed in parallel and teed to one remote outlet. Manual ball valve located at each cylinder allows one boom spraying of restricted areas.
* Quick Jet dripless nozzles equipped with 80 degree XR (extended range) stainless steel tips are factory spaced at 20 inches on 1" I.D. aluminum wetboom.
* Boom spreader bar keeps booms spread during long distance transporting.
* All eighteen sprayer sizes (73'-4" through 130'-0") use the same cart, spraying system and part 1 booms. The thirteen larger sprayer sizes (90'-0" through 130'-0") use the same part 2 booms.
* Windshields provide protection when spraying under windy conditions.

2.2 MAJOR OPTIONS

* Eighteen application widths (73'-4", 76'-8", 80'-0", 83'-4", 86'-8", 90'-0", 93'-4", 96'-8", 100'-0", 103'-4", 106'-8", 110'-0", 113'-4", 116'-8", 120'-0", 123'-4", 126'-8" and 130'-0").

* Four cart tire sizes (16.5L x 16.1 single, 11L x 15 or 12.5L x 15 walking tandem and 14.9 x 38 high clearance).

* Two tank sizes (750 or 1000 gallon) supported by moveable bolted on full saddle.

* Hydraulically or PTO driven pump.

2.3 OTHER OPTIONS

* Raven 440 Control provides computer controlled application based on ground speed.

* Hitch clevis.

* Mix and fill kit with 1-1/4" built-in bottom fill provides foam reduced filling of sprayer tank using chemical and/or water from nurse tank.

* Clean water tank complete with rubber gloves and goggles promotes safe sprayer servicing.

* Bottom fill kit (2 inch) provides foam reduced filling of sprayer tank with water pumped from nurse tank.

* Fillwell strainer basket (1000 gallon tank only).

* Left boom and right boom hydraulic cylinders are plumbed on separate circuits (requires two remote outlets) allowing one boom spraying without leaving tractor seat.

* Dual or triple swivel nozzles change spray tips with a simple twist.

* 110 degree XR stainless steel tips.

* End nozzle kit with manual shut-off valve allows fence row spraying.

3.1 SPRAYER OPERATION SAFETY

> ⚠ CAUTION
>
> REVIEW SECTION 3.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING!

1. READ AND UNDERSTAND Operator's Manual before using machine.
2. DO NOT ALLOW RIDERS.
3. ONLY TOW at a safe speed. Use caution when making corners or meeting traffic.
4. USE a safety chain between tractor drawbar and sprayer hitch when transporting on public roads.
5. ALWAYS use hydraulic cylinder transport locks when transporting on public roads.
6. DISCONNECT boom pull tubes to narrow machine width when transporting on public roads. Secure pull tubes to drawbar and engage auto fold jaws into latch mechanism.
7. STOP engine, place all controls in neutral, set parking brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, maintaining or unplugging.
8. KEEP CHILDREN AWAY from chemicals and sprayer equipment.
9. USE EXTREME CARE when cleaning, filling or making adjustments.
10. **USING CHEMICALS?**  **PROTECT YOURSELF!**

HIGH HAZARD
REQUIRES:
*goggles
*respirator
*avoid fumes
*rubber gloves and skin protection

MODERATE HAZARD
REQUIRES:
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*rubber gloves and skin protection

LOW HAZARD
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*rubber gloves and skin protection

1. REFER TO SIGNAL WORD AND REQUIRED PERSONAL PROTECTIVE EQUIPMENT WHEN USING CHEMICALS.
2. ALWAYS READ AND FOLLOW CHEMICAL MANUFACTURERS' WARNINGS, INSTRUCTIONS AND PROCEDURES BEFORE USING.
3. HANDLE CHEMICALS WITH EXTREME CARE.
4. IN CASE OF POISONING, GET IMMEDIATE MEDICAL ATTENTION. A CONTAINER LABEL MAY BE BENEFICIAL FOR QUICK TREATMENT.
5. BE SAFE!

11. BE CAREFUL when working around high pressure hydraulic system.
12. ALWAYS make sure that pressure is relieved from hydraulic circuits before servicing or disconnecting from tractor.
13. VERIFY all safety devices and shields are in place before using machine.
14. KEEP hands, feet, hair and clothing away from moving parts.

3.2 INITIAL SET-UP AND ADJUSTMENT OF MECHANICAL (CONVERT FROM NARROW TRANSPORT TO FIELD OPERATION)

> **⚠ CAUTION**
>
> REVIEW SECTION 3.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING!

1. COMPLETE WARRANTY REGISTRATION CARD

a. Complete and return WARRANTY REGISTRATION CARD located at the beginning of this manual. **RETURNING CARD ENTITLES YOU TO A FREE GIFT.**

b. Complete the OWNER REGISTER also located at the beginning of this manual (Serial Number is located by the hitch piece). **REMEMBER TO BRING OWNER REGISTER INFORMATION WHEN ORDERING PARTS.**

2. LEVEL THE CART

Before hooking up tractor, determine best vertical location of hitch piece in order to run a level cart:

a. Level the cart front to back.
b. Measure tractor drawbar to determine best vertical location of hitch piece.
c. For carts with 14.9 x 38 high clearance tires, tighten 7/8" set bolt and jam nut on lower back side of drop hitch to prevent wear.

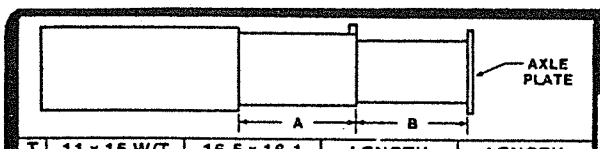
3. MAKE TRACTOR TO SPRAYER HOOKUPS

a. Make hitch connection using a draw pin with keeper and safety chain.
b. Retract jack and rotate into storage position.
c. Install hydraulic tips (if not supplied).
d. Plug in hydraulics to tractor remote outlets for boom and optional hydraulic pump operation.

4. NOTICE MOVEABLE TANK SADDLE

For future consideration, note that the tank is supported by a moveable bolted on saddle which is factory set in the middle of a 6" range. This adjustment allows more or less cart weight to be transferred to the tractor drawbar.

5. ADJUST CART WHEEL SPACING



TIRE SPACING	11 x 15 W/T	16.5 x 16.1	LENGTH A	LENGTH B
	12.5 x 15 W/T	14.9 x 38		
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	120"	108"	15"	3¾"
	126"	114"	15"	6¾"
	132"	120"	15"	9¾"
		132"	15"	15¾"

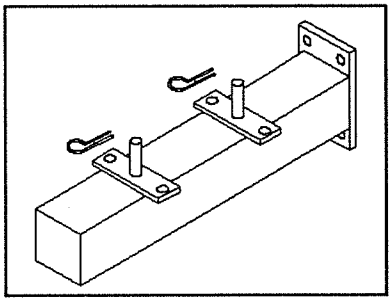
⚠ CAUTION

- WHEN BLOCKING, JACKING OR LIFTING TO CHANGE SPACING.
- TANK MUST BE EMPTY BEFORE LIFTING MACHINE.
- TO LOCATE DESIRED SPACING:
  1. FIND TIRE SIZE ON CHART.
  2. FIND TIRE SPACING IN COLUMN.
  3. MEASURE "A" FROM END OF 6 x 8 TO END OF 5 x 7 AND "B" FROM END OF 5 x 7 TO INSIDE OF AXLE PLATE.
  4. INSERT BOLTS. SECURE WITH LOCKNUT.

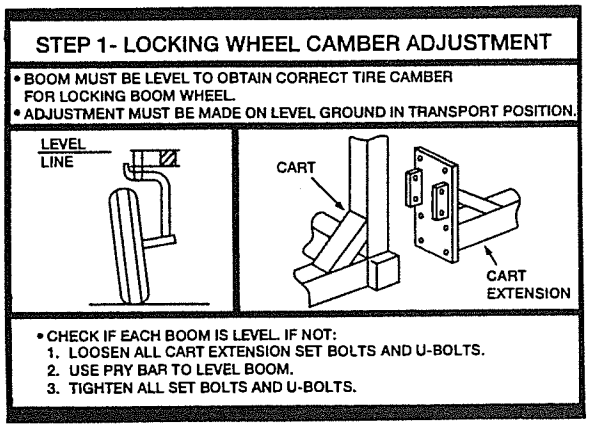
820270

6. REMOVE SPREADER BAR

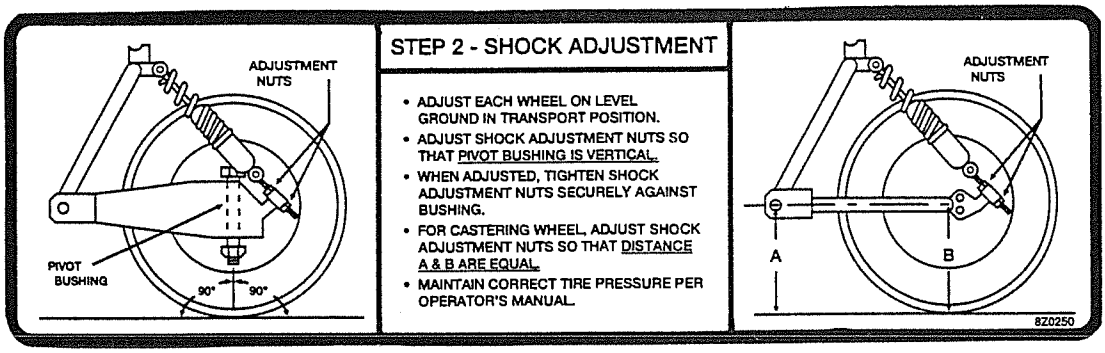
a. Remove spreader bar from back end of sprayer.
b. Store bar on top of left hand drawbar in storage racks provided.



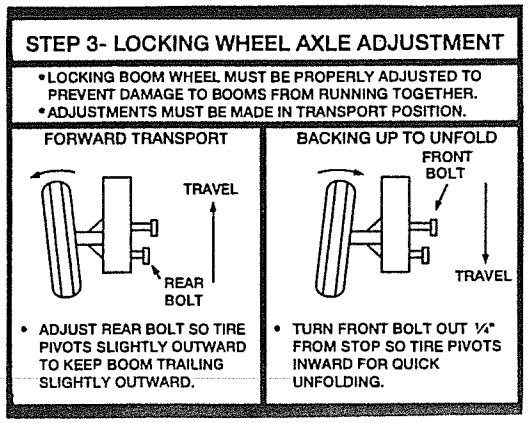
7. ADJUST LOCKING WHEEL CAMBER



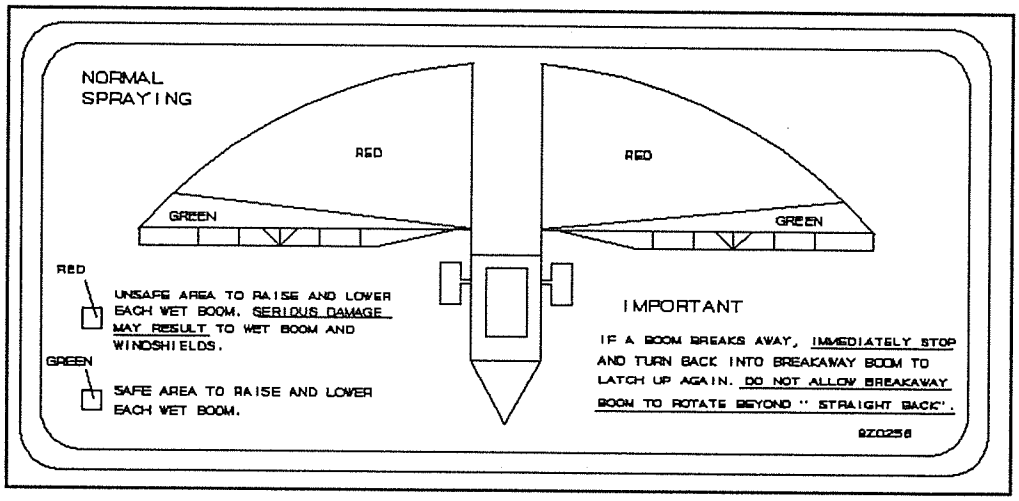
8. ADJUST SHOCK FOR EACH LOCKING AND CASTERING BOOM WHEEL



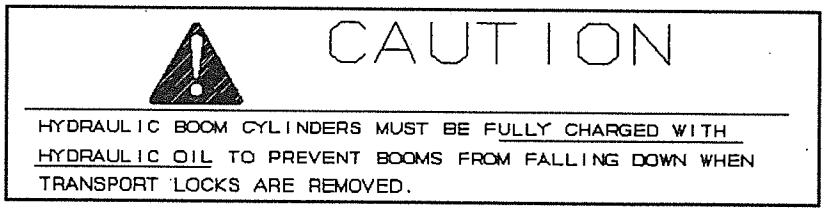
9. ADJUST LOCKING WHEEL AXLE



10. REVIEW UNSAFE AREA TO RAISE AND LOWER EACH WETBOOM



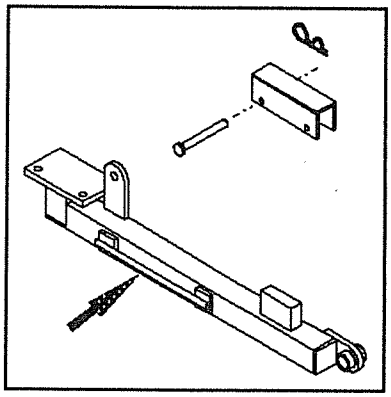
11. CHARGE HYDRAULIC BOOM CYLINDERS WITH HYDRAULIC OIL



a. Open manual ball valve located at each hydraulic boom cylinder.

b. Using tractor hydraulics, fully extend hydraulic boom cylinders (raise booms fully) in order to remove transport locks.

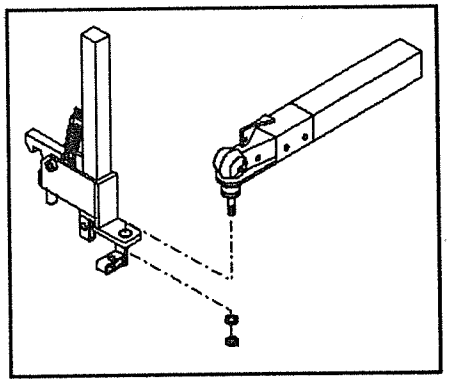
c. Store transport locks on side storage racks provided.



12. CLEAN ROD OF HYDRAULIC BOOM CYLINDERS

Remove any rust from rod surface of hydraulic boom cylinders by using a fine grit sanding cloth.

13. CONNECT UP AUTO FOLD

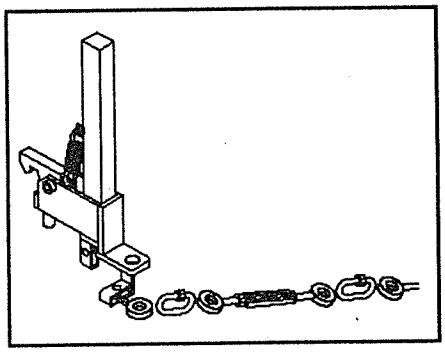


a. Unlock jaw from latch (rotate jaw upward) and swing jaw assembly back toward boom.

b. Remove pull tube and ball from drawbar (leave pull tube attached to ball).

c. Connect ball (with pull tube attached) to jaw assembly.

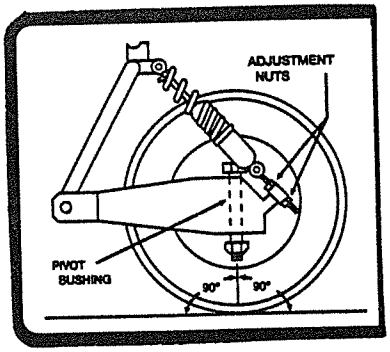
14. CONNECT UP AUTO FOLD CABLE SYSTEM



a. With hydraulic boom cylinders fully extended (booms fully raised), connect up cable system.

b. Adjust cable system to initial setting by adjusting turnbuckle to its midrange.

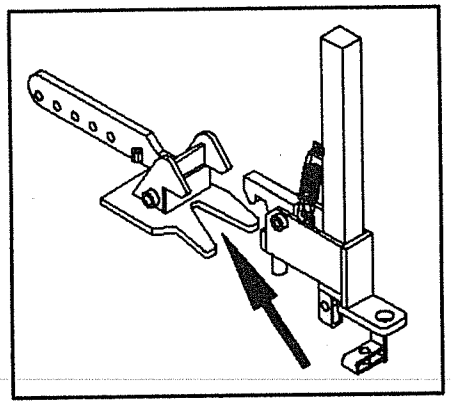
15. OPEN SPRAYER TO FIELD POSITION



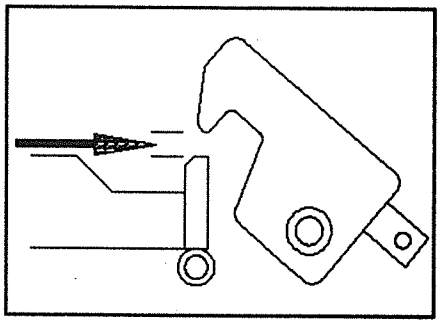
a. Grease pivot bushing.

b. Back up slowly to open booms quickly and equally. Each auto fold jaw assembly should slide into its respective latch assembly at the same time to minimize stress on the locking wheels.

c. If booms do not open correctly, repeat steps 7, 8 and 9.



16. ADJUST AUTO FOLD CABLE SYSTEM



a. With hydraulic boom cylinders fully extended (booms fully raised), adjust cable system to final setting by adjusting turnbuckle to obtain about 1/2" of clearance between bottom of jaw and top of latch.

b. If turnbuckle runs out of adjustment before step 16a is accomplished, make major adjustment to cable system:

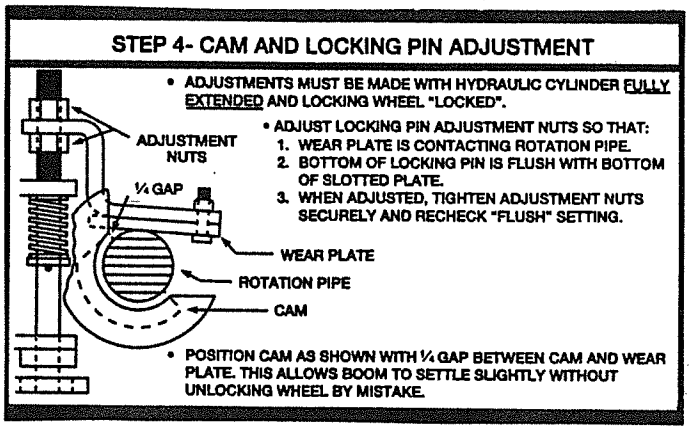
1. Loosen cable clamps on boom end of cable.
2. Adjust turnbuckle to its midrange.
3. Insert a 3/4" thick spacer between bottom of jaw and top of latch.
4. Hand tighten cable on boom end and secure with cable clamps.
5. Remove 3/4" thick spacer to allow cable to snug up.
6. Follow step 16a to make minor adjustment to cable system.

17. ADJUST BOOM WHEEL SPACINGS

a. Determine desired boom wheel locations to match small grains or row crops by measuring from centerline of sprayer.

b. Raise boom wheel off ground and move boom wheel along drawbar to desired location.

18. ADJUST LOCKING WHEEL CAM AND LOCKING PIN



19. REVIEW GENERAL OPERATION OF AUTO FOLD AND LOCKING BOOM WHEEL

- AFTER BACKING UP SPRAYER INTO FIELD POSITION, LOWER BOOM HYDRAULICALLY TO:
  1. LOOSEN CABLE SYSTEM WHICH ALLOWS SPRING LOADED JAW TO SNAP INTO LATCHED POSITION.
  2. ALLOW CAM TO ROTATE THEREBY RAISING SPRING LOADED LOCKING PIN TO UNLOCK BOOM WHEEL.
- NEVER MANUALLY FORCE THE SPRING LOADED JAW INTO LATCHED POSITION WITHOUT VISUALLY CHECKING TO MAKE SURE THAT LOCKING BOOM WHEEL IS UNLOCKED AND WILL REMAIN UNLOCKED. FAILURE TO DO SO MAY RESULT IN SERIOUS DAMAGE TO THE LOCKING BOOM WHEEL, BOOM & AUTOFOLD.
- CABLE SYSTEM IS PRESET AT THE FACTORY BUT MAY NEED PERIODIC ADJUSTMENT. TO MAKE MINOR CABLE ADJUSTMENT: 1. LOOSEN NUTS ON TURNBUCKLE. 2. ADJUST TO OBTAIN ABOUT 1/2" OF CLEARANCE BETWEEN BOTTOM OF JAW AND TOP OF LATCH WHEN BOOM IS FULLY RAISED. 3. SECURE NUTS.
- REFER TO OPERATOR'S MANUAL FOR MAJOR CABLE ADJUSTMENT AND ADJUSTMENT OF SPRING LOADED BREAKAWAY LATCH.

8ZO260

20. REVIEW PURPOSE OF STROKE CONTROL ADJUSTING NUT

- STROKE CONTROL ADJUSTING NUT ON HYDRAULIC CYLINDER IS FACTORY SET TO ALLOW 18" SPRAY HEIGHT ABOVE GROUND. TO INCREASE SPRAY HEIGHT, TURN ADJUSTING NUT COUNTER CLOCKWISE.
- FOR SPRAYERS WITH WINDSHIELD, DO NOT OPERATE LOWER THAN 18" SPRAY HEIGHT DUE TO REDUCED CLEARANCE BETWEEN BOOM TIRES AND WINDSHIELD.

8ZO252

21. LOWER BOOMS FULLY

Using tractor hydraulics, fully retract hydraulic boom cylinders (lower booms fully) to:

a. Loosen cable system which allows spring loaded jaw to snap into latched position.

b. Allow cam to rotate thereby raising spring loaded locking pin to unlock boom wheel.

22. DRIVE AHEAD SLOWLY

IMPORTANT

TO PREVENT DAMAGE TO LOCKING WHEEL AND AUTO FOLD:

1. OPEN SPRAYER TO FIELD POSITION.
2. LOWER BOOMS FULLY.
3. DRIVE AHEAD SLOWLY AND IMMEDIATELY WATCH THAT EACH LOCKING WHEEL IS UNLOCKED AND IS PIVOTING INTO FIELD POSITION.

23. CHECK TIRE AIR PRESSURE

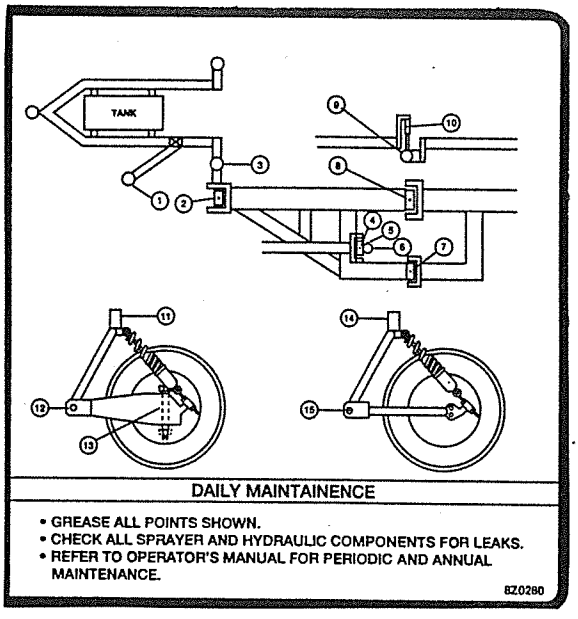
TIRE SIZE	PLY	AIR (PSI) PRESSURE
16.5L X 16.1 SINGLE	8	28
11L X 15 WALKING TANDEM	8	36
12.5L X 15 WALKING TANDEM	12	52
14.9 X 38 HIGH CLEARANCE	6	20
5.00 X 15 BOOM	4	30 (BOOM HINGE) 20 (BOOM END)

24. PERFORM MECHANICAL DAILY MAINTENANCE

a. Grease all points shown.

b. Check all hydraulic components for leaks.

c. Check all wheel bolts.



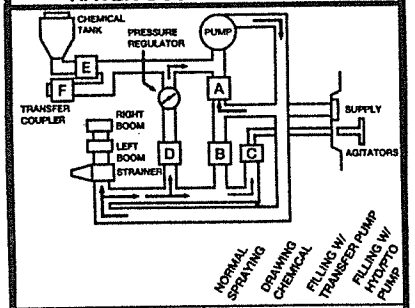
3.3 INITIAL SET-UP AND ADJUSTMENT OF SPRAYER SYSTEM

⚠ CAUTION

REVIEW SECTION 3.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING!

1. REVIEW PLUMBING INSTRUCTIONS FOR OVERALL VIEW OF FOUR SPRAYER SYSTEM FUNCTION

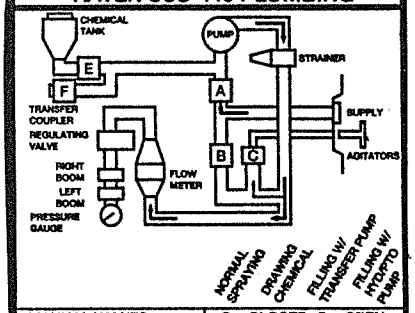
RAVEN SCS-203 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN			
A- MAIN SUPPLY	O	*O	O	C
B- PUMP FILL CONTROL	C	C	C	O
C- AGITATOR CONTROL	O	O	C	C
D- BYPASS CONTROL	O	C	C	C
E- CHEMICAL FILL	C	O	C	C
F- NURSE TANK FILL	C	C	O	O

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL, THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
• REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

RAVEN SCS-440 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN			
A- MAIN SUPPLY	O	*O	O	C
B- PUMP FILL CONTROL	C	C	C	O
C- AGITATOR CONTROL	O	O	C	C
D- RAVEN 203 ONLY	—	—	—	—
E- CHEMICAL FILL	C	O	C	C
F- NURSE TANK FILL	C	C	O	O

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL, THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
• REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

2. MAKE TRACTOR TO RAVEN SCS-203 SPRAYER SYSTEM HOOKUPS

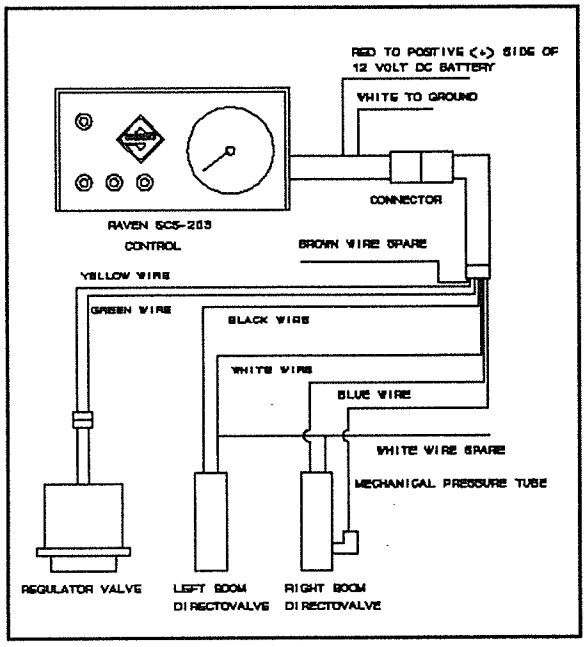
a. Install hydraulic tips (if not supplied) and plug in hydraulics to tractor remote outlet for optional hydraulic pump operation.

b. Mount optional PTO pump onto output shaft of tractor plus make supply side and pressure side plumbing connections.

c. Mount standard Raven SCS-203 Control to a secure support inside tractor cab.

d. Make electrical and mechanical pressure sensing connections. See Raven Sprayer Control Systems manual for additional information.

e. Mount stick-on cable holders onto cart frame to secure Raven Control cable.



3. MAKE TRACTOR TO OPTIONAL RAVEN SCS-440 SPRAYER SYSTEM HOOKUPS

a. Install hydraulic tips (if not supplied) and plug in hydraulics to tractor remote outlet for optional hydraulic pump operation.

b. Mount optional PTO pump onto output shaft of tractor plus make supply side and pressure side plumbing connections.

c. Mount optional Raven SCS-440 Control to a secure support inside tractor cab.

d. Install second decal (shipped loose) for Raven SCS-440 Control in a noticeable location.

e. See Raven SCS-440 manual for additional information.

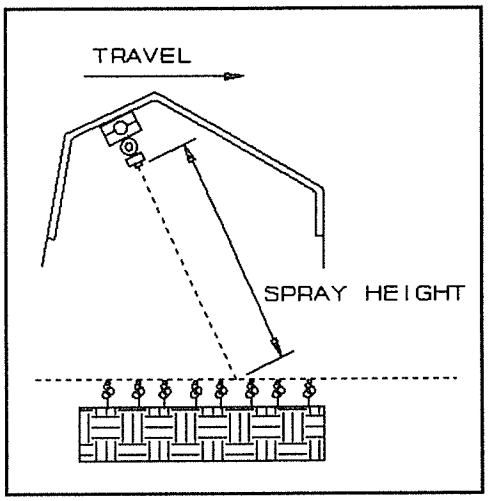
f. Mount stick-on cable holders onto cart frame to secure Raven Control cable.

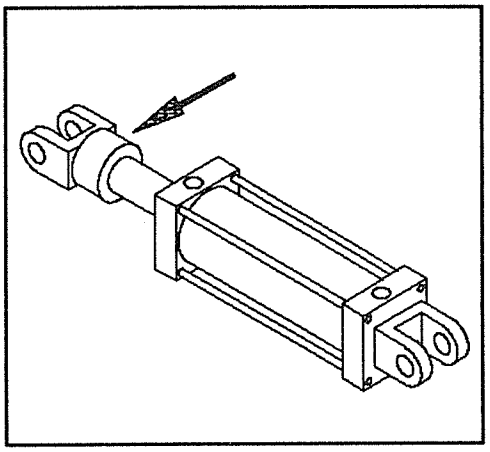
g. Use the following programming data based on actual spraying width: (* assumes each end nozzle covers 72" for each boom. Adjust data based on actual end nozzle coverage).

ACTUAL SPRAYING WIDTH	OPTIONAL END NOZZLES	LEFT BOOM	RIGHT BOOM	ACTUAL SPRAYING WIDTH	OPTIONAL END NOZZLES	LEFT BOOM	RIGHT BOOM
73'-4"	NO	440	440	103'-4"	NO	620	620
	YES*	512	512		YES*	692	692
76'-8"	NO	460	460	106'-8"	NO	640	640
	YES*	532	532		YES*	712	712
80'-0"	NO	480	480	110'-0"	NO	660	660
	YES*	552	552		YES*	732	732
83'-4"	NO	500	500	113'-4"	NO	680	680
	YES*	572	572		YES*	752	752
86'-8"	NO	520	520	116'-8"	NO	700	700
	YES*	592	592		YES*	772	772
90'-0"	NO	540	540	120'-0"	NO	720	720
	YES*	612	612		YES*	792	792
93'-4"	NO	560	560	123'-4"	NO	740	740
	YES*	632	632		YES*	812	812
96'-8"	NO	580	580	126'-8"	NO	760	760
	YES*	652	652		YES*	832	832
100'-0"	NO	600	600	130'-0"	NO	780	780
	YES*	672	672		YES*	852	852

4. ADJUST SPRAY HEIGHT

Adjust spray height to initial chart setting by adjusting stroke control adjusting nut on each hydraulic cylinder.

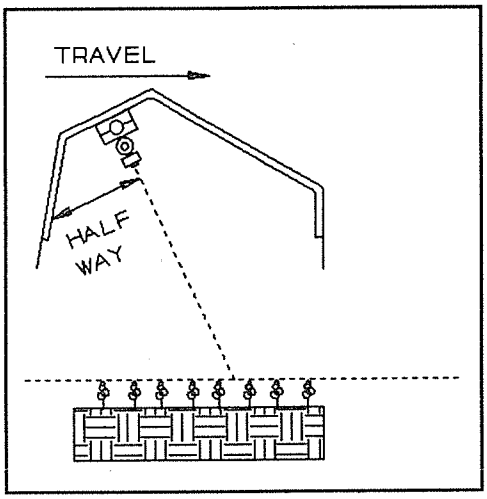


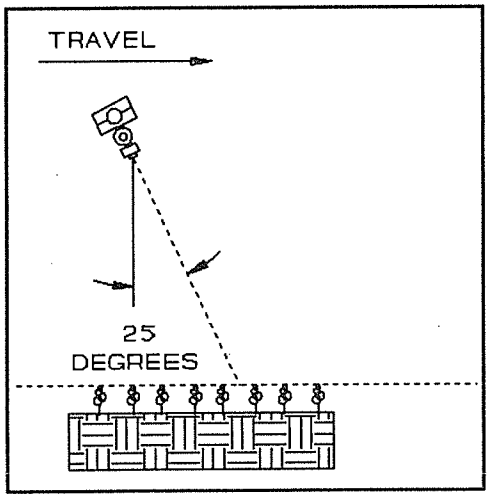


DEGREE TIP	SPRAY HEIGHT
80	18" TO 19"
110	12" TO 14"

5. ADJUST SPRAY ANGLE

Adjust spray angle so that nozzle is half way between front and back windshields or 25 degrees forward for sprayers without windshields.





6. DETERMINE TIP SIZE

Determine tip size by examining a nozzle tip for the stamped number.

PART NUMBER	TIP SIZE	TIP MATERIAL	DEGREE TIP	COLOR CODE
8F3411X	XR8001	STAINLESS STEEL	80 DEGREES	ORANGE
8F3413X	XR80015			GREEN
8F3415X	XR8002			YELLOW
8F3417X	XR8003			BLUE
8F3419X	XR8004			RED
8F3421X	XR8005			BROWN
8F3423X	XR8006			GRAY
8F3425X	XR8008			WHITE
8F3511X	XR11001VS	STAINLESS STEEL	110 DEGREES	ORANGE
8F3513X	XR110015VS			GREEN
8F3515X	XR11002VS			YELLOW
8F3517X	XR11003VS			BLUE
8F3519X	XR11004VS			RED
8F3521X	XR11005VS			BROWN
8F3523X	XR11006VS			GRAY
8F3525X	XR11008VS			WHITE

7. DETERMINE APPLICATION RATE

a. Choose a desired ground speed within factory recommended range of 5 to 8 miles per hour (mph).

b. By knowing tip size and desired ground speed, refer to English or Metric Application Rate Chart (shown on following pages) to determine application rate (U.S. gallons per acre or liters per hectare) based on different operating pressures.

c. Example of how to obtain 5.0 U.S. gallons per acre application rate:

1. Determined tip size to be XR8001.

2. Chose desired ground speed to be 6 miles per hour (mph).

3. Refer to English Application Rage Chart (shown on following page) to see that XR8001 tips traveling at 6 mph will deliver 5.0 U.S. gallons per acre at 40 psi operating pressure.

80°, 110° TIPS APPLICATION RATE CHART (ENGLISH)

U.S. Gallons Per Acre at Various Nozzle Settings

Tip No.	Operating Pressure PSI	SPEED - MPH						
		4	5	6	7	8	10	12
8001 11001	15	4.5	3.6	3.0	2.6	2.3	1.8	1.5
	20	5.3	4.2	3.5	3.0	2.6	2.1	1.8
	30	6.4	5.1	4.3	3.7	3.2	2.6	2.1
	40	7.4	5.9	5.0	4.2	3.7	3.0	2.5
	50	8.3	6.6	5.5	4.7	4.2	3.3	2.8
	60	9.1	7.3	6.1	5.2	4.6	3.6	3.0
80015 110015	15	6.8	5.5	4.5	3.9	3.4	2.7	2.2
	20	7.9	6.3	5.3	4.5	3.9	3.2	2.6
	30	9.6	7.7	6.4	5.5	4.8	3.9	3.2
	40	11.1	8.9	7.4	6.4	5.6	4.5	3.7
	50	12.5	10.0	8.3	7.1	6.2	5.0	4.2
	60	13.6	10.9	9.1	7.8	6.8	5.5	4.6
8002 11002	15	9.1	7.3	6.1	5.2	4.5	3.6	3.0
	20	10.5	8.4	7.0	6.0	5.3	4.2	3.5
	30	12.9	10.3	8.6	7.4	6.4	5.1	4.3
	40	14.9	11.9	9.9	8.5	7.4	5.9	5.0
	50	16.6	13.3	11.1	9.5	8.3	6.6	5.5
	60	18.2	14.6	12.1	10.4	9.1	7.3	6.1
8003 11003	15	13.6	10.9	9.1	7.8	6.8	5.5	4.5
	20	15.8	12.6	10.5	9.0	7.9	6.3	5.3
	30	19.0	15.4	12.9	11.0	9.7	7.7	6.4
	40	22.0	17.8	14.9	12.7	11.1	8.9	7.4
	50	25.0	19.6	16.6	14.2	12.5	10.0	8.3
	60	27.0	22.0	18.2	15.6	13.6	10.9	9.1
8004 11004	15	18.2	14.5	12.1	10.4	9.1	7.3	6.0
	20	21.0	16.8	14.0	12.0	10.5	8.4	7.0
	30	26.0	21.0	17.2	14.7	12.9	10.3	8.6
	40	30.0	24.0	19.8	17.0	14.9	11.9	9.9
	50	33.0	27.0	22.0	19.0	16.6	13.3	11.1
	60	36.0	29.0	24.0	21.0	18.2	14.6	12.1
8005 11005	15	23.0	18.2	15.2	13.0	11.4	9.1	7.6
	20	26.0	21.0	17.5	15.0	13.1	10.5	8.8
	30	32.0	26.0	21.0	18.4	16.1	12.9	10.7
	40	37.0	30.0	25.0	21.0	18.6	14.9	12.4
	50	42.0	33.0	28.0	24.0	21.0	16.6	13.8
	60	45.0	36.0	30.0	26.0	23.0	18.0	15.0
8006 11006	15	27.0	22.0	18.2	15.6	13.6	10.9	9.1
	20	32.0	25.0	21.0	18.0	15.8	12.6	10.5
	30	39.0	31.0	26.0	22.0	19.3	15.4	12.9
	40	45.0	36.0	30.0	25.0	22.0	17.8	14.9
	50	50.0	40.0	33.0	28.0	25.0	19.9	16.6
	60	55.0	44.0	36.0	31.0	27.0	22.0	18.2
8008 11008	15	36.0	29.0	24.0	21.0	18.2	14.5	12.0
	20	42.0	34.0	28.0	24.0	21.0	16.8	14.0
	30	52.0	41.0	34.0	29.0	26.0	21.0	17.2
	40	59.0	48.0	40.0	34.0	30.0	24.0	19.8
	50	66.0	53.0	44.0	38.0	33.0	27.0	22.0
	60	73.0	58.0	49.0	42.0	36.0	29.0	24.0

80°, 110° TIPS APPLICATION RATE CHART (METRIC)

Liters per Hectare at Various Nozzle Settings

Tip No.	Operating Pressure PSI (KPa/100)	SPEED - MPH (KM/HR) 4 (6.4)	5 (8)	6 (9.6)	7 (11.2)	8 (12.8)	10 (16.1)	12 (19.3)
8001 11001	15 (1.0)	42	34	28	24	21	16.8	14.0
	20 (1.4)	49	39	33	28	24	20	16.8
	30 (2.1)	60	48	40	34	30	24	19.6
	40 (2.8)	69	55	47	39	34	28	23
	50 (3.4)	78	62	51	44	39	31	26
	60 (4.1)	85	68	57	49	43	34	28
80015 110015	15 (1.0)	63	51	42	36	32	25	20
	20 (1.4)	74	59	50	42	36	30	24
	30 (2.1)	90	72	60	51	45	36	30
	40 (2.8)	104	83	69	60	52	42	34
	50 (3.4)	117	93	78	66	58	47	39
	60 (4.1)	127	102	85	73	63	51	43
8002 11002	15 (1.0)	85	68	57	49	42	34	28
	20 (1.4)	98	78	65	56	49	39	33
	30 (1.2)	121	96	80	69	60	48	40
	40 (2.8)	139	111	92	79	69	55	47
	50 (3.4)	155	124	104	89	78	62	51
	60 (4.1)	170	136	113	97	85	68	57
8003 11003	15 (1.0)	127	102	85	73	63	51	42
	20 (1.4)	148	118	98	84	74	59	49
	30 (2.1)	178	144	121	103	91	72	60
	40 (2.8)	206	166	139	119	104	83	69
	50 (3.4)	234	183	155	133	117	93	77
	60 (4.1)	252	206	170	146	127	102	85
8004 11004	15 (1.0)	170	135	113	97	85	68	56
	20 (1.4)	196	157	131	112	98	78	65
	30 (2.1)	243	196	161	138	121	96	80
	40 (2.8)	280	224	185	159	139	111	92
	50 (3.4)	308	252	206	178	155	124	104
	60 (4.1)	337	271	224	196	170	136	113
8005 11005	15 (1.0)	215	170	142	121	106	85	71
	20 (1.4)	243	196	164	140	122	98	82
	30 (2.1)	299	243	196	172	150	121	100
	40 (2.8)	346	280	234	196	174	139	116
	50 (3.4)	393	308	258	224	196	155	129
	60 (4.1)	421	337	280	243	210	170	142
8006 11006	15 (1.0)	252	206	170	146	127	102	85
	20 (1.4)	299	236	196	168	148	118	98
	30 (2.1)	365	290	243	206	180	144	121
	40 (2.8)	421	336	280	234	206	166	139
	50 (3.4)	467	374	308	262	234	186	155
	60 (4.1)	514	411	337	290	252	206	170
8008 11008	15 (1.0)	337	271	224	196	170	135	112
	20 (1.4)	393	318	262	224	196	157	131
	30 (2.1)	486	383	318	271	243	196	161
	40 (2.8)	552	449	374	318	280	224	185
	50 (3.4)	617	495	411	355	308	252	206
	60 (4.1)	682	542	458	393	337	271	224

3.4 TESTING AND ADJUSTMENT OF SPRAYER SYSTEM

⚠ CAUTION

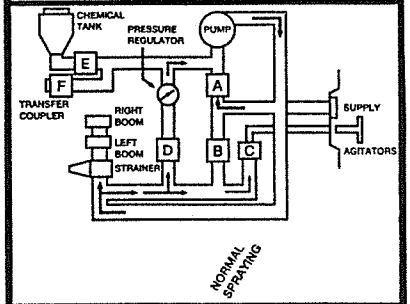
REVIEW SECTION 3.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING!

1. ADD WATER TO MAIN TANK

Add approximately 300 gallons of water to main tank by using one of the following two methods:

a. Set-up Normal Spraying and fill main tank through optional bottom fill kit or through top fillwell.

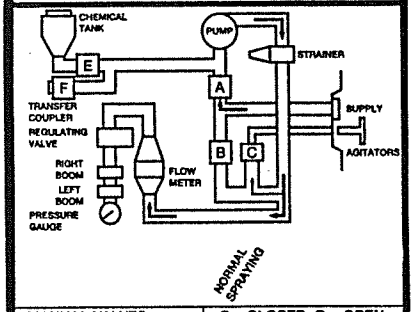
RAVEN SCS-203 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN
A- MAIN SUPPLY	O
B- PUMP FILL CONTROL	C
C- AGITATOR CONTROL	O
D- BYPASS CONTROL	O
E- CHEMICAL FILL	C
F- NURSE TANK FILL	C

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL, THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
* REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

RAVEN SCS-440 PLUMBING

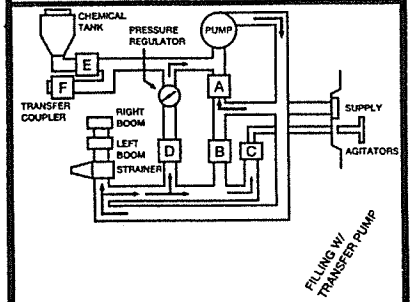


MANUAL VALVES	C = CLOSED O = OPEN
A- MAIN SUPPLY	O
B- PUMP FILL CONTROL	C
C- AGITATOR CONTROL	O
D- RAVEN 203 ONLY	—
E- CHEMICAL FILL	C
F- NURSE TANK FILL	C

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL, THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
* REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

b. Set-up Filling with Transfer Pump and fill main tank through optional mix and fill kit with built-in bottom fill.

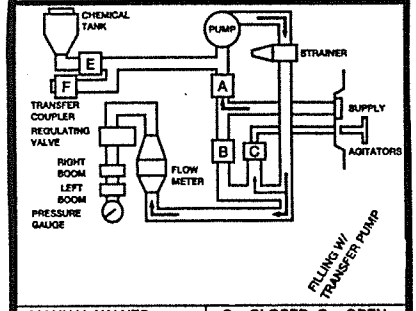
RAVEN SCS-203 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN
A- MAIN SUPPLY	O
B- PUMP FILL CONTROL	C
C- AGITATOR CONTROL	C
D- BYPASS CONTROL	C
E- CHEMICAL FILL	C
F- NURSE TANK FILL	O

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL, THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
* REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

RAVEN SCS-440 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN
A- MAIN SUPPLY	O
B- PUMP FILL CONTROL	C
C- AGITATOR CONTROL	C
D- RAVEN 203 ONLY	—
E- CHEMICAL FILL	C
F- NURSE TANK FILL	O

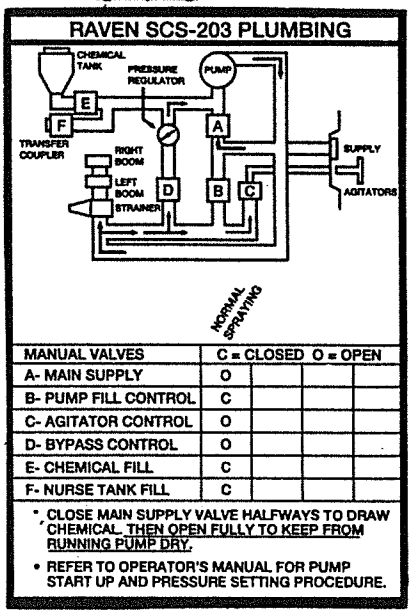
* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL, THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
* REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

2. PRIME SPRAYER SYSTEM PUMP

IMPORTANT

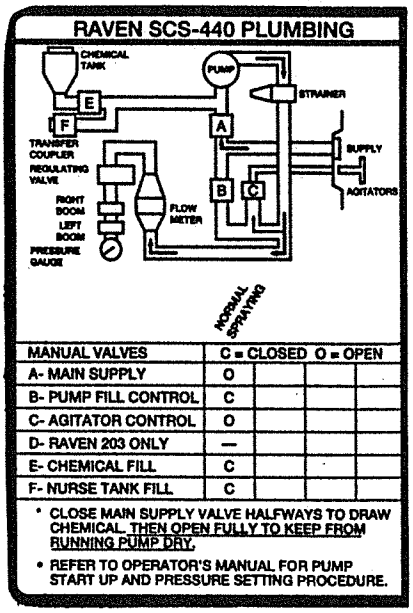
NEVER RUN PUMP DRY. THE MECHANICAL SEAL BETWEEN THE PUMP AND POWER SOURCE DEPENDS UPON THE LIQUID FOR ITS LUBRICATION. A SEAL DAMAGED FROM RUNNING A PUMP DRY IS NOT COVERED BY WARRANTY.

a. Set-up Normal Spraying.



MANUAL VALVES	C = CLOSED O = OPEN			
A- MAIN SUPPLY	O			
B- PUMP FILL CONTROL	C			
C- AGITATOR CONTROL	O			
D- BYPASS CONTROL	O			
E- CHEMICAL FILL	C			
F- NURSE TANK FILL	C			

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
• REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.



MANUAL VALVES	C = CLOSED O = OPEN			
A- MAIN SUPPLY	O			
B- PUMP FILL CONTROL	C			
C- AGITATOR CONTROL	O			
D- RAVEN 203 ONLY	—			
E- CHEMICAL FILL	C			
F- NURSE TANK FILL	C			

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
• REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

b. Prime optional PTO driven pump:

1. Engage tractor PTO system and increase to normal field PTO speed in order to circulate water from the main tank to the pump and back to the main tank again through the agitators. Immediately verify agitator flow by looking through top fillwell.

2. Disengage tractor PTO system.

c. Prime optional hydraulically driven pump:

1. Check that direction of oil flow is correct (flowing into PRESSURE port of hydraulic motor) by momentarily activating the hydraulic system to verify that the hose connected to the PRESSURE port stiffens. If wrong hose stiffens, either reverse hoses at tractor remote outlet or move hydraulic lever in opposite direction.

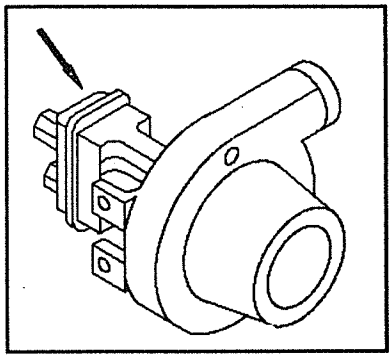
2. Engage tractor hydraulic system and increase to normal field rpm speed in order to circulate water from the main tank to the pump and back to the main tank again through the agitators. Immediately verify agitator flow by looking through top fillwell.

3. Disengage tractor hydraulic system.

3. ADJUST OPTIONAL HYDRAULICALLY DRIVEN PUMP SYSTEM

The hydraulically driven pump system must be adjusted to produce a maximum pressure of 80 psi in order to stay well within the 0 to 100 psi operating range of the Directovalves.

a. Adjust **CLOSED CENTER HM4** pump:

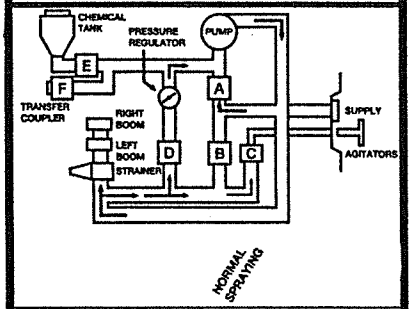


1. Loosen jam nut for bypass screw located on top of hydraulic motor and turn screw completely in. Secure jam nut.

2. Adjust flow control valve for tractor hydraulic system to allow minimum oil flow.

3. Close manual valves C (agitator control) and D (bypass control) plus make sure switches for left and right boom Directovalves are off. LEAVE VALVE A (MAIN SUPPLY) OPEN!

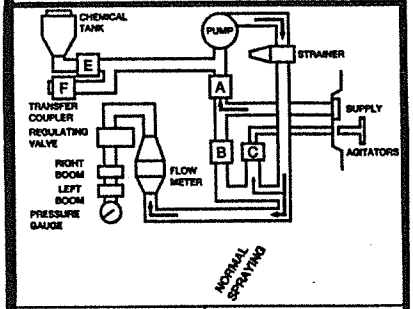
RAVEN SCS-203 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN				
A- MAIN SUPPLY	O				
B- PUMP FILL CONTROL	C				
C- AGITATOR CONTROL	O				
D- BYPASS CONTROL	O				
E- CHEMICAL FILL	C				
F- NURSE TANK FILL	C				

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL, THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
* REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

RAVEN SCS-440 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN				
A- MAIN SUPPLY	O				
B- PUMP FILL CONTROL	C				
C- AGITATOR CONTROL	O				
D- RAVEN 203 ONLY	—				
E- CHEMICAL FILL	C				
F- NURSE TANK FILL	C				

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL, THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
* REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

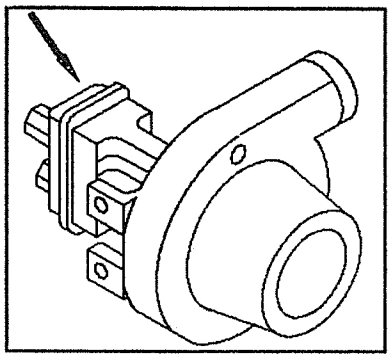
4. Engage tractor hydraulic system and increase to normal field rpm speed.

5. Adjust flow control valve for tractor hydraulic system until pressure gauge of Raven Control reads the recommended maximum pressure of 80 psi.

6. Disengage tractor hydraulic system.

7. Set-up Normal Spraying.

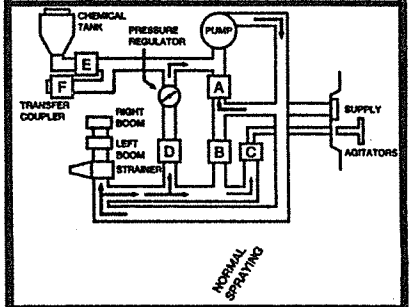
b. Adjust **OPEN CENTER HM1 or HM3** pump:



1. Loosen jam nut for bypass screw located on top of hydraulic motor and turn screw out 3 revolutions from factory setting.

2. Close manual valves C (agitator control) and D (bypass control) plus make sure switches for left and right boom Directovalves are off.
LEAVE VALVE A (MAIN SUPPLY) OPEN!

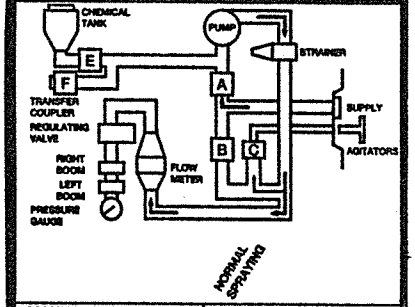
RAVEN SCS-203 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN			
A- MAIN SUPPLY	O			
B- PUMP FILL CONTROL	C			
C- AGITATOR CONTROL	O			
D- BYPASS CONTROL	O			
E- CHEMICAL FILL	C			
F- NURSE TANK FILL	C			

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
* REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

RAVEN SCS-440 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN			
A- MAIN SUPPLY	O			
B- PUMP FILL CONTROL	C			
C- AGITATOR CONTROL	O			
D- RAVEN 203 ONLY	—			
E- CHEMICAL FILL	C			
F- NURSE TANK FILL	C			

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
* REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

3. Engage tractor hydraulic system and increase to normal field rpm speed.

4. Slowly turn bypass screw in until pressure gauge of Raven Control reads the recommended maximum pressure of 80 psi. Secure jam nut.

5. Disengage tractor hydraulic system.

6. Set-up Normal Spraying.

4. START-UP RAVEN CONTROL

a. Start-up **Raven SCS-440** Control:

1. See Raven SCS-440 manual for complete information.

b. Start-up **Raven SCS-203** Control:

1. Place all BOOM ON/OFF switches to OFF.

2. Place MASTER ON/OFF switch to ON.

3. Engage tractor hydraulic system and increase to normal field rpm speed or engage tractor PTO system and increase to normal field PTO speed.

4. Place BOOM 1 ON/OFF switch to ON. Verify that left boom Directovalve operates and that no nozzles are plugged (including optional left boom end nozzle with manual shut-off valve).

5. Place BOOM 3 ON/OFF switch to ON. Verify that right boom Directovalve operates and that no nozzles are plugged (including optional right boom end nozzle with manual shut-off valve).

6. With both BOOM 1 and 3 ON/OFF switches to ON, hold the manual pressure adjust switch one way or the other in order to fully close the motorized Regulator Valve and obtain maximum operating pressure with full agitation. (The Regulator Valve is fully closed when the pressure stops increasing and starts to decrease. The motorized Regulator Valve rotates slowly clockwise or counterclockwise depending on switch position and could take up to 90 seconds to reach fully closed position).

7. Adjust manual valve C (agitator control):

   a. Partially close manual valve C to increase maximum operating pressure.

   b. Under normal spraying conditions, manual valve C should be fully open.

8. If maximum operating pressure is still too low, adjust flow control valve for tractor hydraulic system.

9. With both BOOM 1 and 3 ON/OFF switches to ON, hold the manual pressure adjust switch the other way in order to fully open the motorized Regulator Valve and obtain minimum operating pressure. (The Regulator Valve is fully open when the pressure stops decreasing and starts to increase).

10. With both BOOM 1 and 3 ON/OFF switches to ON, hold the manual pressure adjust switch to obtain required operating pressure necessary for desired application rate.

11. Disengage tractor hydraulic system or PTO system.

5. TEST OPTIONAL MIX AND FILL KIT WITH BUILT-IN BOTTOM FILL

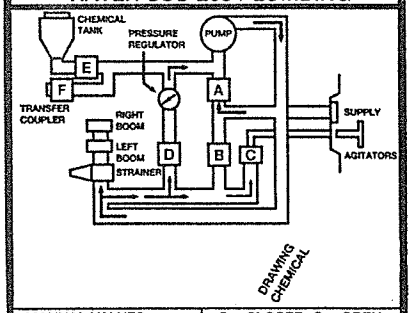
a. Test Drawing Chemical:

1. Add approximately 15 gallons of water to mix and fill tank.

2. Engage tractor hydraulic system or PTO system.

3. Set-up Drawing Chemical. When set-up, close main supply valve halfways to draw chemical. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.

RAVEN SCS-203 PLUMBING

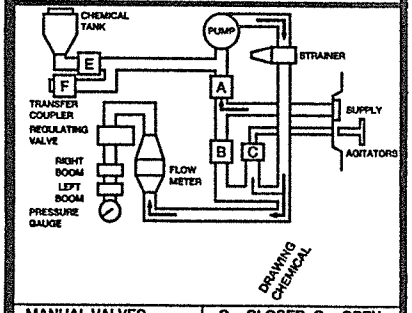


MANUAL VALVES	C = CLOSED O = OPEN			
A- MAIN SUPPLY		*O		
B- PUMP FILL CONTROL		C		
C- AGITATOR CONTROL		O		
D- BYPASS CONTROL		C		
E- CHEMICAL FILL		O		
F- NURSE TANK FILL		C		

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.

• REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

RAVEN SCS-440 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN			
A- MAIN SUPPLY		*O		
B- PUMP FILL CONTROL		C		
C- AGITATOR CONTROL		O		
D- RAVEN 203 ONLY		—		
E- CHEMICAL FILL		O		
F- NURSE TANK FILL		C		

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.

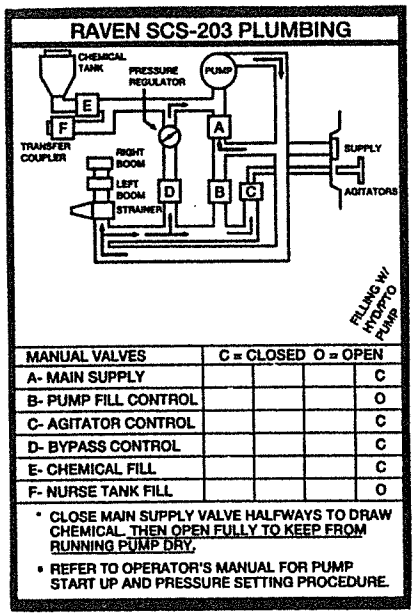
• REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

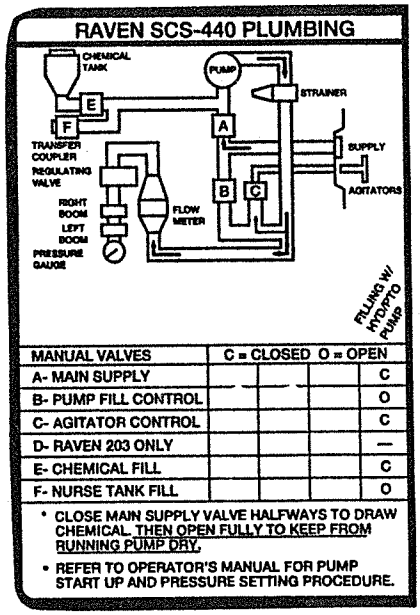
4. Set-up Normal Spraying.

5. Disengage tractor hydraulic system or PTO system.

b. Test Filling with Hydraulic/PTO Pump:

1. Set-up Filling with Hydraulic/PTO Pump.

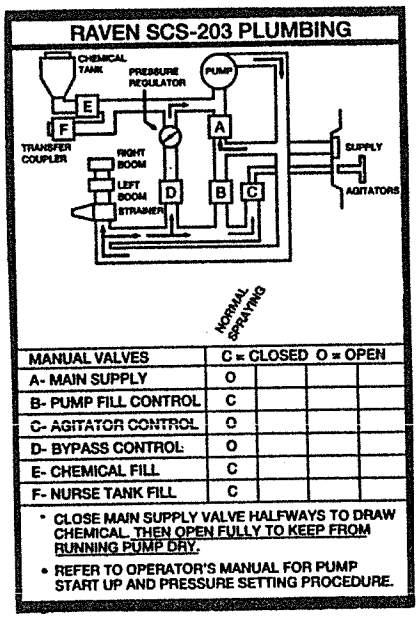


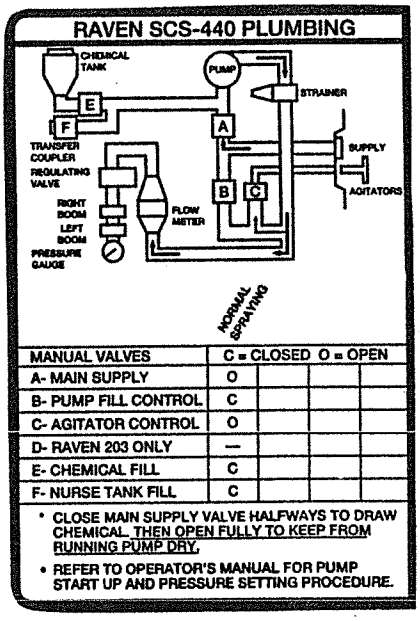


2. Engage tractor hydraulic system or PTO system.

3. Disengage tractor hydraulic system or PTO system.

4. Set-up Normal Spraying.





6. PERFORM SPRAYER SYSTEM DAILY MAINTENANCE

a. Check all sprayer system components for leaks.

b. Clean sprayer system strainer.

c. Check water level in optional clean water tank plus check that rubber gloves and goggles are present.

d. Check tank hold down straps and adjustable end stop.

e. Check nozzle patterns. If a nozzle pattern is distorted:

1. Remove nozzle tip.

2. Clean with tooth brush, wooden or plastic probe. Never use a metal object since damage will occur.

3. Blow out nozzle tip with compressed air no greater than 40 psi. Never use your mouth to blow out a nozzle tip.

4. Replace nozzle tip if necessary.

5. Install nozzle tip back onto sprayer.

f. During periods of use in freezing temperatures:

1. Flush entire sprayer system with permanent type radiator anti-freeze using a 50/50 solution. Spray solution through nozzles.

2. Allow dripless nozzles to drain by loosening each diaphragm check valve nut.

g. When changing chemicals, follow chemical manufacturers' WARNINGS, instructions and procedures concerning sprayer system cleaning.

3.5 TRANSPORTING AND ADJUSTMENT OF SPRAYER FROM FIELD TO FIELD

⚠ CAUTION

REVIEW SECTION 3.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING!

1. RAISE BOOMS FULLY

Using tractor hydraulics, fully extend hydraulic boom cylinders (raise booms fully) to:

a. Tighten cable system which unlocks spring loaded jaw from latch.

b. Allow cam to rotate thereby lowering spring loaded locking pin in order to lock boom wheel as described in next step.

2. DRIVE AHEAD SLOWLY

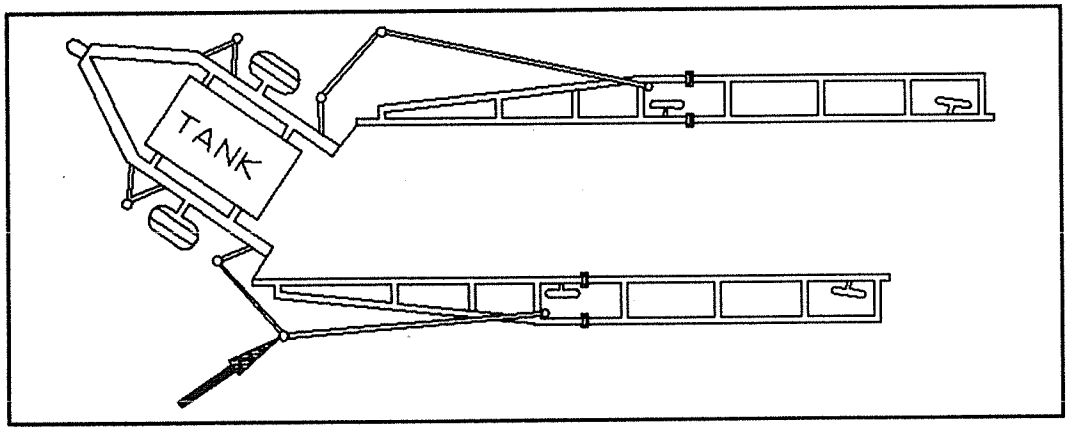
IMPORTANT

TO PREVENT DAMAGE TO BOOMS FROM RUNNING TOGETHER:

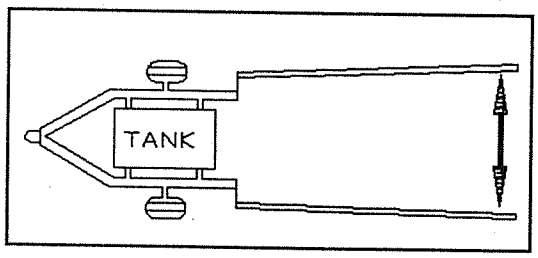
1. RAISE BOOMS FULLY.
2. DRIVE AHEAD SLOWLY AND IMMEDIATELY WATCH THAT EACH LOCKING WHEEL GETS LOCKED BY ITS RESPECTIVE SPRING LOADED LOCKING PIN.
3. ON HARD SURFACES, LOCKING WHEELS MAY NOT PIVOT CORRECTLY TOWARDS LOWERED SPRING LOADED LOCKING PIN DUE TO REDUCED SOIL RESISTANCE.

3. GET FAMILIAR WITH CORNER TURNING LIMIT

Get familiar with how sharp a corner can be made without the auto fold damaging the second front windshield.



4. TRANSPORT SPRAYER TO FIRST FIELD



Each boom should trail slightly outward when traveling forward.

If booms do not trail correctly:

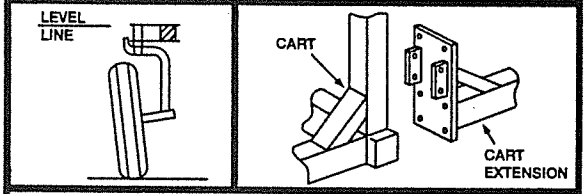
a. Adjust Locking Wheel Camber

IMPORTANT

- DO STEP 1 – LOCKING WHEEL CAMBER ADJUSTMENT FIRST.
- DO STEP 2 – SHOCK ADJUSTMENT SECOND. SEE SHOCK DECAL.
- DO STEP 3 – LOCKING WHEEL AXLE ADJUSTMENT THIRD.
- DO STEP 4 – CAM AND LOCKING PIN ADJUSTMENT FOURTH.
- DO STEP 5 – LOCKING WHEEL "TOE-IN" ADJUSTMENT LAST.

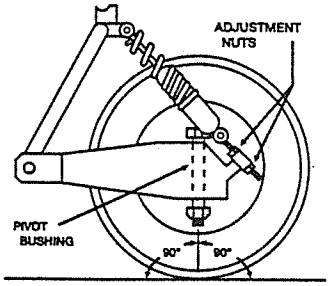
STEP 1- LOCKING WHEEL CAMBER ADJUSTMENT

- BOOM MUST BE LEVEL TO OBTAIN CORRECT TIRE CAMBER FOR LOCKING BOOM WHEEL.
- ADJUSTMENT MUST BE MADE ON LEVEL GROUND IN TRANSPORT POSITION.



- CHECK IF EACH BOOM IS LEVEL. IF NOT:
  1. LOOSEN ALL CART EXTENSION SET BOLTS AND U-BOLTS.
  2. USE PRY BAR TO LEVEL BOOM.
  3. TIGHTEN ALL SET BOLTS AND U-BOLTS.

b. Grease Pivot Bushing and Adjust Shock for each Locking Boom Wheel



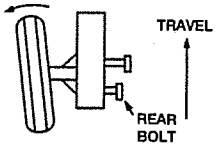
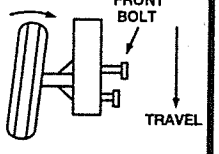
STEP 2 - SHOCK ADJUSTMENT

- ADJUST EACH WHEEL ON LEVEL GROUND IN TRANSPORT POSITION.
- ADJUST SHOCK ADJUSTMENT NUTS SO THAT PIVOT BUSHING IS VERTICAL.
- WHEN ADJUSTED, TIGHTEN SHOCK ADJUSTMENT NUTS SECURELY AGAINST BUSHING.
- FOR CASTERING WHEEL, ADJUST SHOCK ADJUSTMENT NUTS SO THAT DISTANCE A & B ARE EQUAL.
- MAINTAIN CORRECT TIRE PRESSURE PER OPERATOR'S MANUAL.

c. Adjust Locking Wheel Axle

STEP 3- LOCKING WHEEL AXLE ADJUSTMENT

- LOCKING BOOM WHEEL MUST BE PROPERLY ADJUSTED TO PREVENT DAMAGE TO BOOMS FROM RUNNING TOGETHER.
- ADJUSTMENTS MUST BE MADE IN TRANSPORT POSITION.

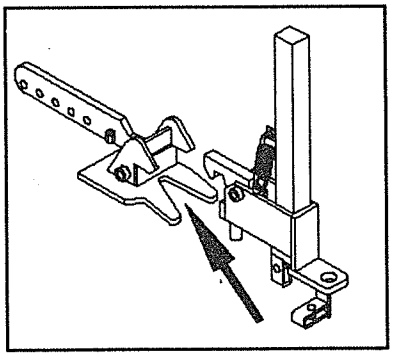
FORWARD TRANSPORT	BACKING UP TO UNFOLD
	
• ADJUST REAR BOLT SO TIRE PIVOTS SLIGHTLY OUTWARD TO KEEP BOOM TRAILING SLIGHTLY OUTWARD.	• TURN FRONT BOLT OUT ¼" FROM STOP SO TIRE PIVOTS INWARD FOR QUICK UNFOLDING.

3.6 MECHANICAL FIELD OPERATION AND ADJUSTMENT

⚠ CAUTION

REVIEW SECTION 3.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING!

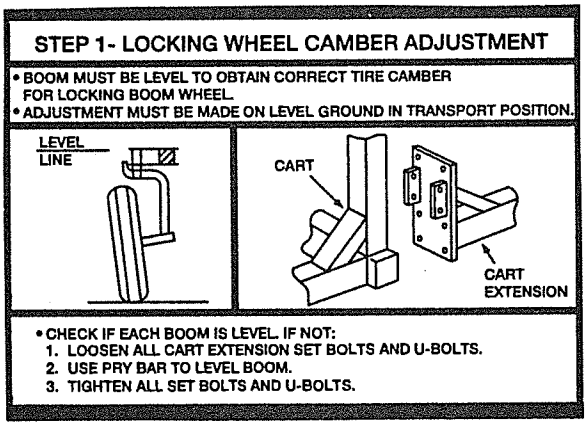
1. OPEN SPRAYER TO FIELD POSITION

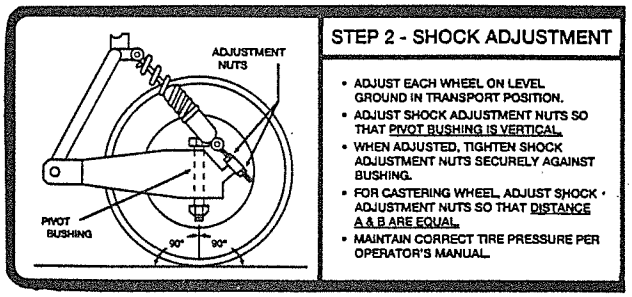


Back up slowly to open booms quickly and equally. Each auto fold jaw assembly should slide into its respective latch assembly at the same time to minimize stress on the locking wheels.

If booms do not open correctly:

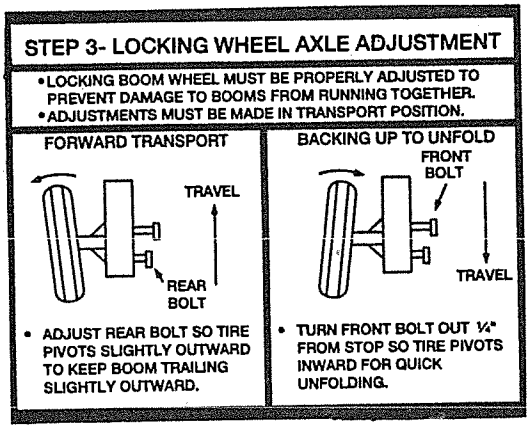
a. Adjust Locking Wheel Camber





b. Grease Pivot Bushing and Adjust Shock for each Locking Boom Wheel

c. Adjust Locking Wheel Axle



2. LOWER BOOMS FULLY

Using tractor hydraulics, fully retract hydraulic boom cylinders (lower booms fully) to:

a. Loosen cable system which allows spring loaded jaw to snap into latched position.

b. Allow cam to rotate thereby raising spring loaded locking pin to unlock boom wheel.

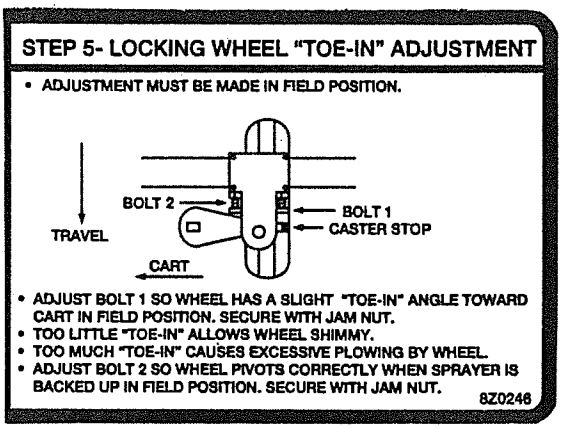
3. DRIVE AHEAD SLOWLY

IMPORTANT

TO PREVENT DAMAGE TO LOCKING WHEEL AND AUTO FOLD:

1. OPEN SPRAYER TO FIELD POSITION.
2. LOWER BOOMS FULLY.
3. DRIVE AHEAD SLOWLY AND IMMEDIATELY WATCH THAT EACH LOCKING WHEEL IS UNLOCKED AND IS PIVOTING INTO FIELD POSITION.

4. ADJUST LOCKING WHEEL "TOE-IN"



IMPORTANT

WHEN BACKING UP SPRAYER, SOME DEGREE OF PLOWING BY LOCKING WHEEL CANNOT BE AVOIDED SINCE THE LOCKING WHEEL MUST CASTER AROUND WHEN FORWARD TRAVEL IS RESUMED. EXERCISE CARE WHEN BACKING UP TO NOT OVER STRESS LOCKING WHEEL.

5. ADJUST EACH BOOM BREAK AWAY

IMPORTANT

1. BECAUSE OF THE WIDE RANGE OF OPERATOR DEPENDENT VARIABLES (GROUND SPEED, TERRAIN, SOIL MOISTURE, ETC.), THE OPERATOR IS RESPONSIBLE FOR ADJUSTING EACH BOOM BREAK AWAY TO MEET HIS OPERATING CONDITIONS SINCE EACH BOOM BREAK AWAY DOES NOT COME "FIELD READY" FROM THE FACTORY.

2. BOOM BREAK AWAY IS DESIGNED TO REDUCE DAMAGE TO THE SPRAYER SHOULD BOOMS COLLIDE WITH FIXED OBJECTS OR OTHER OBSTACLES CAUSING EXCESSIVE BOOM PULL.

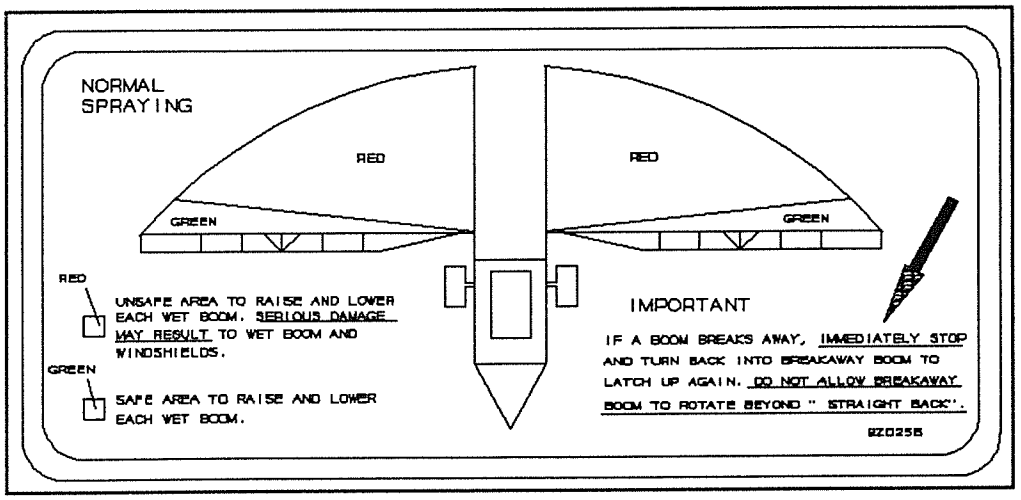
3. SUMMERS MFG. CO., INC. IS NOT RESPONSIBLE FOR AND WILL NOT WARRANT ANY SPRAYER DAMAGE CAUSED BY:

   a. THE OPERATOR FAILING TO ADJUST EACH BOOM BREAK AWAY TO MEET HIS OPERATING CONDITIONS.

   b. THE OPERATOR HITTING FIXED OBJECTS.

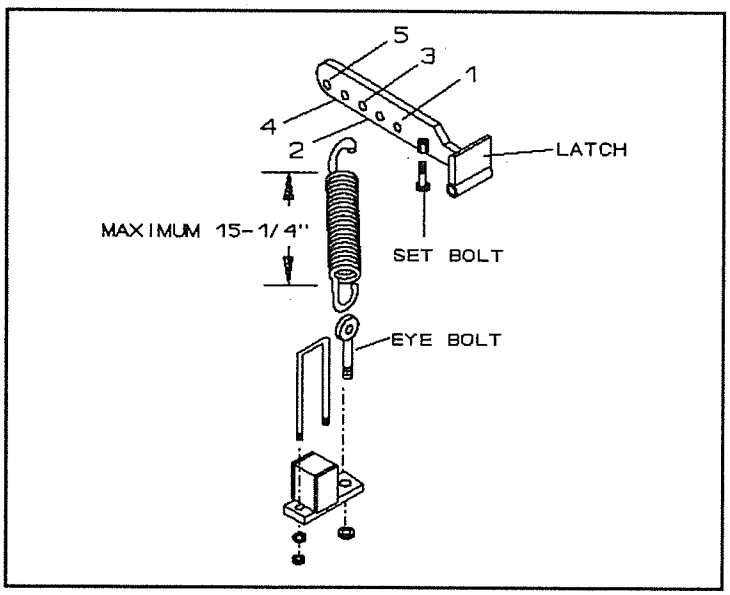
Test holding power of each boom break away:

a. Begin making 90 degree and 180 degree turns at SLOWER THAN NORMAL SPEED.



b. To adjust boom break away LEVERAGE and/or SPRING TENSION:

1. Carefully loosen spring tension using set bolt adjustment first and eye-bolt adjustment last.
2. Move spring to desired hole (1 through 5) to increase or decrease leverage.
3. Move bottom bracket to allow spring to be vertical.
4. Tighten U-bolt to secure bottom bracket.
5. Connect spring to eye-bolt and hand tighten locknut.
6. Adjust set bolts so latch is vertical.
7. Add additional spring tension (stretch) using eye-bolt adjustment. DO NOT EXCEED MORE THAN 15-1/4" COIL LENGTH OR SPRING DAMAGE MAY RESULT.



c. Begin making 90 degree and 180 degree turns at normal speed.

IMPORTANT

HOLDING POWER OF EACH BOOM BREAK AWAY SHOULD BE STRONG ENOUGH TO HOLD BOOM DURING NORMAL SPRAYER OPERATION YET ALLOW BOOM TO BREAK AWAY SHOULD EXCESSIVE BOOM PULL OCCUR.

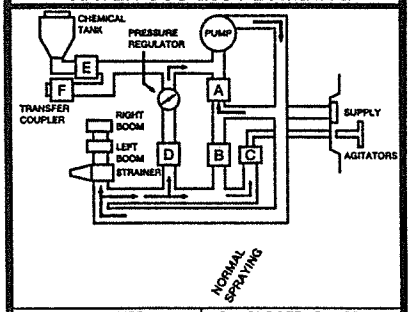
3.7 SPRAYER SYSTEM FIELD OPERATION AND ADJUSTMENT

⚠ CAUTION

REVIEW SECTION 3.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING!

1. SET-UP NORMAL SPRAYING

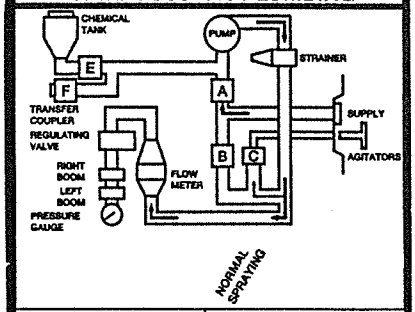
RAVEN SCS-203 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN
A- MAIN SUPPLY	O
B- PUMP FILL CONTROL	C
C- AGITATOR CONTROL	O
D- BYPASS CONTROL	O
E- CHEMICAL FILL	C
F- NURSE TANK FILL	C

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
* REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

RAVEN SCS-440 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN
A- MAIN SUPPLY	O
B- PUMP FILL CONTROL	C
C- AGITATOR CONTROL	O
D- RAVEN 203 ONLY	—
E- CHEMICAL FILL	C
F- NURSE TANK FILL	C

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
* REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

IMPORTANT

1. NEVER RUN PUMP DRY. THE MECHANICAL SEAL BETWEEN THE PUMP AND POWER SOURCE DEPENDS UPON THE LIQUID FOR ITS LUBRICATION. A SEAL DAMAGED FROM RUNNING A PUMP DRY IS NOT COVERED BY WARRANTY.

2. SINCE BOTH THE HYDRAULIC PUMP AND THE PTO PUMP ARE CENTRIFUGAL PUMPS, BOTH BOOMS AS WELL AS MANUAL VALVES B,C AND D CAN BE SHUT OFF WITHOUT DAMAGING THE PUMP PROVIDED THE PUMP IS NEVER RUN DRY.

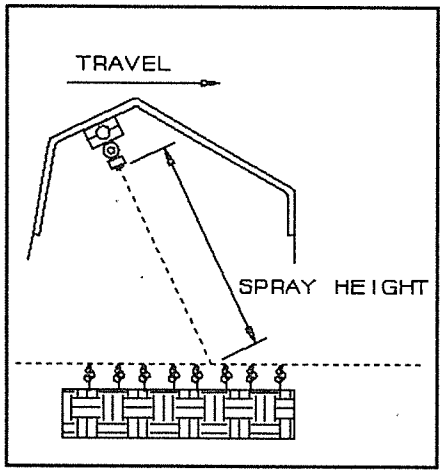
2. START-UP PUMP

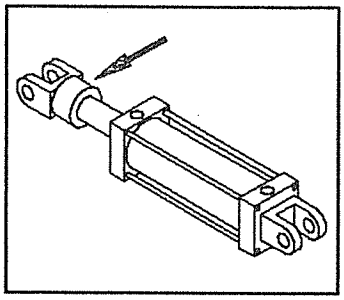
Engage tractor hydraulic system and increase to normal field rpm speed or engage tractor PTO system and increase to normal field PTO speed.

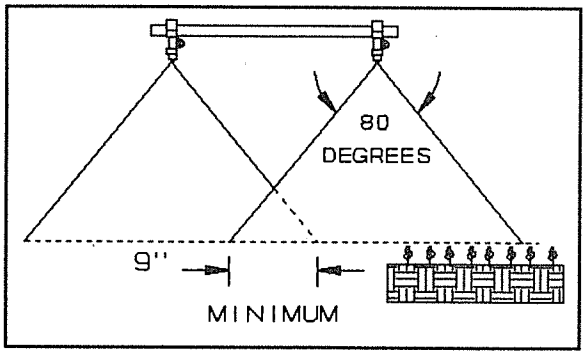
3. START-UP RAVEN CONTROL

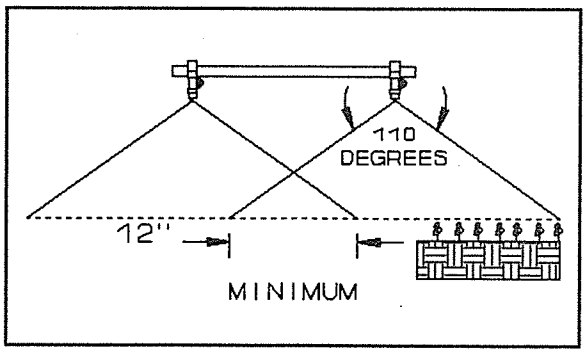
4. ADJUST SPRAY HEIGHT

Adjust spray height to final setting BASED ON MINIMUM OVERLAP OF SPRAY PATTERNS by adjusting stroke control adjusting nut on each hydraulic cylinder.









3.8 CALIBRATION OF SPRAYER SYSTEM

> **CAUTION**
>
> REVIEW SECTION 3.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING!

1. **CHOOSE AND MEASURE OFF** one of the following three fixed distances: (LONGER DISTANCES PRODUCE MORE ACCURATE RESULTS).

    a. 1/4 mile = 1320 feet

    b. 1/2 mile = 2640 feet

    c. 1 mile = 5280 feet

2. **COMPLETELY FILL** the main tank.

3. **SHUT-OFF OPTIONAL END NOZZLES** using manual shut-off valve.

4. **SPRAY THE CHOSEN DISTANCE** using:

    a. Desired ground speed within factory recommended range of 5 to 8 miles per hour (mph).

    b. Desired operating pressure.

5. **MEASURE** the gallons of water required to completely refill the main tank.

6. **CALCULATE APPLICATION RATE** using correct formula for measured distance chosen:

    a. For 1/4 mile:

$$\text{U.S. Gallons per Acre} = \frac{\text{Measured Gallons of Water x 33}}{\text{Actual Spraying Width (Feet)}}$$

    b. For 1/2 mile:

$$\text{U.S. Gallons per Acre} = \frac{\text{Measured Gallons of Water x 16.5}}{\text{Actual Spraying Width (Feet)}}$$

    c. For 1 mile:

$$\text{U.S. Gallons per Acre} = \frac{\text{Measure Gallons of Water x 8.25}}{\text{Actual Spraying Width (Feet)}}$$

7. **EXAMPLE**

    36 gallons of water was required to completely refill the main tank of a 120'- 0" sprayer over a 1/2 mile distance.

$$\frac{\text{36 Gallons of Water x 16.5}}{\text{120 Feet}} = \text{5.0 U.S. Gallons per Acre}$$

8. START-UP RAVEN CONTROL to lower main tank water level enough to make room for chemical.

9. ADD CHEMICAL TO MAIN TANK

USING CHEMICALS?  **PROTECT YOURSELF!**

HIGH HAZARD
REQUIRES:
*goggles
*respirator
*avoid fumes
*rubber gloves and skin protection

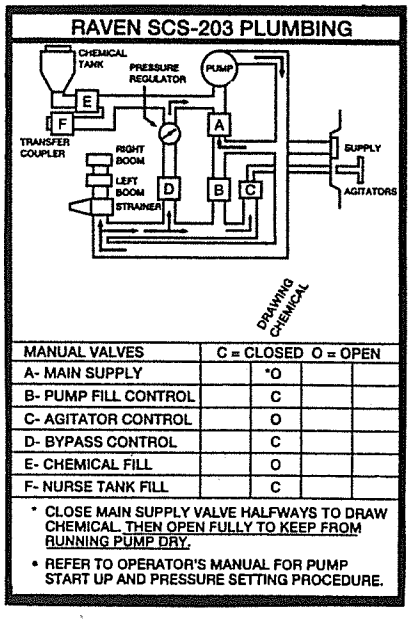
MODERATE HAZARD
REQUIRES:
*goggles
*avoid fumes
*rubber gloves and skin protection

LOW HAZARD
REQUIRES:
*avoid fumes
*rubber gloves and skin protection

1. REFER TO SIGNAL WORD AND REQUIRED PERSONAL PROTECTIVE EQUIPMENT WHEN USING CHEMICALS.
2. ALWAYS READ AND FOLLOW CHEMICAL MANUFACTURERS' WARNINGS, INSTRUCTIONS AND PROCEDURES BEFORE USING.
3. HANDLE CHEMICALS WITH EXTREME CARE.
4. IN CASE OF POISONING, GET IMMEDIATE MEDICAL ATTENTION. A CONTAINER LABEL MAY BE BENEFICIAL FOR QUICK TREATMENT.
5. BE SAFE!

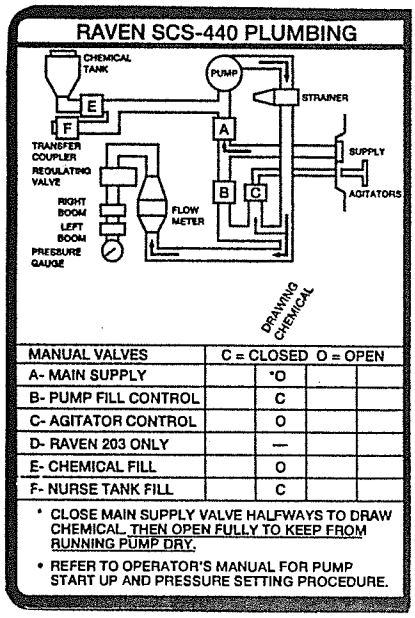
ADD CHEMICAL TO MAIN TANK by using one of the following two methods:

a. Add chemical through top fillwell.
b. Set-up Drawing Chemical and add chemical through optional mix and fill kit.



MANUAL VALVES	C = CLOSED O = OPEN			
A- MAIN SUPPLY		*O		
B- PUMP FILL CONTROL		C		
C- AGITATOR CONTROL		O		
D- BYPASS CONTROL		C		
E- CHEMICAL FILL		O		
F- NURSE TANK FILL		C		

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL, THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
• REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.



MANUAL VALVES	C = CLOSED O = OPEN			
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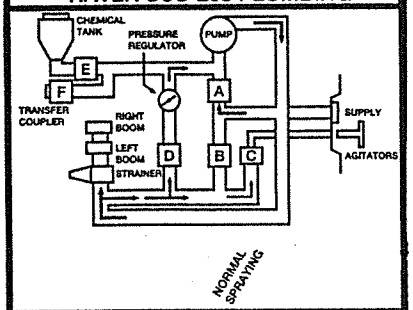
B- PUMP FILL CONTROL		C		
C- AGITATOR CONTROL		O		
D- RAVEN 203 ONLY		—		
E- CHEMICAL FILL		O		
F- NURSE TANK FILL		C		

* CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL, THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
• REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

10. SET-UP NORMAL SPRAYING

RAVEN SCS-203 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN
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B- PUMP FILL CONTROL	C
C- AGITATOR CONTROL	O
D- BYPASS CONTROL	O
E- CHEMICAL FILL	C
F- NURSE TANK FILL	C

- CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
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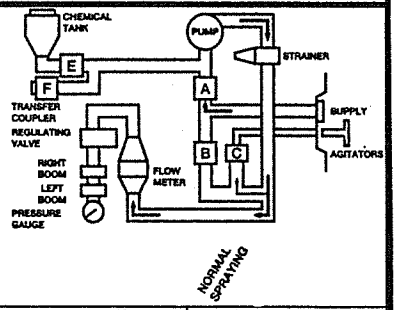
RAVEN SCS-440 PLUMBING



MANUAL VALVES	C = CLOSED O = OPEN
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B- PUMP FILL CONTROL	C
C- AGITATOR CONTROL	O
D- RAVEN 203 ONLY	—
E- CHEMICAL FILL	C
F- NURSE TANK FILL	C

- CLOSE MAIN SUPPLY VALVE HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.
- REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.

11. ADJUST MANUAL VALVE C (AGITATOR CONTROL)

IMPORTANT

1. BECAUSE OF THE WIDE RANGE OF SPRAYING CONDITIONS, THE OPERATOR IS RESPONSIBLE FOR ACCOMPLISHING BOTH PROPER AGITATION AND DESIRED APPLICATION RATE.
2. UNDER NORMAL SPRAYING CONDITIONS, MANUAL VALVE C SHOULD BE FULLY OPEN.
3. BE SURE JET AGITATORS ARE NOT PLUGGED.
4. MIX CHEMICAL THOROUGHLY BEFORE SPRAYING.

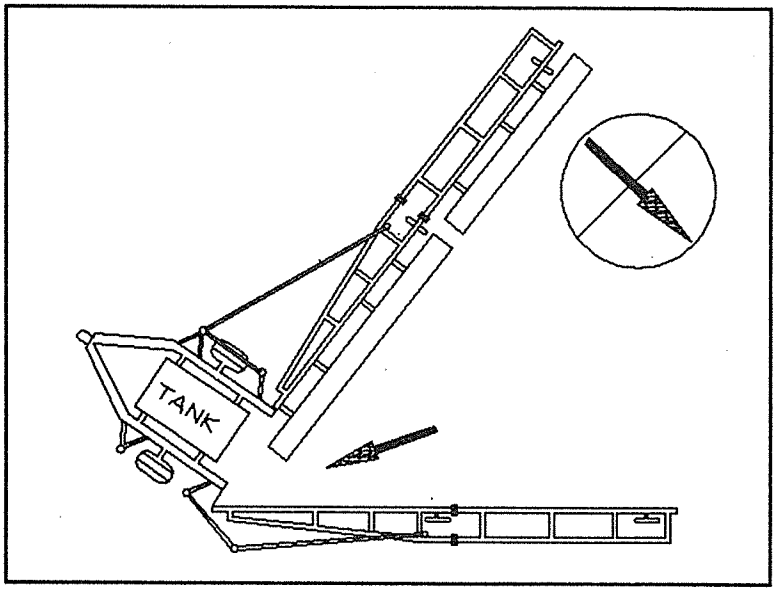
3.9 ONE BOOM SPRAYING

CAUTION

REVIEW SECTION 3.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING!

IMPORTANT

TO PREVENT DAMAGE TO BOOMS FROM RUNNING TOGETHER WHEN ONE BOOM SPRAYING, DO NOT ALLOW OUTSIDE BOOM TIRE OF SPRAYING BOOM TO "BACK UP" WHEN TURNING A CORNER.



1. ONE BOOM SPRAYING USING MANUAL BALL VALVE

a. Starting from Transport Position:

1. Close manual ball valve for hydraulic boom cylinder of non-spraying boom.
2. Open sprayer to field position.
3. When done spraying, fold spraying boom to transport position.
4. Open manual ball valve for hydraulic boom cylinder of non-spraying boom.

b. Starting from Two Boom Field Position:

1. Fully extend hydraulic boom cylinders (raise booms fully).
2. Close manual ball valve for hydraulic boom cylinder of non-spraying boom.
3. Fully retract hydraulic boom cylinder (lower boom fully) of spraying boom.
4. Drive ahead slowly to fold non-spraying boom to transport position.
5. When done spraying, fold spraying boom to transport position.
6. Open manual ball valve for hydraulic boom cylinder of non-spraying boom.

2. ONE BOOM SPRAYING USING OPTIONAL DUAL HYDRAULICS

a. Starting from Transport Position:

1. Open sprayer to field position.
2. Fully retract hydraulic boom cylinder (lower boom fully) of spraying boom only.
3. When done spraying, fold spraying boom to transport position.

b. Starting from Two Boom Field Position:

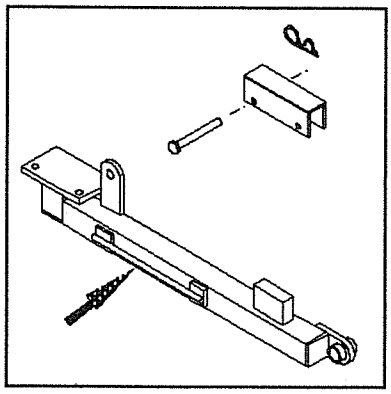
1. Fully extend hydraulic boom cylinder (raise boom fully) of non-spraying boom only.
2. Drive ahead slowly to fold non-spraying boom to transport position.
3. When done spraying, fold spraying boom to transport position.

3.10 NARROW TRANSPORT (CONVERT FROM FIELD OPERATION TO NARROW TRANSPORT)

> **⚠ CAUTION**
>
> REVIEW SECTION 3.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING!

1. REMOVE TRANSPORT LOCK

Remove transport lock from side storage rack and install onto each hydraulic boom cylinder.

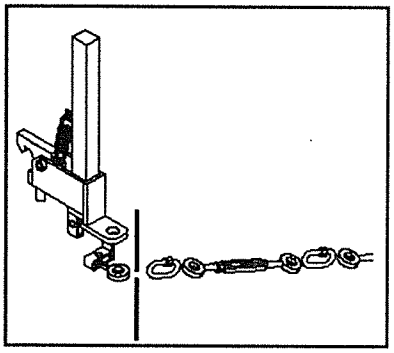


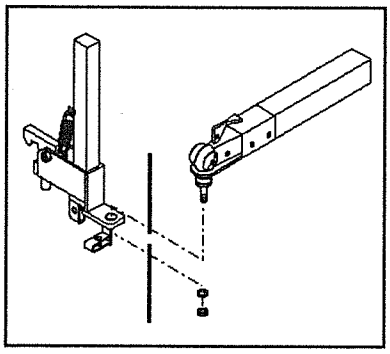
2. SPLIT AUTO FOLD

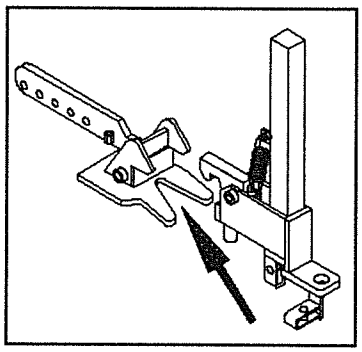
a. Split cable system.

b. Split auto fold. Connect pull tube and ball to drawbar (leave pull tube attached to ball).

c. Swing jaw assembly back toward cart and lock into latch assembly.







3. INSTALL SPREADER BAR

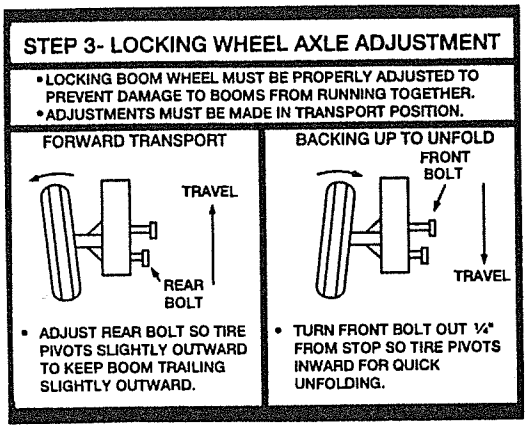
a. Remove spreader bar from storage racks and install onto back end of sprayer.

b. To get the booms spread the correct distance, MANUALLY UNLOCK one of the locking boom wheels and move boom side to side.

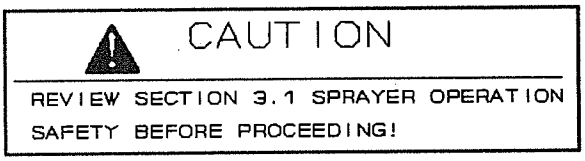
c. MANUALLY RE-LOCK THE LOCKING BOOM WHEEL.

4. ADJUST LOCKING WHEEL AXLE

   a. TURN FRONT BOLT IN FULLY against stop so tire cannot pivot.



3.11 UNHOOKING SPRAYER FROM TRACTOR



1. SPLIT ELECTRICAL AND MECHANICAL PRESSURE SENSING CABLE FOR RAVEN CONTROL.
2. REMOVE OPTIONAL PTO PUMP from output shaft of tractor.
3. DISCONNECT HYDRAULICS from tractor remote outlets for booms and optional hydraulic pump.
4. ROTATE JACK into standing position and extend jack.
5. DISCONNECT HITCH AND SAFETY CHAIN.

4.1 MAINTENANCE SAFETY

> **CAUTION**
>
> REVIEW SECTION 4.1 MAINTENANCE SAFETY BEFORE PROCEEDING!

1. **STOP** engine, place all controls in neutral, set parking brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, maintaining or unplugging.

2. **KEEP CHILDREN AWAY** from chemicals and sprayer equipment.

3. **USE EXTREME CARE** when cleaning, filling or making adjustments.

4. **USING CHEMICALS?**  **PROTECT YOURSELF!**

HIGH HAZARD
REQUIRES:
*goggles
*respirator
*avoid fumes
*rubber gloves and skin protection

MODERATE HAZARD
REQUIRES:
*goggles
*avoid fumes
*rubber gloves and skin protection

LOW HAZARD
REQUIRES:
*avoid fumes
*rubber gloves and skin protection

1. REFER TO SIGNAL WORD AND REQUIRED PERSONAL PROTECTIVE EQUIPMENT WHEN USING CHEMICALS.
2. ALWAYS READ AND FOLLOW CHEMICAL MANUFACTURERS' WARNINGS, INSTRUCTIONS AND PROCEDURES BEFORE USING.
3. HANDLE CHEMICALS WITH EXTREME CARE.
4. IN CASE OF POISONING, GET IMMEDIATE MEDICAL ATTENTION. A CONTAINER LABEL MAY BE BENEFICIAL FOR QUICK TREATMENT.
5. BE SAFE!

5. **BE CAREFUL** when working around high pressure hydraulic system.

6. **ALWAYS** make sure that pressure is relieved from hydraulic circuits before servicing or disconnecting from tractor.

7. **KEEP SAFETY DECALS CLEAN.**

8. **REPLACE** missing or unreadable decals. New decals are available from your SUMMERS dealer by stating correct part number (PN) located in lower right hand corner. See Section 1.5 DECAL LOCATIONS.

9. **VERIFY** all safety devices and shields are in place before using machine.

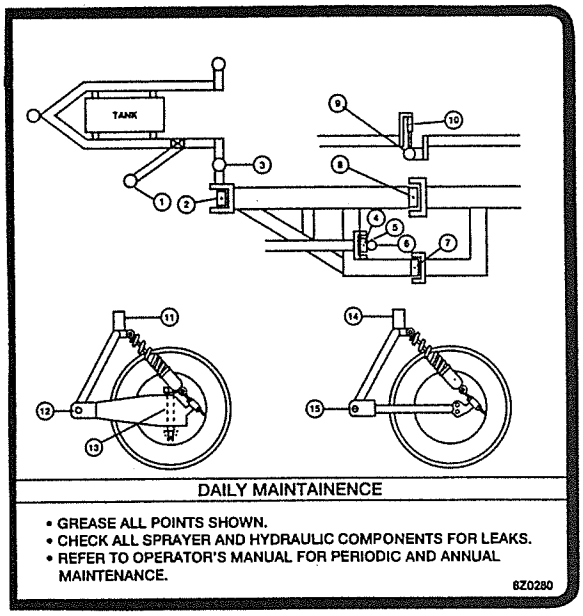
10. **KEEP** hands, feet, hair and clothing away from moving parts.

4.2 DAILY MAINTENANCE

⚠ CAUTION

REVIEW SECTION 4.1 MAINTENANCE SAFETY BEFORE PROCEEDING!

Your Summers Pull Type SuperSprayer will give you better service and last longer if it is properly maintained.



1. Grease all points shown.
2. Check all hydraulic components for leaks.
3. Check all wheel bolts.
4. Check all sprayer system components for leaks.
5. Clean sprayer system strainer.
6. Check water level in optional clean water tank plus check that rubber gloves and goggles are present.
7. Check tank hold down straps and adjustable end stop.
8. Check nozzle patterns. If a nozzle pattern is distorted:
   a. Remove nozzle tip.
   b. Clean with tooth brush, wooden or plastic probe. Never use a metal object since damage will occur.
   c. Blow out nozzle tip with compressed air no greater than 40 psi. Never use your mouth to blow out a nozzle tip.
   d. Replace nozzle tip if necessary.
   e. Install nozzle tip back onto sprayer.
9. During periods of use in freezing temperatures:
   a. Flush entire sprayer system with permanent type radiator anti-freeze using a 50/50 solution. Spray solution through nozzles.
   b. Allow dripless nozzles to drain by loosening each diaphragm check valve nut.
10. When changing chemicals, follow chemical manufacturers' WARNINGS, instructions and procedures concerning sprayer system cleaning.

4.3 OFF SEASON STORAGE

> **CAUTION**
>
> REVIEW SECTION 4.1 MAINTENANCE SAFETY BEFORE PROCEEDING!

1. Clean main tank and optional mix and fill tank:

   a. Flush each tank with clean water. Then drain.

   b. Wash each tank using a strong detergent and mop. Then drain.

   c. Rinse each tank with clean water. Then drain.

2. Clean entire sprayer system:

   a. Partially fill each tank with clean water and add one part household ammonia for every 100 parts water.

   b. Engage pump and circulate solution through entire sprayer system. Spray solution through nozzles. Then drain.

   c. Partially fill each tank with clean water only.

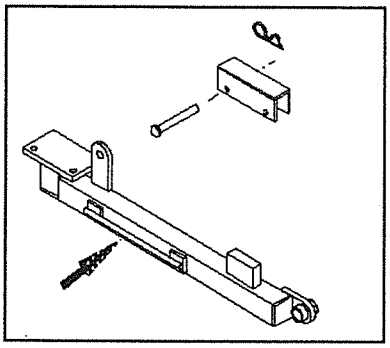
   d. Engage pump and circulate rinse water through entire sprayer system. Spray rinse water through nozzles.

3. Winterize entire sprayer system:

   a. Flush entire sprayer system with permanent type radiator anti-freeze using a 50/50 solution. Spray solution through nozzles.

   b. Allow dripless nozzles to drain by loosening each diaphragm check valve nut.

4. Remove transport lock from side storage rack and install onto each hydraulic boom cylinder.

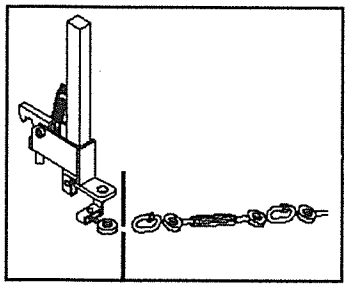


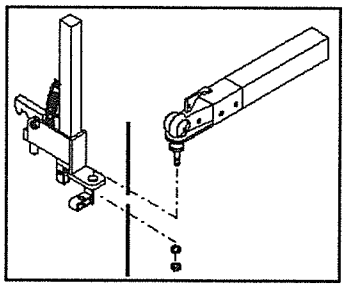
5. Split auto fold for narrow storage width (if desired):

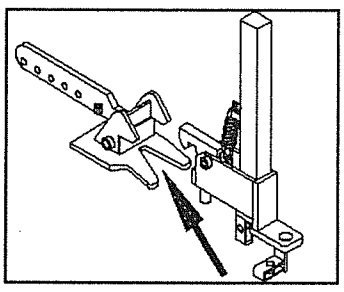
   a. Split cable system.

   b. Split auto fold. Connect pull tube and ball to drawbar (leave pull tube attached to ball).

   c. Swing jaw assembly back toward cart and lock into latch assembly.





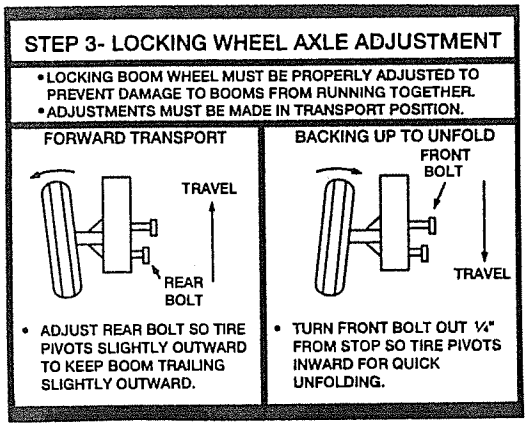


6. Improve back up ability of sprayer in transport position (if desired):
   a. Install spreader bar:

      1. Remove spreader bar from storage racks and install onto back end of sprayer.
      2. To get the booms spread the correct distance, MANUALLY UNLOCK one of the locking boom wheels and move boom side to side.
      3. MANUALLY RE-LOCK THE LOCKING BOOM WHEEL.

   b. Adjust locking wheel axle:

      1. TURN FRONT BOLT IN FULLY against stop so tire cannot pivot.



4.4 PRESEASON ANNUAL MAINTENANCE

⚠ CAUTION

REVIEW SECTION 4.1 MAINTENANCE SAFETY BEFORE PROCEEDING!

1. READ AND UNDERSTAND Operator's Manual before using machine.
2. Grease wheel bearings and inspect bearing looseness.
3. Check tank(s) for cracks.
4. Inspect sprayer components.
5. Inspect hydraulic components.
6. Tighten each diaphragm check valve nut on dripless nozzles.
7. Refer to SECTION 3 - SPRAYER OPERATION for set-up and start-up procedures.
8. Flush winterizing anti-freeze solution from entire sprayer system with clean water. Spray rinse water through nozzles.

5.1 SPRAYER SYSTEM TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
1. Pump does not develop pressure. (Hydraulic motor should "hum" if pump is operating normally). *If hydraulic system overheats: a. Check tractor hydraulic system oil level. b. Check for hydraulic system leaks. c. Check for dented or restricted oil lines. d. Change oil and filters if dirty per tractor manufacturer recommendations. e. Check that hydraulic system reservoir, lines and cooler are clean and functioning. f. Check condition of tractor hydraulic pump. g. See Hydraulic Pump manual for more information.	A. Incorrect direction of oil flow.	Reverse hydraulic hoses or move hydraulic lever in opposite direction.
	B. Insufficient water to prime pump.	Fill tank to a point above pump level.
	C. Insufficient tractor RPM.	Tractor engine must be running at normal field RPM speed.
	D. Bypass screw (located on top of hydraulic motor) improperly adjusted.	Open center HM1 or HM3 pump - turn screw in until desired pressure is read. Closed center HM4 pump - turn screw completely in.
	E. Frozen impeller.	Split water pump and free impeller.
	F. Incorrect pump.	Open center systems must use HM1 or HM3 pump. Closed center systems must use HM4 pump. See Hypro Pump Selection guide for more information.
2. Raven SCS-203 Control does not work properly.		See Raven Sprayer Control Systems manual for more information.
3. Raven SCS-440 Control does not work properly.		See Raven SCS-440 manual for more information.
4. Regulator valve does not regulate pressure.	A. Master switch must be ON and one or more boom switches must be ON.	Turn master switch ON and turn on or more boom switches ON.
	B. Regulator valve is in a neutral position.	Hold pressure adjust switch up to 90 seconds until valve moves into adjusting range.
	C. Improper voltage or poor electrical connection.	Listen to motor while switch is activated. If nothing is heard, check voltage and connections. If motor runs but pressure does not change, replace regulator valve.
5. Directovalves do not open.	A. No electrical power to valve. Should click loudly when turned on and off.	Check electrical connections. See Directovalve manual for more information.
6. Directovalves do not shut off.	A. System operating pressure too high.	Decrease normal field PTO speed or see Section 3.4 to adjust hydraulically driven pump system to produce a maximum pressure of 80 psi.

5.1 SPRAYER SYSTEM TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
7. Directovalve leaks around coil or lower diaphragm piston.	A. Ruptured diaphragm.	Disassemble valve and replace diaphragm. Order repair kit.
8. Not getting application rate for a given pressure setting.	A. Plugged strainer.	Clean strainer.
	B. Plugged nozzle screens.	Clean nozzle screens.

5.2 MECHANICAL TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
1. Boom does not trail slightly outward in transport position.	A. Locking wheel camber incorrect.	See decal 9 in Section 1.5.
	B. Locking wheel shock and axle adjustment incorrect.	See decals 8 and 9 in Section 1.5.
	C. Pivot bushing not greased.	See decal 4 in Section 1.5 for grease point 13.
	D. Unknown.	Install spreader bar and call dealer.
2. Boom does not open quickly to field position.	A. Locking wheel camber incorrect.	See decal 9 in Section 1.5.
	B. Locking wheel shock and axle adjustment incorrect.	See decals 8 and 9 in Section 1.5.
	C. Pivot bushing not greased.	See decal 4 in Section 1.5 for grease point 13.
3. Booms do not open equally when backing up.	A. Locking wheel camber incorrect.	See decal 9 in Section 1.5.
	B. Locking wheel shock and axle adjustment incorrect.	See decals 8 and 9 in Section 1.5.
	C. Pivot bushing not greased.	See decal 4 in Section 1.5 for grease point 13.
	D. Back up speed too fast.	Idle down.
4. Locking wheel does not unlock when boom is lowered.	A. Cam and locking pin adjustment incorrect.	See decal 9 in Section 1.5
	B. Sideward wheel pressure is binding locking pin.	Rock tractor forward or backward slightly.
5. Locking wheel has shimmy or plowing effect in field position when traveling forward.	A. Locking wheel toe-in adjustment incorrect.	See decal 9 in Section 1.5.

5.2 MECHANICAL TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
6. Locking wheel has plowing effect in field position when backing up.	A. Locking wheel toe-in adjustment incorrect.	See decal 9 in Section 1.5. *NOTE: Some degree of plowing cannot be avoided since the locking wheel must caster around when forward travel is resumed. Exercise care when backing up to not over stress locking wheel.
7. Locking wheel does not lock when boom is raised and sprayer is folding for transport.	A. Locking wheel camber incorrect.	See decal 9 in Section 1.5.
	B. Cam and locking pin adjustment incorrect.	See decal 9 in Section 1.5.
8. Locking wheel locks by mistake in field position or unlocks by mistake in transport position.	A. Cam and locking pin adjustment incorrect.	See decal 9 in Section 1.5.
9. Caster wheel (single or double shock) has shimmy effect.	A. Too little pressure on friction pad.	Loosen castle nut slightly.
10. Caster wheel (single or double shock) does not caster freely.	A. Too much pressure on friction pad.	Loosen castle nut slightly.
11. Hydraulics do not raise or lower booms.	A. Hydraulic cylinder transport locks not removed.	Remove transport locks and store on side storage racks.
	B. Manual ball valve at each hydraulic cylinder is closed.	Open manual ball valves.
12. Spray height is not correct.	A. Hydraulic cylinder stroke control adjustment incorrect.	See decal 7 in Section 1.5.
13. Spray height varies from part 1 to part 2 to optional part 3.	A. Locking wheel and caster wheel (single or double shock) shock adjustment incorrect.	See decal 8 in Section 1.5.
	B. Adjustment to rotation pipe alignment discs incorrect.	Grind welds. Loosen bolts. Adjust wet booms to over compensate for sag. Tighten bolts. Weld discs.
14. Auto fold jaw assembly does not slide smoothly into latch assembly.	A. Jaw and/or latch are out of alignment.	Loosen bolts. Align jaw and latch. Tighten bolts.

5.2 MECHANICAL TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
15. Auto fold jaw does not lock onto latch when boom is lowered.	A. Jaw stop is not contacting latch stop.	Back up until jaw stop contacts latch stop.
	B. Cable system adjustment incorrect.	See item 16 in Section 3.2.
16. Auto fold jaw does not unlock from latch when boom is raised.	A. Backward boom pressure.	Back up slightly or step clutch in momentarily if raising booms on the go.
	B. Cable system adjustment incorrect.	See item 16 in Section 3.2.
17. Boom breaks away too easy.	A. Latch angle incorrect.	See item 5 in Section 3.6.
	B. Break away spring tension incorrect.	See item 5 in Section 3.6.
	C. Break away spring too close to latch hinge point.	See item 5 in Section 3.6.
18. Boom breaks away too hard.	A. Latch angle incorrect.	See item 5 in Section 3.6.
	B. Break away spring tension incorrect.	See item 5 in Section 3.6.
	C. Break away spring too far away from latch hinge point.	See item 5 in Section 3.6.
19. Boom leads or lags too much with respect to cart.		Adjust connection point where pull tube bolts to drawbar bracing.
20. Excessive drawbar bounce when spraying.	A. Locking wheel and caster wheel (single or double shock) shock adjustment incorrect.	See decal 8 in Section 1.5.
	B. Over inflated boom tires.	Reduce boom tire pressure.
21. Excessive wet boom bounce.	A. Too little clamping action of two piece plastic bushings which hold rotation pipe to drawbar.	Adjust tightness of bushing bolts to allow proper rotation but not allow excessive wet boom bounce.
22. Spray angle changes.	A. Too little clamping action of two piece plastic bushings which attach windshields to wet boom (or linkage system to wet boom for sprayers without windshields).	Adjust tightness of bushing bolts to prevent rotation of wet boom inside bushings. *Note: This does not include the middle bushings which attach the wet boom to the lift arms. Wet boom rotation must be allowed inside the middle bushings.

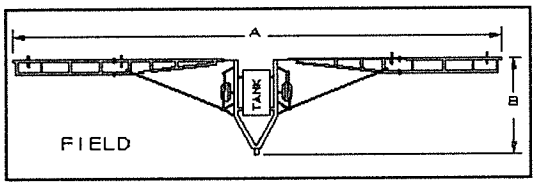
6.1 SPRAYER SIZES AND NOZZLE QUANTITY

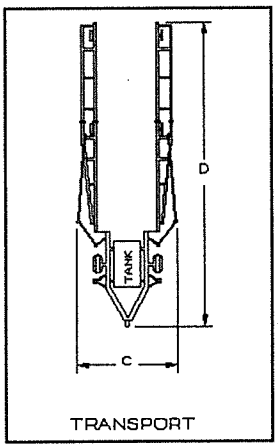
ACTUAL SPRAYING WIDTH	WIDTH OF PART/EXTENSION (NOZZLE QUANTITY)				TOTAL NOZZLES
	PART 1	PART 2	PART 3	EXTENSION	
73'- 4"	26'- 8" (16)	10'- 0" (6)	-	-	44
76'- 8"		10'- 0" (6)	-	1'- 8" (1)	46
80'- 0"		10'- 0" (6)	-	3'- 4" (2)	48
83'- 4"		15'- 0" (9)	-	-	50
86'- 8"		15'- 0" (9)	-	1'- 8" (1)	52
90'- 0"		18'- 4" (11)	-	-	54
93'- 4"		18'- 4" (11)	-	1'- 8" (1)	56
96'- 8"		18'- 4" (11)	-	3'- 4" (2)	58
100'- 0"		18'- 4" (11)	-	5'- 0" (3)	60
103'- 4"		18'- 4" (11)	5'- 0" (3)	1'- 8" (1)	62
106'- 8"		18'- 4" (11)	5'- 0" (3)	3'- 4" (2)	64
110'- 0"		18'- 4" (11)	10'- 0" (6)	-	66
113'- 4"		18'- 4" (11)	10'- 0" (6)	1'- 8" (1)	68
116'- 8"		18'- 4" (11)	10'- 0" (6)	3'- 4" (2)	70
120'- 0"		18'- 4" (11)	15'- 0" (9)	-	72
123'- 4"		18'- 4" (11)	15'- 0" (9)	1'- 8" (1)	74
126'- 8"		18'- 4" (11)	15'- 0" (9)	3'- 4" (2)	76
130'- 0"		18'- 4" (11)	20'-0" (12)	-	78

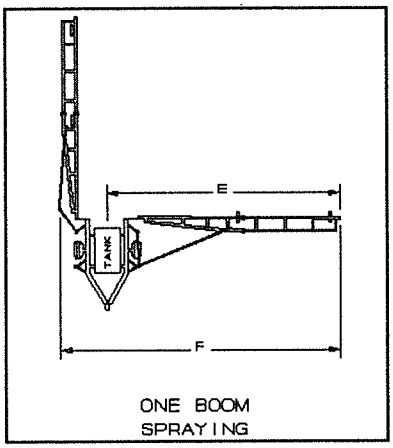
6.2 CART WHEEL SPACINGS

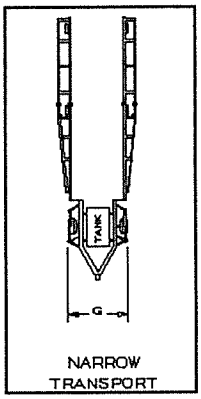
TIRE SIZE	TANK SIZE (GALLONS)	CENTER TO CENTER SPACINGS
16.5L X 16.1 SINGLE	750 or 1000	76" 88" 96" 102" 108" 114" 120" 132"
11L X 15 WALKING TANDEM	750 or 1000	- 88" 100" 108" 114" 120" 126" 132"
12.5L X 15 WALKING TANDEM	750 or 1000	- 88" 100" 108" 114" 120" 126" 132"
14.9 X 38 HIGH CLEARANCE	750	76" 88" 96" 102" 108" 114" 120" 132"
	1000	- - 96" 102" 108" 114" 120" 132"

6.3 OVERALL WIDTH AND LENGTH DIMENSIONS



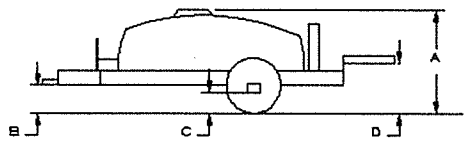




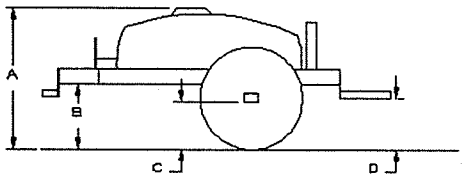


ACTUAL SPRAYING WIDTH (A)	OVERALL LENGTH IN FIELD (B)	OVERALL WIDTH IN TRANSPORT (C)	OVERALL LENGTH IN TRANSPORT (D)	ACTUAL SPRAYING WIDTH FOR ONE BOOM (E)	OVERALL WIDTH FOR ONE BOOM SPRAYING (F)	OVERALL WIDTH IN NARROW TRANSPORT (G)
73'-4"	22'-5"	14'-0"	53'-11"	36'-8"	43'-8"	11'-1"
76'-8"			55'-7"	38'-4"	45'-4"	
80'-0"			57'-3"	40'-0"	47'-0"	
83'-4"			58'-11"	41'-8"	48'-8"	
86'-8"			60'-7"	43'-4"	50'-4"	
90'-0"			62'-3"	45'-0"	52'-0"	
93'-4"			63'-11"	46'-8"	53'-8"	
96'-8"			65'-7"	48'-4"	55'-4"	
100'-0"			67'-3"	50'-0"	57'-0"	
103'-4"			68'-11"	51'-8"	58'-8"	
106'-8"			70'-7"	53'-4"	60'-4"	
110'-0"			72'-3"	55'-0"	62'-0"	
113'-4"			73'-11"	56'-8"	63'-8"	
116'-8"			75'-7"	58'-4"	65'-4"	
120'-0"			77'-3"	60'-0"	67'-0"	
123'-4"			78'-11"	61'-8"	68'-8"	
126'-8"			80'-7"	63'-4"	70'-4"	
130'-0"			82'-3"	65'-0"	72'-0"	

6.4 TIRE SPECIFICATIONS, OVERALL HEIGHT AND CLEARANCE DIMENSIONS



STANDARD CLEARANCE
(16.5L x 16.1, 11L x 15, 12.5L x 15)



HIGH CLEARANCE
(14.9 x 38)

TIRE SIZE	PLY	AIR (PSI) PRESSURE	OVERALL HEIGHT (A)*	CART CLEARANCE (B)*	AXLE CLEARANCE (C)*	DRAWBAR CLEARANCE (D)*
16.5L X 16.1 SINGLE	8	28	7'-1"	21"	11"	28"
11L X 15 WALKING TANDEM	8	36	7'-1"	21"	11"	28"
12.5L X 15 WALKING TANDEM	12	52	7'-2"	22"	12"	28"
14.9 X 38 HIGH CLEARANCE	6	20	8'-0"	32"	22"	28"
5.00 X 15 BOOM	4	30 (BOOM HINGE) 20 (BOOM END)	-	-	-	-

*MEASURED ON CONCRETE SURFACE WITH FULL 1000 GALLON TANK.

6.5 TANK SPECIFICATIONS

TANK	CAPACITY (GALLONS)	ULTRAVIOLET PROTECTED POLYETHYLENE	JET AGITATORS	FILLWELL DIAMETER	STRAINER BASKET
MAIN	750	YES	4	10"	NOT AVAILABLE
	1000		4	16"	14 MESH
MIX AND FILL	15		-	-	-
CLEAN WATER	7		-	-	-

6.6 PUMP SPECIFICATIONS - See Hydraulic or PTO Pump manual.

6.7 MISCELLANEOUS COMPONENT SPECIFICATIONS

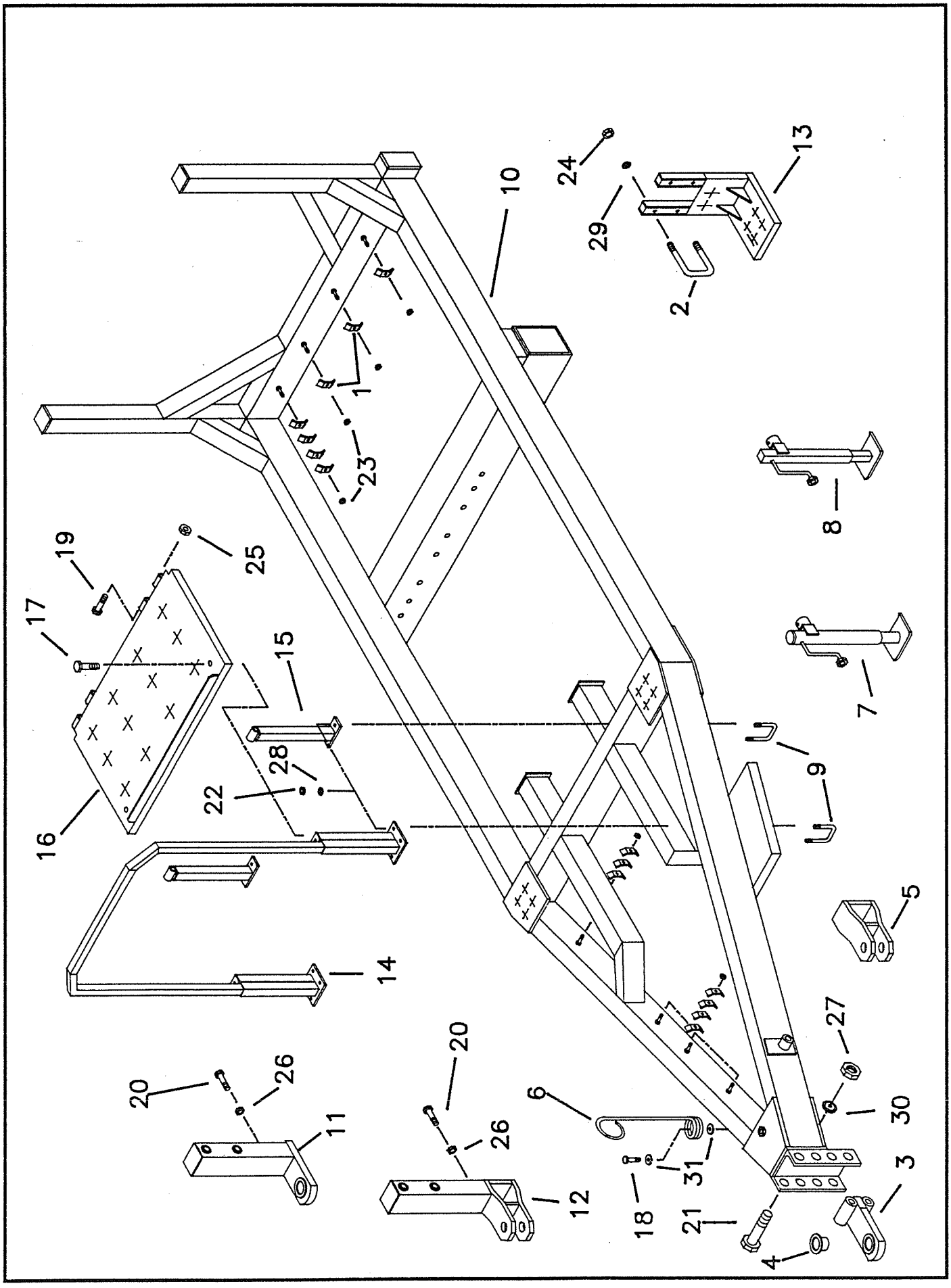
COMPONENT	SPECIFICATIONS
REGULATOR VALVE	3/4" NPT, electronic.
STRAINER	1" NPT, 50 mesh heavy duty screen (100 mesh available).
BALL VALVES	Quarter turn on/off with union.
DIRECTOVALVES	1" NPT, electronic. See Directovalve manual.
NOZZLES	Single, dual or triple split eyelet type with diaphragm check valve.
TIPS	80 or 110 degree, Extended Range (XR), color coded, stainless steel.
CAPS	Quarter turn, color coded, self-aligning.
SCREENS	50 or 100 mesh.
RAVEN 203 CONTROL	See Raven Sprayer Control Systems manual.
RAVEN 440 CONTROL	See Raven SCS-440 manual.
HYDRAULIC CYLINDER	2-1/2" bore x 8" stroke with adjustable stroke control.

6.8 PLUMBING SPECIFICATIONS

PLUMBING	SIZE
SUPPLY SIDE	1-1/4"
PRESSURE SIDE TO STRAINER	1-1/4"
STRAINER TO WETBOOM	1"
WETBOOM (ALUMINUM)	1"
DUAL AGITATOR	3/4"
SINGLE AGITATORS	1/2"
MIX AND FILL W/BOTTOM FILL	1-1/4"
BOTTOM FILL	2"
HYDRAULIC CYLINDER	1/4"
HYDRAULIC PUMP	1/2"

SECTION 7 - PARTS

REMEMBER TO BRING OWNER REGISTER INFORMATION LOCATED AT THE BEGINNING OF THIS MANUAL WHEN ORDERING PARTS (SERIAL NUMBER IS LOCATED BY THE HITCH PIECE).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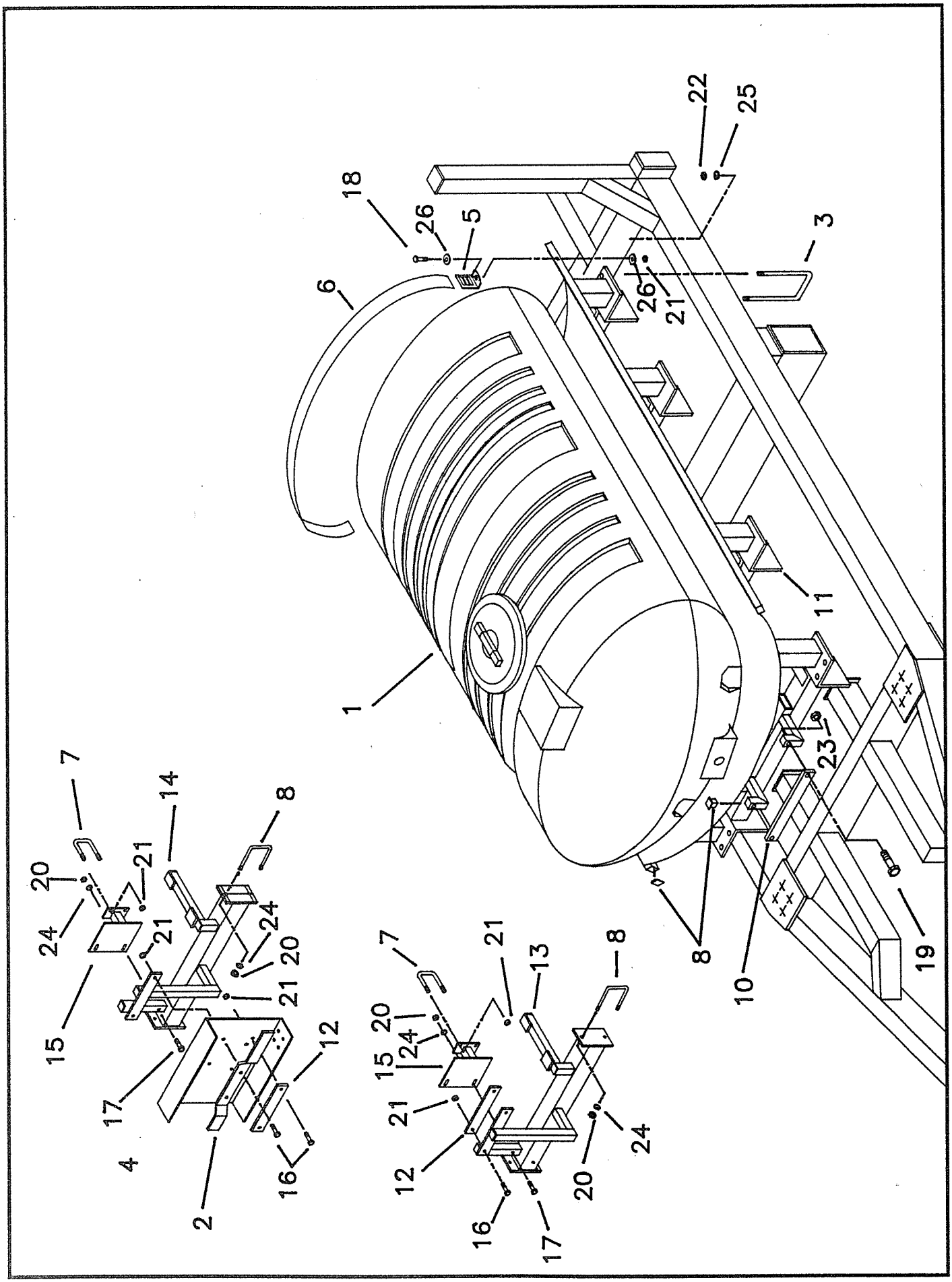
CART ASSEMBLY

Ref	Part No.	Qty	Descriptio
1	7D4310	22	HOSE, HOLD DOWN
2	8D0330	2	U-BOLT, 5/8 FOR (6 X 4) TUBE
3	8D0700	1	HITCH PIECE, SINGLE
4	8D0702	X	HITCH PIECE, WEAR BUSHING
5	8D0710	X	HITCH, CLEVIS
6	8D8500	1	HYD HOSE HOLDER
7	8D8522	X	5000 LB. JACK, 15" LIFT 5/8 PIN
8	8D8523	X	5000 LB. JACK, DROP LEG 5/8 PIN
9	8S0320	6	U-BOLT, 3/8 (FOR 3 X 4 TUBE)
10	8S4020	1	CART, SUPERSPRAYER SS4
11	8S4030	X	HITCH, DROP (HIGH CLEARANCE) SS4
12	8S4032	1	HITCH, DROP (HIGH CLEARANCE CLEVIS) SS4
13	8S4190	X	STEP, BOLT-ON FOR 14.9 x 38 OPT
14	8S4200	1	HAND RAIL, PLATFORM FRONT SS4
15	8S4210	2	SUPPORT, PLATFORM REAR SS4
16	8S4220	1	PLATFORM W/HINGE
17	8X0062	2	BOLT, 1/2 X 2 Z GR5
18	8X0110	1	BOLT, 3/4 X 1-1/4 Z GR5
19	8X0113	2	BOLT, 3/4 X 5 Z GR5
20	8X0132	2	BOLT, 7/8 X 2-1/2 Z GR5
21	8X0140	2	BOLT, 1 X 7 Z GR5
22	8X0201	12	NUT, HEX 3/8 NC Z
23	8X0202	2	NUT, LOCK 3/8 NC, NYLON Z
24	8X0250	4	NUT, HEX 5/8 NC Z
25	8X0261	2	NUT, LOCK 3/4 NC, NYLON Z
26	8X0269	8	NUT, JAM 7/8 NC Z
27	8X0280	2	NUT, HEX 1 NC Z
28	8X0301	12	LOCKWASHER, 3/8 Z
29	8X0304	4	LOCKWASHER, 5/8 Z
30	8X0309	2	LOCKWASHER, 1 Z
31	8X0318	4	FLAT WASHER, 3/4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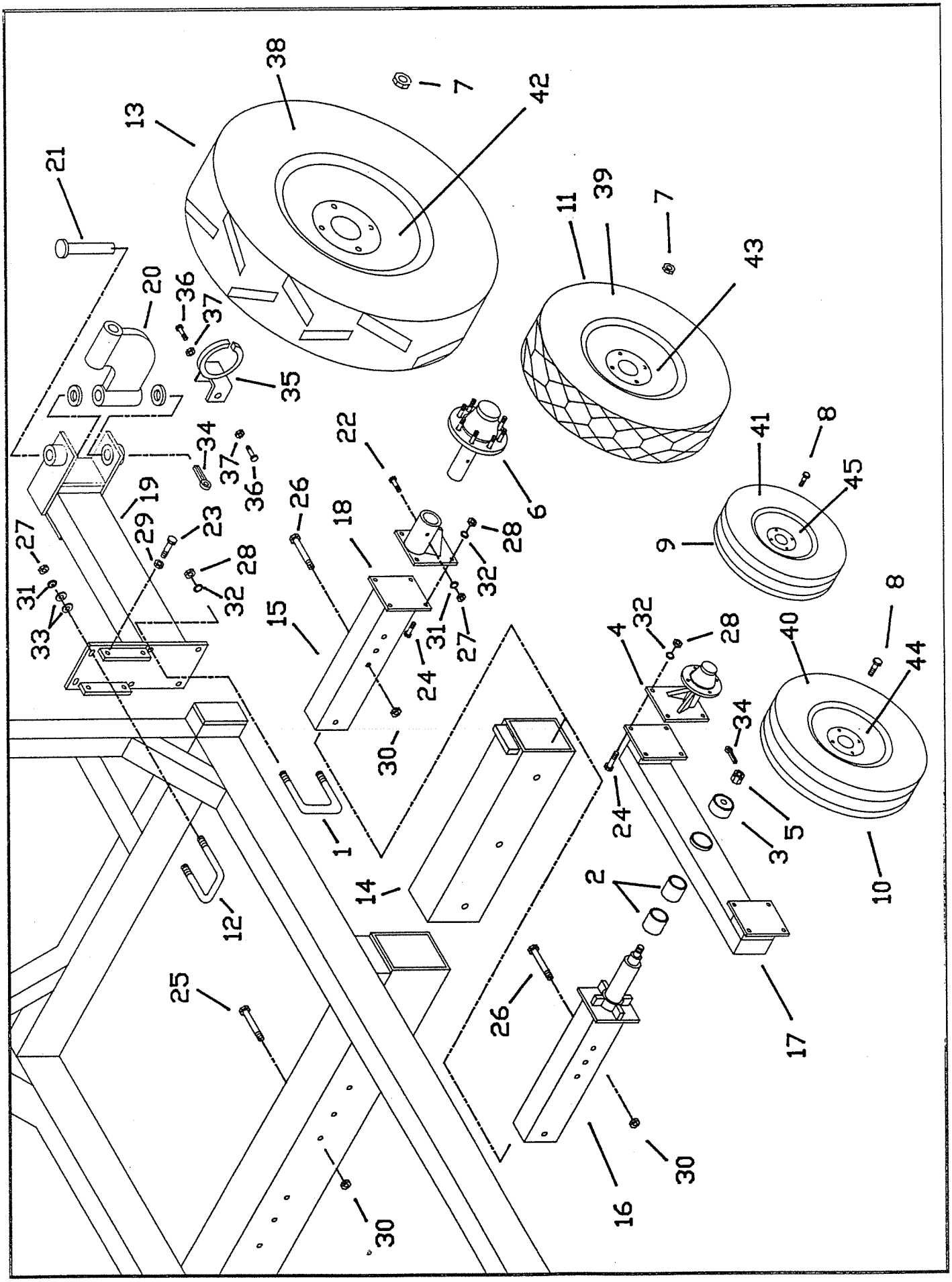
1000 GALLON SADDLE ASSEMBLY

Ref	Part No.	Qty	Description
1	8A1332	1	1000 GAL POLY TANK, ELLIPTICAL
	8A1327	X	53" x 750 POLY TANK (NOT SHOWN)
2	8A4470	1	MOUNTING BRKT, RFM 55
3	8D3152	4	U-BOLT, 1/2 X 3-3/8 16'HITCH
4	8D6600	1	MT PLATE, SCS-440 10GA x 18" x 22"
5	8S0100	6	BUCKLE, TANK STRAP
6	8S0120	3	POLYESTER STRAP, 2 X 140 BL
7	8S0290	1	U-BOLT, 3/8 FOR 2.25 DIA
8	8S0310	2	U-BOLT, 3/8 FOR 4 X 3 TUBE
9	8S3054	X	CAPLUG FITS 1-1/4" SQ TUBING
10	8S3140	1	TANK STOP, 1000 GAL 5/8 x 2 SS4
	8S4132	X	TANK STOP, 750 GAL
11	8S4140	1	SKID, 1000 GAL
	8S4160	X	SKID, 750 GAL
12	8S4240	1	BRCKT, SOLENOID MNT
13	8S4250	1	SADDLE PLUMBING 203 SS4
14	8S4254	1	SADDLE PLUMBING 440 SS4
15	8S4260	X	PTO PUMP MOUNTING BKT
16	8X0004	2	BOLT 3/8 X 1-1/4 Z GR5
17	8X0006	2	BOLT 3/8 X 2-1/4 Z GR5
18	8X0020	4	BOLT, 3/8 X 3-1/2 FULL THD Z
19	8X0096	2	BOLT, 5/8 X 4 OR 5 DEPENDING ON TANK VAR.
20	8X0201	2	NUT, 3/8 NC Z
21	8X0202	10	NUT, LOCK 3/8 NC, NYLON Z
22	8X0240	8	NUT, HEX 1/2 Z
23	8X0253	2	NUT, LOCK 5/8 NYLON Z
24	8X0301	4	LOCKWASHER, 3/8 Z
25	8X0303	8	LOCKWASHER, 1/2 Z
26	8X0320	12	WASHER, FLAT 3/8 Z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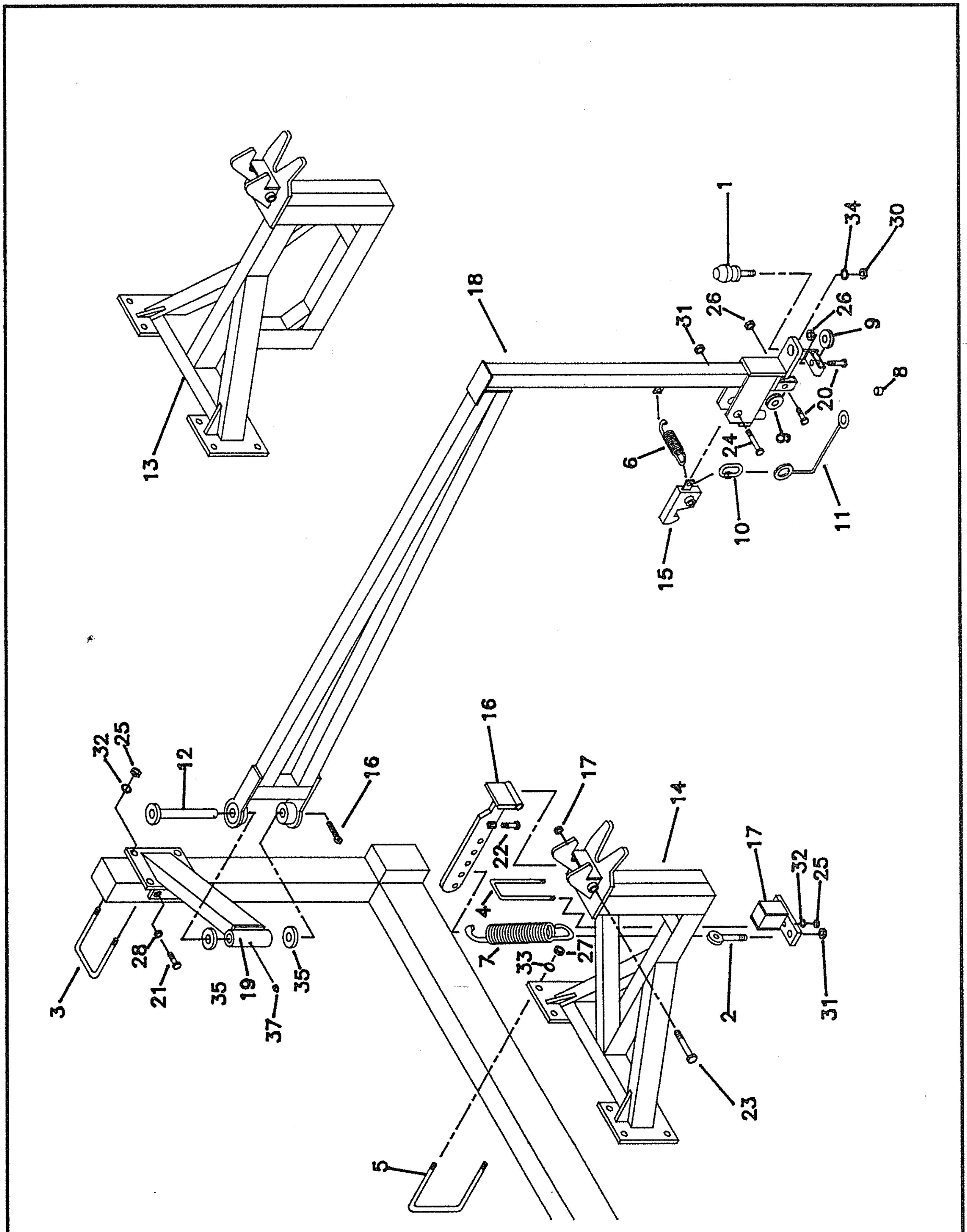
AXLE AND CART EXTENSION ASSEMBLIES

Ref	Part No.	Qty	Description
1	8D0330	4	U-BOLT, 5/8 FOR 6 X 4 TUBE
2	8D3800	X	BEARING, OILITE 2.75 ID X 3 OD
3	8D3830	2	CAP, RETAINING
4	8D3845	4	SPINDLE COMPLETE W/614 HUB
	8S3840	X	SPINDLE ASSEMBLY 614 HUB NOT SHOWN
5	8D5312	2	NUT, AXLE 1 -14
6	8K1105	2	SPINDLE W/HD 812 HUB
7	8K7116	16	NUT, WHEEL STUD 9/16 NF
8	8R6914	24	BOLT, WHEEL 9/16 - 18 NF
9	8D3037	X	11L x 15 8 PLY ON 15 x 8 x 6 WHEEL
10	8D3038	X	12.5L x 15 12 PLY ON 15 x 10 x 6 WHEEL
11	8D3053	X	16.5L x 16 8P PLY ON 15 x 8 x 6 WHEEL
12	8K5515	2	U-BOLT, 3/4 FOR 4 X 4 TUBE
13	8S1260	X	WHEEL, W/14.9 TIRE, 38 x 12 x 8 BOLT
14	8S4040	1	AXLE SLIDE, LEFT (7 X 5) SS4
	8S4042	1	AXLE SLIDE, RIGHT (7 X 5) SS4
15	8S4050	2	AXLE SLIDE, SINGLE (6 X 4) SS4
16	8S4060	2	AXLE SLIDE, WLK TNDM (6 X 4) SS4
17	8S4064	2	WALKING TANDEM AXLE BEAM (6 X 3)
18	8S4070	2	SPINDLE PLATE W/TUBE (812) SS4
19	8S4090	1	CART EXTENSION, WHEEL BOOM LEFT
	8S4092	1	CART EXTENSION, WHEEL BOOM RIGHT
20	8S4100	2	KNUCKLE, CART EXT. WHEELBOOM SS4
21	8S4110	2	PIN, 1-1/4 X 9-1/8 91-
22	8X0074	2	BOLT, 1/2 X 4-1/2 Z GR5
23	8X0091	8	BOLT, 5/8 X 1-3/4 Z GR5
24	8X0093	8	BOLT, 5/8 X 2 Z GR5
25	8X0119	2	BOLT, 3/4 X 7-1/2 Z GR5
26	8X0121	2	BOLT, 3/4 X 7-1/2 Z GR5
27	8X0260	24	NUT, HEX 3/4" Z
28	8X0250	4	NUT, HEX 5/8 Z
29	8X0251	8	NUT, JAM 5/8 Z
30	8X0261	4	NUT, LOCK 3/4 NC, NYLON Z
31	8X0303	2	LOCKWASHER, 1/2 Z
32	8X0304	24	LOCKWASHER, 5/8 Z
33	8X0330	4	WASHER, 1.25 X 17/32 ID
34	8X0415	2	COTTER PIN, 3/16 X 1-3/4 Z
35	8S5850	X	14.9 x 38 HOSE PROTECTOR, W/HDW
36	8X0004	X	BOLT, 3/8 x 1 1/4 Z GR5
37	8X0201		NUT, HEX 3/8 Z
38	8S1240	X	TIRE, 14.9 x 38, 6 PLY
39	8D3051A	X	TIRE, 16.5 x 16.1, 6 PLY
40	8K7027	X	TIRE, 12.5 x 15, 12 PLY
41	8D3024	X	TIRE, 11L x 15, 8 PLY
42	8S1220	X	WHEEL, 38 x 12, 8 BOLT
43	8D3050	X	WHEEL, 16.1 x 14, 8 BOLT
44	8D3036	X	WHEEL, 15 x 10, 6 BOLT
45	8D3035	X	WHEEL, 15 x 8, 6 BOLT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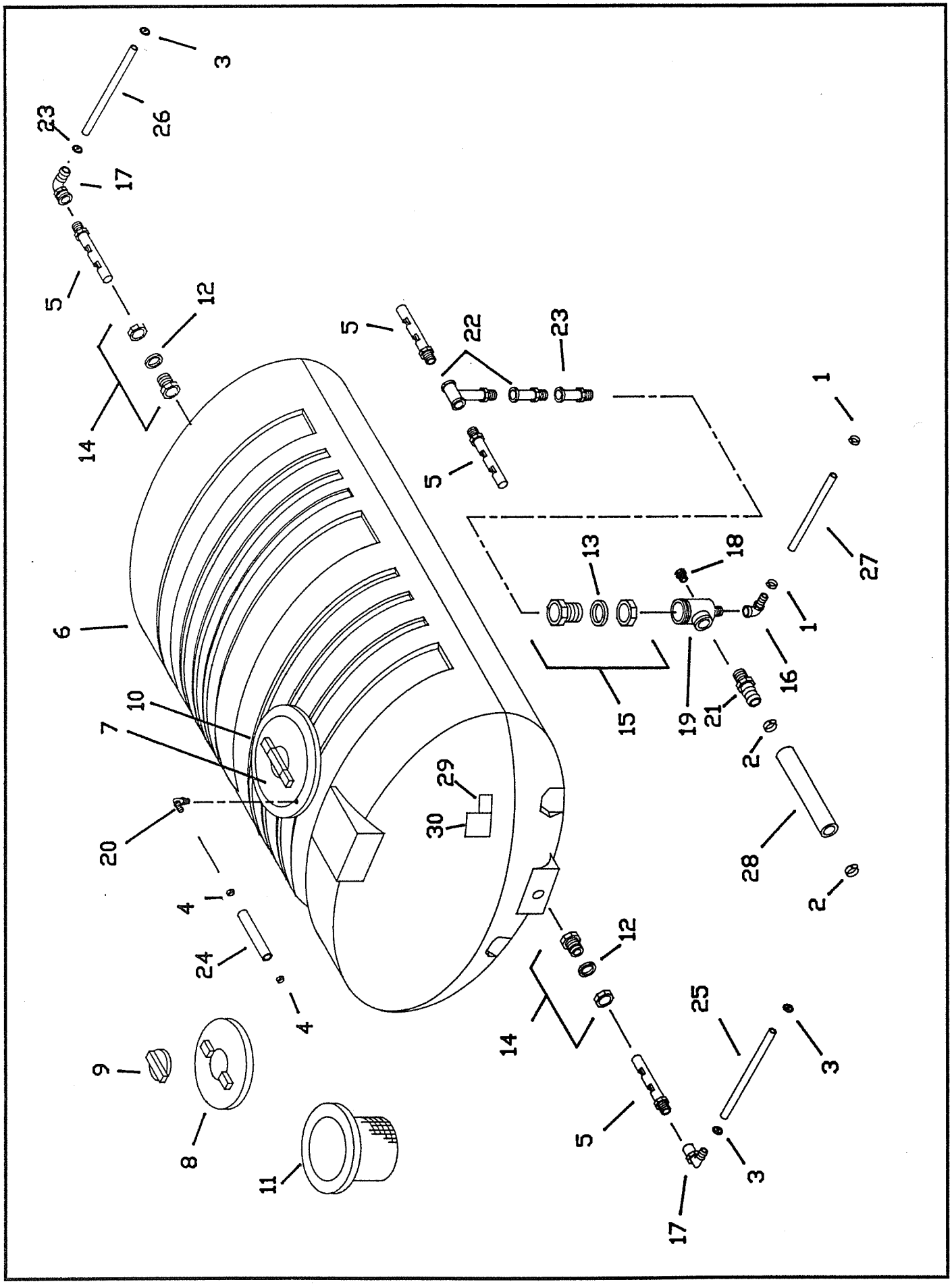
AUTO FOLD ASSEMBLY

Ref	Part No.	Qty	Description
1	8G8140	2	HITCH BALL, 2" DIA. X 3/4" SHNK, CHR
2	8R6145	2	EYE BOLT, 3/4"
3	8S0340	4	U-BOLT, 1/2" (FOR 4 X 4 TUBE)
4	8S0350	2	U-BOLT, 1/2" (FOR 2 X 6 TUBE)
5	8S0360	8	U-BOLT, 5/8" (FOR 6 X 3 TUBE)
6	8S0600	2	SPRING, AUTOFOLD EXT. 3.75" LONG
7	8S0610	2	SPRING, AUTOFOLD EXT. 16.0" LONG
8	8S1052	2	METAL BUSHING, 1/2" ID
9	8S1060	4	STEEL PULLEY, 2" DIA. 1/2" ID
10	8S1074	2	QUICKLINK, 3/16"
11	8S1086	2	CABLE, 5/32" X 13.5 EYE-EYE
12	8S4110	2	PIN, 1-1/4" X 9-1/8" 91-
13	8S5510	1	14.9 X 38 A-FOLD LATCH GUIDE "V" LEFT
	8S5512	1	14.9 X 38 A-FOLD LATCH GUIDE "V" RIGHT
14	8S5520	1	16.5 - A-FOLD LATCH GUIDE "V" LEFT
	8S5522	1	16.5 - A-FOLD LATCH GUIDE "V" RIGHT
15	8S5550	2	JAW AUTO-FOLD BKT AF
16	8S5560	2	LATCH A-FOLD BRCKT, ADJUSTABLE
17	8S5570	2	SPRING ATTCH BRCKT,EYE BOLT AF
18	8S5594	1	ARM, CART AUTO-FOLD ATTCH LEFT
	8S5596	1	ARM, CART AUTO-FOLD ATTCH RIGHT
19	8S5600	2	HINGE BRCKT. AUTO-FOLD
20	8X0066	4	BOLT, 1/2 X 1-3/4 Z GR5
21	8X0087	4	BOLT, 5/8 X 1-1/2 Z GR5
22	8X0093	4	BOLT, 5/8 X 2 Z GR5
23	8X0099	2	BOLT, 5/8 X 6 W/2.75 THD, Z GR5
24	8X0118	2	BOLT, 3/4 X 4 Z
25	8X0240	16	NUT, HEX 1/2 NC Z
26	8X0242	4	NUT, LOCK 1/2 NC NYLON Z
27	8X0250	16	NUT, HEX 5/8 NC Z
28	8X0251	8	NUT, JAM 5/8 NC Z
29	8X0253	2	NUT, LOCK 5/8 NC Z
30	8X0260	2	NUT, HEX 3/4 NC Z
31	8X0261	4	NUT, LOCK 3/4" NC Z
32	8X0303	12	LOCKWASHER 1/2" NC Z
33	8X0304	16	LOCKWASHER, 5/8" NC Z
34	8X0306	2	LOCKWASHER, 3/4" NC Z
35	8X0327	4	WASHER FLAT, 1-1/4" SAE Z
36	8X0414	2	COTTER PIN, 1/4 X 2"
37	8X0708	X	ZERK, 1/4" - 28NF STR Z PL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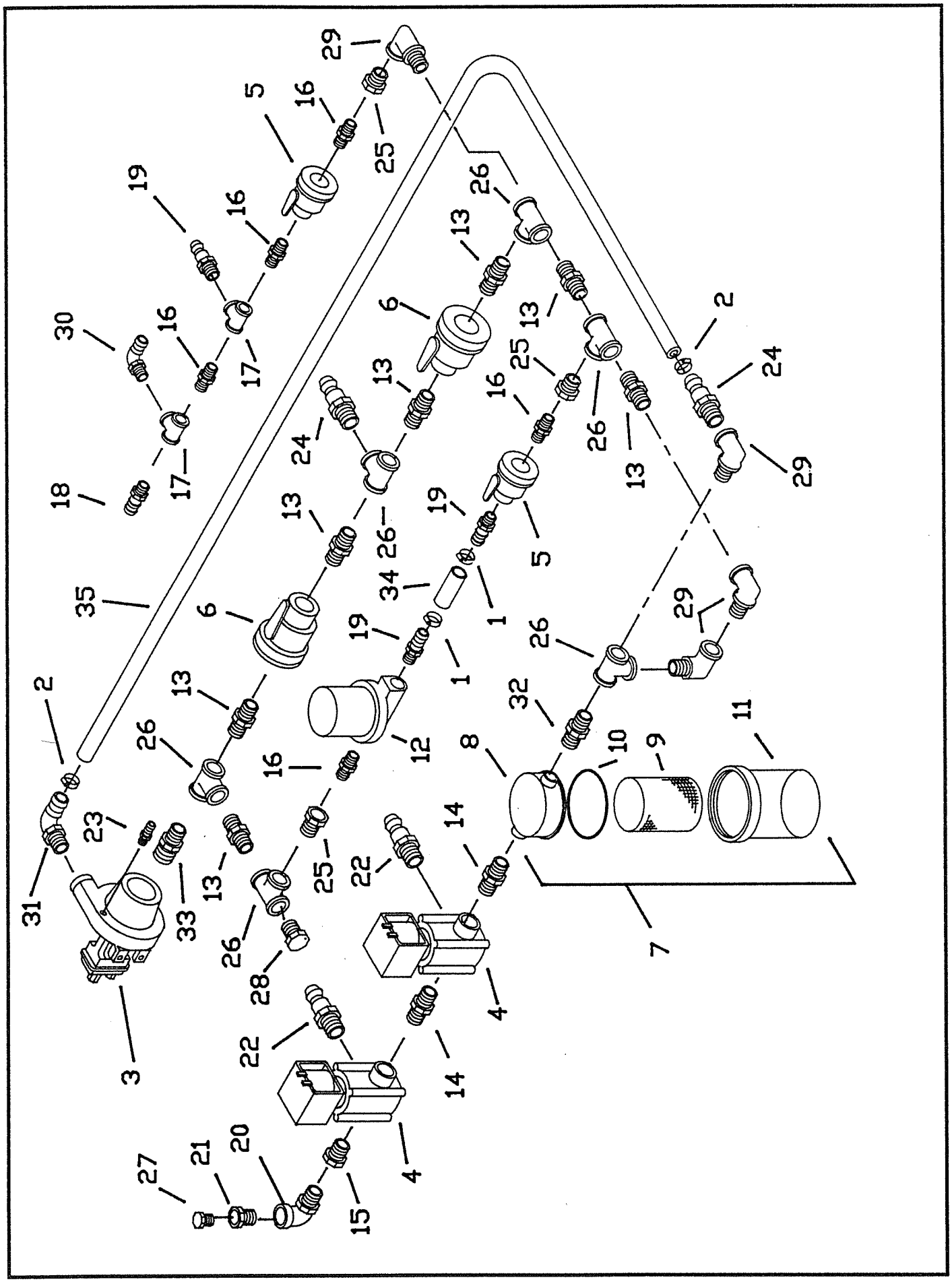
1000 GALLON TANK W/FITTINGS

Ref	Part No.	Qty	Description
1	8A1007	2	HOSE CLAMP, 3/4"
2	8A1008	2	HOSE CLAMP, 1-1/4"
3	8A1011	4	HOSE CLAMP, 1/2 SPRING TYPE
4	8A1016	2	HOSE CLAMP, SIZE C .393-.472
5	8A1272	4	JET AGITATOR 3/4" MPT
6	8A1332	1	1000 GAL POLY TANK, ELLIPTICAL
7	8A1341	X	COVER, RAVEN 16" W/4" CAP
8	8A1342	X	COVER, RAVEN 16" LESS 4" CAP
9	8A1343	X	COVER, RAVEN 4" CAP
10	8A1344	X	FILLWELL RING, RAVEN 16"
11	8A1346	X	STRAINER BASKET, 16" RAVEN
12	8A1362	X	RAVEN 3/4 FITTING, O-RING
13	8A1367	X	RAVEN 2" FITTING, O-RING
14	8A1374	X	RAVEN 3/4" FITTING, COMPLETE
15	8A1376	X	RAVEN 2" FITTING, COMPLETE
16	8A2009	1	ELBOW, 3/4" HB X 3/4" FPT
17	8A2010	1	ELBOW, 1/2" HB X 3/4" FPT
18	8A2012	1	PLUG, 1/2"
19	8A2014	1	COMBINATION FITTING, 2"
20	8A2028	1	ELBOW, 1/4" HB X 3/8 MPT
21	8A2031	1	HOSE BARB, 1-1/4" X 1-1/4 MPT
22	8A2033	1	AGITATOR TEE, 3/4
23	8A2033B	1	AGITATOR TEE, EXTENSION
24	8S8820	1	VENT LINE, 1/4 X 84 HM4 203, 440
	8S8824	1	VENT LINE, 1/4 X 216 PTO 203, 440
25	8S8830	1	APPLICATOR HOSE, 1/2" X 22"
26	8S8840	1	APPLICATOR HOSE, 1/2" X 120"
27	8S8860	1	RUBBER HOSE, 3/4" X 44"
28	8S8880	1	FRTLZR HOSE, 1-1/4" X 50"
29	8Z0276	1	DECAL, GENERAL MACHINE, 3.5" x 6'
30	8Z0280	1	DECAL PLUMBING @ MAIN. 4" x 10"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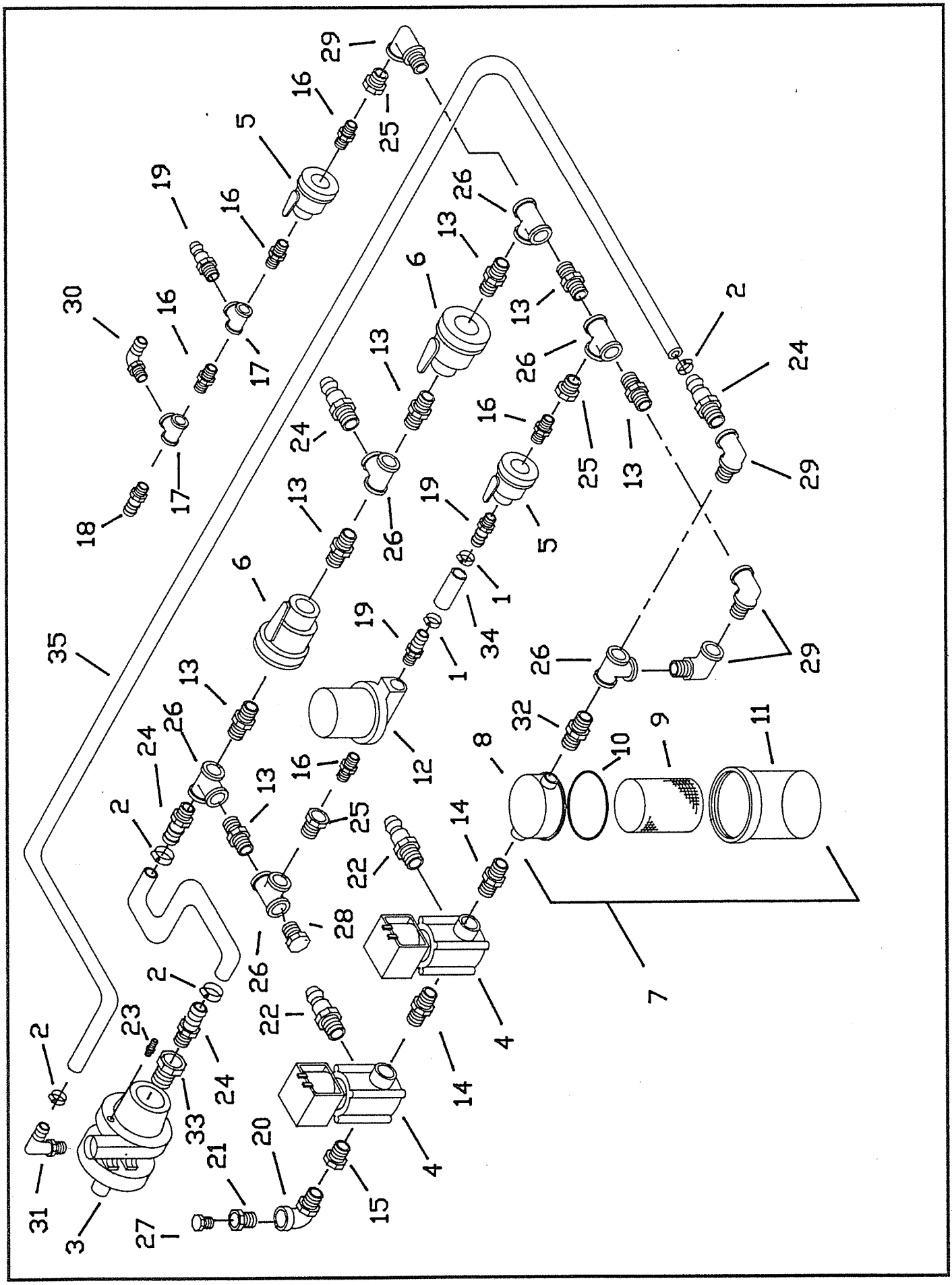
203 HYDRAULIC PLUMBING ASSEMBLY

Ref	Part No.	Qty	Description
1	8A1007	2	HOSE CLAMP, 3/4"
2	8A1008	2	HOSE CLAMP, 1-1/4"
3	8A1056	1	9303C-HM1, 10 GPM OPEN CNT PUMP
	8A1060	X	9303C-HM4, 7 GPM CLOSE CNT PUMP
	8A1062	X	9303C-HM3, 20 GPM OPEN CNT PUMP
4	8A1202	2	DIRECTOVALVE, SPRAY SYSTEMS 145
5	8A1250	2	BALL VALVE, 3/4"
6	8A1255	2	BALL VALVE, 1 1/4"
7	8A1260	1	1" LINE STRAINER
8	8A1261	X	MAIN BODY, 1" LINE STRAINER
9	8A1262	X	SCREEN, 50 MESH HD 1"
	8A1262B	X	SCREEN, 100 MESH HD 1"
10	8A1263	X	GASKET, VITON 1 @ 1.25" STRAINER
11	8A1264	X	BOWL, CLEAR 1 @ 1.25" STRAINER
12	8A1270	1	REGULATOR VALVE, 3/4 FPT
13	8A2000	7	NIPPLE, 1-1/4"
14	8A2001	2	NIPPLE, 1"
15	8A2002	1	REDUCING BUSHING 1 X 3/4"
16	8A2003	5	NIPPLE, 3/4"
17	8A2005	2	TEE, 3/4"
18	8A2006	1	HOSE BARB , 1/2" x 3/4 MPT
19	8A2007	3	HOSE BARB, 3/4" X 3/4 MPT
20	8A2008	1	STREET ELBOW, 3/4"
21	8A2023	1	REDUCING BUSHING, 3/4" X 1/4"
22	8A2025	2	HOSE BARB, 1" x 1" MPT
23	8A2029	1	HOSE BARB, 1/4" X 1/8" MPT
24	8A2031	2	HOSE BARB, 1-1/4 X 1-1/4 MPT
25	8A2038	1	BUSHING, 1-1/4 X 3/4"
26	8A2039	1	TEE, 1-1/4"
27	8A2043	1	PLUG, 1/4"
28	8A2045	1	PLUG, 1-1/4" NYLON
29	8A2053	4	STREET ELBOW, 1-1/4
30	8A2108	1	ELBOW, 1/2" HB x 3/4 MPT
31	8A2112	1	ELBOW, 1-1/4" HB X 1-1/4" MPT
32	8A2130	1	REDUCING NIPPLE, 1-1/4 x 1"
33	8A2132	1	REDUCING NIPPLE, 1 1/4 X 1-1/2
34	8S8850	1	RUBBER HOSE 3/4" x 5"
35	8S8890	1	RUBBER HOSE 1-1/4" x 120"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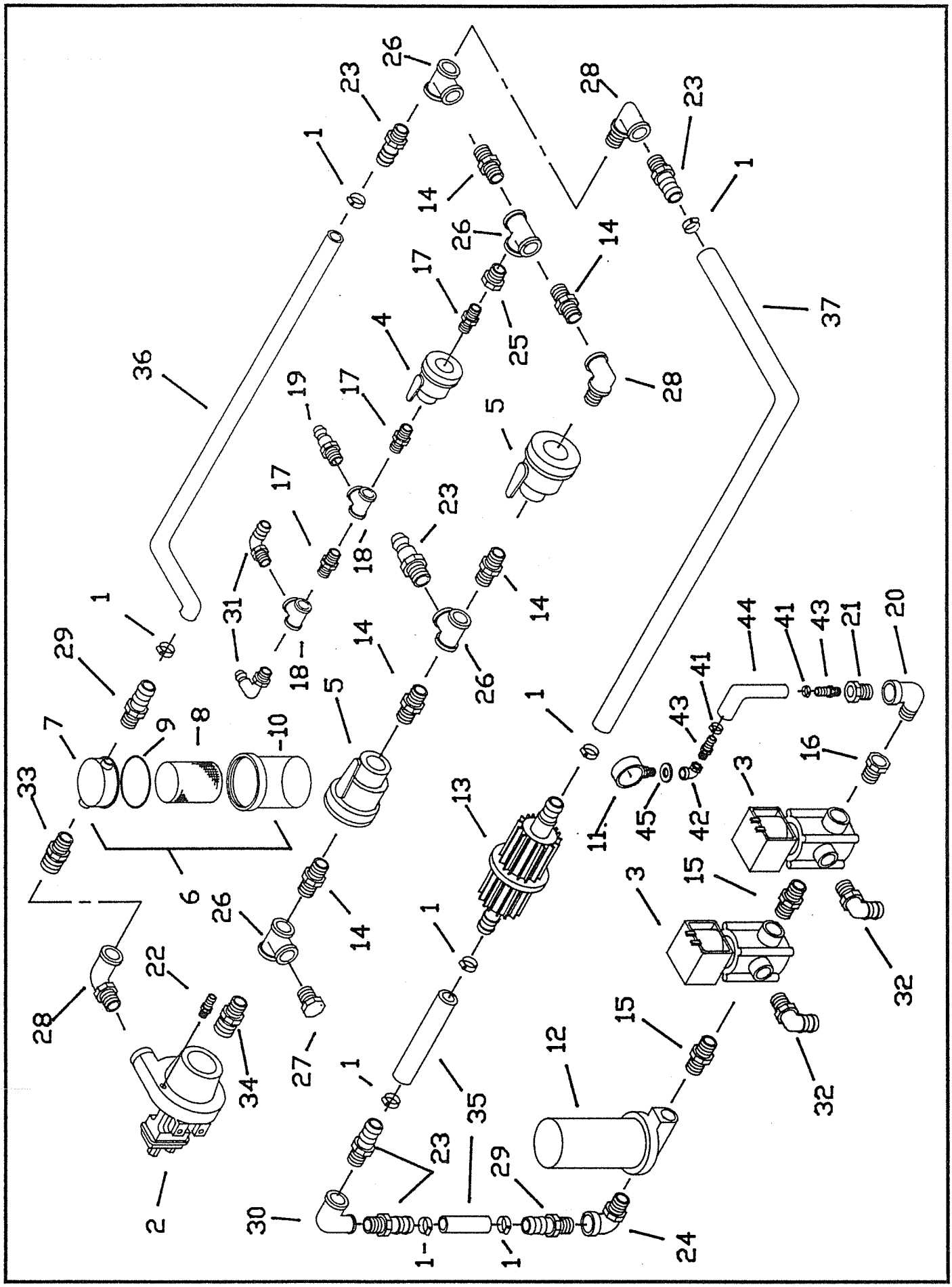
203 PTO PLUMBING ASSEMBLY

Ref	Part No.	Qty	Description
1	8A1007	2	HOSE CLAMP, 3/4"
2	8A1008	2	HOSE CLAMP, 1-1/4"
3	8A1050	1	C9006 540 RPM CENT PUMP VITON
	8A1052	X	C9006 1000 RPM CENT PUMP VITON
4	8A1202	2	DIRECTOVALVE, SPRAY SYSTEMS 145
5	8A1250	2	BALL VALVE, 3/4"
6	8A1255	2	BALL VALVE, 1 1/4"
7	8A1260	1	1" STRAINER, 50 MESH
8	8A1261	X	MAIN BODY, 1" LINE STRAINER
9	8A1262	X	SCREEN, 50 MESH HD 1'
	8A1262B	X	SCREEN, 100 MESH HD 1"
10	8A1263	X	GASKET, VITON 1 @ 1.25" STRAINER
11	8A1264	X	BOWL, CLEAR 1 @ 1.25" STRAINER
12	8A1270	1	REGULATOR VALVE, 3/4" FPT
13	8A2000	7	NIPPLE, 1-1/4"
14	8A2001	2	NIPPLE, 1"
15	8A2002	1	BUSHING, 1 X 3/4"
16	8A2003	5	NIPPLE, 3/4"
17	8A2005	2	TEE, 3/4"
18	8A2006	1	HOSE BARB , 1/2" x 3/4 MPT
19	8A2007	3	HOSE BARB, 3/4" X 3/4 MPT
20	8A2008	1	STREET ELBOW, 3/4"
21	8A2023	1	BUSHING, 3/4 X 1/4"
22	8A2025	2	HOSE BARB, 1" x 1" MPT
23	8A2029	1	HOSE BARB, 1/4" X 1/8 MPT
24	8A2031	2	HOSE BARB, 1-1/4" X 1-1/4 MPT
25	8A2038	1	BUSHING, 1-1/4 X 3/4"
26	8A2039	1	TEE, 1-1/4"
27	8A2043	1	PLUG, 1/4"
28	8A2045	1	PLUG, 1-1/4" NYLON
29	8A2053	4	STREET ELBOW, 1-1/4"
30	8A2108	1	ELBOW, 1/2 HB x 3/4 MPT
31	8A2112	1	ELBOW, 1- 1/4" HB X 1 1/4" MPT
32	8A2130	1	REDUCING NIPPLE, 1-1/4 x 1"
33	8A2132	1	REDUCING NIPPLE, 1 1/2 X 1-1/4
34	8S8850	1	RUBBER HOSE 3/4" x 5"
35	8S8890	1	RUBBER HOSE 1- 1/4" x 120"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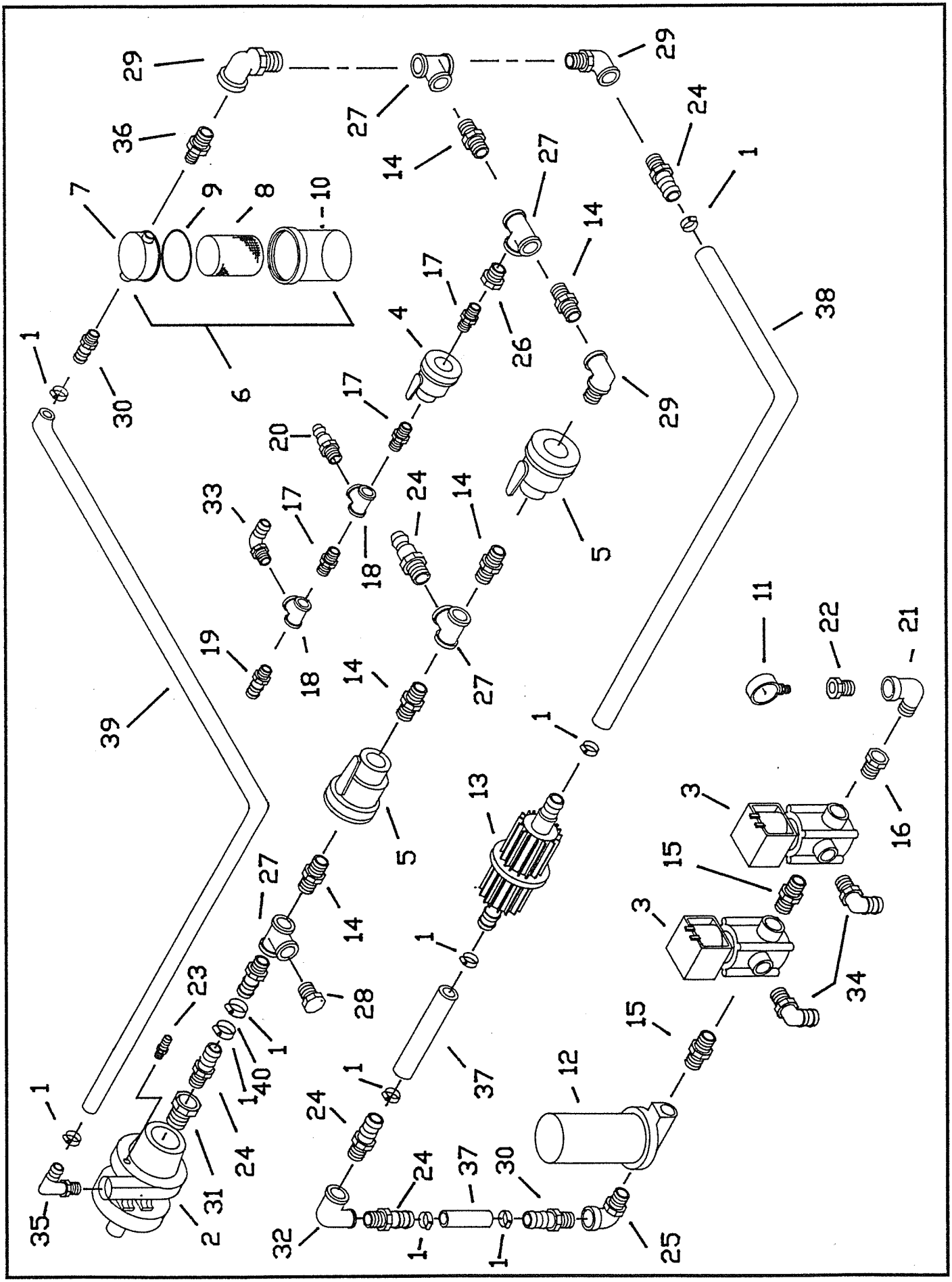
440 HYDRAULIC PLUMBING ASSEMBLY

Ref	Part No.	Qty	Description
1	8A1008	2	HOSE CLAMP, 1-1/4"
2	8A1062	1	9303C-HM4, 7 GPM CLOSE CNT PUMP
	8A1056	X	9303C-HM1, 10 GPM OPEN CNT PUMP
	8A1060	X	9303C-HM3, 20 GPM OPEN CNT PUMP
3	8A1202	2	DIRECTOVALVE, SPRAY SYSTEMS 145
4	8A1250	2	BALL VALVE, 3/4"
5	8A1255	2	BALL VALVE, 1 1/4"
6	8A1260	1	1" STRAINER, 50 MESH
7	8A1261	X	MAIN BODY, 1" LINE STRAINER
8	8A1262	X	SCREEN, 50 MESH HD 1"
	8A1262B	X	SCREEN, 100 MESH HD 1"
9	8A1263	X	GASKET, VITON 1" @ 1.25" STRAINER
10	8A1264	X	BOWL, CLEAR 1 @ 1.25" STRAINER
11	8A1299	1	PRESSURE GAUGE, 0-160 PSI DRY
12	8A1830	1	REGULATOR VALVE, RAVEN 1"
13	8A1844	1	FLOWMETER, 55 GPM POLY
14	8A2000	7	NIPPLE, 1-1/4"
15	8A2001	2	NIPPLE, 1"
16	8A2002	1	BUSHING 1 X 3/4"
17	8A2003	5	NIPPLE, 3/4"
18	8A2005	2	TEE, 3/4"
19	8A2007	3	HOSE BARB, 3/4" X 3/4 MPT
20	8A2008	1	STREET ELBOW, 3/4"
21	8A2023	1	REDUCING BUSHING, 3/4 X 1/4
22	8A2029	1	HOSE BARB, 1/4" X 1/8 MPT
23	8A2031	2	HOSE BARB, 1-1/4" X 1-1/4 MPT
24	8A2032	1	STREET ELBOW, 1"
25	8A2038	2	BUSHING, 1-1/4 X 3/4"
26	8A2039	1	TEE, 1-1/4"
27	8A2045	1	PLUG, 1-1/4" NYLON
28	8A2053	4	STREET ELBOW, 1-1/4"
29	8A2066	1	HOSE BARB, 1-1/4" X 1" MPT
30	8A2105	1	ELBOW, 1-1/4" 90*
31	8A2108	1	ELBOW, 1/2" HB X 3/4" MPT
32	8A2110	1	ELBOW, 1 HB X 1 MPT
33	8A2130	1	REDUCING NIPPLE, 1 X 1-1/4
34	8A2130	1	REDUCING NIPPLE, 1-1/2 x 1 1/4"
35	8S8867	2	RUBBER HOSE, 1-1/4" X 5"
36	8S8868	1	RUBBER, 1-1/4" X 27"
37	8S8876	1	RUBBER HOSE, 1-1/4 X 156"
38	8S8890	1	FRTLZR HOSE, 1-1/4 X 120 (NOT SHOWN)
41	8A1016	2	HOSE CLAMP, SIZE C .393-.472
42	8F3914	1	FEMALE ELBOW, 1/4" BRASS
43	8F9718	2	HOSE BARB, 1/4" X 1/4" MPT
44	8S8816	1	VENT LINE HOSE, 1/4" X 20" 440
45	8X0319	1	WASHER, 7/8 OD X 17/32 ID x 16 GA, 440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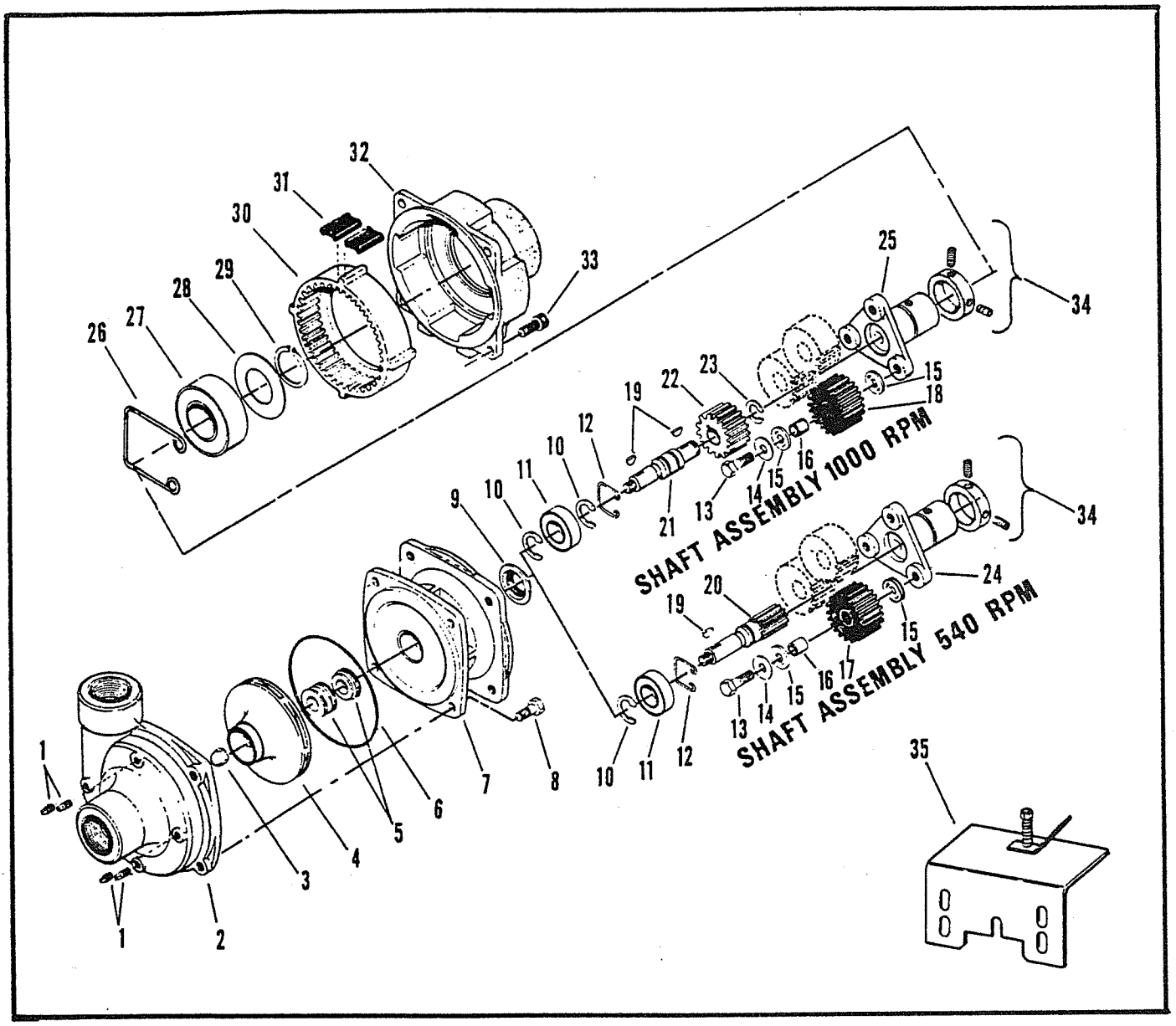
440 PTO PLUMBING ASSEMBLY

Ref	Part No.	Qty	Description
1	8A1008	2	HOSE CLAMP, 1-1/4"
2	8A1050	X	C9006 540 RPM CENT PUMP VITON
	8A1056	X	C9008 1000 RPM CENT PUMP VITON
3	8A1202	2	DIRECTOVALVE, SPRAY SYSTEMS 145
4	8A1250	2	BALL VALVE, 3/4"
5	8A1255	2	BALL VALVE, 1 1/4"
6	8A1260	1	1" STRAINER, 50 MESH
7	8A1261	X	MAIN BODY, 1" LINE STRAINER
8	8A1262	X	SCREEN, 50 MESH HD 1"
	8A1262B	X	SCREEN, 100 MESH HD 1"
9	8A1263	X	GASKET, VITON 1 @ 1.25" STRAINER
10	8A1264	X	BOWL, CLEAR 1 @ 1.25" STRAINER
11	8A1299	1	PRESSURE GAUGE, 0-160 PSI DRY
12	8A1830	1	REGULATOR VALVE, RAVEN 1"
13	8A1844	1	FLOWMETER, 55 GPM POLY
14	8A2000	7	NIPPLE, 1-1/4"
15	8A2001	2	NIPPLE, 1"
16	8A2002	1	BUSHING 1" X 3/4"
17	8A2003	5	NIPPLE, 3/4"
18	8A2005	2	TEE, 3/4"
19	8A2006	3	HOSE BARB, 1/2" X 3/4 MPT
20	8A2007	3	HOSE BARB, 3/4" X 3/4 MPT
21	8A2008	1	STREET ELBOW, 3/4"
22	8A2023	1	BUSHING 3/4" X 1/4"
23	8A2029	1	HOSE BARB, 1/4" X 1/8 MPT
24	8A2031	2	HOSE BARB, 1-1/4" X 1-1/4 MPT
25	8A2032	1	STREET ELBOW, 1"
26	8A2038	2	BUSHING, 1-1/4 X 3/4"
27	8A2039	1	TEE, 1-1/4"
28	8A2045	1	PLUG, 1-1/4" NYLON
29	8A2053	4	STREET ELBOW, 1-1/4"
30	8A2066	1	HOSE BARB, 1-1/4" X 1" MPT
31	8A2102	1	REDUCING BUSHING, 1-1/2 X 1-1/4
32	8A2105	1	ELBOW, 1-1/4" 90*
33	8A2108	1	ELBOW, 1/2" HB X 3/4" MPT
34	8A2110	1	ELBOW, 1" HB X 1" MPT
35	8A2112	1	ELBOW, 1-1/4 HB X 1-1/4 MPT
36	8A2130	1	REDUCING NIPPLE, 1-1/4" x 1"
37	8S8867	2	RUBBER HOSE, 1-1/4" X 5"
38	8S8868	1	RUBBER, 1-1/4" X 27"
39	8S8876	1	RUBBER HOSE, 1-1/4" X 156"
40	8S8890	1	FRTLZR HOSE, 1-1/4" X 120" (NOT SHOWN)
41	8A1016	2	HOSE CLAMP, SIZE C .393-.472
42	8F3914	1	FEMALE ELBOW, 1/4" BRASS
43	8F9718	2	HOSE BARB, 1/4" X 1/4" MPT
44	8S8816	1	VENT LINE HOSE, 1/4" X 20" 440
45	8X0319	1	WASHER, 7/8 OD X 17/32 ID 16 GA, 440



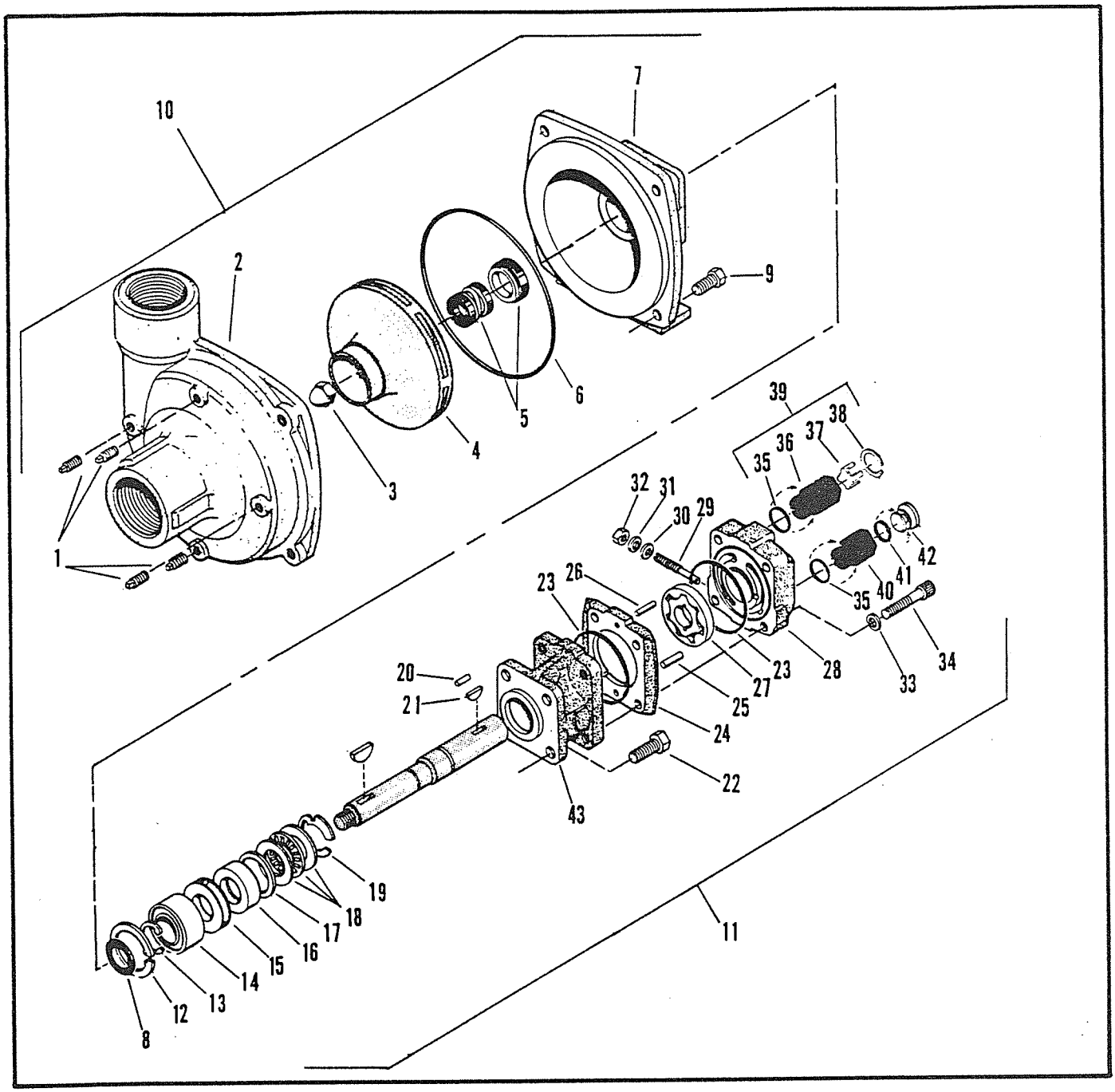
CENTRIFUGAL PUMP ASSEMBLY

(Hypro Series 9000 Gear Driven)

Ref.	Part No.	Hypro	Description	Qty.
1	8A0900	*2406-0009*	PLUG, pipe	4
2	8A0902	*0150-9000C*	CASING, PUMP	1
3	8A0802	*2253-0001*	NUT, impeller	1
4	8A0804	*0400-9000P*	IMPELLER, plastic	1
5	8A0806	*2120-0011*	SEAL, mechanical (Viton)	1
6	8A1046	*1720-0083*	O-RING	1
7	8A0807	*0750-9000C*	ADAPTER, mounting flange	1
8	8A0910	*2210-0020*	CAP SCREW, hex head	4
9	8F6902	*2130-0017*	SEAL, bearing	1
10	8A0810	*1810-0013*	RING, retainer (1 Required for 540 RPM; 2 for 1000 RPM)	x
11	8A0812	*2008-0001*	BEARING, ball	1
12	8A0814	*1820-0025*	RING, retainer	1
13	8A0816	*2210-0046*	CAP SCREW, hex head	3
14	8A0818	*2270-0003*	WASHER	3
15	8A0820	*2265-0003*	THRUST WASHER	6
16	8A0822	*2007-0022*	RACE, inner bearing	3
17	8A0824	*3900-0015*	GEAR, driver (w/bearing - for 540 RPM)	1
18	8A0826	*3900-0016*	GEAR, driver (w/bearing - for 1000 RPM)	1

CENTRIFUGAL PUMP ASSEMBLY (Cont'd)

Ref.	Part No.	Hypro	Description	Qty.
19	8A0912	*1610-0012*	KEY, woodruff (1 Required for 540 RPM; 2 for 1000 RPM Models 9002C, 9008C, 9012C & 9018C; 3 for 1000 RPM Models 9022C & 9028C)	x
20	8A0830	*3900-0010*	IMPELLER SHAFT, pinion geared (for 540 RPM)	1
21	8A0832	*0500-9002*	IMPELLER SHAFT, 1000 RPM	1
22	8A0834	*3900-0013*	SUN GEAR	1
23	8A0836	*1810-0011*	RING, retainer	1
24	8A0838	*0560-9000D*	HUB, driver 1⅜" spline (for Models 9000C & 9006C)	1
25	8A0840	*0560-9002D*	HUB, driver 1⅜" spline (for Models 9002C & 9008C)	1
26	8A0847	*1800-0014*	RING, retainer	1
27	8A0848	*2005-0002*	BEARING, ball	1
28	8A0850	*1410-0006*	SLINGER	1
29	8A0852	*1810-0001*	RING, retainer	1
30	8A0854	*3900-0009*	GEAR, ring	1
31	8A0856	*1450-0004*	BUMPER, cushion	8
32	8A0858	*0751-9000C*	CASING, gear	1
33	8A0860	*2220-0004*	CAP SCREW, hex head	4
34	8A1180	*3430-0176*	LOCKING COLLAR KIT	1
35	8A1178	*1520-0034*	MOUNTING CLIP, Hypro PTO Pump	x

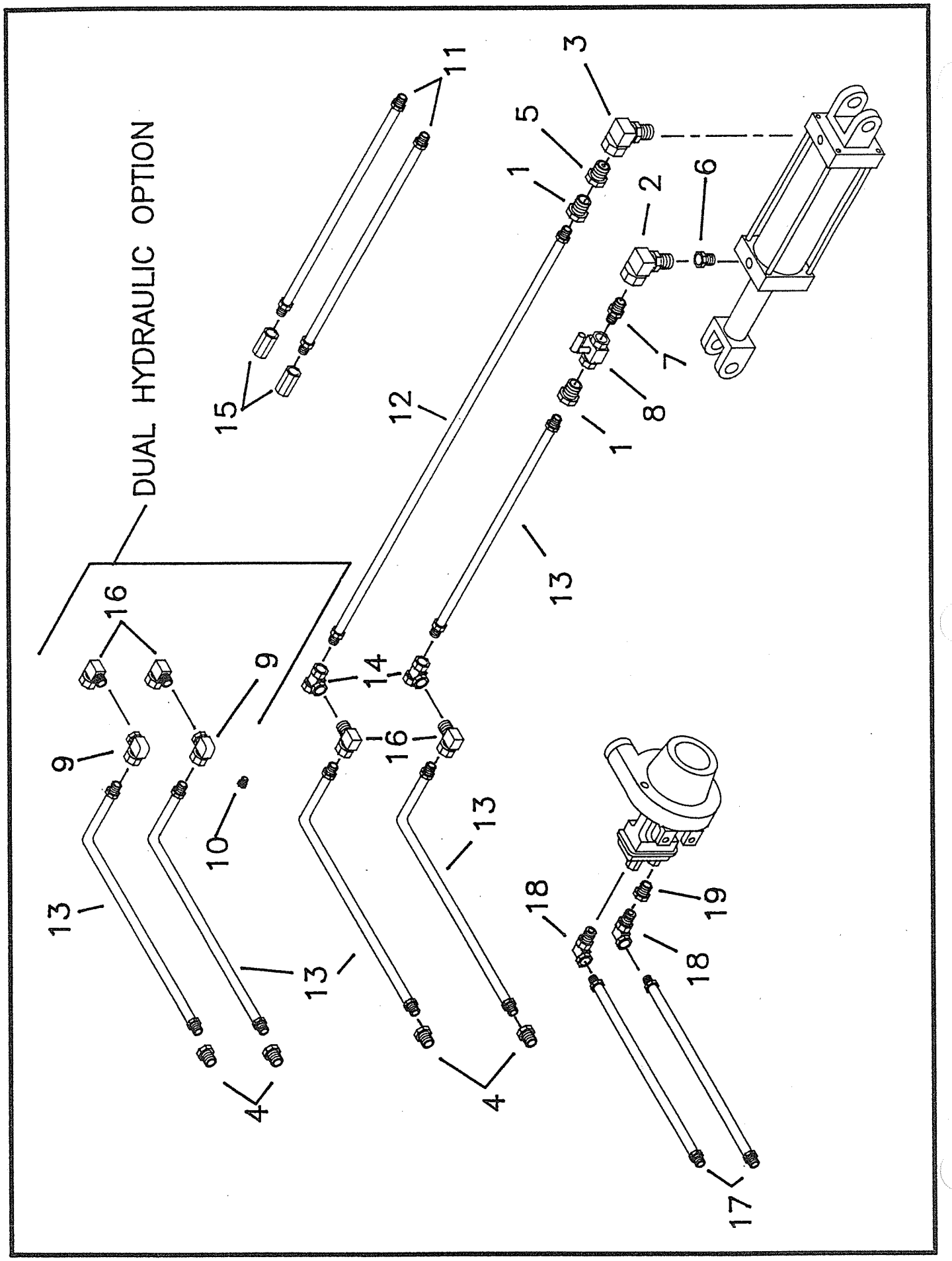


CENTRIFUGAL PUMP AND HYDRAULIC ASSEMBLY

Ref.	Part No.	Hypro.	Description	Qty.
1	8A0900	*2406-0009*	PLUG, drain/vent	4
2	8A0902	*0150-9000C*	CASING, pump (1½" NPT Suction x 1¼" Discharge)	1
3	8A0904	*2253-0002*	NUT, impeller	1
4	8A0906	*0401-9100P*	IMPELLER	1
5	8A1047	*2120-0009*	SEAL, mechanical (Viton)	1
6	8A1046	*1720-0083*	O-RING, (Buna-N)	1
7	8A0907	*0750-9300C*	FLANGE, mounting	1
8	8A0908	*1410-0056*	SLINGER	1
9	8A0910	*2210-0020*	CAP SCREW, hex head	4
10	NSS		PUMP, complete	
11	8A0916	*2500-0009*	MOTOR, Hydraulic (10 GPM Motor) HM1	1
	8A0918	*2500-0010*	MOTOR, Hydraulic (5 GPM Motor) HM2	1
	8A0919	*2500-0011*	MOTOR, Hydraulic (20 GPM Motor) HM3	1
	8A0917	*2500-0012*	MOTOR, Hydraulic (7 GPM Motor) HM4	1
12	8A0922	*1820-0013*	RING, retainer	1
13	8A0924	*1810-0014*	RING, snap	1

CENTRIFUGAL PUMP AND HYDRAULIC DRIVE ASSEMBLY
(Continued)

Ref.	Part No.	Hypro	Description	Qty.
14	8A0926	*2000-0010*	BEARING, ball	1
15	8A0928	*1410-0074*	SPACER	1
16	8A0930	*2104-0005*	SEAL, shaft	1
17	8A0931	*1410-0073*	SPACER, seal	1
18	8A0932	*2029-0014*	THRUST BEARING ASSEMBLY	1
19	8A0934	*1810-0026*	RING, snap	1
20	8A0939	*1610-0031*	ROLL PIN (10 GPM Motor) HM1	1
	8A0938	*1610-0032*	ROLL PIN (5 & 7 GPM Motor) HM2 & HM4	1
21	8A0940	*1610-0030*	KEY, Woodruff (20 GPM Motor) HM3	1
22	8A0914	*2210-0005*	CAP SCREW, hex head	4
23	8A0944	*1720-0110*	O-RING	2
24	8A0946	*0700-2500A*	HOUSING, Gerotor (10 GPM Motor) HM1 (1/2" thick)	1
	8A0945	*0701-2500A*	HOUSING, Gerotor (5 GPM Motor) HM2 (1/4" thick	1
	8A0947	*0702-2500A*	HOUSING, Gerotor (20 GPM Motor) HM3 (1" thick)	1
	8A0948	*0703-2500A*	HOUSING, Gerotor (7 GPM Motor) HM4 (5/16" thick)	1
25	8A0949	*1600-0044*	PIN, Dowel (10 GPM Motor) HM1	1
	8A0948	*1600-0045*	PIN, Dowel (5 & 7 GPM Motor) HM2 & HM4	1
	8A0950	*1600-0052*	PIN, Dowel (20 GPM Motor) HM3	1
26	8A0953	*1600-0037*	PIN, Dowel (10 GPM Motor) HM1	1
	8A0952	*1600-0042*	PIN, Dowel (5 & 7 GPM Motor) HM2 & HM4	1
	8A0954	*1600-0051*	PIN, Dowel (20 GPM Motor) HM3	1
27	8A0957	*3900-0022*	GEROTOR (10 GPM Motor) HM1	1
	8A0956	*3900-0023*	GEROTOR (5 GPM Motor) HM2	1
	8A0958	*3900-0024*	GEROTOR (20 GPM Motor) HM3	1
	8A0959	*3900-0025*	GEROTOR (7 GPM Motor) HM4	1
28	8A0960	*0251-2500A*	END PLATE, motor (Includes Main Bearing)	1
29	8A0962	*3320-0029*	SCREW, bypass adjustment	1
30	8A0964	*1700-0047*	GASKET	1
31	8A0966	*2270-0027*	WASHER	1
32	8A0968	*2250-0038*	NUT, lock	1
33	8A0970	*2270-0039*	WASHER	4
34	8A0971	*2220-0021*	CAP SCREW, Socket Head (10 GPM Motor) HM1	4
	8A0972	*2220-0045*	CAP SCREW, Socket Head (5 & 7 GPM Motor) HM2 & HM4	4
	8A0973	*2220-0044*	CAP SCREW, Socket Head (20 GPM Motor) HM3	4
35	8A0920	*1720-0108*	O—RING	
36	8A0974	*3320-0016*	ADAPTER, tank port	1
37	8A0975	*3260-0039*	POPPET	1
38	8A0976	*1820-0023*	RING, retainer	1
39	8A1040	*3320-0015*	CHECK VALVE ASSEMBLY (Refs. 38-41)	1
40	8A1044	*3360-0021*	ADAPTER, pressure port	1
41	8A1078	*1720-0105*	O-RING, orifice	1
42	8A1080	*3373-0020*	ORIFICE, metering (Size #1 - HM2 & HM4 Units Only)	1
	8A1081	*3373-0021*	ORIFICE, metering (Size #2 - HM2 & HM4 Units Only)	Opt.
	8A1082	*3373-0022*	ORIFICE, metering (Size #3 - HM2 & HM4 Units Only)	Opt.
	8A1085	*3430-0187*	ADAPTER KIT, HM2 & HM4 Units Only (Includes Ref. 38, 43, 44 & 45; Metering Orifice Sizes #2 and #3, and Two Additional Ref. 44)	
43	8A0942	*0151-2500A*	BODY, front (Includes Main Bearing)	1
44	8A0936	*0500-2500*	SHAFT, HM1	1
	8A9035	*0503-2500*	SHAFT, HM2 & 4	1
	8A0937	*0502-2500*	SHAFT, HM3	1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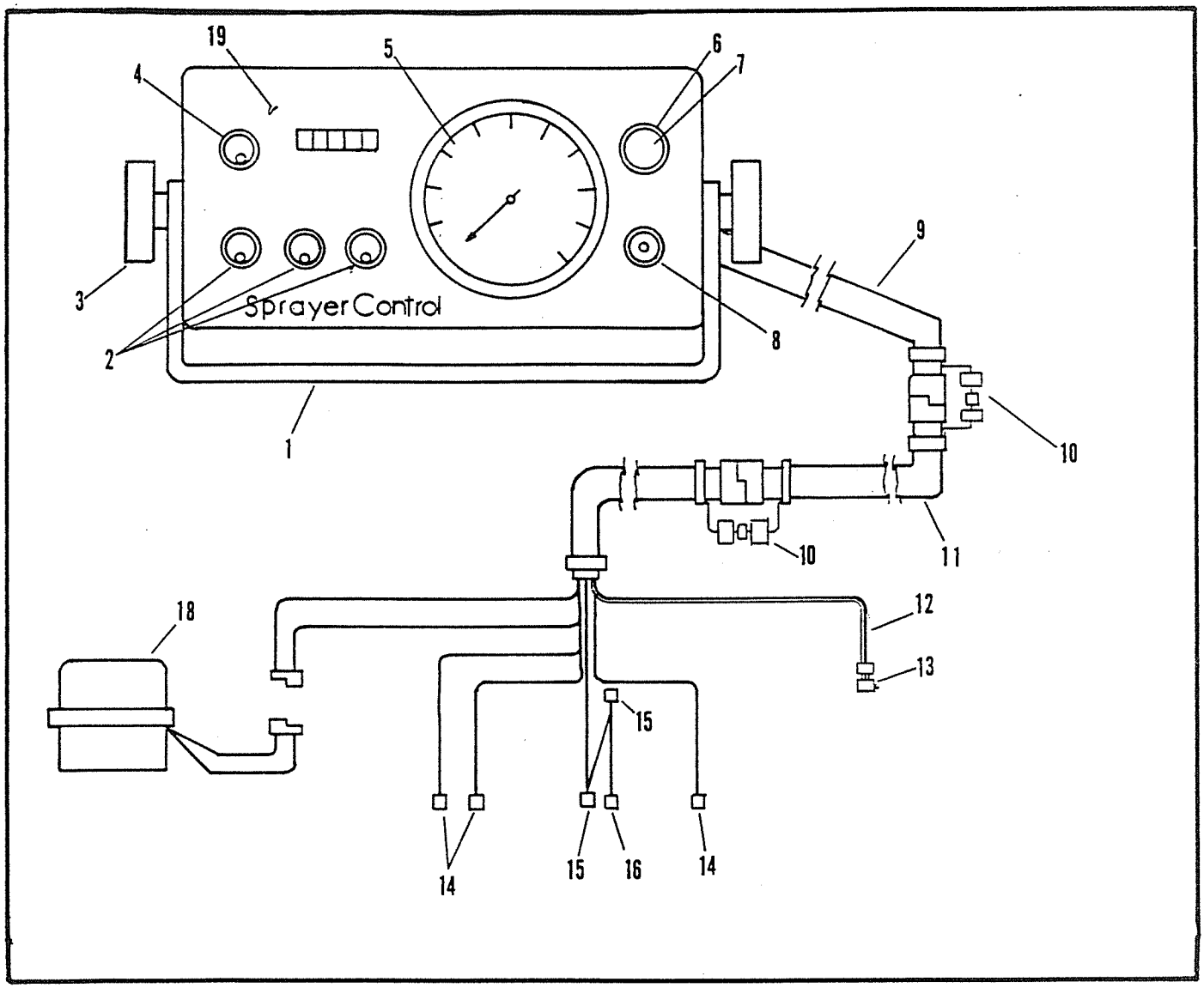
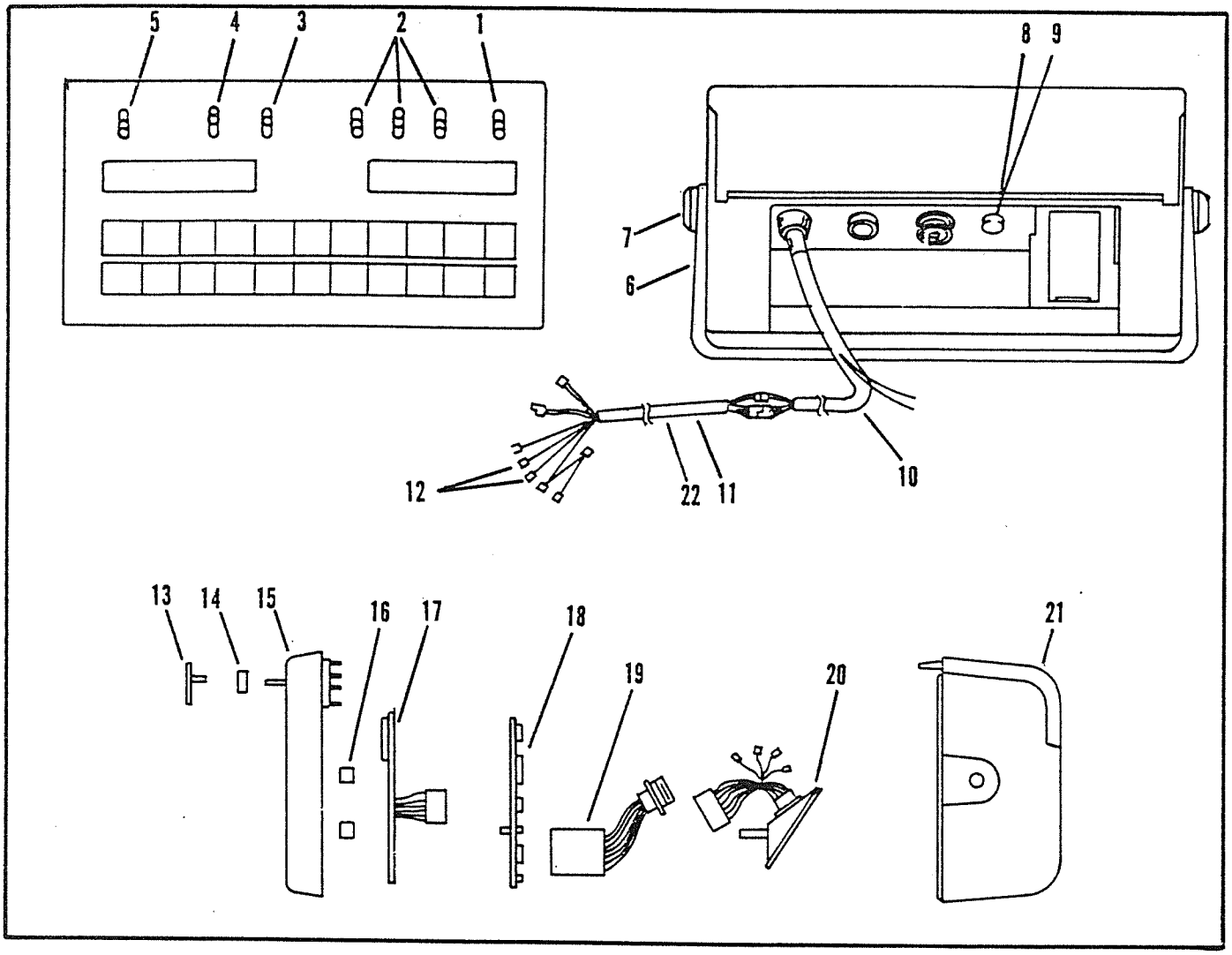
HYDRAULIC SYSTEM

Ref	Part No.	Qty	Description
1	8D3094	X	HEX BUSHING, 3/8 X 1/4" Z
2	8D3095	X	1/2" MP / 3/8 FPT 90* ADP
3	8D3097	X	3/4"-16 ORB / 3/8" FPT 90* ADP
4	8D3098A	X	HEX BUSHING, 1/2 x 1/4" Z
5	8D3100	X	3/8 MP x 3/8" FPX 1/32" RESTR
6	8D3101	X	3/4" - 16 ORB x 1/2" FPT STR ADP
7	8R6860	X	3/8" HEX CLOSE NIPPLE
8	8S1400	X	HYD BALL VALVE, 3/8"
9	8W1356	X	ELBOW, 1/4" FPT
10	8W1358	X	PLUG, 1/4" MPT
11	8W1438	X	1/4" x 180" HYD HOSE, 3000 PSI
12	8W1496		1/4" x 296" HYD HOSE, 3000 PSI
13	8W1498	X	1/4" x 284" HYD HOSE, 3000 PSI
14	8W1530	X	1/4" FPT TEE, 3 SWIVELS
15	8W1540	X	1/4" FPT PIPE COUPLING, PLATED
16	8W1562	X	1/4" MP X 1/4 FPX 90 ADP
17	8D3078	X	1/2" x 168" HYD HOSE, 3000 PSI
18	8R6852	X	1/2" MP X 1/2 FPX 90* ADP
19	8R6854	X	1/2" MP X 1/2 SWIVEL



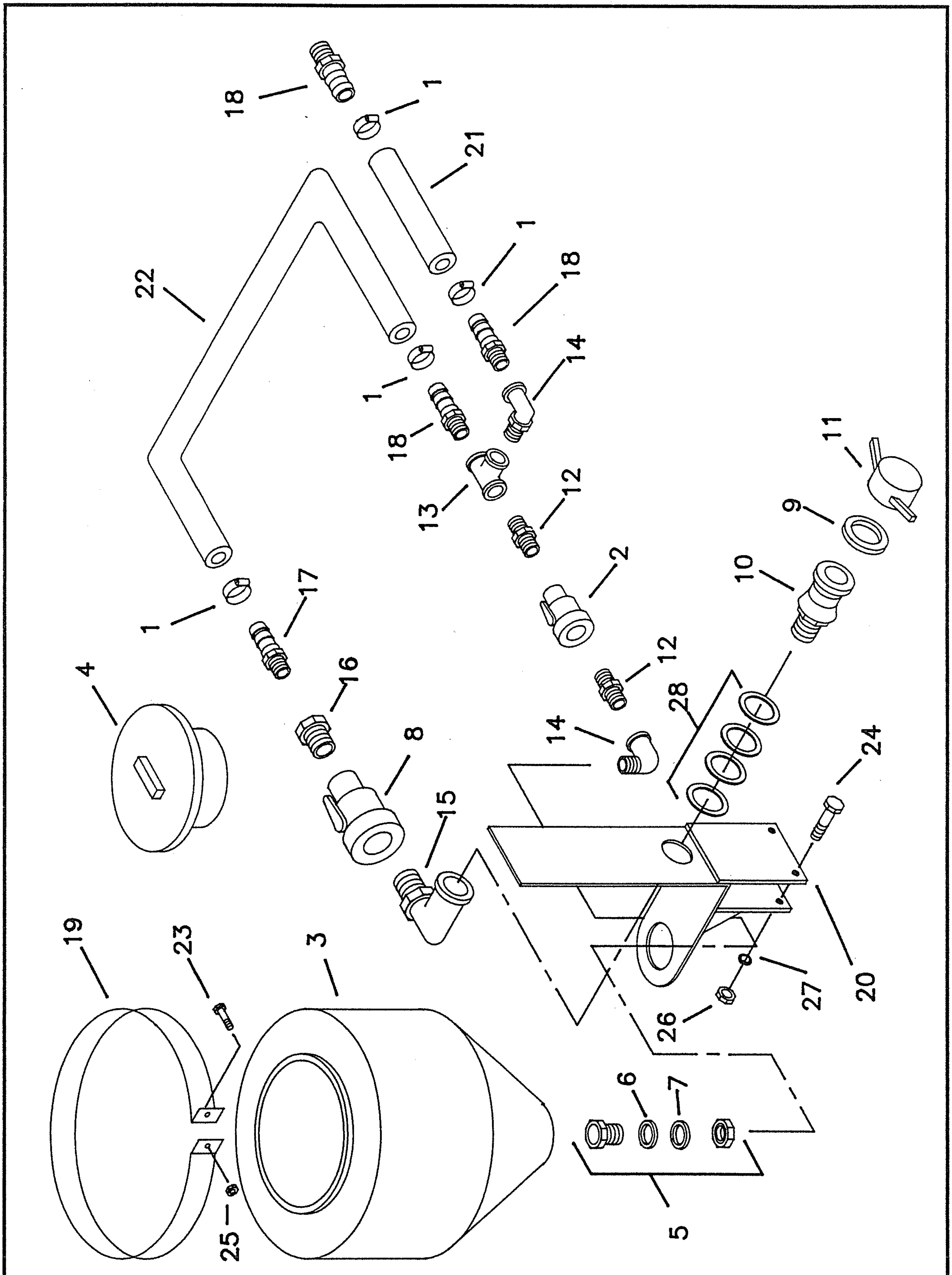
SCS 201, 202 & 203 CONTROL CONSOLE

Ref.	Part No.	Raven PN	Description	Qty.
1	8A1297	*107-0159-007*	BRACKET, mounting	1
2	8A1920	*412-2011-038*	SWITCH, boom	3
3	8A1932	*309-1000-006*	KNOB	2
4	8A1922	*412-2011-037*	SWITCH, master	1
5	8A1284	*117-0159-006*	GAUGE, pressure (w/female fitting, 103" tubing & union fitting)	1
6	8A1934	*510-2001-003*	HOLDER, fuse	1
7	8A1935	*510-1003-003*	FUSE, 15 amp	1
8	8A1928	*412-2011-039*	SWITCH, pressure adjust	1
9	8A1952	*115-0159-010*	CABLE ASSEMBLY, enclosure hook-up (96")	1
10	8A1282	*333-0001-008*	FITTING, union	1
11	8A1283	*107-0159-025*	CABLE ASSEMBLY, extension (12')	Opt.
12	8A1954	*107-0159-020*	TUBING, 1/4" (Bulk)	Per Ft.
13	8A1281	*333-0001-007*	FITTING, male	1
14	8A1956	*405-2001-018*	TERMINAL, insulated female	3
15	8A1957	*405-2001-008*	TERMINAL, 12-10 AWG female	1
16	8A1958	*405-2001-009*	TERMINAL, 16-14 AWG female	1
17	8A1280	*115-0159-013*	CABLE ASSEMBLY, solenoid hook-up (6')	1
18	8A1270	*063-0159-001*	VALVE ASSEMBLY, 3/4"	1
	8A1269	*063-0159-448*	VALVE ASSEMBLY 1½"	Opt.
	8A1271	*107-0159-030*	COVER, 3/4" valve	1
19	8A1960	*107-0159-009*	FACEPLATE, For SCS-203	x
20	8A1962	*312-4001-003*	LOCKNUT, gauge (Not Shown)	x



SCS 440 CONTROL CONSOLE

Ref.	Part No.	Raven	Description	Qty.
1	8A1923	*412-2011-046*	SWITCH, master	1
2	8A1921	*412-2011-047*	SWITCH, boom	3
3	8A1929	*412-2011-049*	SWITCH, man. adj.	1
4	8A1827	*412-2011-050*	SWITCH, Rate 1/Rate 2/Man.	1
5	8A1925	*412-2011-048*	SWITCH, power	1
6	8A1931	*106-0159-437*	BRACKET, mounting	1
7	8A1933	*106-0159-438*	KNOB	2
8	8A1935	*510-2001-018*	HOLDER, fuse	1
9	8A1941	*510-1003-003*	FUSE, fast blow (Buss AGC 15)	1
10	8A1814	*115-0159-418*	CABLE ASSEMBLY, console control (10')	1
11	8A1811	*115-0159-404*	CABLE ASSEMBLY, flow control (6')	1
	8A1949	*115-0159-016*	CABLE ASSEMBLY, flow meter (6')	1
12	8A1938	*117-0159-402*	TERMINALS, assorted (Spade lugs, etc.)	x
13	8A4402	*106-0159-433*	COVER, switch	x
14	8A4404	*117-0159-421*	FILLER SPACERS, set	x
15	8A4406	*063-0159-525*	FACE PLATE SUB-ASSEMBLY	1
16	8A4408	*107-0159-478*	SPACER, display board	x
17	8A4410	*064-0159-428*	LCD DISPLAY BOARD	1
18	8A4412	*064-0159-429*	PROCESSOR BOARD	1
19	8A4414	*064-0159-437*	TIP MONITOR ASSEMBLY	1
20	8A4416	*063-0159-527*	CONNECTOR PLATE SUB-ASSEMBLY	1
21		*063-0159-530*	BACK ASSEMBLY	1
22	8A1812	*115-0159-409*	EXTENSION CABLE, flow control (12')	x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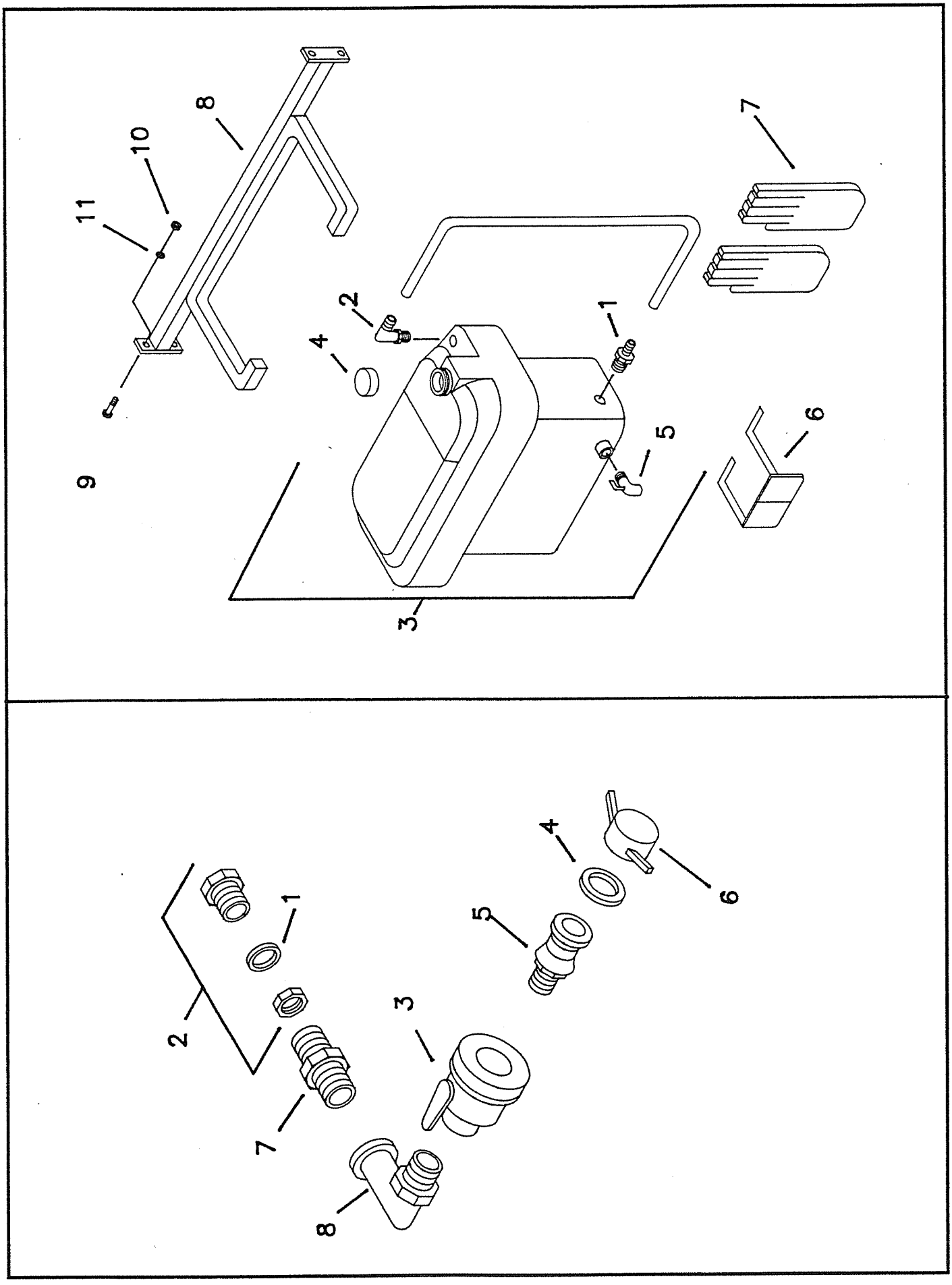
MIX AND FILL KIT ASSEMBLY

Ref	Part No.	Qty	Description
1	8A1006	4	HOSE CLAMP, 1-1/2"
2	8A1255	1	BALL VALVE, 1-1/4"
3	8A1310	1	CHEMICAL MIX TANK, 15 GAL
4	8A1337B	X	COVER, SOLAR 10" NS
5	8A1386	X	SOLAR, 1-1/4" FITTING, COMPLETE
6	8A1387	X	SOLAR, 1-1/4" FITTING, RUB WASHER
7	8A1388	X	SOLAR, 1-1/4 FITTING NYL WASHER
8	8A1732	1	BALL VALVE, 2" UNION
9	8A1755	X	GASKET, 2" COUPLER
10	8A1756	1	MALE ADAPTER-MALE THREAD
11	8A1760	1	COUPLER END CAP, 2"
12	8A2000	2	NIPPLE, 1-1/4"
13	8A2039	1	TEE, 1-1/4"
14	8A2053	4	STREET ELBOW, 1-1/4"
15	8A2056	4	STREET ELBOW, 2"
16	8A2058	1	BUSHING 2 X 1-1/2"
17	8A2060	1	HOSE BARB, 1-1/2"
18	8A2064	3	HOSE BARB, 1-1/2" X 1-1/4" MPT
19	8A3010	1	BAND, 15 GAL - MIX & FILL TANK 59"
20	8S4270	1	SADDLE, MIX & FILL SS4
21	8S8910	1	FRTLZR HOSE, 1-1/2" X 23"
22	8S8920	1	FRTLZR HOSE, 1-1/2" X 30"
23	8X0006	1	BOLT, 3/8 X 2-1/2 Z GR5
24	8X0074	2	BOLT, 1/2 X 4-1/2 Z GR5
25	8X0202	1	NUT, LOCK 3/8 NC, NYLON Z
26	8X0240	2	NUT, HEX 1/2 NC Z
27	8X0303	2	LOCKWASHER, 1/2 Z
28	8X0364	4	WASHER, 3" OD X 2-7/16" ID 16 GA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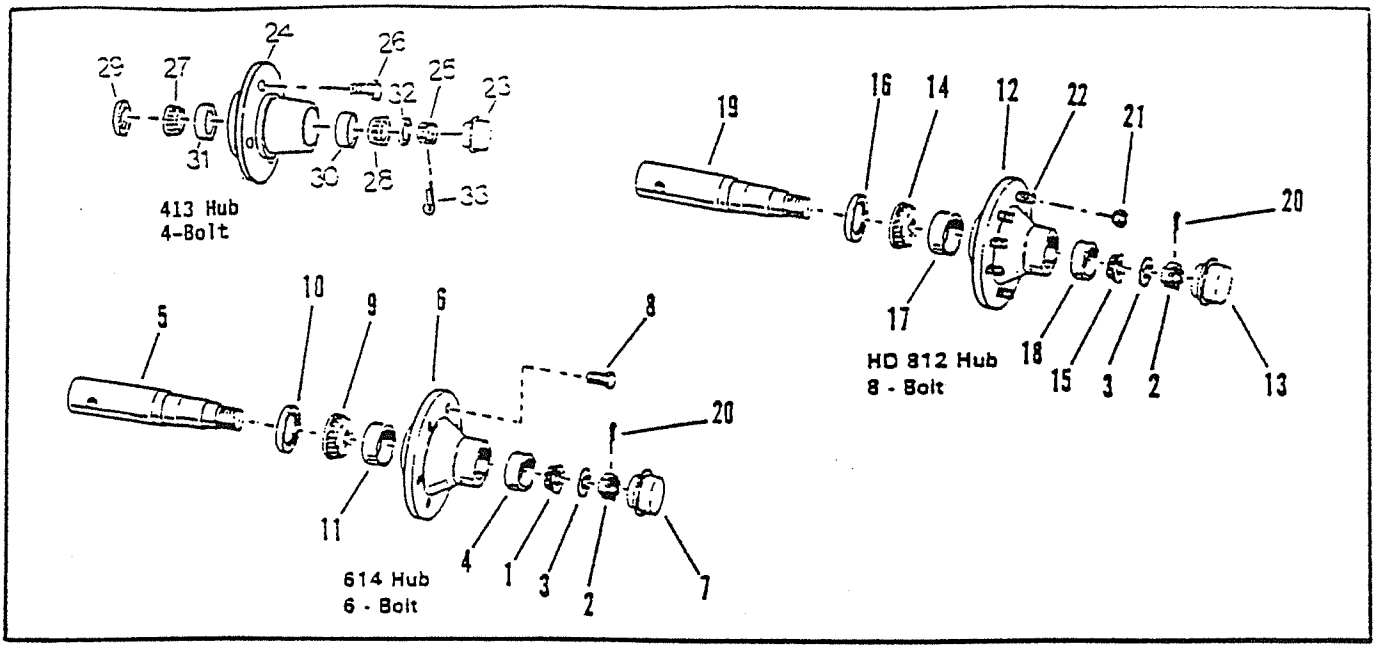
CLEAN WATER TANK ASSEMBLY

Ref	Part No.	Qty	Description
1	8A2006	X	HOSE BARB, 1/2" x 3/4 MPT
2	8F9745	X	ELBOW, 1/2 x 1/2 MPT POLY
3	8S3100	1	WATER SAFETY KIT
4	8S3104	X	CAP, WATER SAFETY TANK
5	8S3108	X	FAUCET ONLY, WATER SAFETY TANK
6	8S3130	1	CHEMICAL GOGGLES
7	8S3140	1	VINYL COATED GLOVES
8	8S4230	1	BRCKT, CLEAN WATER TANK SS4
9	8X0008	2	BOLT, 3/8 x 2 Z GR5
10	8X0201	2	NUT, HEX 3/8 NC Z
11	8X0301	1	LOCKWASHER, 3/8 Z

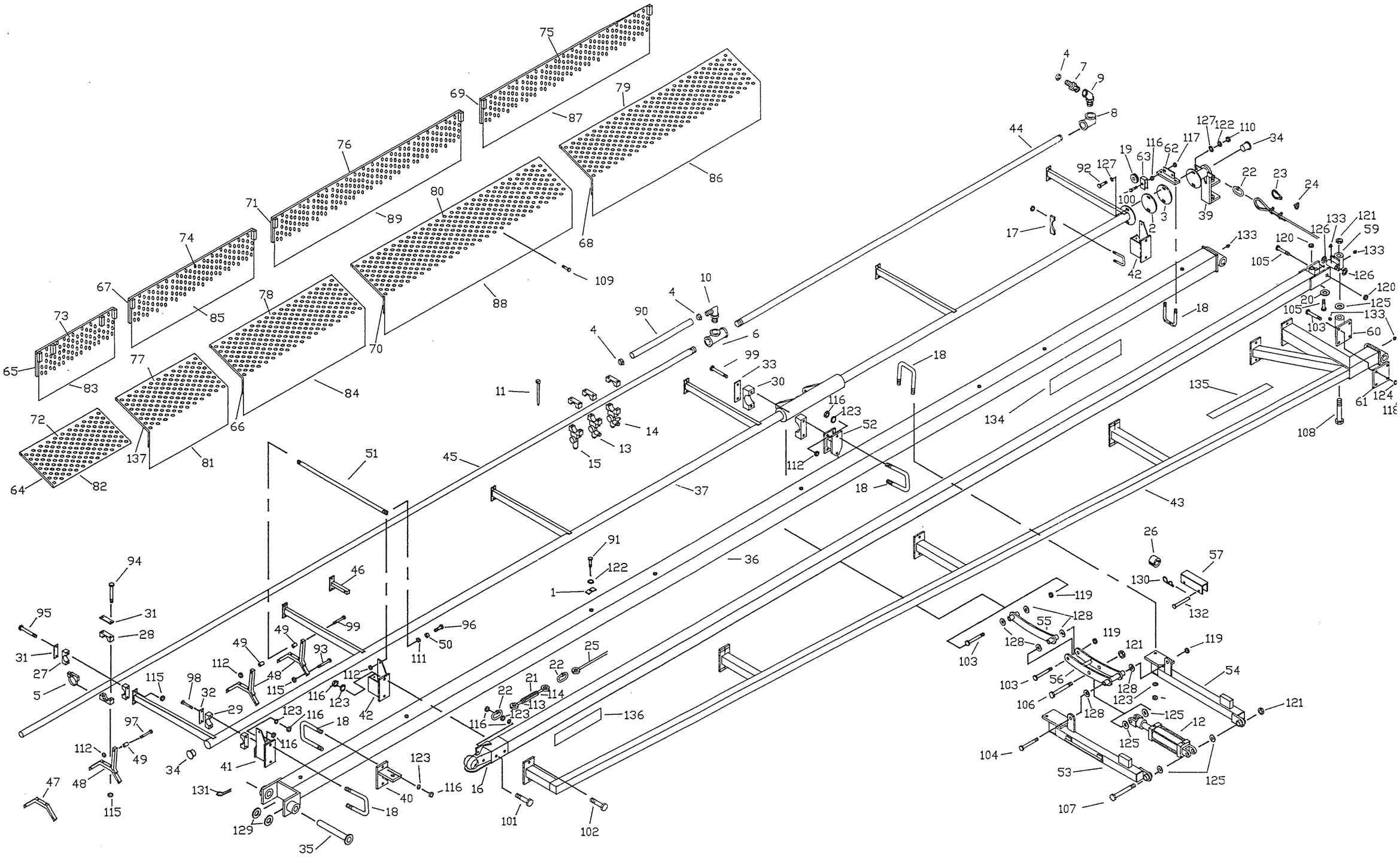
BOTTOM FILL KIT ASSEMBLY

Ref	Part No.	Qty	Description
1	8A1367	X	RAVEN 2" FITTING, O-RING
2	8A1376	1	RAVEN 2" FITTING COMPLETE
3	8A1732	1	BALL VALVE, 2" UNION
4	8A1755	1	GASKET, 2" COUPLER
5	8A1756	1	MALE ADAPTER-MALE THREAD
6	8A1760	2	COUPLER, END CAP 2"
7	8A2052	1	NIPPLE, 2" NYLON
8	8A2056	2	STREET ELBOW, 2"



HUBS AND SPINDLES

Ref.	Part No.	Description
1	8D5217	BEARING (LM48548)
2	8D5312	NUT, Axle 1" - 14 NF
3	8D5319	WASHER, axle 1"
4	8D5332	RACE, bearing (H517, H614 - LM488510)
5	8R6901	AXLE ONLY, 2" dia. x 9-1/2" (H614)
6	8R6911	HUB, 6 bolt (H614 W/Races and Grease Fitting)
7	8R6913	CAP, hub (H614)
8	8R6914	BOLT, wheel 9/16" - 18 NF
9	8R6917	Bearing (LM603049)
10	8R6921	SEAL, 2" ID (H614)
11	8R6925	RACE, inner bearing (H614 - LM603011)
12	8K7111	HUB, 8 bolt (HD812 W/Races and Grease Fitting)
13	8K7113	CAP, hub (HD812)
14	8K7117	BEARING, inner (LM3780)
15	8K7118	BEARING, outer (LM2790)
16	8K7120	SEAL, 2-1/2" ID (HD812)
17	8K7130	RACE, inner bearing (HD812 - LM3720)
18	8K7132	RACE, outer bearing (H812 - LM2720)
19	8K7150	AXLE ONLY, 2-1/2" dia. x 11-1/2" (HD812)
20	8X0415	PIN, cotter 3/16" x 1-3/4"
21	8K7116	NUT, wheel stud 9/16-18NF
22	8K7115	STUD, wheel 9/16-18NF x 2-1/4"
23	M6527846	CAP, hub (H413)
24	M6527850	HUB, 4 bolt (W/bearing cups CTD 413)
25	8D5112	NUT, axle 3/4" - 16
26	8D5114	BOLT, wheel 1/2 NF
27	8D5117	BEARING, LM 67048
28	8D5118	BEARING, LM 11949
29	8D5120	SEAL, 1-5/8" ID H511
30	8D5330	RACE, inner LM 11910
31	8D5336	RACE, inner LM 67010
32	8X0317	WASHER, flat 3/4 SAE Z
33	8X0415	COTTER PIN, 3/16 x 1-3/4" Z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PART 1 BOOM ASSEMBLY

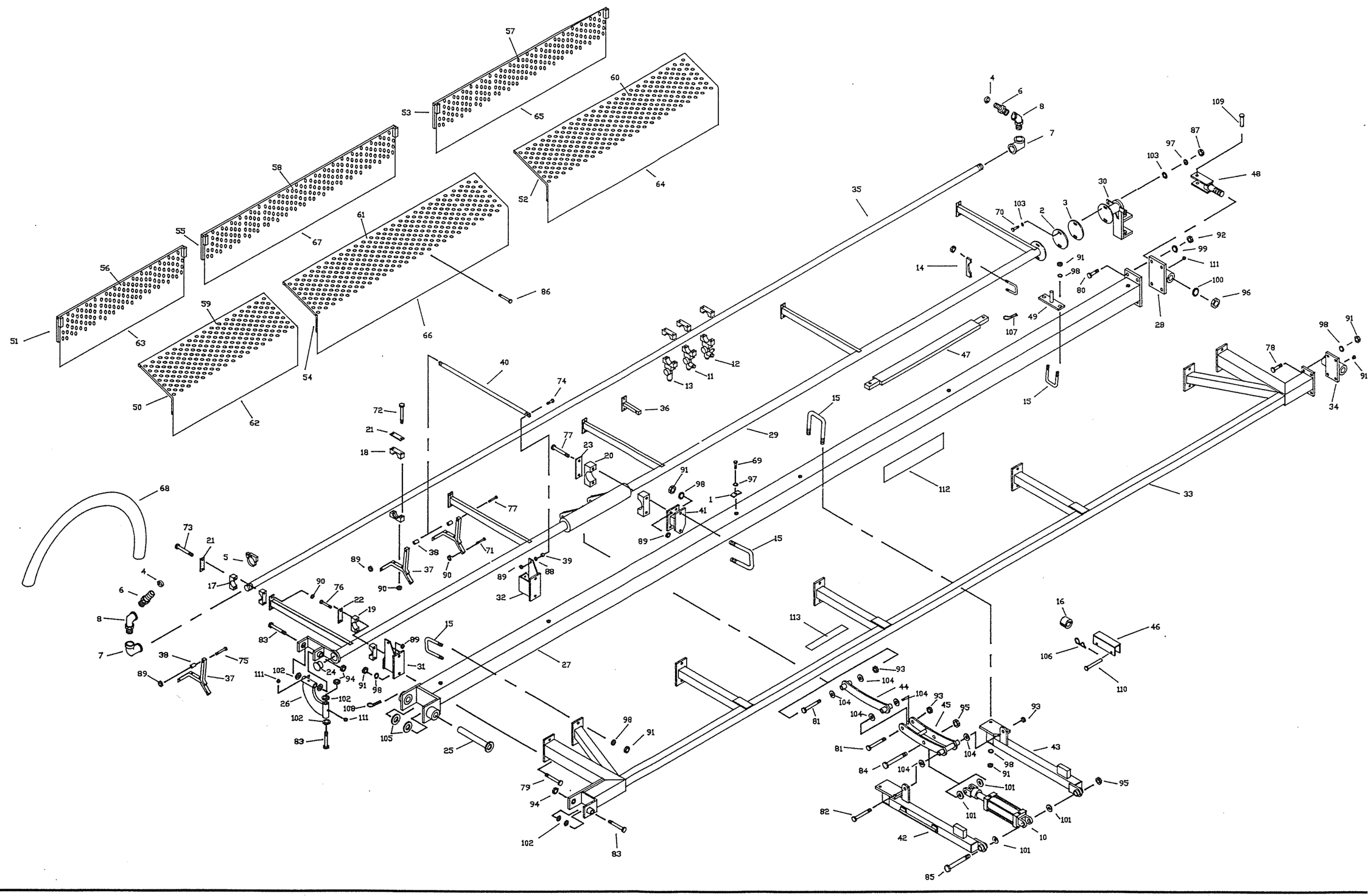
Ref	Part No.	Qty	Description
1	7D4310	8	FLAT 3/16 x 1-3"W/HOLE
2	7S0196	X	CIRCLE FC, 1/8 x 4.5"
3	7S0200	X	CIRCLE FC, 1/4 x 4.5"
4	8A1009	3	HOSE CLAMP 1" #16
5	8A1014	18	HOSE CLAMP, 80# 1.250-1.437"
6	8A2004	1	TEE, 1"
7	8A2025	1	HOSE BARB, 1" x 1" MPT
8	8A2106	1	ELBOW, 1" 90*
9	8A2107	1	STREET ELBOW, 1" 45*
10	8A2110	1	ELBOW, 1" x 1" MPT
11	8A4052	17	NYLON TIE, 15-1/4" LONG
12	8D9114	1	CYL 2.5 8" W/ DEPTH CNTRL
13	8F3824	X	TURRET NOZ, 2 HEAD, 1" PIPE
14	8F3826	X	TURRET NOZ, 3 HEAD, 1" PIPE
15	8F3830	X	WET BOOM NOZZLE, QJ 1" PIPE
16	8G8134	1	2" DIA BALL COUPLER, FOR 3" SQ
17	8S0080	4	PIPE CLAMP, 1.90 ID PLATE
18	8S0340	14	U-BOLT, 1/2" (FOR 4 x 4 TUBE)
19	8S1060	1	STEEL PULLEY, 2" DIA. 1/2" ID
20	8S1062	1	STEEL PULLEY, 2" DIA. 3/4" ID
21	8S1070	1	TURNBUCKLE, 1/4" x 5.5" CLOSED
22	8S1074	3	QUICKLINK, 3/16"
23	8S1080	X	CABLE THIMBLE, FOR 5/32" CABLE
24	8S1082	X	CABLE CLAMP, 5/32"
25	8S1090	2	CABLE, 5/32 x 288" EYE BOLT
26	8S1420	2	STROKE CNTRL COLLAR, 1" 1.25 ROD
27	8S3000	12	PIPE CLAMP, 1" PIVOT SMOOTH, PAIR
28	8S3010	24	PIPE CLAMP, 1" TIGHT RIBBED, PAIR
29	8S3020	12	PIPE CLAMP, 1.90" ID PAIR
30	8S3025	8	PIPE CLAMP, 2.375" ID PAIR
31	8S3038	36	COVER PLATE, 1/8 x 1 3/16 x 2 3/4"
32	8S3040	12	COVER PLATE 1/8 x 1 1/8 x 3 3/8"
33	8S3042	8	COVER PLATE, 3/16 x 1 4 5/8"
34	8S3058	X	CAPLUG, FITS 1.90" RD TUBING
35	8S4110	2	PIN, 1 1/4" x 9 1/8 SS4
36	8S4310	2	BOOM PART 1 (26'-8") 91-
37	8S4414	1	PIPE, ROT PART1 LH (26'-8") 94-
38	8S4415	1	PIPE, ROT PART1 LH (26'-8") 94-
39	8S4502	2	PIPE, ROTATION COUPLER 94-
40	8S4550	2	BRCKT, AUTO FOLD BOOM ARM TRNSPRT
41	8S4591	2	BRCKT, ROT. PIPE ATTCH-RIGHT 94
42	8S4592	10	BRCKT, ROT. PIPE ATTCH-LEFT 94
43	8S4611	2	BRACE, DBR PART 1 (26'-8") 94-
44	8S4870	2	PIPE BOOM (AL) 99.75" 94-
45	8S4964	2	PIPE BOOM (AL) 204 94-
46	8S5040	X	BRCKT, CONSTANT NOZ. ANGLE ONLY
47	8S5061	2	BRCKT, WIND SHIELD ONLY 94-
48	8S5081	22	BRCKT, WIND SHIELD FULL 94-
49	8S5090	24	SPACER, NOZ. ANGLE/WINDSHIELD
50	8S5095	12	SPACER, BOTTOM OF LINK 94-
51	8S5101	12	LINK, NOZZLE/ WINDSHIELD 94-
52	8S5140	4	SPACER, HYD STIIENER PIPE SS4
53	8S5160	2	HYD. CYL. BRCKT BOOM LEFT SS4
54	8S5162	2	HYD. CYL. BRCKT BOOM RIGHT SS4

PART 1 BOOM ASSEMBLY CONTINUED

Ref	Part No.	Qty	Description
55	8S5180	2	HYD. CYL. LINK, SINGLE MOON SS4
56	8S5190	2	HYD. CYL. LINK, DOUBLE MOON SS4
57	8S5200	2	HYD. CYL. TRANSPORT LOCK SS4
58	8S5620	1	PULL TUBE, AUTOFOLD LEFT
	8S5622	1	PULL TUBE, AUTOFOLD RIGHT
59	8S5640	2	KNUCKLE, AUTOFOLD PULL TUBE
60	8S5650	2	PIVOT, AUTOFOLD BOOM (U-BOLT)
61	8S5655	2	BOLT PLATE, AFOLD
62	8S5660	2	PULLEY BRCKT, CABLE (U-BOLT)
63	8S5670	2	CLEVIS PULLEY, CABLE (PNTD)
64	8S7205	X	FRAME, FRONT TANK 14.9 94-
65	8S7210	X	FRAME, BACK TANK 94-
66	8S7240	X	FRAME, FRONT 2 NOZ 94-
67	8S7250	X	FRAME, BACK 2 NOZ 94-
68	8S7260	X	FRAME, FRONT HINGE 94-
69	8S7270	X	FRAME, BACK HINGE 94-
70	8S7290	X	FRAME, FRONT 3 NOZ 94-
71	8S7290	X	FRAME, BACK 3 NOZ 94-
72	8S8010	X	CURTAIN, 13" x 23 1/8" 94-
73	8S8020	X	CURTAIN, 13" x 27 1/4" 94-
74	8S8030	X	CURTAIN, 13" x 37 1/4" 94-
75	8S8040	X	CURTAIN, 13" x 51 1/4" 94-
76	8S8050	X	CURTAIN, 13" x 57 1/4" 94-
77	8S8070	X	CURTAIN, 22 1/2" x 23 1/8" 94-
78	8S8080	X	CURTAIN, 22 1/2" x 37 1/4" 94-
79	8S8090	X	CURTAIN, 22 1/2" x 51 1/2" 94-
80	8S8100	X	CURTAIN, 22 1/2" x 37 1/4" 94-
81	8S8500	X	WS ASSY, FRONT 16.5 94-
82	8S8503	X	WS ASSY, FRONT TANK 14.9 94-
83	8S8505	2	WS ASSY, BACK TANK 94-
84	8S8520	2	WS ASSY, FRONT 2 NOZ 94-
85	8S8525	2	WS ASSY, BACK 2 NOZ 94-
86	8S8530	2	WS ASSY, FRONT HINGE 94-
87	8S8535	2	WS ASSY, BACK HINGE 94-
88	8S8540	6	WS ASSY, FRONT 3 NOZ 94-
89	8S8545	6	WS ASSY, BACK 3 NOZ 94-
90	8S8866	2	RUBBER HOSE, 1"x 35' FEED LINE
91	8X0001	X	BOLT, 3/8 x 3/4 Z GR5
92	8X0007	X	BOLT 3 x 1 1/2 Z GR5
93	8X0010	X	BOLT, 1/4 x 1 1/4 Z GR5
94	8X0012	X	BOLT, 1/4 x 3 1/2 Z GR
95	8X0014	X	BOLT 1/4 x 3 Z GR5
96	8X0023	X	BOLT, 5/16 x 2 Z GR5
97	8X0026	X	BOLT, 5/16 x 2 3/4 Z GR5
98	8X0029	X	BOLT, 5/16 x 3 1/2 Z GR5
99	8X0030	X	BOLT, 5/16 x 5 Z GR5
100	8X0068	X	BOLT, 1/2 x 2 1/2 Z GR5
101	8X0074	X	BOLT, 1/2 x 4 1/2" Z GR5
102	8X0076	X	BOLT, 1/2 x 5 1/2
103	8X0095	X	BOLT, 5/8 x 5 Z GR5
104	8X0103	X	BOLT, 5/8 x 7 1/2 Z GR5
105	8X0113	X	BOLT, 3/4 x 5 Z GR5
106	8X0138	X	BOLT, 1 x 5 1/2 Z GR5
107	8X0141	X	BOLT, 1 x 7 1/2 Z GR5

PART 1 BOOM ASSEMBLY CONTINUED

Ref	Part No.	Qty	Description
108	8X0144	X	BOLT, 1 x 9 1/2 Z GR5
109	8X0196	X	SELF DRILL SCRW, 10-16 x 5/8"RUB
110	8X0201	X	NUT, HEX 3/8 NC Z
111	8X0210	X	NUT, HEX 5/16 NC Z
112	8X0212	X	NUT, LOCK 5/16 NC NYLON Z
113	8X0219	X	NUT, HEX 1/4 NC LEFT-HAND Z
114	8X0220	X	NUT, HEX 1/4 NC
115	8X0222	X	NUT, LOCK 1/4 NC NYLON Z
116	8X0240	X	NUT, HEX 1/2 NC Z
117	8X0242	X	NUT, LOCK 1/2 N NYLON Z
118	8X0250	X	NUT, HEX 5/8 NC Z
119	8X0253	X	NUT, LOCK 5/8 NC, NYLON
120	8X0261	X	NUT, LOCK 3/4 NC NYLON Z
121	8X0281	X	NUT, LOCK 1 NC NYLON
122	8X0301	X	LOCKWASHER, 5/16 Z
123	8X0303	X	LOCKWASHER, 1/2 Z
124	8X0304	X	LOCKWASHER, 5/8 Z
125	8X0316	X	WASHER, FLAT 1" SAE Z
126	8X0318	X	WASHER, FLAT 3/4 Z
127	8X0320	X	WASHER, FLAT 3/8 Z
128	8X0324	X	WASHER, FLAT 5/8 Z
129	8X0327	X	WASHER, FLAT 1 1/4" SAE Z
130	8X0400	X	HAIR PIN CLIP, 1/8 x 1 15/16
131	8X0414	X	COTTER PIN 1/4 x 2"
132	8X0462	X	CLEVIS PIN 3/8 x 3" W/HOLE Z
133	8X0708	X	ZERK, 1/4 -28 NF STR
134	8Z0246	X	LOCKING BW MISC DECAL, 3.376 x 16"
135	8Z0252	X	DECAL, BOOM HGT CAUTION
136	8Z0260	X	DECAL, AUTO - FOLD 2.375 x 10 SSIV
137	8S7220	X	FRAME, FRONT TANK 16.5 94-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PART 2 OR 3 BOOM ASSEMBLY

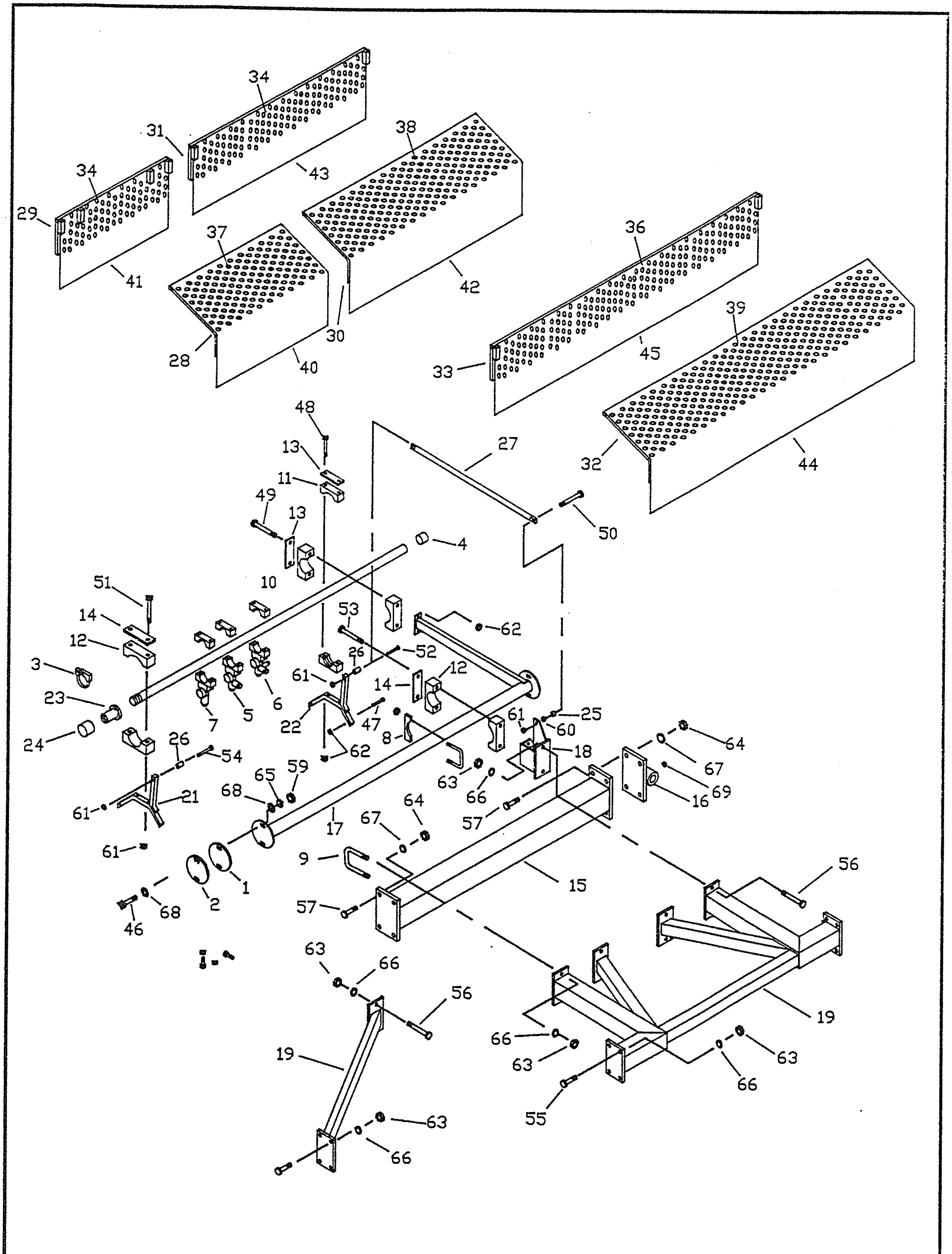
Ref	Part No.	Qty	Description
1	7D4310	X	FLAT 3/16 x 1-3"W/HOLE
2	7S0196	X	CIRCLE FC, 1/8 x 4.5" SS4
3	7S0200	X	CIRCLE FC, 1/4 x 4.5"
4	8A1009	X	HOSE CLAMP 1"
5	8A1014	X	HOSE CLAMP, 80# 1.250-1.437
6	8A2025	2	HOSE BARB, 1" x 1" MPT
7	8A2106	2	ELBOW, 1" 90
8	8A2107	2	STREET ELBOW, 1" 45
9			
10	8D9114	2	CYL 2.5 8" W/ DEPTH CNTRL
11	8F3824	X	TURRET NOZ, 2 HEAD, 1" PIPE
12	8F3826	X	TURRET NOZ, 3 HEAD, 1" PIPE
13	8F3830	X	WET BOOM NOZZLE, QJ 1" PIPE
14	8S0080	4	PIPE CLAMP, 1.90" ID PLATE
15	8S0340	X	U-BOLT, 1/2" (FOR 4 x 4 TUBE)
16	8S1420	2	STROKE CNTRL COLLAR, 1" 1.25 ROD
17	8S3000	X	PIPE CLAMP, 1" PIVOT SMOOTH, PAIR
18	8S3010	X	PIPE CLAMP, 1" TIGHT RIBBED, PAIR
19	8S3020	X	PIPE CLAMP, 1.90" ID PAIR
20	8S3025	X	PIPE CLAMP, 2.375" ID PAIR
21	8S3038	X	COVER PLATE, 1/8 x 1- 3/16 x 2- 3/4"
22	8S3040	X	COVER PLATE 1/8 x 1- 1/8 x 3- 3/8"
23	8S3042	X	COVER PLATE, 3/16 x 1 4 x 5/8"
24	8S3058	X	CAPLUG, FITS 1.90" RD TUBING
25	8S4110	2	PIN, 1 1/4" x 9 1/8 SS4 91-
26	8S4304	2	KNUCKLE, ROTATION PIPE 92-
27	8S4331	X	BOOM, PART 2 OR 3 (10') 94-
	8S4351	X	BOOM, PART 2 OR 3 (15') 94-
	8S4371	X	BOOM, PART 2 (18'4") 94-
	8S4381	X	BOOM, PART 3 (20') 94-
28	8S4400	X	1 1/4" ID PVT. TUBE W/FLAT 94-
29	8S4434	X	PIPE, ROT PART 2/3 (10') 94-
	8S4454	X	PIPE, ROT PART 2/3 (15') 94-
	8S4474	X	PIPE, ROT PART 2 LH (18-4") 94-
	8S4475	X	PIPE, ROT PART 2 RH (18-4") 94-
	8S4484	X	PIPE, ROT PART 3 (20') 94-
30	8S4502	2	PIPE, ROTATION COUPLER 94-
31	8S4591	2	BRCKT, ROT. PIPE ATTCH-RIGHT 94
32	8S4592	10	BRCKT, ROT. PIPE ATTCH-LEFT 94
33	8S4631	X	BRACE, DBR PART 2/3 (10') 94-
	8S4651	X	BRACE, DBR PART 2/3 (15') 94-
	8S4676	X	BRACE, DBR PART 2 (18'-4") 94-
	8S4681	X	BRACE, DBR PART 3 (20') 94-
34	8S4710	X	3/4" ID PVT TUBE W/FLAT
35	8S4896	X	PIPE, BOOM (AL) 111.5" 94-
	8S4934	X	PIPE, BOOM (AL) 171.5" 94-
	8S4968	X	PIPE, BOOM (AL) 211.5" 94-
	8S4976	X	PIPE, BOOM (AL) 231.5" 94-
36	8S5040	X	BRCKT, NOZ. ANGLE 91-
37	8S5081	22	BRCKT, WIND SHIELD FULL 94-
38	8S5090	24	SPACER, TOP OF LINK 91-
39	8S5095	12	SPACER, BOTTOM OF LINK 94-
40	8S5101	12	LINK, NOZZLE/ WINDSHIELD 94-

PART 2 OR 3 BOOM ASSEMBLY CONTINUED

Ref	Part No.	Qty	Description
41	8S5140	4	SPACER, HYD STIFFENER PIPE SS4
42	8S5160	2	HYD. CYL. BRCKT, BOOM- LEFT SS4
43	8S5162	2	HYD. CYL. BRCKT, BOOM- RIGHT SS4
44	8S5180	2	HYD. CYL. LINK, SINGLE MOON SS4
45	8S5190	2	HYD. CYL. LINK, DOUBLE MOON SS4
46	8S5200	2	HYD. CYL. TRANSPORT LOCK SS4
47	8S5920	X	SPREADER BAR
48	8S5930	X	BOOM ATTACH-1 1/4" SPREADER BAR
49	8S5940	X	STORAGE BRACKET, SPREADER BAR
50	8S7240	X	FRAME, FRONT 2 NOZ 94-
51	8S7250	X	FRAME, BACK 2 NOZ 94-
52	8S7260	X	FRAME, FRONT HINGE 94-
53	8S7270	X	FRAME, BACK HINGE 94-
54	8S7280	X	FRAME, FRONT 3 NOZ 94-
55	8S7290	X	FRAME, BACK 3 NOZ 94-
56	8S8030	X	CURTAIN, 13" x 37 1/4" 94-
57	8S8040	X	CURTAIN, 13" x 51 1/4" 94-
58	8S8050	X	CURTAIN, 13" x 57 1/4" 94-
59	8S8080	X	CURTAIN, 22 1/2" x 37- 1/4" 94-
60	8S8090	X	CURTAIN, 22- 1/2" x 51- 1/4" 94-
61	8S8100	X	CURTAIN, 22- 1/2" x 57 1/4" 94-
62	8S8520	2	WS ASSY, FRONT 2 NOZ 94-
63	8S8525	2	WS ASSY, BACK 2 NOZ 94-
64	8S8530	2	WS ASSY, FRONT HINGE 94-
65	8S8535	2	WS ASSY, BACK HINGE 94-
66	8S8540	6	WS ASSY, FRONT 3 NOZ 94-
67	8S8545	6	WS ASSY, BACK 3 NOZ 94-
68	8S8864	X	RUBBER HOSE, 1"x 36" JUMP LINE
69	8X0001	X	BOLT, 3/8 x 3/4 Z GR5
70	8X0007	X	BOLT 3 x 1-1/2 Z GR5
71	8X0010	X	BOLT, 1/4 x 1-1/4 Z GR5
72	8X0012	X	BOLT, 1/4 x 3-1/2 Z GR
73	8X0014	X	BOLT 1/4 x 3 Z GR5
74	8X0023	X	BOLT, 5/16 x 2 Z GR5
75	8X0026	X	BOLT, 5/16 x 2-3/4 Z GR5
76	8X0029	X	BOLT, 5/16 x 3-1/2 Z GR5
77	8X0030	X	BOLT, 5/16 x 5 Z GR5
78	8X0066	X	BOLT, 1/2 x 1- 3/4 Z GR5
79	8X0076	X	BOLT, 1/2 x 5-1/2 Z GR5 2.5" TH
80	8X0093	X	BOLT, 5/8 x 2 Z GR5
81	8X0095	X	BOLT, 5/8 x 5 Z GR5
82	8X0103	X	BOLT, 5/8 x 7-1/2 Z GR5
83	8X0119	X	BOLT, 3/4 x 7-1/2 Z GR5
84	8X0138	X	BOLT, 1 x 5-1/2 Z GR5
85	8X0141	X	BOLT, 1 x 7-1/2 Z GR5
86	8X0176	X	SELF DRILL SCRW, 10-16 x 5/8"RUB
87	8X0201	X	NUT, HEX 3/8 NC Z
88	8X0210	X	NUT, HEX 5/16 NC Z
89	8X0212	X	NUT, LOCK 5/16 NC, NYLON Z
90	8X0222	X	NUT, LOCK 1/4 NC, NYLON Z
91	8X0240	X	NUT, HEX 1/2 NC Z
92	8X0250	X	NUT, HEX 5/8 NC Z
93	8X0253	X	NUT, LOCK 5/8 NC, NYLON Z
94	8X0261	X	NUT, LOCK 3/4 NC, NYLON Z

PART 2 OR 3 BOOM ASSEMBLY CONTINUED

Ref	Part No.	Qty	Description
95	8X0281	X	NUT, LOCK 1 NC, NYLON Z
96	8X0284	X	NUT, HEX 1 1/4 NC Z
97	8X0301	X	LOCKWASHER, 3/8 Z
98	8X0303	X	LOCKWASHER, 1/2 Z
99	8X0304	X	LOCKWASHER, 5/8 Z
100	8X0311	X	LOCKWASHER, 1-1/4 Z
101	8X0316	X	WASHER, FLAT 1" SAE Z
102	8X0318	X	WASHER, FLAT 3/4 Z
103	8X0320	X	WASHER, FLAT 3/8 Z
104	8X0324	X	WASHER, FLAT 5/8 Z
105	8X0327	X	WASHER, FLAT 1-1/4" SAE Z
106	8X0400	X	HAIR PIN CLIP, 1/8 x 1-15/16"
107	8X0402	X	HAIR PIN CLIP, 1/8 x 2-9/16"
108	8X0414	X	COTTER PIN 1/4 x 2" Z
109	8X0440	X	CLEVIS PIN, 5/8 x 3 1/2 Z PL
110	8X0462	X	CLEVIS PIN 3/8 x 3" W/HOLE Z
111	8X0708	X	ZERK, 1/4 -28 NF STR Z
112	8Z0246	X	LOCKING BW MISC DECAL, 3.375 x 21"
113	8Z0252	X	DECAL, BOOM HGT CAUTION 1.63 x 10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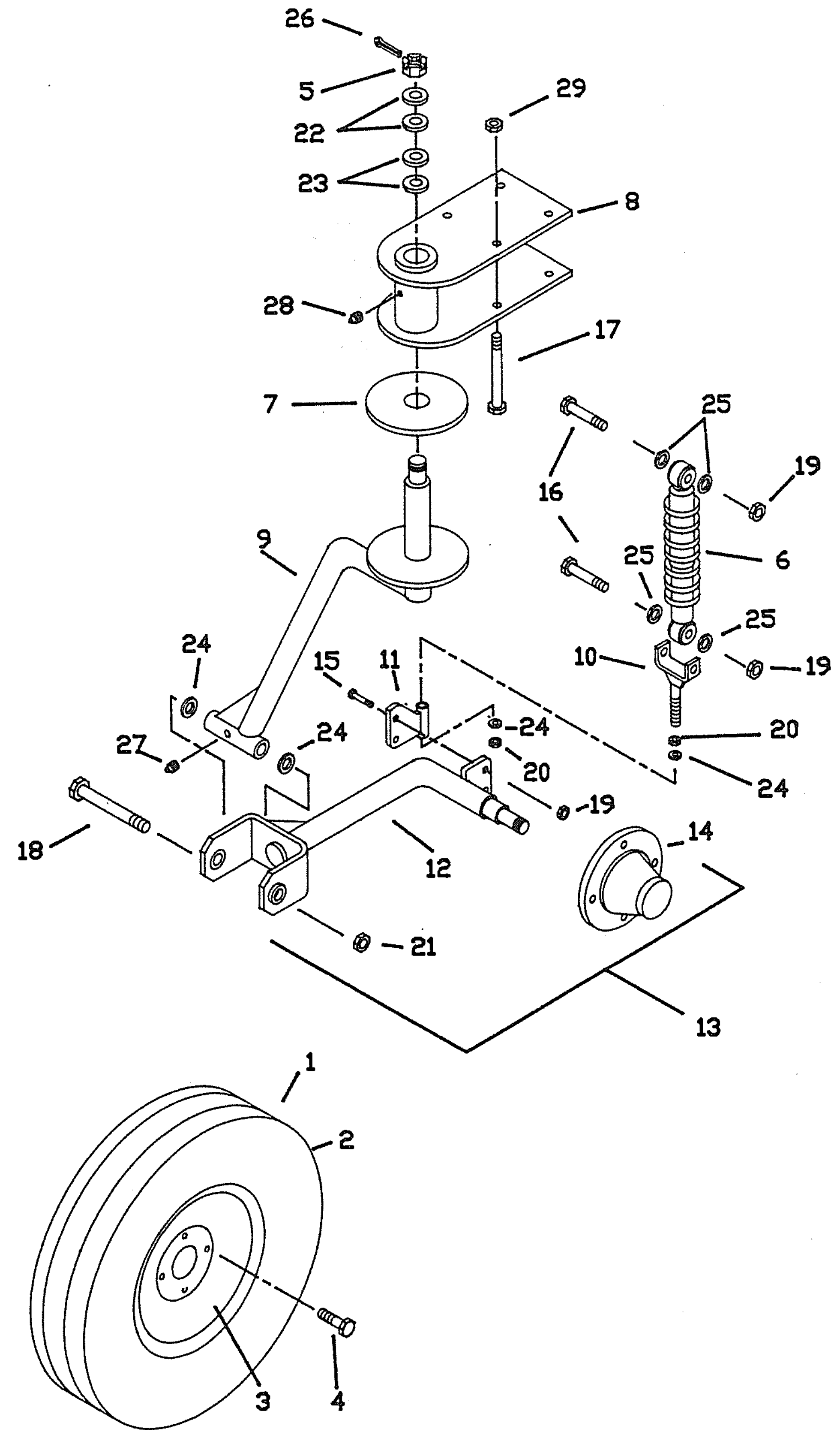
EXTENSION BOOM ASSEMBLY

Ref	Part No.	Qty	Description
1	7S0196	X	CIRCLE FC, 1/8 x 4.5" SS4
2	7S0200	X	CIRCLE FC, 1/4 x 4.5" SS4
3	8A1014	X	HOSE CLAMP, 80# 1.250-1.437"
4	8A2138	X	PIPE CAP, 1" FPT
5	8F3824	X	TURRET NOZ, 2 HEAD, 1" PIPE
6	8F3826	X	TURRET NOZ, 3 HEAD, 1" PIPE
7	8F3830	X	WET BOOM NOZZLE, QJ 1" PIPE
8	8S0080	4	PIPE CLAMP, 1.90" ID PLATE
9	8S0340	X	U-BOLT, 1/2" (FOR 4 x 4 TUBE)
10	8S3000	X	PIPE CLAMP, 1" PIVOT SMOOTH, PAIR
11	8S3010	X	PIPE CLAMP, 1" TIGHT RIBBED, PAIR
12	8S3020	X	PIPE CLAMP, 1.90" ID PAIR
13	8S3038	X	COVER PLATE, 1/8 x 1-3/16 x 2-3/4"
14	8S3040	X	COVER PLATE, 1/8 x 1-1/8 x 3-3/8"
15	8S4316	X	BOOM, EXTENSION (1' 8") 94-
	8S4321	X	BOOM, EXTENSION (3' 4") 94-
	8S4326	X	BOOM, EXTENSION (5') 94-
16	8S4400	X	1-1/4" ID PVT. TUBE W/FLAT 94-
17	8S4420	X	PIPE, ROT EXTENSION (1' 8") 94-
	8S4423	X	PIPE, ROT EXTENSION (3' 4") 94-
	8S4426	X	PIPE, ROT EXTENSION (5') 94-
18	8S4591	X	BRCKT, ROT. PIPE ATTCH-RIGHT 94 (NOT SHOWN)
	8S4592	X	BRCKT, ROT. PIPE ATTCH-LEFT 94-
19	8S4616	X	BRACE, DBR EXTENSION (1' 8") 94-
	8S4621	X	BRACE, DBR EXTENSION (3' 4") 94-
	8S4626	X	BRACE, DBR EXTENSION (5') 94-
20	8S4810	X	PIPE, BOOM (AL) 19.25" 94-
	8S4830	X	PIPE, BOOM (AL) 39.25" 94-
	8S4850	X	PIPE, BOOM (AL) 59.25" 94-
21	8S5075	X	BKCKT , WIND SHIELD COUPLER 94-
22	8S5081	22	BRCKT, WIND SHIELD FULL 94-
23	8S5086	X	COUPLING, 1" MACHINED 94-
24	8S5088	X	PIPE, MACHINED COUPLING 94-
25	8S5090	24	SPACER, TOP OF LINK 91-
26	8S5095	12	SPACER, BOTTOM OF LINK 94-
27	8S5101	12	LINK, NOZZLE/ WINDSHIELD 94-
	8S7220	X	FRAME, FRONT 1 NOZ 94-
29	8S7230	X	FRAME, BACK 1 NOZ 94-
30	8S7240	X	FRAME, FRONT 2 NOZ 94-
31	8S7250	X	FRAME, BACK 2 NOZ 94-
32	8S7280	X	FRAME, FRONT 3 NOZ 94-
33	8S7290	X	FRAME, BACK 3 NOZ 94-
34	8S8000	X	CURTAIN, 13" x 17-1/4" 94-
34	8S8030	X	CURTAIN, 13" x 37-1/4" 94-
36	8S8050	X	CURTAIN, 13" x 57-1/4" 94-
37	8S8060	X	CURTAIN, 22-1/2" x 17-1/4" 94-
38	8S8080	X	CURTAIN, 22-1/2" x 37-1/4" 94-
39	8S8100	X	CURTAIN, 22-1/2" x 37-1/4" 94-
40	8S8510	2	WS ASSY, FRONT 1 NOZ 94-
41	8S8515	2	WS ASSY, BACK 1 NOZ 94-
42	8S8520	2	WS ASSY, FRONT 2 NOZ 94-
43	8S8525	2	WS ASSY, BACK 2 NOZ 94-
44	8S8540	6	WS ASSY, FRONT 3 NOZ 94-
45	8S8545	6	WS ASSY, BACK 3 NOZ 94-

EXTENSION BOOM ASSEMBLY CONTINUED

Ref	Part No.	Qty	Description
46	8X0007	X	BOLT 3/8 x 1-1/2 Z GR5
47	8X0010	X	BOLT, 1/4 x 1-1/4 Z GR5
48	8X0012	X	BOLT, 1/4 x 3-1/2 Z GR
49	8X0014	X	BOLT 1/4 x 3 Z GR5
50	8X0023	X	BOLT, 5/16 x 2 Z GR5
51	8X0026	X	BOLT, 5/16 x 2-3/4 Z GR5
52	8X0027	X	BOLT, 5/16 x 4 Z GR5
53	8X0029	X	BOLT, 5/16 x 3-1/2 Z GR5
54	8X0030	X	BOLT, 5/16 x 5 Z GR5
55	8X0066	X	BOLT, 1/2 x 1-3/4 Z GR5
56	8X0076	X	BOLT, 1/2 x 5-1/2 Z GR5
57	8X0093	X	BOLT, 5/8 x 2 Z GR5
58	8X0176	X	SELF DRILL SCRW, 10-16 x 5/8"RUB
59	8X0201	X	NUT, HEX 3/8 NC Z
60	8X0210	X	NUT, HEX 5/16 NC Z
61	8X0212	X	NUT, LOCK 5/16 NC NYLON Z
62	8X0222	X	NUT, LOCK 1/4 NC, NYLON Z
63	8X0240	X	NUT, HEX 1/2 NC Z
64	8X0250	X	NUT, HEX 5/8 NC Z
65	8X0301	X	LOCKWASHER, 3/8 Z
66	8X0303	X	LOCKWASHER, 1/2 Z
67	8X0304	X	LOCKWASHER, 5/8 Z
68	8X0320	X	WASHER, FLAT 3/8 Z
69	8X0708	X	ZERK, 1/4 -28 NF STR Z PL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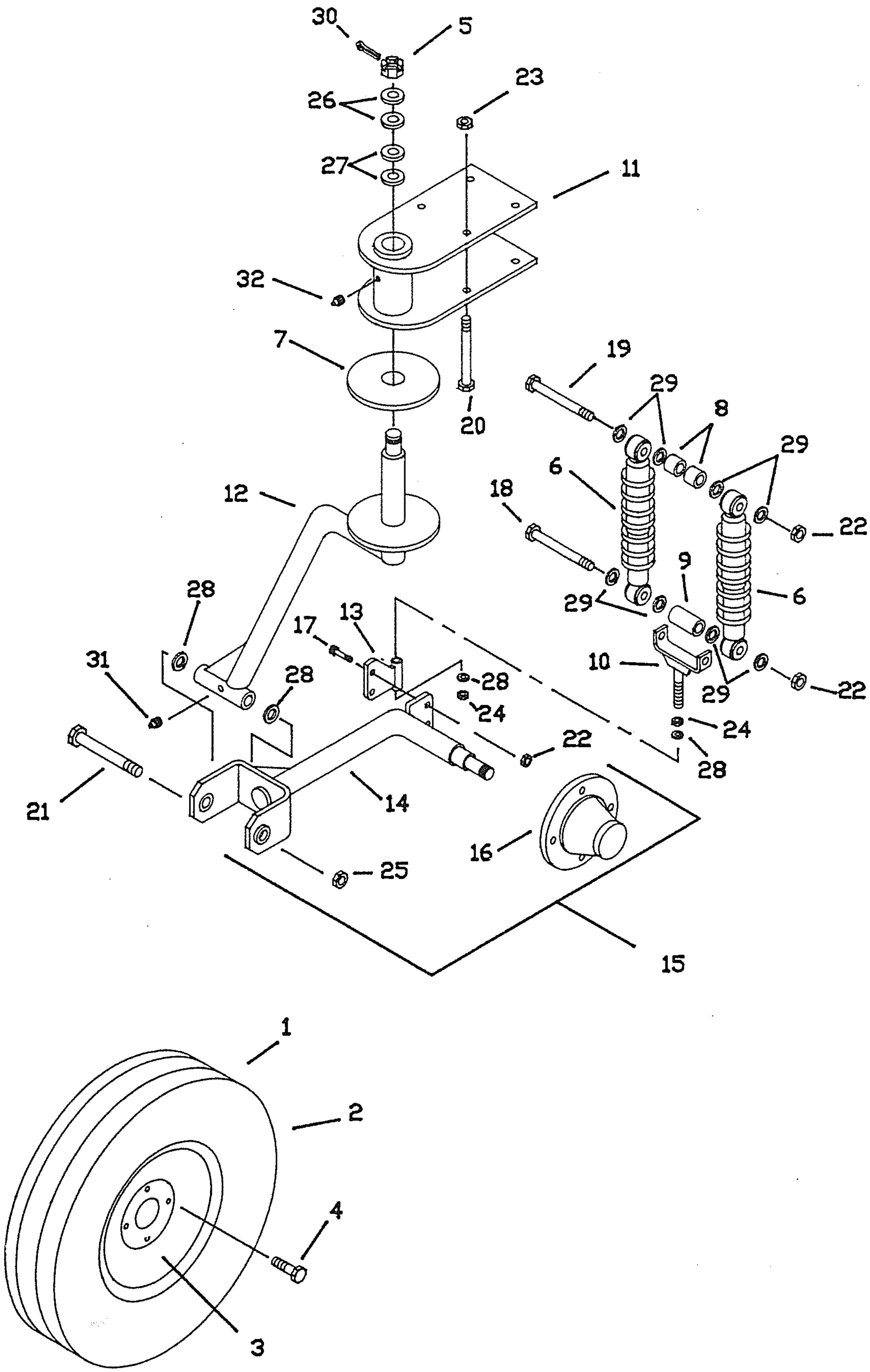
CASTERING BOOM WHEEL ASSEMBLY

Ref	Part No.	Qty	Description
1	8D3006	1	5.00 X 15 4PLY ON 15 X 4.5 X 4 WHL
2	8D3012	X	TIRE, 5.00 x 15" 4 PLY
3	M6515280	X	RIM 15 X 4.5 4 BOLT
4	8D5114	4	1/2" WHEEL BOLT UNF
5	8D5313	1	NUT, AXLE 1" - 14
6	8S1010	1	SHOCK & COIL SPRING ASSY
7	8S1036	1	DISK, UMHW 1/4 X 5-1/2" DIA CBW
8	8S5420	1	PIVOT, W/BOOM ATTACH CASTERING BW
9	8S5430	1	SWIVEL, CASTERING BOOM LEFT
	8S5432	1	SWIVEL, CASTERING BOOM RIGHT
10	8S5440	1	ADJ. CLEVIS BOTTOM SHOCK MT CBW
11	8S5450	1	BKT. ASSY BOTTOM SHOCK MT CBW
12	8S5460	X	413 SPINDLE ASSY W/PIVOT CASTERING BW
13	8S5464	1	413 SPINDLE ASSY W/HUB CASTERING BW
14	M6527850	X	HUB 4 BOLT W/BRG CUP 413 CTD
15	8X0004	2	BOLT 3/8 X 1-1/4 Z GR5
16	8X0009	2	BOLT 3/8 X 2 Z GR5
17	8X0075	4	BOLT 1/2 X 5-1/2 Z GR5
18	8X0117	1	BOLT 3/4 X 7 Z GR5
19	8X0202	4	NUT, LOCK 3/8 NC, NYLON Z
20	8X0260	2	NUT, HEX 3/4 NC Z
21	8X0261	1	NUT, LOCK 3/4 NC, NYLON Z
22	8X0315	2	WASHER, SPRING 2" OD X 1" ID BL
23	8X0316	4	WASHER, FLAT 1 SAE Z
24	8X0317	4	WASHER, FLAT 3/4 SAE Z
25	8X0320	4	WASHER, FLAT 3/8 Z
26	8X0415	1	COTTER PIN 3/16 X 1-3/4 Z
27	8X0708	1	ZERK, 1/4 X 28 NF STR Z PL
28	8X0710	1	ZERK,1/4 X 28 NF 90 Z PL
29	8X0242	4	NUT, LOCK 1/2 NC, NYLON Z PL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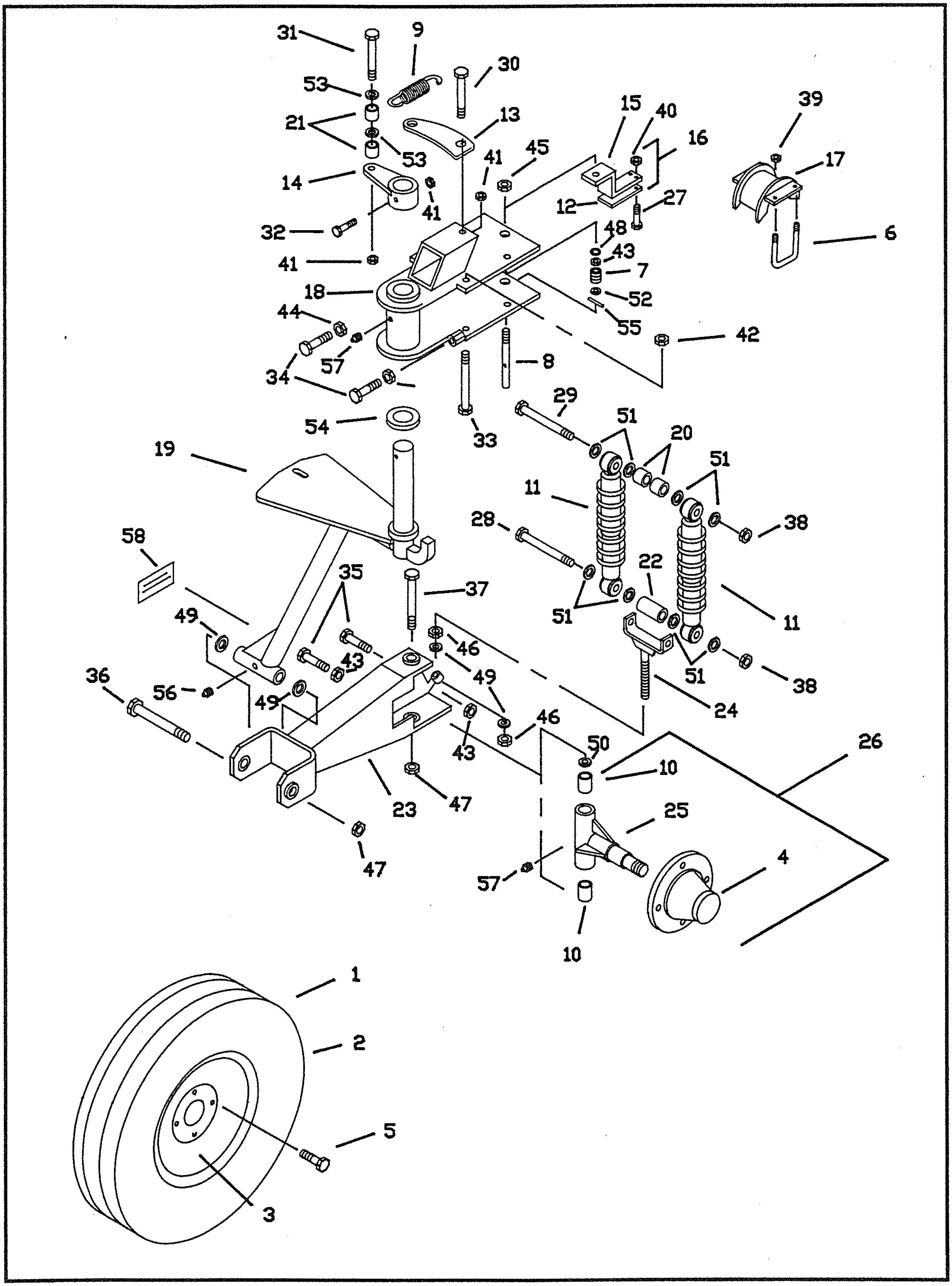
HEAVY DUTY CASTERING BOOM WHEEL ASSEMBLY

Ref	Part No.	Qty	Description
1	8D3006	1	5.00 X 15 4PLY ON 15 X 4.5 X 4 WHL
2	8D3012	X	TIRE, 5.00 x 15" 4 PLY
3	M6515280	X	RIM 15 X 4.5 4 BOLT
4	8D5114	4	1/2" WHEEL BOLT NF
5	8D5313	1	NUT, AXLE 1" - 14
6	8S1010	2	SHOCK & COIL SPRING ASSY
7	8S1036	1	DISK, UMHW 1/4" X 5-1/2" DIA CBW
8	8S5370	2	BUSHING, .675 OD X 1/2" LBW
9	8S5376	1	BUSHING, .675 OD X 1-1/2" LBW
10	8S5390	1	ADJ. CLEVIS, BOTTOM SHOCK MT DBL
11	8S5420	1	PIVOT, W/BOOM ATTACH CASTERING BW
12	8S5434	1	SWIVEL, CASTERING BOOM LEFT DBL SHOCK
	8S5436	1	SWIVEL, CASTERING BOOM RIGHT DBL SHOCK
13	8S5450	1	BKT. ASSY BOTTOM SHOCK MT CBW
14	8S5462	X	413 SPINDLE ASSY W/PIVOT HD CSTRBW
15	8S5466	1	413 SPINDLE ASSY W/HUB CBW DBL SHOCK
16	M6527850	X	HUB 4 BOLT W/BRG CUP 413 CTD
17	8X0004	2	BOLT 3/8 X 1-1/4 Z GR5
18	8X0017	1	BOLT 3/8 X 5 Z GR5
19	8X0018	1	BOLT 3/8 X 4 Z GR5
20	8X0075	4	BOLT 1/2 X 5-1/2 Z GR5
21	8X0117	1	BOLT 3/4 X 7 Z GR5
22	8X0202	4	NUT, LOCK 3/8 NC, NYLON
23	8X0242	4	NUT, LOCK 1/2 NC NYLON Z
24	8X0260	2	NUT, HEX 3/4 NC Z
25	8X0261	2	NUT, LOCK 3/4 NC, NYLON Z
26	8X0315	2	WASHER, SPRING 2" OD X 1" ID BL
27	8X0316	2	WASHER, FLAT 1 SAE Z
28	8X0317	4	WASHER, FLAT 3/4 SAE Z
29	8X0320	8	WASHER, FLAT 3/8 Z
30	8X0415	1	COTTER PIN 3/16 X 1-3/4 Z
31	8X0708	1	ZERK, 1/4 X 28 NF STR Z PL
32	8X0710	1	ZERK,1/4 X 2 NF 90 Z PL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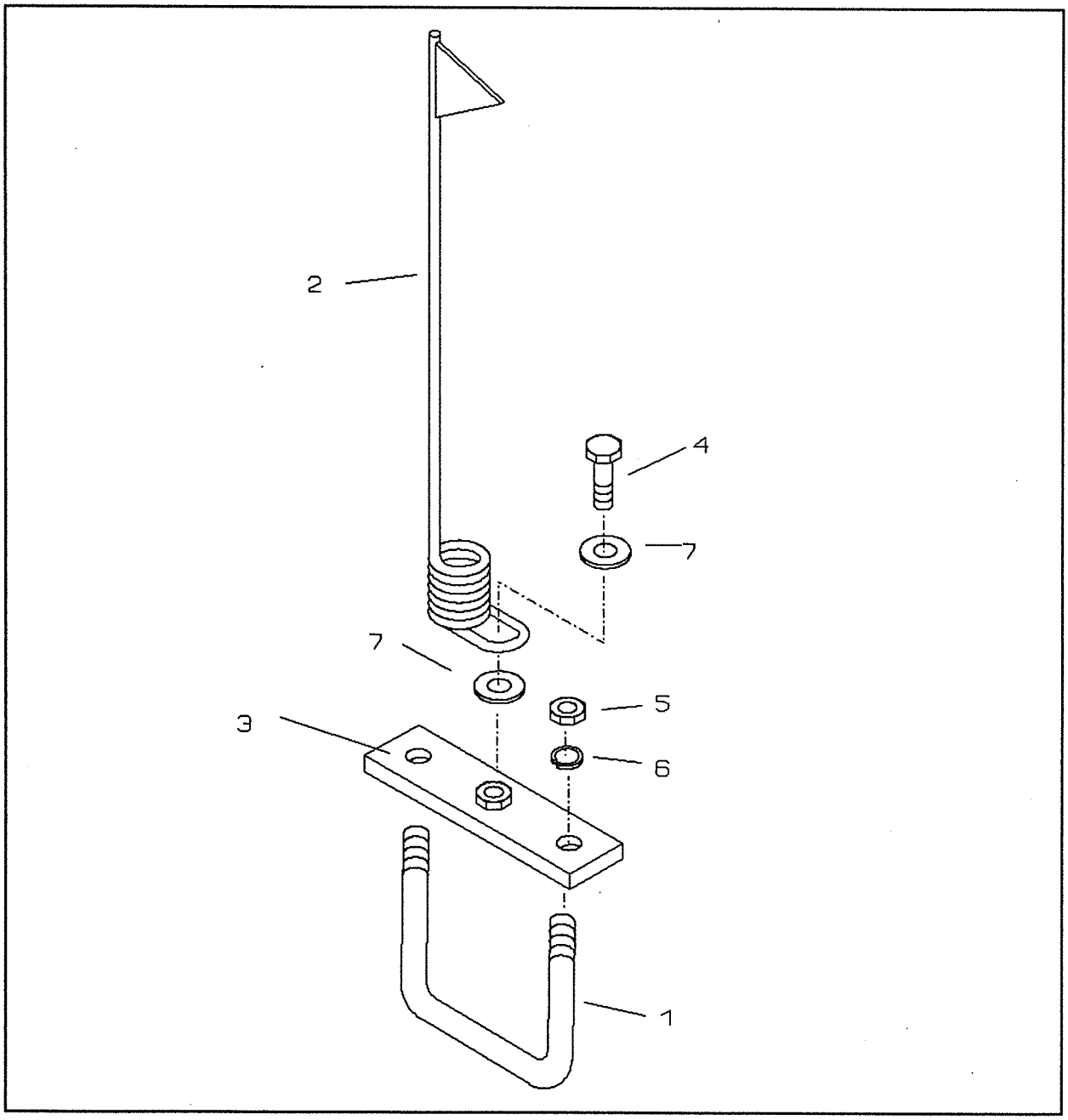
LOCKING BOOM WHEEL ASSEMBLY

Ref	Part No.	Qty	Description
1	8D3006	2	5.00 X 15 4 PLY ON 15 X 4.5 X 4 WHL
2	8D3012	X	TIRE, 5.00 X 15" 4 PLY
3	M6515280	X	RIM 15 X 4.5 4 BOLT
4	M6527850	1	HUB 4 BOLT W/BRG CUP 413 CTD
5	8D5114	4	1/2" WHEEL BOLT NF
6	8S0280	2	U-BOLT, 5/16" (FOR 2" DIA. TUBE)
7	8S0620	1	SPRING, BOOM WHL LOCK 3" LONG
8	8S0400	1	LOCKING PIN, 5/8"
9	8S0660	1	SPRING, BOOM WHL LOCK 7.81" LONG
10	8S0760	2	NYLATRON 1"OD X .754 ID - 1-1/4"
11	8S1010	2	SHOCK & COIL SPRING ASSY
12	8S1040	X	FLAT, UMHW 1/4 X 1-1/2 X 3-5/8
13	8S5300	1	SPRING ASSIST, FC (7S0110) LBW
14	8S5310	1	SPRING ASSIST, TUBE W/LEVER LBW
15	8S5320	X	FLAT, ENGAGING PIN, 3/8 X 1-1/2 LBW
16	8S5322	1	FLAT, ENGAGING PIN, W/UMHW SLIDE
17	8S5330	1	CAM, U-BOLT ATTACH
18	8S5350	1	PIVOT, W/BOOM ATTCH*LCK PIN HOLE
19	8S5360	1	SWIVEL W/LCK BOOM WHL LEFT LBW
	8S5362	1	SWIVEL W/LCK BOOM WHL RIGHT LBW
20	8S5370	2	BUSHING, .675 OD X 1/2" LBW
21	8S5374	2	BUSHING, .675 OD X 3/4" LBW
22	8S5376	1	BUSHING, .675 OD X 1-1/2" LBW
23	8S5380	1	AXLE ATTACH, LCK BM WHEEL LEFT
	8S5382	1	AXLE ATTACH, LCK BM WHEEL RIGHT
24	8S5390	1	ADJ. CLEVIS, BOTTOM SHOCK MT DBL
25	8S5400	X	ADJ. 413 SPINDLE ASSY W/PVT LBW
26	8S5405	1	ADJ. 413 SPINDLE ASSY W/HUB LBW
27	8X0010	2	BOLT 1/4 X 1-1/4 Z GR5
28	8X0017	1	BOLT 3/8 X 5 Z GR5
29	8X0018	1	BOLT 3/8 X 4 Z GR5
30	8X0033	1	BOLT 7/16 X 1-1/4 Z GR5
31	8X0041	1	BOLT 7/16 X 3 Z GR5
32	8X0069	1	BOLT 1/2 X 3 Z GR5
33	8X0075	4	BOLT 1/2 X 5-1/2 Z GR5
34	8X0090	2	BOLT 5/8 X 2-1/4 Z GR5
35	8X0098	2	BOLT 5/8 X 3-1/2 W/FULL THD Z GR5
36	8X0117	1	BOLT 3/4 X 7 Z GR5
37	8X0119	1	BOLT 3/4 X 7-1/2 Z GR5
38	8X0202	2	NUT, LOCK 3/8 NC, NYLON Z
39	8X0212	4	NUT, LOCK 5/16 NC, NYLON Z
40	8X0222	2	NUT, LOCK 1/4 NC, NYLON Z
41	8X0234	2	NUT, LOCK 7/16 NC, NYLON Z
42	8X0242	4	NUT, LOCK 1/2 NC, NYLON Z
43	8X0250	2	NUT, HEX 5/8 NC Z
44	8X0251	2	NUT, JAM 5/8 NC Z
45	8X0253	1	NUT, LOCK 5/8 NYLON Z
46	8X0260	2	NUT, HEX 3/4 NC Z
47	8X0261	2	NUT, LOCK 3/4 NYLON Z
48	8X0304	1	LOCKWASHER, 5/8 Z
49	8X0317	4	WASHER, FLAT 3/4 SAE Z
50	8X0318	1	WASHER, FLAT 3/4 Z
51	8X0320	8	WASHER, FLAT 3/8 Z
52	8X0323	1	WASHER, FLAT 1.188 OD X 5/8 ID Z

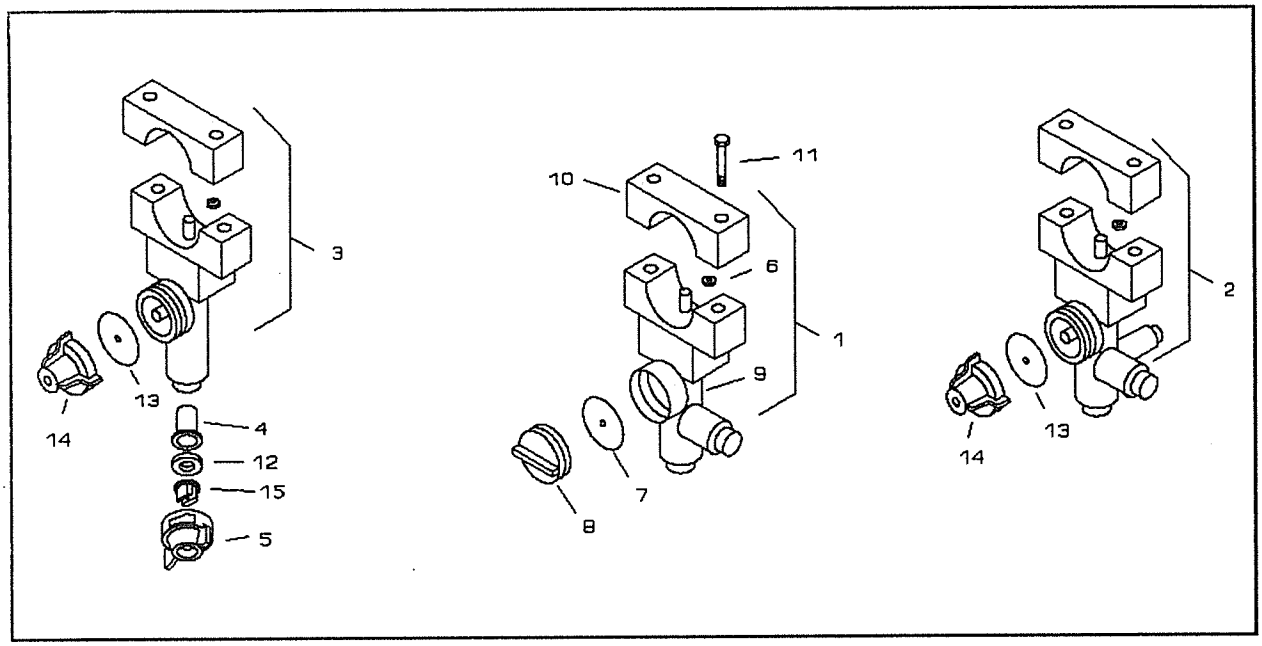
LOCKING BOOM WHEEL ASSEMBLY CONTINUED

Ref	Part No.	Qty	Description
53	8X0330	2	WASHER, 1.25 X 17/32 ID Z
54	8X0355	1	MACH. BUSHING 1-1/2 X 10 GA BL
55	8X0510	1	ROLL PIN, 3/16 X 1-1/4
56	8X0708	1	ZERK, 1/4 - 28 NF STR Z PL
57	8X0710	1	ZERK, 1/4 - 28 NF 90 Z PL
58	8Z0250	1	LOCKING BW DECAL, 2.75" x 9" SS4



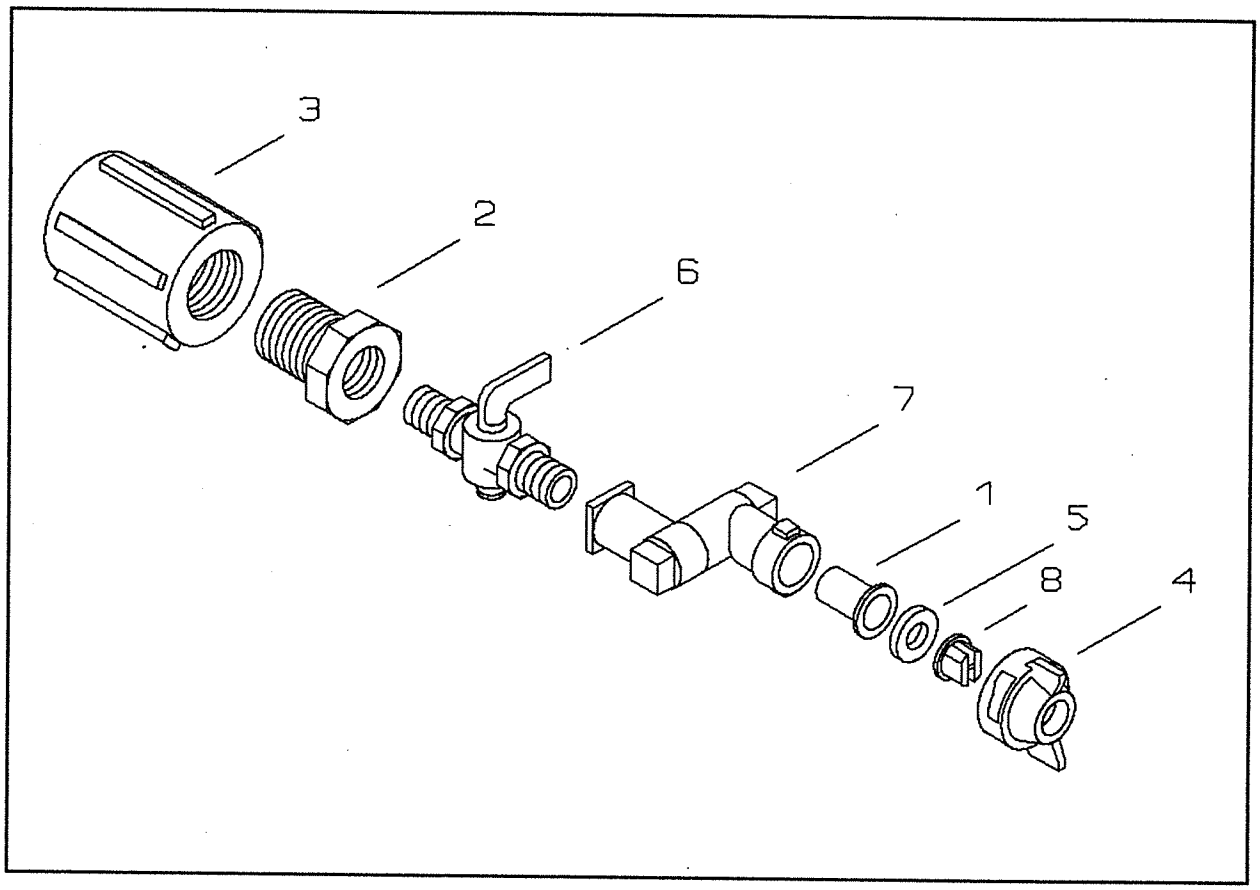
FLAG KIT ASSEMBLY

Ref	Part No.	Qty	Description
1	8S3040	1	U-BOLT, 1/2" FOR 4 x 4 TUBE
2	8S1150	1	NORDIC FLEXI-FLAG
3	8S5950	1	MOUNTING BRCKT, FLEXI-FLAG
4	8X0110	1	BOLT, 3/4" x 1 1/4"
5	8X0240	2	NUT, HEX 1/2"
6	8X0303	2	LOCKWASHER, 1/2"
7	8X0318	2	WASHER, FLAG 3/4"



NOZZLE ASSEMBLIES

Ref	Part No.	Qty	Description
1	8F3824	X	TURRET NOZ, 2 HEAD, 1" PIPE
2	8F3826	X	TURRET NOZ, 3 HEAD, 1" PIPE
3	8F3830	X	WET BOOM NOZ, QJ 1"PIPE
4	8F3324	X	STRAINER, 50 MESH POLY (TEEJET)
	8F3326	X	STRAINER, 100 MESH POLY (TEEJET)
5	8F3860	X	CAP, SHUT-OFF BLACK QJ
	8F3861	X	CAP, BLACK TEEJET QJ
	8F3862	X	CAP, WHITE TEEJET QJ
	8F3863	X	CAP, RED TEEJET QJ
	8F3864	X	CAP, BLUE TEEJET QJ
	8F3865	X	CAP, GREEN TEEJET QJ
	8F3866	X	CAP, YELLOW TEEJET QJ
	8F3867	X	CAP, BROWN TEEJET QJ
	8F3868	X	CAP, ORANGE TEEJET QJ
6	8F3880	X	O-RING, 3/8" ID SWIVEL JET
7	8F3881	X	DIAPHRAGM, 1 1/32" OD SWIVEL JET
8	8F3882	X	DIAPHRAGM, MODULE SWIVEL JET
9	8F3884	X	LOWER DUAL BODY SWIVEL JET
10	8F3885	X	UPPER CLAMP, 1" SWIVEL JET
11	8F3886	X	SCREW, SWIVEL JET
12	8F3892	X	SEAT GASKET, VITON QJ
	8F3894	X	SEAT GASKET, VITON
13	8F3896	X	DIAPHRAGM, EDPM QJ
	8F3897	X	DIAPHRAGM, VITON QJ
14	8F3898	X	END CAP, SUB ASSEMBLY
15			SEE SELECTION CHART



END NOZZLE ASSEMBLY

Ref.	Part Number	Qty.	Description
1	8A1121	2	DRIPLESS SCREEN, 50 Mesh
2	8A2023	2	BUSHING, 3/4" NPT-M X 1/4" NPT-F
3	8A2047	2	REDUCING COUPLING, 1" NPT-F X 3/4" NPT-F
4	8F3601	X	CAP, black (Floodjet QJ)
	8F3602	X	CAP, white (Floodjet QJ)
	8F3603	X	CAP, red (Floodjet QJ)
	8F3604	X	CAP, blue (Floodjet QJ)
	8F3605	X	CAP, green (Floodjet QJ)
	8F3606	X	CAP, yellow (Floodjet QJ)
	8F3607	X	CAP, brown (Floodjet QJ)
	8F3608	X	CAP, orange (Floodjet QJ)
5	8F3892	2	GASKET, seat (EDPM - QJ)
	8F3897	X	GASKET, seat (Viton - QJ)
6	8F3918	2	VALVE, 1/4" NPT-M
7	8F3920	2	SWIVEL NOZZLE, single (QJ)
8	8F3930	X	TIP, off center (Teejet OC02 BR)
	8F3932	X	TIP, off center (Teejet OC03 BR)
	8F3934	X	TIP, off center (Teejet OC04 BR)
	8F3936	X	TIP, off center (Teejet OC06 BR)
	8F3938	X	TIP, off center (Teejet OC08 BR)
	8F3940	X	TIP, off center (Teejet OC12 BR)
	8F3942	X	TIP, off center (Teejet OC16 BR)