

SUMMERS®

Operator's Manual

ULTRA & ULTIMATE NT SUPERSPRAYERS

IMPORTANT

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



CAUTION

READ & UNDERSTAND OPERATOR'S MANUAL BEFORE USING MACHINE.

See www.summersmfg.com for latest version of all Summers Operator's Manuals

SUMMERS MANUFACTURING CO., INC.

WEB SITE: www.summersmfg.com

MADDOCK, NORTH DAKOTA 58348 (701) 438-2855

DEVILS LAKE, NORTH DAKOTA 58301..... (701) 662-5391

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

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INTRODUCTION

This manual provides the following information about your Summers Field Sprayer.

SECTION 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 – OPTION NOTES AND INSTRUCTIONS explains installation and operation of available options.
- Section 7 – SPECIFICATIONS lists important dimensions, capacities and other technical information.
- Section 8 – PARTS

OTHER ITEMS OF IMPORTANCE

- A. Summers Mfg. Co., Inc. strongly recommends that each Field Sprayer Operator READ and UNDERSTAND the Operator’s Manual before using the 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 obligations to install such changes on products previously delivered.**
- C. Reference to “right” and “left” in this manual is determined from a seated position in the drivers seat.**
- D. Parts are referenced in each drawing with the Summers Manufacturing Part Number. Use this Part Number when ordering replacement parts from your Summers dealer. See back section of manual for description of each Part Number.**



For the latest version of all Operator’s Manuals scan the symbol to the left and choose which manual you would like to view/print from our website.

<u>OWNER REGISTER</u>	
Name _____	Size _____
Address _____	Serial Number _____ <small>(located on frame)</small>
City _____	
State/Prov. _____	Date Purchased _____
Mail Code _____	Dealer _____

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OTHER MANUALS AND INFORMATION PROVIDED:

Hydraulic or PTO Pump Manual	Raven Sprayer Control Systems manual (for Raven SCS-205 Control)
Raven SCS-450 manual (for SCS-450 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:



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.



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



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.

DANGER!

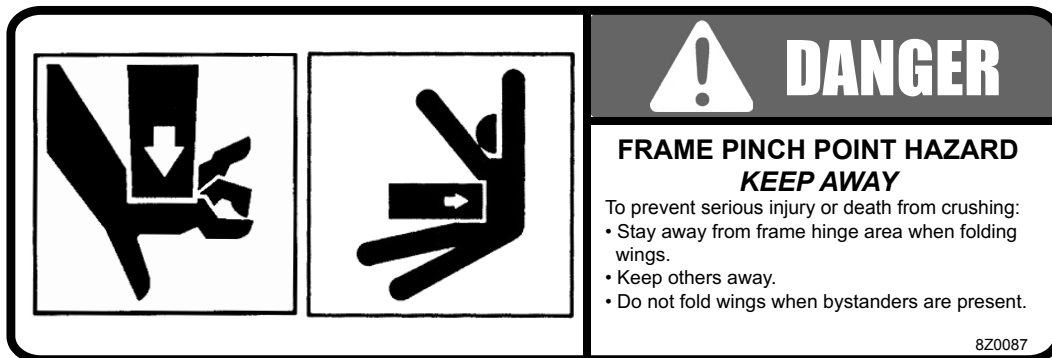
HITCH MUST BE ANCHORED TO TRACTOR TO PREVENT OVER CENTER CONDITION WHEN FOLDING OR UNFOLDING BOOMS. NEVER FOLD OR UNFOLD SPRAYER WITHOUT A PROPER CONNECTION TO TRACTOR.

1.3 SAFETY DURING TRANSPORT

1. ONLY TOW at a safe speed. Maximum implement towing speed is 25 MPH. 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 secure folded booms to transport rest when transporting on public roads. If towing a long distance tie end booms together above sprayer tank.

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 on the decal.

3. PN 8Z0204 SUMMERS DECAL.4. PN 8Z0086 ELECTROCUTION DANGER DECAL.5. PN 8Z0087 PINCH POINT HAZARD DECAL.6. PN 8Z0089 CONFINED SPACE HAZARD DECAL.

7. PN 8Z2490 ULTIMATE NT DECAL.

8. PN 8Z2495 ULTRA DECAL.

9. PN 8Z0276 GENERAL CAUTION DECAL.

	<div style="text-align: center;">  <h2 style="margin: 0;">CAUTION</h2> </div> <ol style="list-style-type: none"> 1. Read and understand Operator's Manual before using machine. 2. For Sprayers: <ol style="list-style-type: none"> a. Read and follow chemical manufacturers' WARNINGS, instructions and procedures before using. b. Use recommended personal protective equipment to reduce or eliminate chemical contact. c. Never run pump dry. 3. Verify all safety devices and shields are in place before using machine. 4. Keep hands, feet, hair and clothing away from moving parts. 5. Stop engine, place all controls in neutral, set parking brakes, remove ignition key and wait for all moving parts to stop before servicing, adjusting, maintaining or unplugging. 6. Be careful when working around high pressure hydraulic system. 7. Do not allow riders. 8. Check all wheel bolts DAILY for tightness. 9. Refer to Operator's Manual for periodic and annual maintenance. 10. For Towed Implements, DO NOT EXCEED 20 MPH.
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8Z0276




10. PN 8Z0278 WHEEL TIGHTENING DECAL.

TIGHTEN ALL WHEEL BOLTS DAILY!

5/8" (8-BOLT) 240 FT-LB.
 3/4" (10-BOLT) 250 FT-LB.
 1 1/8" INNER BUDD NUT 450 FT-LB.
 1 1/8" OUTER BUDD NUT 450 FT-LB.

8Z0278

11. PN 8Z0284 NT TELESCOPING AXLE DECAL.



AXLE
PLATE

← A →

CART TIRES	NARROW AXLE WHEEL SPACING (8S9398)							
	A=1"	A=3"	A=7"	A=11"	A=14"	A=17.5"	A=20"	A=23"
480/90R38	-	80"	88"	96"	102"	109"	114"	120"
380/90R46	76"	80"	88"	96"	102"	109"	114"	120"

CART TIRES	WIDE AXLE WHEEL SPACING (8S9399)							
	A=1/2"	A=6"	A=12"	A=18"	A=22"	-	-	-
480/80R38	109"	120"	132"	144"	152"	-	-	-
380/90R46	109"	120"	132"	144"	152"	-	-	-

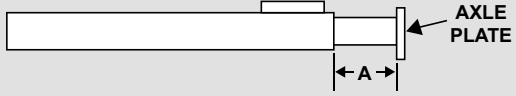
CART TIRES	BEET AXLE WHEEL SPACING (8S9400)							
	A=1"	A=5"	A=11.5"	A=17"	A=23"	-	-	-
480/80R38	88"	96"	109"	120"	132"	-	-	-
380/90R46	88"	96"	109"	120"	132"	-	-	-

CAUTION

- WHEN BLOCK, JACKING OR LIFTING TO CHANGE SPACING
- TANK MUST BE EMPTY BEFORE LIFTING MACHINE
- TO DETERMINE LENGTH A:

1. FIND CORRECT TIRE SIZE.
2. MOVE ACROSS TO FIND SPACING.
3. MOVE UP TO FIND CORRECT LENGTH A.
4. MEASURE A FROM END OF 6 X 8 TO INSIDE OF AXLE PLATE.
5. INSTALL HARDWARE. 8Z0284

12. PN 8Z0286 NARROW CART TELESCOPING AXLE DECAL.



AXLE
PLATE

← A →

CART TIRES	NARROW AXLE NARROW CART WHEEL SPACING (8S9402)							
	A=.75"	A=6.75"	A=8.75"	A=10.75"	A=15.25"	-	-	-
480/80R38	-	72"	76"	80"	89"	-	-	-
380/90R46	60"	72"	76"	80"	89"	-	-	-
380/90R46DUAL	-	-	-	-	60 / 120	-	-	-

CART TIRES	WIDE AXLE NARROW CART WHEEL SPACING (8S9401)							
	A=.75"	A=2.75"	A=7.25"	A=12.25"	A=17.25"	A=19.25"	-	-
480/80R38	76"	80"	89"	99"	109"	113"	-	-
380/90R46	76"	80"	89"	99"	109"	113"	-	-
380/90R46DUAL	-	-	60 / 120	80 / 120	88 / 132	-	-	-

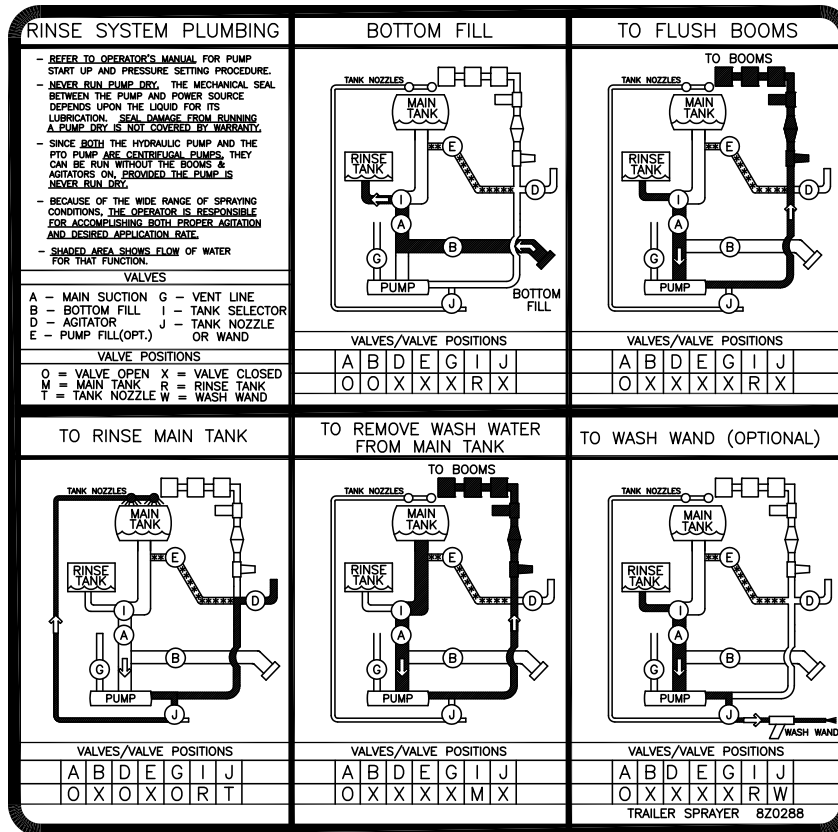
CAUTION

- WHEN BLOCK, JACKING OR LIFTING TO CHANGE SPACING
- TANK MUST BE EMPTY BEFORE LIFTING MACHINE
- TO DETERMINE LENGTH A:

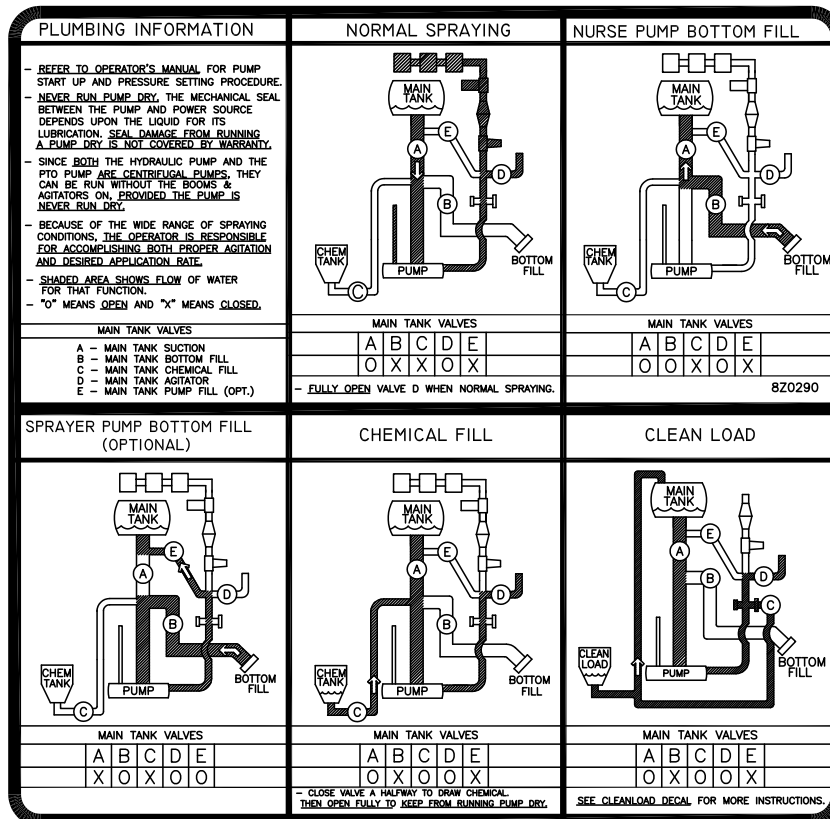
1. FIND CORRECT TIRE SIZE.
2. MOVE ACROSS TO FIND SPACING.
3. MOVE UP TO FIND CORRECT LENGTH A.
4. MEASURE A FROM END OF 6 X 8 TO INSIDE OF AXLE PLATE.
5. INSTALL HARDWARE. 8Z0286



13. PN 8Z0288 RINSE TANK DECAL.



14. PN 8Z0290 SINGLE TANK PLUMBING DECAL.

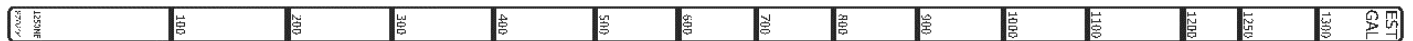




15. PN 8Z0292 DUAL TANK PLUMBING DECAL.

PLUMBING INFORMATION	NORMAL SPRAYING	NURSE PUMP BOTTOM FILL	SPRAYER PUMP BOTTOM FILL (OPTIONAL)
<p>REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.</p> <p>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.</p> <p>SINCE BOTH THE HYDRAULIC PUMP AND THE PTO PUMP ARE CENTRIFUGAL PUMPS, THEY CAN BE RUN WITHOUT THE BOOMS AND AGITATORS ON, PROVIDED THE PUMP IS NEVER RUN DRY.</p> <p>BECAUSE OF THE WIDE RANGE OF SPRAYING CONDITIONS, THE OPERATOR IS RESPONSIBLE FOR ADOPTING BOTH PROPER AGITATION AND DESIRED APPLICATION RATE.</p> <p>FRONT TANK VALVES ARE ON RIGHT HAND SIDE OF CART.</p> <p>MAIN TANK VALVES ARE ON LEFT HAND SIDE OF CART.</p> <p>SHOWER AREA SHOWS FLOW OF WATER FOR THAT FUNCTION.</p> <p>* "O" MEANS OPEN AND "X" MEANS CLOSED.</p>			
<p>FRONT TANK VALVES</p> <p>N - FRONT TANK SUCTION O - FRONT TANK BOTTOM FILL P - FRONT TANK CHEMICAL FILL Q - FRONT TANK AGITATOR R - FRONT TANK PUMP FILL S - MAIN TANK PUMP FILL T - FRONT TANK CROSS AGITATOR U - FRONT TANK VENT</p>	<p>MAIN TANK VALVES</p> <p>A - MAIN TANK SUCTION B - MAIN TANK BOTTOM FILL C - MAIN TANK CHEMICAL FILL D - MAIN TANK AGITATOR E - MAIN TANK PUMP FILL F - FRONT TANK CROSS AGITATOR G - MAIN TANK VENT</p>	<p>FRONT TANK VALVES</p> <p>N O P Q R S T X O X X X X O</p>	<p>FRONT TANK VALVES</p> <p>N O P Q R S T X O X X X X O</p>
<p>MAIN TANK VALVES</p> <p>A B C D E F G X O X X X X O</p>	<p>MAIN TANK VALVES</p> <p>A B C D E F G X O X X X X O</p>	<p>MAIN TANK VALVES</p> <p>A B C D E F G X O X X X X O</p>	<p>MAIN TANK VALVES</p> <p>A B C D E F G X O X X X X O</p>
<p>* OPTIONAL</p>	<p>- FULLY OPEN VALVE Q AND D WHEN NORMAL SPRAYING.</p>		<p>8Z0292</p>
CHEMICAL FILL	CLEAN LOAD SYSTEM	CROSS SPRAYING- FRONT TANK WATER TO MAIN TANK PLUMBING	CROSS SPRAYING- MAIN TANK WATER TO FRONT TANK PLUMBING
<p>FRONT TANK VALVES</p> <p>N O P Q R S T X O X X X X O</p>	<p>FRONT TANK VALVES</p> <p>N O P Q R S T X O X X X X O</p>	<p>FRONT TANK VALVES</p> <p>N O P Q R S T X O X X X X X</p>	<p>FRONT TANK VALVES</p> <p>N O P Q R S T X O X X X X O</p>
<p>MAIN TANK VALVES</p> <p>A B C D E F G X O X X X X O</p>	<p>MAIN TANK VALVES</p> <p>A B C D E F G X O X X X X O</p>	<p>MAIN TANK VALVES</p> <p>A B C D E F G X O X X X X O</p>	<p>MAIN TANK VALVES</p> <p>A B C D E F G X O X X X X X</p>
<p>- CLOSE VALVE N AND A HALFWAYS TO DRAW CHEMICAL. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.</p>	<p>SEE CLEANLOAD DECAL FOR MORE INSTRUCTIONS.</p>	<p>-USE CAUTION WHEN CROSS SPRAYING: 1. STOP BOTH PUMPS. 2. CLOSE ALL VALVES. 3. OPEN CORRECT VALVES. 4. START MAIN PUMP.</p>	<p>-USE CAUTION WHEN CROSS SPRAYING: 1. STOP BOTH PUMPS. 2. CLOSE ALL VALVES. 3. OPEN CORRECT VALVES. 4. START FRONT PUMP.</p>

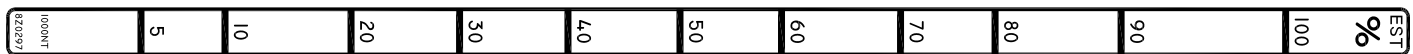
16. PN 8Z0294 1250 NT SIGHT TUBE DECAL.



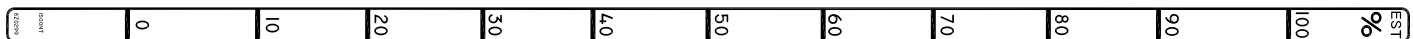
17. PN 8Z0296 1500 NARROW SIGHT TUBE DECAL.



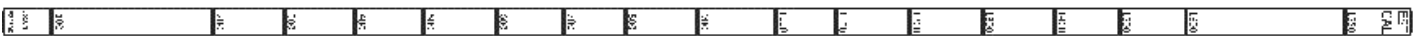
18. PN 8Z0297 1000 NT SIGHT TUBE DECAL.



19. PN 8Z0299 1500 NT SIGHT TUBE DECAL.

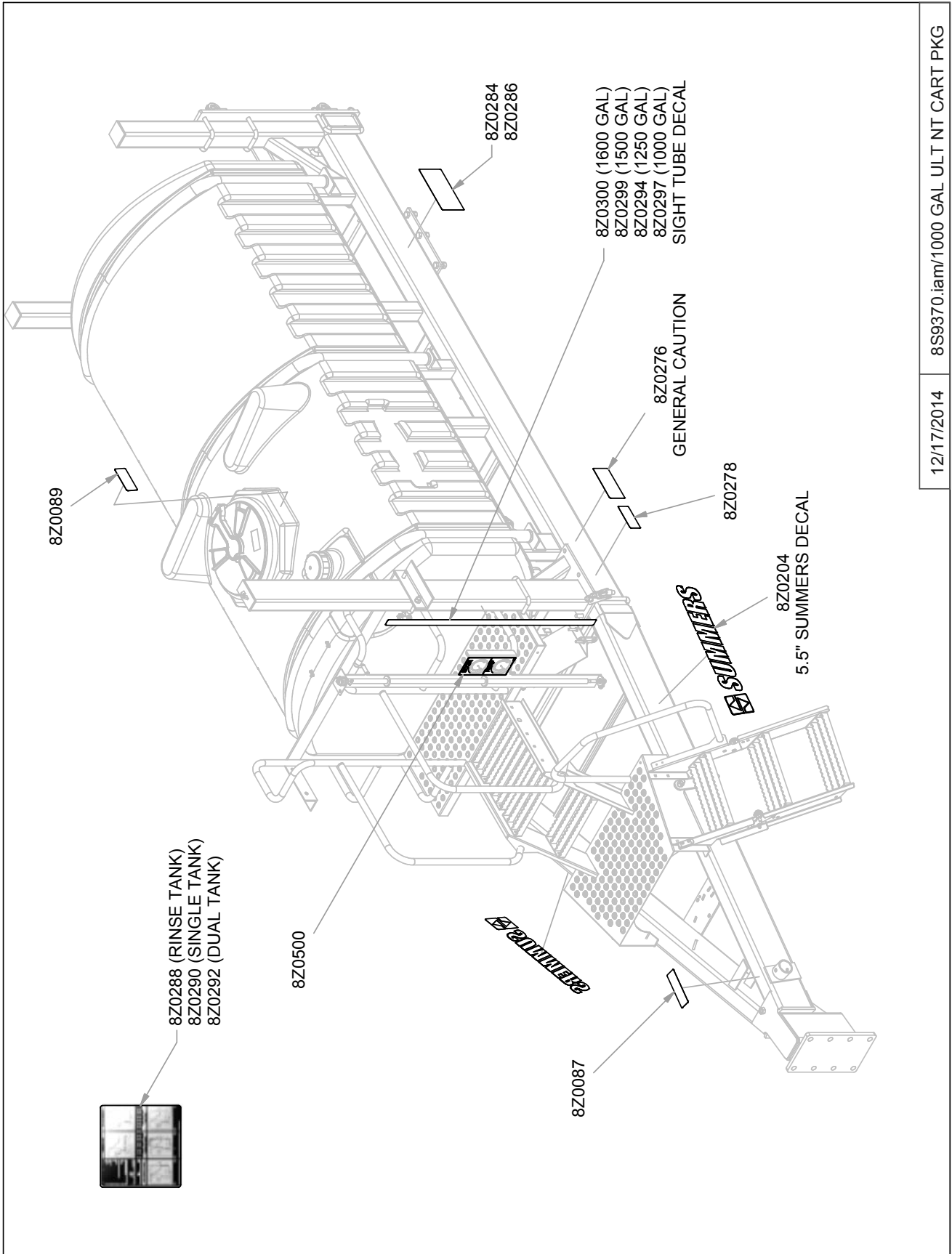


20. PN 8Z0300 1650 NT SIGHT TUBE DECAL.





1.5 DECAL LOCATIONS



SECTION 2 - SPRAYER OPERATION

2.1 SPRAYER OPERATION SAFETY

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 fold booms into transport rest and secure when transporting on public roads.
6. 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.
7. KEEP CHILDREN AWAY from chemicals and sprayer equipment.
8. USE EXTREME CARE when cleaning, filling or making adjustments.



9. 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!

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

SECTION 2 - SPRAYER OPERATION

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

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

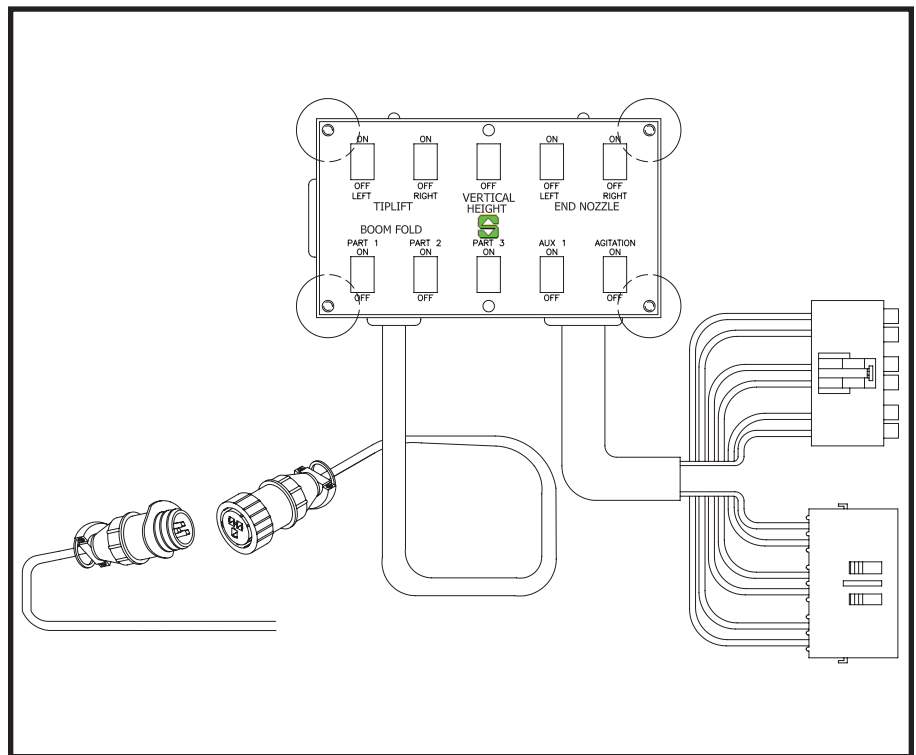
Before connecting to tractor, determine best vertical location of hitch piece in order to run a level cart:

- A. Level the cart front to back.
- B. Measure tractor drawbar to determine best vertical location of hitch piece.

3. MAKE TRACTOR TO SPRAYER HOOKUPS

- A. Make hitch connection using a draw pin with keeper and safety chain. A spacer between sprayer tongue and tractor clevis will minimize hitch noise and shock.
- B. Retract jack and rotate into storage position.
- C. Plug in hydraulics to tractor remote outlets for boom and hydraulic pump operation.
- D. Prepare to mount hydraulic switch control box in cab and run cable to rear of tractor.

1. Select a convenient location. Surface must be smooth and clean for suction cups to attach.
2. If tractor is equipped with factory accessory power plug, disconnect 3-foot pigtail lead from control box and couple to tractor power plug.
3. For tractors not equipped with a power plug connect black lead to a good ground and the other wire to a 12-volt keyed power supply.



4. Route 6 pin connectors through tractor cab to drawbar area and secure in a safe place.
- E. Hook all electrical leads to mating connectors near hitch.

SECTION 2 - SPRAYER OPERATION

NOTE!

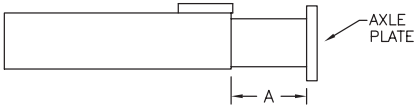
WHEN ELECTRIC/HYDRAULIC SWITCH BOX IS PROPERLY INSTALLED AND ENERGIZED THE GREEN POWER LIGHT WILL GLOW. IF GREEN LIGHT DOES NOT GLOW REVERSE ELECTRICAL LEADS. A 15 AMP RESETTABLE CIRCUIT BREAKER IS PROVIDED ON THE BOX. IT MUST BE PUSHED IN FOR SWITCHES TO PERFORM THEIR FUNCTION. INDIVIDUAL SWITCHES WILL GLOW WHEN ACTIVATED.

4. ADJUST CART WHEEL SPACING

- A. Jack sprayer up so wheels are off the ground.
- B. Block frame up for safety while working on axle.
- C. Loosen 2 front axle retainer bolts on each side
- D. Loosen 2 bottom axle retainer bolts on each side.
- E. Remove inboard axle through bolt on each side.
- F. Slide axles to desired dimension. Refer to decal.
- G. Install inboard axle through bolts on both sides.
- H. Tighten 2 bottom axle retainer bolts on each side.
- I. Tighten 2 front axle retainer bolts on each side.

WARNING!

SPRAYER EQUIPPED WITH DUAL WHEELS ARE NOT DESIGNED TO RUN WITH OUTSIDE WHEEL REMOVED. IF SINGLE WHEELS ARE NEEDED OPERATOR MUST REMOVE INNER WHEELS AND REPLACE WITH OUTSIDE WHEELS. HUB MUST REMAIN IN CENTER OF WHEEL FOOTPRINT.

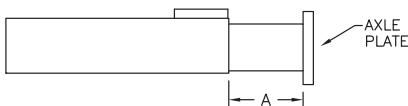


CAUTION

- WHEN BLOCKING, JACKING OR LIFTING TO CHANGE SPACING.
- TANK MUST BE EMPTY BEFORE LIFTING MACHINE.
- TO DETERMINE LENGTH A:
 1. FIND CORRECT TIRE SIZE.
 2. MOVE ACROSS TO FIND SPACING.
 3. MOVE UP TO FIND CORRECT LENGTH A.
 4. MEASURE A FROM END OF 6 x 8 TO INSIDE OF AXLE PLATE.
 5. INSTALL HARDWARE.

CART TIRES	NARROW AXLE WHEEL SPACING (8S9398)							
	A=1"	A=3"	A=7"	A=11"	A=14"	A=17.5"	A=20"	A=23"
480/80R38	—	80"	88"	96"	102"	109"	114"	120"
380/90R46	76"	80"	88"	96"	102"	109"	114"	120"
CART TIRES	WIDE AXLE WHEEL SPACING (8S9399)							
	A=1/2"	A=6"	A=12"	A=18"	A=22"	—	—	—
480/80R38	109"	120"	132"	144"	152"	—	—	—
380/90R46	109"	120"	132"	144"	152"	—	—	—
CART TIRES	BEET AXLE WHEEL SPACING (8S9400)							
	A=1"	A=5"	A=11.5"	A=17"	A=23"	—	—	—
480/80R38	88"	96"	109"	120"	132"	—	—	—
380/90R46	88"	96"	109"	120"	132"	—	—	—

8Z0284



CAUTION

- WHEN BLOCKING, JACKING OR LIFTING TO CHANGE SPACING.
- TANK MUST BE EMPTY BEFORE LIFTING MACHINE.
- TO DETERMINE LENGTH A:
 1. FIND CORRECT TIRE SIZE.
 2. MOVE ACROSS TO FIND SPACING.
 3. MOVE UP TO FIND CORRECT LENGTH A.
 4. MEASURE A FROM END OF 6 x 8 TO INSIDE OF AXLE PLATE.
 5. INSTALL HARDWARE.

CART TIRES	NARROW AXLE NARROW CART WHEEL SPACING (8S9402)							
	A=.75"	A=6.75"	A=8.75"	A=10.75"	A=15.25"	—	—	—
480/80R38	—	72"	76"	80"	89"	—	—	—
380/90R46	60"	72"	76"	80"	89"	—	—	—
380/90R46DUAL	—	—	—	—	60/120	—	—	—
CART TIRES	WIDE AXLE NARROW CART WHEEL SPACING (8S9401)							
	A=.75"	A=2.75"	A=7.25"	A=12.25"	A=17.25"	A=19.25"	—	—
480/80R38	76"	80"	89"	99"	109"	113"	—	—
380/90R46	76"	80"	89"	99"	109"	113"	—	—
380/90R46DUAL	—	—	60/120	80/120	88/132	—	—	—

8Z0286

SECTION 2 - SPRAYER OPERATION

5. UNFOLD BOOM FROM TRANSPORT TO FIELD POSITION

WARNING!

SPRAYER SHOULD BE PARKED ON A LEVEL SURFACE FOR FOLDING AND UNFOLDING OPERATIONS. AREA MUST BE CLEAR OF POWER LINES AND OTHER OBSTRUCTIONS.

- A. Activate vertical height switch on control box and move tractor hydraulic lever to extend cylinders and lift booms out of transport brackets.
- B. Deactivate vertical height switch.
- C. Activate part 1 boom fold switch and move hydraulic lever to unfold part 1 booms.
- D. Deactivate part 1 boom fold switch.
- E. Activate right and left tip-lift switches and move hydraulic lever to lower tip-lifts.
- F. Deactivate tip-lift switches.
- G. If equipped with 3 boom sections, activate part 2 boom switch and move tractor hydraulics to unfold part 2 booms to field position.
- H. Deactivate part 2 boom switch.

CAUTION!

INNER BOOMS MUST BE COMPLETELY UNFOLDED BEFORE UNFOLDING OUTER BOOMS. ONCE OUTER BOOMS ARE MOVED FROM TRANSPORT POSITION A SAFETY SWITCH IS OPENED PREVENTING FURTHER INNER BOOM MOVEMENT.

WARNING!

OUTER MOST BOOM SWITCH MUST BE DEACTIVATED FOR BOOM TO BREAK AWAY WHEN CONTACTING AN OBSTRUCTION. FAILURE TO DEACTIVATE SWITCH WILL CAUSE PHYSICAL DAMAGE AND POSSIBLY BODILY INJURY. **BOOM DAMAGE CAUSED BY FAILURE TO MAKE BREAK AWAY OPERATIVE WILL NOT BE WARRANTED.**

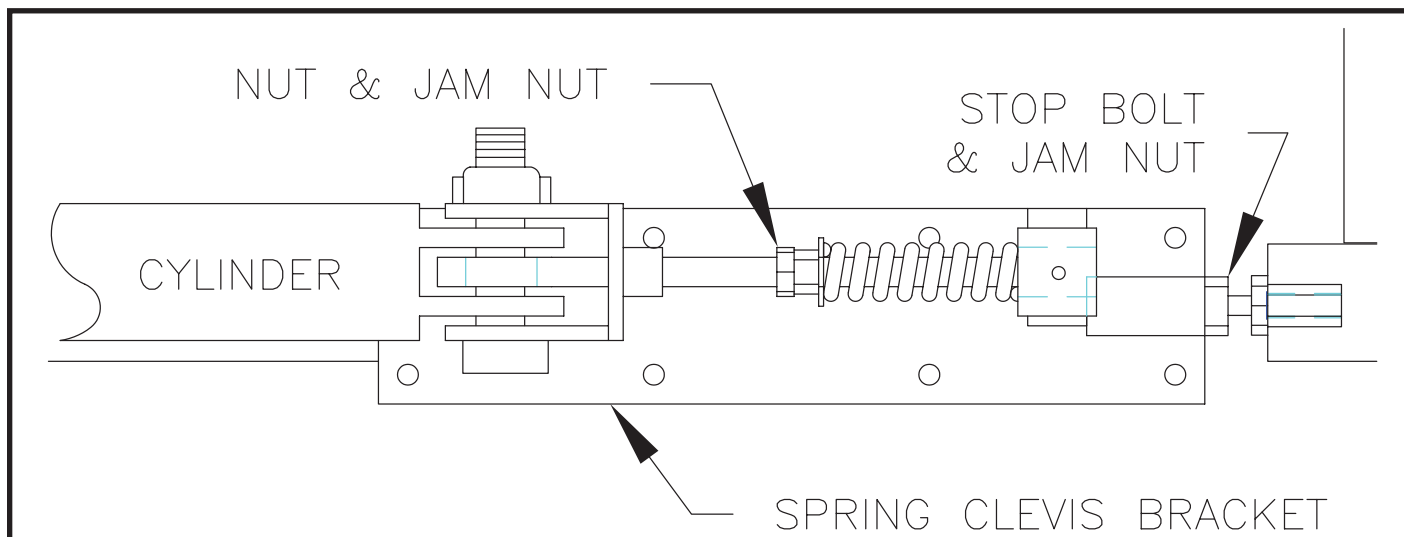
- I. Activate part 3 boom switch and move tractor hydraulics to unfold part 3 booms to field position.
- J. Deactivate part 3 boom switch.

6. ADJUSTMENTS AT BOOM MIDDLE HINGE

- A. From boom end, verify that boom sections are lined up.
 - 1. Adjust stop bolts to line up part 1, part 2 and part 3 boom sections.
 - 2. Loosen u-bolts securing outer boom spring latch and adjust latch mechanism to be centered on the latch pin.
- B. Adjust part 2 boom cables, if equipped, so it is tight but not pulling the part 2 section to fold.
- C. Adjust part 2 or part 3 boom cylinder attachment spring cushion.
 - 1. Unfold sprayer but do not turn off power to outer most boom fold switch.
 - 2. Manually push on outer boom section to force a breakaway. Outer section should fold back 1-1/2 to 2 feet after collapsing inner spring. Cylinder should not collapse.
 - 3. Adjust inner nut and jam nut to insure a complete unfold.
 - 4. Fold outer section of boom with tractor hydraulics to check if boom folds completely.
 - 5. If booms do not fold completely adjust outer spring to permit complete folding.
 - 6. Once adjustment is centered, tighten equally from each side until there is 3/16 – 1/4” inch between all spring coils.

SECTION 2 - SPRAYER OPERATION

7. INNER BOOM CYLINDER SPRING CLEVIS ADJUSTMENT



8. ADJUSTMENT TO LEVEL SPRAYER BOOMS

- A. Park sprayer on a level surface.
- B. Level swinging center with a jack or blocks.
- C. Check level of each inner boom.

Level adjustment is performed near tiplift cylinder on top of inner boom.

1. To adjust loosen jam nut near tiplift cylinder.
2. Adjust 1-1/2" bolt in or out until boom is level with swinging center.
3. Tighten jam nut to secure adjustment

9. CHECK BOOM LEAD

- A. With booms unfolded; manually force booms rearward to collapse spring clevis on inner boom fold cylinders. Booms should not move rearward past a line extending straight out from sprayer boom swinging center.
- B. Perform any required adjustment at the part 1 boom fold cylinder eyebolt.
- C. Verify both nuts are tight to secure the adjustment.

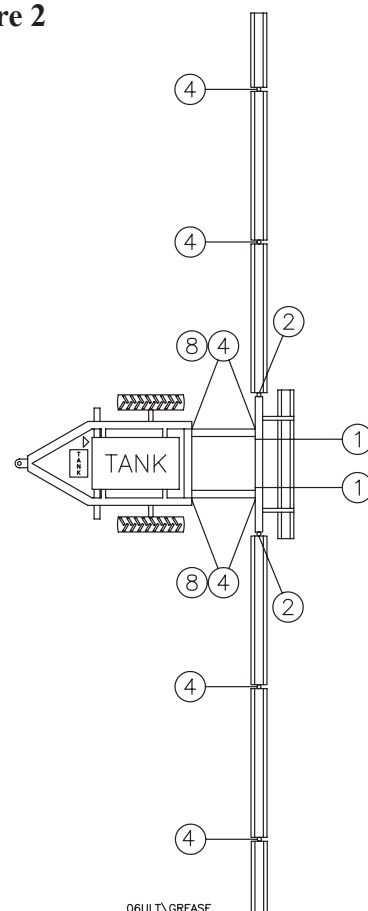
10. CHECK TIRE PRESSURES

See specifications page 7.2 for proper tire inflation pressures. Maximum pressures are stamped on tire.

11. PERFORM DAILY MAINTENANCE

- A. Grease all points shown (See figure 2).
- B. Verify all wheel bolts are tight.
- C. Check hydraulic components for leaks or frayed hoses.
- D. Inspect plumbing for leaks and problem areas.
- E. Perform general inspection for loose or missing parts.

Figure 2



SECTION 2 - SPRAYER OPERATION

WARNING!

PART 1 BOOM FOLD CYLINDERS ARE MOUNTED WITH A SPRING CLEVIS ASSEMBLY. THE CLEVIS WILL ALLOW 5/8" OF AN INCH OF CYLINDER MOVEMENT. THE SPRING MUST BE TIGHTENED TO ALLOW FOR FULL TRAVEL WITHOUT THE COILS COMING IN CONTACT WITH EACH OTHER.

12. FOLD BOOM FROM FIELD TO TRANSPORT POSITION.

- A. Activate vertical height switch and raise booms completely.
- B. Deactivate vertical height switch.
- C. Activate part 3 boom switch and fold part 3 boom, if equipped..
- D. Deactivate part 3 boom switch.
- E. Activate part 2 boom switch and fold part 2 booms.
- F. Deactivate part 2 boom switch.
- G. Activate right and left tip lift switches together or separately and raise tip lifts.
- H. Deactivate tip lift switches.
- I. Activate part 1 boom fold switch and fold part 1 booms.
- J. Deactivate part 1 boom switch.
- K. Activate vertical height switch and lower booms to transfer **ALL** weight of booms onto transport supports.

NOTE!

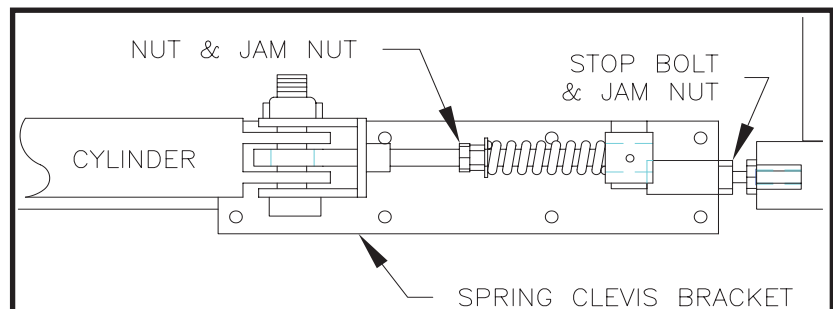
OUTER MOST BOOMS MUST BE COMPLETELY FOLDED BEFORE ANY INNER BOOMS WILL MOVE. IF INNER BOOMS DO NOT MOVE VERIFY THAT OUTER BOOMS HAVE FOLDED COMPLETELY AND CLOSED SAFETY SWITCH LOCATED NEAR RIGHT BOOM MID-HINGE.

WARNING!

WHEN SPRAYER IS TOWED WITHOUT A TRACTOR, BOOMS SHOULD BE SECURED TO TRANSPORT RESTS. THIS IS EASILY ACCOMPLISHED BY RUNNING A STRAP BETWEEN OUTER BOOMS NEAR THE TRANSPORT RESTS. CARE MUST BE TAKEN TO INSURE THE BOOMS REMAIN SECURE WHEN HYDRAULIC POWER IS NOT READILY AVAILABLE.

13. ADJUSTMENTS FOR TRANSPORT

- A. Park sprayer on a level surface.
- B. Adjust boom fold travel.
 1. Fold sprayer booms up to transport rest.
 2. Inner boom should just make contact with transport rest inner stop.



SECTION 2 - SPRAYER OPERATION

- a. Perform adjustment at rear of sprayer on part 1 fold cylinder attachment by loosening 4 u-bolts and sliding spring clevis assembly left or right. There are two adjustment bolts to aid and to retain the new setting.
- b. Position head of adjustment bolt against spring clevis assembly.
- c. Tighten jam nut on adjustment bolt.
- d. Tighten all cylinder spring clevis u-bolts.
- e. Check boom lead again and adjust if necessary.

2.3 INITIAL SET-UP AND ADJUSTMENT OF SPRAYER SYSTEM



WARNING!

BEFORE HOOKING UP HYDRAULIC PUMP HOSES TO TRACTOR CONSULT TRACTOR MANUFACTURER'S OPERATORS MANUAL. CONTINUOUS OPERATION OF HYDRAULIC MOTOR CAN HEAT UP TRACTOR HYDRAULIC FLUID AND CAUSE HARM TO HYDRAULIC SYSTEM. **READ AND FOLLOW TRACTOR MANUFACTURERS' RECOMMENDATIONS!**

HYDRAULIC PUMP NOTES: Many tractor hydraulic systems route return lines through filters or other restrictive elements which can cause an increase in return circuit pressure. Hypro's hydraulic motor oil seals are designed to withstand 300 PSI continuous pressure. However, whenever possible, it is recommended to utilize either a standard (or purchase an optional) low pressure return circuit. This will allow for less oil heat generation, lower horsepower consumption, and longer oil seal life. Consult with your tractor manufacturer to see if your tractor is or can be equipped in this way.

The Return (or Tank) ports on Hypro hydraulic motors are equipped with an anti-reversing check valve. This is to prevent the motor from accidentally being operated backwards. Backward operation of the motor will cause almost immediate oil seal failure. **Do Not Remove Check Valve.**

HM2 and HM4 models of Hypro's hydraulic motor driven centrifugal pumps can be equipped with a metering orifice in the in-lest port. The orifice is intended to be used on older model tractors with Closed Center systems that do not have flow control valves. Consult with your tractor manufacturer to determine if you have this type of system and require an orifice. Further information is available with your pump's operating manual.

Hypro hydraulic motors are equipped with a bypass adjustment screw. These are only to be adjusted when used on Open Center Hydraulic systems. Please see the installation instructions included with the pump for directions on how to use the bypass. Closed Center hydraulic systems do not require any bypass. Be sure that the bypass adjustment is screwed all the way in and the lock nut is tight when operating on Closed Center systems.

There are four basic positions for each type of spool valve. They are Raise, Neutral, Lower, and Float (in order, from back to front). The names used for these positions vary somewhat between manufacturers, but the order of the positions do not.

To properly operate a hydraulic motor-driven centrifugal pump on a tractor hydraulic circuit, only the Lower and Float positions should be used. Use Lower for "On" and Float for "Off". The Float position is recommended for turning the motor off because it allows the remote circuit to flow in a continuous loop allowing the motor to free wheel to a stop and also does not trap pressure in the circuit.

1. REVIEW PLUMBING INSTRUCTIONS FOR OVERALL VIEW OF SPRAYER SYSTEM FUNCTIONS

Refer to pages 1.4, 1.5, and 1.6.

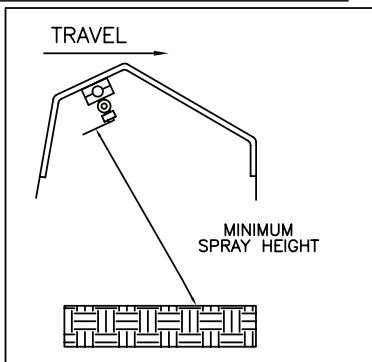
SECTION 2 - SPRAYER OPERATION

2. MAKE TRACTOR TO RAVEN SCS-205 SPRAYER SYSTEM HOOKUPS

- A. Plug hydraulic pump hoses into tractor remote outlet for hydraulic pump operation.
- B. Mount PTO pump on PTO output shaft of tractor (PTO pump optional).
- C. Hook up suction and discharge plumbing hoses (PTO pumps only).
- D. Mount Raven SCS-205 control in a secure and accessible location inside tractor cab.
- E. Make electrical and mechanical pressure sensing connections per drawing on page 5.2.
See Raven Sprayer Control Systems manual for additional information.
- F. Mount stick-on cable holders onto cart frame to secure Raven Control cable.

3. MAKE TRACTOR TO RAVEN SCS-450 SPRAYER SYSTEM HOOKUPS

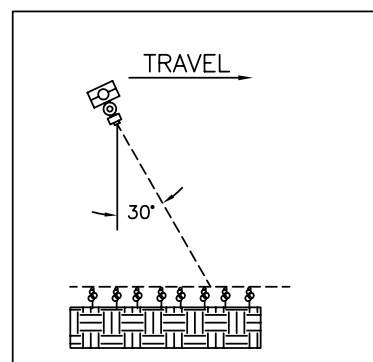
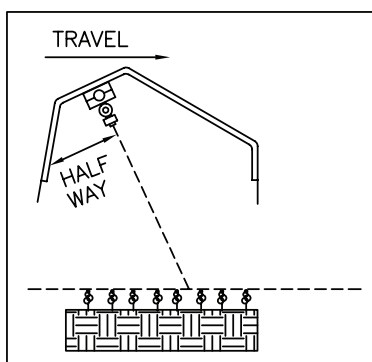
- A. Plug hydraulic pump hoses into tractor remote outlet for hydraulic pump operation.
 - B. Mount PTO pump on PTO output shaft of tractor (PTO pump optional).
 - C. Hook up suction and discharge plumbing hoses (PTO pumps only).
 - D. Mount Raven SCS-450 Control in a secure and accessible location inside tractor cab.
 - E. Make electrical connections per drawing on page 5.2. See Raven manual for additional information.
 - F. To determine spraying width for programming your monitor use the following guidelines.
 1. Determine number of boom shut off valves for each tank.
 2. Verify which shut off the rear boom is connected to.
 3. Determine the number of nozzles on each boom section.
 4. Multiply the number of nozzles on each boom by the nozzle spacing. This is the boom width that should be programmed into the Raven console.
 5. Each end nozzle covers approximately 72". Be sure to adjust the respective boom when the end nozzle is spraying.
4. **ADJUST SPRAY HEIGHT** - Adjust spray height to initial chart setting by setting vertical height.



DEGREE TIP	SPRAY HEIGHT TIP TO TARGET
80°	17" TO 19"
110°	15" TO 18"

5. ADJUST SPRAY ANGLE

Adjust spray angle so that nozzle is half way between front and back windshields or 30 degrees forward for sprayers without windshields.



SECTION 2 - SPRAYER OPERATION

6. **DETERMINE TIP SIZE** – stamped number on orifice side identifies Tips.

Part Number	Tip Size	TIP MATERIAL	DEGREE TIP	COLOR CODE	OPTIONAL END NOZZLE SIZE
8F3411X	XR8001VS	STAINLESS STEEL	80°	ORANGE	OC04
8F3413X	XR80015VS			GREEN	OC06
8F3415X	XR8002VS			YELLOW	OC08
8F3417X	XR8003VS			BLUE	OC12
8F3419X	XR8004VS			RED	OC12
8F3421X	XR8005VS			BROWN	OC16
8F3423X	XR8006VS			GRAY	OC16
8F3425X	XR8008VS			WHITE	-
8F3511X	XR11001VS			STAINLESS STEEL	110°
8F3513X	XR110015VS	GREEN	OC06		
8F3515X	XR11002VS	YELLOW	OC08		
8F3517X	XR11003VS	BLUE	OC12		
8F3519X	XR11004VS	RED	OC12		
8F3521X	XR11005VS	BROWN	OC16		
8F3523X	XR11006VS	GRAY	OC16		
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 (US gallons per acre or liters per hectare) based on different operation pressures.
- C. Example of how to obtain 5.0 U.S. gallons per acre application rate:
 1. Determined tip size to be XR8001.
 2. Choose desired ground speed to be 6 miles per hour (mph).
 3. Refer to English Application Rate Chart (shown on following page) to see that XR8001 tip traveling at 6 mph will deliver 5.0 U.S. gallons per acre at 40 psi operation pressure.
- D. Spraying solutions other than water: All tabulations in this manual are based on spraying water which weighs 8.34 lbs. per U.S. gallon. Conversion factors must be used when spraying solutions which are heavier or lighter than water. To properly size nozzles for the solution to be sprayed multiply the desired GPM or GPA of solution by the water rate conversion factor, then use the new converted GPM or GPA rate to select the proper size nozzle.

Example: Desired application rate is 20GPA of 28%N. Determine the correct nozzle size as follows:

$$\text{GPA (solution)} \times \text{Conversion factor} = \text{GPA (from table)}$$

$$20\text{GPA (28\%)} \times 1.13 = 22.6 \text{ GPA (water)}$$

The applicator should choose a nozzle size that will supply 22.6 GPA of water at the desired pressure.

WEIGHT OF SOLUTION	SPECIFIC GRAVITY	CONVERSION FACTORS	WEIGHT OF SOLUTION	SPECIFIC GRAVITY	CONVERSION FACTORS
7.0 LBS. PER GALLON	.84	.92	10.65 LBS. PER GAL.	1.28	1.13
8.0 LBS. PER GALLON	.96	.98	11.0 LBS. PER GAL.	1.32	1.15
8.34 LBS. PER GALLON	1.00	1.00	12.0 LBS. PER GAL.	1.44	1.20
9.0 LBS. PER GALLON	1.08	1.04	14.0 LBS. PER GAL.	1.68	1.30
10.0 LBS. PER GALLON	1.20	1.10			

SECTION 2 - SPRAYER OPERATION

SUMMERS MANUFACTURING CO., INC. APPLICATION RATE CHART (ENGLISH) U.S. GALLONS PER ACRE - 20" SPACING

TIP NO. Color Screen	PSI	Capacity 1 Nozzle in GPM oz/min	SPEED - MPH					
			5	6	7	8	10	12
8001 11001 Orange 100 mesh Green	15	.06 / 8	3.6	3.0	2.6	2.3	1.8	1.5
	20	.07 / 9	4.2	3.5	3.0	2.6	2.1	1.8
	30	.09 / 11	5.3	4.5	3.7	3.2	2.6	2.1
	40	.10 / 13	5.9	5.0	4.2	3.7	3.0	2.5
	50	.11 / 14	6.5	5.4	4.7	4.1	3.3	2.7
	60	.12 / 15	7.1	5.9	5.1	4.5	3.6	3.0
	*75	.14 / 18	8.3	6.9	5.9	5.2	4.2	3.5
80015 110015 Green 100 mesh Green	15	.09 / 12	5.3	4.5	3.8	3.3	2.7	2.3
	20	.11 / 14	6.5	5.4	4.7	4.1	3.2	2.6
	30	.13 / 17	7.7	6.4	5.5	4.8	3.9	3.2
	40	.15 / 19	8.9	7.4	6.4	5.6	4.5	3.7
	50	.17 / 22	10.1	8.4	7.2	6.3	5.0	4.2
	60	.18 / 23	10.7	8.9	7.6	6.7	5.5	4.6
	*75	.21 / 27	12.5	10.4	8.9	7.8	6.2	5.2
8002 11002 Yellow 50 mesh Red	15	.12 / 15	7.1	5.9	5.1	4.5	3.5	3.0
	20	.14 / 18	8.3	6.9	5.9	5.2	4.2	3.5
	30	.17 / 22	10.1	8.4	7.2	6.3	5.0	4.2
	40	.20 / 26	11.9	9.9	8.5	7.4	5.9	5.0
	50	.22 / 28	13.1	10.9	9.3	8.2	6.5	5.4
	60	.24 / 31	14.3	11.9	10.2	8.9	7.1	5.9
	*75	.27 / 35	16.0	13.4	11.5	10.0	8.0	6.7
80025 110025 Lilac 50 mesh Red	*90	.30 / 38	17.8	14.9	12.7	11.1	8.9	7.4
	15	.15 / 19	8.9	7.4	6.4	5.6	4.5	3.7
	20	.18 / 23	10.7	8.9	7.6	6.7	5.3	4.5
	30	.22 / 28	13.1	10.9	9.3	8.2	6.5	5.4
	40	.25 / 32	14.9	12.4	10.6	9.3	7.4	6.2
	50	.28 / 36	16.6	13.9	11.9	10.4	8.3	6.9
	60	.31 / 40	18.4	15.3	13.2	11.5	9.2	7.7
8003 11003 Blue 50 mesh Red	*75	.34 / 44	20.2	16.8	14.4	12.6	10.1	8.4
	*90	.38 / 49	23.0	18.8	16.1	14.1	11.3	9.4
	15	.18 / 23	10.7	8.9	7.6	6.7	5.3	4.5
	20	.21 / 27	12.5	10.4	8.9	7.8	6.2	5.2
	30	.26 / 33	15.4	12.9	11.0	9.7	7.7	6.4
	40	.30 / 38	17.8	14.9	12.7	11.1	8.9	7.4
	50	.34 / 44	20.0	16.8	14.4	12.6	10.1	8.4
8004 11004 Red 50 mesh Red	60	.37 / 47	22.0	18.3	15.7	13.7	11.0	9.2
	*75	.41 / 52	24.0	20.0	17.4	15.2	12.2	10.1
	*90	.45 / 58	27.0	22.0	19.1	16.7	13.4	11.1
	15	.24 / 31	14.3	11.9	10.2	8.9	7.1	5.9
	20	.28 / 36	16.6	13.9	11.9	10.4	8.3	6.9
	30	.35 / 45	21.0	17.3	14.9	13.0	10.4	8.7
	40	.40 / 51	24.0	19.8	17.0	14.9	11.9	9.9
8005 11005 Brown 50 mesh Red	50	.45 / 58	27.0	22.0	19.1	16.7	13.4	11.1
	60	.49 / 63	29.0	24.0	21.0	18.2	14.6	12.1
	*75	.55 / 70	33.0	27.0	23.0	20.0	16.3	13.6
	*90	.60 / 77	36.0	30.0	25.0	22.0	17.8	14.9
	15	.31 / 40	18.4	15.3	13.2	11.5	9.2	7.7
	20	.35 / 45	21.0	17.3	14.9	13.0	10.4	8.7
	30	.43 / 55	26.0	21.0	18.2	16.0	12.8	10.6
8006 11006 Gray 50 mesh Red	40	.50 / 64	30.0	25.0	21.0	18.6	14.6	12.4
	50	.56 / 72	33.0	28.0	24.0	21.0	16.6	13.9
	60	.61 / 78	36.0	30.0	26.0	23.0	18.1	15.1
	*75	.68 / 87	40.0	34.0	29.0	25.0	20.2	16.8
	*90	.75 / 96	45.0	37.0	32.0	28.0	22.3	18.6
	15	.37 / 47	22.0	18.3	15.7	13.7	11.0	9.2
	20	.42 / 54	25.0	21.0	17.8	15.6	12.5	10.4
8008 11008 White 50 mesh Red	30	.52 / 67	31.0	26.0	22.0	19.3	15.4	12.9
	40	.60 / 77	36.0	30.0	25.0	22.0	17.8	14.9
	50	.67 / 86	40.0	33.0	28.0	25.0	19.9	16.6
	60	.73 / 95	44.0	36.0	31.0	27.0	22.0	18.2
	15	.49 / 63	29.0	24.0	21.0	18.2	14.5	12.0
8008 11008 White 50 mesh Red	20	.57 / 73	34.0	28.0	24.0	21.0	16.8	14.0
	30	.69 / 88	41.0	34.0	29.0	26.0	21.0	17.2
	40	.8 / 102	48.0	40.0	34.0	30.0	24.0	19.8
	50	.89 / 113.5	53.0	44.0	38.0	33.0	27.0	22.0
	60	.98 / 125	58.0	49.0	42.0	36.0	29.0	24.0

* TURBO TEEJET TIPS ARE RECOMMENDED FOR PRESSURES GREATER THAN 60PSI.

BASED ON WATER @ 8.34 LB/GAL.

SECTION 2 - SPRAYER OPERATION

SUMMERS MANUFACTURING CO., INC. APPLICATION RATE CHART (METRIC) LITERS PER HECTARE - .508 m (20") SPACING

TIP NO. Color Screen	KPA/100 (PSI)	Capacity 1 Nozzle in L/min	SPEED - KM/HR (MPH)					
			8 (5)	10 (6.2)	12 (7.5)	14 (8.7)	16 (9.9)	18 (11.2)
8001 11001 Orange 100 mesh Green	1.0 (14.5)	.23	34.5	27.6	23.0	19.7	17.3	15.3
	1.5 (21.8)	.28	42.0	33.6	28.0	24.0	21.0	18.7
	2.0 (29.0)	.32	48.0	38.4	32.0	27.4	24.0	21.3
	2.5 (36.3)	.36	54.0	43.2	36.0	30.9	27.0	24.0
	3.0 (43.5)	.39	58.5	46.8	39.0	33.4	29.3	26.0
	3.5 (50.7)	.42	63.0	50.4	42.0	36.0	31.5	28.0
	4.0 (58.0)	.45	67.5	54.0	45.0	38.6	33.8	30.0
	*5.0 (72.5)	.50	75.0	60.0	50.0	42.9	37.5	33.3
	*6.0 (87.0)	.55	82.5	66.0	55.0	47.1	41.3	36.7
80015 110015 Green 100 mesh Green	1.0 (14.5)	.34	51.0	40.8	34.0	29.1	25.5	22.7
	1.5 (21.8)	.42	63.0	50.4	42.0	36.0	31.5	28.0
	2.0 (29.0)	.48	72.0	57.6	48.0	41.1	36.0	32.0
	2.5 (36.3)	.54	81.0	64.8	54.0	46.3	40.5	36.0
	3.0 (43.5)	.59	88.5	70.8	59.0	50.6	44.3	39.3
	3.5 (50.7)	.64	96.0	76.8	64.0	54.9	48.0	42.7
	4.0 (58.0)	.68	102.0	81.6	68.0	58.3	51.0	45.3
	*5.0 (72.5)	.76	114.0	91.2	76.0	65.1	57.0	50.7
	*6.0 (87.0)	.83	125.0	99.6	83.0	71.1	62.3	55.3
8002 11002 Yellow 50 mesh Red	1.0 (14.5)	.46	69.0	55.2	46.0	39.4	34.5	30.7
	1.5 (21.8)	.56	84.0	67.2	56.0	48.0	42.0	37.3
	2.0 (29.0)	.65	97.5	78.0	65.0	55.7	48.8	43.3
	2.5 (36.3)	.72	108.0	86.4	72.0	61.7	54.0	48.0
	3.0 (43.5)	.79	119.0	94.8	79.0	67.7	59.3	52.7
	3.5 (50.7)	.85	128.0	102.0	85.0	72.9	63.8	56.7
	4.0 (58.0)	.91	137.0	109.0	91.0	78.0	68.3	60.7
	*5.0 (72.5)	1.02	153.0	122.0	102.0	87.4	76.5	68.0
	*6.0 (87.0)	1.12	168.0	134.0	112.0	96.0	84.0	74.7
80025 110025 Lilac 50 mesh Red	1.0 (14.5)	.57	84.2	67.3	56.1	48.1	42.1	37.4
	1.5 (21.8)	.70	103	82.7	68.9	59.1	51.7	45.9
	2.0 (29.0)	.81	120	95.7	79.7	68.3	59.8	53.1
	2.5 (36.3)	.90	133	106	88.6	75.9	66.4	59.1
	3.0 (43.5)	.99	146	117	97.4	83.5	73.1	65.0
	3.5 (50.7)	1.07	158	126	105	90.3	79.0	70.2
	4.0 (58.0)	1.14	168	135	112	96.2	84.2	74.8
	*5.0 (72.5)	1.28	189	151	126	108	94.5	84.0
	*6.0 (87.0)	1.40	207	165	138	118	103	91.9
8003 11003 Blue 50 mesh Red	1.0 (14.5)	.68	102.0	81.6	68.0	58.3	51.0	45.3
	1.5 (21.8)	.83	125.0	99.6	83.0	71.1	62.3	55.3
	2.0 (29.0)	.96	144.0	115.0	96.0	82.3	72.0	64.0
	2.5 (36.3)	1.08	162.0	130.0	108.0	92.6	81.0	72.0
	3.0 (43.5)	1.18	177.0	142.0	118.0	101.0	88.5	78.7
	3.5 (50.7)	1.27	191.0	152.0	127.0	109.0	95.3	84.7
	4.0 (58.0)	1.36	204.0	163.0	136.0	117.0	102.0	90.7
	*5.0 (72.5)	1.52	228.0	182.0	152.0	130.0	114.0	101.0
	*6.0 (87.0)	1.67	251.0	200.0	167.0	143.0	125.0	111.0
8004 11004 Red 50 mesh Red	1.0 (14.5)	.91	137.0	109.0	91.0	78.0	68.3	60.7
	1.5 (21.8)	1.12	168.0	134.0	112.0	96.0	84.0	74.7
	2.0 (29.0)	1.29	194.0	155.0	129.0	111.0	96.8	86.0
	2.5 (36.3)	1.44	216.0	173.0	144.0	123.0	108.0	96.0
	3.0 (43.5)	1.58	237.0	190.0	158.0	135.0	119.0	105.0
	3.5 (50.7)	1.71	257.0	205.0	171.0	147.0	128.0	114.0
	4.0 (58.0)	1.82	273.0	218.0	182.0	156.0	137.0	121.0
	*5.0 (72.5)	2.04	306.0	245.0	204.0	175.0	153.0	136.0
	*6.0 (87.0)	2.23	335.0	268.0	223.0	191.0	167.0	149.0
8005 11005 Brown 50 mesh Red	1.0 (14.5)	1.14	171.0	137.0	114.0	97.7	85.5	76.0
	1.5 (21.8)	1.39	209.0	167.0	139.0	119.0	104.0	92.7
	2.0 (29.0)	1.61	242.0	193.0	161.0	138.0	121.0	107.0
	2.5 (36.3)	1.80	270.0	216.0	180.0	154.0	135.0	120.0
	3.0 (43.5)	1.97	296.0	236.0	197.0	169.0	148.0	131.0
	3.5 (50.7)	2.13	320.0	256.0	213.0	183.0	160.0	142.0
	.04.0 (58.0)	2.27	341.0	272.0	227.0	195.0	170.0	151.0
	*5.0 (72.5)	2.54	381.0	305.0	254.0	218.0	191.0	169.0
	*6.0 (87.0)	2.79	419.0	335.0	279.0	239.0	209.0	186.0
8006 11006 Gray 50 mesh Red	1.0 (14.5)	1.37	206.0	164.0	137.0	117.0	103.0	91.3
	1.5 (21.8)	1.68	252.0	202.0	168.0	144.0	126.0	112.0
	2.0 (29.0)	1.94	291.0	233.0	194.0	166.0	146.0	129.0
	2.5 (36.3)	2.16	324.0	259.0	216.0	185.0	162.0	144.0
	3.0 (43.5)	2.37	356.0	284.0	237.0	203.0	178.0	158.0
	3.5 (50.7)	2.56	384.0	307.0	256.0	219.0	192.0	171.0
8008 11008 White 50 mesh Red	1.0 (14.5)	1.82	273.0	218.0	182.0	156.0	137.0	121.0
	1.5 (21.8)	2.23	335.0	268.0	223.0	191.0	167.0	149.0
	2.0 (29.0)	2.58	387.0	310.0	258.0	221.0	194.0	172.0
	2.5 (36.3)	2.88	432.0	346.0	288.0	247.0	216.0	192.0
	3.0 (43.5)	3.16	474.0	379.0	316.0	271.0	237.0	211.0
	3.5 (50.7)	3.41	512.0	409.0	341.0	292.0	256.0	227.0
4.0 (58.0)	3.65	548.0	438.0	365.0	313.0	274.0	243.0	

* TURBO TEEJET TIPS ARE RECOMMENDED FOR PRESSURES GREATER THAN 4 KPA.

BASED ON WATER @ 1 gm/cm³. 8Z1107 5/06

TIP SIZE	PRESSURE (PSI)	Nozzle Capacity (GPM)	Nozzle Capacity (oz/min)	22.0 inch tip spacing									
				3.0 mph	4.0 mph	5.0 mph	6.0 mph	7.0 mph	8.0 mph	9.0 mph	10.0 mph	12.0 mph	14.0 mph
XR8001VS XR11001VSP TT11001VP Orange 100 Mesh Green	15	0.06	8	5.4	4.1	3.2	2.7	2.3	2.0	1.8	1.6	1.4	1.2
	20	0.07	9	6.3	4.7	3.8	3.2	2.7	2.4	2.1	1.9	1.6	1.4
	25	0.08	10	7.2	5.4	4.3	3.6	3.1	2.7	2.4	2.2	1.8	1.5
	30	0.09	12	8.1	6.1	4.9	4.1	3.5	3.0	2.7	2.4	2.0	1.7
	35	0.09	12	8.1	6.1	4.9	4.1	3.5	3.0	2.7	2.4	2.0	1.7
	40	0.10	13	9.0	6.8	5.4	4.5	3.9	3.4	3.0	2.7	2.3	1.9
	50	0.11	14	9.9	7.4	5.9	5.0	4.2	3.7	3.3	3.0	2.5	2.1
	60	0.12	15	10.8	8.1	6.5	5.4	4.6	4.1	3.6	3.2	2.7	2.3
	70	0.13	17	11.7	8.8	7.0	5.9	5.0	4.4	3.9	3.5	2.9	2.5
	80	0.14	18	12.6	9.5	7.6	6.3	5.4	4.7	4.2	3.8	3.2	2.7
90	0.15	19	13.5	10.1	8.1	6.8	5.8	5.1	4.5	4.1	3.4	2.9	
100	0.16	20	14.4	10.8	8.6	7.2	6.2	5.4	4.8	4.3	3.6	3.1	
XR8001SVS XR11001SVSP TT11001SVP Green 100 Mesh Green	15	0.09	12	8.1	6.1	4.9	4.1	3.5	3.0	2.7	2.4	2.0	1.7
	20	0.11	14	9.9	7.4	5.9	5.0	4.2	3.7	3.3	3.0	2.5	2.1
	25	0.12	15	10.8	8.1	6.5	5.4	4.6	4.1	3.6	3.2	2.7	2.3
	30	0.13	17	11.7	8.8	7.0	5.9	5.0	4.4	3.9	3.5	2.9	2.5
	35	0.14	18	12.6	9.5	7.6	6.3	5.4	4.7	4.2	3.8	3.2	2.7
	40	0.15	19	13.5	10.1	8.1	6.8	5.8	5.1	4.5	4.1	3.4	2.9
	50	0.17	22	15.3	11.5	9.2	7.7	6.6	5.7	5.1	4.6	3.8	3.3
	60	0.18	23	16.2	12.2	9.7	8.1	6.9	6.1	5.4	4.9	4.1	3.5
	70	0.20	26	18.0	13.5	10.8	9.0	7.7	6.8	6.0	5.4	4.5	3.9
	80	0.21	27	19	14.2	11.3	9.5	8.1	7.1	6.3	5.7	4.7	4.1
90	0.23	29	21	15.5	12.4	10.4	8.9	7.8	6.9	6.2	5.2	4.4	
100	0.24	31	22	16.2	13.0	10.8	9.3	8.1	7.2	6.5	5.4	4.6	
XR8002VS XR11002VSP TT11002VP Yellow 50 Mesh Red	15	0.12	15	10.8	8.1	6.5	5.4	4.6	4.1	3.6	3.2	2.7	2.3
	20	0.14	18	12.6	9.5	7.6	6.3	5.4	4.7	4.2	3.8	3.2	2.7
	25	0.16	20	14.4	10.8	8.6	7.2	6.2	5.4	4.8	4.3	3.6	3.1
	30	0.17	22	15.3	11.5	9.2	7.7	6.6	5.7	5.1	4.6	3.8	3.3
	35	0.19	24	17.1	12.8	10.3	8.6	7.3	6.4	5.7	5.1	4.3	3.7
	40	0.20	26	18.0	13.5	10.8	9.0	7.7	6.8	6.0	5.4	4.5	3.9
	50	0.22	28	20	14.9	11.9	9.9	8.5	7.4	6.6	5.9	5.0	4.2
	60	0.24	31	22	16.2	13.0	10.8	9.3	8.1	7.2	6.5	5.4	4.6
	70	0.26	33	23	17.6	14.0	11.7	10.0	8.8	7.8	7.0	5.9	5.0
	80	0.28	36	25	19	15.1	12.6	10.8	9.5	8.4	7.6	6.3	5.4
90	0.30	38	27	20	16.2	13.5	11.6	10.1	9.0	8.1	6.8	5.8	
100	0.32	41	29	22	17.3	14.4	12.3	10.8	9.6	8.6	7.2	6.2	
XR8003VS XR11003VSP TT11003VP Blue 50 Mesh Red	15	0.18	23	16.2	12.2	9.7	8.1	6.9	6.1	5.4	4.9	4.1	3.5
	20	0.21	27	19	14.2	11.3	9.5	8.1	7.1	6.3	5.7	4.7	4.1
	25	0.24	31	22	16.2	13.0	10.8	9.3	8.1	7.2	6.5	5.4	4.6
	30	0.26	33	23	17.6	14.0	11.7	10.0	8.8	7.8	7.0	6.0	5.0
	35	0.28	36	25	19	15.1	12.6	10.8	9.5	8.4	7.6	6.3	5.4
	40	0.30	38	27	20	16.2	13.5	11.6	10.1	9.0	8.1	6.8	5.8
	50	0.34	44	31	23	18	15.3	13.1	11.5	10.2	9.2	7.7	6.6
	60	0.37	47	33	25	20	16.7	14.3	12.5	11.1	10.0	8.3	7.1
	70	0.40	51	36	27	22	18.0	15.4	13.5	12.0	10.8	9.0	7.7
	80	0.42	54	38	28	23	19	16.2	14.2	12.6	11.3	9.5	8.1
90	0.45	58	41	30	24	20	17.4	15.2	13.5	12.2	10.1	8.7	
100	0.47	60	42	32	25	21	18.1	15.9	14.1	12.7	10.6	9.1	
XR8004VS XR11004VSP TT11004VP Red 50 Mesh Red	15	0.24	31	22	16.2	13.0	10.8	9.3	8.1	7.2	6.5	5.4	4.6
	20	0.28	36	25	19	15.1	12.6	10.8	9.5	8.4	7.6	6.3	5.4
	25	0.32	41	29	22	17.3	14.4	12.3	10.8	9.6	8.6	7.2	6.2
	30	0.35	45	32	24	19	15.8	13.5	11.8	10.5	9.5	7.9	6.8
	35	0.37	47	33	25	20	16.7	14.3	12.5	11.1	10.0	8.3	7.1
	40	0.40	51	36	27	22	18.0	15.4	13.5	12.0	10.8	9.0	7.7
	50	0.45	58	41	30	24	20	17.4	15.2	13.5	12.2	10.1	8.7
	60	0.49	63	44	33	26	22	18.9	16.5	14.7	13.2	11.0	9.5
	70	0.53	68	48	36	29	24	20.4	17.9	15.9	14.3	11.9	10.2
	80	0.57	73	51	38	31	26	22	19.2	17.1	15.4	12.8	11.0
90	0.60	77	54	41	32	27	23	20.3	18.0	16.2	13.5	11.6	
100	0.63	81	57	43	34	28	24	21.3	18.9	17.0	14.2	12.2	
XR8005VS XR11004VSP TT11005VSP Brown 50 Mesh Red	15	0.31	40	28	21	16.7	14.0	12.0	10.5	9.3	8.4	7.0	6.0
	20	0.35	45	32	24	19	15.8	13.5	11.8	10.5	9.5	7.9	6.8
	25	0.40	51	36	27	22	18.0	15.4	13.5	12.0	10.8	9.0	7.7
	30	0.43	55	39	29	23	19	16.6	14.5	12.9	11.6	9.7	8.3
	35	0.47	60	42	32	25	21	18.1	15.9	14.1	12.7	10.6	9.1
	40	0.50	64	45	34	27	23	19.3	16.9	15.0	13.5	11.3	9.6
	50	0.56	72	50	38	30	25	22	18.9	16.8	15.1	12.6	10.8
	60	0.61	78	55	41	33	27	24	20.6	18.3	16.5	13.7	11.8
	70	0.66	84	59	45	36	30	25	22	19.8	17.8	14.9	12.7
	80	0.71	91	64	48	38	32	27	24	21.3	19.2	16.0	13.7
90	0.75	96	68	51	41	34	29	25	22.5	20.3	16.9	14.5	
100	0.79	101	71	53	43	36	30	27	24	21.3	17.8	15.2	
XR8006VS XR11006VSP Gray 50 Mesh Red	15	0.37	47	33	25	20	16.7	14.3	12.5	11.1	10.0	8.3	7.1
	20	0.42	54	38	28	23	19	16.2	14.2	12.6	11.3	9.5	8.1
	25	0.47	60	42	32	25	21	18.1	15.9	14.1	12.7	10.6	9.1
	30	0.52	67	47	35	28	23	20.1	17.6	15.6	14.0	11.7	10.0
	35	0.56	72	50	38	30	25	22	18.9	16.8	15.1	12.6	10.8
	40	0.60	77	54	41	32	27	23	20.3	18.0	16.2	13.5	11.6
	50	0.67	86	60	45	36	30	26	23	20.1	18.1	15.1	12.9
	60	0.73	93	66	49	39	3	28	25	21.9	19.7	16.5	14.1
	70	0.79	101	71	53	43	36	30	27	24	21.3	17.8	15.2
	80	0.85	109	77	57	46	38	32	29	26	23.0	19.1	16.4
90	0.90	115	81	61	49	41	35	30	27	24.3	20.3	17.4	
100	0.95	122	86	64	51	43	37	32	29	26	21.4	18.3	
XR8008VS XR11008VSP White 50 Mesh Red	15	0.49	63	44	33	26	22	18.9	16.5	14.7	13.2	11.0	9.5
	20	0.57	73	51	38	31	26	22	19.2	17.1	15.4	12.8	11.0
	25	0.63	81	57	43	33	28	24	21.3	18.9	17.0	14.2	12.2
	30	0.69	88	62	47	37	31	27	23	20.7	18.6	15.5	13.3
	35	0.75	96	68	51	41	34	29	25	22.5	20.3	16.9	14.5
	40	0.80	102	72	54	43	36	31	27	24	21.6	18.0	15.4
	50	0.89	114	80	60	48	40	34	30	27	24.0	20.0	17.2
	60	0.98	125	88	66	53	44	38	33	29	26	22.1	18.9
	70	1.06	136	95	72	57	48	41	36	32	29	23.9	20.4
	80	1.13	145	102	76	61	51	44	38	34	31	25	21.8
90	1.20	154	108	81	65	54	46	41	36	32	27	23.1	
100	1.26	161	113	85	68	57	49	43	38	34	28	24	

TIP SIZE	PRESSURE (PSI)	Nozzle Capacity (GPM)	Nozzle Capacity (oz/min)	22.0 inch tip spacing									
				3.0 mph	4.0 mph	5.0 mph	6.0 mph	7.0 mph	8.0 mph	9.0 mph	10.0 mph	12.0 mph	14.0 mph
XR8001VS XR11001VS TT11001VP Orange 100 Mesh Green	15	0.06	8	5.4	4.1	3.2	2.7	2.3	2.0	1.8	1.6	1.4	1.2
	20	0.07	9	6.3	4.7	3.8	3.2	2.7	2.4	2.1	1.9	1.6	1.4
	25	0.08	10	7.2	5.4	4.3	3.6	3.1	2.7	2.4	2.2	1.8	1.5
	30	0.09	12	8.1	6.1	4.9	4.1	3.5	3.0	2.7	2.4	2.0	1.7
	35	0.09	12	8.1	6.1	4.9	4.1	3.5	3.0	2.7	2.4	2.0	1.7
	40	0.10	13	9.0	6.8	5.4	4.5	3.9	3.4	3.0	2.7	2.3	1.9
	50	0.11	14	9.9	7.4	5.9	5.0	4.2	3.7	3.3	3.0	2.5	2.1
	60	0.12	15	10.8	8.1	6.5	5.4	4.6	4.1	3.6	3.2	2.7	2.3
	70	0.13	17	11.7	8.8	7.0	5.9	5.0	4.4	3.9	3.5	2.9	2.5
	80	0.14	18	12.6	9.5	7.6	6.3	5.4	4.7	4.2	3.8	3.2	2.7
90	0.15	19	13.5	10.1	8.1	6.8	5.8	5.1	4.5	4.1	3.4	2.9	
100	0.16	20	14.4	10.8	8.6	7.2	6.2	5.4	4.8	4.3	3.6	3.1	
XR80015VS XR110015VS TT110015VP Green 100 Mesh Green	15	0.09	12	8.1	6.1	4.9	4.1	3.5	3.0	2.7	2.4	2.0	1.7
	20	0.11	14	9.9	7.4	5.9	5.0	4.2	3.7	3.3	3.0	2.5	2.1
	25	0.12	15	10.8	8.1	6.5	5.4	4.6	4.1	3.6	3.2	2.7	2.3
	30	0.13	17	11.7	8.8	7.0	5.9	5.0	4.4	3.9	3.5	2.9	2.5
	35	0.14	18	12.6	9.5	7.6	6.3	5.4	4.7	4.2	3.8	3.2	2.7
	40	0.15	19	13.5	10.1	8.1	6.8	5.8	5.1	4.5	4.1	3.4	2.9
	50	0.17	22	15.3	11.5	9.2	7.7	6.6	5.7	5.1	4.6	3.8	3.3
	60	0.18	23	16.2	12.2	9.7	8.1	6.9	6.1	5.4	4.9	4.1	3.5
	70	0.20	26	18.0	13.5	10.8	9.0	7.7	6.8	6.0	5.4	4.5	3.9
	80	0.21	27	19	14.2	11.3	9.5	8.1	7.1	6.3	5.7	4.7	4.1
90	0.23	29	21	15.5	12.4	10.4	8.9	7.8	6.9	6.2	5.2	4.4	
100	0.24	31	22	16.2	13.0	10.8	9.3	8.1	7.2	6.5	5.4	4.6	
XR8002VS XR11002VS TT11002VP Yellow 50 Mesh Red	15	0.12	15	10.8	8.1	6.5	5.4	4.6	4.1	3.6	3.2	2.7	2.3
	20	0.14	18	12.6	9.5	7.6	6.3	5.4	4.7	4.2	3.8	3.2	2.7
	25	0.16	20	14.4	10.8	8.6	7.2	6.2	5.4	4.8	4.3	3.6	3.1
	30	0.17	22	15.3	11.5	9.2	7.7	6.6	5.7	5.1	4.6	3.8	3.3
	35	0.19	24	17.1	12.8	10.3	8.6	7.3	6.4	5.7	5.1	4.3	3.7
	40	0.20	26	18.0	13.5	10.8	9.0	7.7	6.8	6.0	5.4	4.5	3.9
	50	0.22	28	20	14.9	11.9	9.9	8.5	7.4	6.6	5.9	5.0	4.2
	60	0.24	31	22	16.2	13.0	10.8	9.3	8.1	7.2	6.5	5.4	4.6
	70	0.26	33	23	17.6	14.0	11.7	10.0	8.8	7.8	7.0	5.9	5.0
	80	0.28	36	25	19	15.1	12.6	10.8	9.5	8.4	7.6	6.3	5.4
90	0.30	38	27	20	16.2	13.5	11.6	10.1	9.0	8.1	6.8	5.8	
100	0.32	41	29	22	17.3	14.4	12.3	10.8	9.6	8.6	7.2	6.2	
XR8003VS XR11003VS TT11003VP Blue 50 Mesh Red	15	0.18	23	16.2	12.2	9.7	8.1	6.9	6.1	5.4	4.9	4.1	3.5
	20	0.21	27	19	14.2	11.3	9.5	8.1	7.1	6.3	5.7	4.7	4.1
	25	0.24	31	22	16.2	13.0	10.8	9.3	8.1	7.2	6.5	5.4	4.6
	30	0.26	33	23	17.6	14.0	11.7	10.0	8.8	7.8	7.0	6.0	5.0
	35	0.28	36	25	19	15.1	12.6	10.8	9.5	8.4	7.6	6.3	5.4
	40	0.30	38	27	20	16.2	13.5	11.6	10.1	9.0	8.1	6.8	5.8
	50	0.34	44	31	23	18	15.3	13.1	11.5	10.2	9.2	7.7	6.6
	60	0.37	47	33	25	20	16.7	14.3	12.5	11.1	10.0	8.3	7.1
	70	0.40	51	36	27	22	18.0	15.4	13.5	12.0	10.8	9.0	7.7
	80	0.42	54	38	28	23	19	16.2	14.2	12.6	11.3	9.5	8.1
90	0.45	58	41	30	24	20	17.4	15.2	13.5	12.2	10.1	8.7	
100	0.47	60	42	32	25	21	18.1	15.9	14.1	12.7	10.6	9.1	
XR8004VS XR11004VS TT11004VP Red 50 Mesh Red	15	0.24	31	22	16.2	13.0	10.8	9.3	8.1	7.2	6.5	5.4	4.6
	20	0.28	36	25	19	15.1	12.6	10.8	9.5	8.4	7.6	6.3	5.4
	25	0.32	41	29	22	17.3	14.4	12.3	10.8	9.6	8.6	7.2	6.2
	30	0.35	45	32	24	19	15.8	13.5	11.8	10.5	9.5	7.9	6.8
	35	0.37	47	33	25	20	16.7	14.3	12.5	11.1	10.0	8.3	7.1
	40	0.40	51	36	27	22	18.0	15.4	13.5	12.0	10.8	9.0	7.7
	50	0.45	58	41	30	24	20	17.4	15.2	13.5	12.2	10.1	8.7
	60	0.49	63	44	33	26	22	18.9	16.5	14.7	13.2	11.0	9.5
	70	0.53	68	48	36	29	24	20.4	17.9	15.9	14.3	11.9	10.2
	80	0.57	73	51	38	31	26	22	19.2	17.1	15.4	12.8	11.0
90	0.60	77	54	41	32	27	23	20.3	18.0	16.2	13.5	11.6	
100	0.63	81	57	43	34	28	24	21.3	18.9	17.0	14.2	12.2	
XR8005VS XR11005VS TT11005VP Brown 50 Mesh Red	15	0.31	40	28	21	16.7	14.0	12.0	10.5	9.3	8.4	7.0	6.0
	20	0.35	45	32	24	19	15.8	13.5	11.8	10.5	9.5	7.9	6.8
	25	0.40	51	36	27	22	18.0	15.4	13.5	12.0	10.8	9.0	7.7
	30	0.43	55	39	29	23	19	16.6	14.5	12.9	11.6	9.7	8.3
	35	0.47	60	42	32	25	21	18.1	15.9	14.1	12.7	10.6	9.1
	40	0.50	64	45	34	27	23	19.3	16.9	15.0	13.5	11.3	9.6
	50	0.56	72	50	38	30	25	22	18.9	16.8	15.1	12.6	10.8
	60	0.61	78	55	41	33	27	24	20.6	18.3	16.5	13.7	11.8
	70	0.66	84	59	45	36	30	25	22	19.8	17.8	14.9	12.7
	80	0.71	91	64	48	38	32	27	24	21.3	19.2	16.0	13.7
90	0.75	96	68	51	41	34	29	25	22.5	20.3	16.9	14.5	
100	0.79	101	71	53	43	36	30	27	24	21.3	17.8	15.2	
XR8006VS XR11006VS Gray 50 Mesh Red	15	0.37	47	33	25	20	16.7	14.3	12.5	11.1	10.0	8.3	7.1
	20	0.42	54	38	28	23	19	16.2	14.2	12.6	11.3	9.5	8.1
	25	0.47	60	42	32	25	21	18.1	15.9	14.1	12.7	10.6	9.1
	30	0.52	67	47	35	28	23	20.1	17.6	15.6	14.0	11.7	10.0
	35	0.56	72	50	38	30	25	22	18.9	16.8	15.1	12.6	10.8
	40	0.60	77	54	41	32	27	23	20.3	18.0	16.2	13.5	11.6
	50	0.67	86	60	45	36	30	26	23	20.1	18.1	15.1	12.9
	60	0.73	93	66	49	39	3	28	25	21.9	19.7	16.5	14.1
	70	0.79	101	71	53	43	36	30	27	24	21.3	17.8	15.2
	80	0.85	109	77	57	46	38	33	29	26	23.0	19.1	16.4
90	0.90	115	81	61	49	41	35	30	27	24.3	20.3	17.4	
100	0.95	122	86	64	51	43	37	32	29	26	21.4	18.3	
XR8008VS XR11008VS White 50 Mesh Red	15	0.49	63	44	33	26	22	18.9	16.5	14.7	13.2	11.0	9.5
	20	0.57	73	51	38	31	26	22	19.2	17.1	15.4	12.8	11.0
	25	0.63	81	57	43	32	28	24	21.3	18.9	17.0	14.2	12.2
	30	0.69	88	62	47	37	31	27	23	20.7	18.6	15.5	13.3
	35	0.75	96	68	51	41	34	29	25	22.5	20.3	16.9	14.5
	40	0.80	102	72	54	43	36	31	27	24	21.6	18.0	15.4
	50	0.89	114	80	60	48	40	34	30	27	24.0	20.0	17.2
	60	0.98	125	88	66	53	44	38	33	29	26	22.1	18.9
	70	1.06	136	95	72	57	48	41	36	32	29	23.9	20.4
	80	1.13	145	102	76	61	51	44	38	34	31	25	21.8
90	1.20	154	108	81	65	54	46	41	36	32	27	23.1	
100	1.26	161	113	85	68	57	49	43	38	34	28	24	

SECTION 2 - SPRAYER OPERATION

2.4 TESTING AND ADJUSTMENT OF SPRAYER SYSTEM.

PLUMBING INFORMATION

- REFER TO OPERATOR'S MANUAL FOR PUMP START UP AND PRESSURE SETTING PROCEDURE.
- 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.
- SINCE BOTH THE HYDRAULIC PUMP AND THE PTO PUMP ARE CENTRIFUGAL PUMPS, THEY CAN BE RUN WITHOUT THE BOOMS AND AGITATORS ON, PROVIDED THE PUMP IS NEVER RUN DRY.
- BECAUSE OF THE WIDE RANGE OF SPRAYING CONDITIONS, THE OPERATOR IS RESPONSIBLE FOR ACCOMPLISHING BOTH PROPER AGITATION AND DESIRED APPLICATION RATE.
- FRONT TANK VALVES ARE ON RIGHT HAND SIDE OF CART.
- MAIN TANK VALVES ARE ON LEFT HAND SIDE OF CART.
- SHADED AREA SHOWS FLOW OF WATER FOR THAT FUNCTION.
- "O" MEANS OPEN AND "X" MEANS CLOSED.

FRONT TANK VALVES	MAIN TANK VALVES
N - FRONT TANK SUCTION	A - MAIN TANK SUCTION
O - FRONT TANK BOTTOM FILL	B - MAIN TANK BOTTOM FILL
P - FRONT TANK CHEMICAL FILL	C - MAIN TANK CHEMICAL FILL
Q - FRONT TANK AGITATOR	D - MAIN TANK AGITATOR
R - FRONT TANK PUMP FILL*	E - MAIN TANK PUMP FILL*
S - MAIN TANK CROSS AGITATOR	F - FRONT TANK CROSS AGITATOR
T - FRONT TANK VENT	G - MAIN TANK VENT

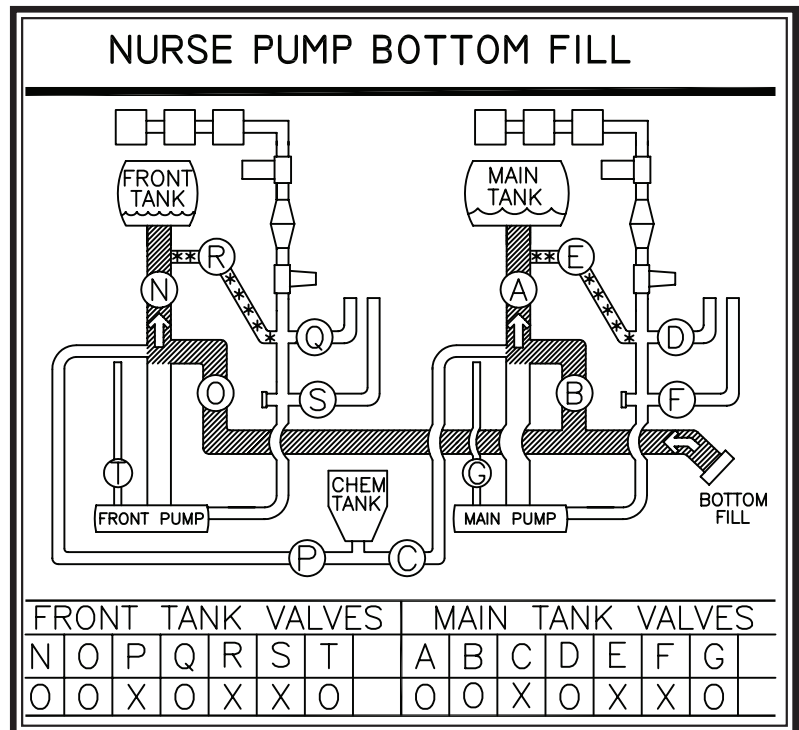
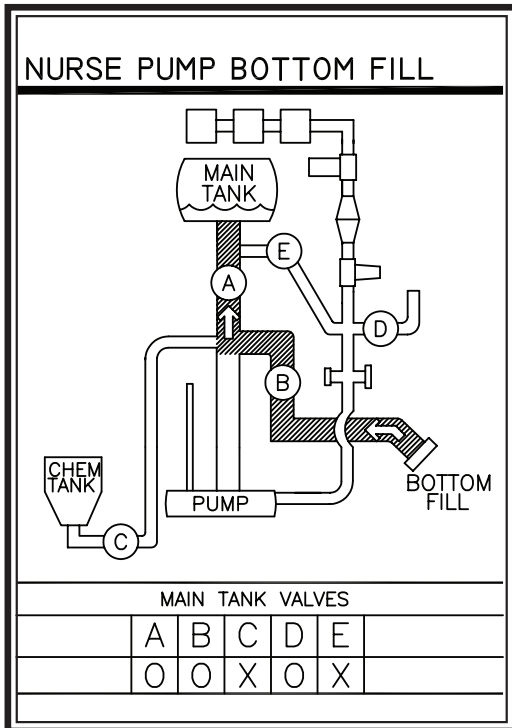
CAUTION

REVIEW SECTION 2.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING

1. ADD WATER TO TANK

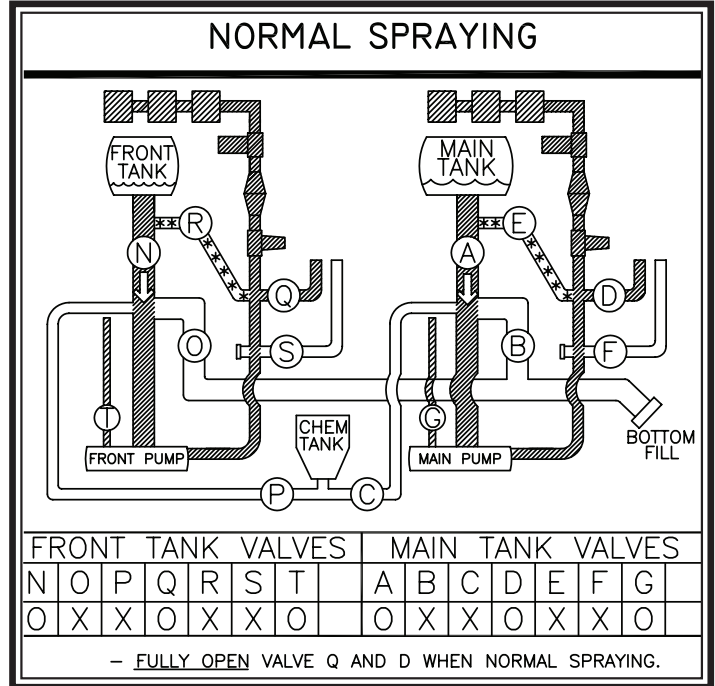
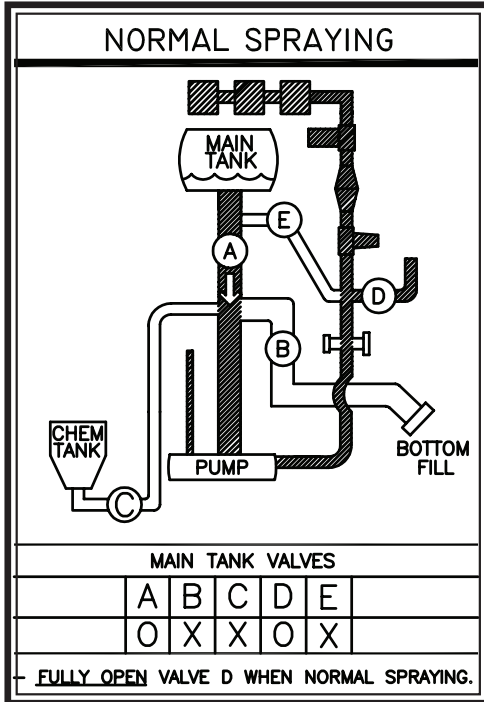
Add approximately 300 gallons of water to tank(s) using one of the following methods. (For a dual tank system, test one system at a time).

A. Set up Nurse Pump Bottom Fill.



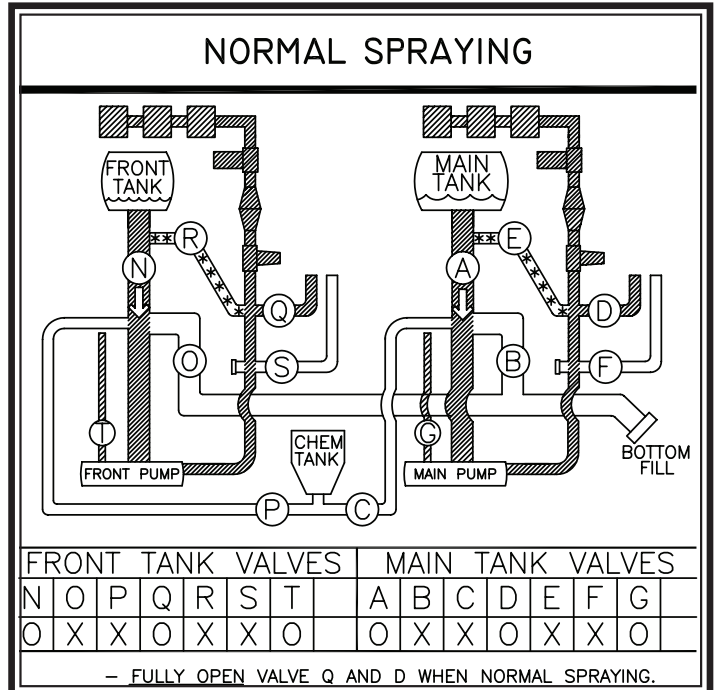
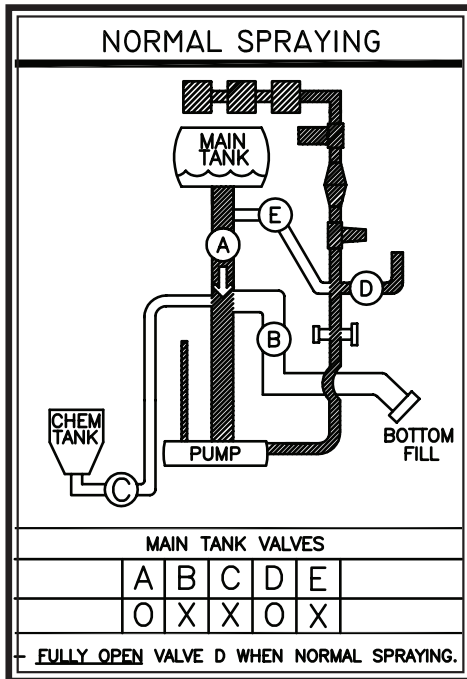
SECTION 2 - SPRAYER OPERATION

B. Set up Normal Spraying and fill tank(s) through top fillwell.



2. PRIME SPRAYER SYSTEM PUMP

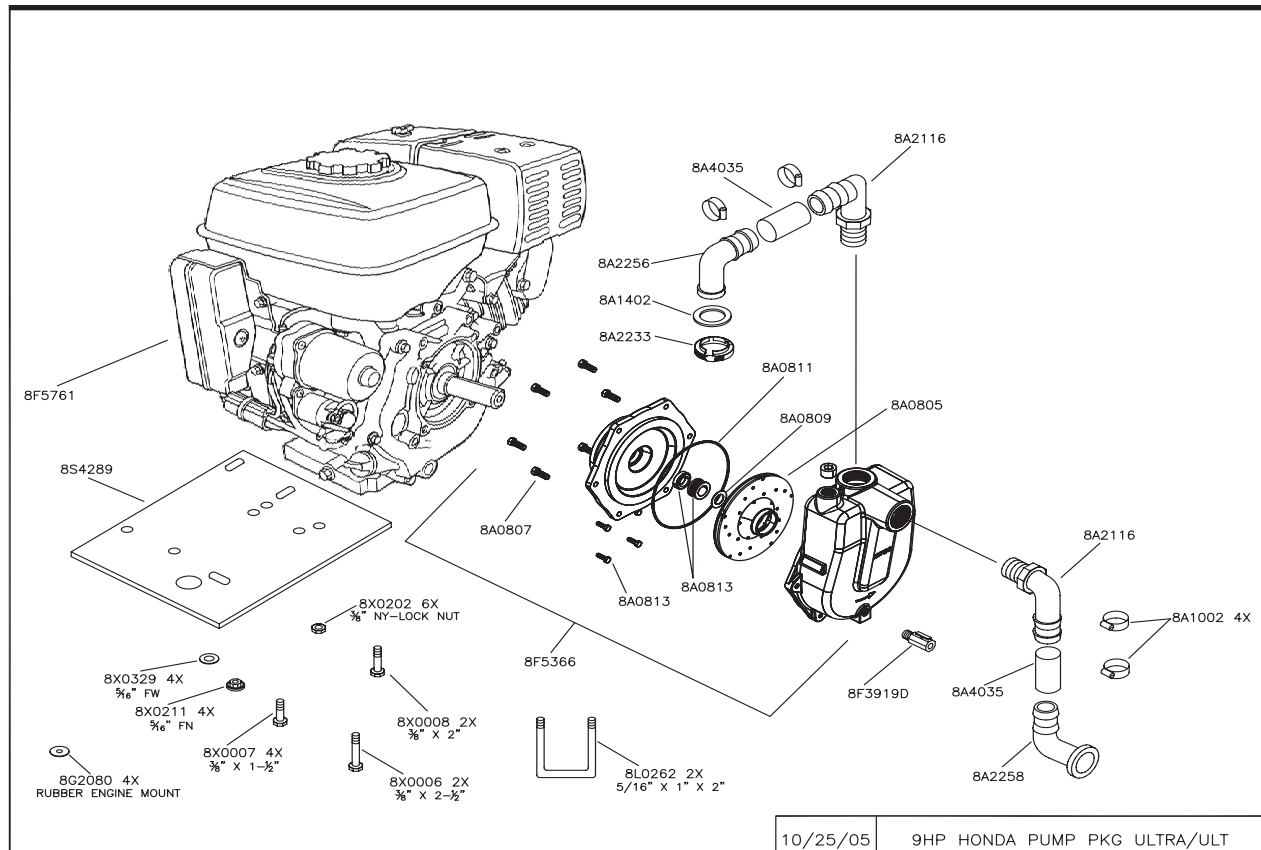
A. Set up Normal Spraying.



B. Prime PTO driven pump:

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

SECTION 2 - SPRAYER OPERATION



C. Prime sprayer mounted gasoline driven pump:

1. Ensure there is liquid available at the pump.
2. Remove or loosen top vent fitting to expel air.
3. If water does not flow from fitting, add fluid until pump casting is full.
4. Verify engine has oil and fuel in it.
5. Turn ignition switch to run.
6. Pull starter rope. Choke engine as required.
7. After start up increase engine speed to circulate water from the tank to the pump and back to the tank through the agitators.
8. Slow engine to idle and turn ignition switch to off.

D. Prime hydraulically driven pump:

1. Check that oil flow direction is correct by verifying that hose supplying pressure port of pump stiffens when engaging hydraulic lever in the float direction. The pump motor has a check valve on the tank port that should prevent the pump from running backwards. If the hoses are improperly connected to the tractor the tank hose will get hard and the pump should not run. If your pump runs both directions contact your Summer's dealer.
2. Engage tractor hydraulic system and increase to normal field rpm speed in order to circulate water from tank to pump and back to the tank again through the agitators. Immediately verify agitator flow by looking through top fillwell.
3. Disengage tractor hydraulic system by moving lever to float position. This allows pump to coast to a stop.

SECTION 2 - SPRAYER OPERATION

3. ADJUST HYDRAULICALLY DRIVEN PUMP SYSTEM

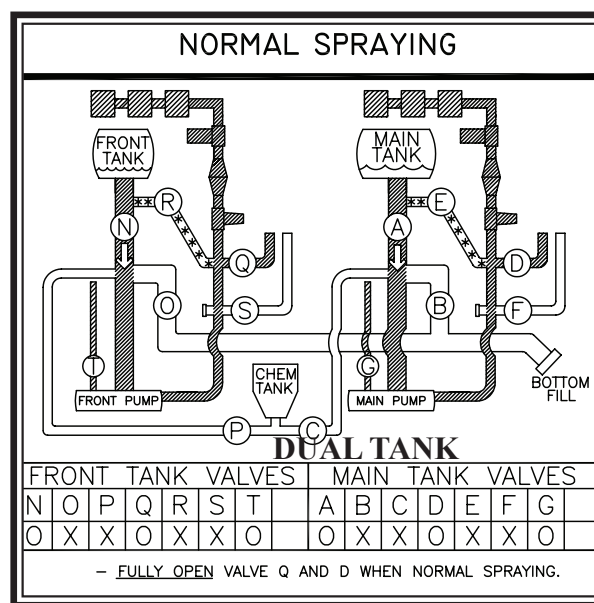
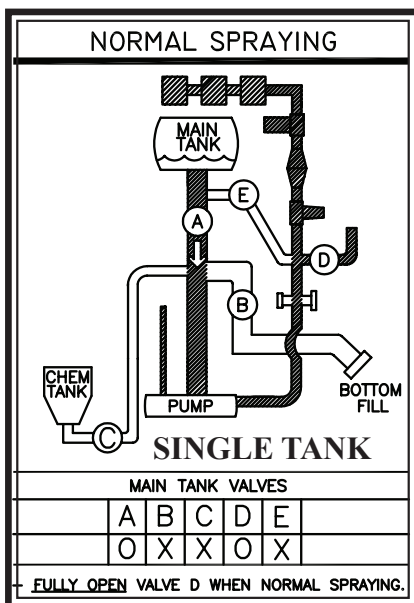
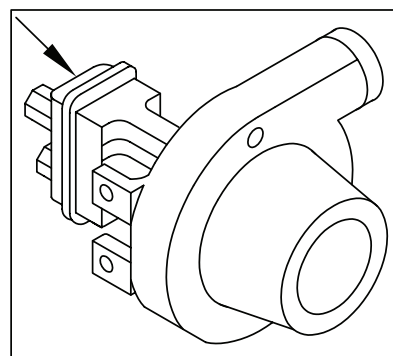
The hydraulically driven pump system must be adjusted to limit maximum shut off pressure of 125 psi in order to stay within the 0 to 125 psi operating range of the plumbing system. Tractor hydraulic output will affect pump performance. **For more complete information see the Hypro pump selection guide included in the publication.**

NOTE!

WHEN HIGH SPRAY PRESSURES ARE DESIRED, OPERATOR MUST ADJUST AGITATORS TO INCREASE SPRAY PRESSURE. WITH ALL SPRAYER FUNCTIONS SHUT OFF AND PUMP RUNNING AT FULL CAPACITY **PRESSURE MUST NEVER EXCEED 125 PSI.**

A. For **CLOSED CENTER LOAD SENSING** tractors adjust pump as follows:

1. Loosen jam nut for bypass screw located on top of hydraulic motor and turn screw completely in.
2. Secure jam nut.
3. Adjust flow control valve for tractor hydraulic system to allow minimum oil flow.

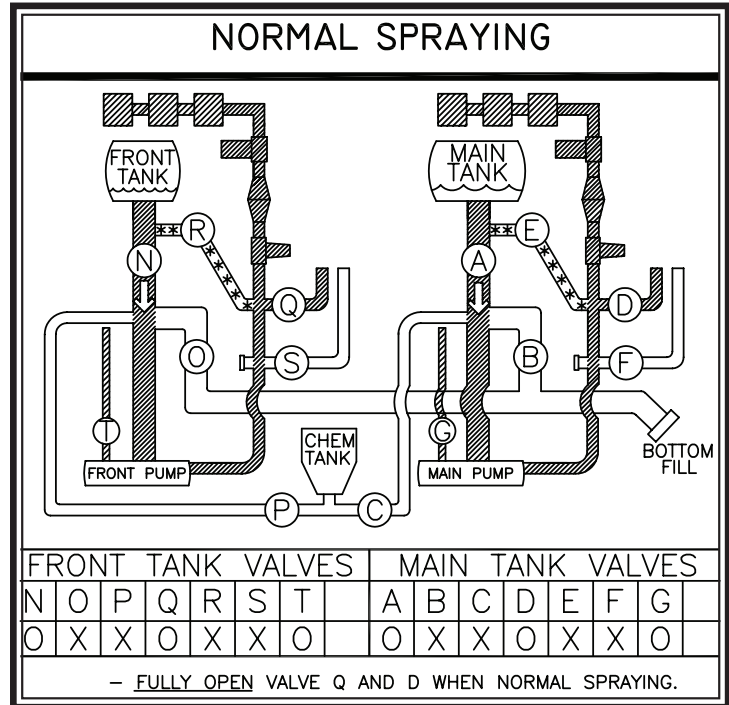
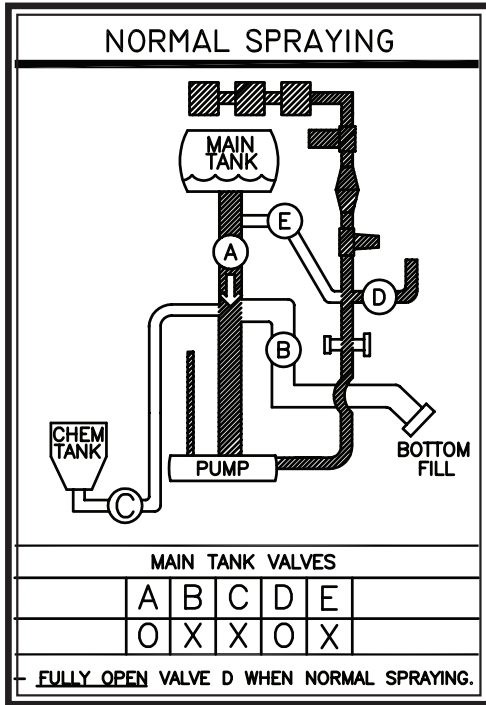
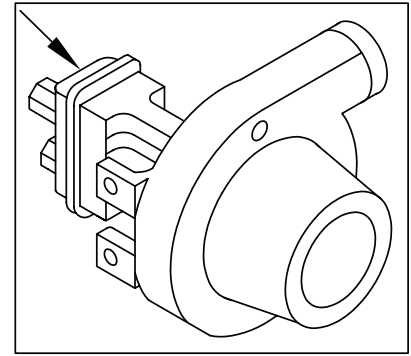


4. Close manual valve D or Q (agitator control) plus make sure switches for all boom Electric Ball Valves are off. LEAVE VALVES A AND N (TANK SUCTION) OPEN!
5. Engage tractor hydraulic system and increase to normal field rpm speed.
6. Adjust flow control valve for tractor hydraulic system until pressure gauge reads 30-50 psi over the expected spray pressure. **DO NOT EXCEED 125 PSI.**
7. Disengage tractor hydraulic system by moving lever to float position. This will allow pump to coast to a stop.
8. Set up Normal Spraying.

SECTION 2 - SPRAYER OPERATION

B. For **OPEN CENTER TRACTORS** adjust pump by:

1. Loosen jam nut for bypass screw located on top of hydraulic motor and turn screw out 2 1/2 turns from fully closed setting.
2. Close manual valve D or Q (agitator control) and verify that switches for all boom Electric Ball Valves are on. LEAVE VALVES A AND N (TANK SUCTION) OPEN!
3. Engage tractor hydraulic system and increase to normal field rpm speed.



4. After oil has warmed open agitation valve D or Q to desired circulation.
5. Check pressure gauge and adjust bypass screw in for an increase in pressure and out to decrease pressure. **DO NOT EXCEED 125 PSI!**
6. Secure jam nut.
7. Disengage tractor hydraulic system.
8. Set up Normal Spraying.

4. **START-UP RAVEN CONTROL**

A. Start-up **Raven SCS-450** Control:

1. See Raven SCS-450 manual for complete information.

B. Start-up **Raven SCS-205** 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. One by one cycle each BOOM ON/OFF switch on and off. Verify that each corresponding boom electric ball valve operates and that all nozzles have the desired spray pattern. When each outer boom is engaged test optional boom end nozzle for proper operation.

SECTION 2 - SPRAYER OPERATION

5. With all BOOM ON/OFF switches turned ON, hold the manual pressure adjust switch one way or the other in order to fully open the motorized regulator valve and obtain maximum operating pressure with full agitation. (The regulator valve is fully opened when the pressure stops increasing and starts to decrease).
6. Adjust manual valve D or Q (agitator control):
 - a. Partially close manual valve D or Q to increase maximum operating pressure.
 - b. Under normal spraying conditions, manual valve D or Q should be fully open.
7. If maximum operating pressure is still too low, follow pump adjusting procedure previously outlined.
8. With all BOOM ON/OFF switches turned ON, hold the manual pressure adjust switch the other way in order to fully close the motorized Regulator Valve and obtain minimum operating pressure. (The regulator valve is fully closed when the pressure stops decreasing and starts to increase).
9. With all spray BOOM ON/OFF switches turned ON, hold the manual pressure adjust switch to obtain required operating pressures necessary for desired application rate.
10. Disengage tractor hydraulic system or PTO system.

HELPFUL HINTS FOR 450 CONTROL PROGRAMMING

1. Write down meter cal, valve cal, speed cal, and boom cal numbers in manual for quick, easy reference.
2. If any component fails and is replaced calibration will change and must be updated.
3. Disconnect console before jump starting, charging battery or welding on equipment.
4. Suspension type fertilizers and slurry mixtures will reduce the life of plastic parts in flow meter and control valve. Check rotor and hub frequently for worn parts. Excessive wear will affect accuracy.
5. Summers Manufacturing uses only standard close valves (C-sd).
6. SP1 is for wheel drive speed sensor. SP2 is for GPS, radar and interface cable speed sensors.
7. If console is flashing "CAL" it has not received enough calibration input to function.
8. To change some settings the console must be cleared. Data from Hint 1 will be useful in this case.

NOTE!
SUMMERS MFG. CO. RECOMMENDS THAT THE OPTIONAL COMPUTERIZED CONTROL CONSOLE BE MOUNTED TO A SECURE SUPPORT INSIDE THE CAB OF THE SPRAY MACHINE.

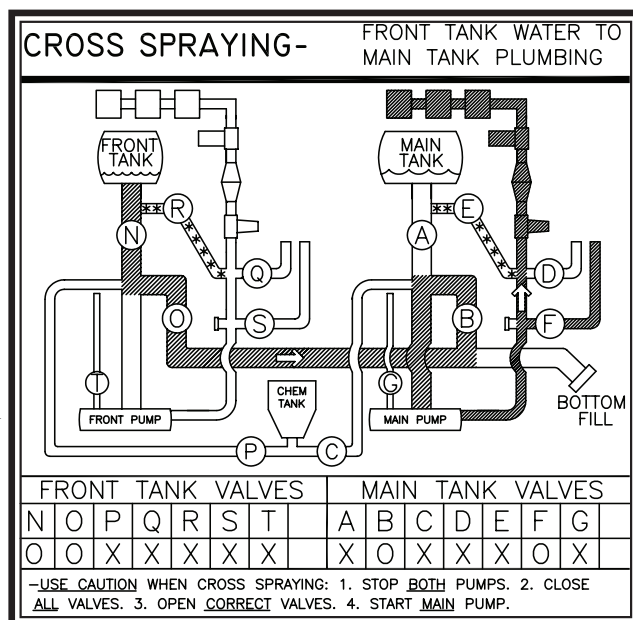
IMPORTANT!

OPERATOR MUST PAY CAREFUL ATTENTION WHEN CROSS SPRAYING TO INSURE THAT SPRAY SOLUTION IS GOING TO ITS DESIRED LOCATION.

5. **CROSS SPRAYING** – Front Tank Water to Main Tank Plumbing. (If you do not have a dual tank sprayer, proceed to Step 7).

This allows the operator the ability to supply the boom normally used for the main tank with spray solution from the front tank.

- A. Set up for Front Tank Water to Main Tank Plumbing – Cross Spraying.



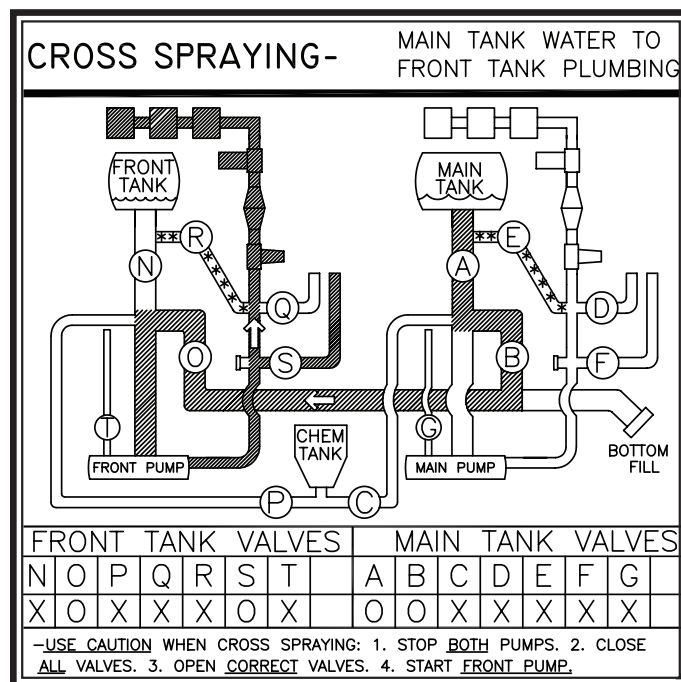
SECTION 2 - SPRAYER OPERATION

- B. Engage tractor hydraulic system for the main tank pump and increase to normal field rpm speed or engage tractor PTO for the main tank pump and increase to normal PTO speed.
- C. Immediately verify that agitator flow and main tank pump vent are going to front tank.
- D. Disengage tractor hydraulic system or PTO system.
- E. Close all valves.

6. CROSS SPRAYING – Main Tank Water to Front Tank Plumbing.

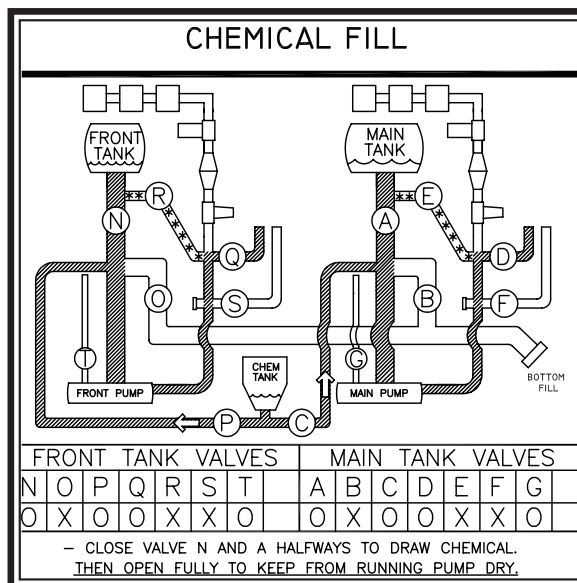
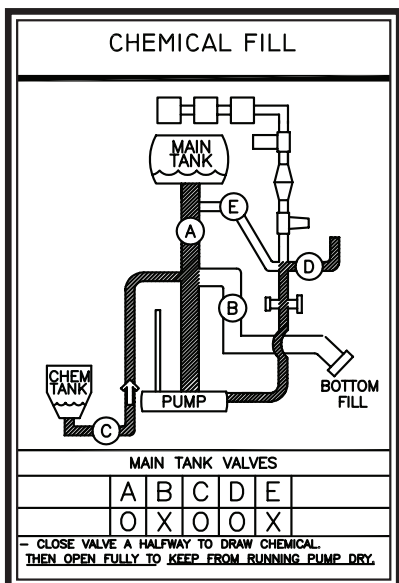
This allows the operator the ability to supply the boom normally used for the front tank with spray solution from the main tank.

- A. Set up for Main Tank Water to Front Tank Plumbing – Cross Spraying.
- B. Engage tractor hydraulic system for the front tank pump and increase to normal field rpm speed or engage tractor PTO for the front tank pump and increase to normal PTO speed.
- C. Immediately verify that agitator flow and front tank pump vent are going to main tank.
- D. Disengage tractor hydraulic system or PTO system.
- E. Close all valves.



7. TEST CHEMICAL FILL

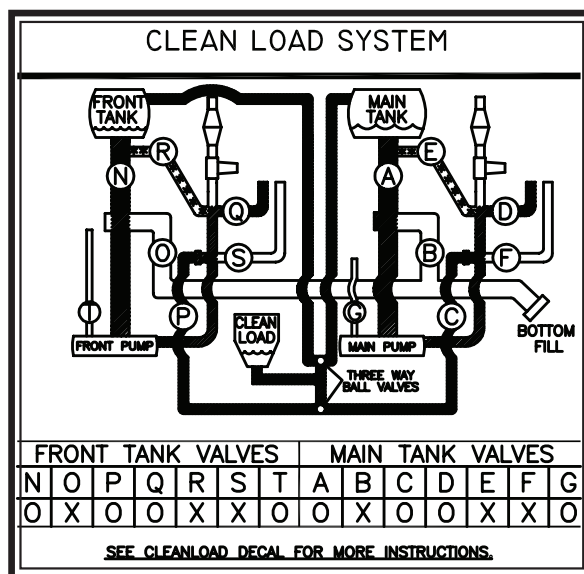
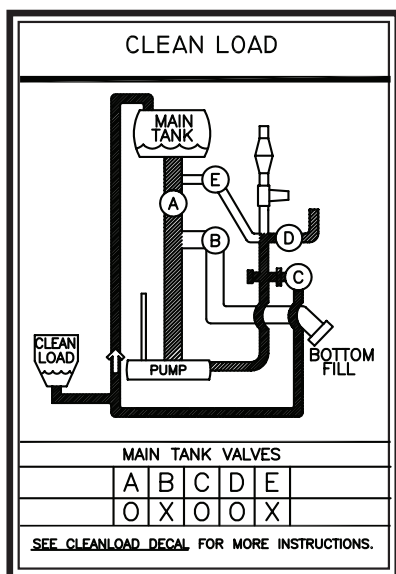
- A. Add approximately 15 gallons of water to chemical fill tank.
- B. Engage tractor hydraulic system or PTO system.
- C. Set up Chemical Fill. When set up; close main supply valve halfway to draw chemical. THEN OPEN FULLY TO KEEP FROM RUNNING PUMP DRY.



SECTION 2 - SPRAYER OPERATION

- D. Disengage tractor hydraulic system or PTO system.
- E. Close all valves.

8. TEST OPTIONAL CLEAN LOAD SYSTEM



LOADING

1. All Cleanload valves must be closed prior to starting. Inlet ball valve, knife valve, and hopper rinse ball valve.
2. Open lid to check for foreign objects which may hinder performance or contaminate the system.
3. Close and lock lid by turning cover clockwise.
4. Divert pump flow to cleanload inlet line (open valves "C" or "P"). A pressure of 30 PSI minimum and 150 PSI maximum must be used. Highest pressures increase the education rate and available wand suction.
5. Open knife valve located on the bottom of hopper by pushing handle in.
6. Unlock and open lid slowly by turning cover counterclockwise.

LOADING LIQUID OR POWDERED CHEMICAL INTO HOPPER

7. Pour required amount of chemical into hopper. Avoid splashing liquids or powdered chemicals outside of hopper.
8. Rinse empty chemical containers if applicable. Place container opening over container rinse valve and press down. This will activate the rinse valve and rinse container.
9. Rinse cleanload hopper. Close and lock lid by turning cover clockwise. Release the safety locking band on the hopper rinse ball valve and turn on for 20 seconds. Close ball valve and return locking band to locked position.
10. Open lid and inspect for chemical residue. Repeat step 10 as necessary.
11. Close knife valve by pulling red handle out towards you. Turn inlet valve off.

SHUTDOWN

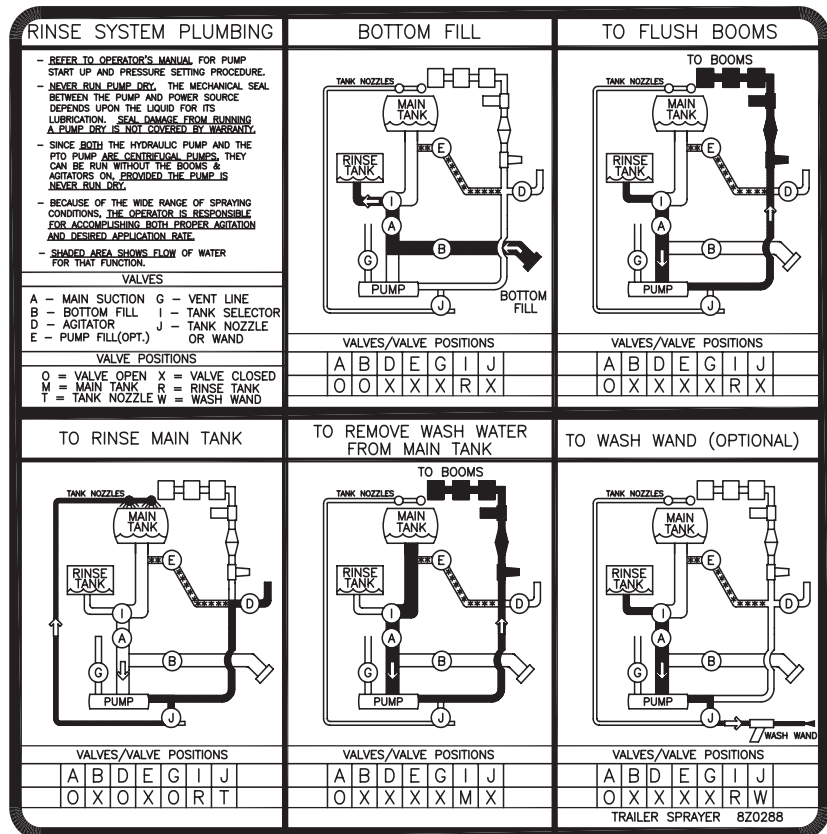
1. Close knife valve first by pulling red handle out towards you.
2. Insure that the remaining valves are closed.
3. Verify chemical residue has been cleaned up.

SECTION 2 - SPRAYER OPERATION

4. Close hopper lid and lock by turning clockwise.
5. Divert pump discharge flow back to normal operation by closing valves "C" or "P".

9. TEST OPTIONAL RINSE TANK

- A. Add approximately 40 gallons of water to RINSE TANK using Bottom Fill or through top fillwell.
- B. Set up and test all functions of RINSE TANK individually.
 1. Position valves as shown for each operation.
 2. Engage tractor hydraulic system or PTO system.
 3. **NEVER RUN PUMP DRY!** Check that rinse operation is running correctly.
 4. Disengage sprayer pump.
 5. Reposition valves for next spray operation.



10. PERFORM SPRAYER SYSTEM DAILY MAINTENANCE

- A. Check all sprayer system components for leaks.
- B. Clean sprayer system strainer.
- C. Check water level in safety water tank plus check that rubber gloves and goggles are present.
- D. Check tanks for movement and tighten hold down components as required.
- E. Check nozzle patterns. If a nozzle pattern is distorted:
 1. Remove nozzle tip.
 2. Clean with toothbrush, 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 recreational vehicle (RV) anti-freeze. RV anti-freeze is non-toxic and safe for the environment. It must be used in 100 % concentrations, but it is more economical than permanent anti-freeze to purchase and will not corrode plastic sprayer com-

SECTION 2 - SPRAYER OPERATION

ponents.

2. Spray solution through nozzles.
3. Allow dripless nozzles to drain by loosening each diaphragm check valve nut.

IMPORTANT!

ANALOG GAUGES USED IN RAVEN CONSOLES MAY RETAIN SMALL AMOUNTS OF FLUID IN THEM AND SHOULD NOT BE SUBJECT TO EXTENDED PERIODS OF FREEZING TEMPERATURES. STORE GAUGE INDOORS AFTER SPRAYER HAS BEEN USED AND BEFORE IT IS EXPOSED TO FREEZING TEMPERATURES.

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

IMPORTANT!

CERTAIN CHEMICALS AND FERTILIZERS MAY CAUSE PAINT DETERIORATION. TO REDUCE CHANCE OF SPRAYER PAINT DETERIORATION, CLEAN SURFACES CONTACTED BY CHEMICAL IMMEDIATELY AFTER USE.

2.5 TRANSPORTING AND OPERATION OF SPRAYER FROM FIELD TO FIELD

1. UNFOLD BOOM FROM TRANSPORT TO FIELD POSITION.



CAUTION
REVIEW SECTION 2.1 SPRAYER OPERATION SAFETY BEFORE PROCEEDING

IMPORTANT!

SPRAYER SHOULD BE PARKED ON A LEVEL SURFACE FOR FOLDING AND UNFOLDING OPERATIONS. OPERATOR MUST BE SURE AREA IS CLEAR OF POWER LINES AND OTHER OBSTRUCTIONS.

- A. Activate vertical height switch on control box and select tractor hydraulics to extend cylinders and lift booms up out of transport rests.
- B. Deactivate vertical height switch.
- C. Activate part 1 boom fold switch and select tractor hydraulics to unfold part 1 booms.
- D. Deactivate part 1 boom fold switch.
- E. Activate right and left tip lift switches and select tractor hydraulics to lower tip lifts.
- F. Deactivate tip lift switches.
- G. Activate part 2 boom fold switch and select tractor hydraulics to unfold part 2 booms
- H. Deactivate part 2 boom fold switch.

NOTE

INNER BOOMS MUST BE COMPLETELY UNFOLDED BEFORE UNFOLDING OUTER BOOMS. ONCE OUTER BOOMS ARE MOVED FROM TRANSPORT POSITION A SAFETY SWITCH IS OPENED PREVENTING FURTHER INNER BOOM MOVEMENT.

SECTION 2 - SPRAYER OPERATION

IMPORTANT!

OUTER BOOM SWITCH MUST BE DEACTIVATED FOR BOOM TO BREAK AWAY WHEN CONTACTING AN OBSTRUCTION. FAILURE TO DEACTIVATE SWITCH WILL CAUSE PHYSICAL DAMAGE AND POSSIBLY BODILY INJURY. **BOOM DAMAGE CAUSED BY FAILURE TO MAKE BREAK AWAY OPERATIVE WILL NOT BE WARRANTED.**

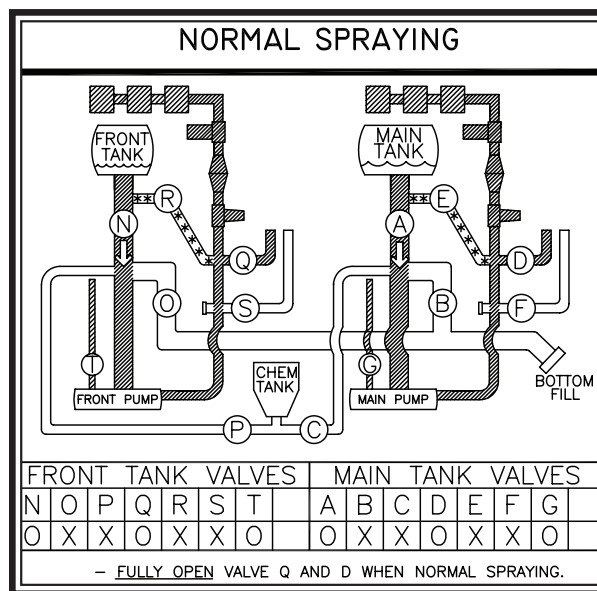
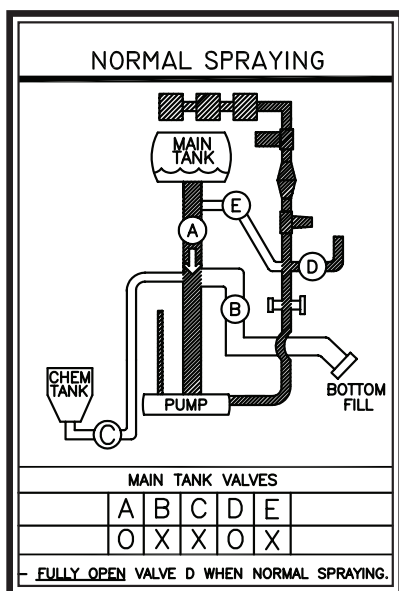
- I. Activate part 3 boom fold switch (if equipped with 3 section boom) and select tractor hydraulics to unfold part 3 booms.
- J. Deactivate part 3 boom switch.
- K. Activate vertical height switch and select tractor hydraulics to adjust height of spray boom.
- L. Deactivate vertical height switch.

2. LEARN THE CORNER TURNING LIMIT

Know how sharp a corner can be made without interference between tractor and sprayer when sprayer is folded and unfolded. Every tractor connection is different so know the limits.

2.6 SPRAYER SYSTEM FIELD OPERATION AND ADJUSTMENT

1. SET UP NORMAL SPRAYING



IMPORTANT!

1. NEVER RUN PUMP DRY. THE MECHANICAL SEAL BETWEEN THE PUMP AND POWER SOURCE DEPENDS UPON LIQUID FOR LUBRICATION. SEAL DAMAGE FROM RUNNING PUMP DRY IS NOT COVERED BY WARRANTY.
2. SINCE BOTH THE HYDRAULIC AND PTO PUMPS ARE CENTRIFUGAL PUMPS, BOTH THE BOOMS, AS WELL AS THE MANUAL VALVES D AND Q CAN BE SHUT OFF WITHOUT DAMAGING THE PUMP PROVIDED THE PUMP IS NEVER RUN DRY.

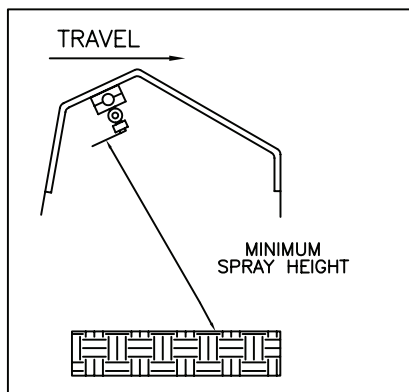
SECTION 2 - SPRAYER OPERATION

2. START UP PUMP

Start pump engine, engage pump, and increase pump speed to obtain proper pump performance.

3. START UP RAVEN CONTROL

4. ADJUST SPRAY HEIGHT



DEGREE TIP	SPRAY HEIGHT TIP TO TARGET
80°	17" TO 19"
110°	15" TO 18"

2.7 CALIBRATION OF SPRAYER SYSTEM

- CHOOSE AND MEASURE OFF** one of the following three fixed distances:
(LONGER DISTANCES PRODUCE MORE ACCURATE RESULTS).
 - 1/4 mile = 1320 feet
 - 1/2 mile = 2640 feet
 - 1 mile = 5280 feet
- COMPLETELY FILL** the sprayer tank or tanks.
- SHUT OFF OPTIONAL END NOZZLES**
- SPRAY THE CHOSEN DISTANCE** using:
 - Desired ground speed within factory recommended range of 5 to 8 miles per hour (mph).
 - Desired operating pressure.
- MEASURE** the gallons of water required to completely refill the sprayer tank.
- CALCULATE APPLICATION RATE** using correct formula for measured distance chosen:
 - For 1/4 mile:

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

- For 1/2 mile:

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

SECTION 2 - SPRAYER OPERATION

C. For 1 mile:

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

7. EXAMPLE

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

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:

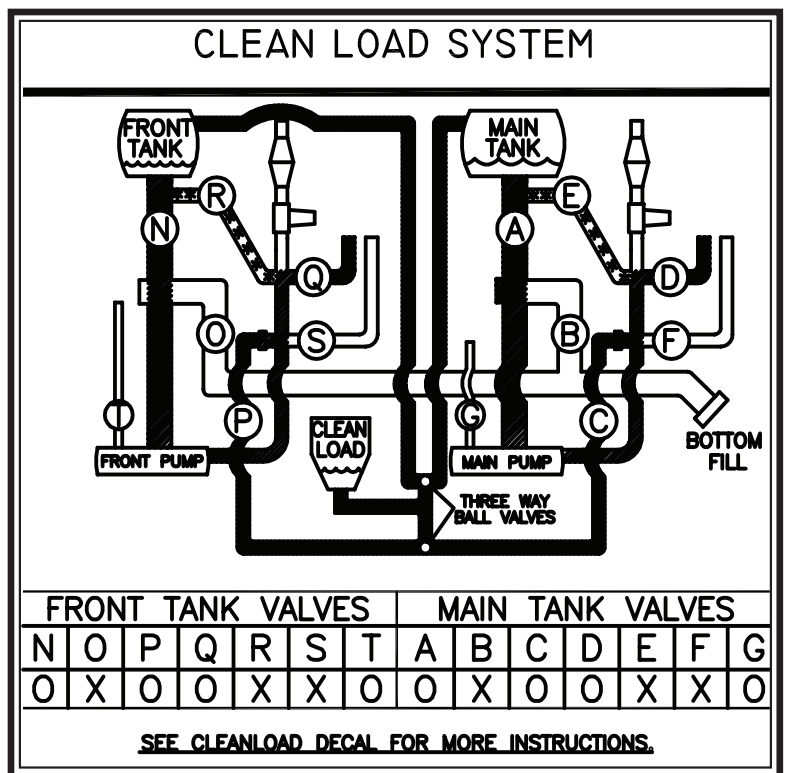
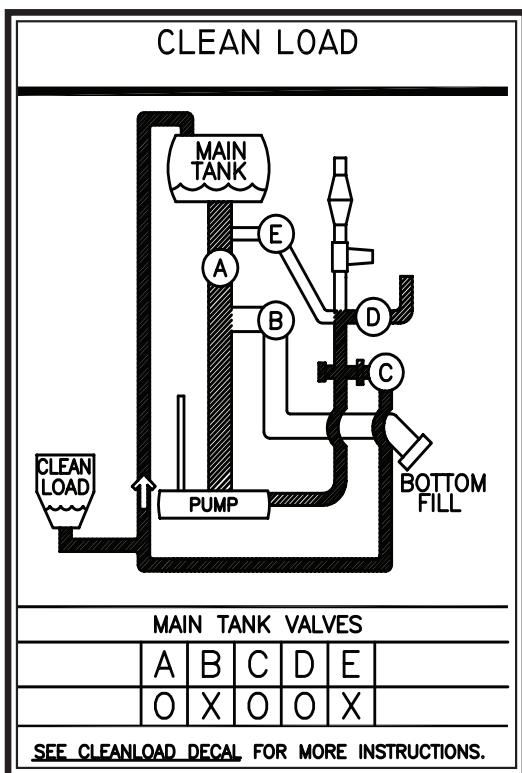
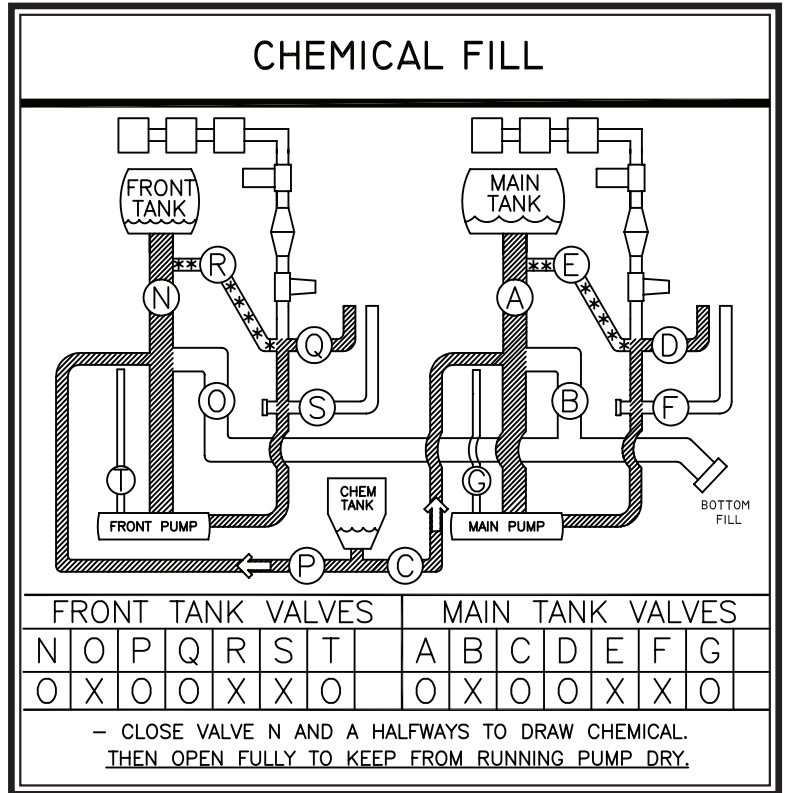
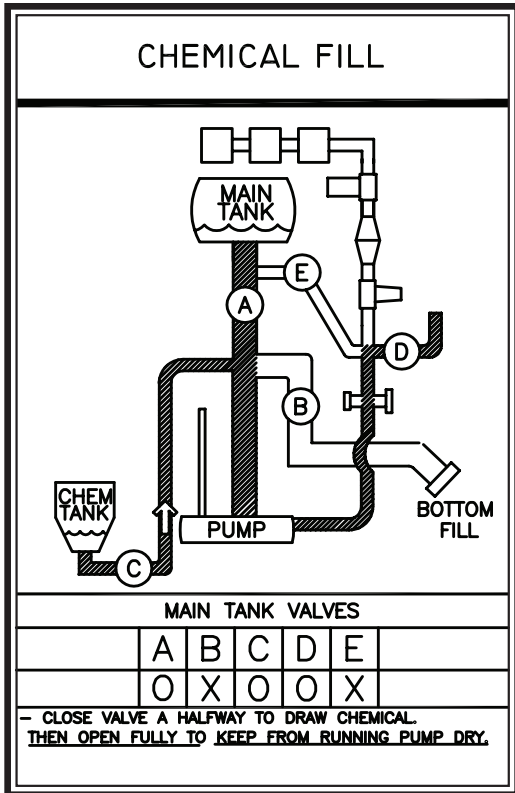
- *avoid fumes
- *rubber gloves and skin protection

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!

SECTION 2 - SPRAYER OPERATION

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

- a. Add chemical through top fillwell.
- b. Set up Chemical Fill.
- c. Add chemical with Chemical Load and Rinse Wand.



SECTION 2 - SPRAYER OPERATION

10. START UP NORMAL SPRAYING.

CAUTION!

OPERATOR USE OF AUTOMATED STEERING SYSTEMS CAN CAUSE RAPID DIRECTION OF TRAVEL CORRECTIONS. TRACKED AND ARTICULATED TRACTORS MAGNIFY OR WORSEN THESE DIRECTION CHANGES. WHEN SPRAYING THESE RAPID DIRECTION CHANGES WILL CAUSE THE BOOMS TO WHIP VIOLENTLY AND CAN CAUSE SEVERE STRUCTURE DAMAGE TO SPRAYER OR SPRAY VEHICLE. OPERATOR MUST BE SURE THAT SPRAY VEHICLE IS CLOSE TO LINE OF GUIDANCE BEFORE SWITCHING TO AUTO STEER.

11. ADJUST MANUAL VALVE D OR Q (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. FOLLOW CHEMICAL CONTAINER LABELING.
2. UNDER NORMAL SPRAYING CONDITIONS, MANUAL VALVE D OR Q SHOULD BE FULLY OPEN.
3. BE SURE JET AGITATORS ARE NOT PLUGGED.
4. MIX CHEMICAL THOROUGHLY BEFORE SPRAYING.

2.8 UNHOOKING SPRAYER FROM TRACTOR

1. SPLIT ELECTRICAL AND MECHANICAL PRESSURE SENSING CABLES.
2. REMOVE PTO PUMP from output shaft of tractor.
3. DISCONNECT HYDRAULIC LINES.
4. ROTATE JACK into standing position and extend jack.
5. DISCONNECT HITCH AND SAFETY CHAIN.

SECTION 3 - MAINTENANCE

3.1 MAINTENANCE SAFETY

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!

IMPORTANT!

CERTAIN CHEMICALS AND FERTILIZERS MAY CAUSE PAINT DETERIORATION. TO REDUCE CHANCE OF SPRAYER PAINT DETERIORATION, CLEAN SURFACES CONTACTED BY CHEMICAL

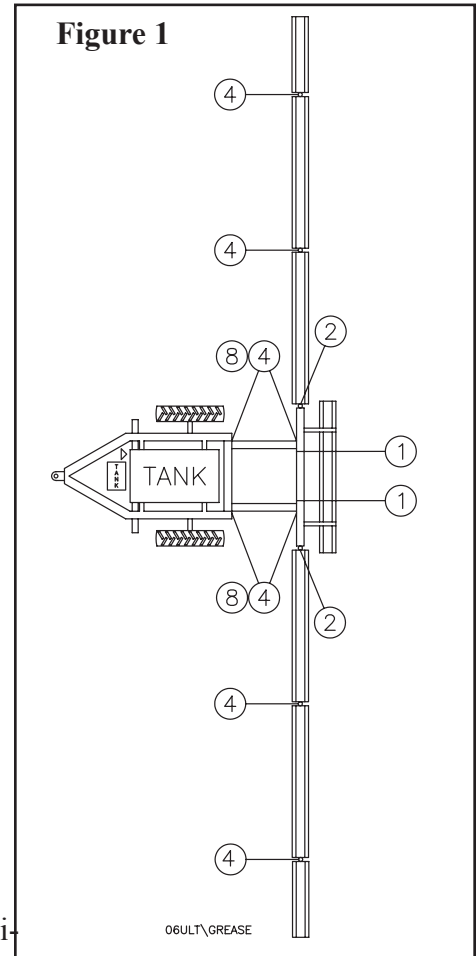
5. **BE CAREFUL** when working around high pressure hydraulic system.
6. **ALWAYS** make sure that pressure is relieved from hydraulic circuits before servicing or disconnecting from tractor.
7. **KEEP SAFETY DECALS CLEAN.**
8. **REPLACE** missing or unreadable decals. New decals are available from your SUMMERS dealer by stating correct part number (PN) located on the decal. 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.

SECTION 3 - MAINTENANCE

3.2 DAILY MAINTENANCE

Your Summers Supersprayer will give you lasting trouble free service if it is properly maintained.

1. Grease all points shown (See Figure 1).
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 tanks for movement and tighten hold down components as required.
8. Check nozzle patterns. If a nozzle pattern is distorted:
 - a. Remove nozzle tip.
 - b. Clean with toothbrush, wooden or plastic probe. Never use a metal object since tip 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 recreational vehicle (RV) anti-freeze. RV anti-freeze is non-toxic and safe for the environment. It must be used in 100 percent concentrations, but it is more economical than permanent type anti-freeze to purchase and will not corrode plastic spray components.
 - b. Spray solution through nozzles.
 - c. 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.



3.3 OFF SEASON STORAGE

1. Clean sprayer system tank(s) and optional mix and fill tank:
 - a. Flush each tank with clean water, and then drain.
 - b. Flush each tank using a strong detergent or ammonia, then drain.
 - c. Rinse each tank with clean water, and then drain.

SECTION 3 - MAINTENANCE

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 spray system. Spray solution through nozzles, and then drain.
 - c. Partially fill each tank with clean water only.
 - d. Engage pump and circulate rinse water through entire spray system. Spray rinse water through nozzles.
3. Winterize entire sprayer system:
 - a. Flush entire sprayer system with recreational vehicle (RV) anti-freeze. RV anti-freeze is non-toxic and safe for the environment. It must be used in 100 % concentrations, but it is more economical than permanent type anti-freeze to purchase and will not corrode plastic spray components.
 - b. Spray solution through nozzles.
 - c. Allow dripless nozzles to drain by loosening each diaphragm check valve nut.

IMPORTANT!

ANALOG GAUGES USED IN RAVEN CONSOLES MAY RETAIN SMALL AMOUNTS OF FLUID IN THEM AND SHOULD NOT BE SUBJECT TO EXTENDED PERIODS OF FREEZING TEMPERATURES. STORE GAUGE IN-DOORS AFTER SPRAYER HAS BEEN USED AND BEFORE IT IS EXPOSED TO FREEZING TEMPERATURES.

3.4. PRESEASON ANNUAL MAINTENANCE

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 2 – 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. Automotive anti-freeze is a hazardous material and must be disposed of properly.

SECTION 3 - MAINTENANCE

NOTES

SECTION 4 - TROUBLESHOOTING

4.1. 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 side of hydraulic motor) improperly adjusted.	See <u>Hypro Pump Selection</u> guide for more information. Refer to section 2.4-3.
	E. Frozen impeller.	Split water pump and free impeller.
	F. Incorrect pump.	See <u>Hypro Pump Selection</u> guide for more information.
	G. Unknown.	See <u>Hydraulic or PTO Pump</u> manual for more information.
2. Raven SCS-205 Control does not work properly.	Improper connections or defective components.	See <u>Raven Sprayer Control Systems</u> manual for more information.
3. Raven SCS-450 Control does not work properly.	Improper connections or defective components.	See <u>Raven SCS-450</u> 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 one or more boom switches ON.
	B. Regulator valve is in a neutral position (205 only)	Hold pressure adjust switch 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.
	D. Rate 1 or Rate 2 is selected on 450.	Turn Rate Switch to manual.
5. Electric ball valves do not work properly.	A. Improper voltage or poor electrical connection.	Check voltage and connections. Refer to section 5 Electrical diagrams.
	B. Internal breaker tripped.	Disconnect power for 20 seconds to reset.
	C. Power and ground wires on console are reversed.	Disconnect console feed wires and attach red to positive and white to ground.

SECTION 4 - TROUBLESHOOTING

4.1. SPRAYER SYSTEM TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
6. Not getting application rate for a given pressure setting.	A. Controller in Rate 1 or Rate 2 position.	Move Rate Control Switch to Manual position & hold Increase switch up with Master Switch & at least one boom switch in ON position.
	B. Restriction in plumbing.	a) Clean/Replace Main Line Strainer (strainer may look clean, but holding up to a light can reveal possible restriction). b) Check for restriction on suction side of pump. (Rinse Ball from sprayer tank could be in sump.) (Mouse nest, rag(s) or other contamination from tank might have gotten into the plumbing.) c) Clean/Replace Boom Line Strainers d) Clean/Replace Nozzle Body Strainers and/or spray tips.
	C. Crossover Plumbing Valve in OPEN position.	Turn Crossover Plumbing Valve to CLOSED position.
	D. Tank Rinse Valve left on.	Turn Tank Rinse Valve to off.
	E. Cracked or split pump impeller (damaged impeller is capable of developing some pressure, but not able to product volume).	Replace damaged impeller.
7. Unable to maintain spray rate at usual speed	Restriction in plumbing.	(SEE ABOVE) ↑
8. Steady Alarm/Rate 0.0 Pressure too low	No speed signal to Controller	a) Select SPEED to verify zero speed reading. b) Confirm correct SPEED CAL # c) Check speed sensor for functionality.
9. Steady Alarm/Rate 0.0 Pressure too high	No Flow signal to Controller	a) select VOL/MIN key to verify zero volume reading. b) Confirm correct METER CAL #. c) Check wiring for possible breaks/kinks (common on draw-bar/cab articulation points). d) Verify meter impeller can spin freely. e) Replace flowmeter transducer or entire flowmeter.
10. Intermittent Alarm “Low Level” flashes	Low Limit alarm activated	Increase speed when possible - or reset/disable Low Limit setting. See Raven Manual.
11. Intermittent Alarm “Low Level” flashes	Low Tank Level alarm activated	Enter correct TANK VOL when filling sprayer tank - or disable Low Level alarm. See Raven Manual.

SECTION 4 - TROUBLESHOOTING

4.1. SPRAYER SYSTEM TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
12. Booms spray even though all switches are in OFF position	Power to console was shut-off before Master/Boom switches were turned off. (Boom valves are in OPEN position & cannot close until they receive power.)	Turn Power Switch to ON position.
13. LEFT & RIGHT TIP LIFT & MAIN LIFT circuits on Switch Box don't operate	Open circuit on Control Grip Plug on side of Switch Box	Tighten plug to complete circuit, or replace missing plug.

SECTION 4 - TROUBLESHOOTING

4.2. MECHANICAL TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
1. Boom leads or lags too much in relation to cart.	A. Spring clevis adjustment is incorrect.	Adjust Spring clevis so when spring is compressed the coils never touch. See Pages 2.4-6.
	B. Eye bolts are out of adjustment.	Boom lead is properly adjusted when spring clevis is compressed and there is zero boom lead. See Pages 2.4-6.
2. Inner and outer boom sections are not lined up with each other.	A. Stop bolts out of adjustment.	Adjust stop bolts and lock nuts.
	B. Rubber bumper loose or missing.	Replace rubber bumper.
	C. Stop bolts broken or missing.	Repair broken or missing adjustment bolts.
3. Outer booms slam back to field position after encountering an obstruction.	A. Restrictor check valves missing or installed improperly.	One way restrictor check valves are installed in the outer boom fold cylinder. The slot should be up in the blind end and slot down in rod end.
	B. Rubber bumpers missing.	Replace rubber bumpers.
	C. Cylinder mounting springs out of adjustment.	Adjust cylinder-mounting eyebolt so springs are preloaded and adjustment is centered. Check so boom unfolds and folds completely and look for worn parts.
4. Outer booms do not self-return to field position after encountering an obstruction.	A. Restrictor check valves missing or installed improperly.	One way restrictor check valves are installed in the outer boom fold cylinder. The slot should be up in the blind end and slot down in rod end.
	B. Accumulator not functioning properly.	Check accumulator for gas charge. Replace if charge has escaped.
	C. Wind or travel speed excessive.	Slow travel speed down.
5. Booms bounce excessively when spraying.	A. Terrain too rough or uneven.	Slow travel speed to factory recommended 5-8 MPH.
	B. Nitrogen charged accumulator not functioning properly.	Dangerous. Check nitrogen pressure, replace or recharge.
	C. Cable out of adjustment.	Adjust cable to reduce boom bounce.
6. Boom suspension does not work.	A. Operator is using cylinder stops to control boom height.	Remove vertical height cylinder stops. Boom must be held on accumulator.
	B. Suspension accumulator has an inaccurate nitrogen charge.	Replace or recharge accumulator.
	C. Hydraulic system leak.	Repair hydraulic leak.
	D. Tire pressure incorrect.	Adjust tire pressure to specifications.
7. Boom breaks away too easy.	A. Latch clips are too loose.	Adjust latch clips.
	B. Outer boom cable is too tight.	Loosen cable.
	C. Wind or travel speed excessive.	Slow travel speed down.
	D. Cylinders not fully charged with oil. (After breakaway function is utilized, cylinders need to be recharged to be fully reset.)	Turn ON Outer Boom circuit & hold hydraulic lever for 10 seconds to fully extend cylinders. Turn OFF Outer Boom circuit to re-engage breakaway function.

SECTION 4 - TROUBLESHOOTING

4.2. MECHANICAL TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
8. Boom doesn't break away.	A. Outer boom fold switch not turned off.	Outer boom fold switch must be turned off for the break away to function.
	B. Blocking valve on outer boom fold cylinder not working.	Verify that blocking valve is normally open.
	C. Accumulator malfunction.	Check for nitrogen pressure in accumulator. Replace or recharge.
9. Spray height is not correct.	A. Hydraulic cylinder adjustment incorrect.	Activate vertical height circuit and raise or lower booms.
	B. Booms not level.	Adjust inner boom top clevis to level booms. Refer to section 2.5.
10. Booms do not go into transport rests.	A. Sprayer is on uneven terrain.	Move sprayer to level location.
	B. Inner boom spring cushion is out of adjustment.	Adjust inner boom fold spring cushion. Refer to section 2.4 and see note.
	C. Inner boom spring cushion assembly is out of adjustment.	Adjust inner boom fold spring cushion assembly. Refer to section 2.6.
	D. Inner boom eyebolt bent or broken.	Adjust or replace inner boom eyebolt.
11. Booms do not self-level.	A. Travel speed too fast for terrain.	Loosen bolts so boom can move as needed.
	B. Swing arms are not greased.	Lubricate swing arms and parallel links.
	C. Wear plates are rubbing guides hard.	Check for worn pivot bolts or adjust boom wear plate guides.
12. Booms contact ground often.	A. Terrain too rough or uneven.	Slow down to allow sprayer time to react.
	B. Terrain too rough for suspended boom.	Raise booms.
	C. Sprayer and tractor unstable.	Spread out wheel c-c's to gain stability.
	D. Booms do not self level.	See problem 11 above.
	E. Boom suspension does not work properly.	Check and adjust accumulator pressure.
		Correct parallel link binding.
		Grease parallel link pivots.
F. Improper tire pressure.	Adjust tire pressures to specifications.	
G. Booms are not level in spray position.	Level both booms and recheck.	
13. Inner booms won't fold out	A. Malfunctioning Safety Switch Circuit	a) Check Safety Switch above RH Part 2 Fold Cylinder for proper adjustment. b) Check connector in wiring harness located by RH Tip Lift Cylinder.
	B. Broken Eye-Bolt (operator isn't able to see this from the cab)	Replace broken Eye-Bolt.
14. Outer booms won't fold in	A. Weak or non-functioning solenoid on either or both part 2 fold cylinders	Verify voltage and correct operation of all 4 solenoids in this circuit. 2 on main block & on on each cylinder.
	B. Low voltage from tractor (this circuit takes more power than any of the other circuits because it's using 4 solenoids at the same time)	

SECTION 4 - TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	CORRECTION
15. Inner boom does not move when hydraulic lever operated.	A. Switch box does not have 12 volts.	Wire switch box on 12 volts power.
	B. Safety switch on right boom not being tripped by outer boom.	Verify that outer boom is folded or adjust safety switch.
	C. Cartridge I and/or F not functioning properly.	Clean I and F cartridges and coils.
	D. Debris in cartridges and/or orifice.	Clean cartridges and orifices under cartridges.
16. Outer booms do not unfold.	A. Switch box does not have 12 volts.	Wire switch box to 12 volts power.
	B. Wire connections loose.	Check wire connections from hydraulic block to Part 2 boom, cyl. needs 12 volts.
	C. Debris in cartridges and/or orifice.	Clean cartridges and orifices under cartridges.
	D. Cartridge A and/or D not functioning properly.	Clean A and D cartridges and coils.
17. Booms drift forward during field operation.	A. Pressure relief cartridge C not functioning properly.	Check for debris under pressure relief cartridge. Replace pressure relief cartridge.
	B. Add pilot operated check valve to system.	Install 8L1430 or 8L1432 pilot check valve kit per instructions.
18. Sprayer does not quit spraying when master boom switch is turned off.	A. Sprayer remote not turned on.	Remote control must be left on while console is operating.
	B. Diaphragm caps on nozzle bodies not shutting off.	Diaphragm gaskets need cleaning or diaphragm spring not strong enough. Replace diaphragm.
19. Sprayer remote does not function.	A. Remote not wired correctly.	Mate two blue wires on remote to orange & orange/white wires on Raven wire harness.
	B. Improper Raven 450 console wire harness connection.	450 console harness must have power lead connection closest to console.
20. Spray pressure falls off when boom valves turned on.	A. Plugged main line strainer (screen).	Flush screen with cleaner and blow off with compressed air.
	B. Supply line to pump is restricted.	Check for debris in main suction line.
	C. Speed reading is not correct.	Check speed cal. Number or recalibrate speed.
21. Norac boom leveling system does not function or is slow.	A. Hoses not plugged in.	Plug in hyd. hoses.
	B. Norac filter plugged.	Replace filter.
	C. Sensor not working.	Clean sensor filter.
	D. Sensor not ticking.	If harness tests okay replace or calibrate sensor.
	E. Improper oil flow.	Adjust oil flow from 5-7 gpm.

SECTION 5 - ELECTRICAL

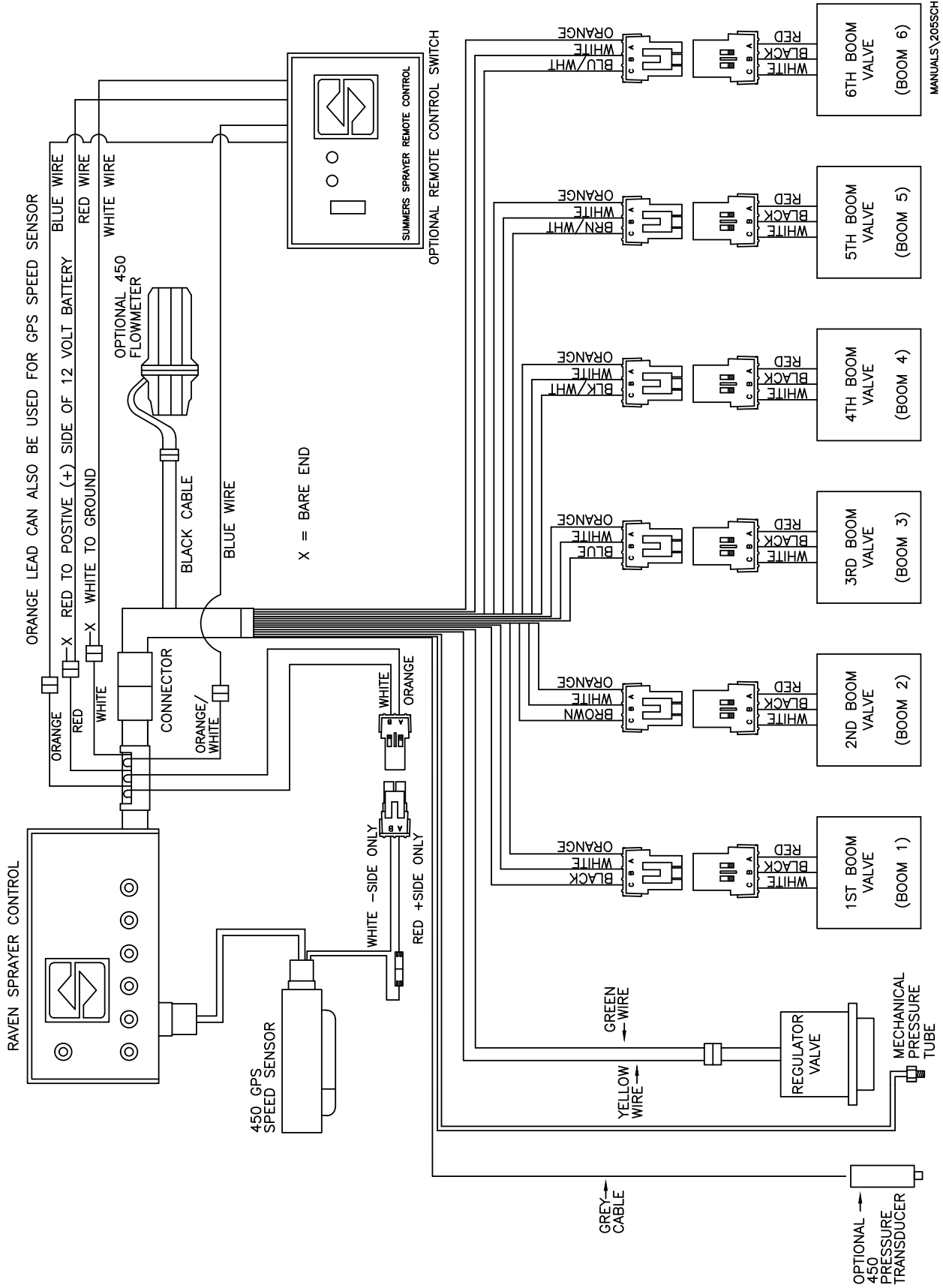
THIS SECTION CONTAINS ELECTRICAL DIAGRAMS THAT MAY BE HELPFUL IN THE EVENT OF A SPRAYER MALFUNCTION. THIS SECTION IS PROVIDED FOR YOUR INFORMATION AND TO AID SERVICE WHEN DISCUSSING SERVICE PROBLEMS OVER THE PHONE.

NOTE!

OPERATORS INSTALLING FOAM MARKERS ON ULTIMATE SPRAYERS BE ADVISED THAT LIGHTED SWITCHES INSTALLED IN ELECTRICAL SWITCH BOX WILL CARRY 15 AMPS MAXIMUM. MARKERS EXCEEDING SWITCH AND WIRING CAPACITY WILL NOT PERFORM EFFICIENTLY ON AN INADEQUATE CURRENT SUPPLY. UNITS WITH A LARGE CURRENT NEED SHOULD USE WIRING HARNESS SUPPLIED WITH THE MARKER. A SIMPLE RELAY CIRCUIT COULD ALSO BE USED TO SUPPLY CURRENT THROUGH A 6 GAUGE WIRE AND BE OPERATED WITH THE SUMMERS ELECTRICAL SWITCH BOX.

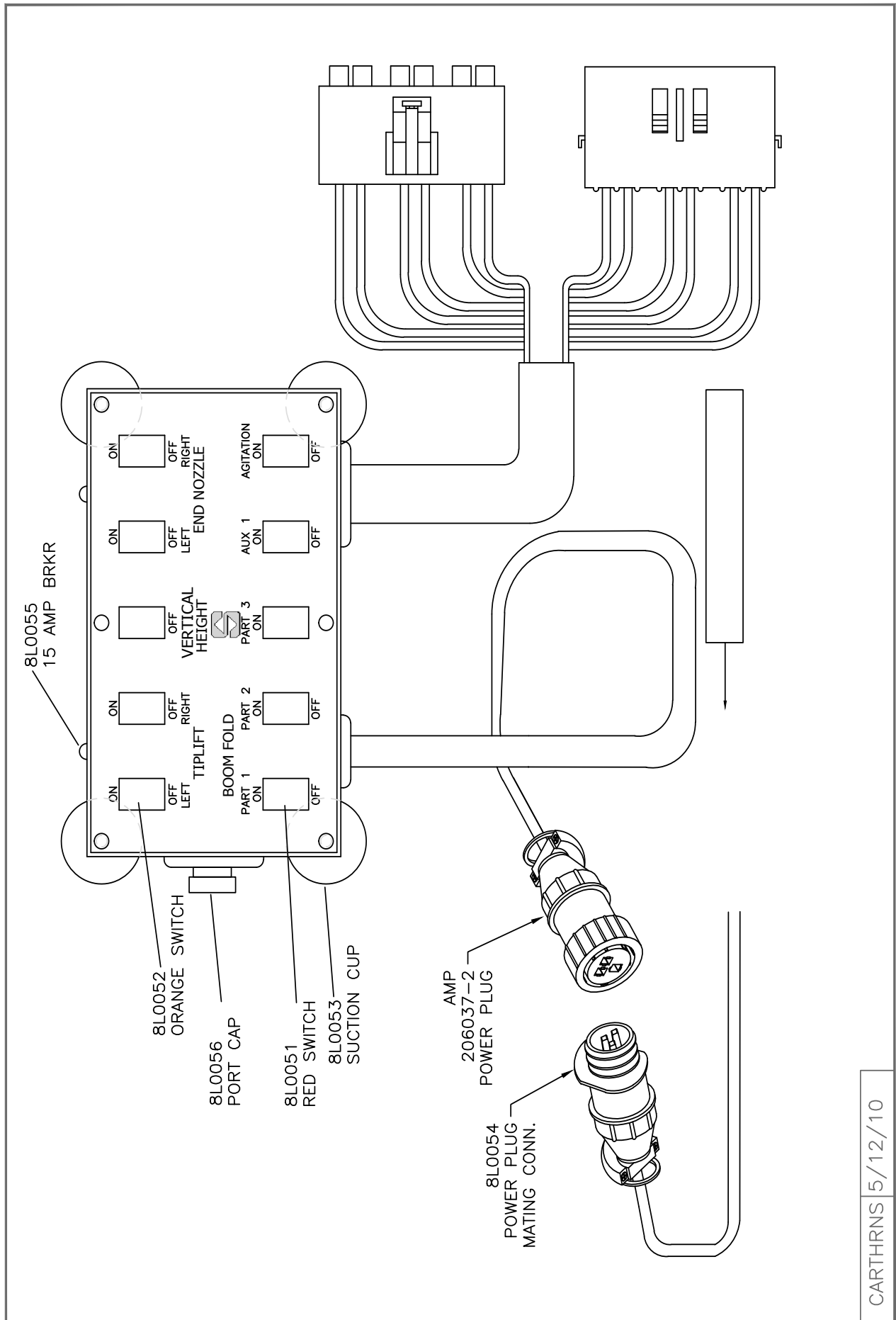
SECTION 5 - ELECTRICAL

WIRING FOR SPRAYERS USING ELECTRIC BALLVALVES

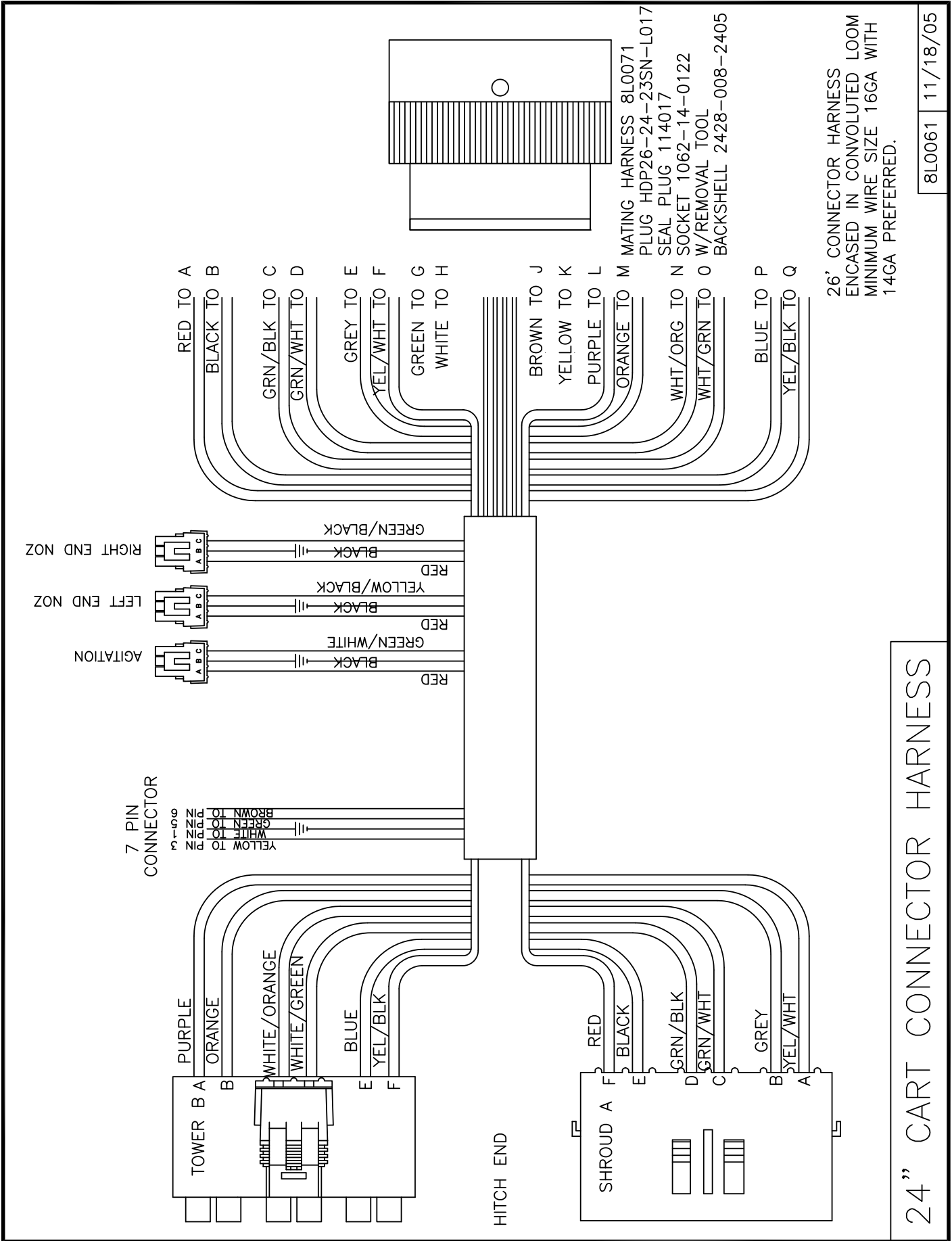


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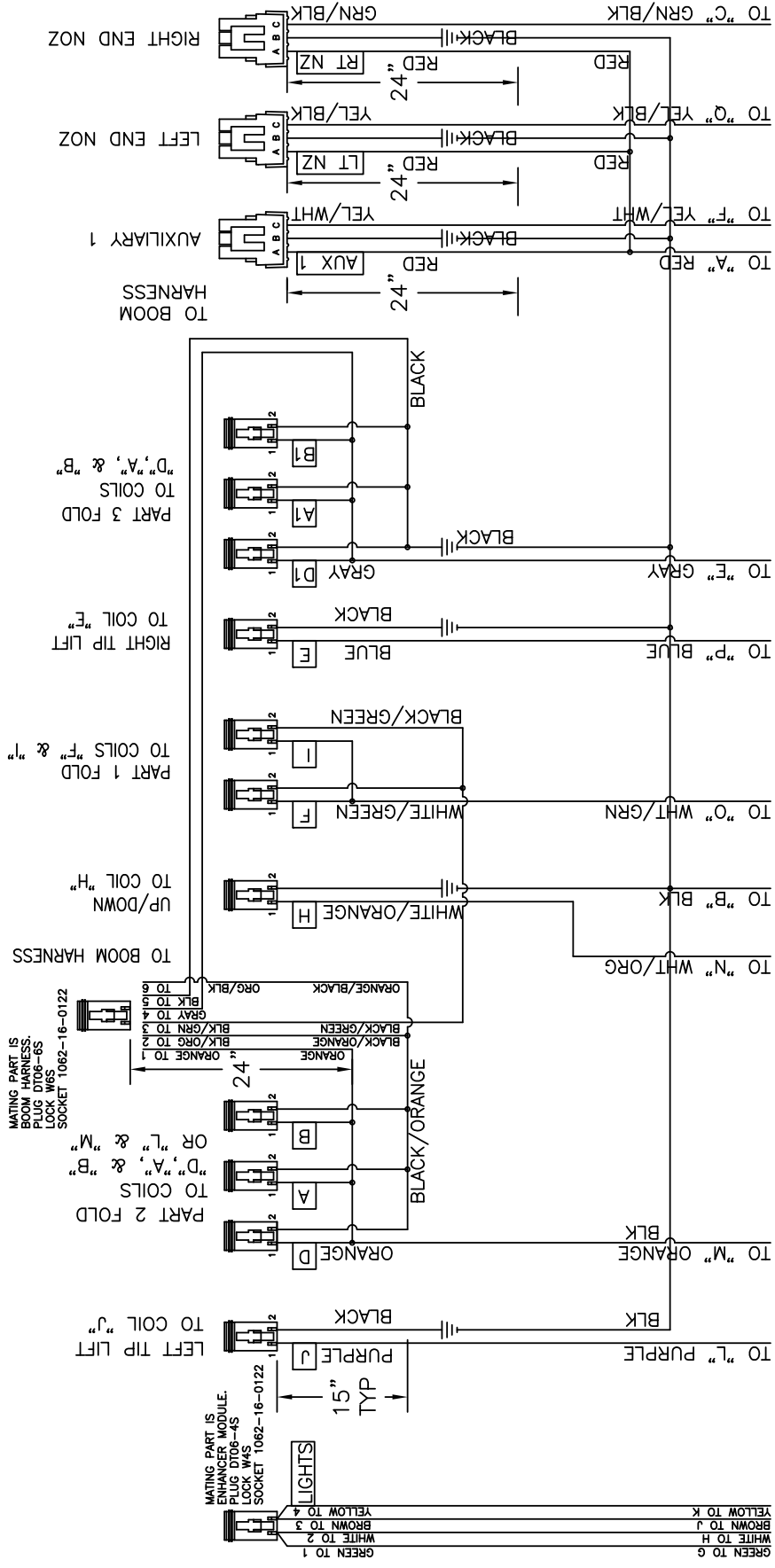
SECTION 5 - ELECTRICAL



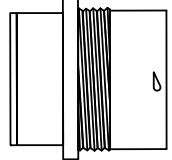
SECTION 5 - ELECTRICAL



SECTION 5 - ELECTRICAL



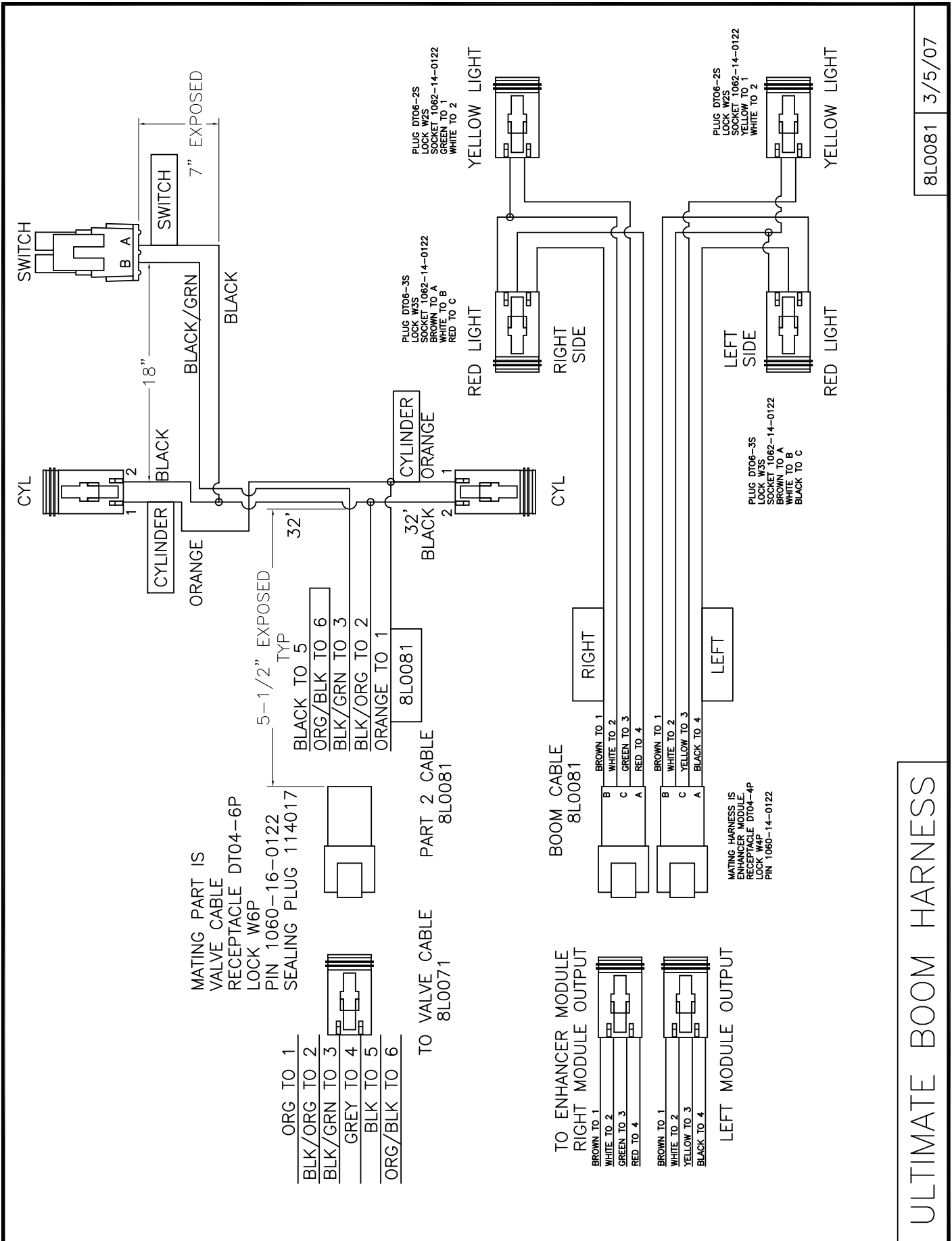
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- MATING PART IS ENHANCER MODULE. PLUG DT06-4S. LOCK WAS. SOCKET 1062-16-0122
- MATING HARNESS 8L0061
- RECEPTACLE HDP24-24-23PN-L015
- SEAL PLUG 114017
- PIN 1060-14-0122
- BACKSHELL M902-2244
- BACKSHELL NUT M902-2054



8L0071 3/2/07

8' CART VALVE WIRING HARNESS

SECTION 5 - ELECTRICAL

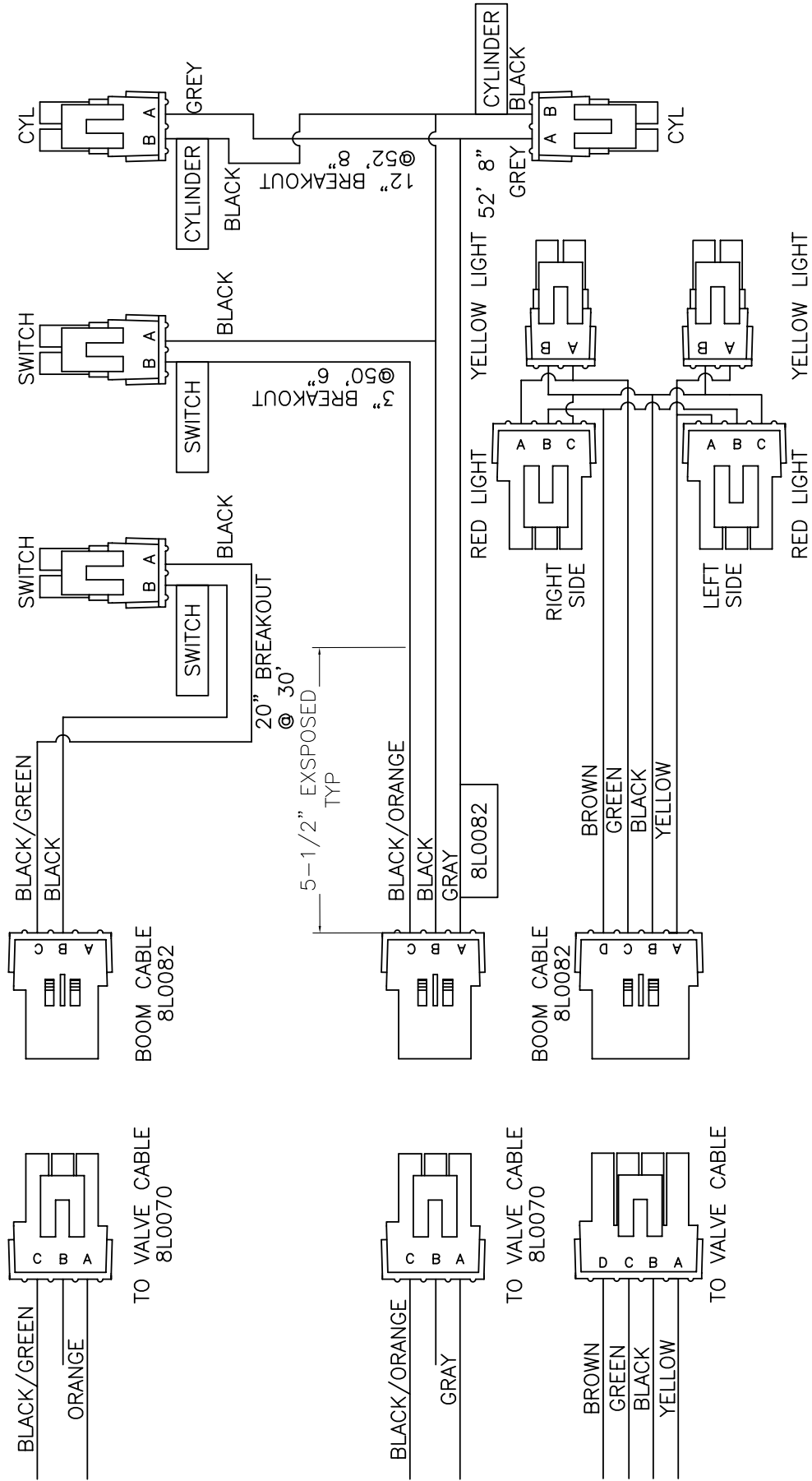


ULTIMATE BOOM HARNESS

8L0081 3/5/07

SECTION 5 - ELECTRICAL

8L0082 11/18/05



ULTRA BOOM HARNESS

6.1. ELECTRONIC PRESSURE GAUGE PACKAGE

To install electronic pressure transducer on a 450 plumbing system.

Locate the 1/4" fittings on the end of the boom valve manifold or where you want to take a pressure reading. The pressure transducer is equipped with a few extra fittings to allow for an end user preferences. The end user may want to have both an analog and a digital pressure reading or one or the other may be sufficient.

Install the desired fittings and pressure transducer.

Attach and route transducer cables to sprayer console. Be careful to fasten transducer cable to sprayer so it is protected from harm and abrasion.

To calibrate transducer.

With 0 PSI (KPA) in the boom lines, enter 0 for pressure calibration (cal pressure) in 450 console.

Cal pressure is under the Data Menu key.

When system is operating, system PSI (KPA) will be displayed when the speed key or the vol/min key is depressed and illuminated.

Electronic pressure gauge part number is 8S9476.

6.2. EQUAL BOOM SPLIT OPTION

1. Count all nozzles.
2. Divide by number of boom control valves.
3. If it is some odd number decide on how you want it split up. Keep in mind the center boom already has six nozzles on it and the end result will have to be an even number, unless it is desired to split in the middle.
4. With six nozzles fixed on rear center boom decide how many are required on each side boom to come up with a per nozzle quantity.
5. Cut the aluminum boom after the last nozzle of the center boom width on each side. You must leave at least 2-1/2" after the last nozzle port for threads and clearance. The finished result will be removing 10"-15" from each wet boom.
6. Thread the cut ends of the wet boom tube with 1" NPT. Normal thread length is 1".
7. Install coupler, hose barb ends and pipe cap in appropriate locations.
8. Remove existing fitting from center boom control valve. You will use this fitting over again so do not destroy it. Install nipple and cross to boom control for center section.

SECTION 6 - OPTION NOTES AND INSTRUCTIONS

9. Install hose barb fittings into cross. You will need to end up with two ports facing the front of the sprayer and one port facing the rear boom.
10. Run 3/4" line from cross to each end of 3 boom sections on center section.
11. Run 1" line to out board boom sections from remaining boom control valves.
12. Add water to sprayer tank and test operation.
13. Check for and repair all leaks.

Example: For a 66'8" sprayer @ 20" spacing. To find out how many nozzles convert 66'8" into inches and divide by 20". $(66 \times 12) + 8 = 800$, $800/20 = 40$ nozzles. Divide the number of nozzles by the number of booms you want. $40 \text{ nozzles} / 3 \text{ booms} = 13.33$ nozzles per boom. In this example there will be one boom that is unequal to the other two. We would set up 13 on right boom, 14 on the center boom, and 13 on the left boom. With six nozzles on the center boom we would cut the left and right booms after the fourth nozzle on each side. $6 + 4 + 4 = 14$

6.3. CONTROL GRIP

To install a hydraulic control grip on Summers sprayer.

Locate port on hydraulic switch box. Attach control grip to switch box at control grip port. Switch box will not function properly with control grip port empty. Control grip or protective cover must be installed for proper operation of all switch functions.

Mount control grip to hydraulic lever that will control desired sprayer functions.

Tie up or retain any extra cabling so it does not become a safety hazard

To use control grip functions.

With tractor engine operating move hydraulic lever to desired position while operating one of the three switches. The respective function on sprayer switch box will light up indicating circuit is activated and the cylinders should function.

Moving the control grip in opposite direction with the same switch activated will reverse the cylinder direction.

With the control grip installed in the switch box the three switches that are replaced by the control grip will not function. This is normal and they will again function when the control grip is removed and port plug installed. Operator must remember this when folding the sprayer.

6.4. RINSE NOZZLE WITHOUT RINSE TANK

Assembly tips for installing rinse ball on main tank without a rinse tank Summers Ultimate Sprayer.

1. Drill one 1-1/2" diameter hole in main tank directly behind the second tank hoop in the top center of the tank. Drill another 1-1/2" diameter hole directly behind the front hoop in a unobstructed location near the top of the tank.
2. Locate a capped off port on pressure side of plumbing and install the reducer coupling, elbow, ball valve and hose barb. Tighten all flange clamps after the new plumbing components are routed to clear obstacles.
3. Install hose connecting the ball valve with rinse ball.

RINSE HEAD OPERATION

Refer to sprayer plumbing decal for valve locations

To flush sprayer tank

1. Rotate tank selector valve "A" to closed position.
2. If sprayer has bottom fill, verify that 2" bottom fill to main tank is closed and open to sprayer pump.
3. Close valve "D" to agitators.
4. Start sprayer pump and open the new valve to tank rinse nozzle.

To remove rinse water from Main tank

1. Remove bottom fill line.
2. Open valve "A" and valve "D".
3. Start and run pump and discharge rinse water through spray booms.
4. After agitator line has been flushed the valve can be closed to allow more complete use of water in main tank.

6.5. RINSE TANK OPTION W/WAND

Assembly tips for installing rinse tank on Summers Ultimate Sprayer.

1. Drill one 1-1/2" diameter hole in main tank directly behind the second tank hoop in the top center of the tank. Drill another 1-1/2" diameter hole directly behind the front hoop in a unobstructed location near the top of the tank.
2. Install 2" 3-way ball valve on end of suction plumbing by mating the flanges. The two outlet ports will go to the rinse tank and the main sprayer tank.
3. Sight tube and bracket with optional gauge will need to be removed prior to saddle and tank installation. Sight tube will be relocated to the front of the rinse tank saddle support.
4. Flanged 1" hose barb elbow will get installed in the pressure side of the plumbing and will allow hook up of 1" hose that will supply a 1" three way ball valve that is to be mounted on the saddle support. This valve will control flow to the rinse nozzle or optional wash wand.

RINSE SYSTEM OPERATION

To fill tank using bottom fill

1. Rotate tank valve “A” to middle (closed) position.
2. If sprayer has combination bottom fill, verify that 2” bottom fill to main tank is closed.
3. Open 1-1/4” ball valve to rinse tank.
4. When rinse tank is full, close fill valve, and adjust tank valve “A” to desired position.

To flush sprayer tank

1. Adjust tank valve “A” right to receive clean water from rinse tank.
2. Rotate pump rinse valve “B” clockwise to direct water to sprayer tank rinse head.
3. Start and run pump for desired results.

To remove rinse water from main tank

1. Adjust tank valve “A” counter clockwise to receive dilute chemical solution from sprayer tank.
2. Rotate rinse valve “B” counter clockwise to direct chemical solution to sprayer booms. Booms must be turned on and pump must be running.
3. Repeat as necessary to clean tank.

If sprayer is equipped with 2” bottom fill into the tank, the tank may be drained through the bottom fill into a catch pan.

To flush booms only

1. Rotate tank valve “A” clockwise to receive clean water from rinse tank.
2. Rotate rinse valve “B” clockwise to direct rinse water to spray booms.
3. Start sprayer pump and adjust RPM to achieve adequate pressure for washing.

If there are further questions call Summers service department at 1-800-732-4392 ext. 2019.

6.6. VALVES “E” & “R” CROSS OVER PLUMBING OPTION

To install cross over plumbing on a summers pull-type sprayer.

Locate the front most capped off port on the discharge (plumbing attached to pump that feeds the booms) plumbing. Install small elbow, clamp, gasket, and hose.

Locate a capped off port on suction line farthest from sprayer hitch. Attach ball valve and larger elbow using clamps and gaskets supplied.

Attach the other end of hose installed in first step to hose barb elbow just installed.

Fittings may be loosened and rotated to allow best path of flow from discharge to suction and to eliminate and hose problems. Tighten all clamps

To bottom fill via the cross over plumbing.

Close the suction line ball valve that supplies water to pump from spray tank.

Open the bottom fill line ball valve so pump can suck from bottom fill line.

Open cross over plumbing ball valve to allow bottom fill water passage to sprayer tank.

Start sprayer pump to force water into spray tank.

6.7. END NOZZLE OPTION

To install a manual end nozzle on Summers sprayer.

Verify the end nozzle tip is installed and sized to match the boom spray tips (a selection chart is in the operator's manual for your sprayer).

Selected desired side of sprayer to mount end nozzle.

Remove wet boom end cap if installed.

Brush some pipe sealing compound on pipe threads and install end nozzle.

With nozzle installed adjust the spray direction to desired location.

Start sprayer and check for leaks, tip operation and spray pattern direction.

To install an electric end nozzle on Summers sprayer.

Verify the end nozzle tip is installed and sized to match the boom spray tips (there is a selection chart in your sprayer operator's manual).

Selected desired side of sprayer to mount end nozzle.

Remove wet boom end cap if installed.

Brush some pipe sealing compound on pipe threads and install end nozzle.

Attach wire harness to solenoid and route wires towards operator platform.

Tie or tape harness cable securely to sprayer and out of harms way. Be careful around pinch points and moving parts.

Attach harness to 450 control wiring if available. If all 450 harness switches are used then the end nozzle can be run through any type of switch box that will provide a power supply and ground if one has not been provided to you.

With nozzle installed adjust the spray direction to desired location.

Start sprayer, activate switch, check for leaks, tip operation and spray pattern direction.

End nozzle operation notes.

When end nozzle is operating the proper pattern will cover 6 feet and this must be considered additional width when programming the Raven 450 sprayer control. If boom width is not entered correctly application rate may not be accurate. Electric end nozzle harness should be plugged in to any available boom switch harness on the 450 control harness. When the electric end nozzle is installed on the 450 console that boom switch will automatically adjust spray pressure to meet the desired application rate for the width of sprayer booms that are spraying.

SECTION 6 - OPTION NOTES AND INSTRUCTIONS

6.8. SINGLE SEPARATE TIPLIFT CIRCUIT

1. Select tip lift cylinder to isolate – left or right.
2. Port “J” feeds left tip lift.
3. Port “E” feeds right tip lift.
4. Remove existing hose and fitting from selected port.
5. Install small 9/16 ORB tee fitting into port.
6. Install original hose to tee.
7. Remaining exposed tee port will be directed towards tractor remote and will be connected by supplied hose/hoses, union as required, restrictor, and tractor coupler. Colored ties will mark each end of supply hose.
8. Hose may be clamped to sprayer hitch side frame with plastic clamps.
9. Recommended placement of restrictor is nearest the hydraulic coupler.

WARNING!

RESTRICTOR INCLUDED IN THIS PACKAGE IS FOR OPERATOR SAFETY. MODERN TRACTORS HAVE TOO MUCH FLOW FOR OUR HYDRAULIC SYSTEM AND MAY PUT DAMAGING STRESSES ON THE ULTIMATE BOOMS. FLOW CONTROLS ON THE TRACTOR ARE ADJUSTABLE BUT ADJUSTMENTS, IF PERFORMED AT ALL, WILL VARY FROM OPERATOR TO OPERATOR. FOR SAFETY AND SPRAYER LIFE THE RESTRICTOR MUST BE INSTALLED. FAILURE TO DO SO COULD VOID ANY BOOM WARRANTY YOU HAVE.

After installation of this option the remote tip lift function will now be independent of the Ultimate switch box on the one circuit only. The remaining tip lift could have the option installed also, or the switch on that tip lift cylinder could be left on and the operator would then have separate control with two different hydraulic circuits. The sprayer switch box will still function exactly the same as it had prior to the installation of the separate control. Operator will have two different means of controlling the same circuit.

Parts required

Component	Description	Quantity per
8D3212	MALE TIP 3/4"-16ORB ISO	1.000
8G2286	NYLON TIE - BLUE	2.00
8J5100 *	#6 JIC(M) X #6 JIC(M) UNION	1.000
8J5510	3/4" -16 ORB X #6 JIC(M) STR	1.000
8J5800	3/8" FPT X #6 JIC(F-SW) STR	1.000
8J6002	9/16"-18 ORB X #6 JIC(M)	1.00
8J7216	#6JIC(M) X #6JIC(F) 1/16"RESTR	1.000
8N3060 *	3/8 X 60"HYD HOSE #6FJX3000PSI	1.000
8N3348	3/8X 348"HYD HOSE #6FJX3000PSI	1.000
8S2980	HYD HOSE CLAMP-SMALL-NYLON	6.000
8X0202	NUT NY-LOCK 3/8"-16NC GR2 ZDI	3.000

* Not required on sprayer sizes less than 90 feet.

6.9. FOAM MARKER

To install a foam marker Summers sprayer.

1. Determine side of sprayer to mount platform. Summers Mfg. Co., Inc. installs all platforms on right side of machine. Some sprayer models will have space on left side of machine so it may be desirable to mount it there.
2. Mount foamer platform.
3. Mount foamer on platform.
4. Assemble foam nozzle per foamer instructions.
5. Mount foamer nozzle on outer end of boom. Nozzle should not extend beyond the booms and must remain out of harms way during folding and unfolding.
6. Attach foamer lines to nozzle.
7. Route lines out of harms way back to foamer and secure to non moving parts.
8. Mount foamer control switch box near operator station.
9. Connect power source wires to strong battery power and ground terminals.
10. Route harness to foamer and connect mating connectors.
11. Mix foam and water per instructions.
12. Verify proper foamer operation

6.10. BOOM CLEAN OUT OPTION

Cam lock couplings can be placed in desired location on the wet boom. Cam lock couplings can be used for flush sediment out of the wet boom tube or they can function as a boom drain. Boom cleanout quantity should closely match the number of boom control shut offs.

Clean out installation.

1. Decide the purpose of cleanout operation. Drainage or flushing?
2. Decide on quantity of cleanouts required.
3. Verify sufficient room to mount clean out. If clean out can not be mounted on extreme run of boom section a location nearest the end may be adequate.
4. Mark aluminum for cleanout or Tee installation. For a tee installation – 2-3/4” of aluminum must be cut out of the section and threaded so 20 nozzle spacing is maintained.
5. Install all fittings and check for interference and ease of operation.

6.11. BOTTOM FILL FLOW METER PACKAGE

Bottom fill flow meter is installed in the suction side of the sprayer plumbing between the bottom fill shut off valves and the tank bottom suction lines. It is used to provide an indication of the amount of liquid entering the tank. Its accuracy is plus or minus 2%.

Flow meter installation.

1. Remove tank supply line from end of plumbing fittings.
2. Mount flow meter in line and install suction line. Flow meter should be rotated or adjusted to obtain the best possible view of the display. If sprayer has a rinse system the tank selector ball valve will be mounted between the flow meter and the fluid tanks.
3. Install bolt plate to nearest sprayer cross member.
4. Install bushing bracket to bolt plate.
5. Install threaded flow meter bracket to bushing bracket and to flow meter.
6. Tighten all fittings and check for interference and ease of operation.

6.12. CLEAN LOAD PACKAGE

To install a Cleanload on a Summers Pull-Type Sprayer

1. Locate the front most elbow on pump discharge (plumbing attached to pump that feeds the booms) plumbing. Install tee, clamp, gasket, ball valve, and hose barb fitting. Ball valve and fitting are directed to the front of machine. Existing plumbing will connect to rear facing port on tee.
2. Mount cleanload with bracket to inside right hitch side frame using large u-bolt.
3. Attach the short piece of hose from inlet ball valve to inlet side of chemical eductor and tighten hose clamps.
4. Locate and drill a 3" diameter hole in the top of main tank near the front and center. The fitting should be in an area of the tank that will allow it to seal.
5. Install 2" bulkhead and fittings in the top of the tank.
6. Install hose and clamps connecting Cleanload eductor to top of tank.
7. Use extra 2" rubber hose inside tank to drop down lower into the tank. This will help to reduce foaming when adding chemicals. The hose may need to be perforated near the tank top fitting to prevent siphoning.

Cleanload Operating Procedure

Loading

1. All Cleanload valves must be closed prior to starting. Inlet ball valve, knife valve, and hopper rinse ball valve.
2. Open lid to check for foreign objects which may hinder performance or contaminate the system.
3. Close and lock lid by turning cover clockwise.
4. Divert pump flow to cleanload inlet line (open valves "C" or "P"). A pressure of 30 PSI minimum and 150 PSI maximum must be used. Highest pressures increase the eduction rate and available wand suction.
5. Open knife valve located on the bottom of hopper by pushing handle in.
6. Unlock and open lid slowly by turning cover counterclockwise.

SECTION 6 - OPTION NOTES AND INSTRUCTIONS

Loading Liquid or Powdered Chemical into Hopper

7. Pour required amount of chemical into hopper. Avoid splashing liquids or powdered chemicals outside of hopper.
8. Rinse empty chemical containers if applicable. Place container opening over container rinse valve and press down. This will activate the rinse valve and rinse container.
9. Rinse cleanload hopper. Close and lock lid by turning cover clockwise. Release the safety return locking band to locked position.
10. Open lid and inspect for chemical residue. Repeat step 10 as necessary.
11. Close knife valve by pulling red handle out towards you. Turn inlet valve off.

Loading Liquid and or Powdered Chemical with Optional Suction Lance

Note: Lance suction is dependant on eductor pressure and flow. For best results use highest pressure available up to 150 PSI maximum.

12. Insert lance body with o-ring into eductor until the o-ring is sealed.
13. Use free end of lance to pierce bag or container and vacuum powdered or liquid chemical.
14. Rinse lance. Place lance end into a clean container of water to rinse lance assembly.
15. Remove lance body from eductor and drain any remaining fluid into hopper.
16. Close knife valve by pulling red handle out towards you. Turn inlet valve off.

Shutdown

1. Close knife valve first by pulling red handle out towards you.
2. Insure that the remaining valves are closed.
3. Verify chemical residue has been cleaned up.
4. Close hopper lid and lock by turning clockwise.
5. Divert pump discharge flow back to normal operation by closing valves "C" or "P".

6.13. ELECTRIC AGITATOR SHUTOFF PACKAGE

To install Electric agitator shutoff on a Summers Pull-Type Sprayer

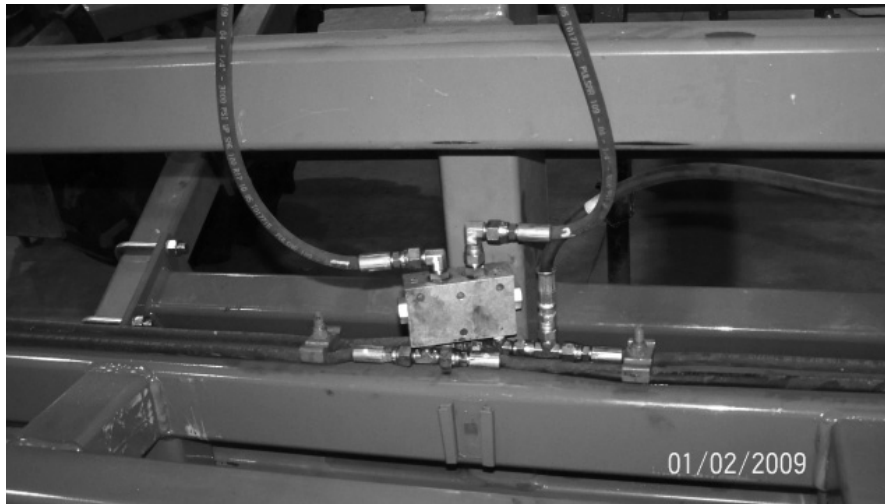
1. Install the mounting bracket on ball valve.
2. Locate 2" square tube on front of sprayer hitch where the mounting bracket will attach.
3. Attach mounting bracket and ball valve to square tube in line with existing agitator feed hose.
4. Install fittings into ball valve.
5. Cut existing agitator feed hose near ball valve shutoff and attach hoses to ball valve fittings.
6. Locate switch box accessory leads on right side of sprayer main frame or near hydraulic block on rear of sprayer.
7. Connect ball valve wire harness to available lead.
8. Energize switch box and locate switch to controls agitator ball valve motor.
9. Agitator flow is regulated by manual ball valve on discharge plumbing.
10. Electric shutoff will enable and disable flow as desired.

SECTION 6 - OPTION NOTES AND INSTRUCTIONS

6.14. REMOTE PILOT OPERATED CHECK VALVE PACKAGE

For option # 8L1430 (JIC) & 8L1432 (NPT)

1. Locate hydraulic lines coming from ports “I” and “F” on hydraulic block.
2. Trace lines back to just behind the slow moving emblem where the lines tee off.
3. Install pilot check valve (8L0036) in those lines. Lines coming from summers block will attach to ports v1 and v2.
4. The lines coming from cylinders will route to c1 and c2 and will attach to block with tee.
5. Care must be maintained to insure that the “I” hose will still route to the rod side of the cylinders through the V1-C1 or V2-C2 path. The other “F” hose will go to the remaining port series either 1 or 2 so we don’t have hose crossing.
6. Tighten all fittings and reinstall the slow moving emblem.
7. Locate the pressure relief cartridge in the summer’s hydraulic block and replace it with new one from package.
8. Locate cartridge “F” and replace it with one of the new cartridges in the kit.
9. Replace the original coil on “F” with one of the new e coils in the package.
10. Hook up coil to original wire using wetherpack to deutsch adapter harness if required.
11. Locate cartridge “I” and replace it with remaining new cartridges from the kit.
12. Use care when removing existing cartridge because there is an orifice under the cartridge that can fall out. Replace the original orifice with an offset orifice from the package.
13. Reinstall the “I” cartridge and replace coil with new e coil.
14. Hook up coil using wiring adaptor.
15. Test the system for proper operation in full extension or full retraction of part 1 cylinders.
16. Inspect for hydraulic leaks
17. Verify the boom drift to forward position is gone and boom remains where it was left by operator.



These instructions should help you install the pilot operated check valve package. The pilot check valve will prevent the booms from moving forward while sprayer is in use. They will also permit the relief valve to function properly if the booms have not been lifted from the transport cradle prior to any unfolding operations. The relief valve will protect the eye bolts from being broken during unfolding. The relief valve will be isolated from the rest of the circuit during spraying operations and boom drift should be eliminated.

SECTION 7 - SPECIFICATIONS

7.1. SPRAYER SIZES AND NOZZLE QUANTITY

ACTUAL SPRAYING WIDTH	PART 1	PART 2	EXTENSION	TOTAL NOZZLES	
60' - 0"	50' - 0" (30)	10' - 0" (6)	–	36	
63' - 4"		10' - 0" (6)	1' - 8" (2)	38	
66' - 8"		10' - 0" (6)	3' - 4" (4)	40	
70' - 0"		20' - 0" (12)	–	42	
73' - 4"		20' - 0" (12)	1' - 8" (2)	44	
76' - 8"		20' - 0" (12)	3' - 4" (4)	46	
80' - 0"		30' - 0" (12)	–	48	
83' - 4"		30' - 0" (12)	1' - 8" (2)	50	
86' - 8"		30' - 0" (12)	3' - 4" (4)	52	
90' - 0"		40' - 0" (12)	–	54	
93' - 4"		60' - 0" (36)	30' - 0" (12)	1' - 8" (2)	56
96' - 8"			30' - 0" (12)	3' - 4" (4)	58
100' - 0"	40' - 0" (12)		–	60	
103' - 4"	40' - 0" (12)		1' - 9" (2)	62	
106' - 8"	40' - 0" (12)		3' - 4" (4)	64	
110' - 0"	50' - 0" (15)		–	66	
120' - 0"	100' - 0"	20' - 0"	–	72	
133' - 4"		33' - 4"	–	80	

7.2. OVERALL WIDTH AND LENGTH DIMENSIONS

ACTUAL SPRAYING WIDTH	TOTAL LENGTH IN FIELD	TRANSPORT WIDTH WO/ WINDSHIELDS	TRANSPORT WIDTH W/ WINDSHIELDS	TRANSPORT LENGTH
60' - 0"	27' - 2"	11' - 10"	13' - 10"	26' - 0"
63' - 4"				
66' - 8"				
70' - 0"				
73' - 4"				
76' - 8"				
80' - 0"				
83' - 4"				
86' - 8"				
90' - 0"				
93' - 4"	32' - 2"	11' - 10"	13' - 10"	31' - 0"
96' - 8"				
100' - 0"				
103' - 4"				
106' - 8"				
110' - 0"				
120' - 0"	30' - 10"	14' - 8"	NA	29' - 4"
133' - 4"				

SECTION 7 - SPECIFICATIONS

7.3. TIRE PRESSURE SPECIFICATIONS AND CART WHEEL SPACING

TIRE SIZE (BRAND)	LOAD INDEX	RECOMMENDED AIR PRESSURE (MAX)	MODEL
480/80R38 (GOODYEAR)	155	35 (35)	1000/1650 ULT
380/90R46 (GOODYEAR) *	159	58 (58)	1000/1650 ULT

CENTER TO CENTER SPACING

NARROW AXLE – 82”, 88”, 96”, 102”, 109”, 114”, 120”

**76” Spacing also possible with this tire*

WIDE AXLE – 109”, 120”, 132”, 144”, 152”

BEET AXLE – 88”, 96”, 109”, 120”, 132”

NARROW CART NARROW AXLE – 72”, 76”, 80”, 89”, 60-120” Duals

NARROW CART WIDE AXLE – 76”, 80”, 89”, 99”, 109”, 113”, 60-120”, 80-120”, 88-132” Duals

**60” Spacing also possible with this tire*

7.4. TANK SPECIFICATIONS

TANK	CAPACITY (U.S. GALLONS)	ULTRAVIOLET PROTECTED POLYTHYLENE	JET AGITATORS	FILL WELL DIAMETER	STRAINER BASKET
MAIN	1000 CROP CARE	YES	2 SINGLE	16”	MESH
	1500 CROP CARE		2 SINGLE	16”	
	1650 CROP CARE		2 SINGLE	16”	
RINSE	71 SINGLE		-	10”	-
INDUCTOR CONE	6.5		JUG RINSE & SPRAY BALL	12”	-
CLEAN WATER	5		-	5”	-
INDUCTOR CONE	6.5		JUG RINSE & SPRAY BALL	12”	-

7.5. OVERALL HEIGHT AND CLEARANCE DIMENSIONS

MODEL	OVERALL HEIGHT	CART CLEARANCE *	AXLE CLEARANCE *
ULTIMATE 380 TIRES	144”	39”	30”
ULTIMATE 480 TIRES	144”	38”	29”

*MEASURED ON CONCRETE SURFACE WITH FULL TANK

SECTION 7 - SPECIFICATIONS

7.6. MISCELLANEOUS COMPONENT SPECIFICATIONS

COMPONENT	SPECIFICATIONS
PUMP	See Hydraulic or PTO pump manual.
LINE STRAINER	1-1/2" Flange, 120 or 80 mesh heavy-duty screen.
FLOW METER	1-1/2" Flange, 60 GPM (1000 GPM optional).
BALL VALVES	Quarter turn on/off.
REGULATOR VALVE	Flange, electronic.
ELECTRIC BALL VALVES	Flange, electronic. See Electric Ball Valves manual.
NOZZLES	Single, dual or triple split eyelet type with diaphragm check valve.
TIPS	80 or 110°, Extended Range (XR), color-coded, stainless steel.
CAPS	Quarter turn, color coded, self-aligning.
SCREENS	100 or 50 mesh.
RAVEN 205 CONTROL	See Raven Sprayer Control Systems manual.
RAVEN 450 CONTROL	See Raven SCS-450 manual.
RAVEN 4400 CONTROL	See Raven SCS-4400 manual.

7.7. PLUMBING SPECIFICATIONS

PLUMBING	HOSE SIZE	PLUMBING	HOSE SIZE
SUPPLY SIDE	3"	WET BOOM	1"
BOTTOM FILL	2 or 3"	SIGHT TUBE	3/4"
INDUCTION CONE	1-1/2"	TANK DRAIN	3/4"
PRESSURE SIDE	1-1/2"	HYDRAULIC PUMP	1/2"
AGITATOR	1"	HYDRAULIC CYLINDERS	1/4" & 3/8"
BOOM FEED LINE	1"	HYDRAULIC CONTROL BLOCK	3/8"

SECTION 7 - SPECIFICATIONS

7.8 BOLT TORQUE SPECIFICATIONS

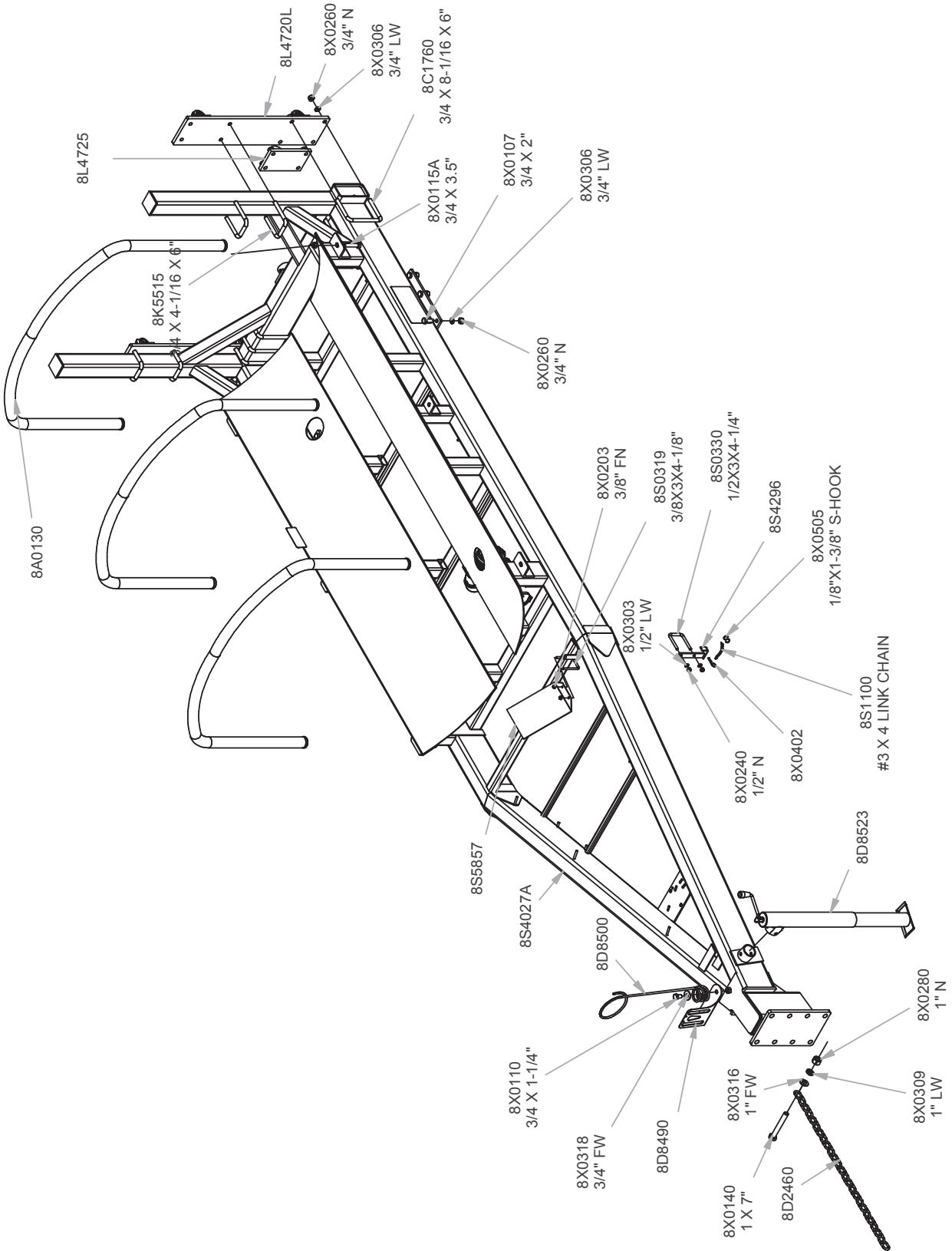
BOLT SIZE	TORQUE
1/4"	7 ft-lbs
5/16"	15 ft-lbs
3/8"	30 ft-lbs
7/16"	45 ft-lbs
1/2"	70 ft-lbs
9/16" wheel bolts	122 ft-lbs
5/8" wheel bolts & bolts	170 ft-lbs
3/4" wheel bolts & bolts	250 ft-lbs
7/8"	350 ft-lbs
1"	450 ft-lbs
1-1/4"	500 ft-lbs
1-1/2"	570 ft-lbs
2"	1200 ft-lbs

NOTES

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

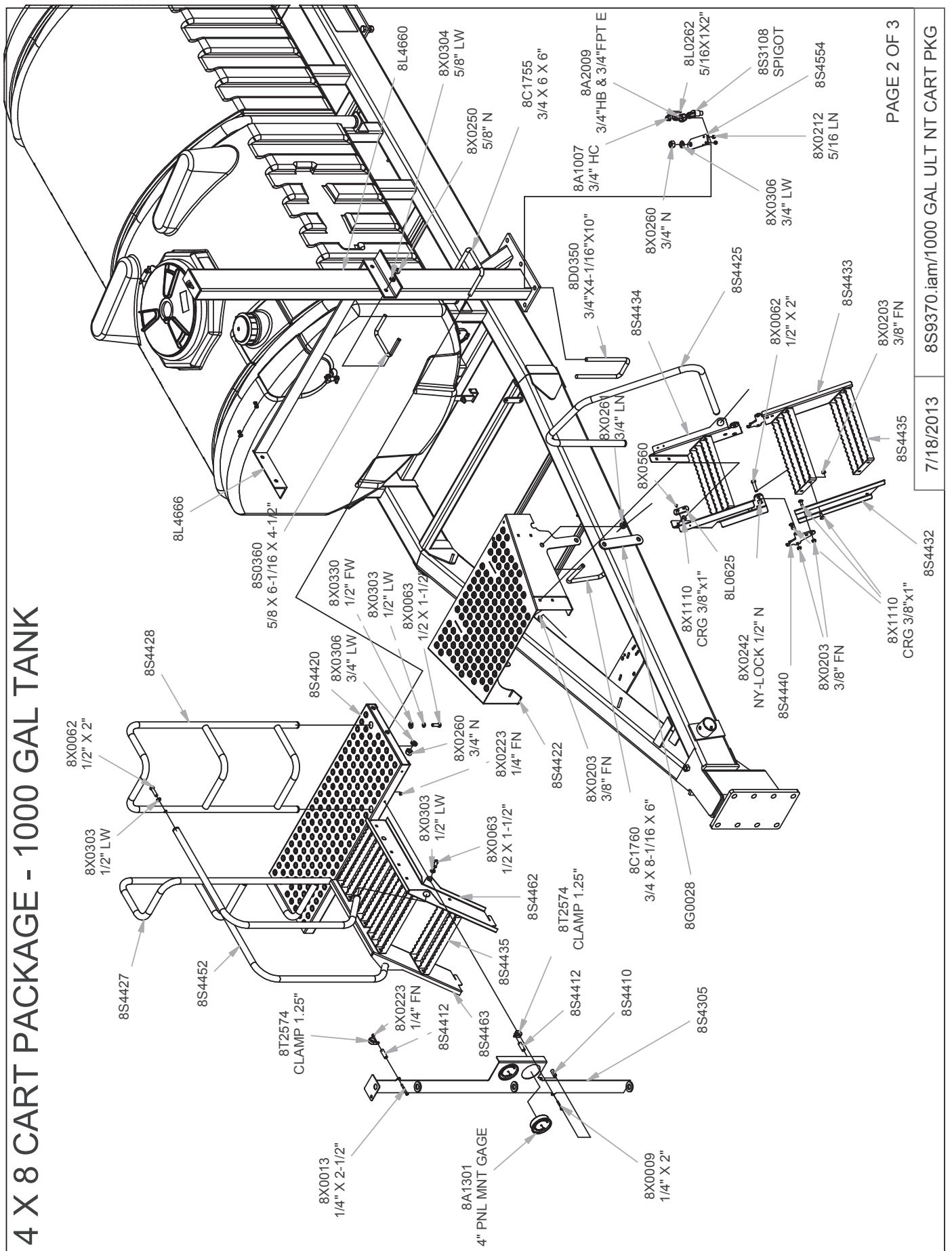
SECTION 8 - PARTS

4 X 8 CART PACKAGE - 1000 GAL TANK

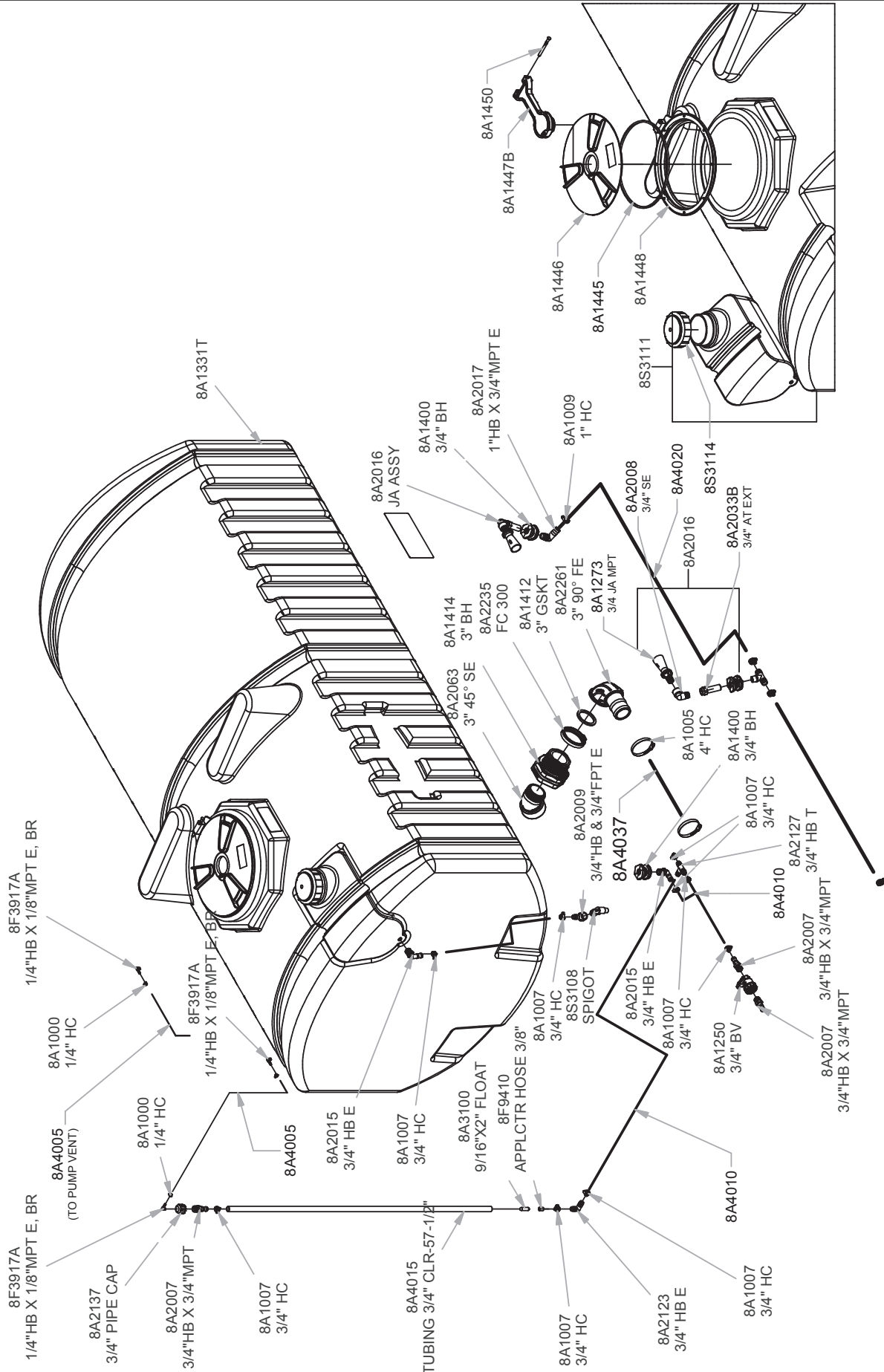


SECTION 8 - PARTS

4 X 8 CART PACKAGE - 1000 GAL TANK

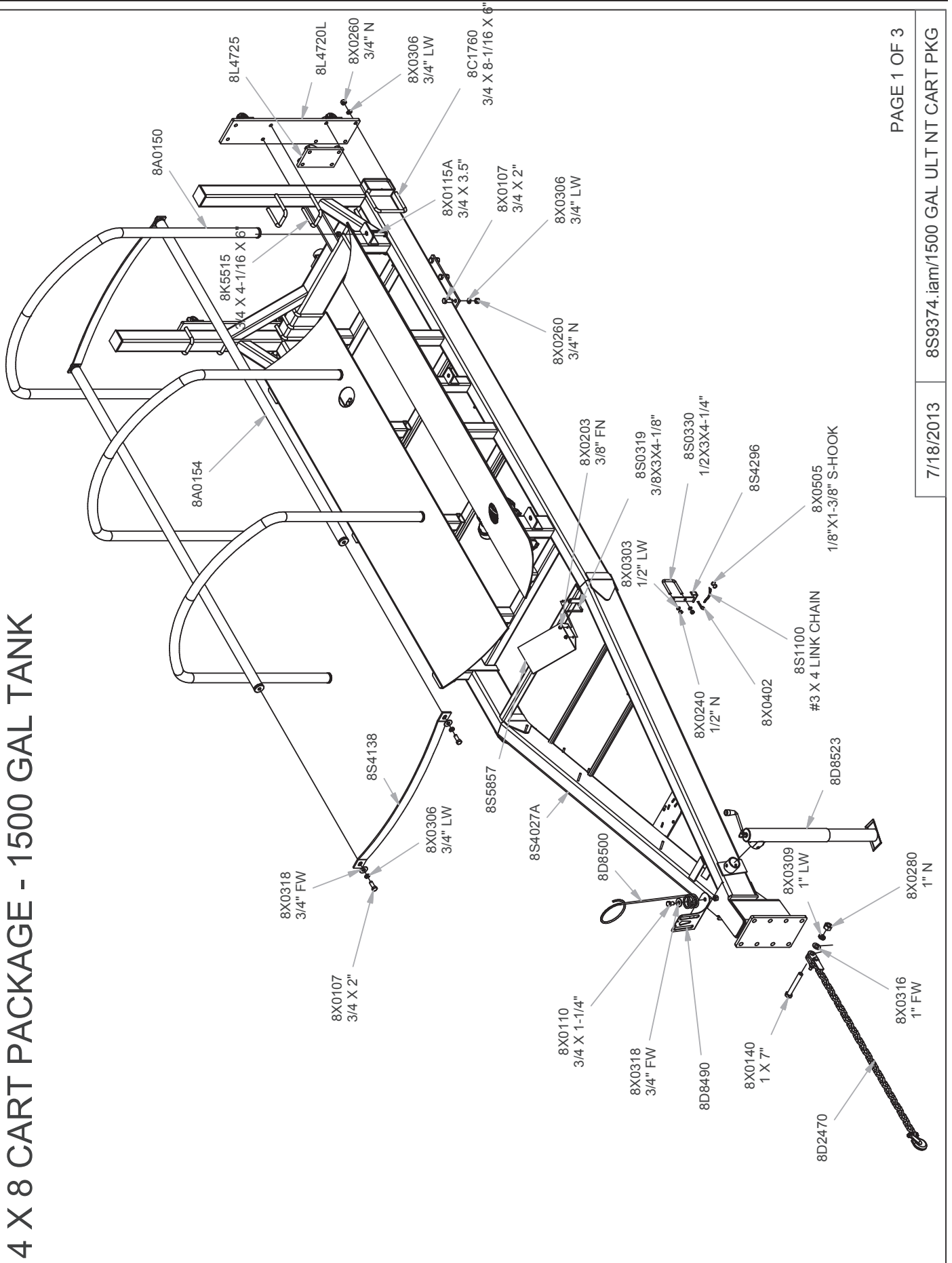


4 X 8 CART PACKAGE - 1000 GAL TANK



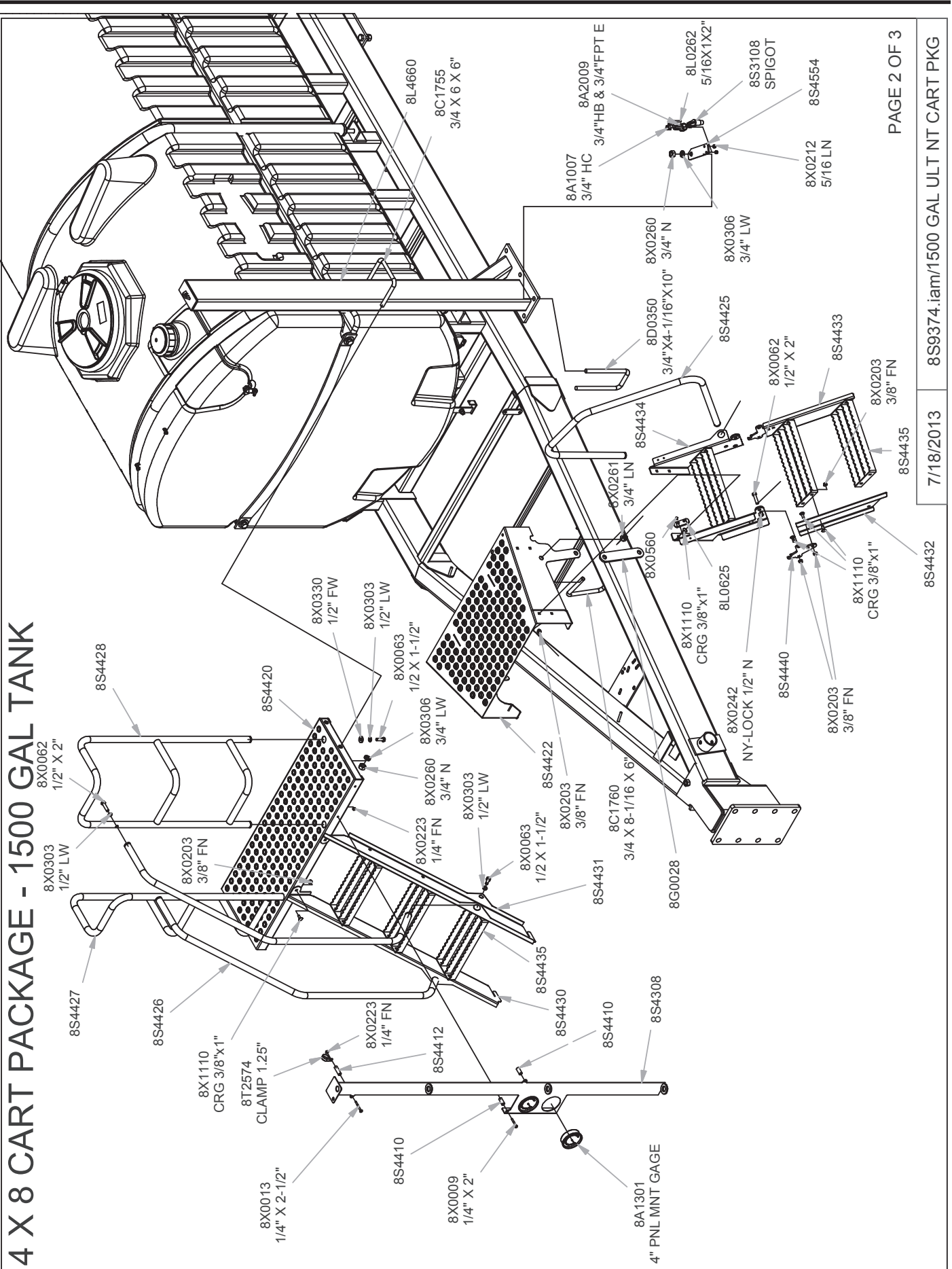
SECTION 8 - PARTS

4 X 8 CART PACKAGE - 1500 GAL TANK



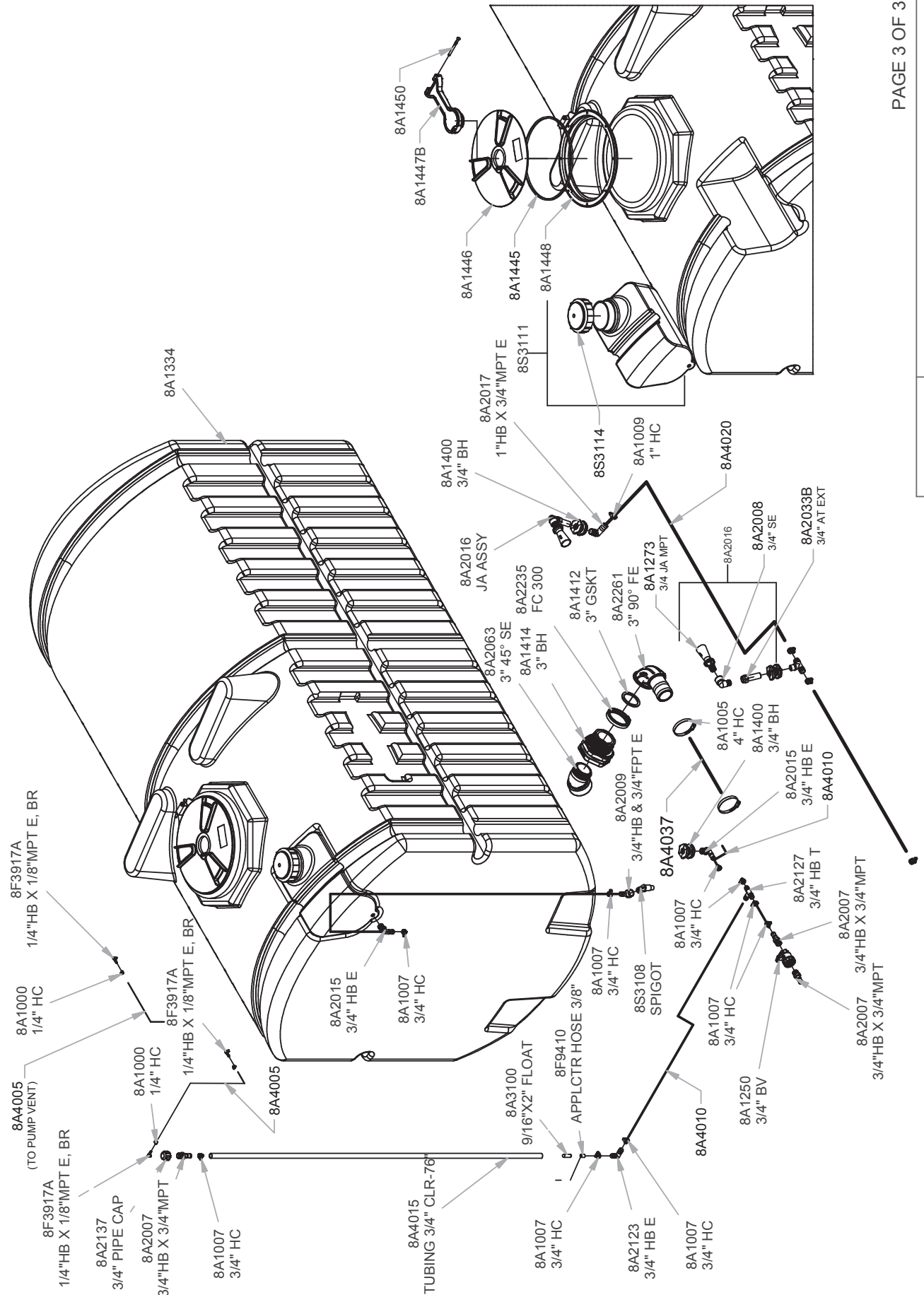
SECTION 8 - PARTS

4 X 8 CART PACKAGE - 1500 GAL TANK



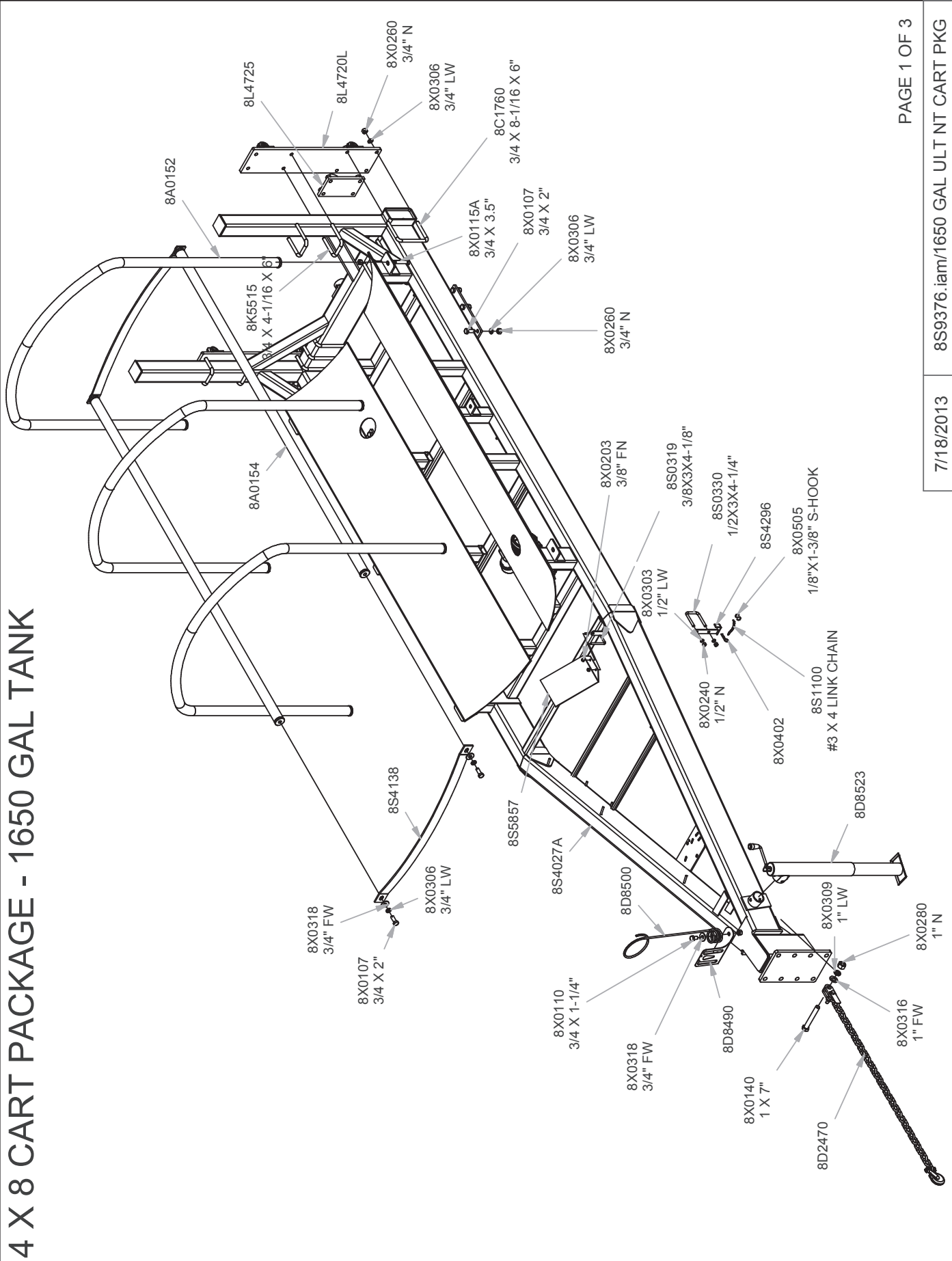
SECTION 8 - PARTS

4 X 8 CART PACKAGE - 1500 GAL TANK



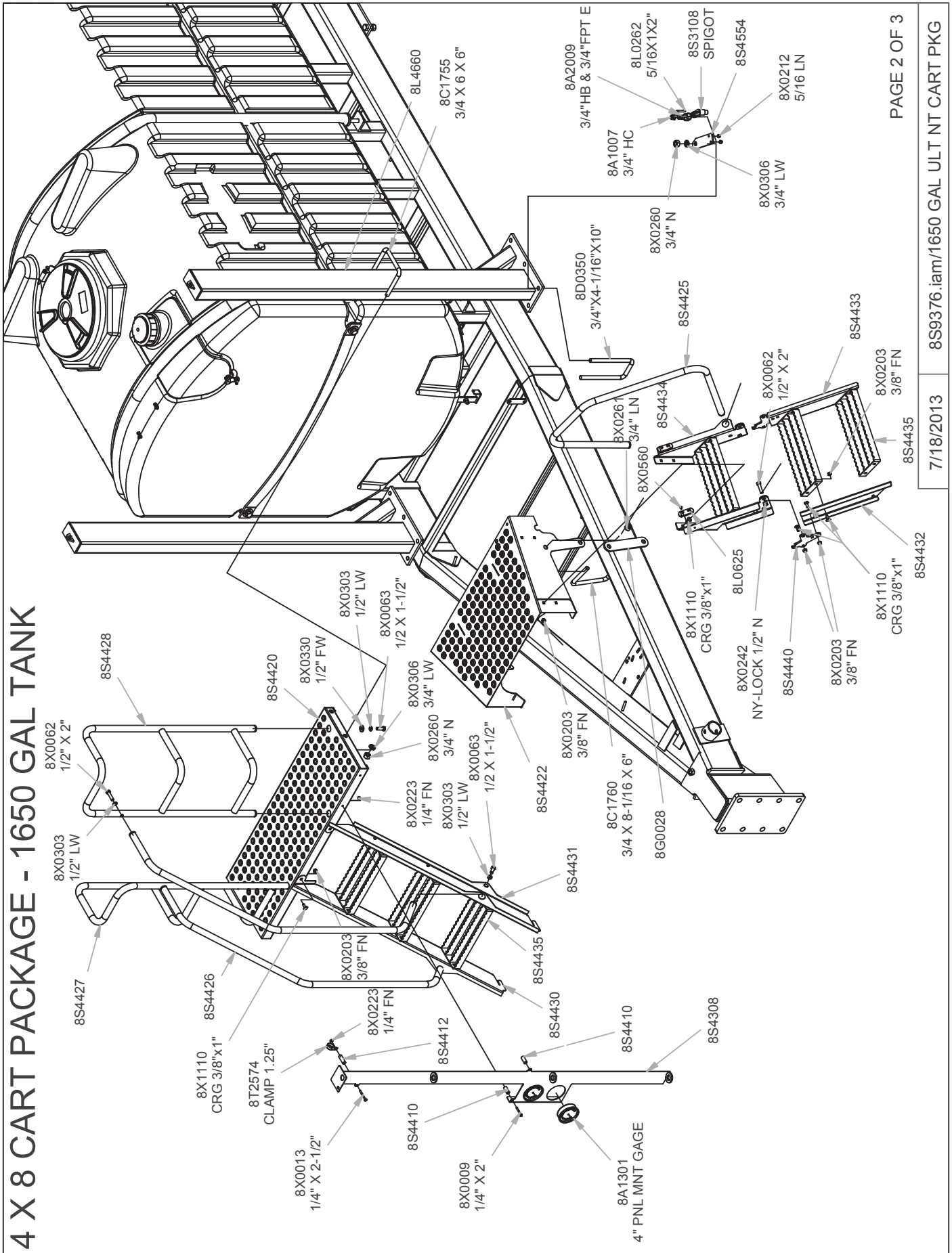
SECTION 8 - PARTS

4 X 8 CART PACKAGE - 1650 GAL TANK



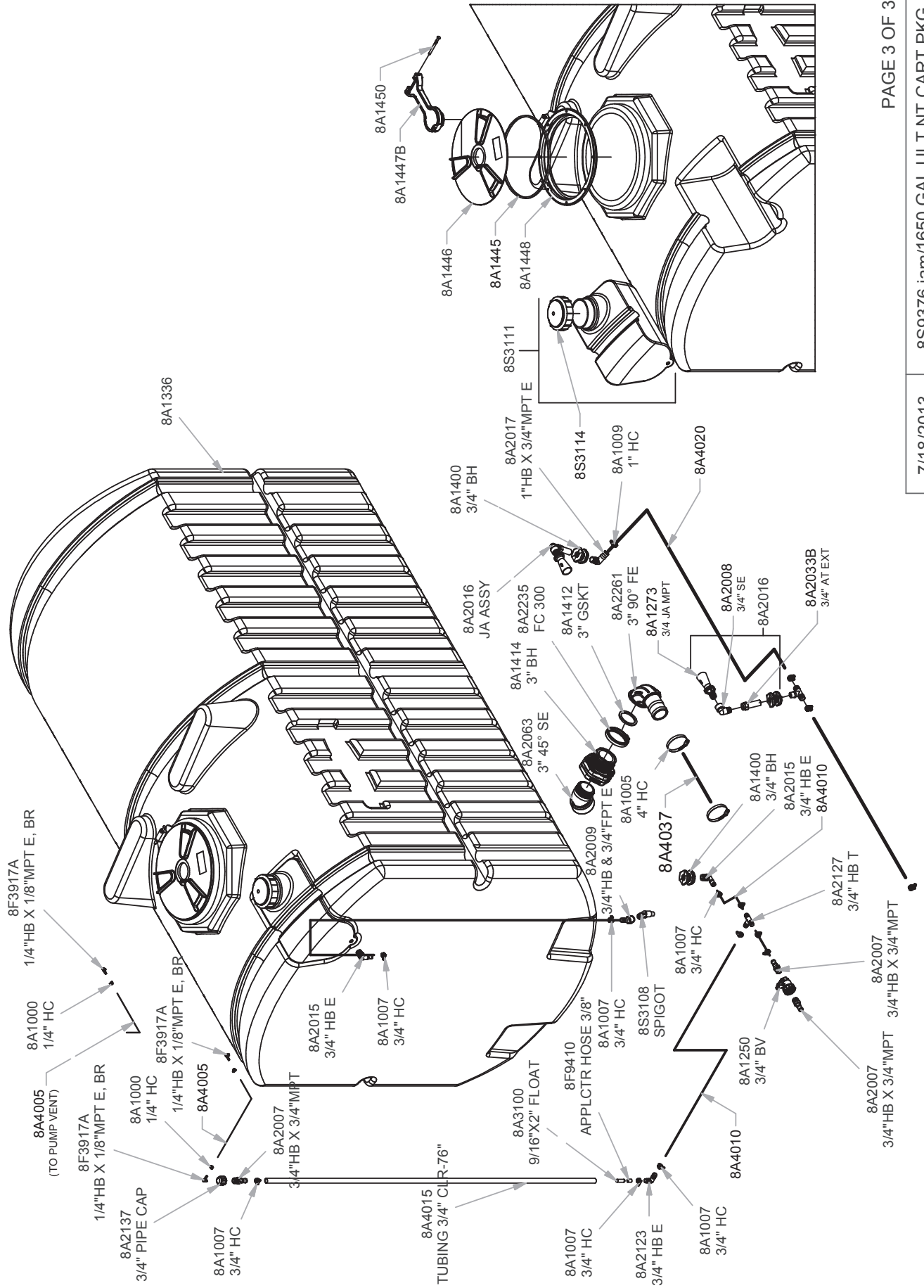
SECTION 8 - PARTS

4 X 8 CART PACKAGE - 1650 GAL TANK



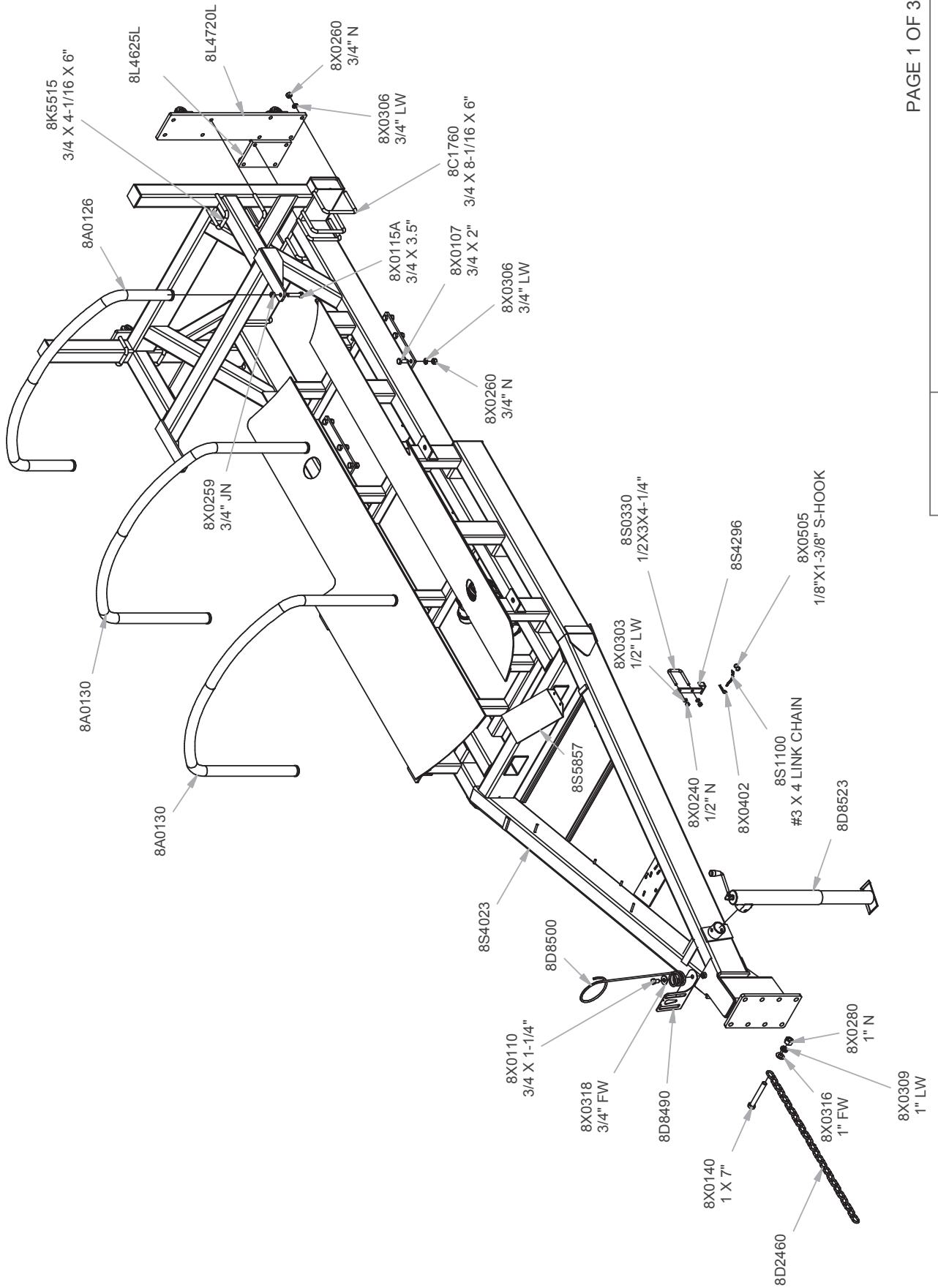
SECTION 8 - PARTS

4 X 8 CART PACKAGE - 1650 GAL TANK

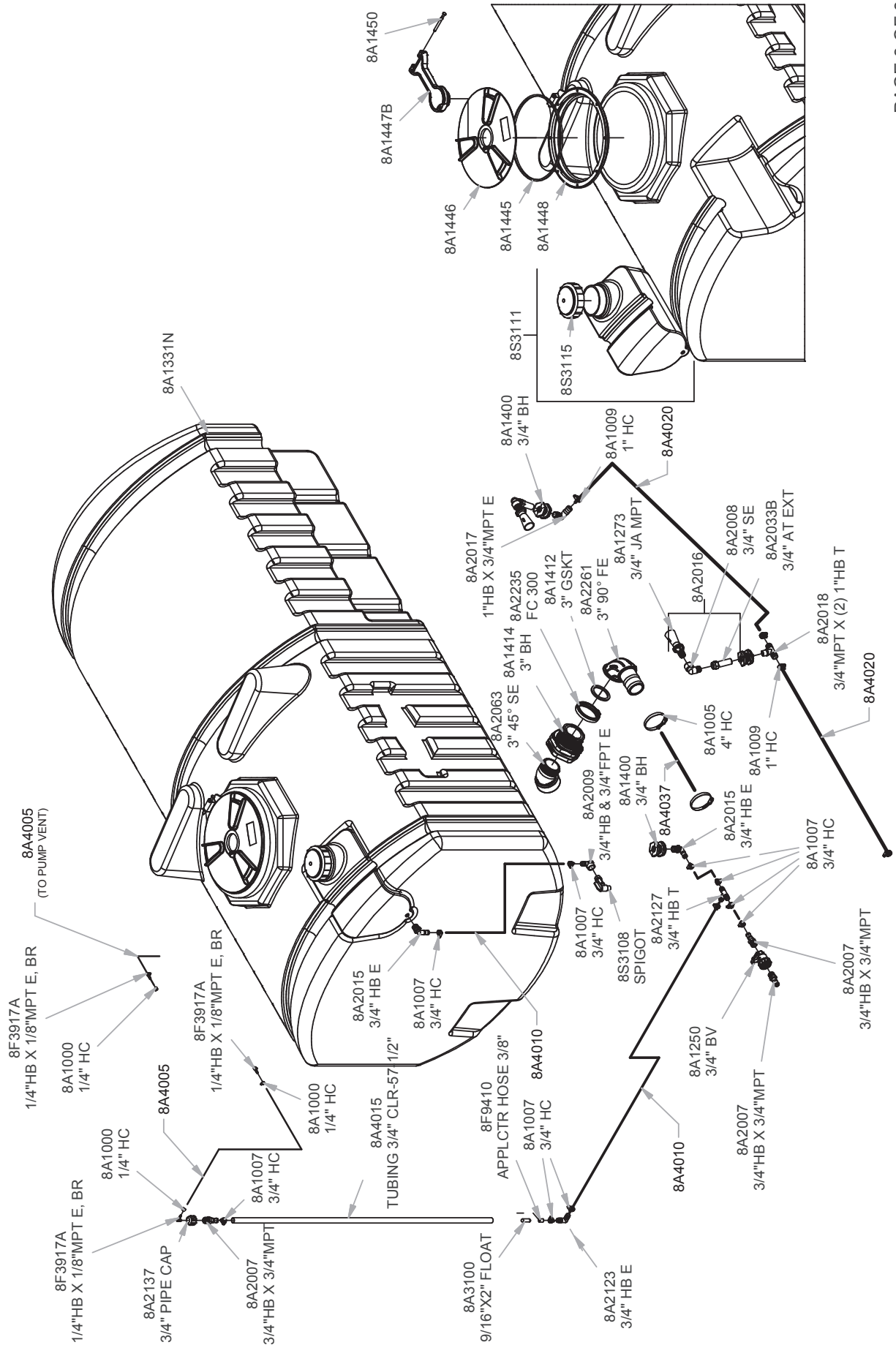


SECTION 8 - PARTS

NARROW CART PACKAGE - 1000 GAL TANK

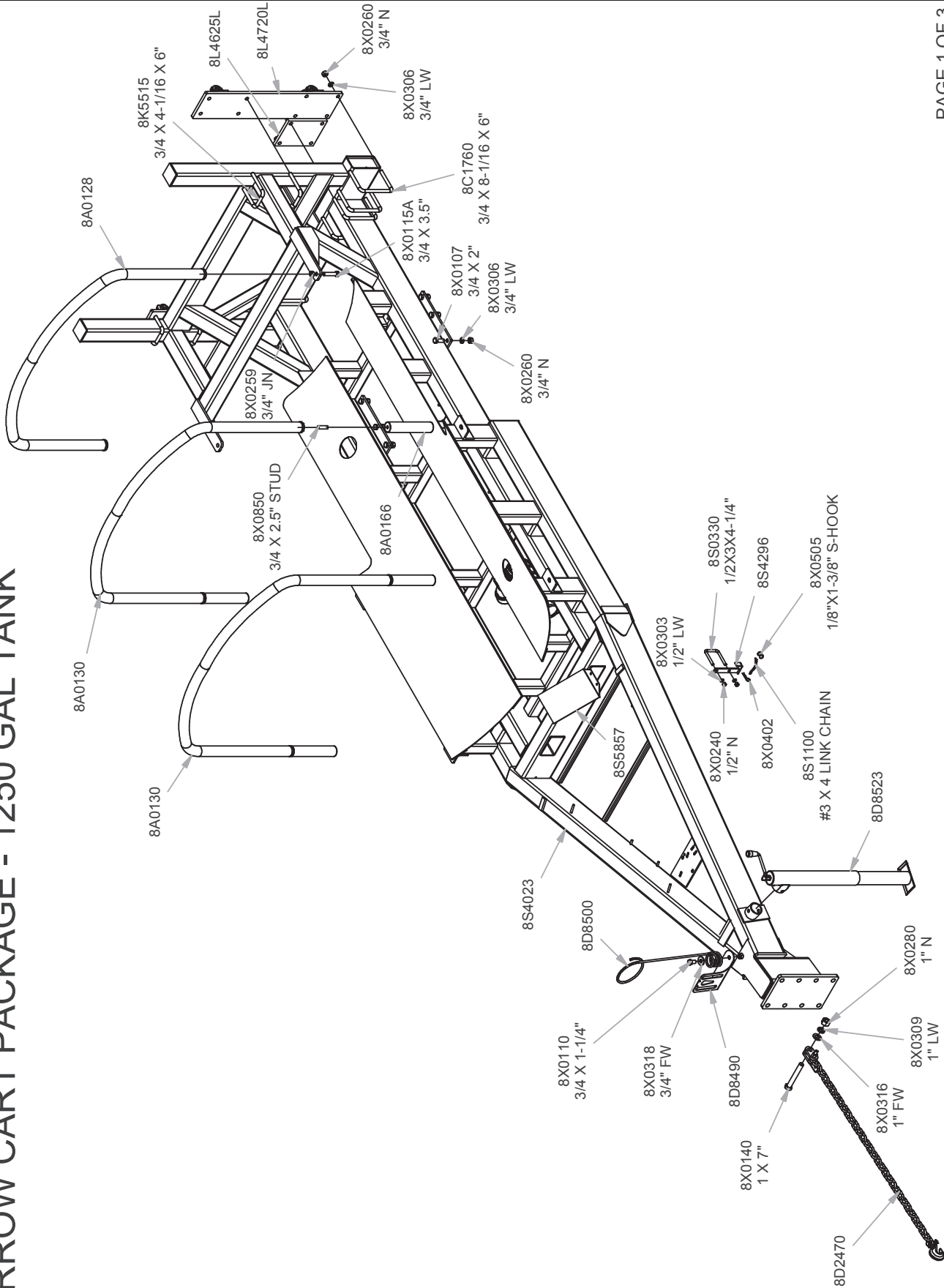


NARROW CART PACKAGE - 1000 GAL TANK



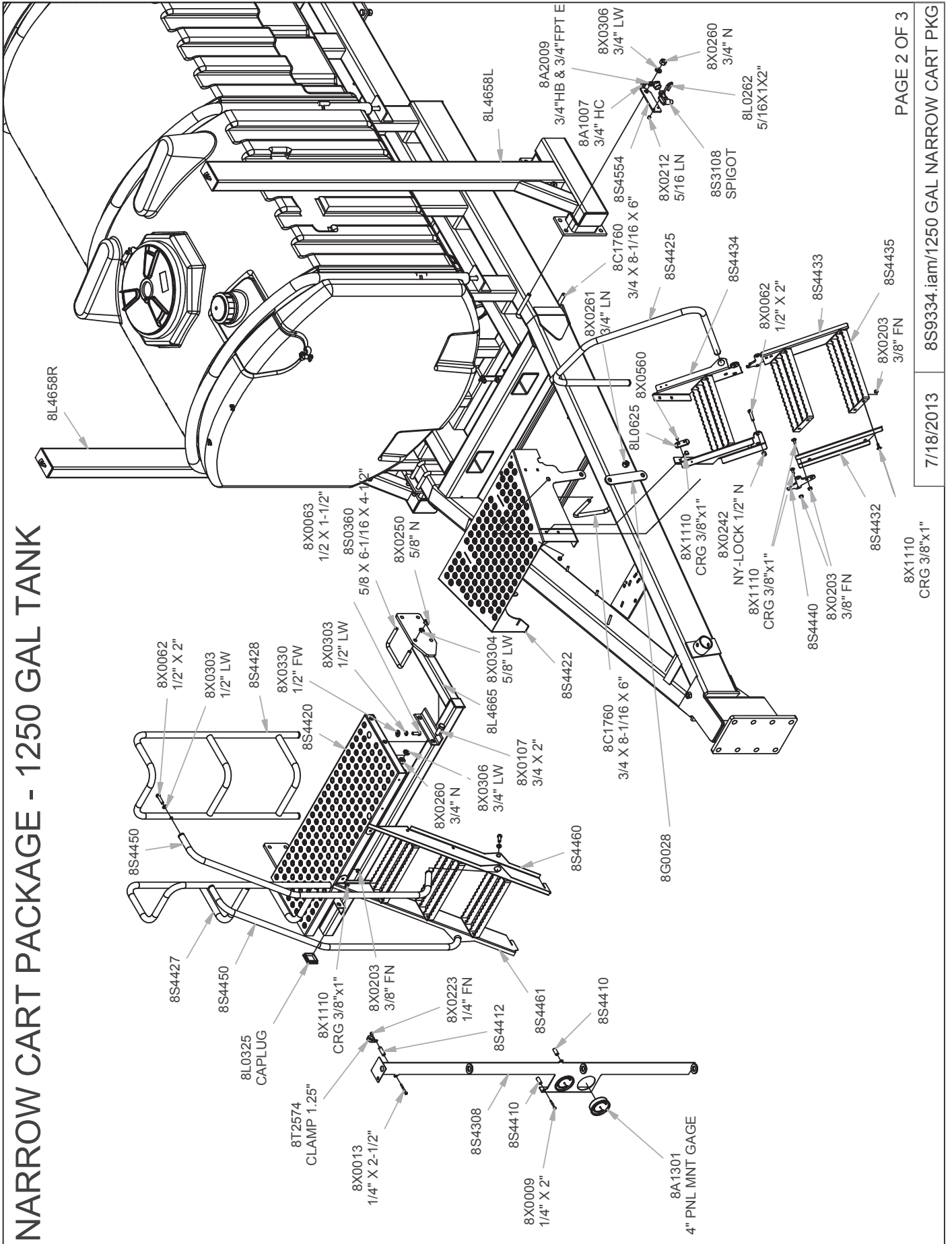
SECTION 8 - PARTS

NARROW CART PACKAGE - 1250 GAL TANK

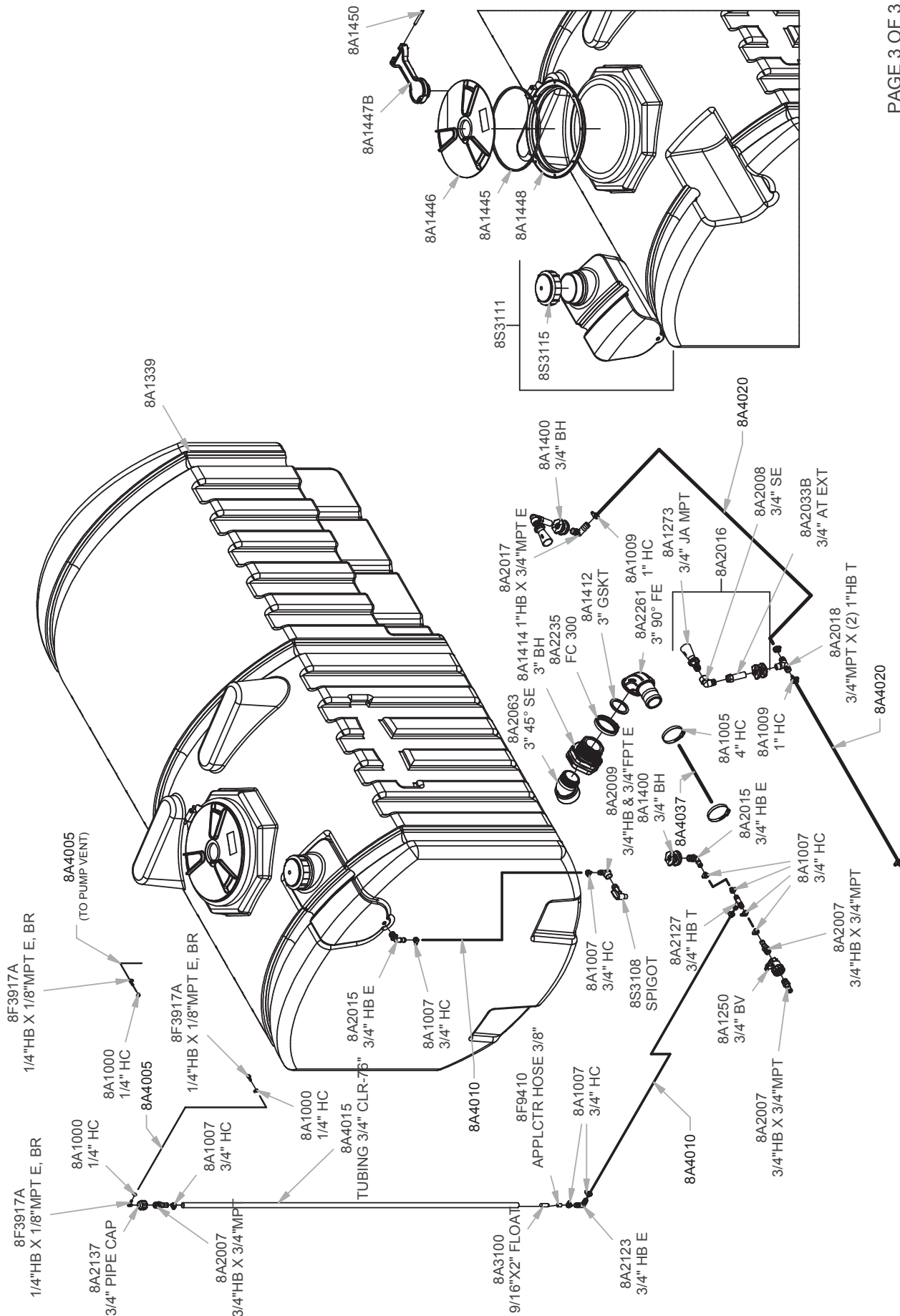


SECTION 8 - PARTS

NARROW CART PACKAGE - 1250 GAL TANK

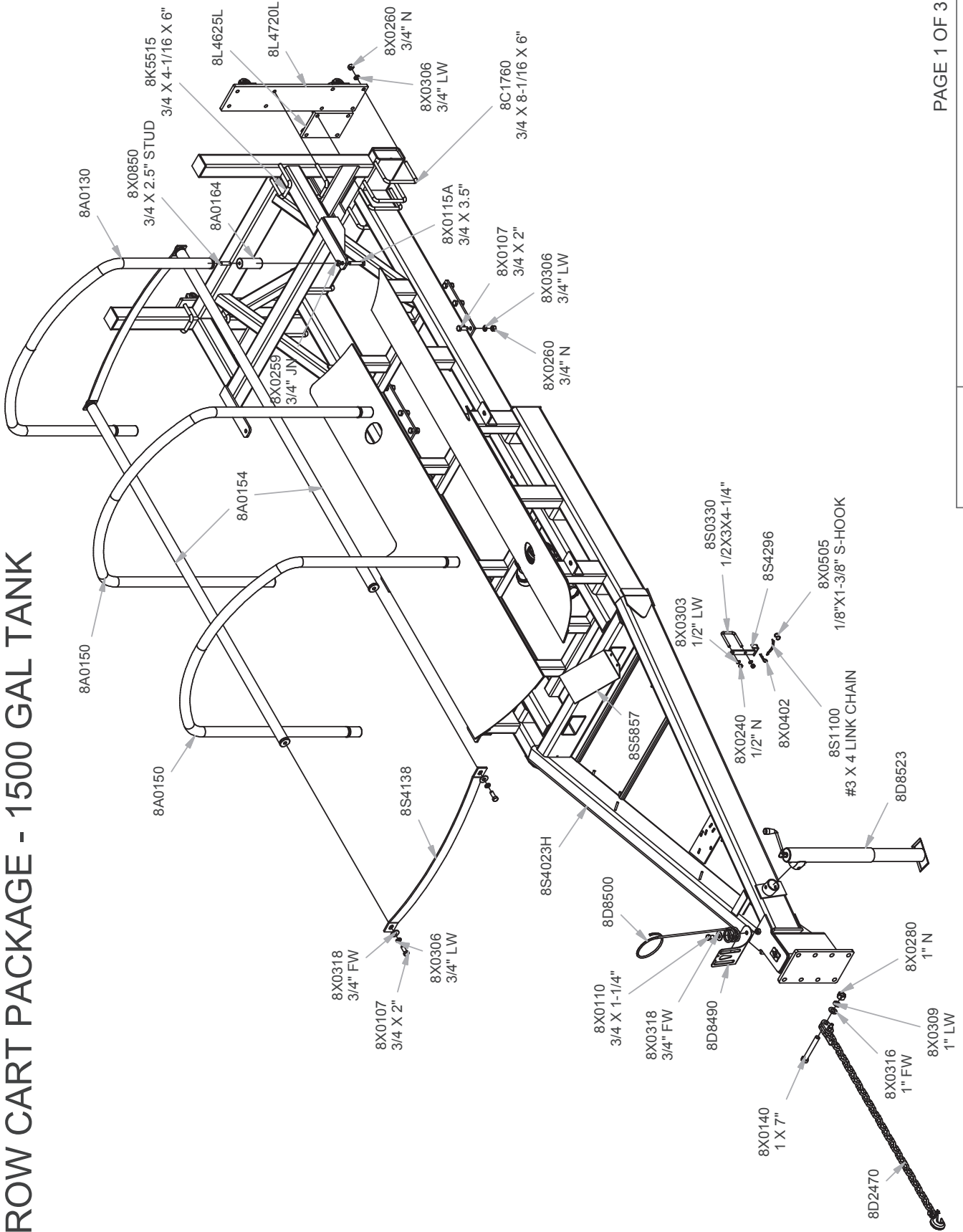


NARROW CART PACKAGE - 1250 GAL TANK



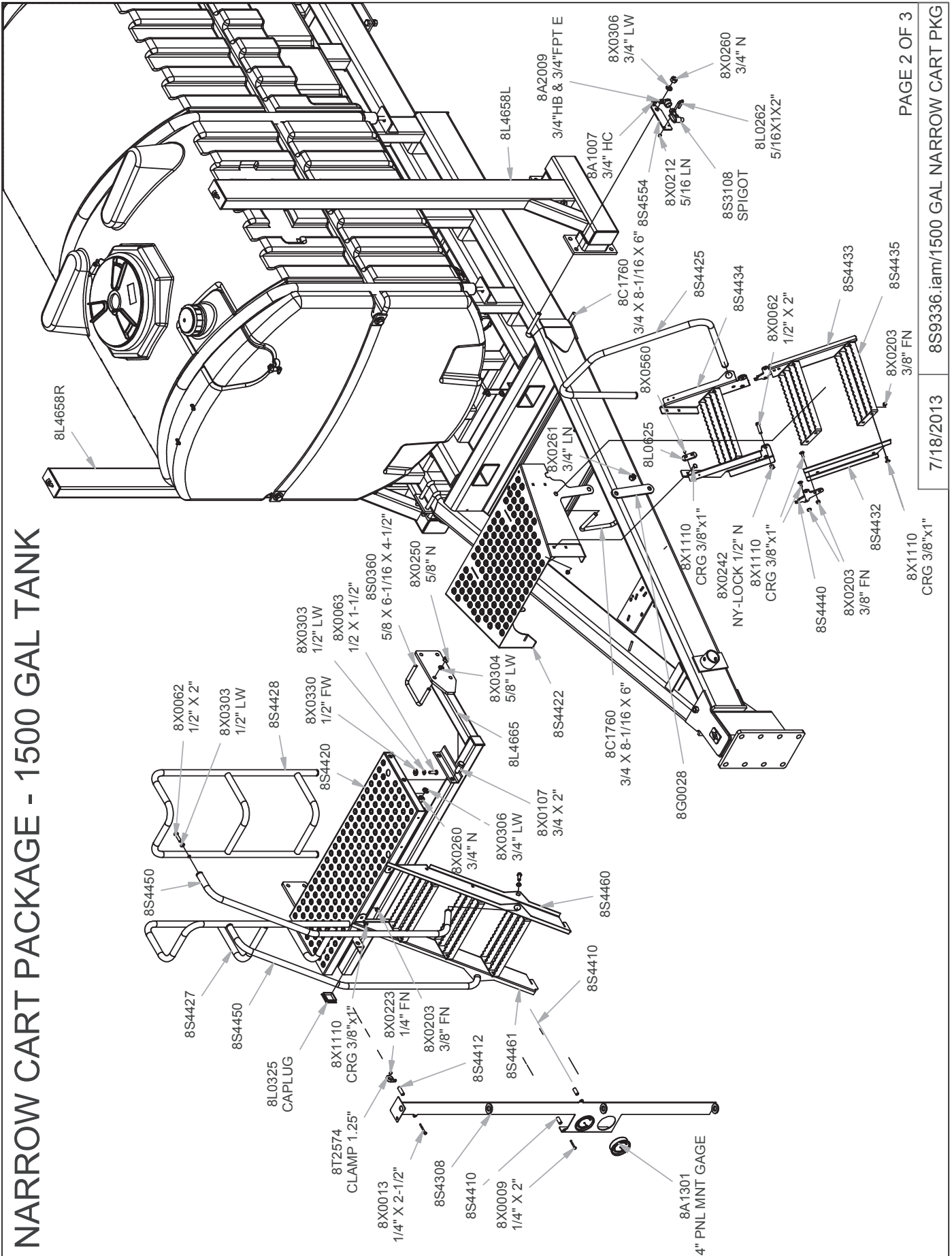
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NARROW CART PACKAGE - 1500 GAL TANK



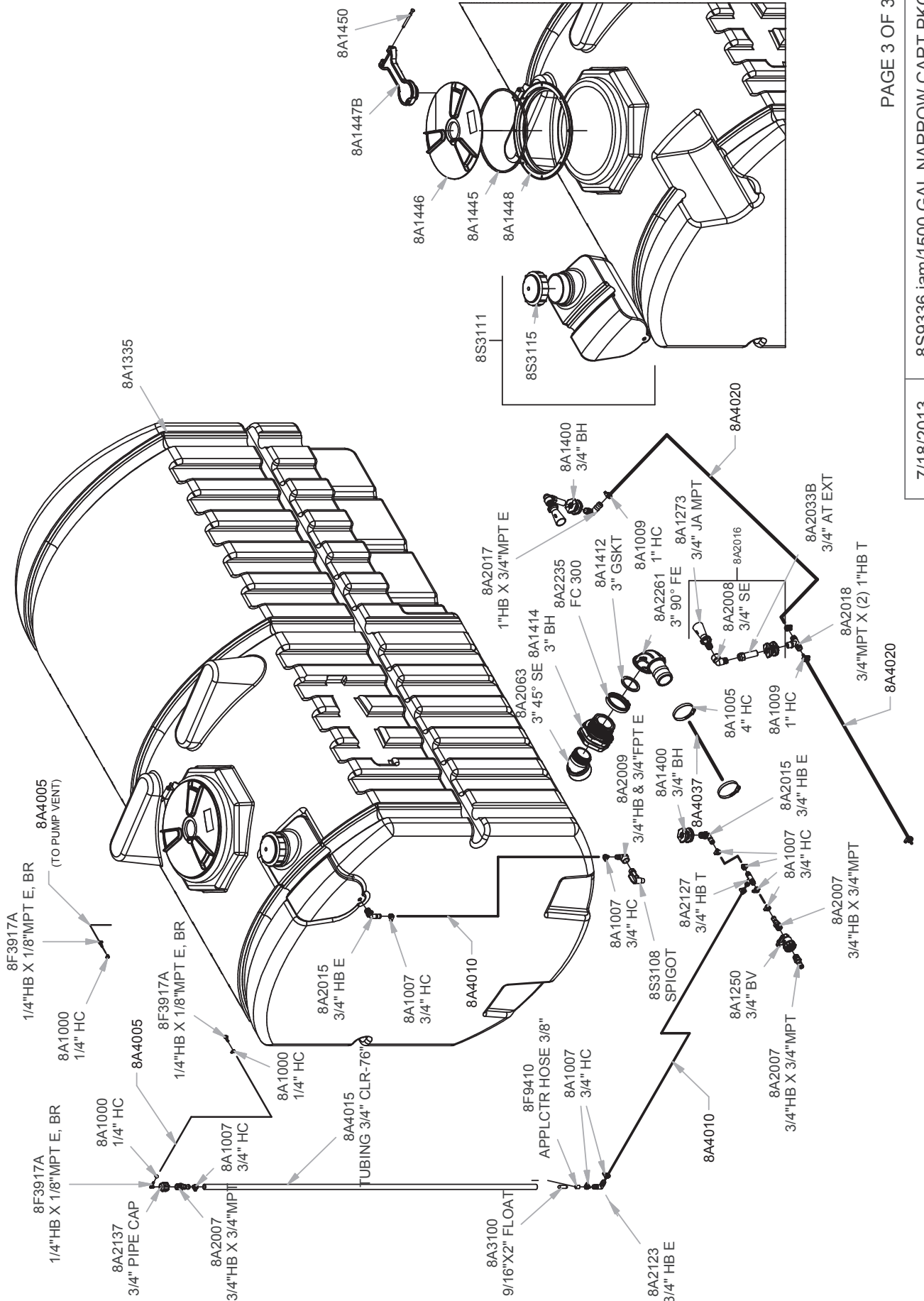
SECTION 8 - PARTS

NARROW CART PACKAGE - 1500 GAL TANK



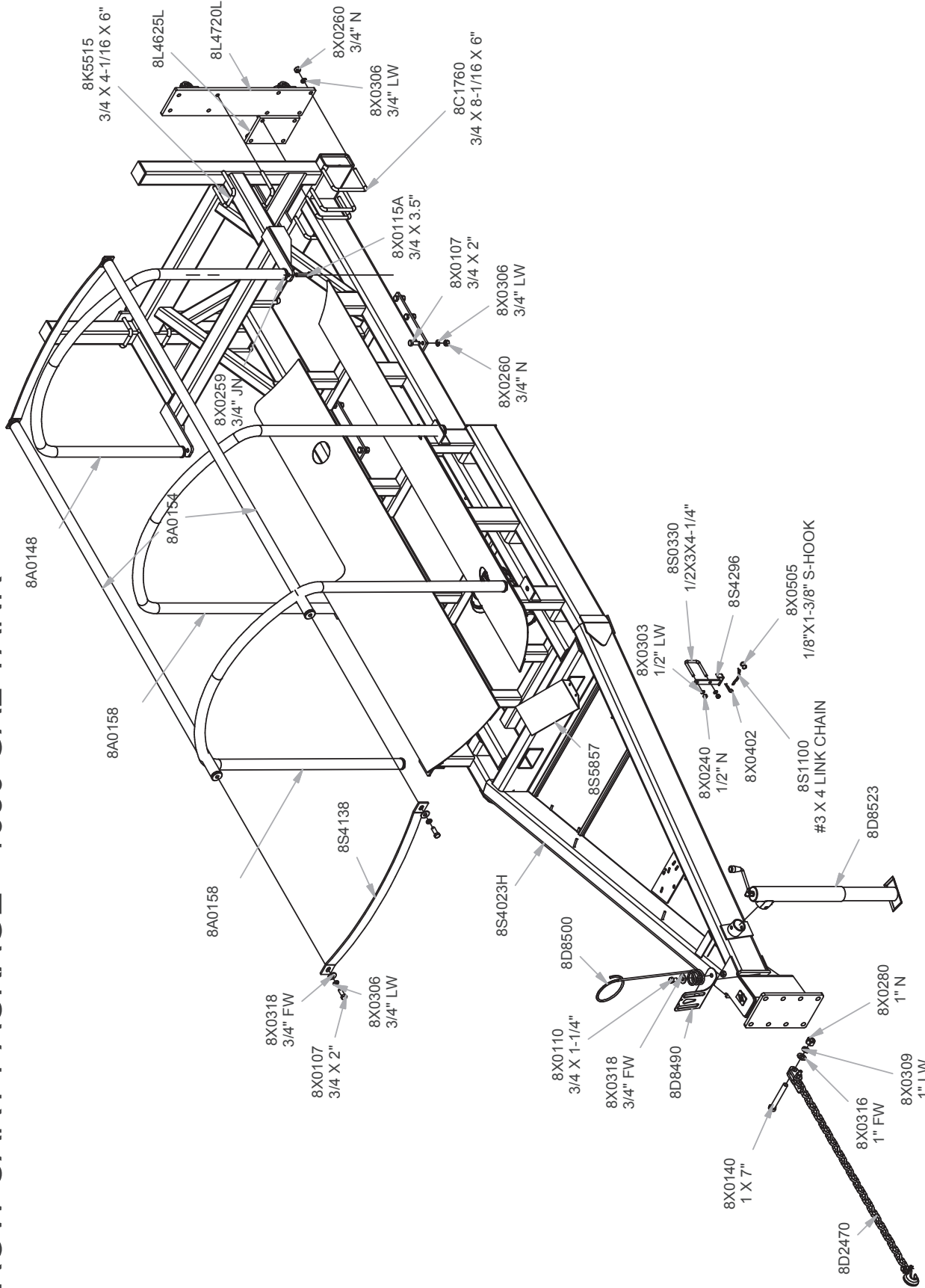
SECTION 8 - PARTS

NARROW CART PACKAGE - 1500 GAL TANK



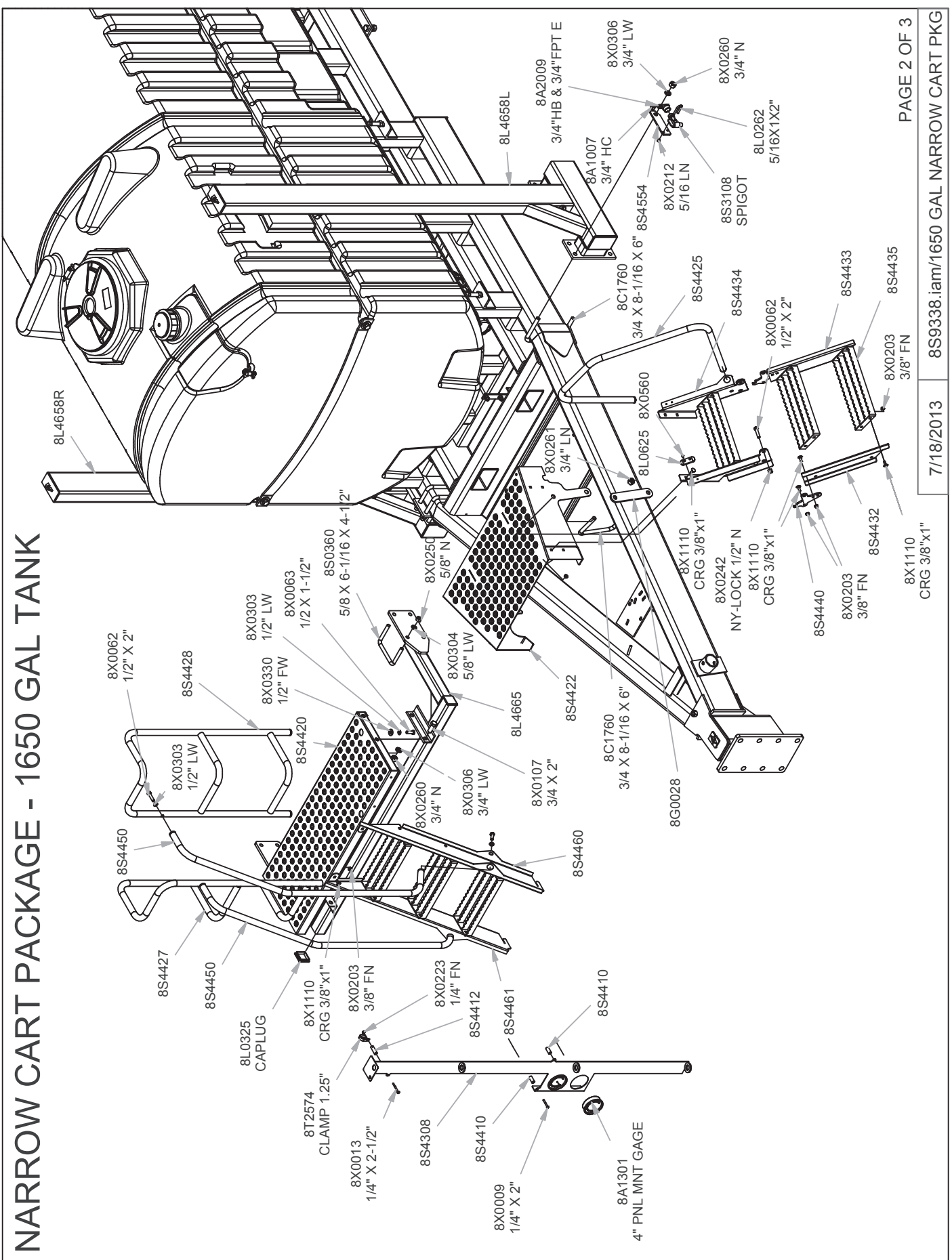
SECTION 8 - PARTS

NARROW CART PACKAGE - 1650 GAL TANK



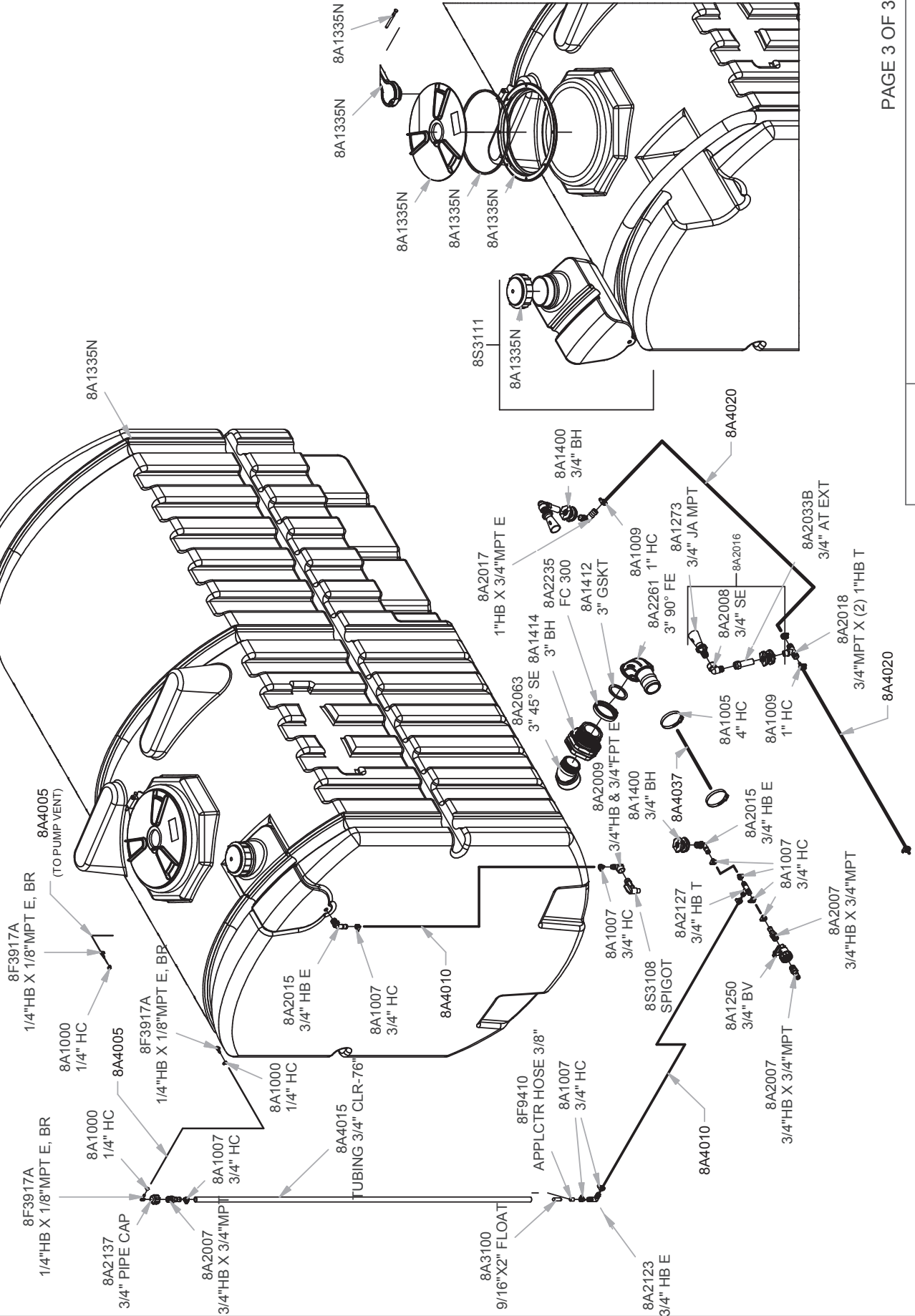
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NARROW CART PACKAGE - 1650 GAL TANK



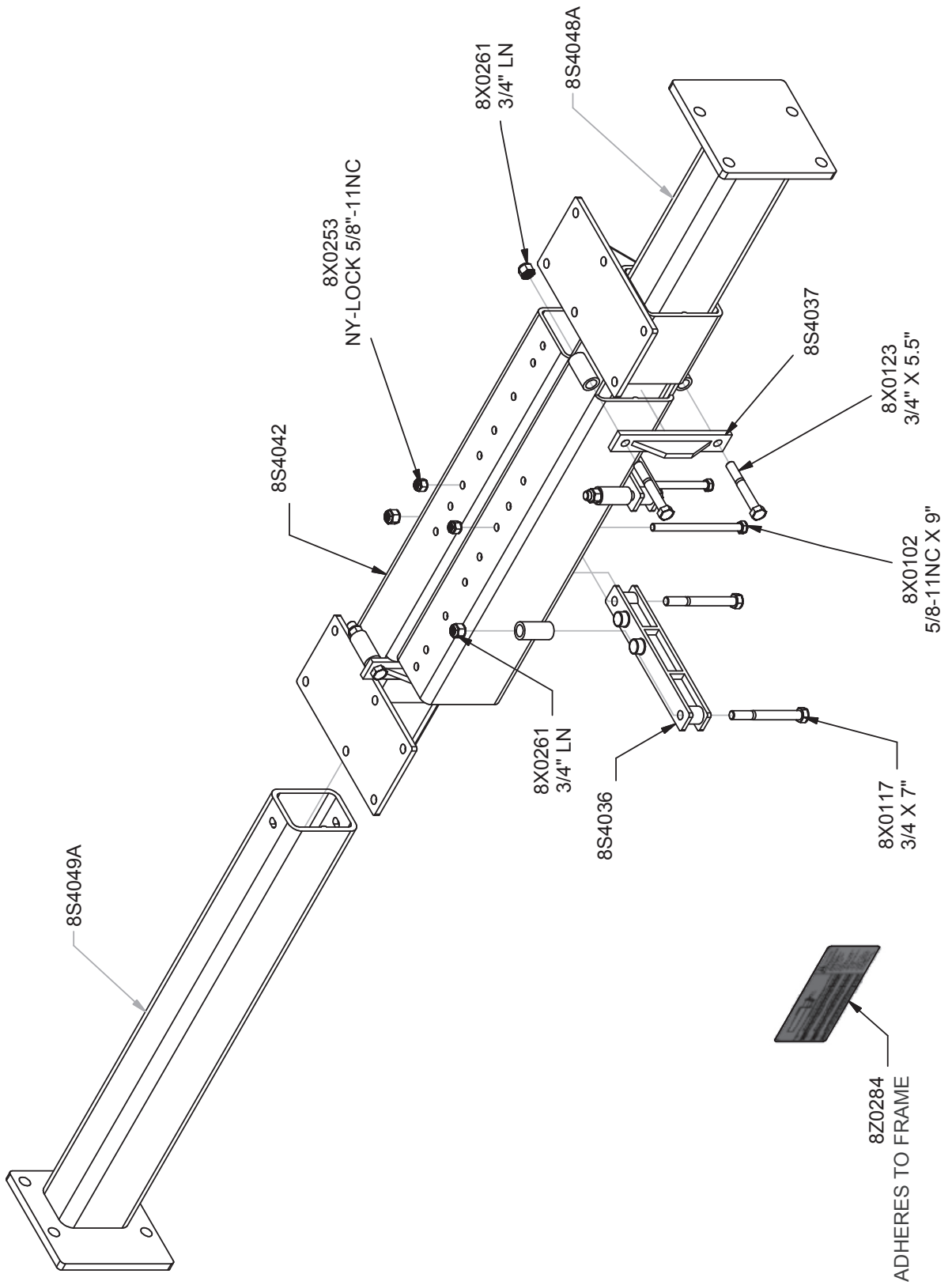
SECTION 8 - PARTS

NARROW CART PACKAGE - 1650 GAL TANK



SECTION 8 - PARTS

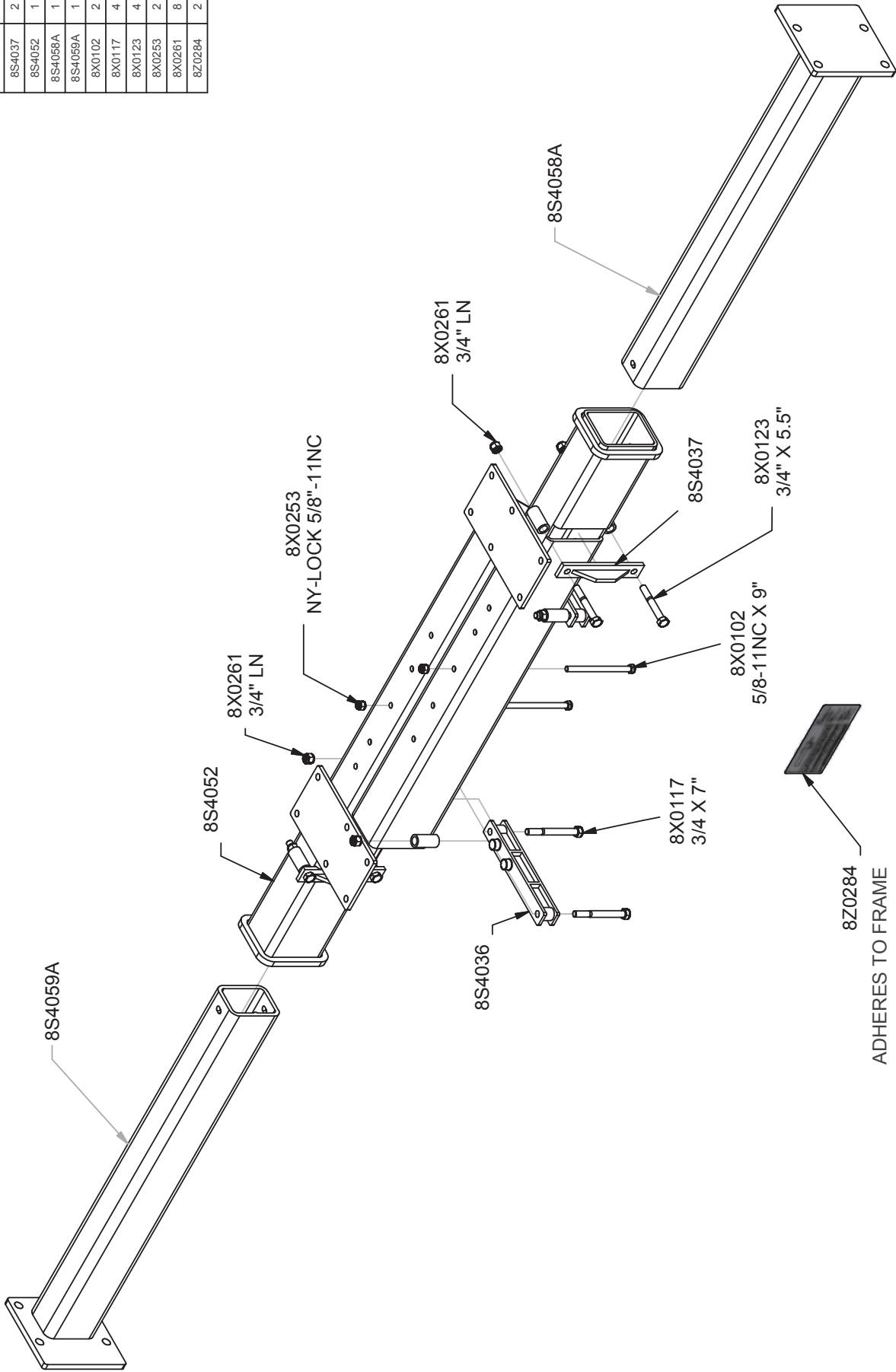
PN	QTY
8S4036	2
8S4037	2
8S4042	1
8S4048A	1
8S4049A	1
8X0102	2
8X0117	4
8X0123	4
8X0253	2
8X0261	8
8Z0284	2



12/31/2013 8S9398A.iam/STANDARD AXLE PKG. 2011 -

SECTION 8 - PARTS

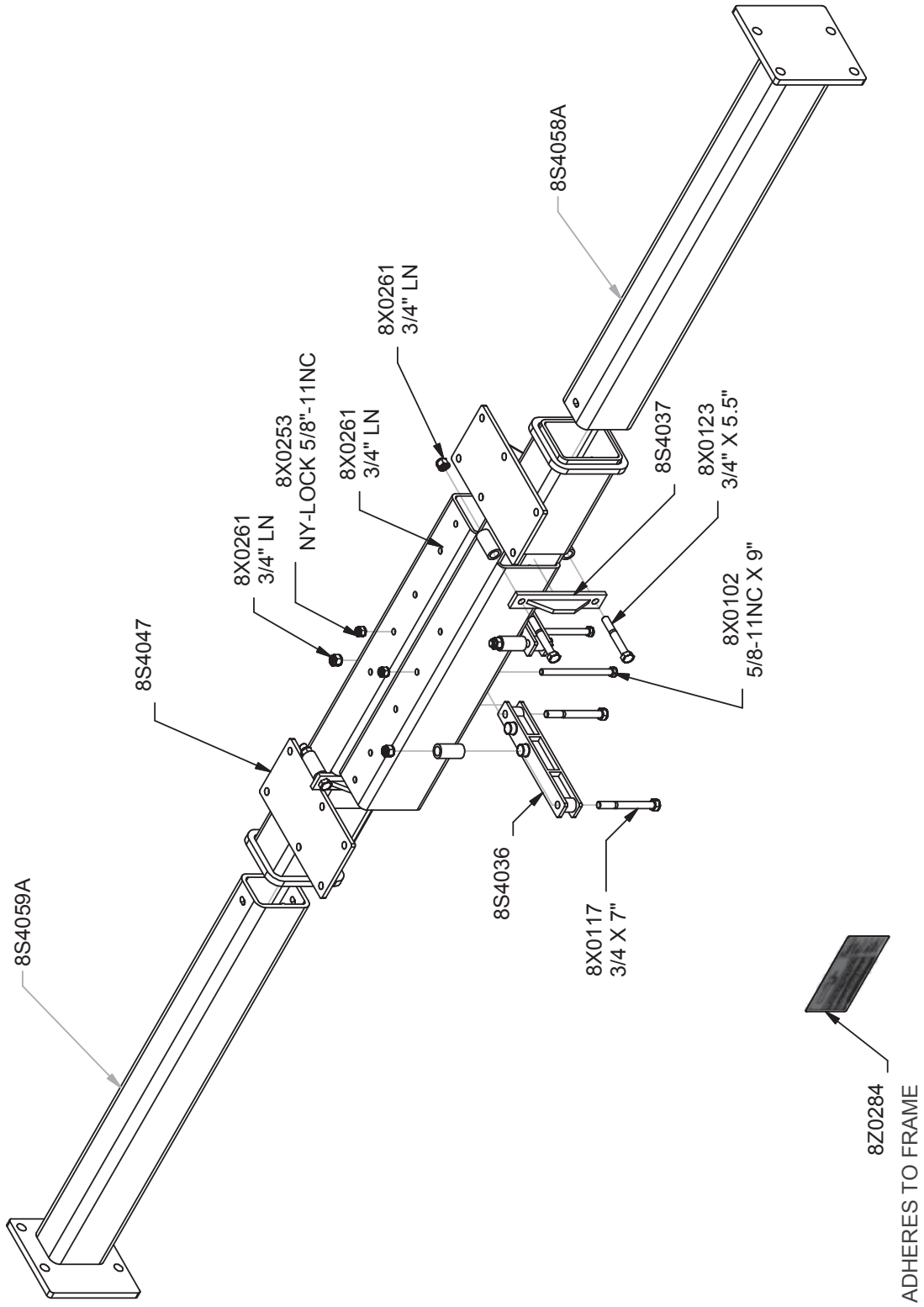
PN	QTY
8S4036	2
8S4037	2
8S4052	1
8S4058A	1
8S4059A	1
8X0102	2
8X0117	4
8X0123	4
8X0253	2
8X0261	8
8Z0284	2



1/2/2014 8S9399A.iam/WIDE AXLE PKG. 2011 -

SECTION 8 - PARTS

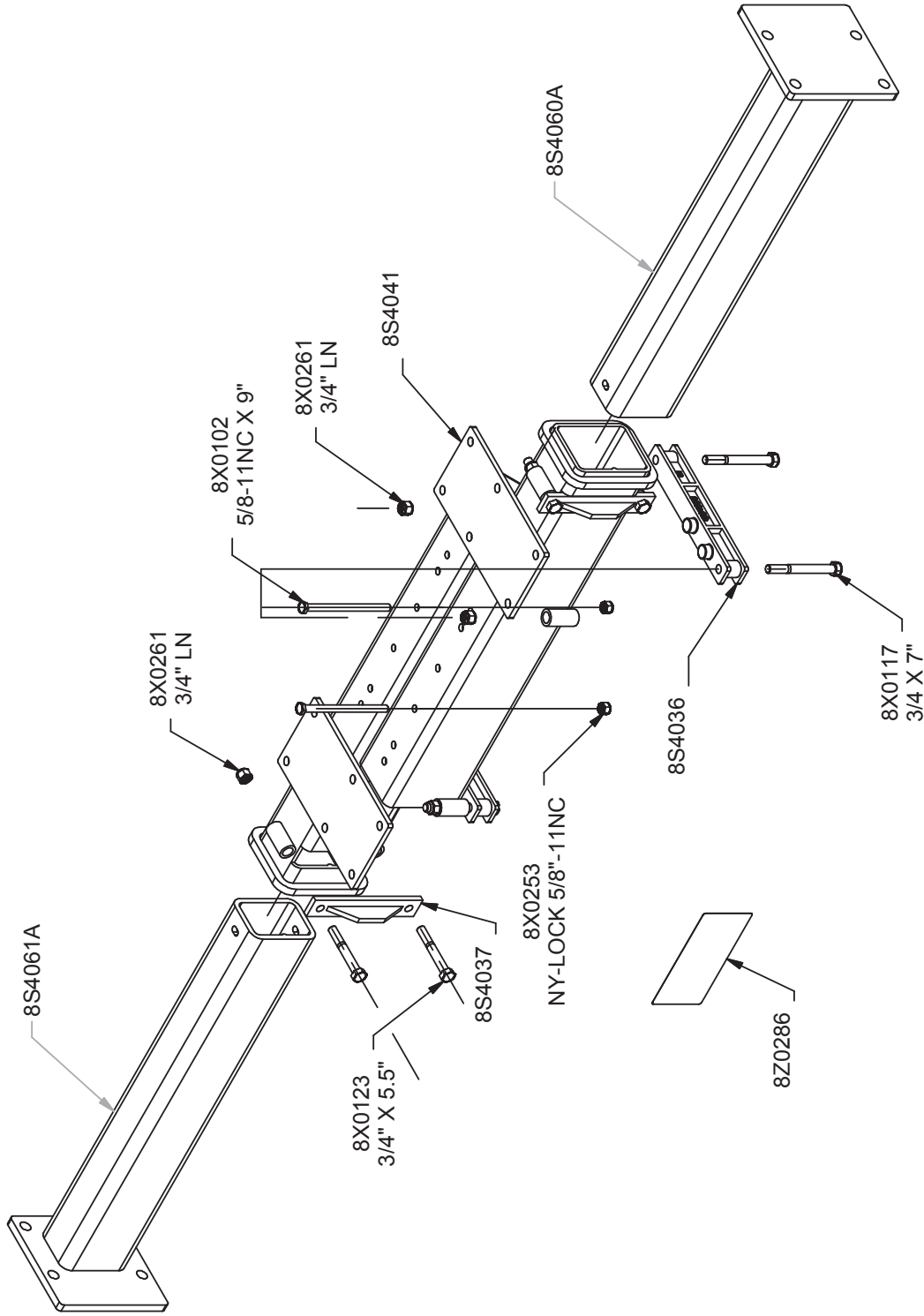
PN	QTY
8S4036	2
8S4037	2
8S4047	1
8S4058A	1
8S4059A	1
8X0102	2
8X0117	4
8X0123	4
8X0253	2
8X0261	8
8Z0284	2



SECTION 8 - PARTS

WIDE AXLE PACKAGE FOR NARROW CART

PN	QTY
8S4036	2
8S4037	2
8S4041	1
8S4060A	1
8S4061A	1
8X0102	2
8X0117	4
8X0123	4
8X0253	2
8X0261	8
8Z0286	2



USE WITH DUALS

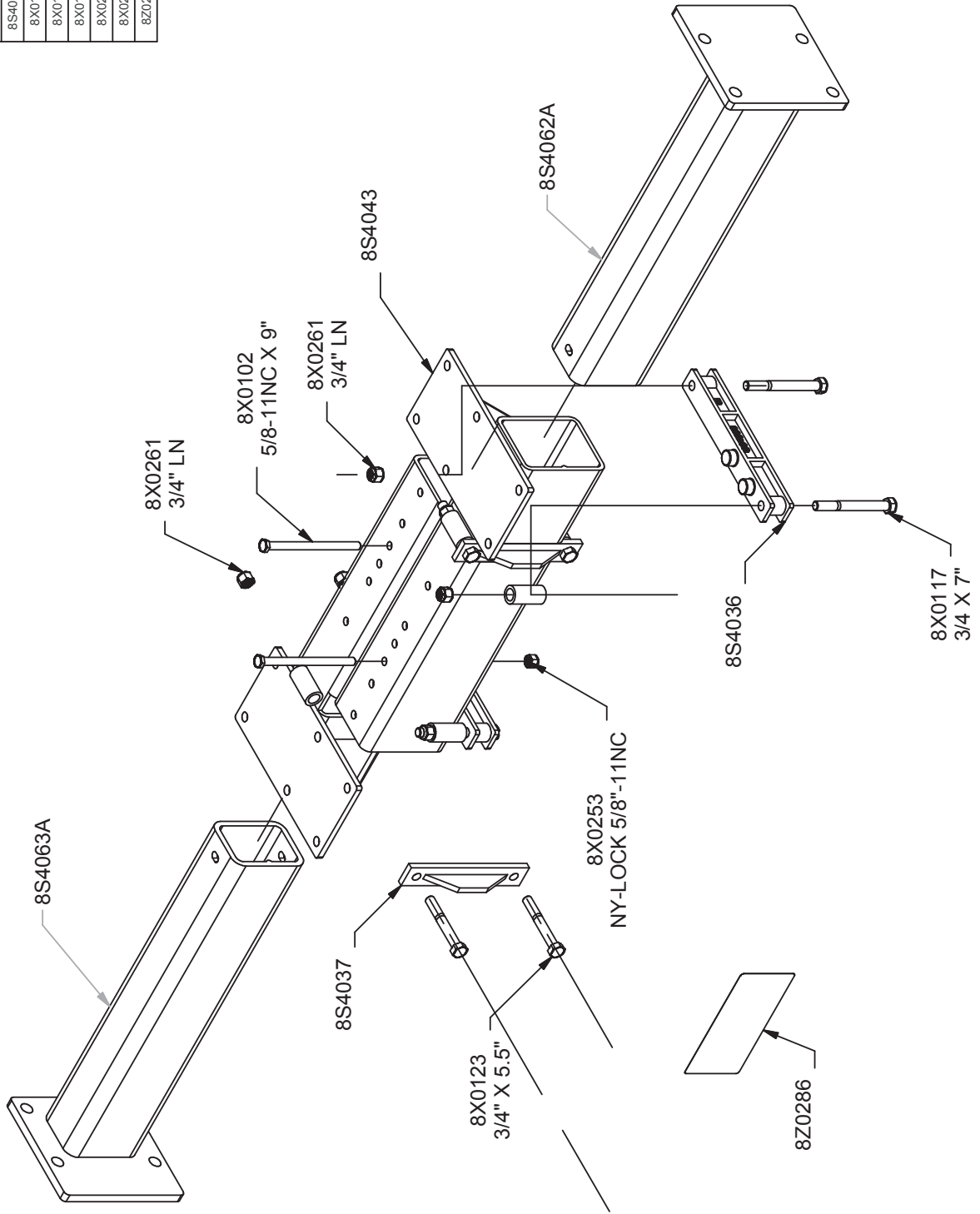
1/2/2014

8S9401A/WIDE AXLE PKG NRRW 2011 -

SECTION 8 - PARTS

PN	QTY
8S4036	2
8S4037	2
8S4043	1
8S4062A	1
8S4063A	1
8X0102	2
8X0117	4
8X0123	4
8X0253	2
8X0261	8
8Z0286	2

NARROW AXLE PACKAGE FOR NARROW CART



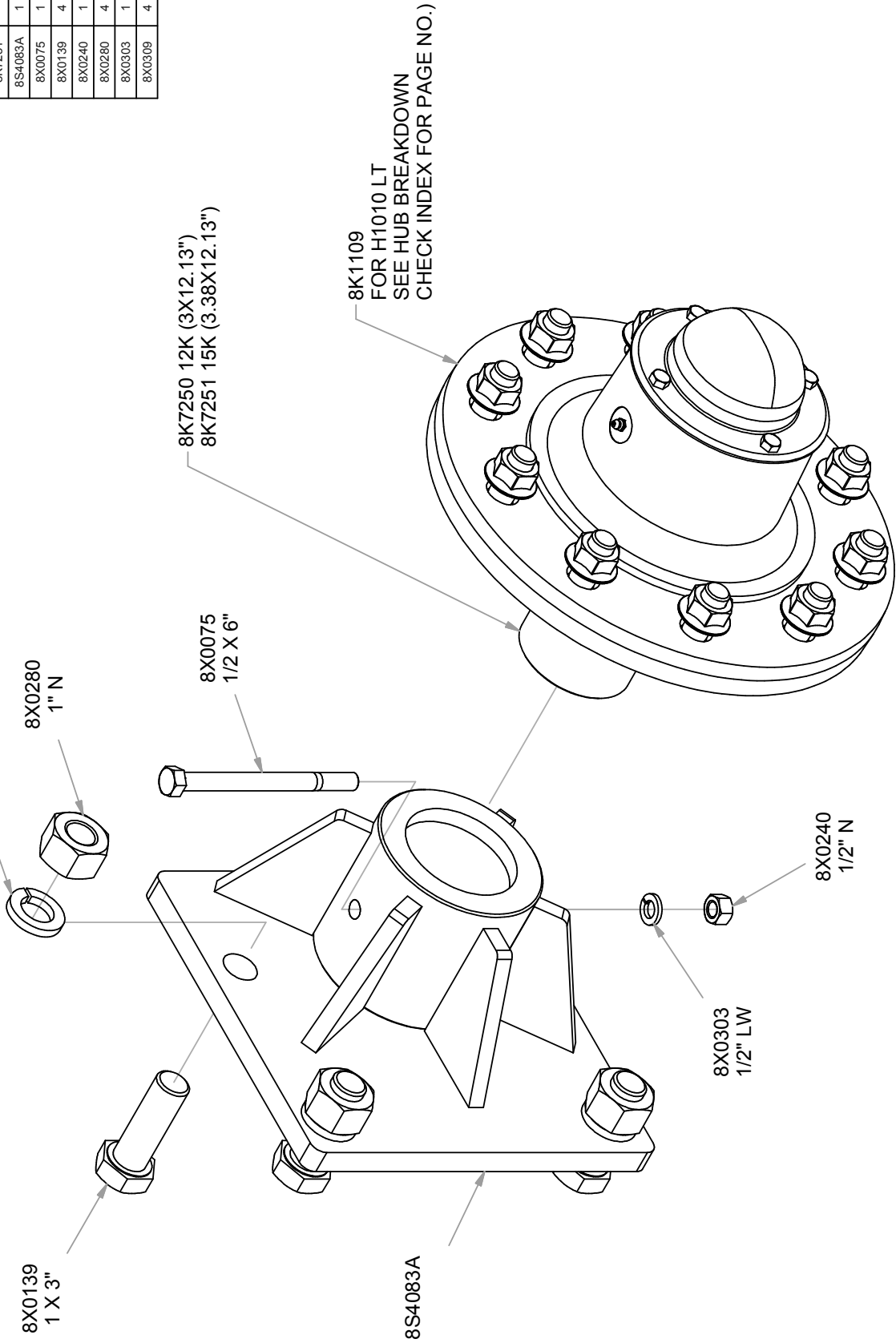
USE WITH SINGLE TIRES

01/02/2014 8S9402A/NRRW AXLE PKG NRRW CART 2011 -

SECTION 8 - PARTS

PN	QTY
8K1109	1
8K7250	1
8K7251	1
8S4083A	1
8X0075	1
8X0139	4
8X0240	1
8X0280	4
8X0303	1
8X0309	4

15,000 LB HUB PACKAGE

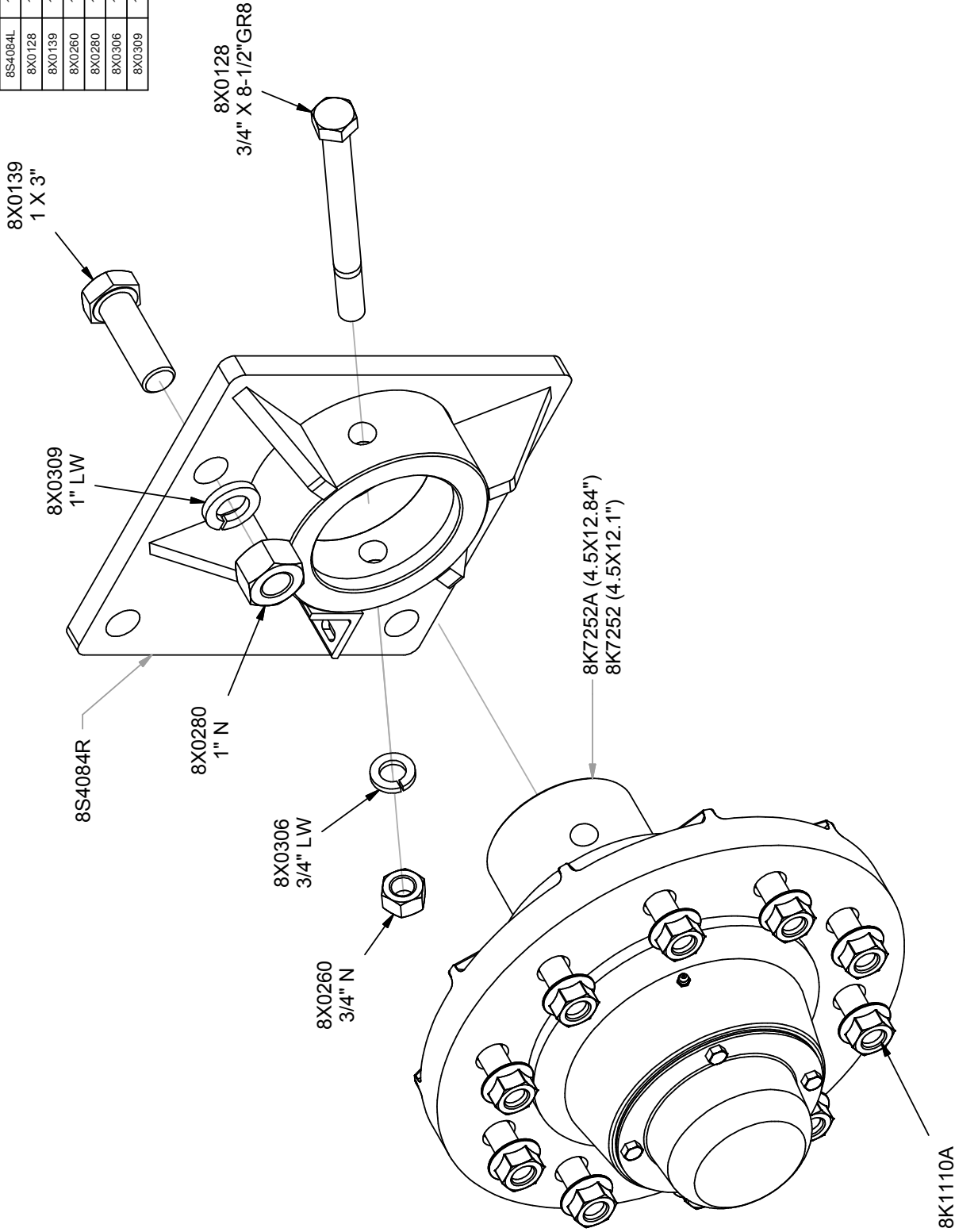


LEFT SIDE SHOWN

SECTION 8 - PARTS

25,000 LB HUB PACKAGE

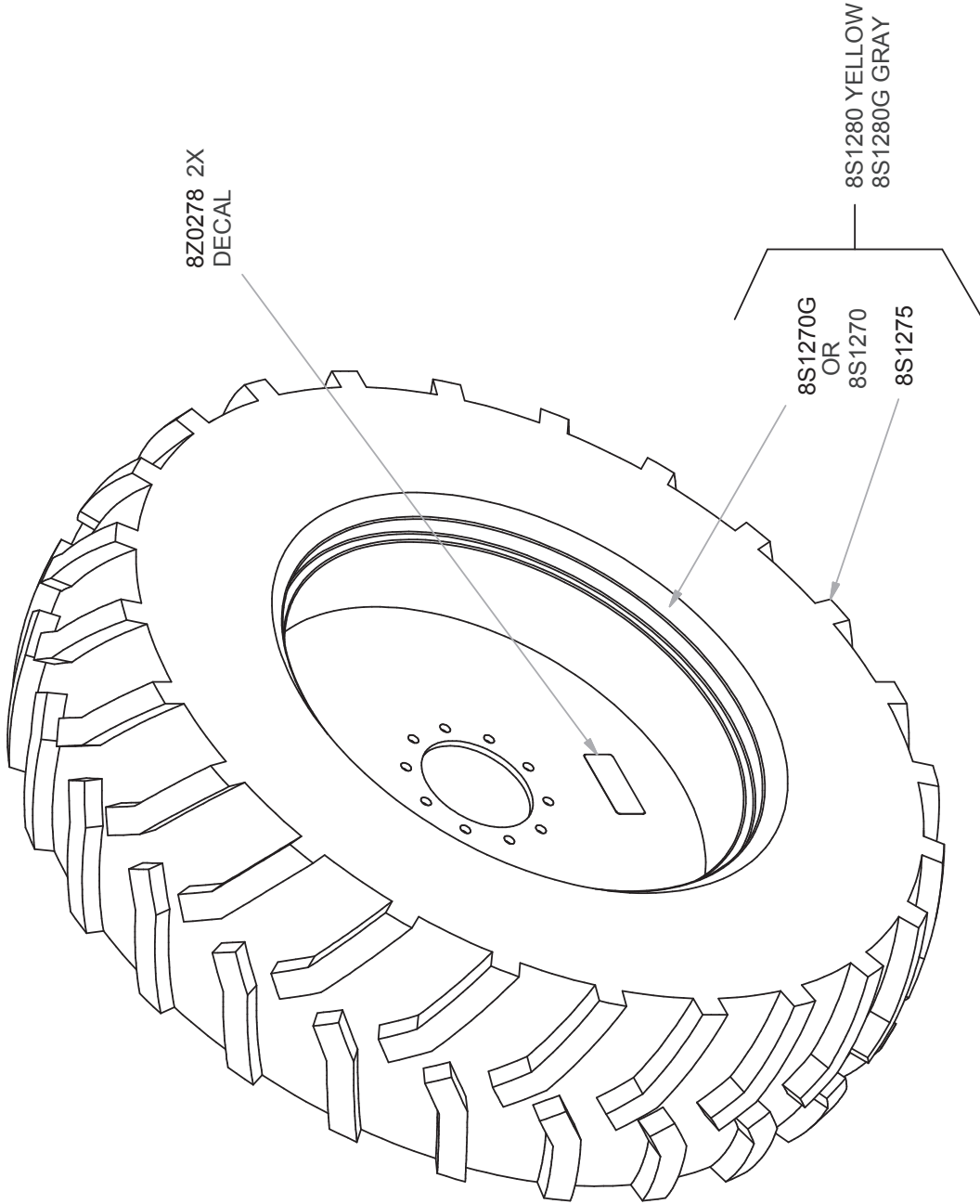
PN	QTY
8K1110A	1
8K7252	1
8K7252B	1
8S4084L	1
8X0128	1
8X0139	1
8X0260	1
8X0280	1
8X0306	1
8X0309	1



SEE HUB BREAKDOWN
(CHECK INDEX FOR PAGE NO.)

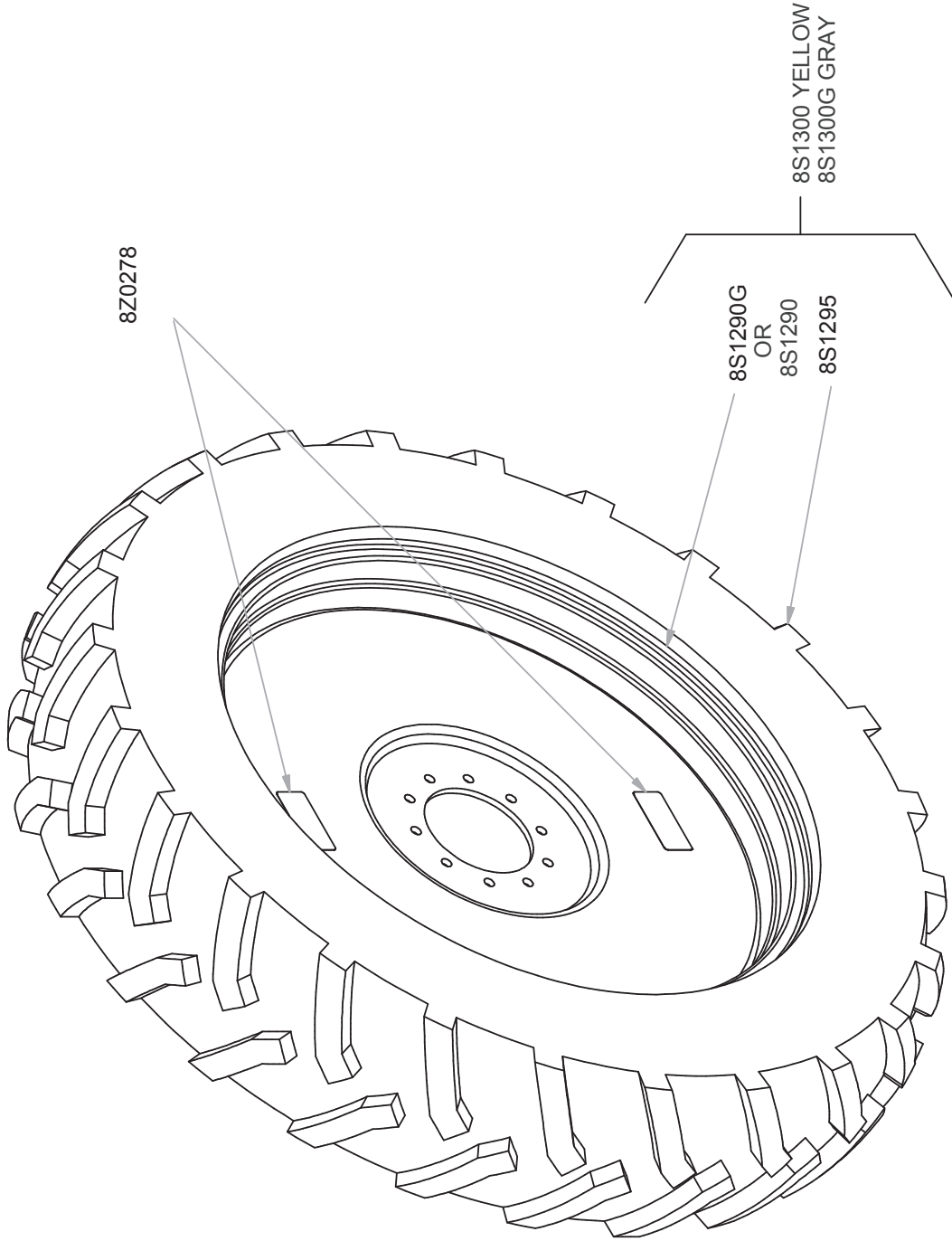
8/18/2015 8S9534B.iam/ 25K SPINDLE/HUB 2011 -

SINGLE 480/80R38 TRACTOR TIRE/RIM PACKAGE (ULTIMATE)



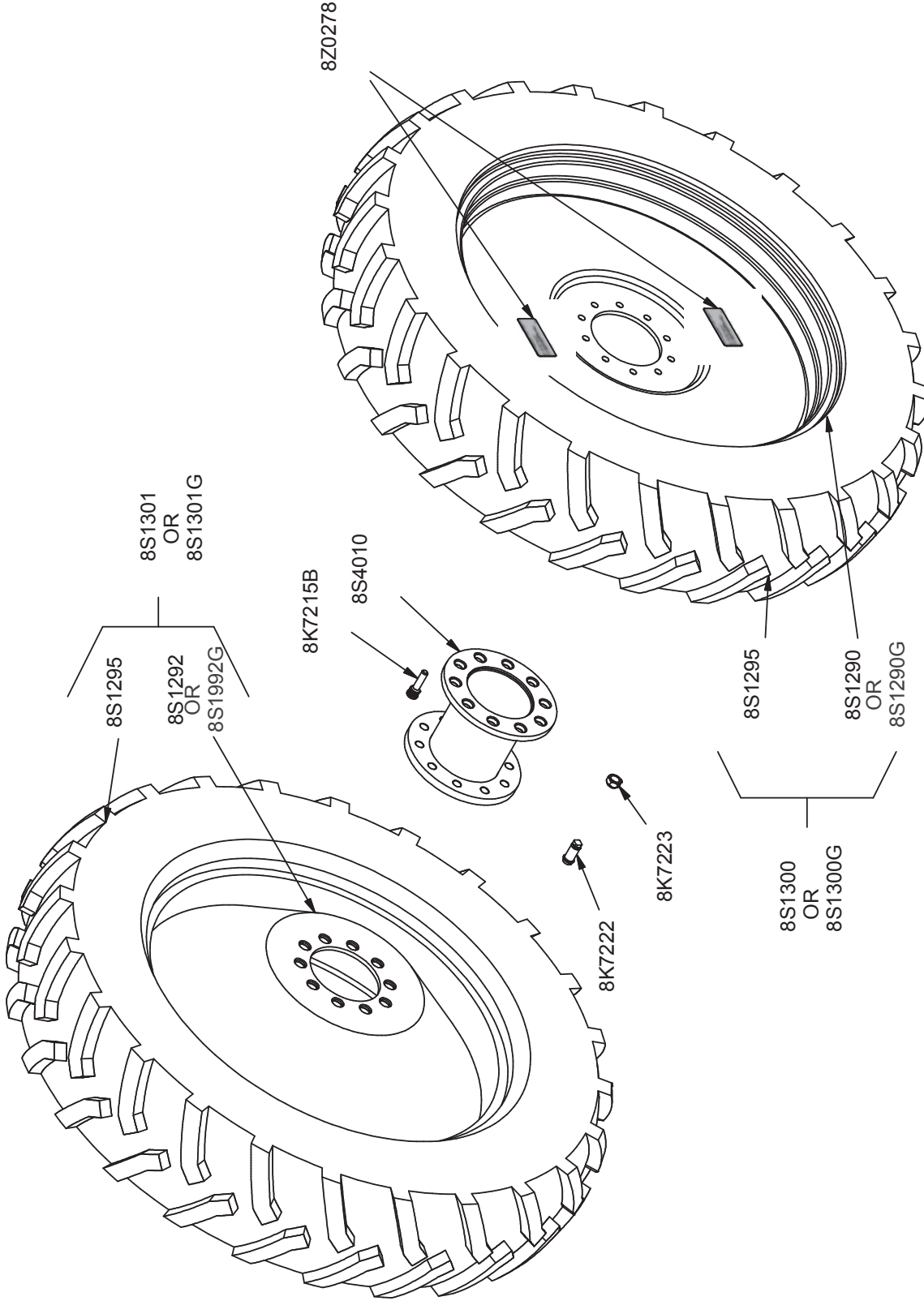
*SET AXLE TO 88" WHEEL SPACING.
*TIGHTEN WHEEL NUTS TO 220 FT. LBS.

SINGLE 380/90R46 TRACTOR TIRE/RIM PACKAGE (ULTIMATE)



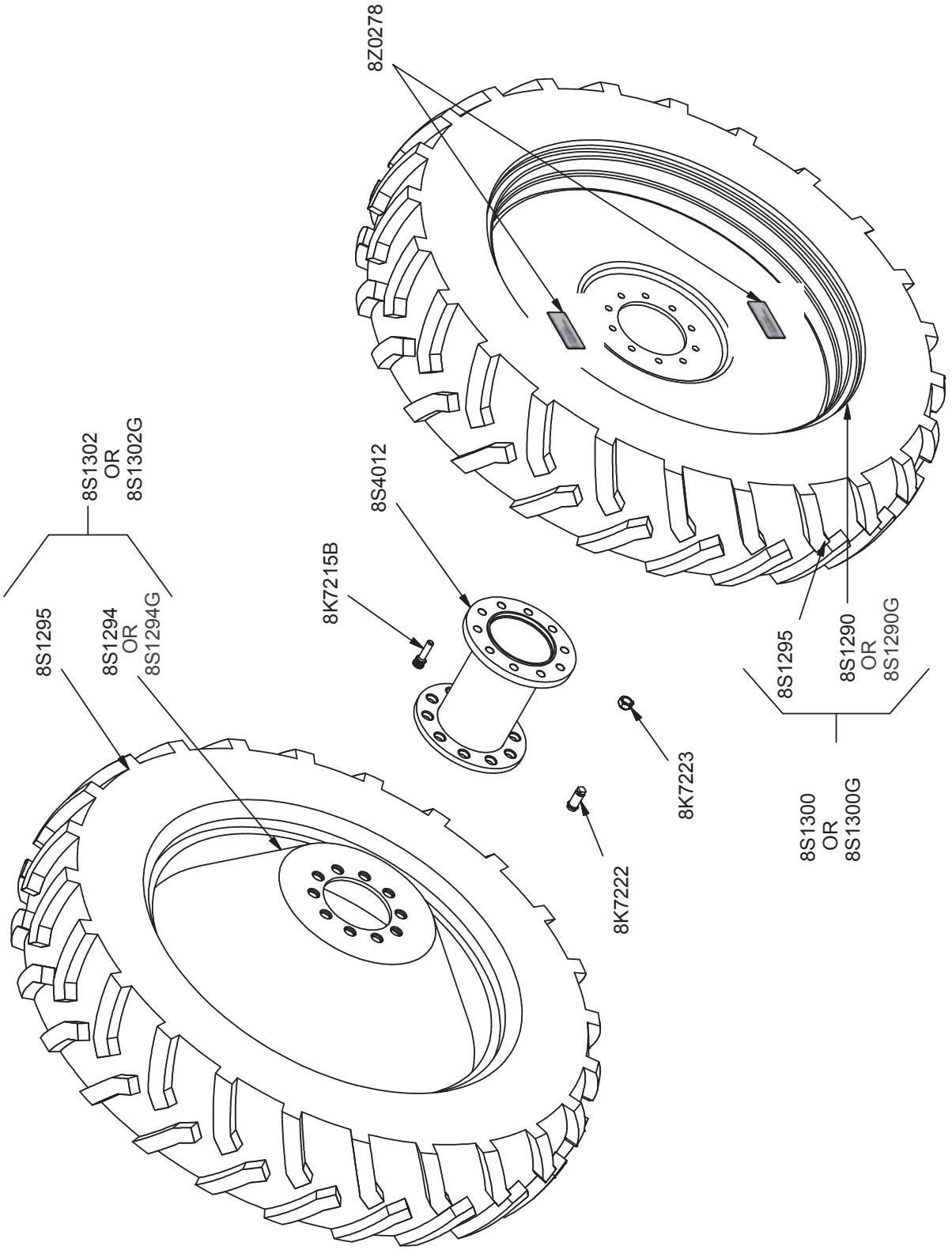
*SET AXLE TO 88" WHEEL SPACING.
*TIGHTEN WHEEL NUTS TO 220 FT. LBS.

DUAL 380/90R46 TRACTOR TIRE/RIM PACKAGE (22" SPACING)



TIGHTEN WHEEL NUTS TO 220 FT.-LBS.

DUAL 380/90R46 TRACTOR TIRE/RIM PACKAGE (30"SPACING)



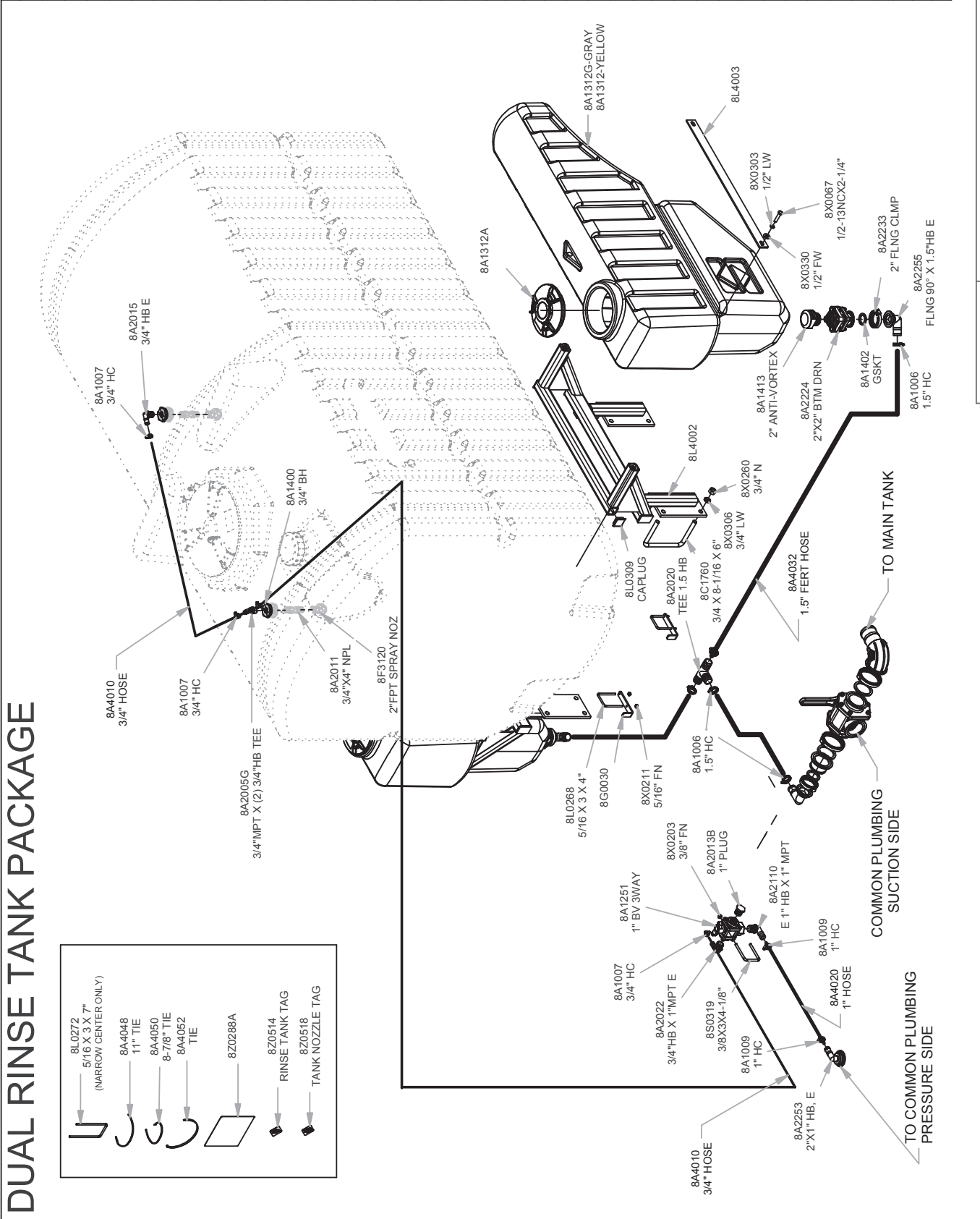
TIGHTEN WHEEL NUTS TO 220 FT-LBS.

12/16/2013

8S9397E.idw/DUAL 380/90R46 - 30" SPACING

SECTION 8 - PARTS

PN	QTY
8A1006	6
8A1007	4
8A1009	2
8A1251	1
8A1312	2
8A1312A	2
8A1400	2
8A1402	2
8A1413	2
8A2005G	1
8A2011	2
8A2013B	1
8A2015	1
8A2020	1
8A2022	1
8A2110	1
8A2224	2
8A2233	2
8A2234	1
8A2253	1
8A2255	2
8A4048	6
8A4050	5
8A4052	12
8C1760	8
8F3120	2
8G0030	2
8L0288	2
8L0272	1
8L0309	4
8L4002	2
8L4003	2
8S0319	1
8X0067	4
8X0203	2
8X0211	4
8X0260	8
8X0303	4
8X0306	8
8X0330	4
8Z0288A	1
8Z0514	1
8Z0518	1



12/10/2013 8S9946.iam/DUAL SIDE MNTD RNSE TANK

SECTION 8 - PARTS

3" COMMON PLUMBING PACKAGE



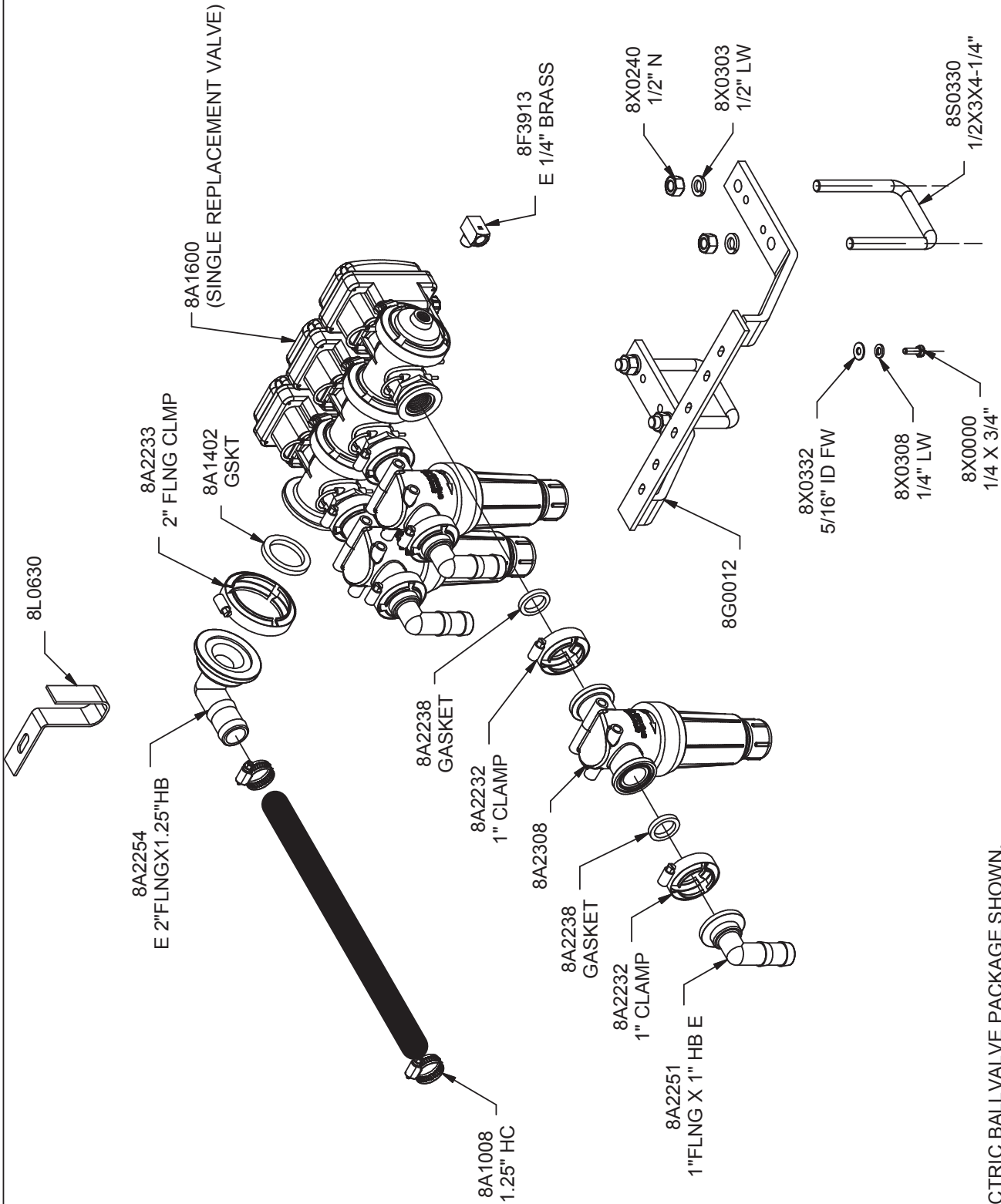
PN	QTY
8A1402	11
8A1405	2
8A1412	16
8A1495	1
8A1600	1
8A1738	1
8A1742	2
8A1760	1
8A1762	1
8A1765	1
8A2232	3
8A2233	11
8A2234	2
8A2235	16
8A2238	3
8A2251	1
8A2257	1
8A2261	1
8A2295	1
8A2296	3
8A2299	2
8A2300	1
8A2316	1
8A2317A	1
8A2321A	1
8A2323	1
8A2328	2
8A2330	1
8A2331A	2
8A2333	2
8A2341	2
8A2350	1
8A2372	2
8A4048	3
8G8010	4
8S0295	2
8S0317	2
8S3054	4
8S4276	2
8S4278	1
8S4280	1
8S4281	1
8S4282	1
8X0203	16
8X0260	4
8Z0522	1
8Z0528	1
8Z0532	1

5/21/2014

8S9451.i am/3" COMMON PLUMBING PACKAGE

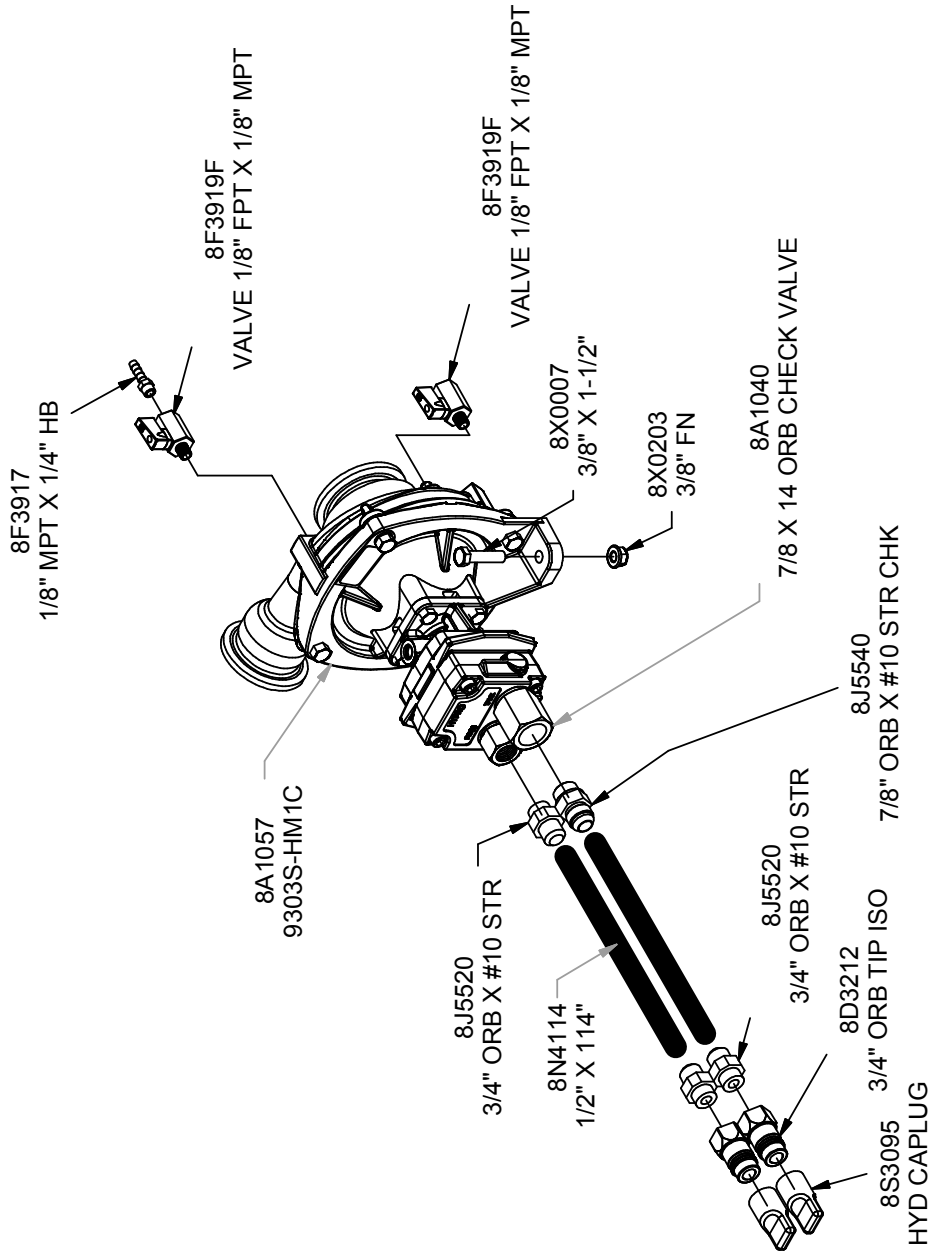
SECTION 8 - PARTS

8S9891
8S9892
8S9893
8S9894
8S9895
8S9898
8S9914
8S9915
8S9916
8S9917
8S9918
8S9919
8S9921



8S9915 TRIPLE ELECTRIC BALL VALVE PACKAGE SHOWN. ASSEMBLY IS SIMILAR FOR ALL BALL VALVE PACKAGES LISTED IN TABLE ABOVE.

OPTIONAL HM1C STAINLESS STEEL HYDRAULIC PUMP PACKAGE



*APPLY TEFLON TAPE TO ALL MPT/FPT CONNECTIONS

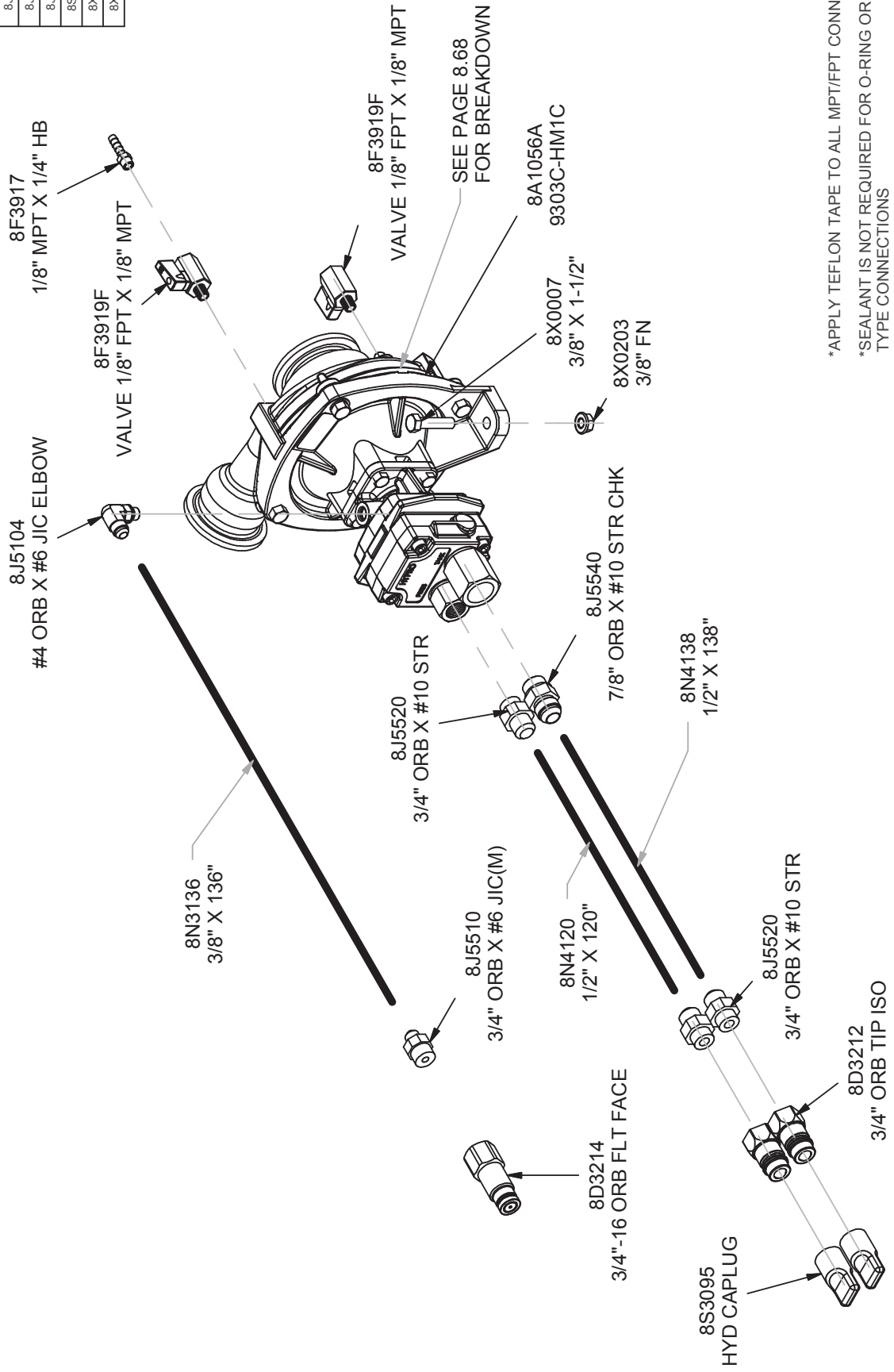
*SEALANT IS NOT REQUIRED FOR O-RING OR FLARE TYPE CONNECTIONS

1/22/2015	8S9463/HM1S STD CAP/STAINLESS PMP PKG
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SECTION 8 - PARTS

STANDARD CAP/PRESSURE HYDRAULIC FLANGED PUMP PACKAGE

PN	QTY
8A1056A	1
8D3212	2
8D3214	1
8F3917	1
8F3919F	2
8G2282	6
8J5104	1
8J5510	1
8J5520	3
8J5540	1
8S3095	2
8X0007	2
8X0203	2

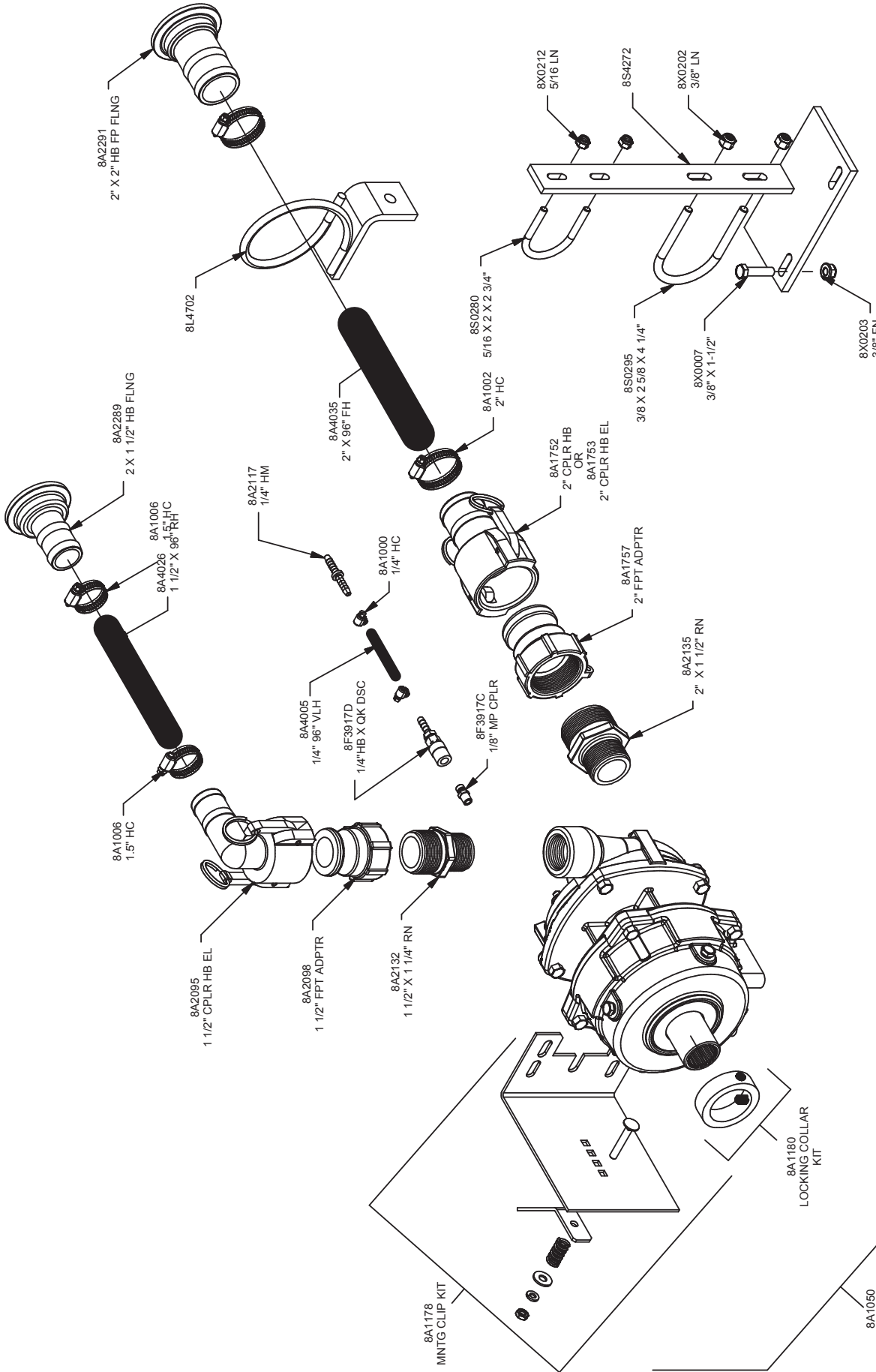


* APPLY TEFLON TAPE TO ALL MPT/FPT CONNECTIONS
 * SEALANT IS NOT REQUIRED FOR O-RING OR FLARE TYPE CONNECTIONS

7/16/2013 8S9453A.iam/hm1c STD CAP/PRESSURE PUMP PKG

SECTION 8 - PARTS

OPTIONAL PTO STD CAP/PRESSURE PUMP PACKAGES



*APPLY TEFLON TAPE TO ALL MPT/FPT CONNECTIONS.
 *SEALANT IS NOT REQUIRED FOR O-RING OR FLARE TYPE CONNECTIONS

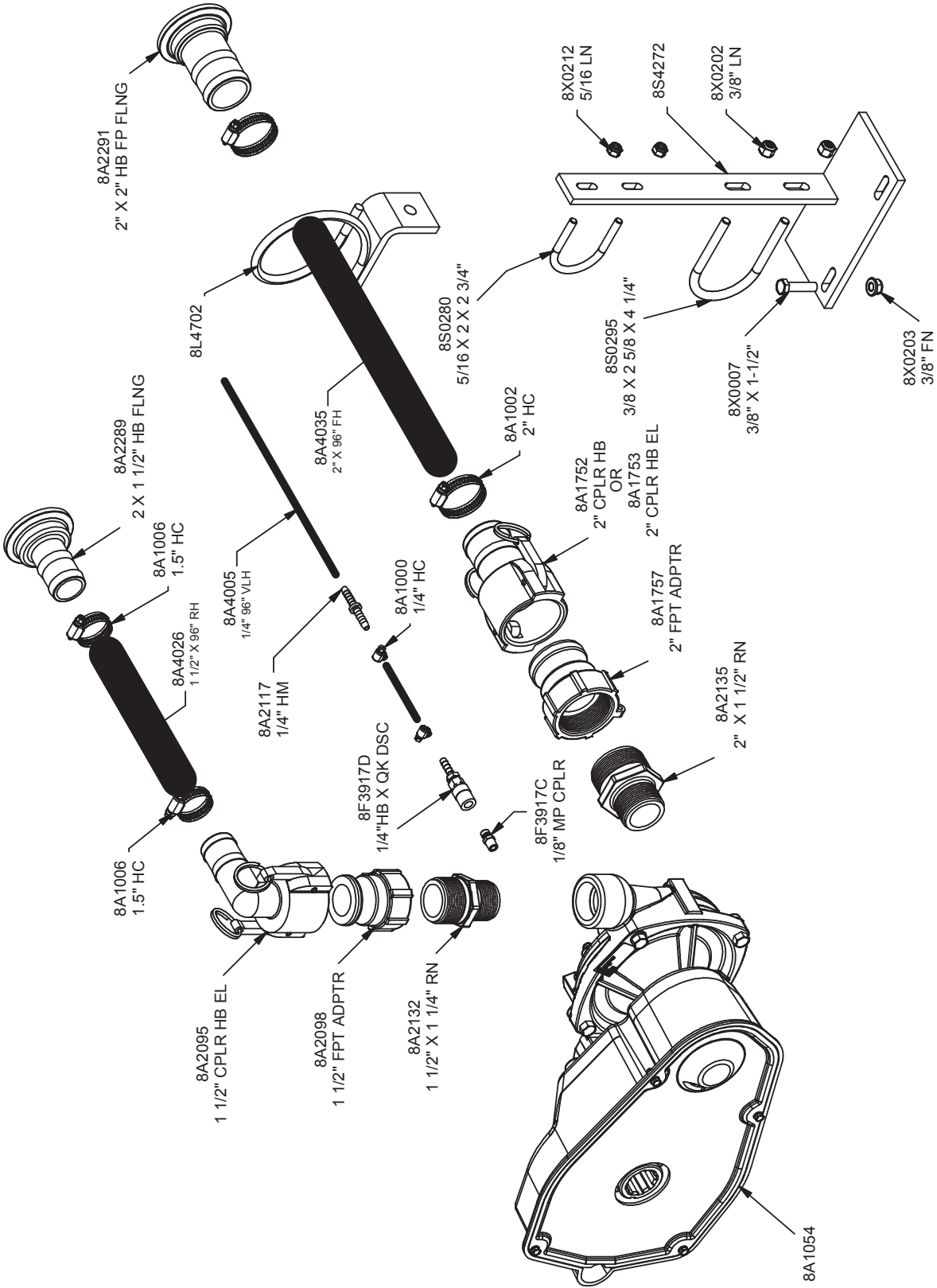
8S9461/PTO PUMP PKG 1000RPM 8 SPLINE
8S9458/PTO PUMP PKG 540RPM ULT
8S9460/PTO PUMP PKG 1000RPM ULT

4/26/2010

8S9458 540RPM PKG
8S9460 1000RPM PKG

- 8A1178 MINTG CLIP KIT
- 8A1050 C9006 540 RPM PUMP OR 8A1052 C9008 1000 RPM PUMP OR 8A1053 C9008 1000 RPM 8-SPLINE
- 8A1180 LOCKING COLLAR KIT

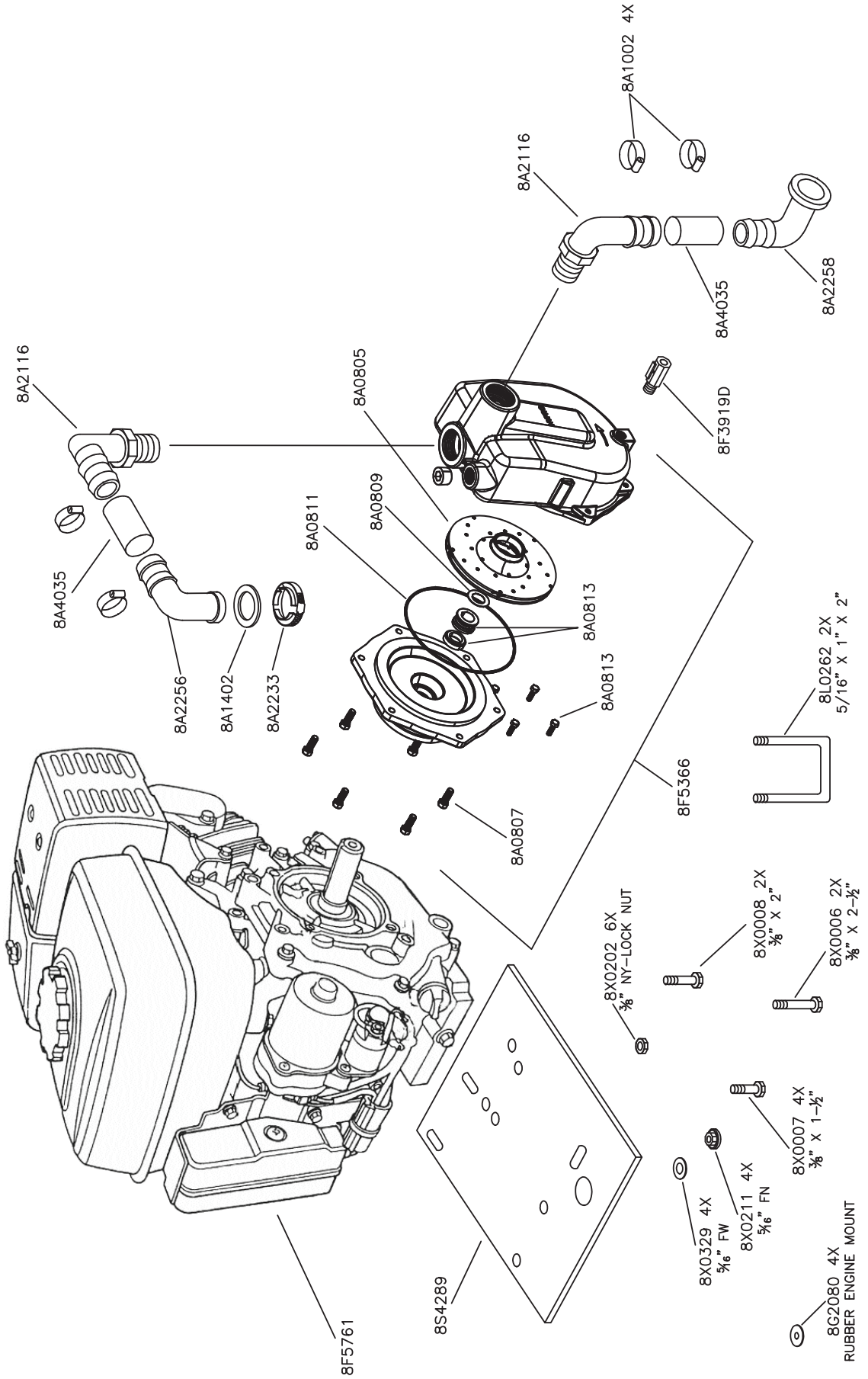
BELT DRIVE PTO STD CAP/PRESSURE PUMP PACKAGES



*APPLY TEFLON TAPE TO ALL MPT/FPT CONNECTIONS.
 *SEALANT IS NOT REQUIRED FOR O-RING OR FLARE TYPE CONNECTIONS

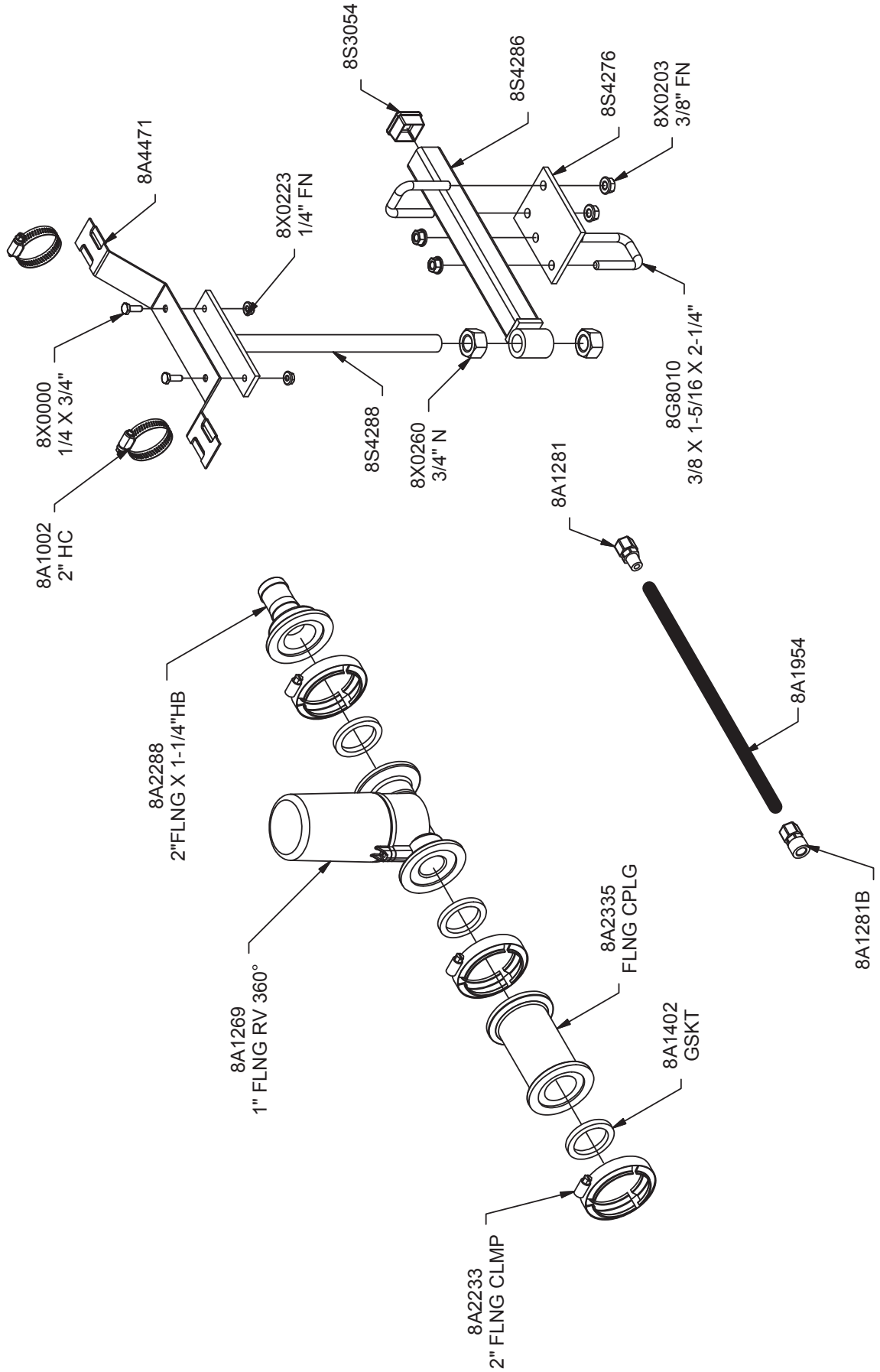
SECTION 8 - PARTS

OPTIONAL 9HP HONDA PUMP PACKAGE



8S9466 10/25/05 9HP HONDA PUMP PKG ULTRA/ULT

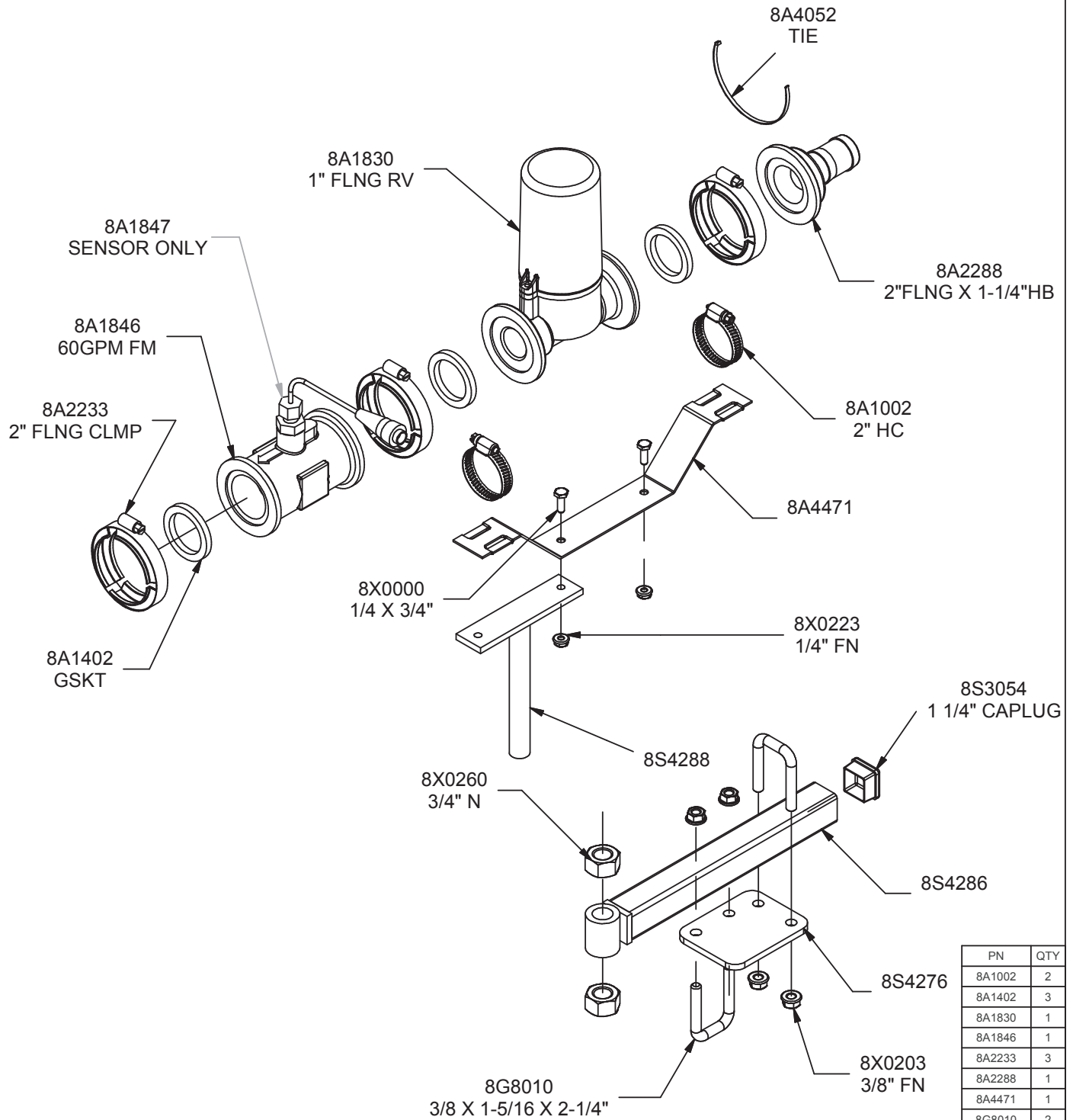
205 CONTROL PLUMBING PACKAGE



12/10/2008 8S9472/205 CONTROL PLUMBING PKG ULT/RA

SECTION 8 - PARTS

450 CONTROL PUMBINING PACKAGE



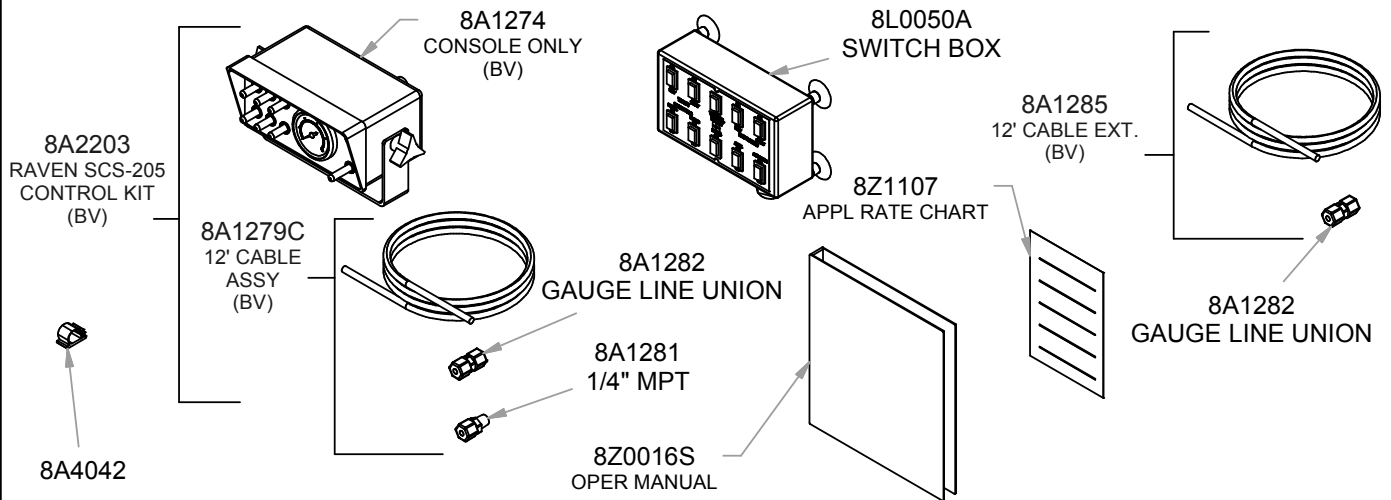
PN	QTY
8A1002	2
8A1402	3
8A1830	1
8A1846	1
8A2233	3
8A2288	1
8A4471	1
8G8010	2
8S3054	1
8S4276	1
8S4286	1
8S4288	1
8X0000	2
8X0203	4
8X0223	2
8X0260	2

12/17/2013

8S9474/450 PLUMBING PKG ULTRA

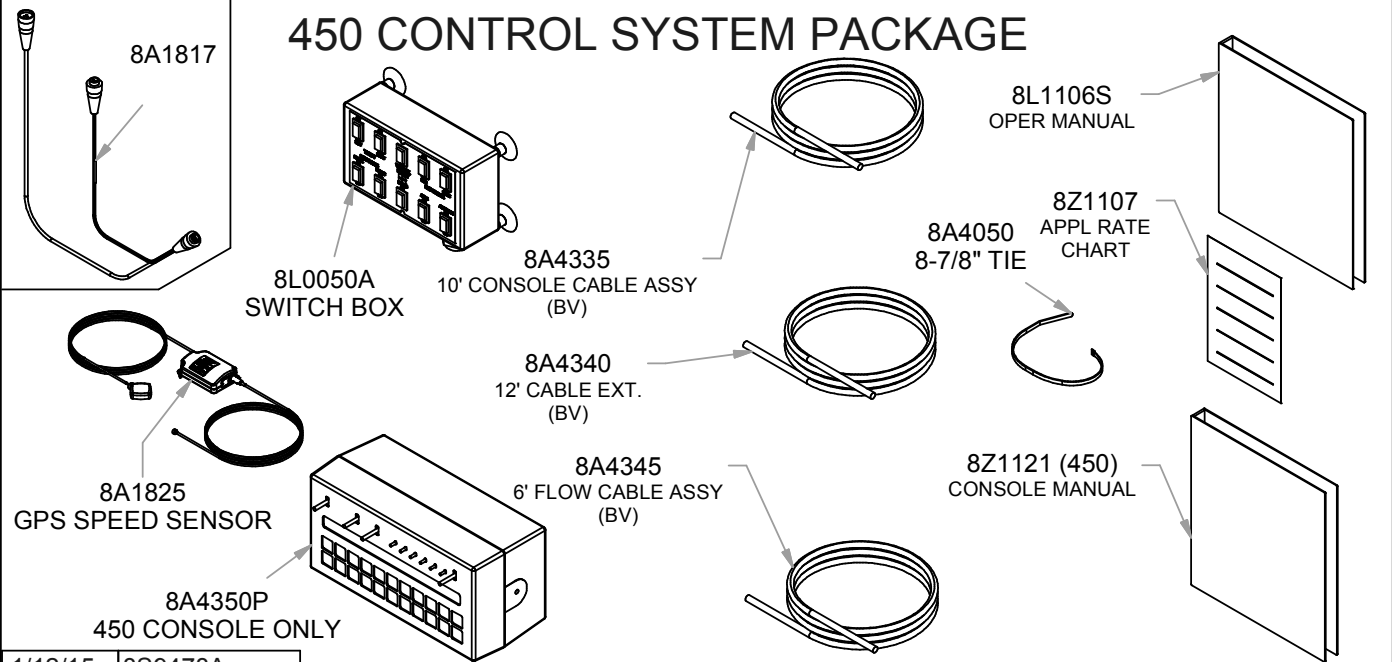
SECTION 8 - PARTS

205 CONTROL SYSTEM PACKAGE



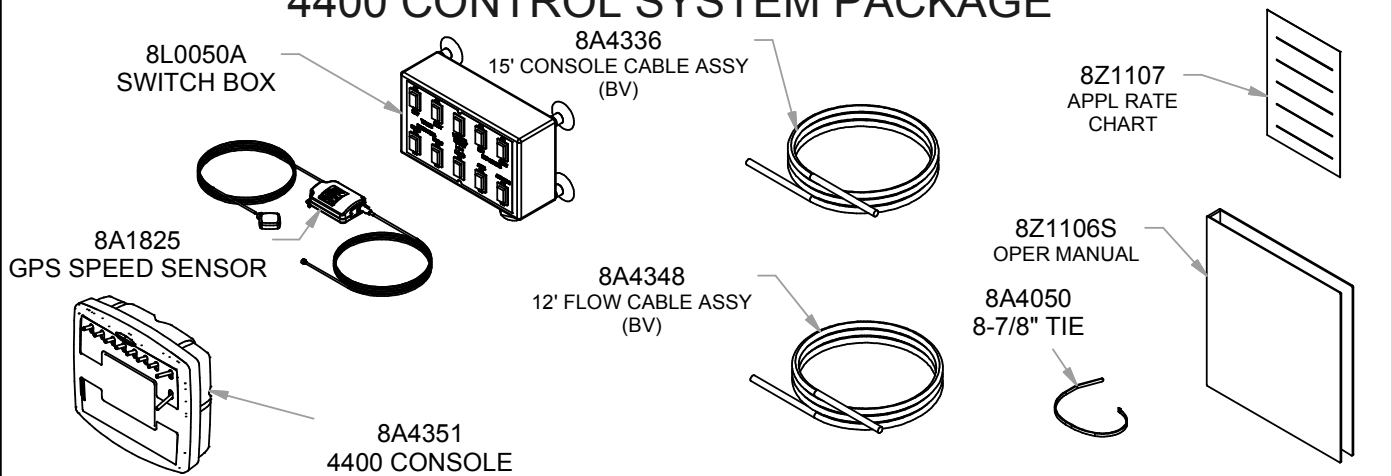
1/12/15 | 8S9475U

450 CONTROL SYSTEM PACKAGE



1/12/15 | 8S9478A

4400 CONTROL SYSTEM PACKAGE

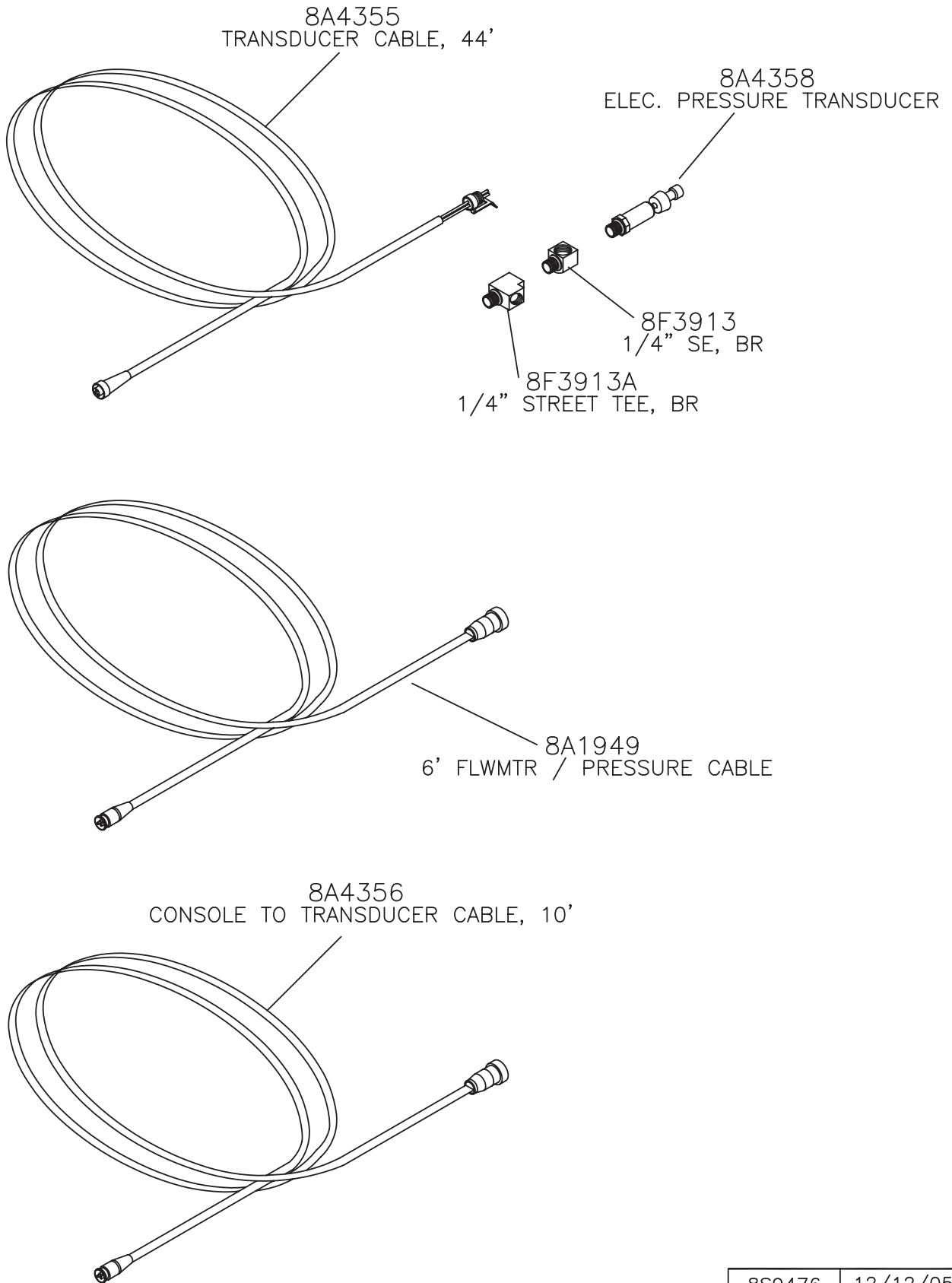


1/12/15 | 8S9479V

10/19/2011 | CONTROL SYSTEM PACKAGES

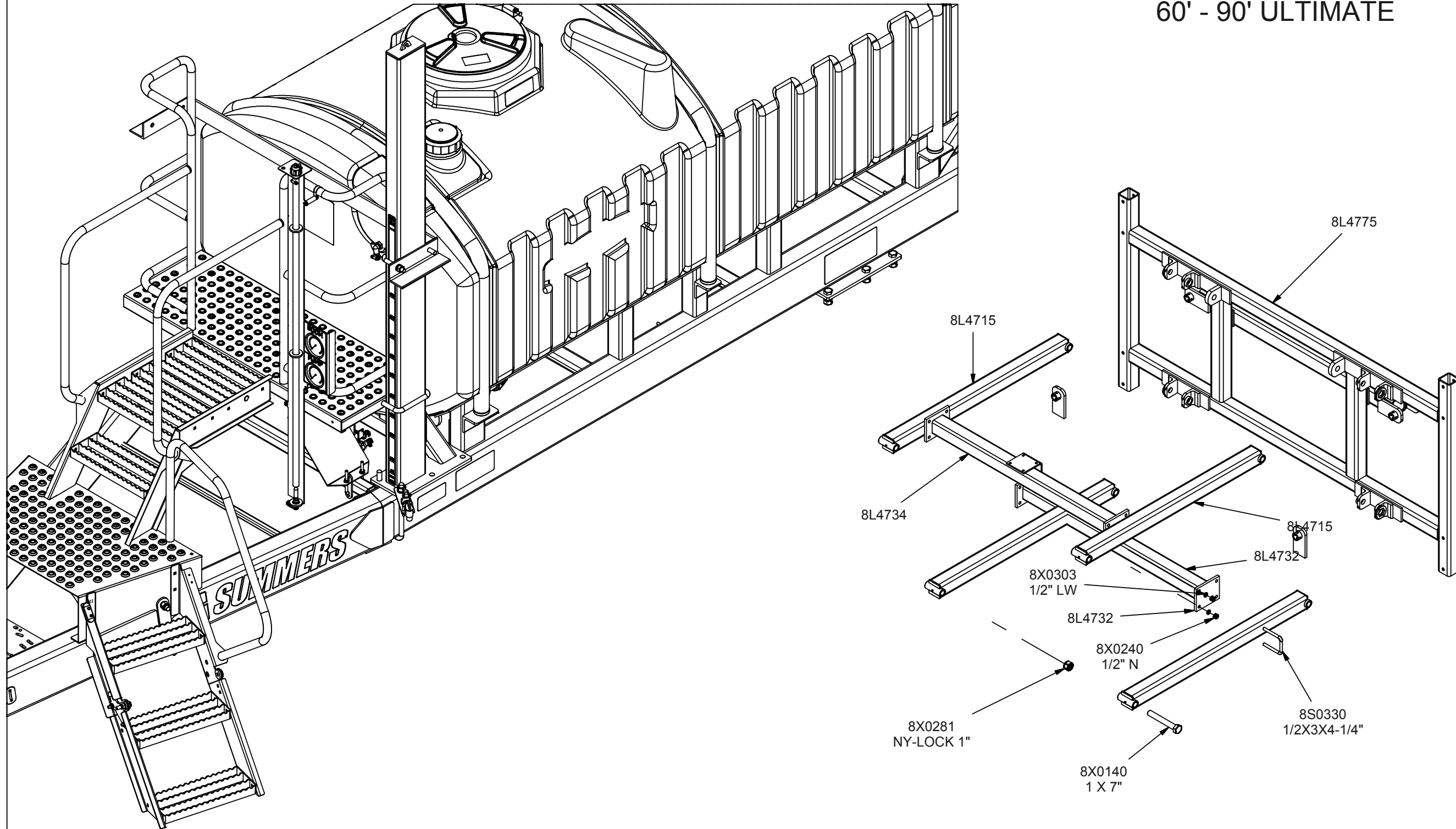
SECTION 8 - PARTS

ELECTRONIC PRESSURE GAUGE PACKAGE



8S9476 12/12/05

50' CENTER BOOM PACKAGE
60' - 90' ULTIMATE



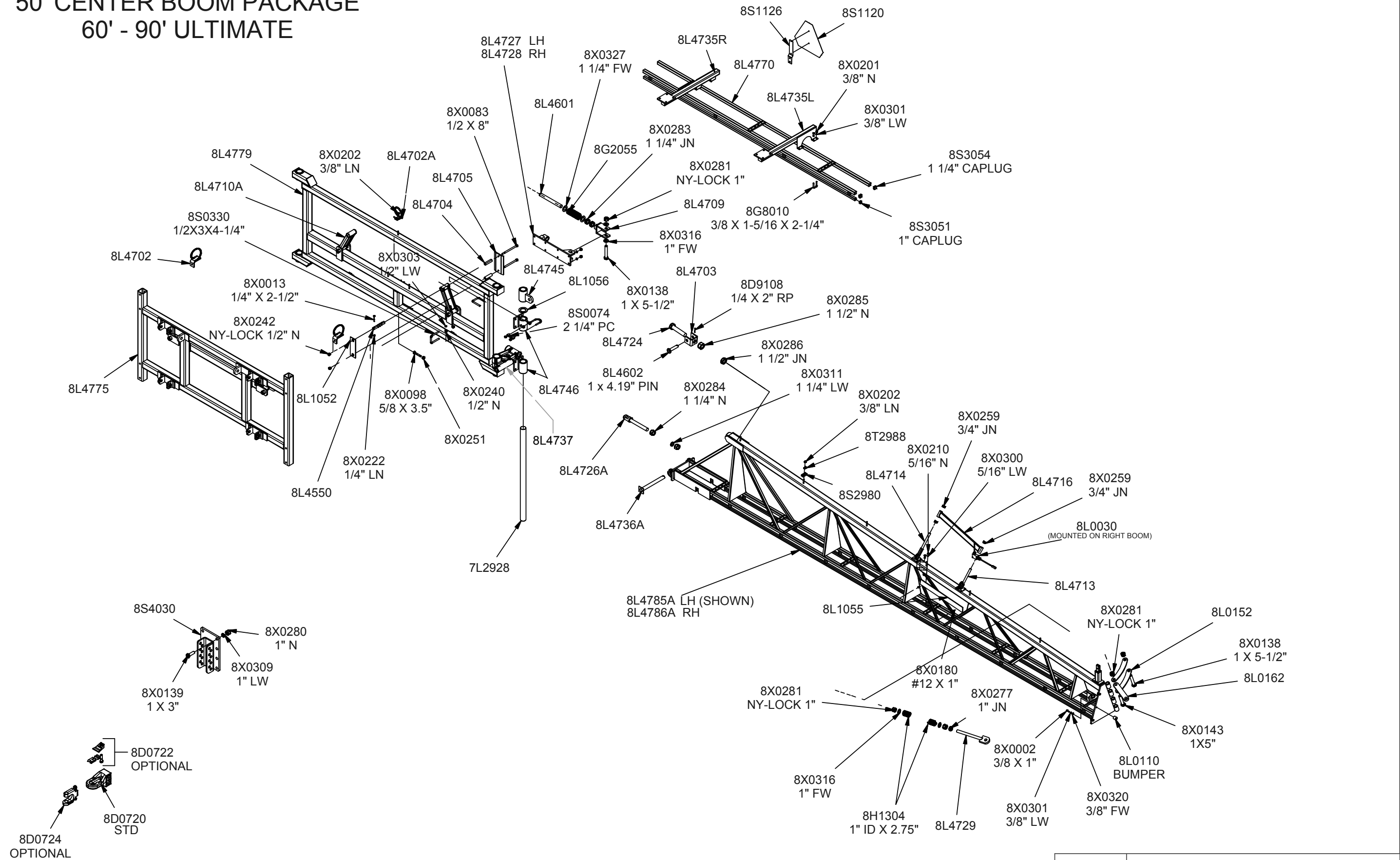
WIRING PART NUMBERS

- 8L0030 - SWITCH SPRING TOGGLE
- 8L0061 - CART WIRNG HARNESS
- 8L0071A - VALVE WIRNG HARNESS
- 8L0081 - BOOM WIRING HARNESS
- 8K8030A - LIGHT MODULE

5/19/2016 8L7051/BOOM PKG 50'PRT1&CNTR ULTIMATE

SECTION 8 - PARTS

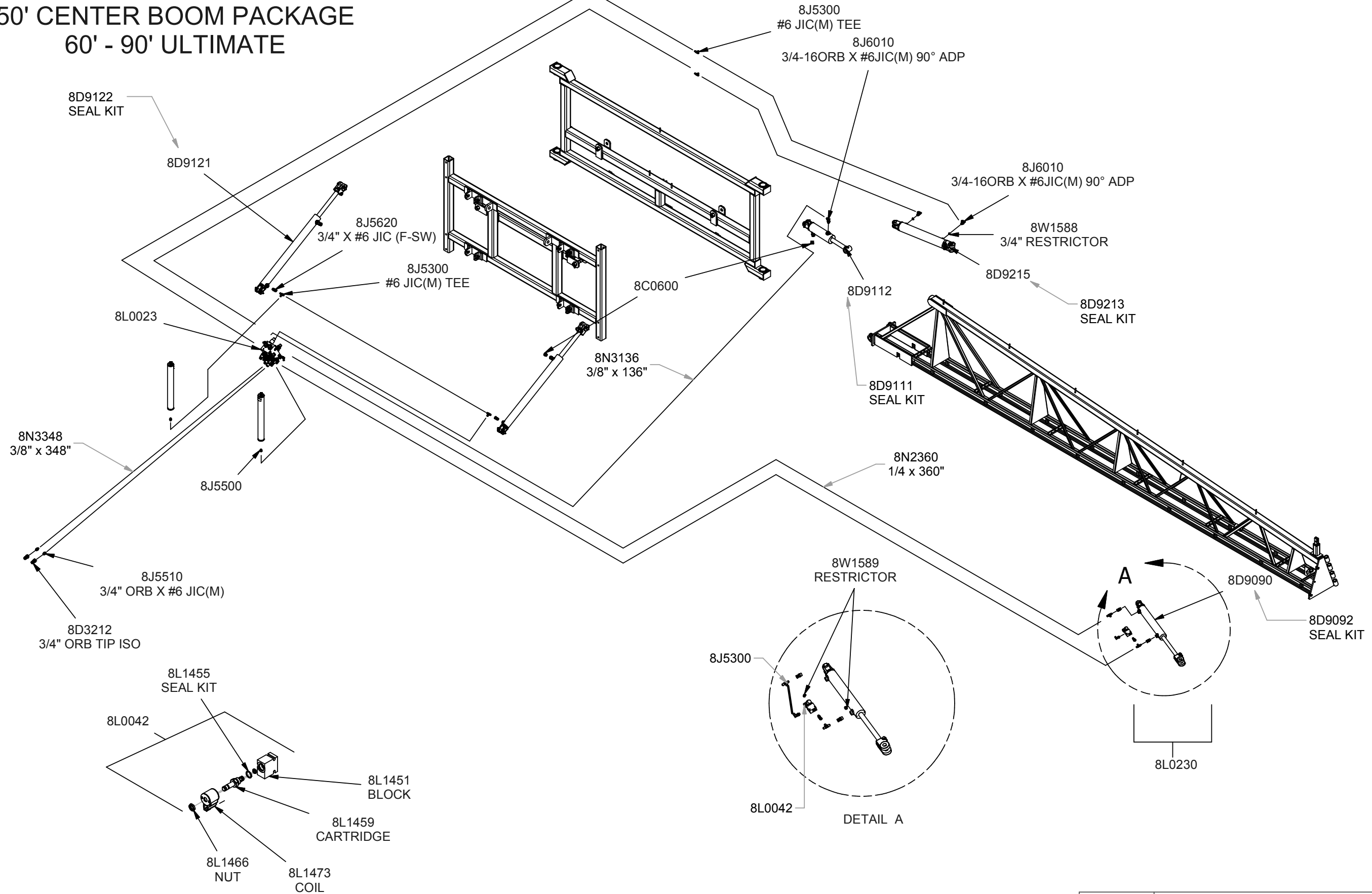
50' CENTER BOOM PACKAGE
60' - 90' ULTIMATE

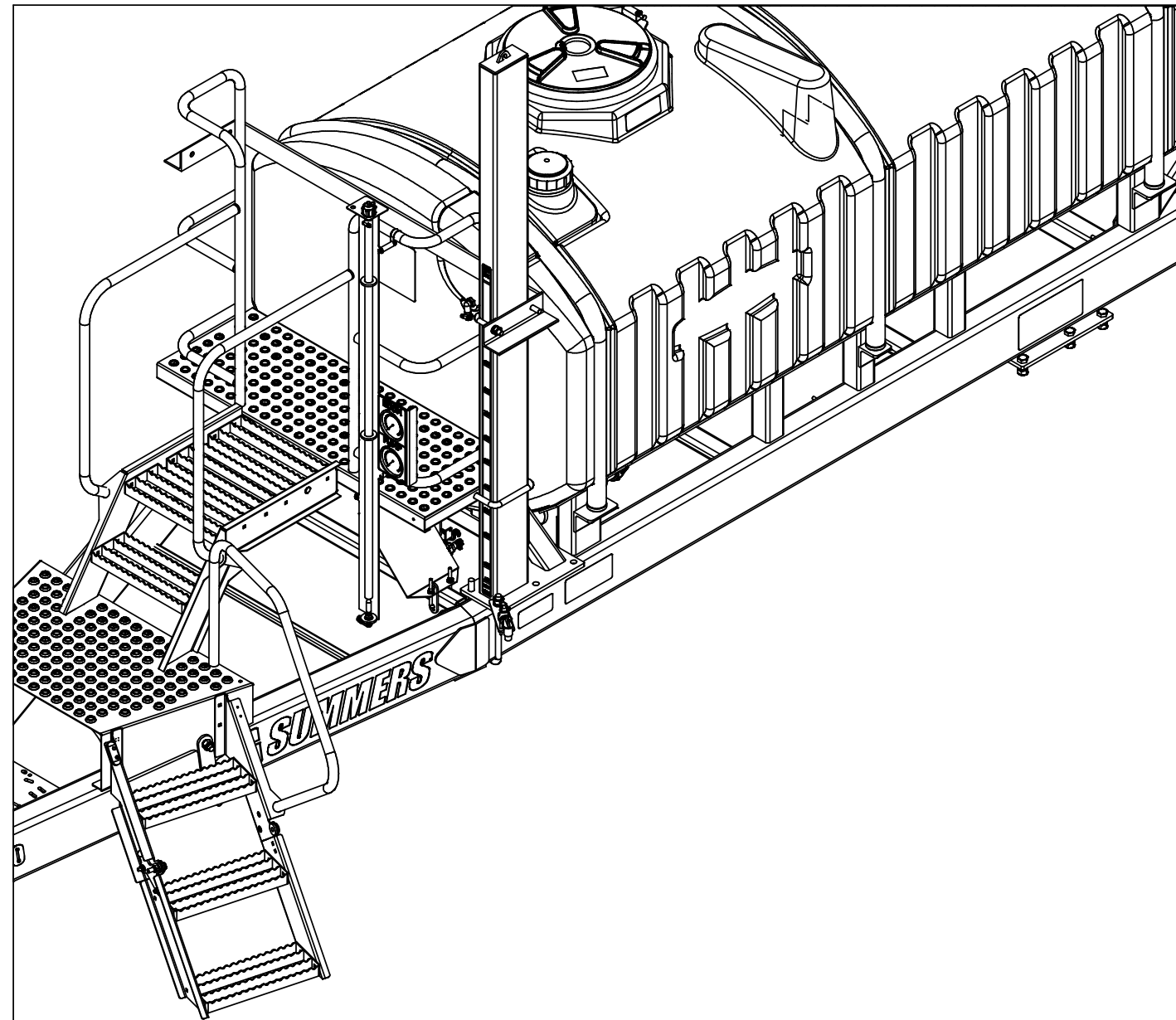


5/19/2016 8L7051/BOOM PKG 50'PRT1&CNTR ULTIMATE

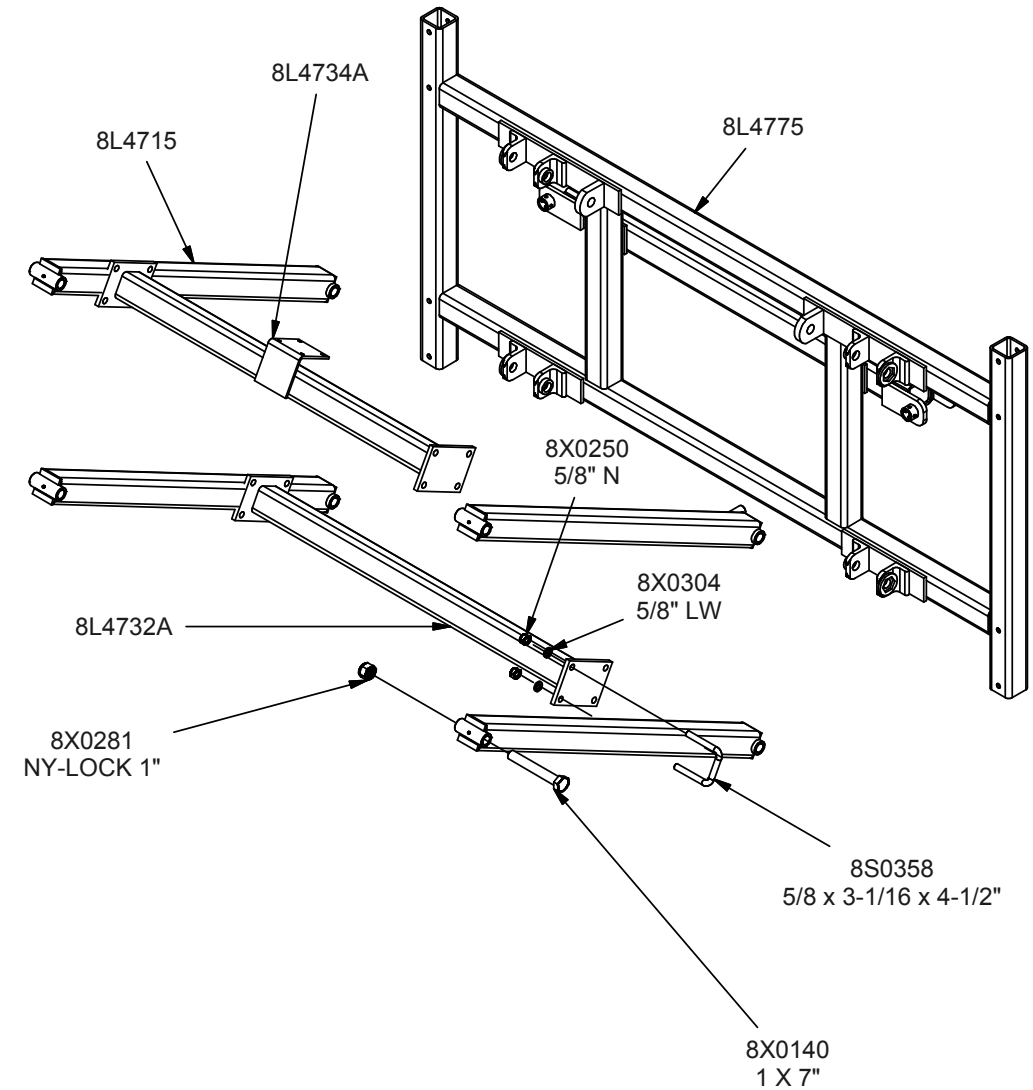
SECTION 8 - PARTS

50' CENTER BOOM PACKAGE
60' - 90' ULTIMATE





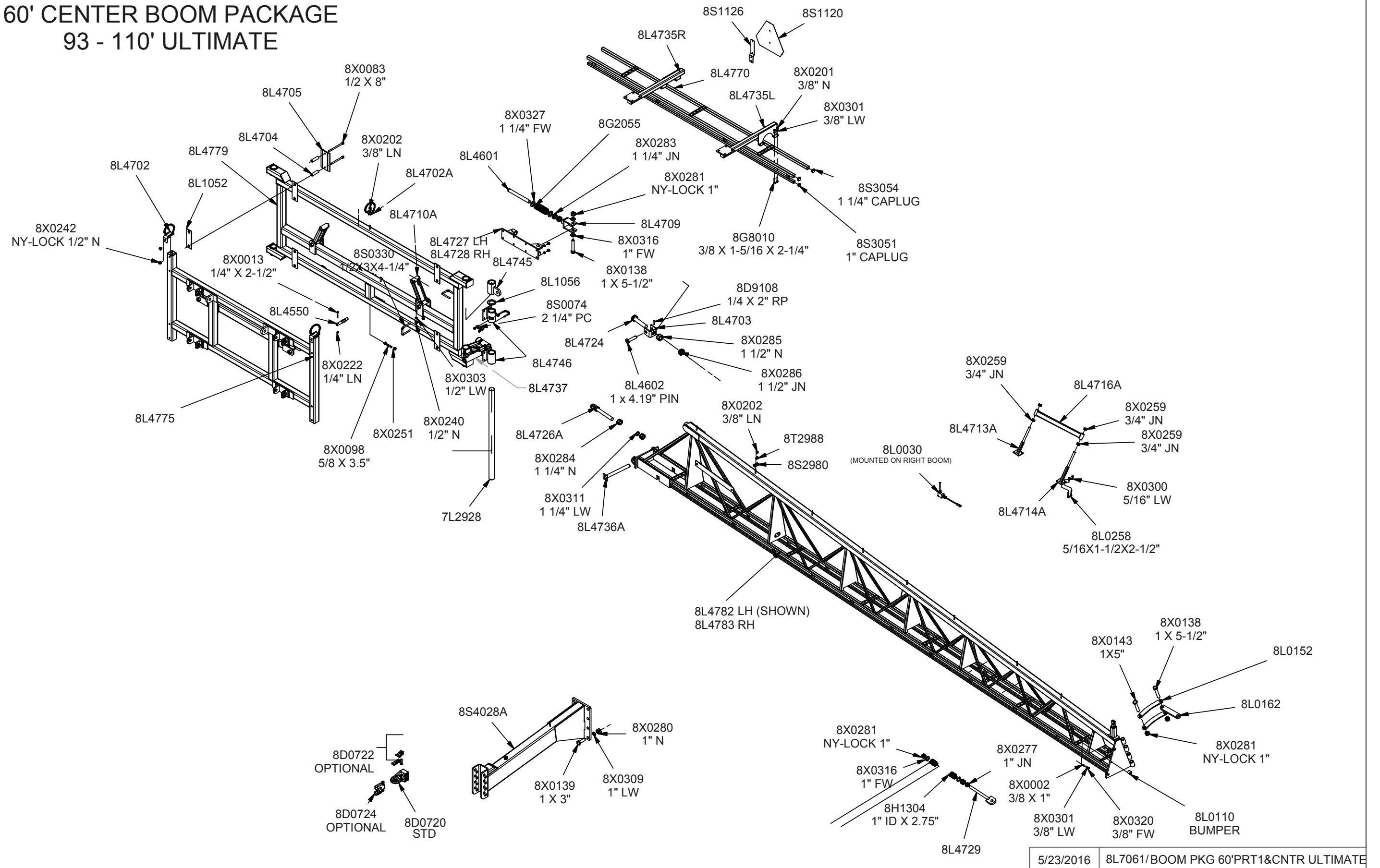
60' CENTER BOOM PACKAGE
93' - 110' ULTIMATE



- WIRING PART NUMBERS**
- 8L0030 - SWITCH SPRING TOGGLE
 - 8L0061 - CART WIRING HARNESS
 - 8L0062 - CART HARNESS EXTENSION
 - 8L0071A - VALVE WIRING HARNESS
 - 8L0081 - BOOM WIRING HARNESS
 - 8K8030A - LIGHT MODULE

SECTION 8 - PARTS

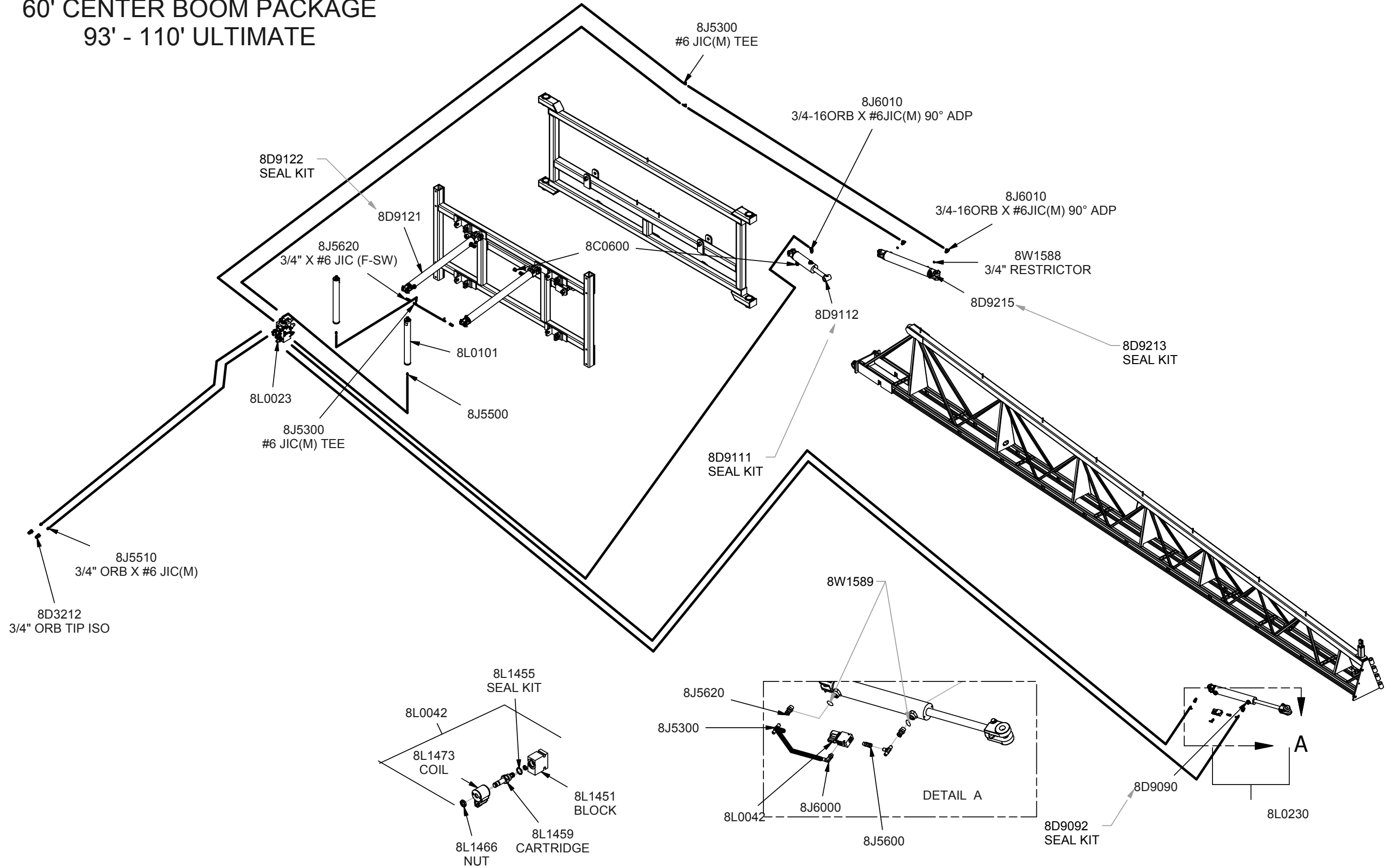
60' CENTER BOOM PACKAGE
93 - 110' ULTIMATE



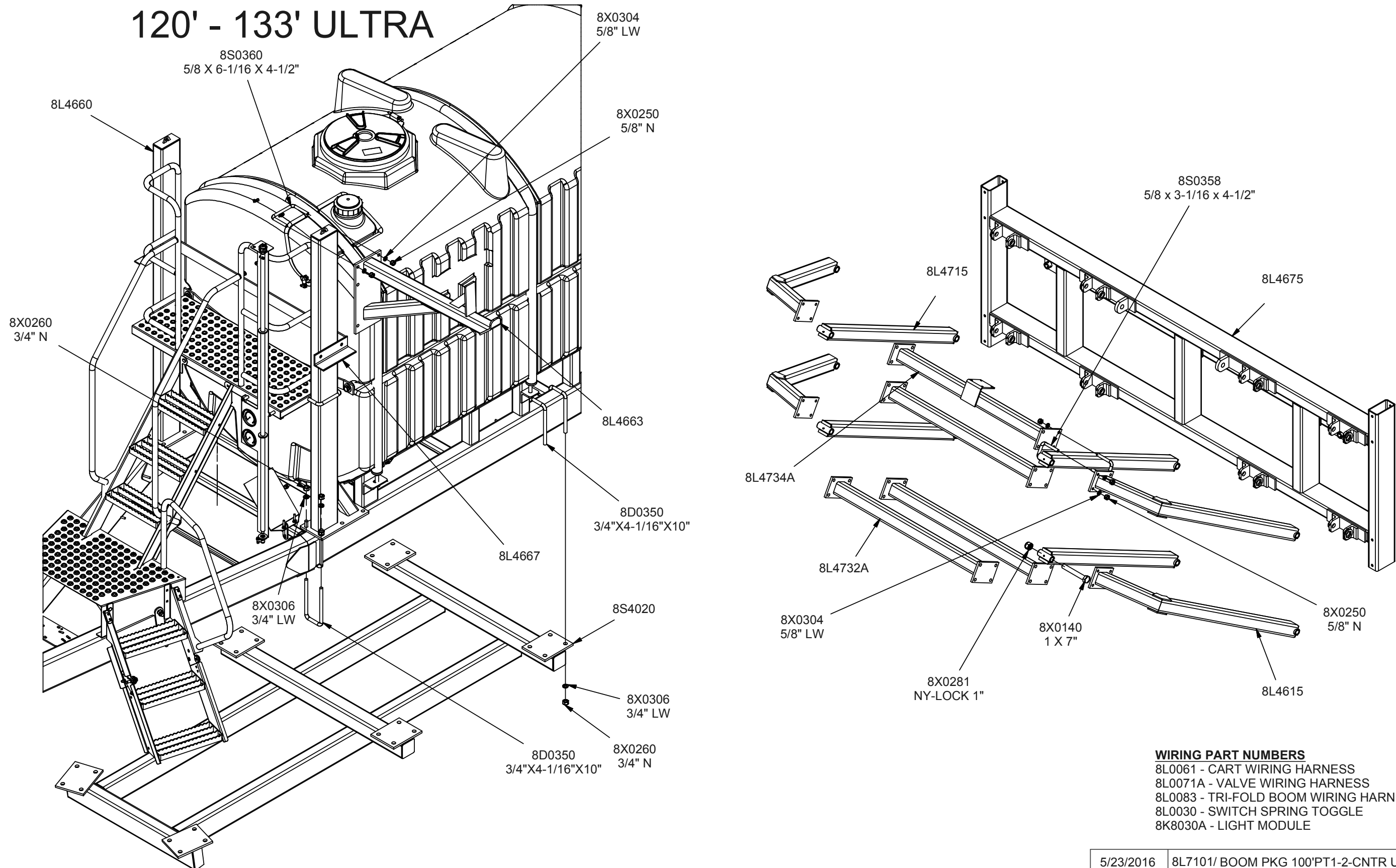
5/23/2016 8L7061/BOOM PKG 60'PRT1&CNTR ULTIMATE

SECTION 8 - PARTS

60' CENTER BOOM PACKAGE
93' - 110' ULTIMATE



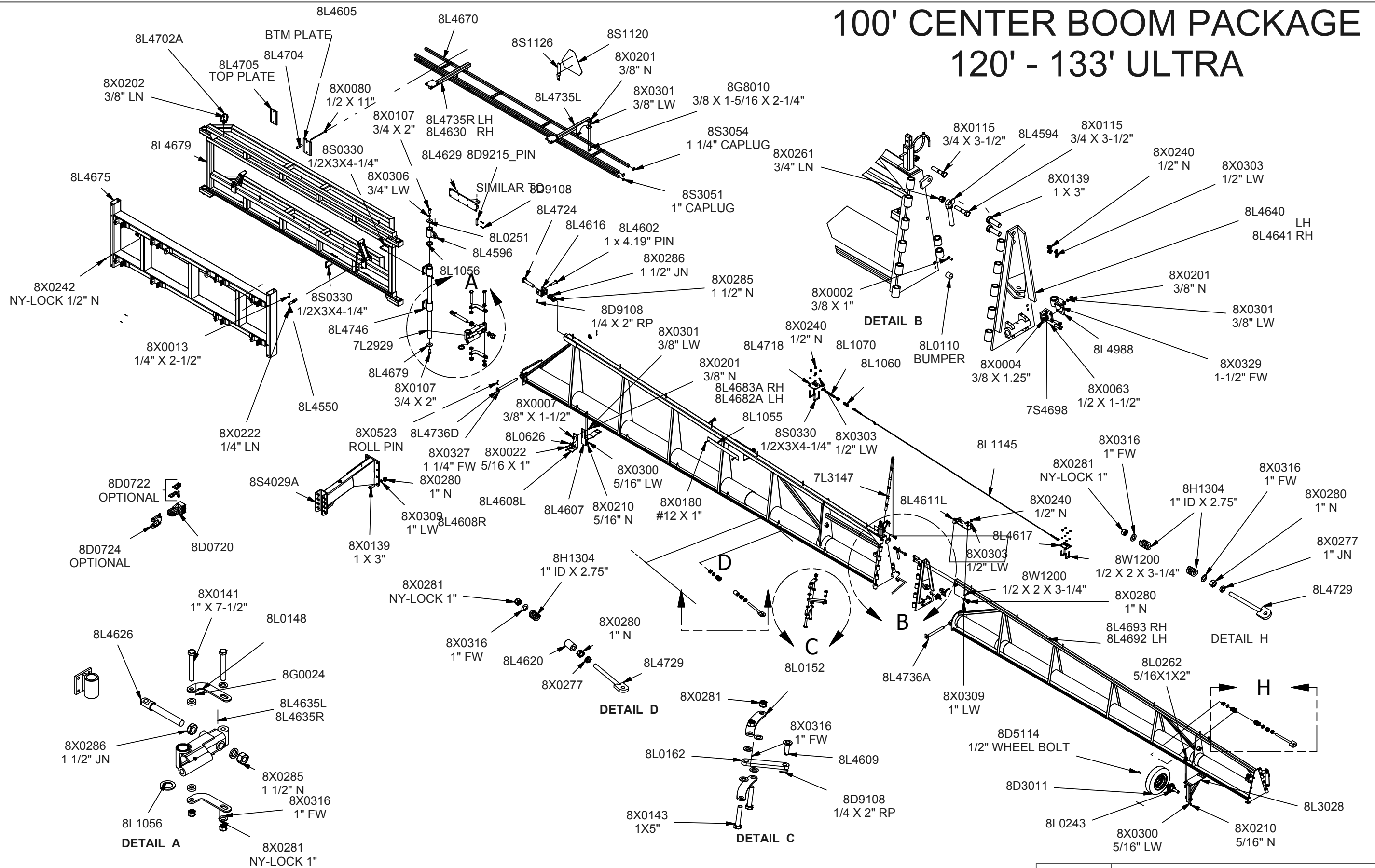
100' CENTER BOOM PACKAGE 120' - 133' ULTRA



5/23/2016 | 8L7101/ BOOM PKG 100'PT1-2-CNTR ULTRA

SECTION 8 - PARTS

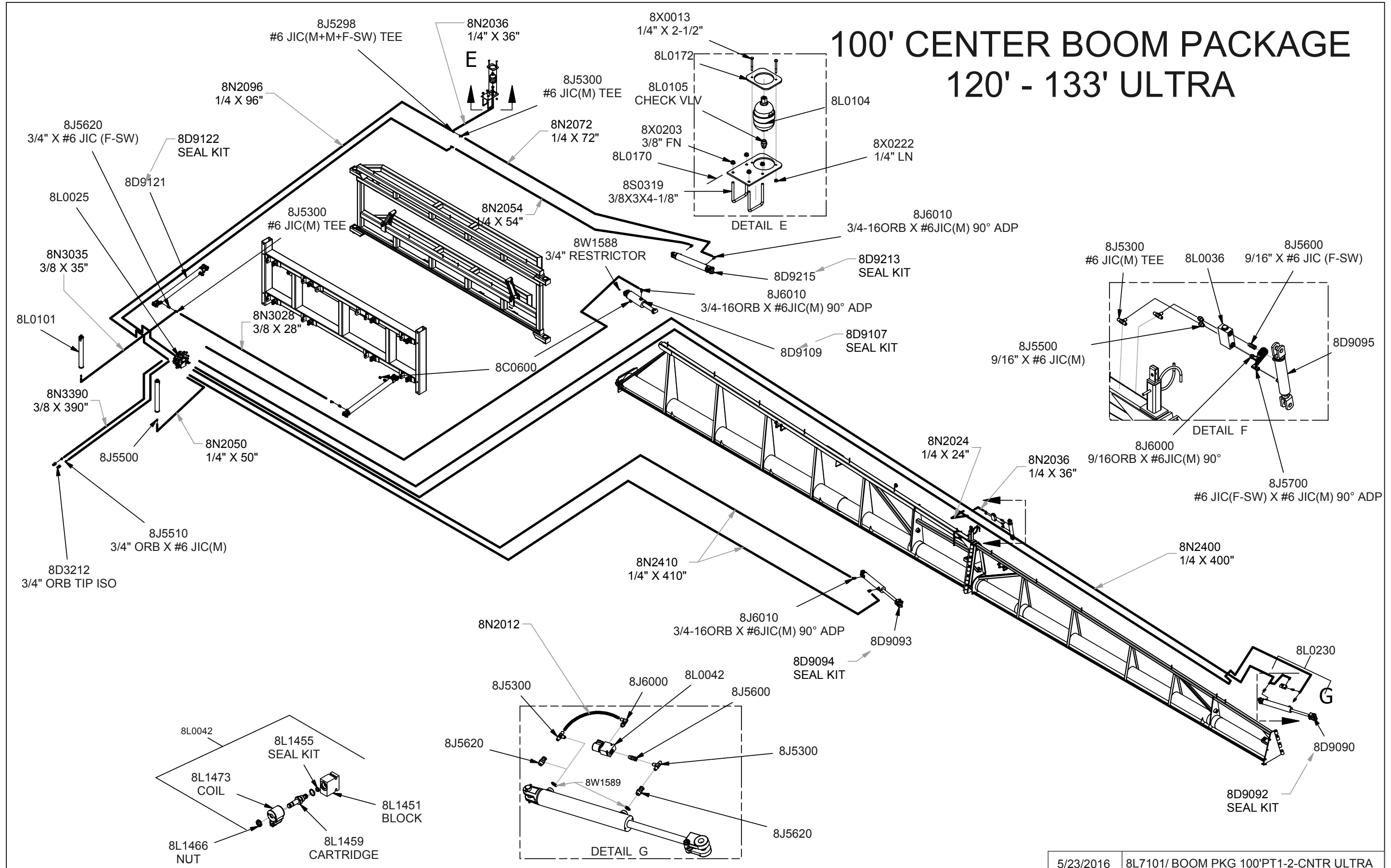
100' CENTER BOOM PACKAGE 120' - 133' ULTRA



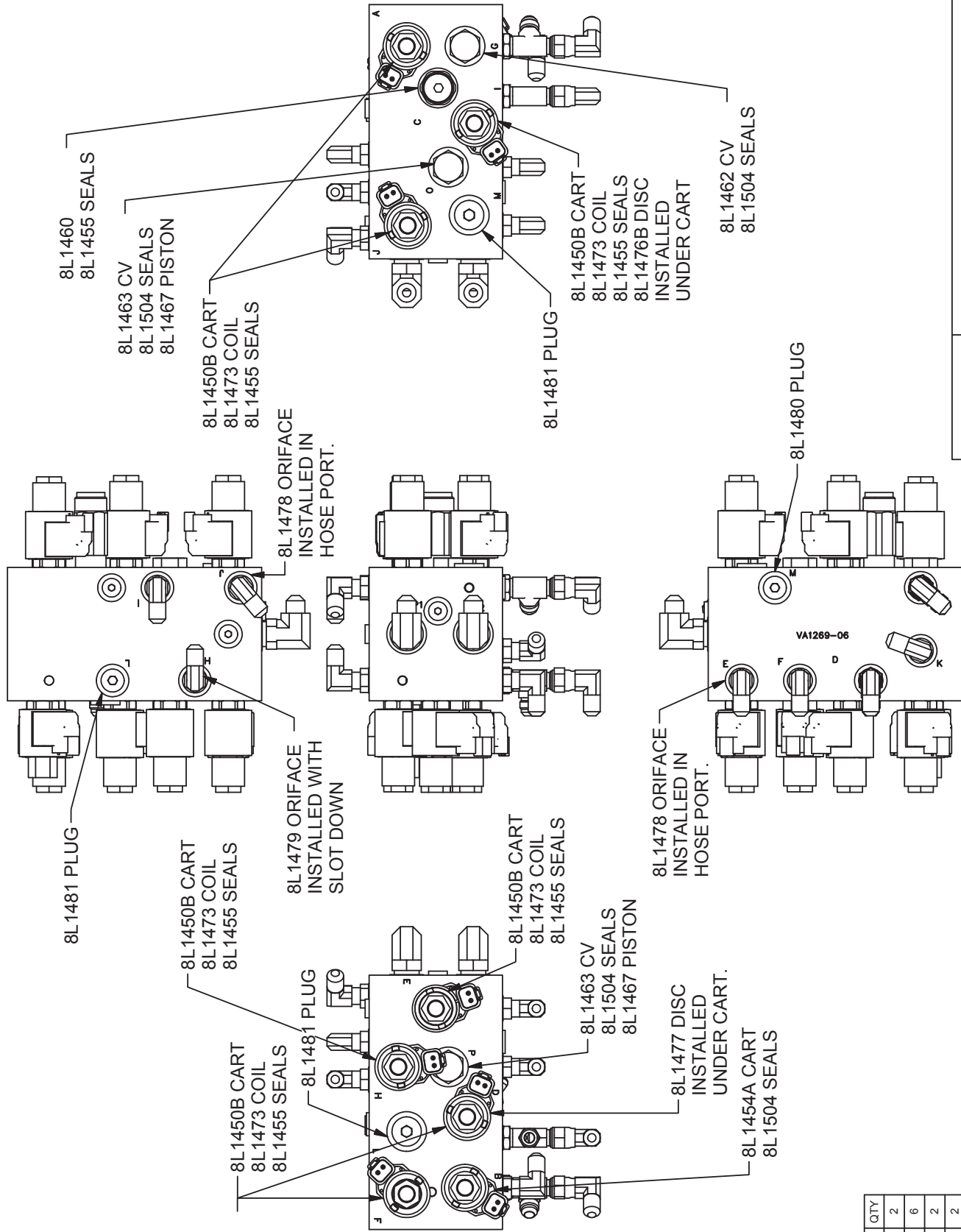
5/23/2016 | 8L7101/BOOM PKG 100'PT1-2-CNTR ULTRA

SECTION 8 - PARTS

100' CENTER BOOM PACKAGE 120' - 133' ULTRA



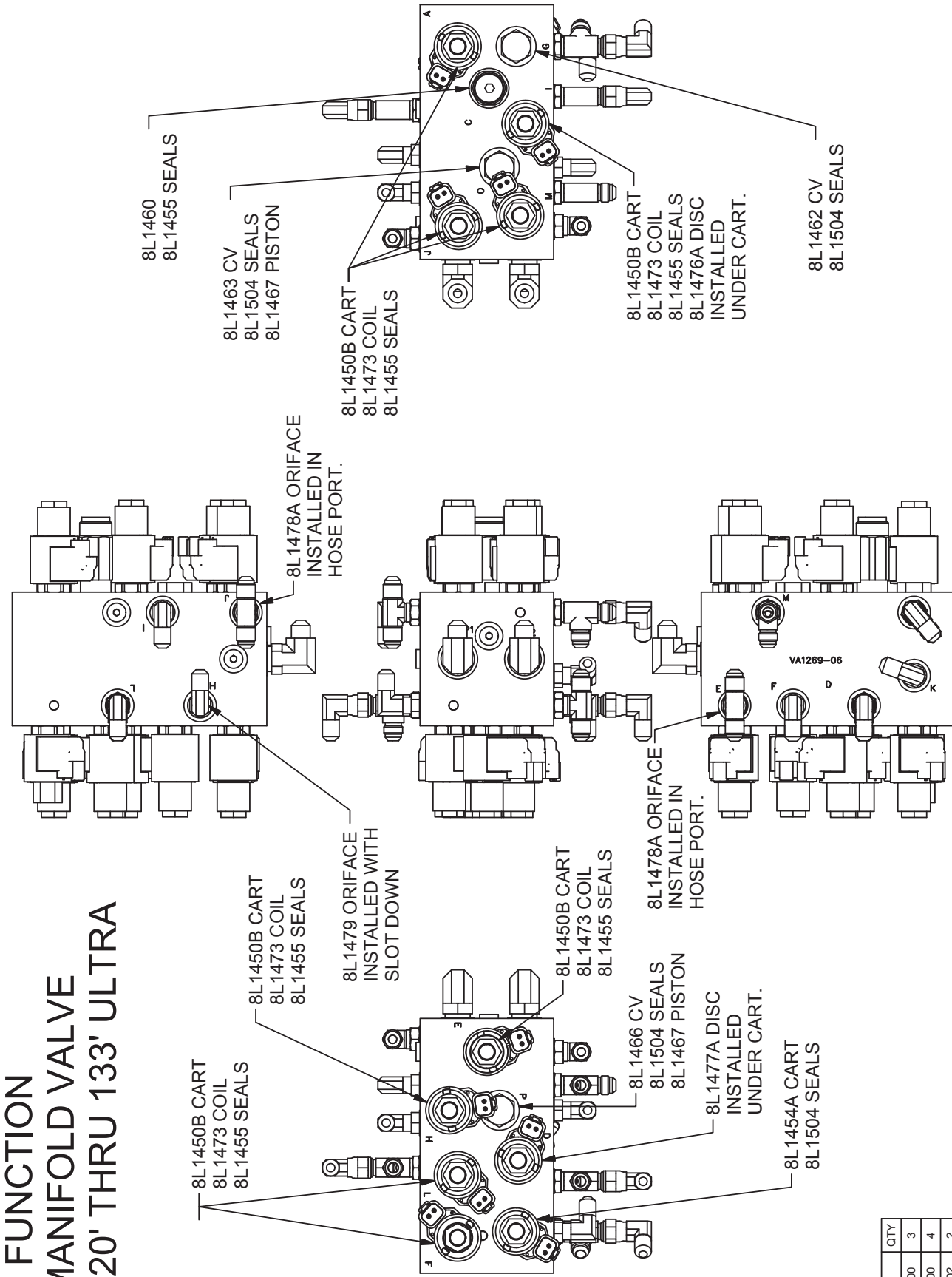
5 FUNCTION MANIFOLD VALVE - 60' THRU 110' ULTIMATE



PN	QTY
8J5700	2
8J6000	6
8J6004	2
8J6010	2
8L0022	1

8/4/2009 8L0023/MANIFOLD VLVE W/FITTINGS 05-

6 FUNCTION MANIFOLD VALVE 120' THRU 133' ULTRA

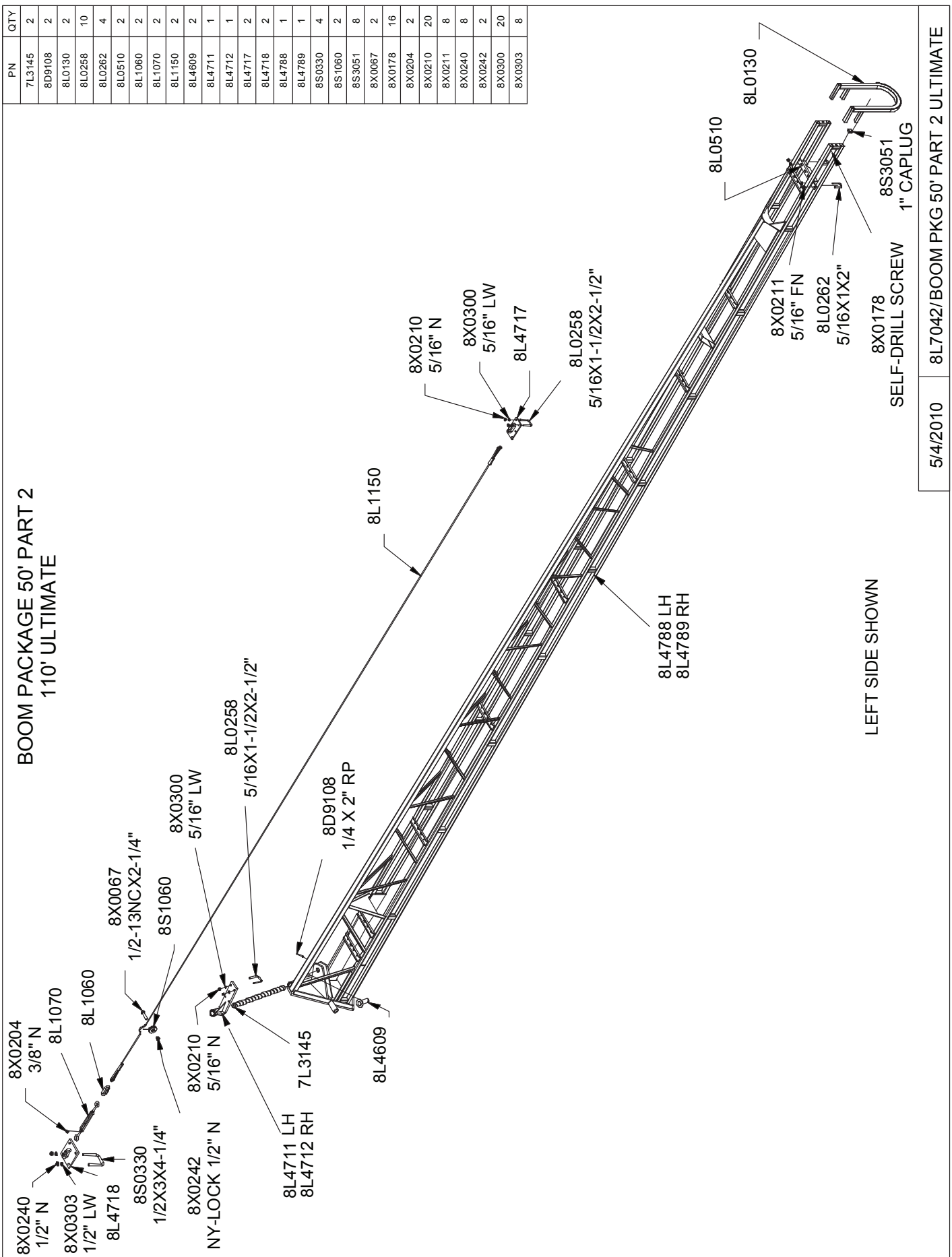


PN	QTY
8J5700	3
8J6000	4
8J6002	2
8J6004	4
8J6010	2
8L0024	1

8/4/2009

8L0025/MANIFOLD VLVE W/FITTINGS 05-

SECTION 8 - PARTS

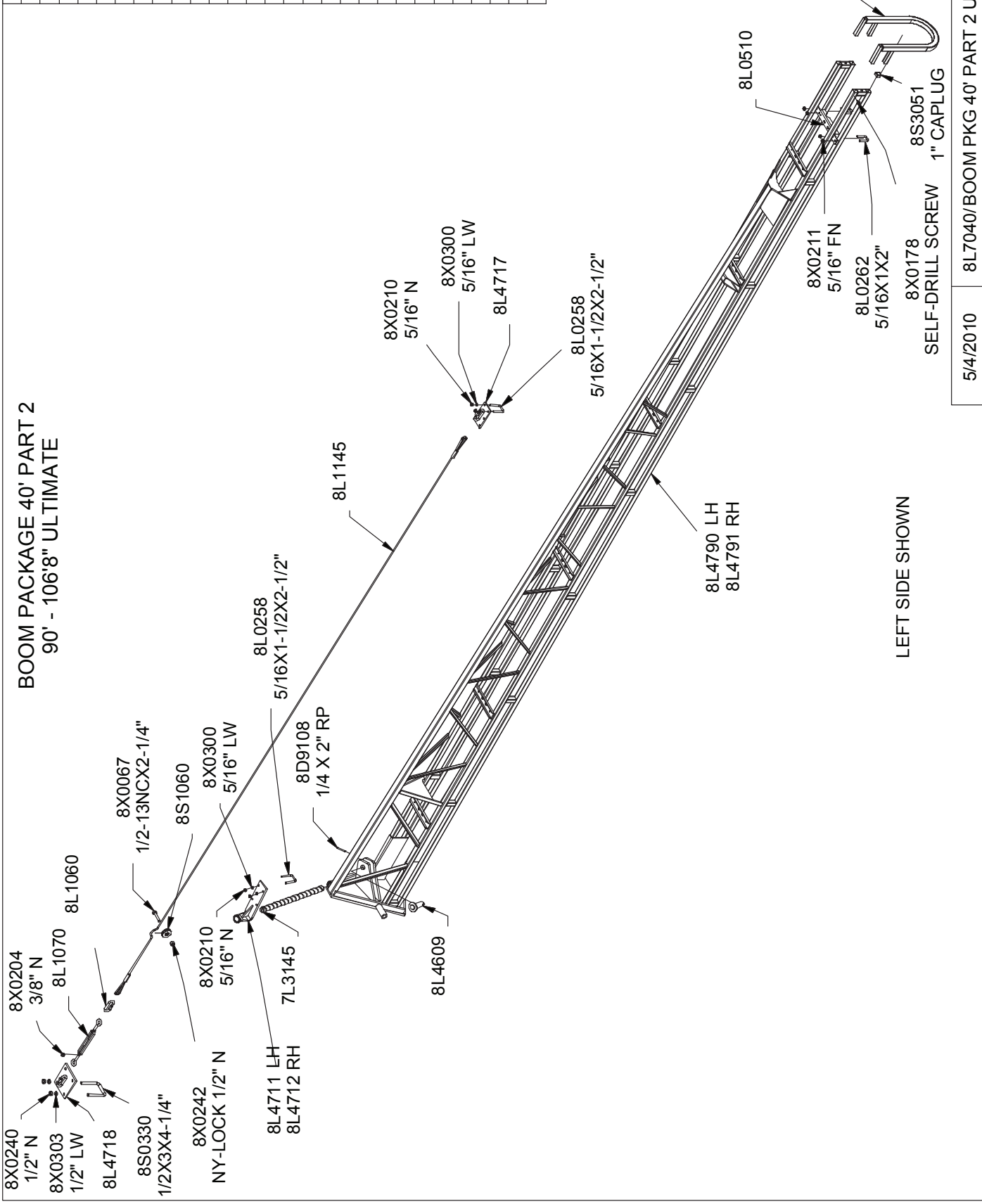


PN	QTY
7L3145	2
8D9108	2
8L0130	2
8L0258	10
8L0262	4
8L0510	2
8L1060	2
8L1070	2
8L1150	2
8L4609	2
8L4711	1
8L4712	1
8L4717	2
8L4718	2
8L4788	1
8L4789	1
8S0330	4
8S1060	2
8S3051	8
8X0067	2
8X0178	16
8X0204	2
8X0210	20
8X0211	8
8X0240	8
8X0242	2
8X0300	20
8X0303	8

5/4/2010 8L7042/BOOM PKG 50' PART 2 ULTIMATE

SECTION 8 - PARTS

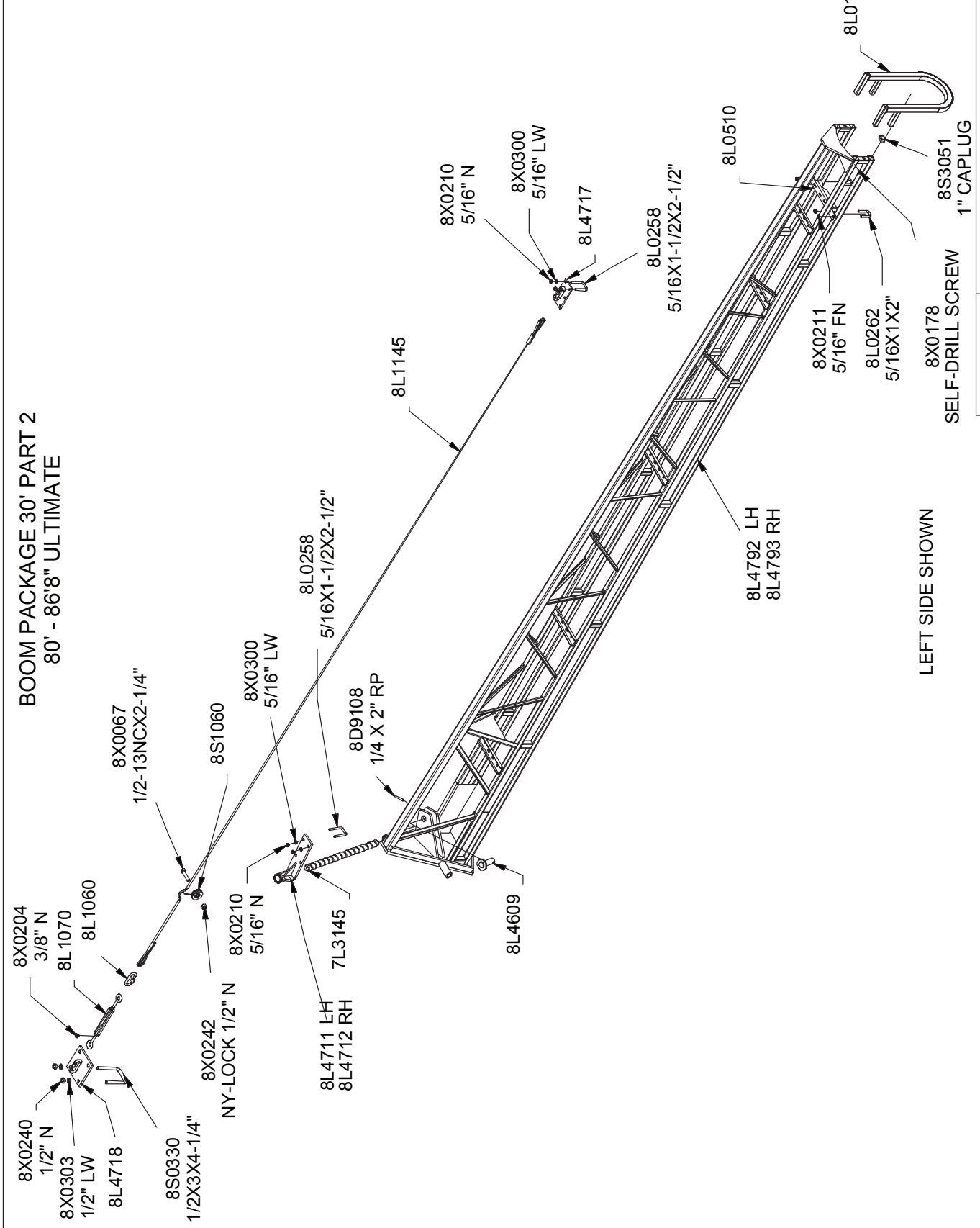
PN	QTY
7L3145	2
8D9108	2
8L0130	2
8L0258	10
8L0262	4
8L0510	2
8L1060	2
8L1070	2
8L1145	2
8L4609	2
8L4711	1
8L4712	1
8L4717	2
8L4718	2
8L4790	1
8L4791	1
8S0330	4
8S1060	2
8S3051	8
8X0067	2
8X0178	16
8X0204	2
8X0210	20
8X0211	8
8X0240	8
8X0242	2
8X0300	20
8X0303	8



5/4/2010	8L7040/BOOM PKG 40' PART 2 ULTIMATE
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SECTION 8 - PARTS

PN	QTY
7L3145	2
8D9108	2
8L0130	2
8L0258	10
8L0262	4
8L0510	2
8L1060	2
8L1070	2
8L1145	2
8L4609	2
8L4711	1
8L4712	1
8L4717	2
8L4718	2
8L4792	1
8L4793	1
8S0330	4
8S1060	2
8S3051	8
8X0067	2
8X0178	16
8X0204	2
8X0210	20
8X0211	8
8X0240	8
8X0242	2
8X0300	20
8X0303	8



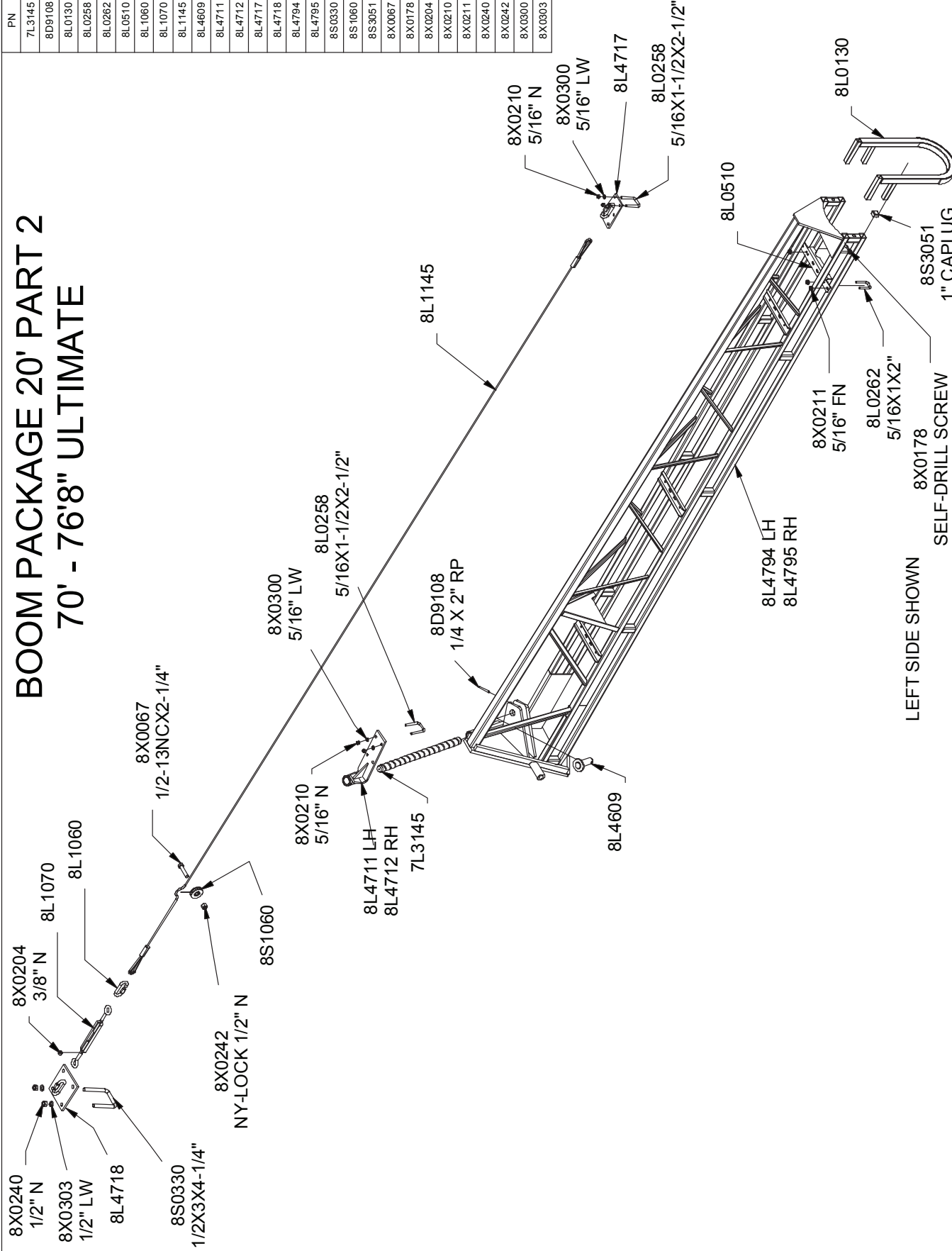
LEFT SIDE SHOWN

5/4/2010	8L7030/BOOM PKG 30' PART 2 ULTIMATE
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SECTION 8 - PARTS

BOOM PACKAGE 20' PART 2
70' - 76'8" ULTIMATE

PN	QTY
7L3145	2
8D9108	2
8L0130	2
8L0258	10
8L0262	2
8L0510	1
8L1060	2
8L1070	2
8L1145	2
8L4609	2
8L4711	1
8L4712	1
8L4717	2
8L4718	2
8L4794	1
8L4795	1
8S0330	4
8S1060	2
8S3051	8
8X0067	2
8X0178	16
8X0204	2
8X0210	20
8X0211	8
8X0240	8
8X0242	2
8X0300	20
8X0303	8



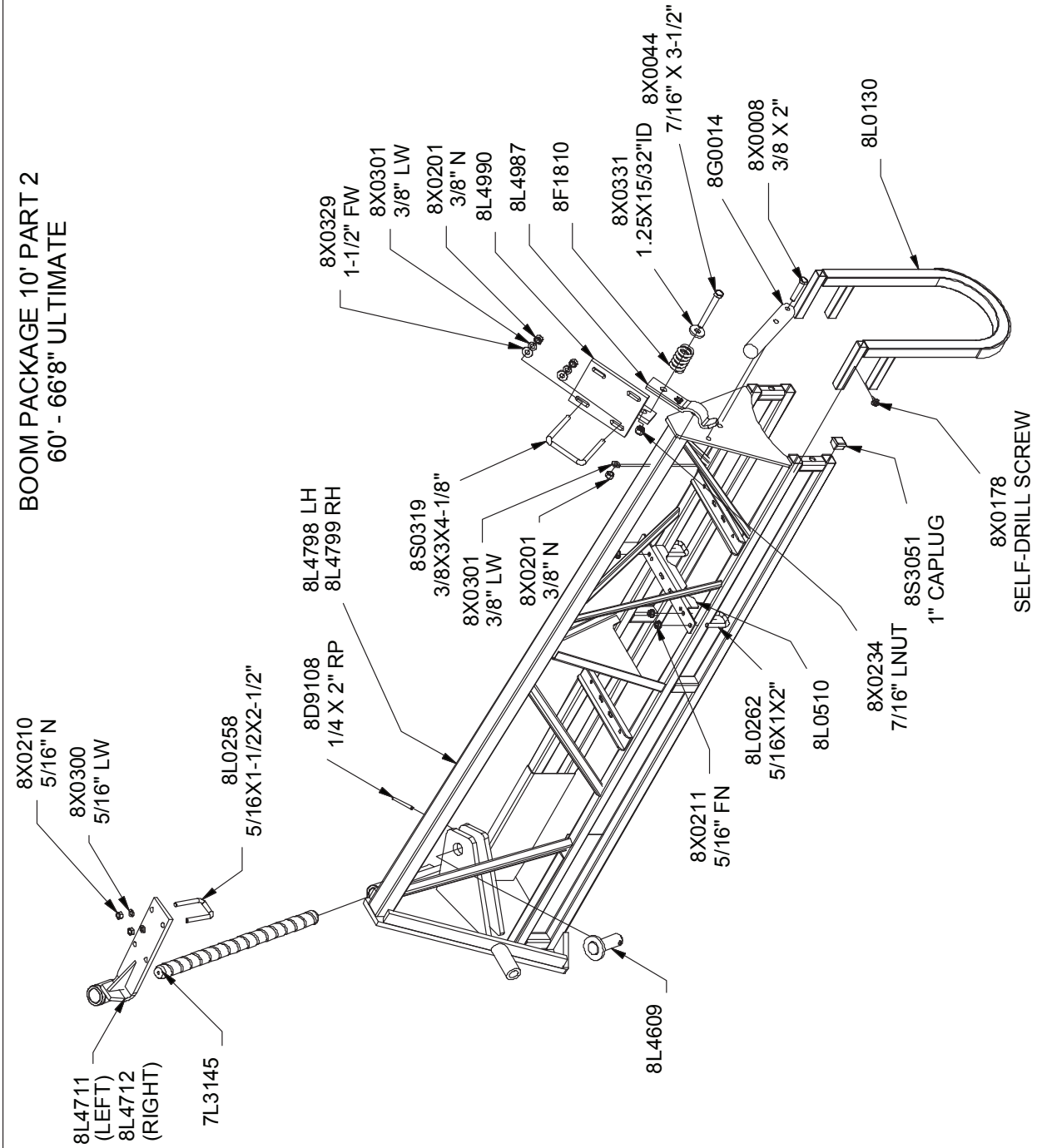
LEFT SIDE SHOWN

5/4/2010 8L7020/BOOM PKG 20' PART 2 ULTIMATE

SECTION 8 - PARTS

BOOM PACKAGE 10' PART 2
60' - 66'8" ULTIMATE

PN	QTY
7L3145	2
8D9108	2
8F1810	2
8G0014	2
8L0130	2
8L0258	4
8L0262	4
8L0510	2
8L4609	2
8L4711	1
8L4712	1
8L4798	1
8L4799	1
8L4987	1
8L4990	2
8S0319	4
8S3051	4
8X0008	4
8X0044	2
8X0178	16
8X0201	12
8X0210	8
8X0211	8
8X0234	2
8X0300	8
8X0301	12
8X0329	8
8X0331	2



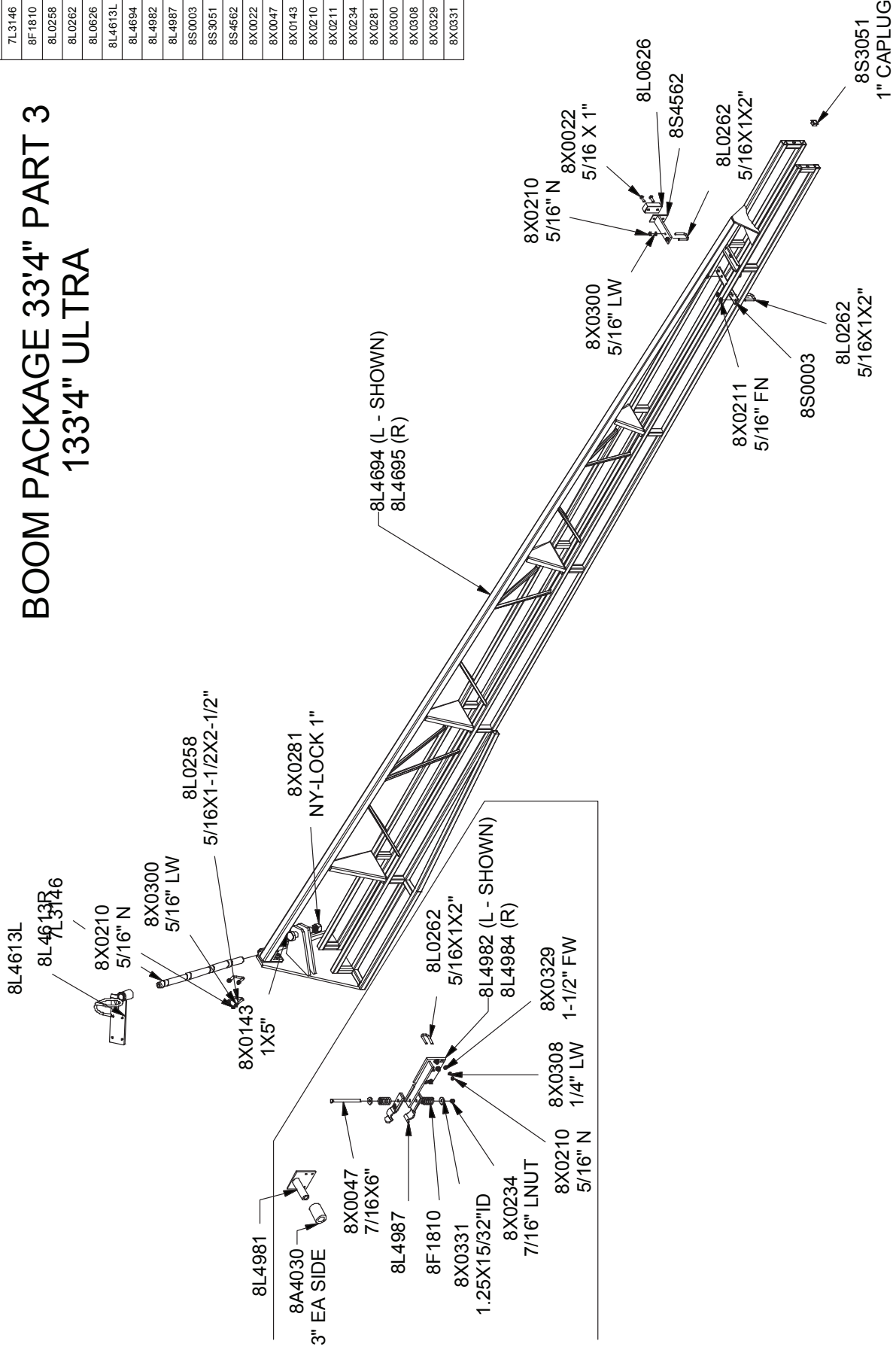
LEFT SIDE SHOWN

11/11/2010 8L7010/BOOM PKG 10' PART 2 ULTIMATE

SECTION 8 - PARTS

BOOM PACKAGE 33'4" PART 3
133'4" ULTRA

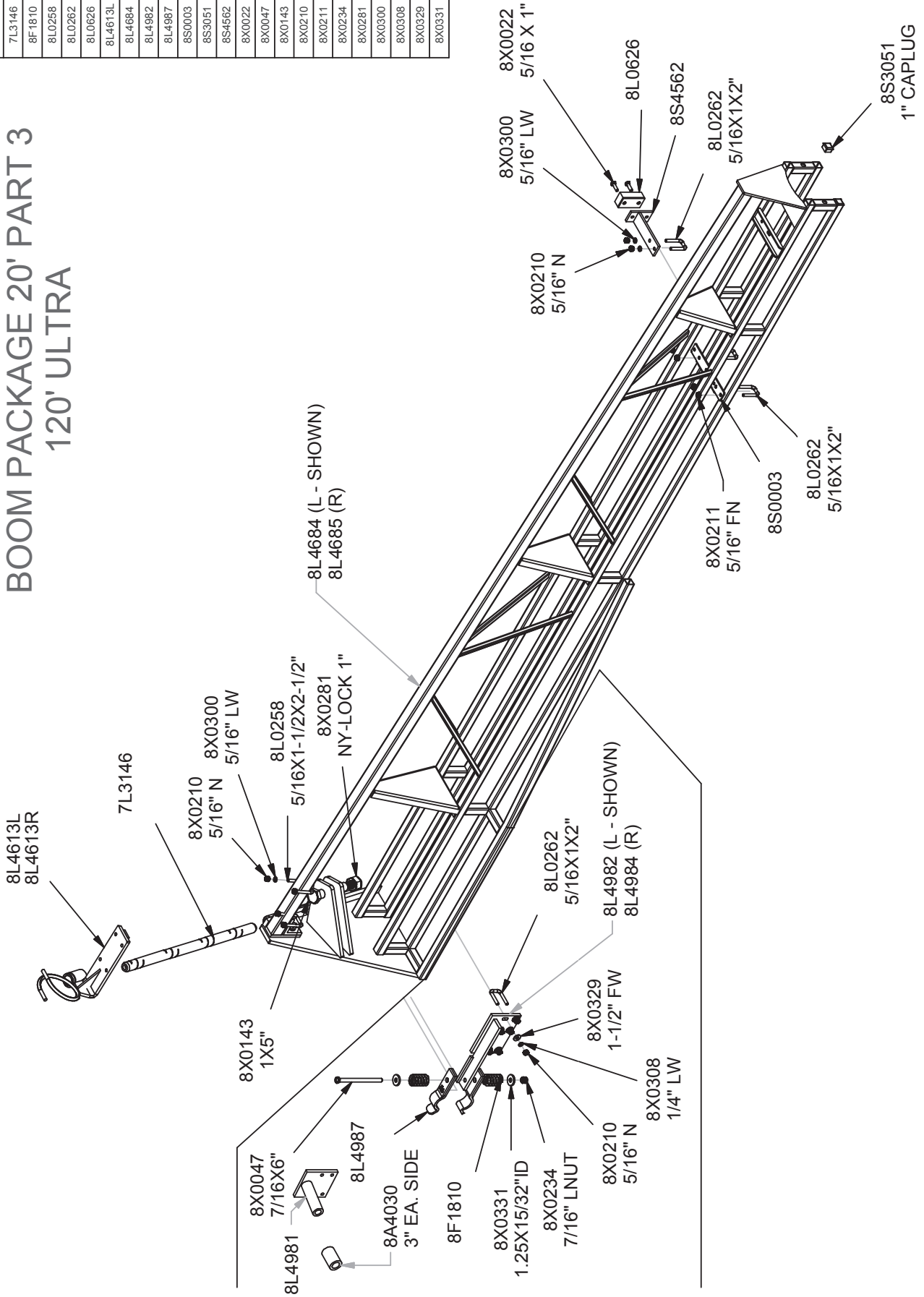
PN	QTY
7L3146	1
8F1810	2
8L0258	2
8L0262	6
8L0626	1
8L4613L	1
8L4694	1
8L4982	1
8L4987	2
8S0003	1
8S3051	2
8S4562	1
8X0022	2
8X0047	1
8X0143	1
8X0210	12
8X0211	4
8X0234	1
8X0281	1
8X0300	6
8X0308	6
8X0329	6
8X0331	2



SECTION 8 - PARTS

BOOM PACKAGE 20' PART 3
120' ULTRA

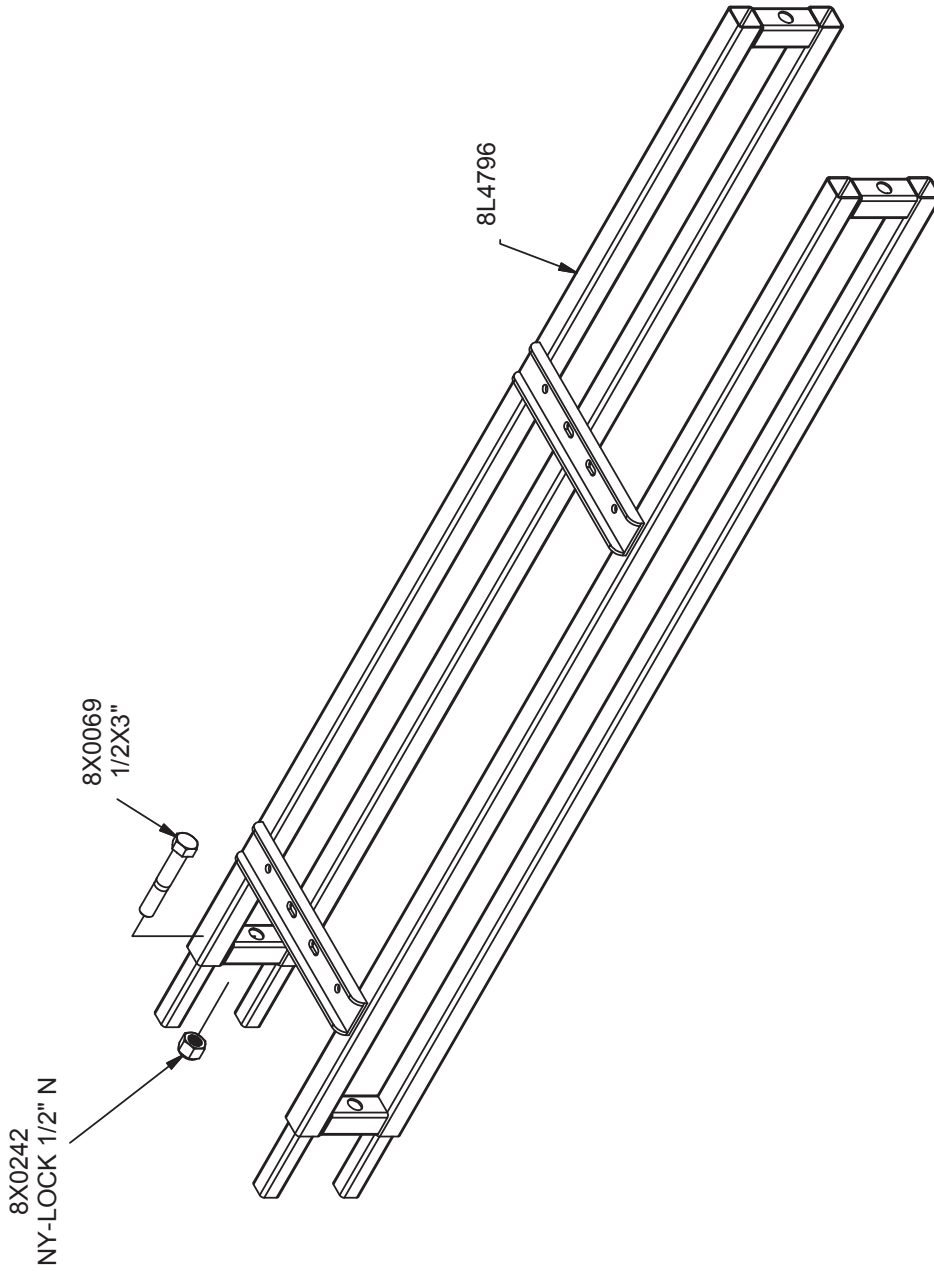
PN	QTY
7L3146	1
8F1810	2
8L0258	2
8L0262	6
8L0626	1
8L4613L	1
8L4684	1
8L4982	1
8L4987	2
8S0003	1
8S3051	2
8S4562	1
8X0022	2
8X0047	1
8X0143	1
8X0210	12
8X0211	4
8X0234	1
8X0281	1
8X0300	6
8X0308	6
8X0329	6
8X0331	2



SECTION 8 - PARTS

BOOM PACKAGE 6' 8" EXT 2
66'8", 76'8", 86'8", 96'8", 106'8" ULTIMATE

PN	QTY
8L4796	2
8X0069	4
8X0242	4

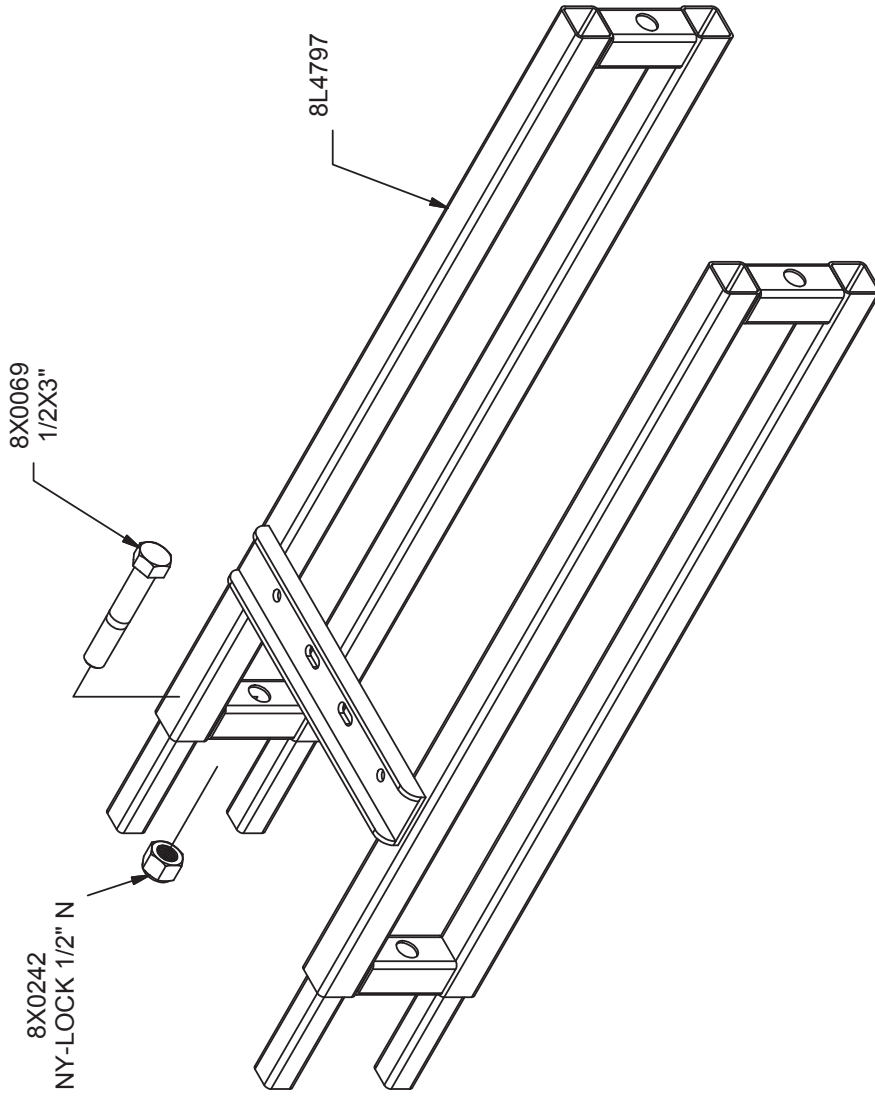


12/12/2005 8L7006/BOOM PKG 6'8" EXT 2 ULTIMATE

SECTION 8 - PARTS

PN	QTY
8L4797	2
8X0069	4
8X0242	4

BOOM PACKAGE 3' 4" EXT 2
 63'4", 73'4", 83'4", 93'4", 103'4" ULTIMATE

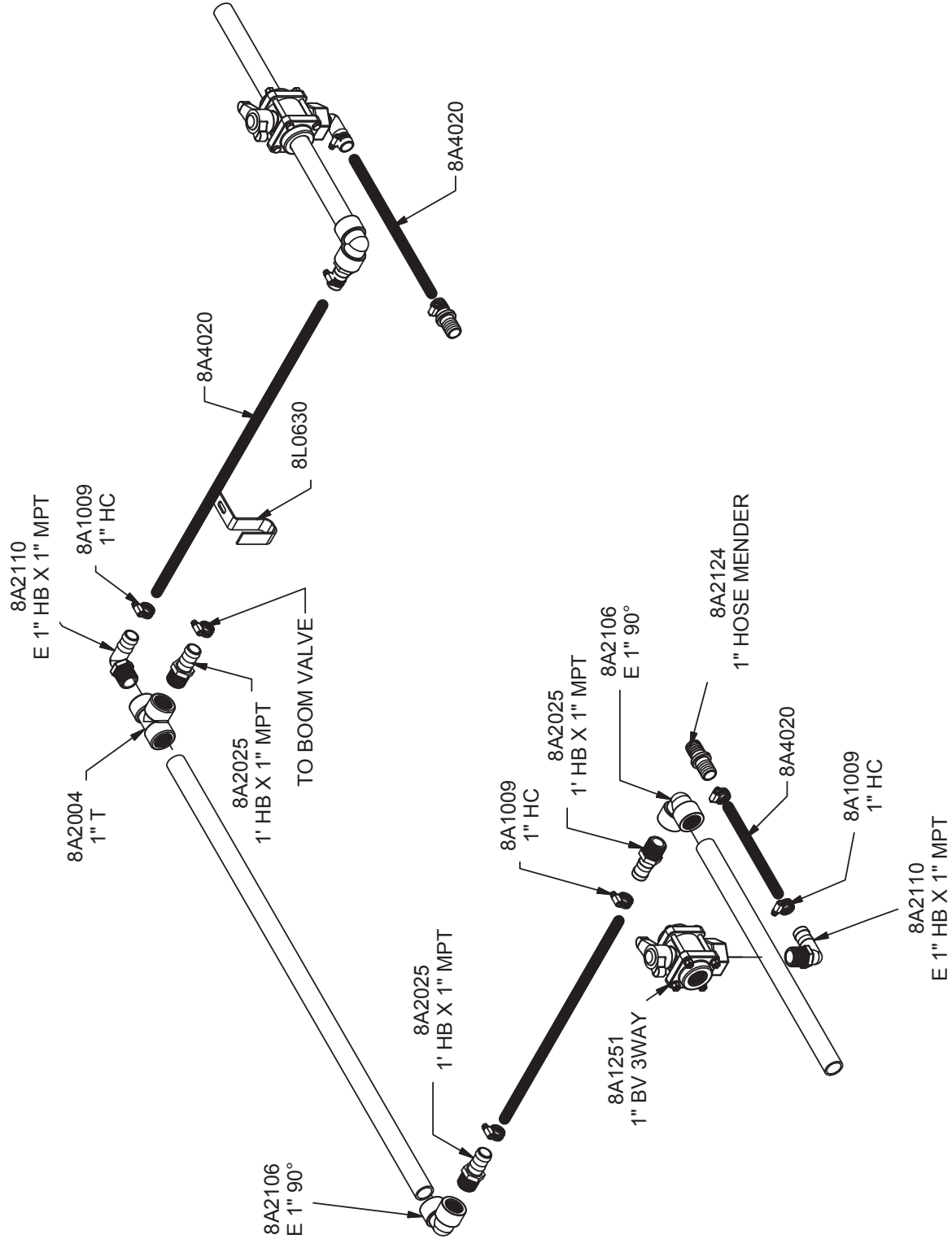


12/12/2005 8L7003/BOOM PKG 3'4" EXT 2 ULTIMATE

SECTION 8 - PARTS

PN	QTY
8A1009	8
8A1251	2
8A2004	1
8A2025	2
8A2110	3
8A2124	2
8A4020	20
8A4052	30
8L0630	12

EQUAL BOOM WIDTH OPTION

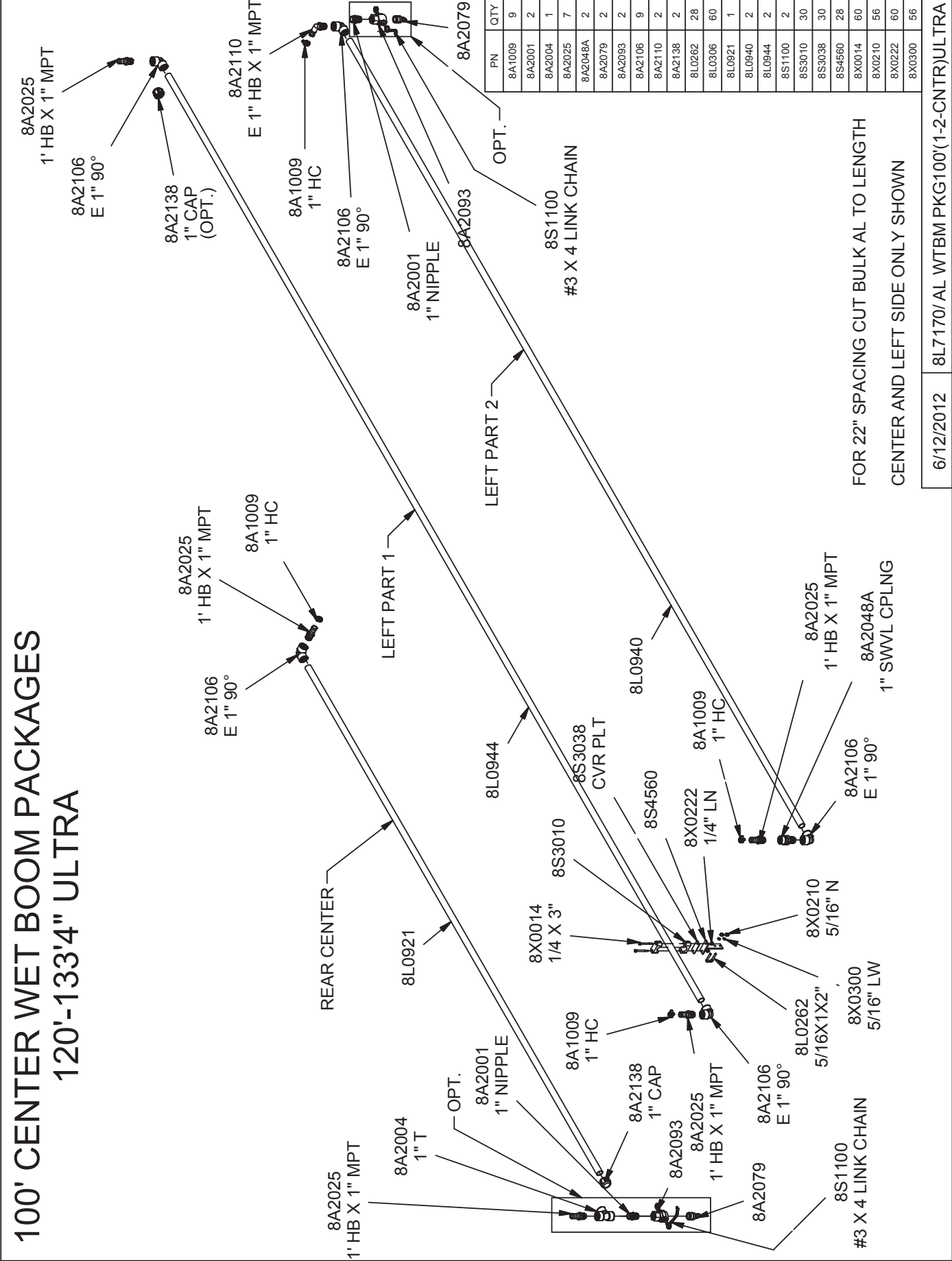


11/6/2008

8L4957/EQUAL BM WIDTH OPT ULT

SECTION 8 - PARTS

100' CENTER WET BOOM PACKAGES
120'-133'4" ULTRA



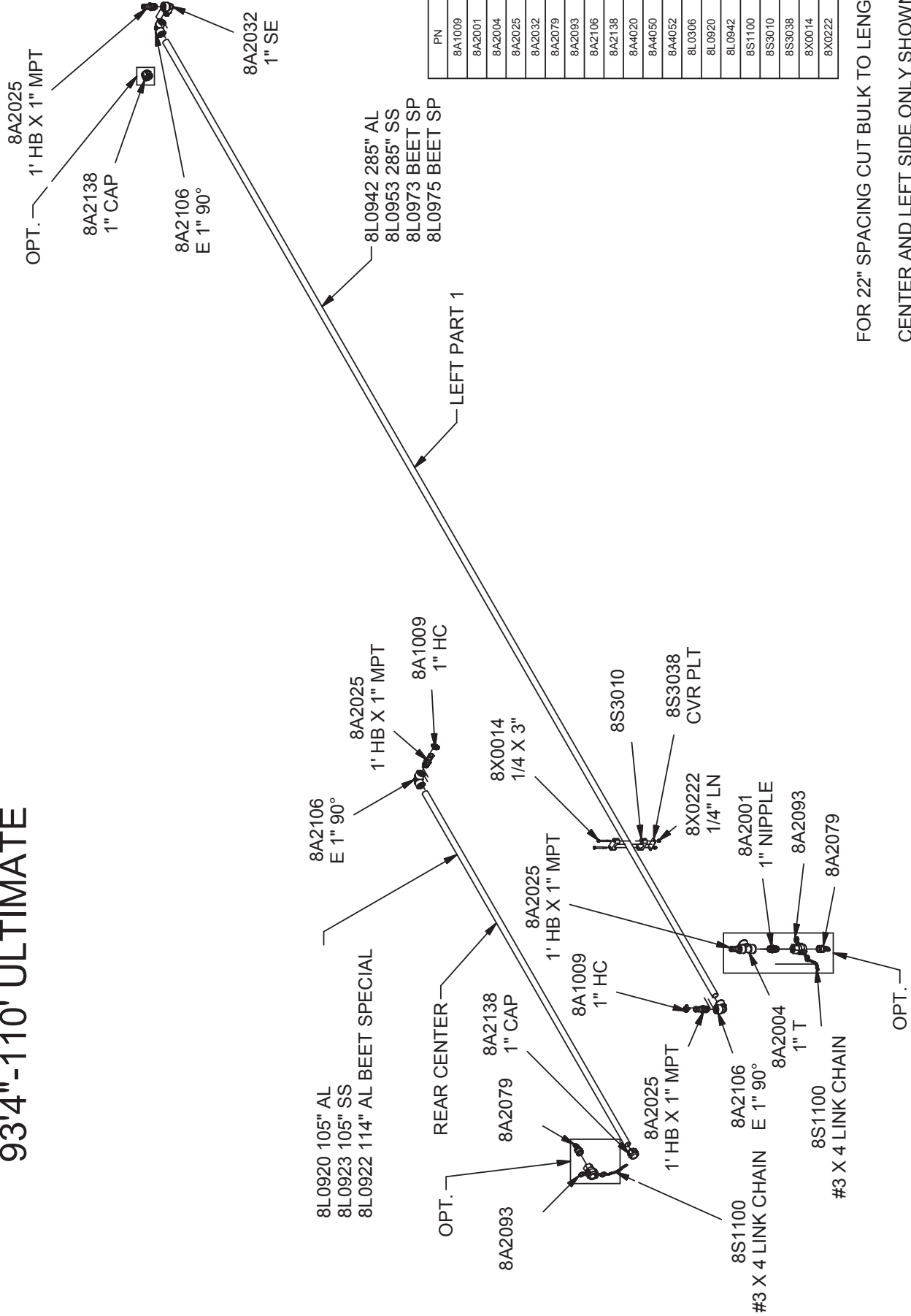
PN	QTY
8A1009	9
8A2001	2
8A2004	1
8A2025	7
8A2048A	2
8A2079	2
8A2093	2
8A2106	9
8A2110	2
8A2138	2
8L0262	28
8L0306	60
8L0921	1
8L0940	2
8L0944	2
8S1100	2
8S3010	30
8S3038	30
8S4560	28
8X0014	60
8X0210	56
8X0222	60
8X0300	56

FOR 22" SPACING CUT BULK AL TO LENGTH
CENTER AND LEFT SIDE ONLY SHOWN

6/12/2012	8L7170/AL WTBM PKG100'(1-2-CNTR)ULTRA
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SECTION 8 - PARTS

**60' CENTER WET BOOM PACKAGES
93'4"-110' ULTIMATE**



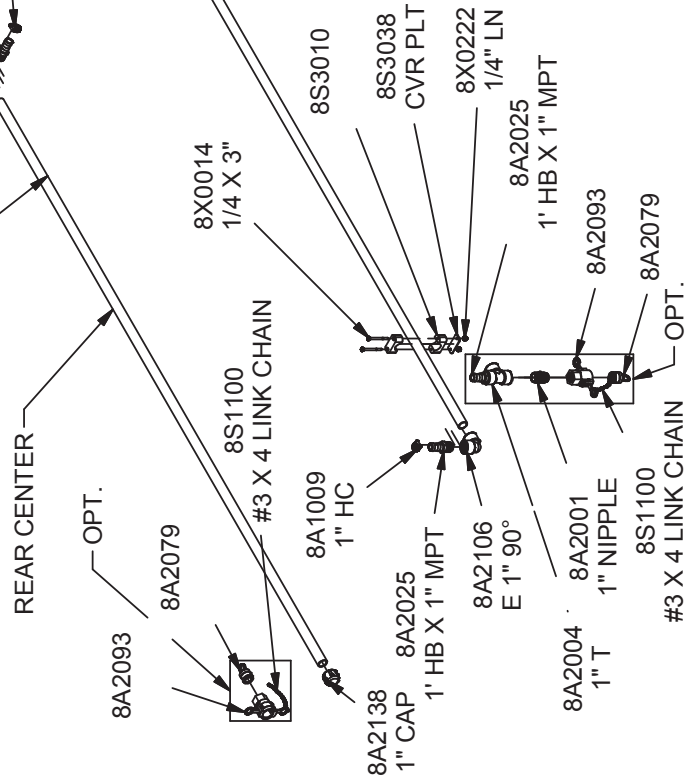
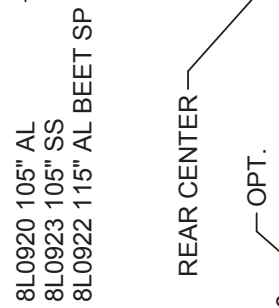
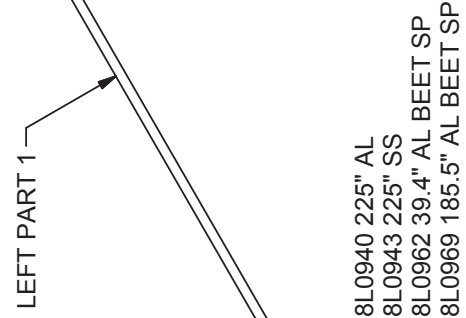
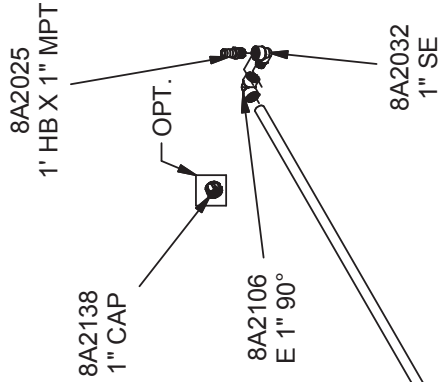
PN	QTY
8A1009	6
8A2001	1
8A2004	1
8A2025	5
8A2032	2
8A2079	2
8A2083	2
8A2106	5
8A2138	2
8A4020	35'
8A4050	12
8A4052	12
8L0306	36
8L0920	1
8L0942	2
8S1100	2
8S3010	19
8S3038	19
8X0014	38
8X0222	38

FOR 22" SPACING CUT BULK TO LENGTH
CENTER AND LEFT SIDE ONLY SHOWN

SECTION 8 - PARTS

50' CENTER WET BOOM PACKAGES
60'-90' ULTIMATE

PN	QTY
8A1009	6
8A2001	1
8A2004	1
8A2025	5
8A2032	2
8A2079	2
8A2093	2
8A2106	5
8A2138	2
8A4020	35
8A4050	11
8A4052	11
8L0306	30
8L0920	1
8L0940	2
8S1100	2
8S3010	15
8S3038	15
8X0014	30
8X0222	30

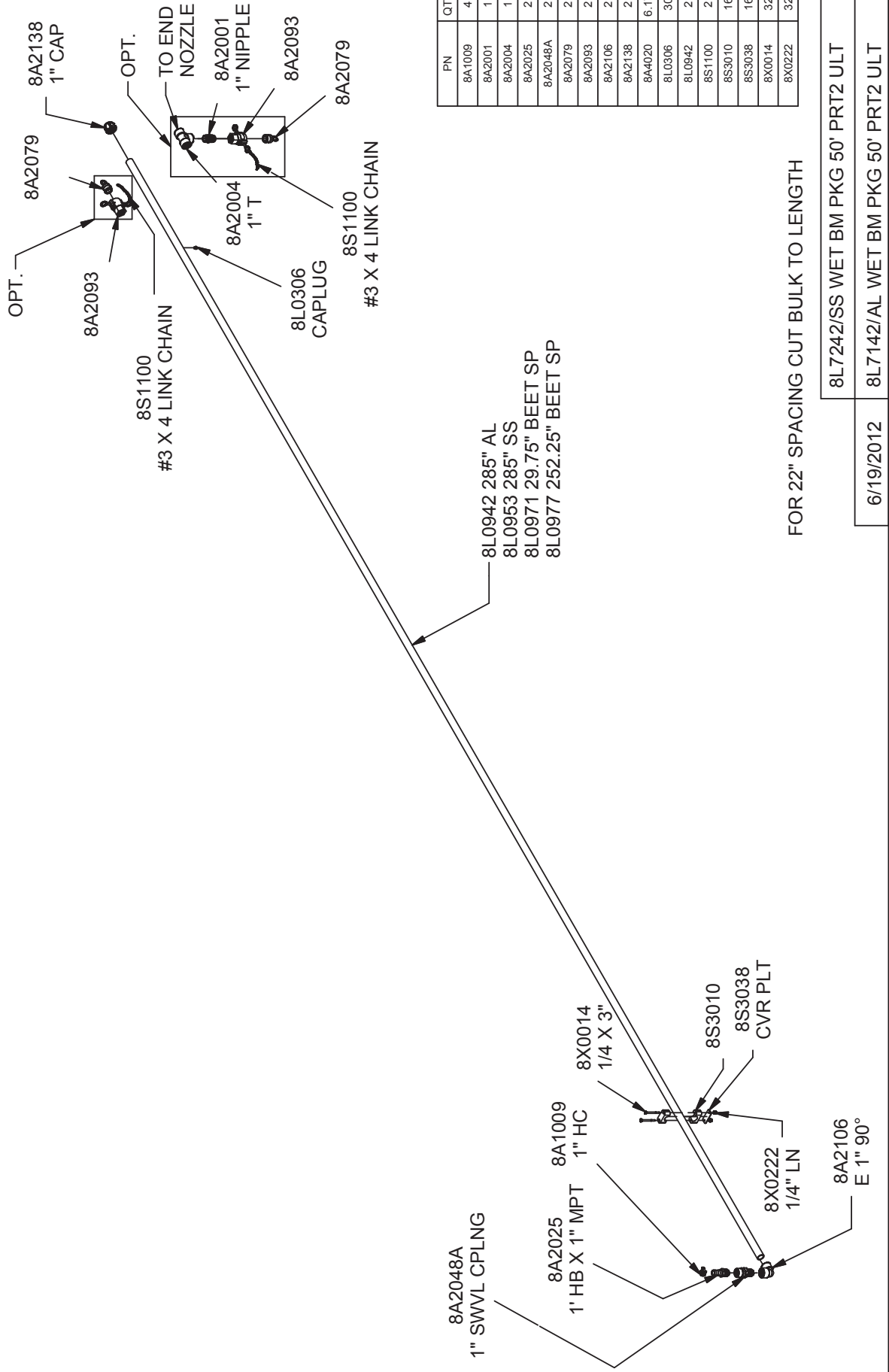


FOR 22" SPACING CUT BULK TO LENGTH
CENTER AND LEFT SIDE ONLY SHOWN

8L7250/SS WET BM PKG 50'PRT1&CNTR ULT	6/19/2012
8L7150/AL WET BM PKG 50'PRT1&CNTR ULT	

SECTION 8 - PARTS

50' PART 2 WET BOOM PACKAGES 110' ULTIMATE



PN	QTY
8A1009	4
8A2001	1
8A2004	1
8A2025	2
8A2048A	2
8A2079	2
8A2093	2
8A2106	2
8A2138	2
8A4020	6.17'
8L0306	30
8L0942	2
8S1100	2
8S3010	16
8S3038	16
8X0014	32
8X0222	32

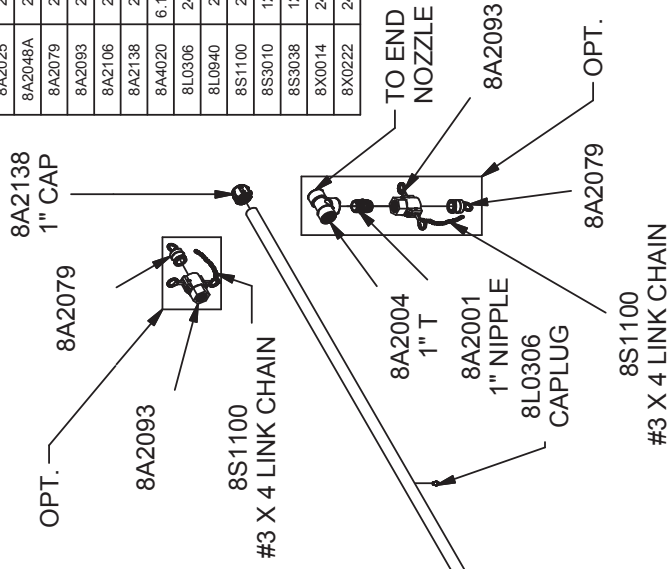
FOR 22" SPACING CUT BULK TO LENGTH

8L7242/SS WET BM PKG 50' PRT2 ULT	6/19/2012
8L7142/AL WET BM PKG 50' PRT2 ULT	

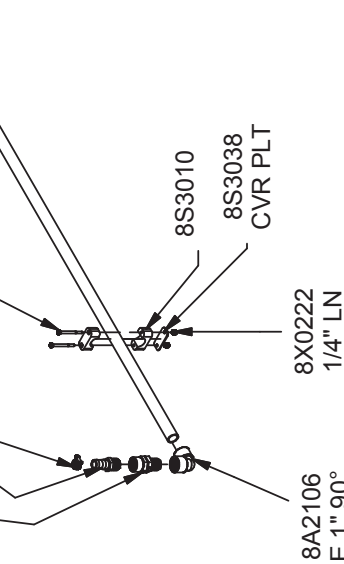
SECTION 8 - PARTS

40' PART 2 WET BOOM PACKAGES
90'-106'8" ULTIMATE

PN	QTY
8A1009	4
8A2001	1
8A2004	1
8A2025	2
8A2048A	2
8A2079	2
8A2093	2
8A2106	2
8A2138	2
8A4020	6.17'
8L0306	24
8L0940	2
8S1100	2
8S3010	12
8S3038	12
8X0014	24
8X0222	24



8L0940 225" AL
8L0943 225" SS
8L0964 71" AL BEET SP
8L0966 141.5" AL BEET SP



FOR 22" ALUMINUM CUT BULK TO LENGTH

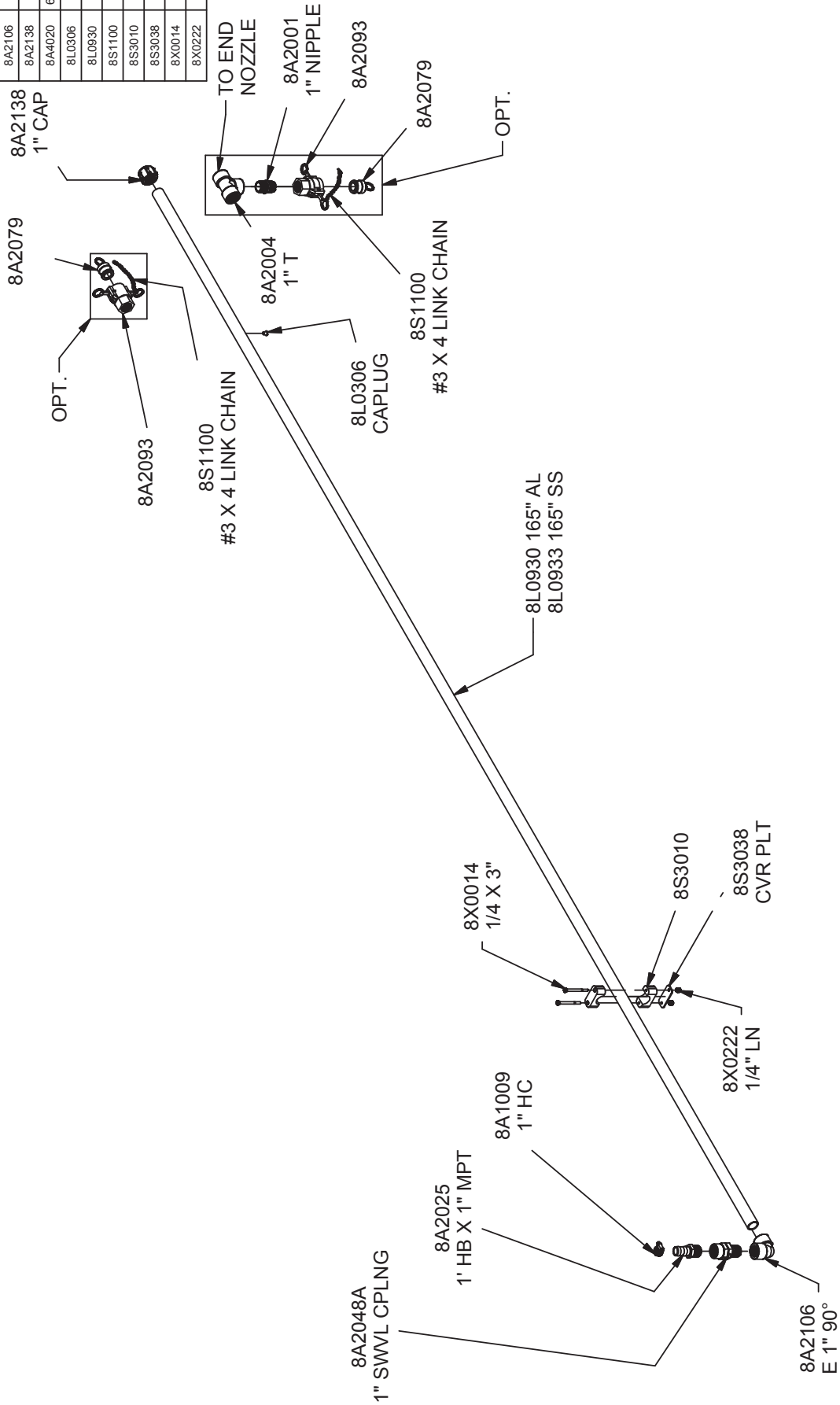
8L7240/SS WET BM PKG 40' PRT2 ULT
8L7140/AL WET BM PKG 40' PRT2 ULT

6/19/2012

SECTION 8 - PARTS

30' PART 2 WET BOOM PACKAGES
80'-86'8" ULTIMATE

PN	QTY
8A1009	4
8A2001	1
8A2004	1
8A2025	2
8A2048A	2
8A2079	2
8A2093	2
8A2106	2
8A2138	2
8A4020	6.17
8L0306	18
8L0930	2
8S1100	2
8S3010	10
8S3038	10
8X0014	20
8X0222	20



8L7230/SS WET BM PKG 30' PRT2 ULT

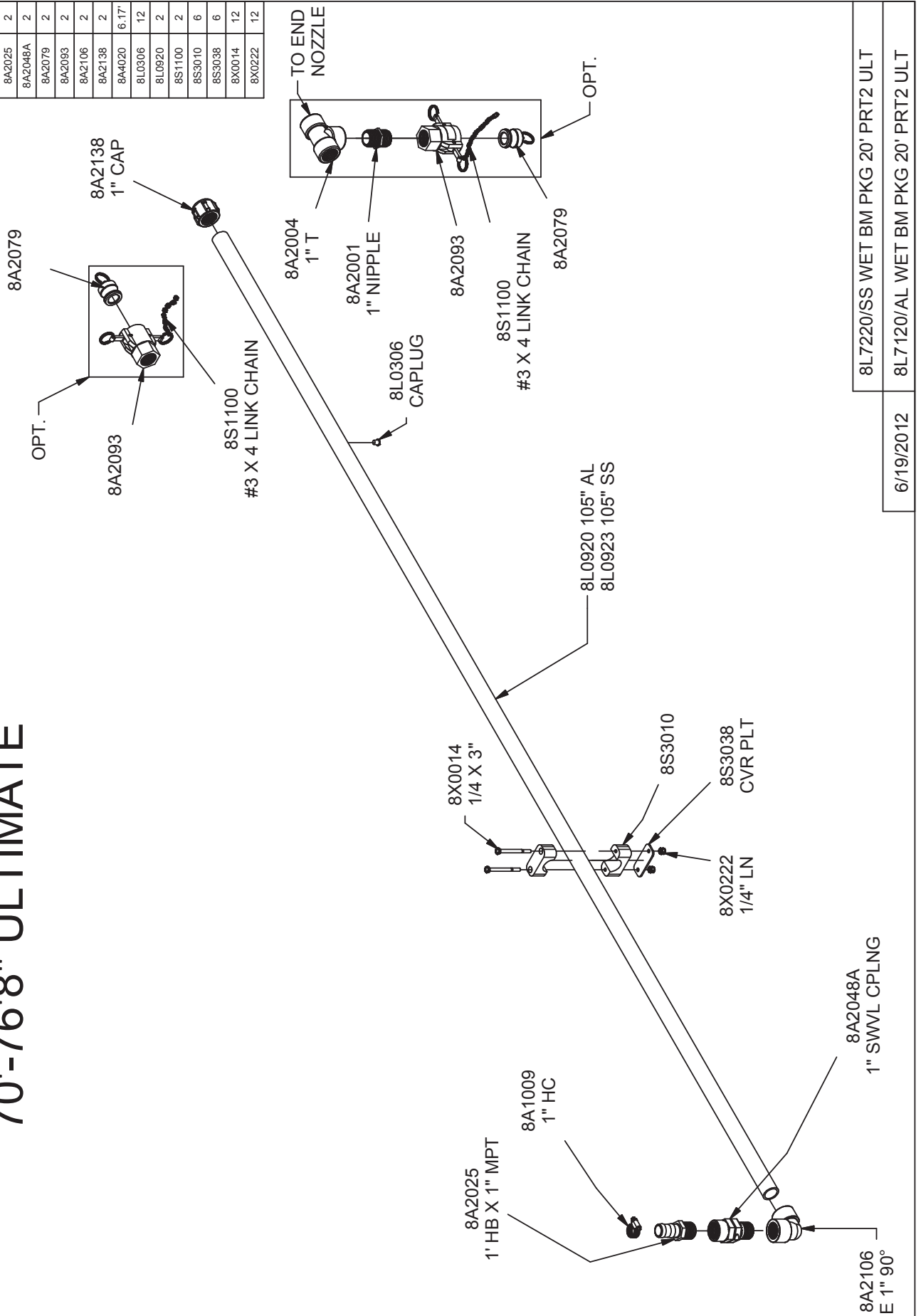
8L7130/AL WET BM PKG 30' PRT2 ULT

6/19/2012

SECTION 8 - PARTS

20' PART 2 WET BOOM PACKAGES
70'-76'8" ULTIMATE

PN	QTY
8A1009	4
8A2001	1
8A2004	1
8A2025	2
8A2048A	2
8A2079	2
8A2093	2
8A2106	2
8A2138	2
8A4020	6.17
8L0306	12
8L0920	2
8S1100	2
8S3010	6
8S3038	6
8X0014	12
8X0222	12

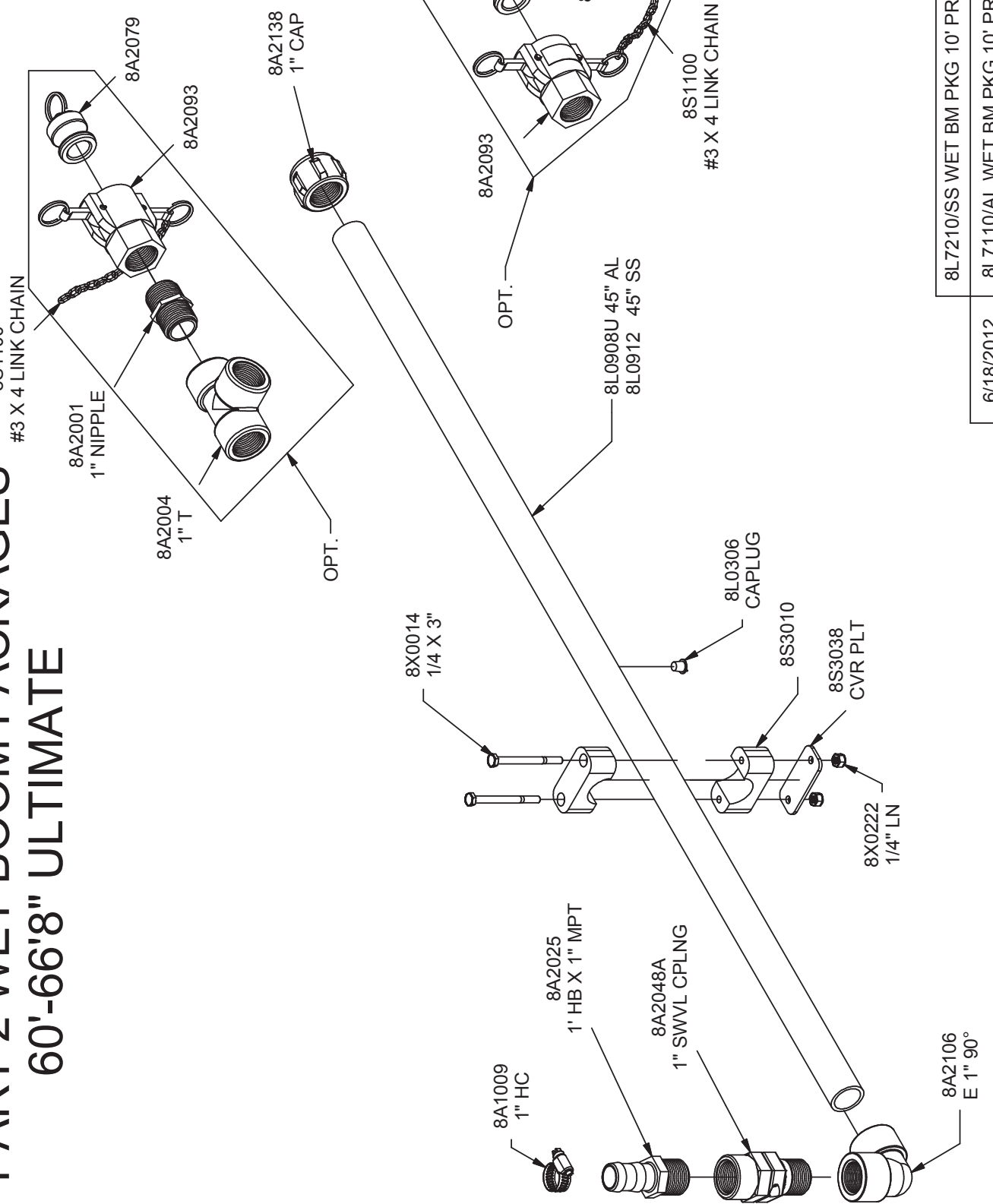


8L7220/SS WET BM PKG 20' PRT2 ULT
6/19/2012
8L7120/AL WET BM PKG 20' PRT2 ULT

SECTION 8 - PARTS

10' PART 2 WET BOOM PACKAGES
60'-66'8" ULTIMATE

PN	QTY
8A1009	4
8A2025	2
8A2048A	2
8A2106	2
8A2138	2
8L0306	6
8L0908U	2
8S3010	4
8S3038	4
8X0014	8
8X0222	8
8A2093	2
8A2079	2
8S1100	2
8A2004	1
8A2001	1

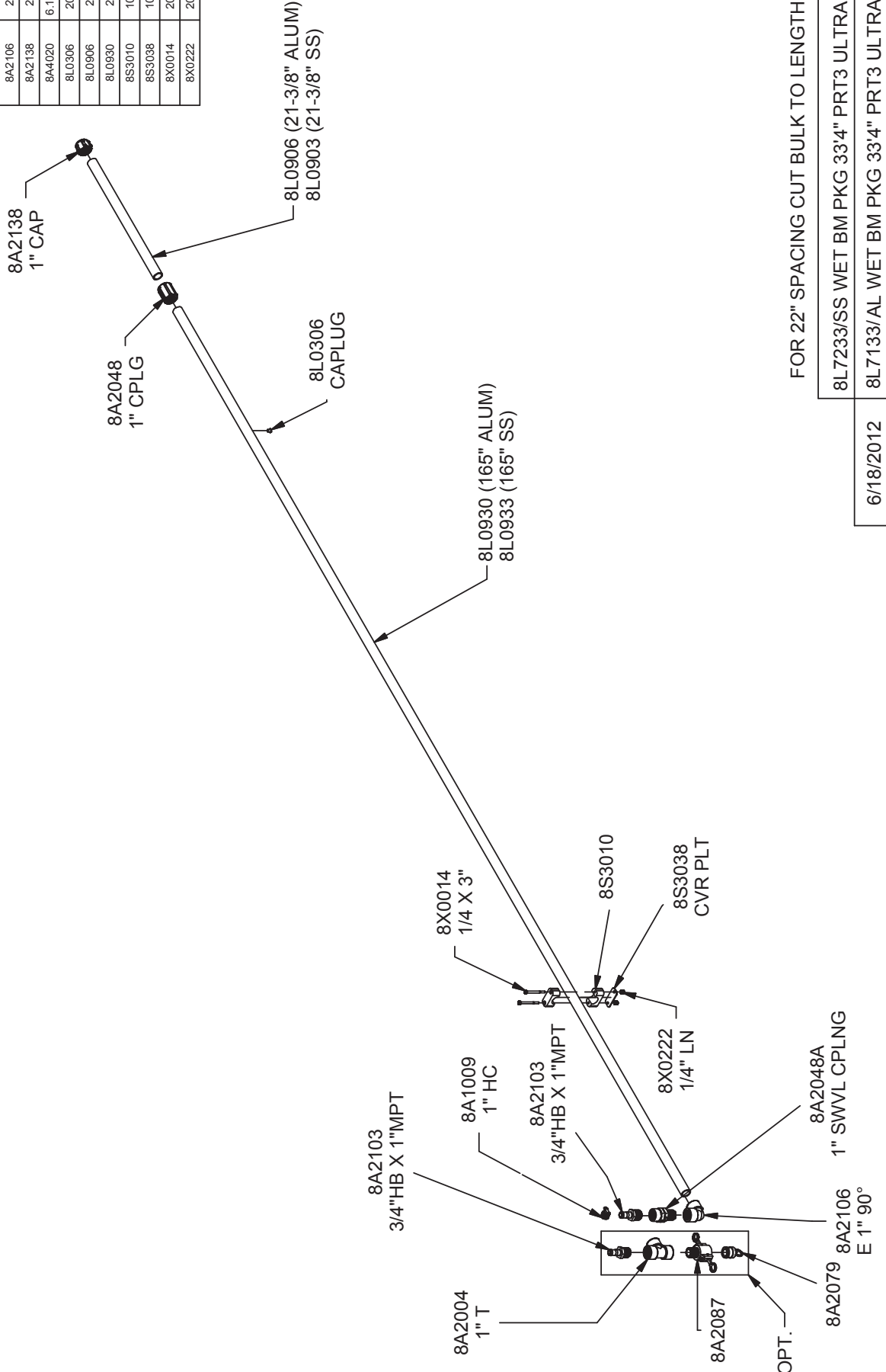


8L7210/SS WET BM PKG 10' PRT2 ULT	6/18/2012
8L7110/AL WET BM PKG 10' PRT2 ULT	

SECTION 8 - PARTS

33'4" PART 3 WET BOOM PACKAGES 133'4" ULTRA

PN	QTY
8A1009	2
8A2004	1
8A2048	2
8A2048A	2
8A2079	1
8A2087	1
8A2103	2
8A2106	2
8A2138	2
8A4020	6.17
8L0306	20
8L0906	2
8L0930	2
8S3010	10
8S3038	10
8X0014	20
8X0222	20



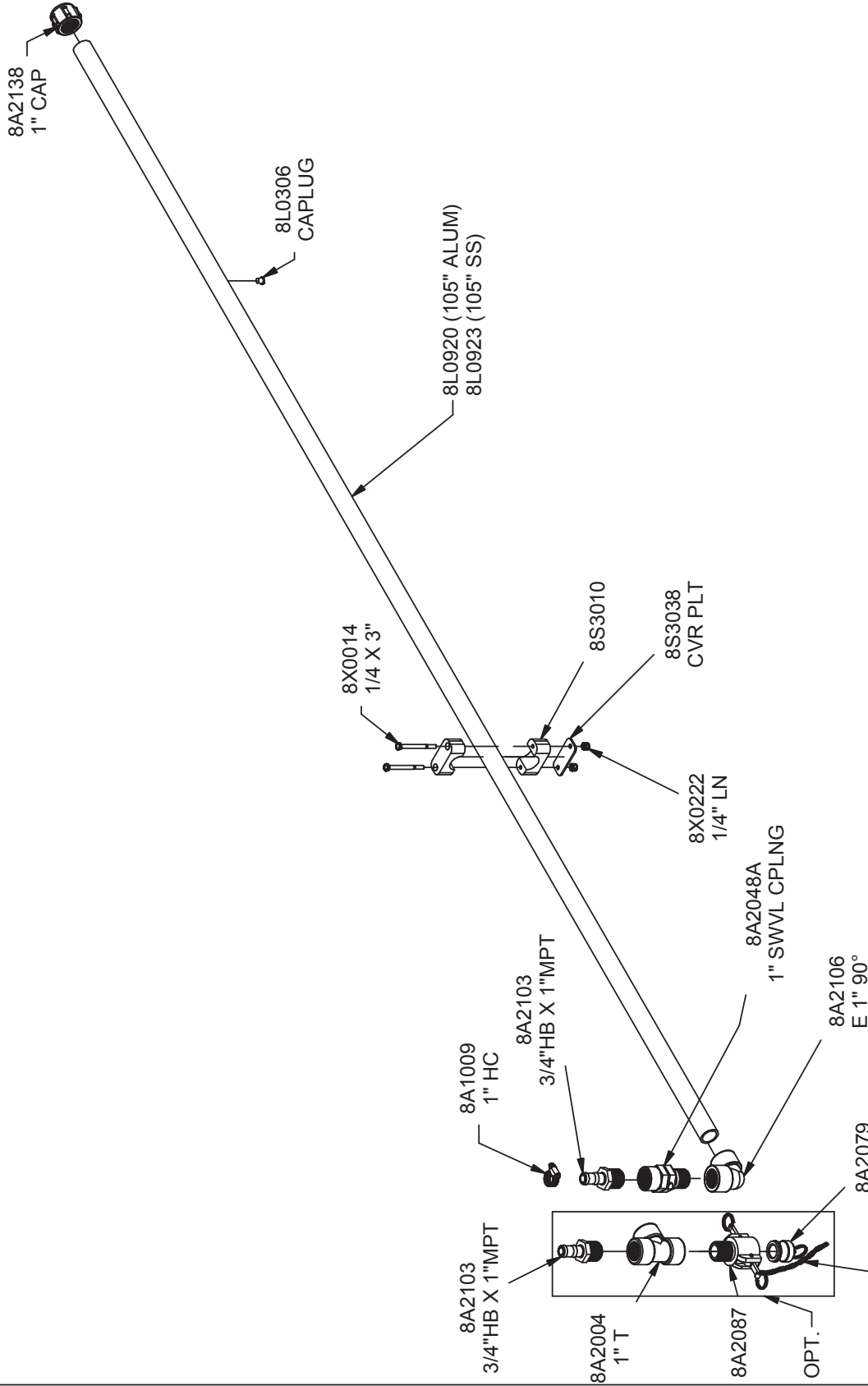
FOR 22" SPACING CUT BULK TO LENGTH
8L7233/SS WET BM PKG 33'4" PRT3 ULTRA
8L7133/AL WET BM PKG 33'4" PRT3 ULTRA

6/18/2012

SECTION 8 - PARTS

20' PART 3 WET BOOM PACKAGES
120' ULTRA

PN	QTY
8A1009	4
8A2004	1
8A2048A	2
8A2079	1
8A2087	1
8A2103	2
8A2106	2
8A2138	2
8A4020	6.17
8L0306	12
8L0920	2
8S1100	1
8S3010	8
8S3038	8
8X0014	16
8X0222	16



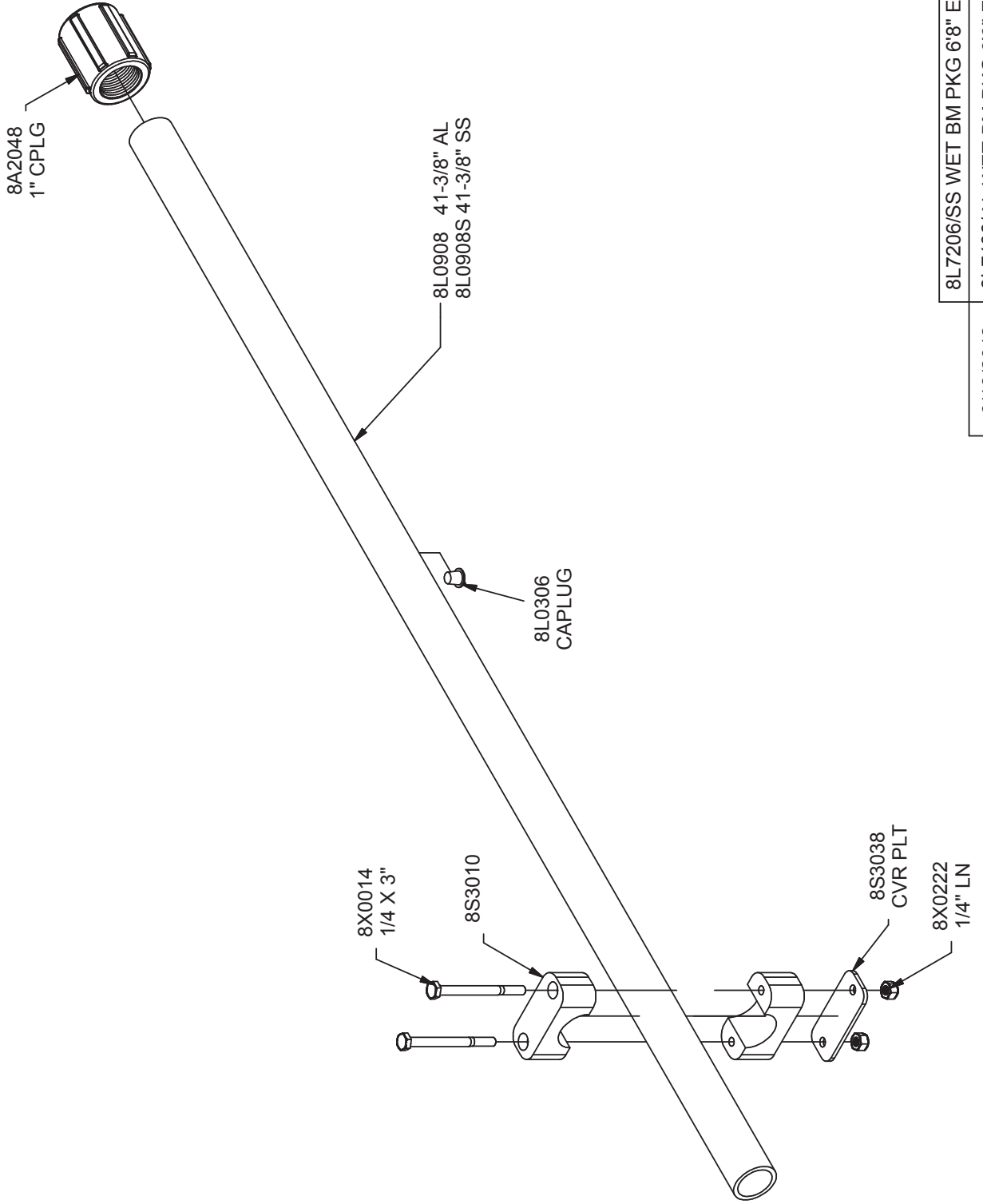
8L7223/SS WET BM PKG 20' PRT3 ULTRA
6/18/2012
8L7123/AL WET BM PKG 20' PRT3 ULTRA

8S1100
#3 X 4 LINK CHAIN

SECTION 8 - PARTS

6' 8" PART 2 EXTENSION WET BOOM PACKAGES
 66'8" , 76'8" , 86'8" , 96'8" , 106'8" ULTIMATE

PN	QTY
8A2048	2
8L0306	4
8L0908	2
8S3010	4
8S3038	4
8X0014	8
8X0222	8

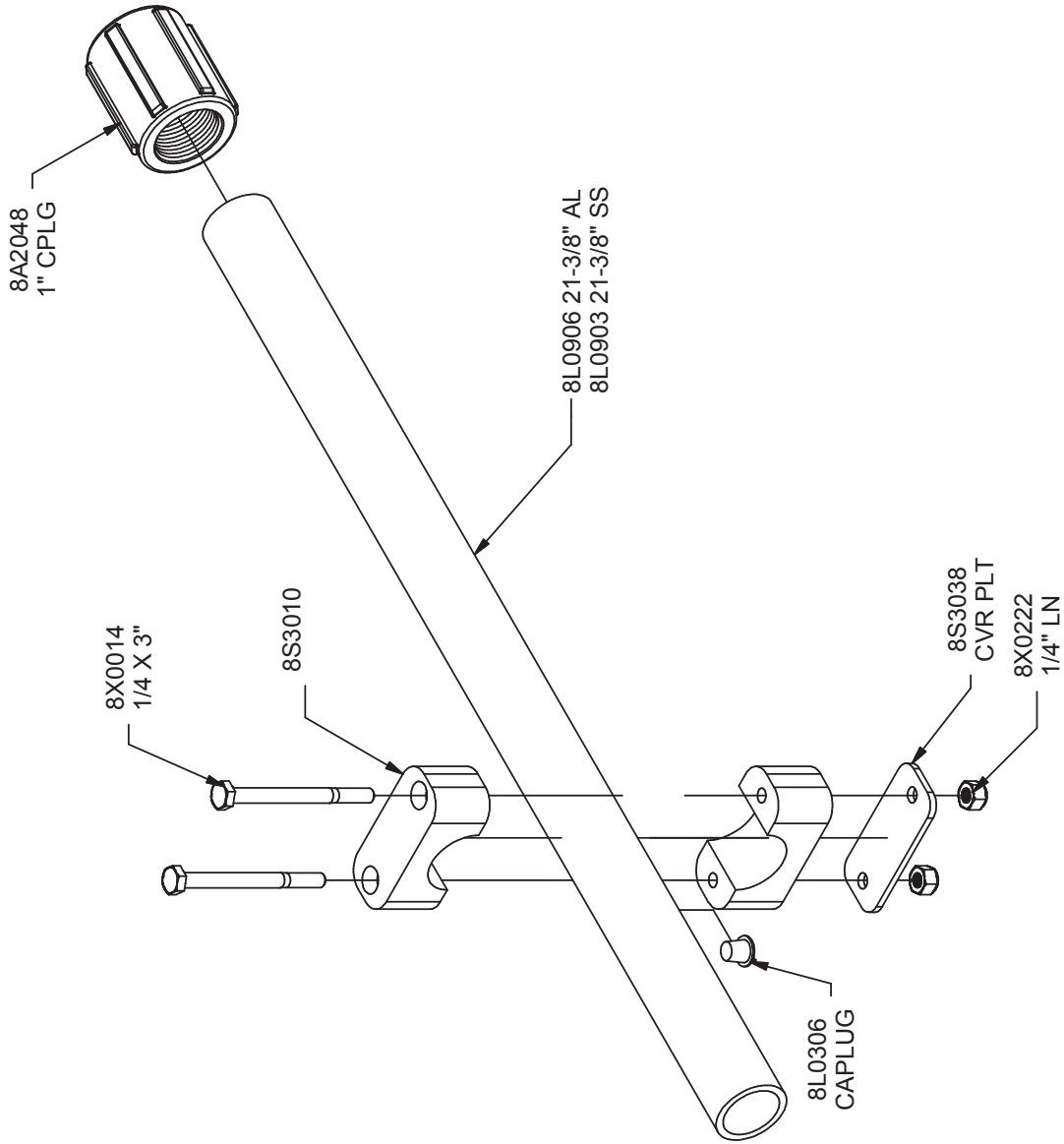


8L7206/SS WET BM PKG 6'8" EXT 2 ULT
6/18/2012
8L7106/AL WET BM PKG 6'8" EXT 2 ULT

SECTION 8 - PARTS

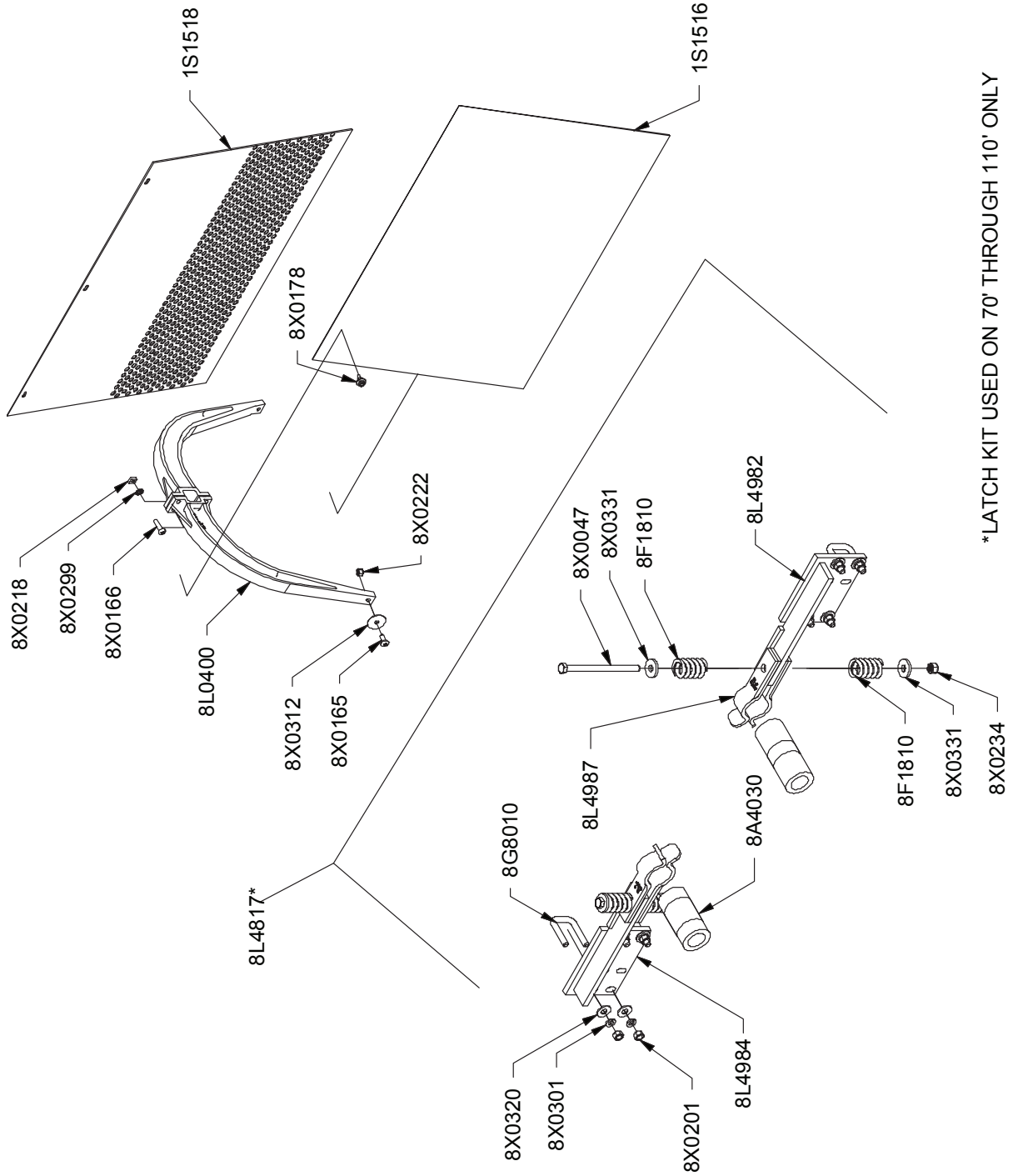
3' 4" PART 2 EXTENSION WET BOOM PACKAGES
 63' 4", 73' 4", 83' 4", 93' 4", 103' 4" ULTIMATE

PN	QTY
8A2048	2
8L0306	2
8L0906	2
8S3010	2
8S3038	2
8X0014	4
8X0222	4



8L7203/SS WET BM PKG 3'4" EXT 2 ULT	6/18/2012
8L7103/AL WET BM PKG 3'4" EXT 2 ULT	

SECTION 8 - PARTS



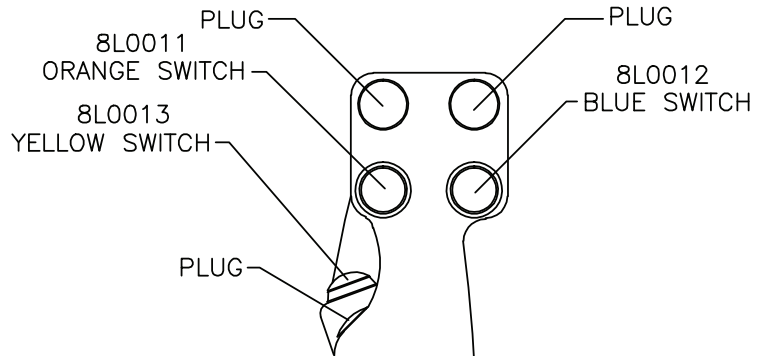
*LATCH KIT USED ON 70" THROUGH 110" ONLY

8L6260	60"
8L6263	63"
8L6266	66"
*8L6270	70"
*8L6273	73"
*8L6276	76"
*8L6280	80"
*8L6283	83"
*8L6286	86"
*8L6290	90"
*8L6293	93"
*8L6296	96"
*8L6300	100"
*8L6303	103"
*8L6306	106"
*8L6310	110"

12/2/2010 8L6260/WINDSHIELD PACKAGES - ULTIMATE

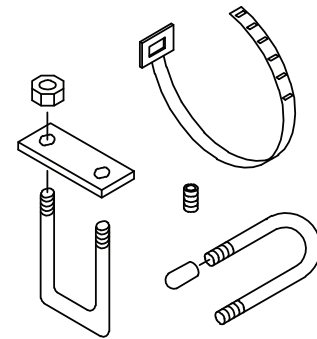
SECTION 8 - PARTS

SUMMERS MFG. CO., INC.
3-SWITCH FASSE CONTROL GRIP

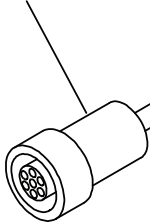


WIRING SCHEMATIC:

- PORT 2 - BATTERY ⊕ TO ALL SWITCHES
- PORT 5 - BLUE SWITCH RIGHT TIPLIFT
- PORT 3 - ORANGE SWITCH LEFT TIPLIFT
- PORT 4 - YELLOW SWITCH VERTICAL



AMP 7 CONTACT SMALL CONNECTOR
(211399-1 W/CLAMP)



48" OF LEAD
4 CONDUCTOR
PVC JACKETED CABLE

CONTROL GRIP PURCHASED WITH:

BRACKET - FASSE PN 214-001
MOUNTING HARDWARE KIT - FASSE PN 300-034

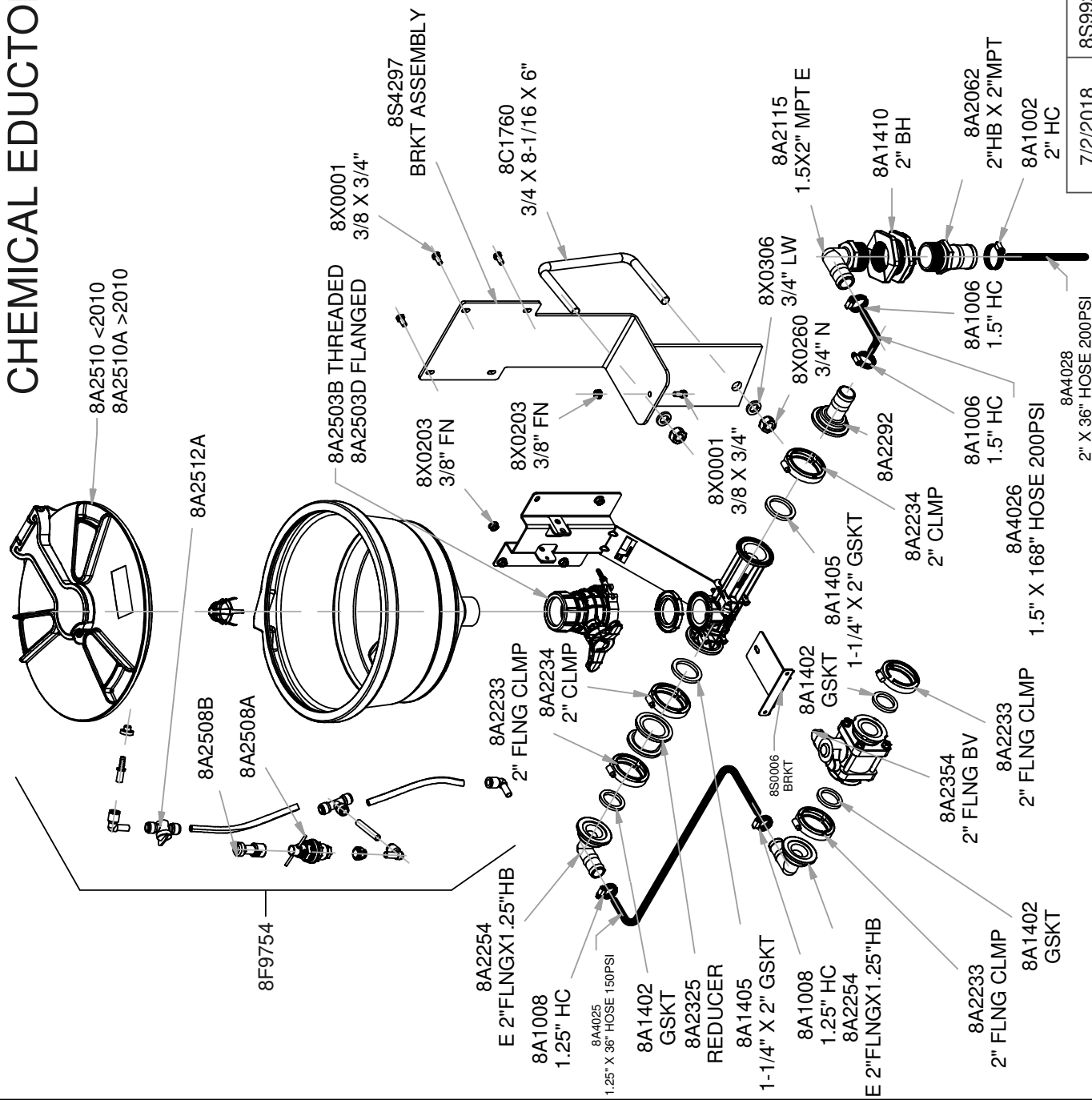
9/23/04

8L9901

SECTION 8 - PARTS

CHEMICAL EDUCTOR PACKAGE

PN	QTY
8A1002	1
8A1006	2
8A1008	2
8A1402	3
8A1405	2
8A1410	1
8A2062	1
8A2115	1
8A2233	3
8A2234	2
8A2254	2
8A2292	1
8A2325	1
8A2354	1
8A2508A	1
8A2508B	1
8A4025	3
8A4026	14
8A4028	3
8A4048	1
8C1760	1
8F9754	1
8S0006	1
8S4297	1
8X0001	5
8X0203	5
8X0260	2
8X0306	2
8X1236	1
8Z0089	1
8Z0526	1

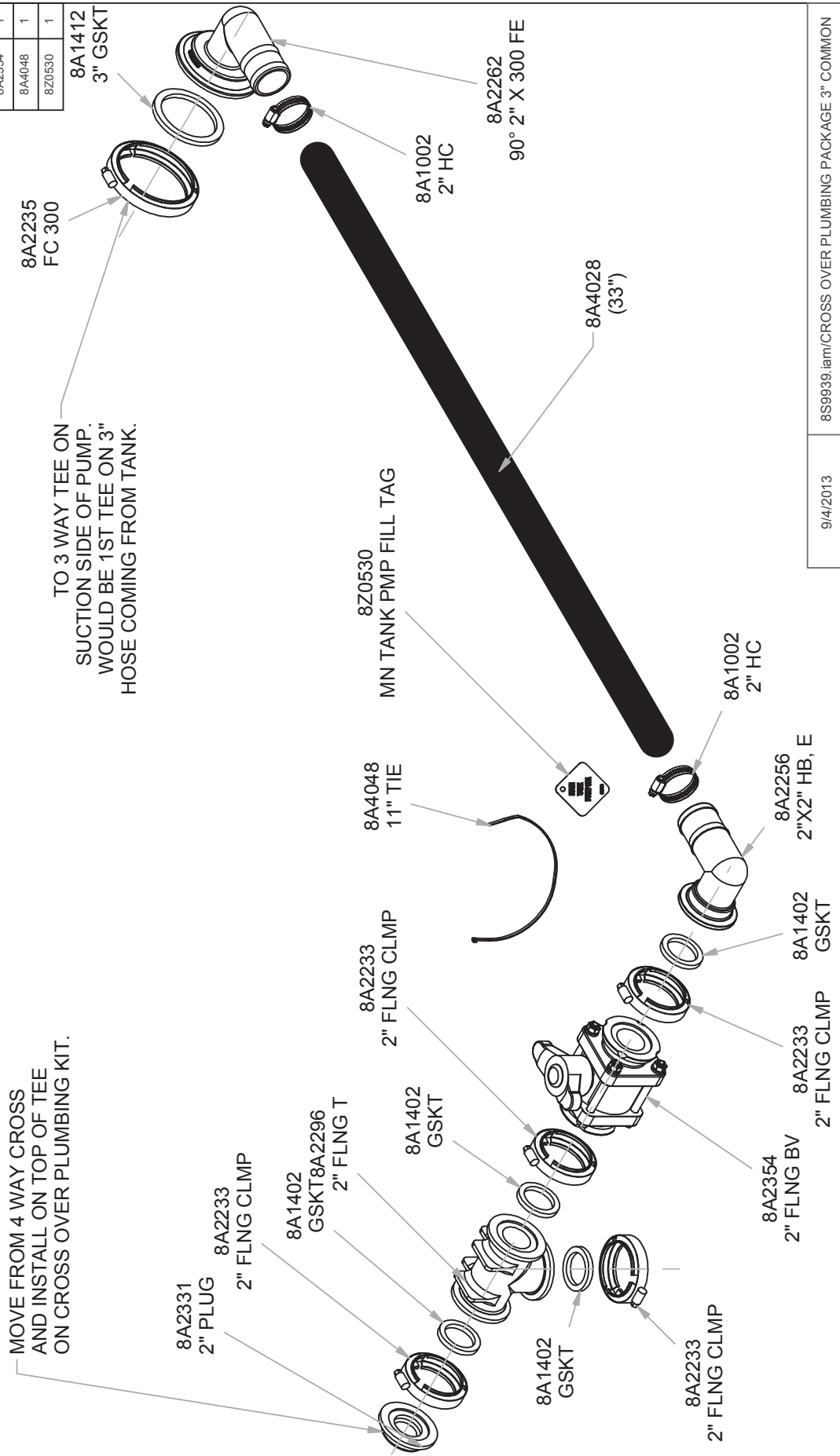


7/2/2018 8S9929/CHEMICAL INDUCTR PKG ULT/RA

SECTION 8 - PARTS

CROSS OVER PLUMBING PACKAGE 3" COMMON

PN	QTY
8A1002	2
8A1402	4
8A1412	1
8A2233	4
8A2235	1
8A2256	1
8A2262	1
8A2296	1
8A2331	1
8A2354	1
8A4048	1
8Z0530	1

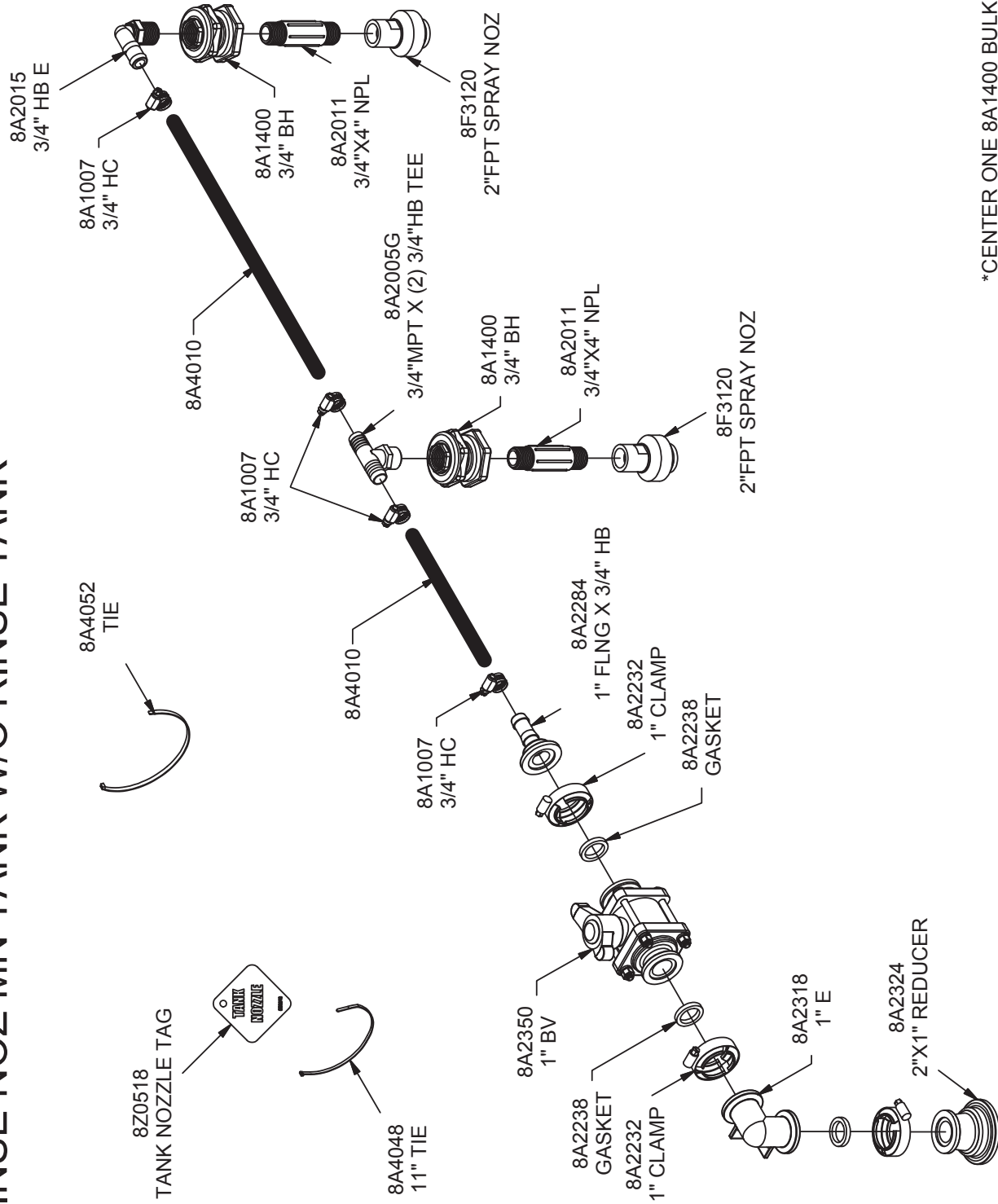


9/4/2013 8S9939.lam/CROSS OVER PLUMBING PACKAGE 3" COMMON

SECTION 8 - PARTS

RINSE NOZ MN TANK W/O RINSE TANK

PN	QTY
8A1007	4
8A1400	2
8A2005G	1
8A2011	2
8A2015	1
8A2232	3
8A2238	3
8A2284	1
8A2318	1
8A2324	1
8A2350	1
8A4010	16'
8A4048	1
8A4052	4
8F3120	2
8Z0518	1



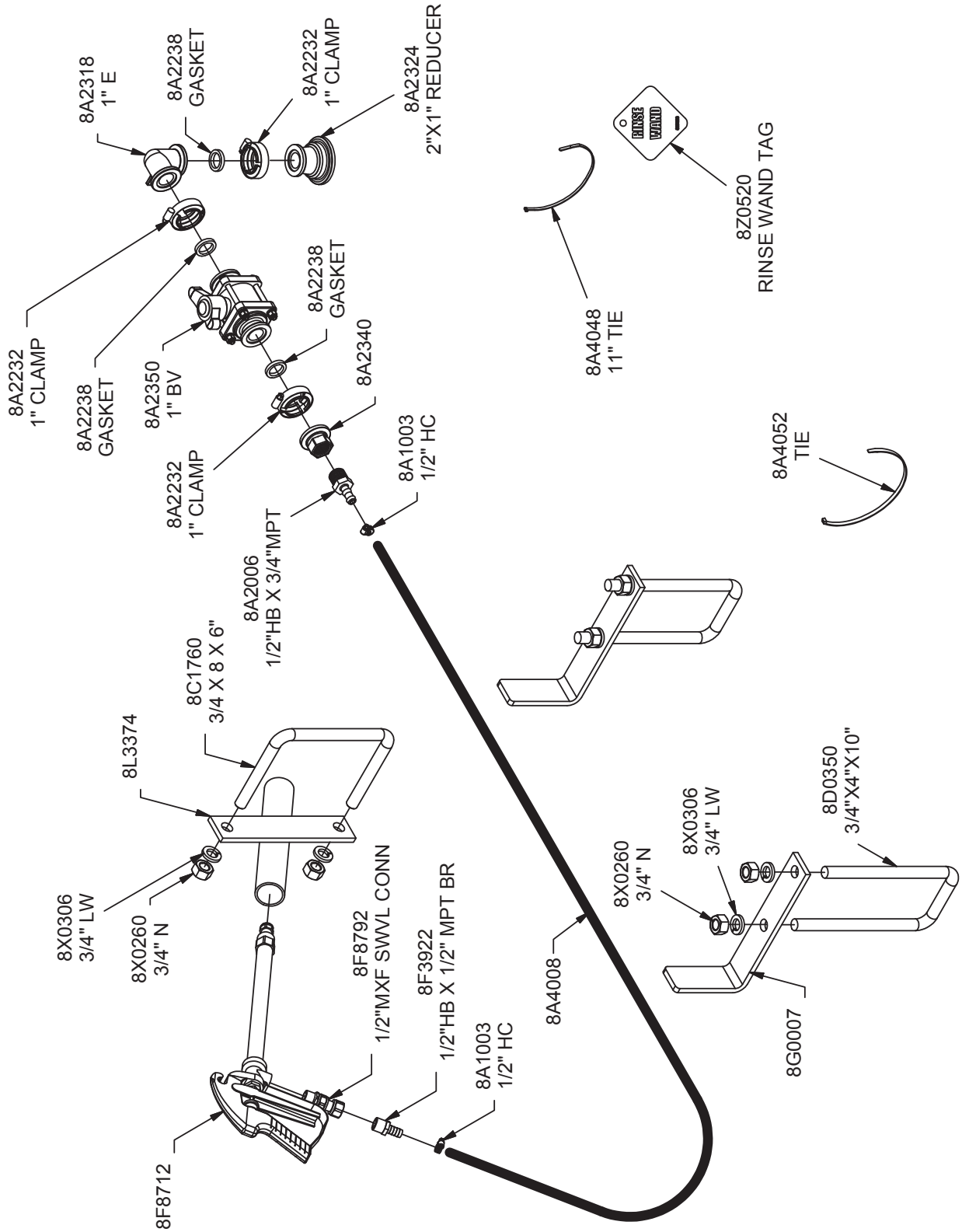
*CENTER ONE 8A1400 BULKHEAD IN TOP OF TANK
8" BEHIND CENTER TANK HOOP AND ON
AHEAD OF FILL WELL SLIGHTLY RIGHT OF CENTER.

11/10/2008 | 8S9956/RINSE NOZ MN TANK W/O RINS TNK

SECTION 8 - PARTS

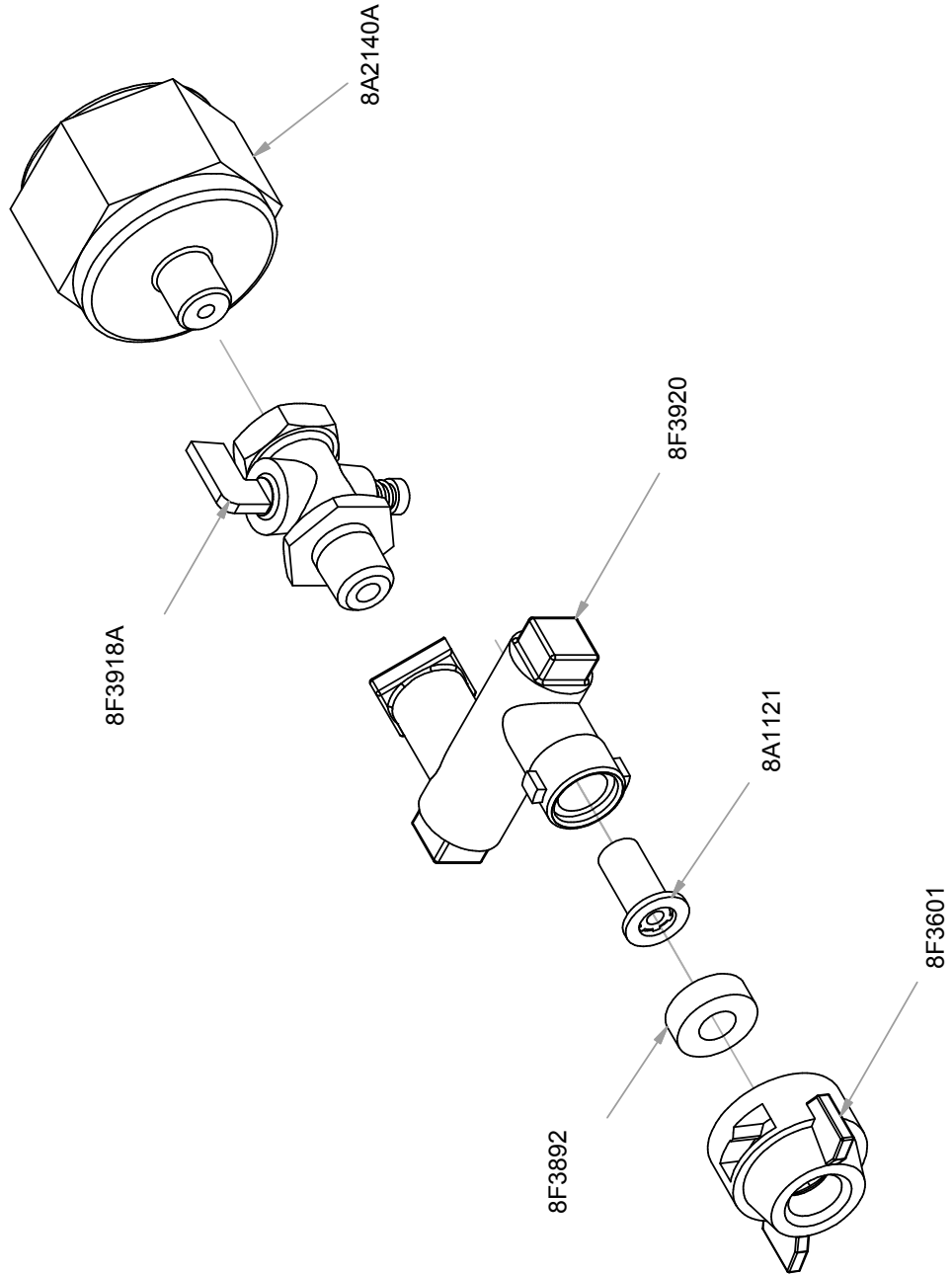
WASH WAND PACKAGE WO / TANK

PN	QTY
8A1003	2
8A2006	1
8A2232	3
8A2318	3
8A2324	1
8A2340	1
8A2350	1
8A4008	80'
8A4048	1
8A4052	5
8C1760	1
8D0350	2
8F3922	1
8F8712	1
8F8792	1
8G0007	2
8L3374	1
8X0260	6
8X0306	6
8Z0520	1



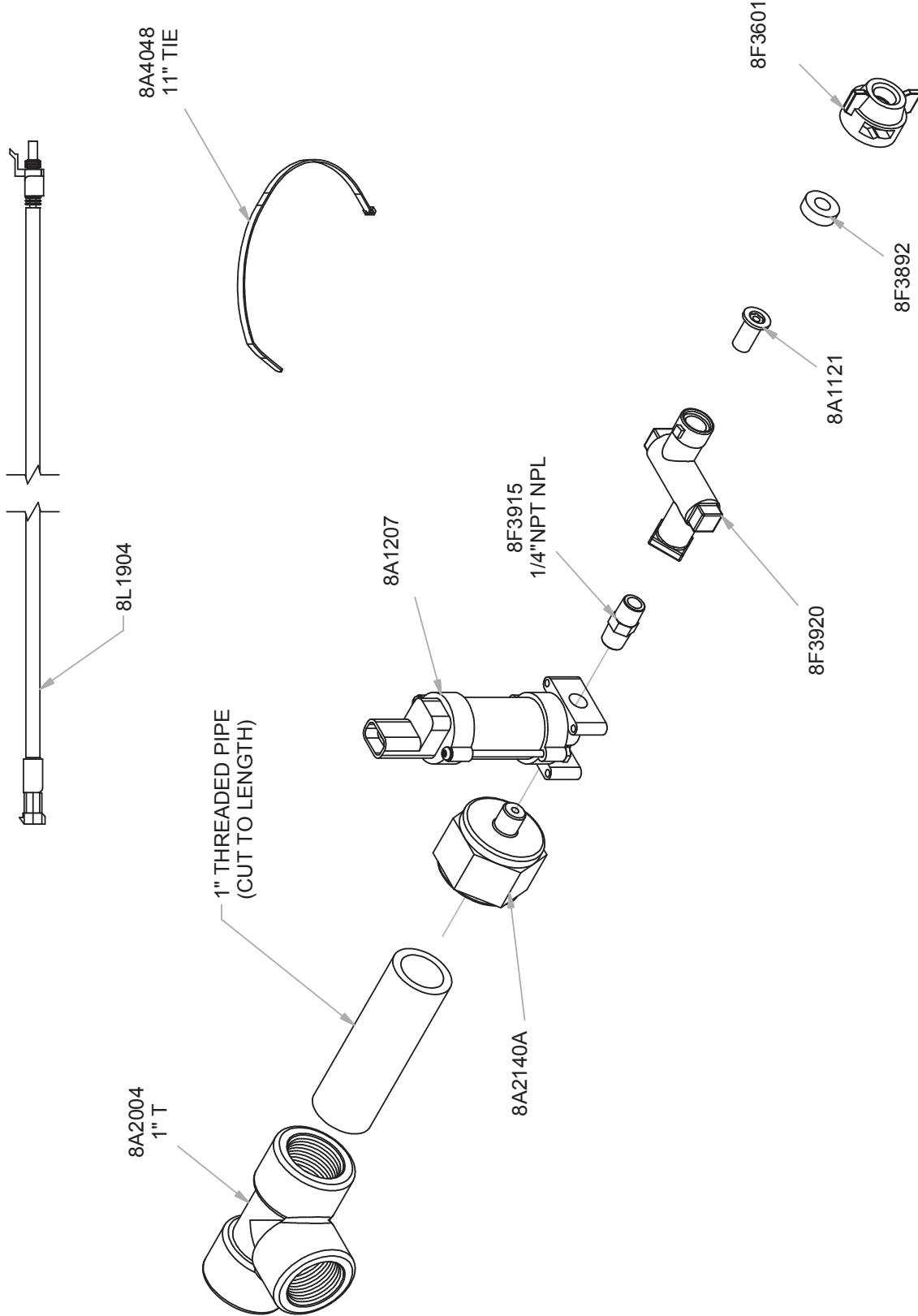
11/11/2008 8S9954A/WASH WAND PKG WO/RINS TANK

MANUAL END NOZZLE



SECTION 8 - PARTS

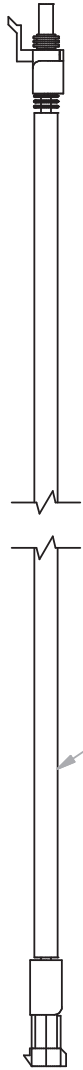
PN	QTY
1S1220-4"	1
8A1121	1
8A1207	1
8A2004	1
8A2140A	1
8F3601	1
8F3892	1
8F3915	1
8F3920	1



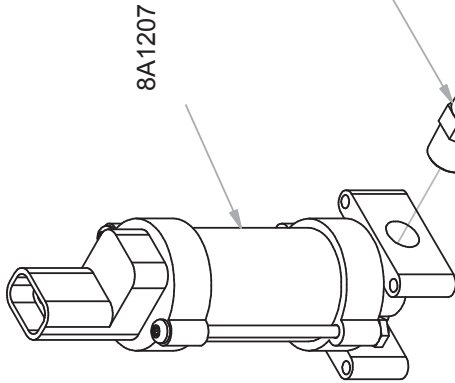
10/7/2011 8F3903.iam/ULTIMATE SNGL ELEC ENDNOZ09-

SECTION 8 - PARTS

PN	QTY
8A1121	1
8A1207	1
8A2140A	1
8F3601	1
8F3892	1
8F3915	1
8F3920	1



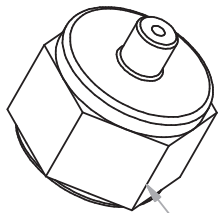
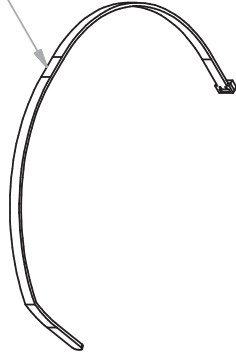
8L1902



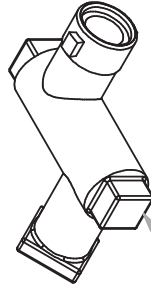
8A1207

8F3915
1/4"NPT NPL

8A4048
11" TIE



8A2140A



8F3920

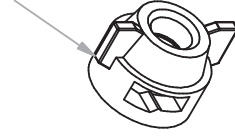


8A1121



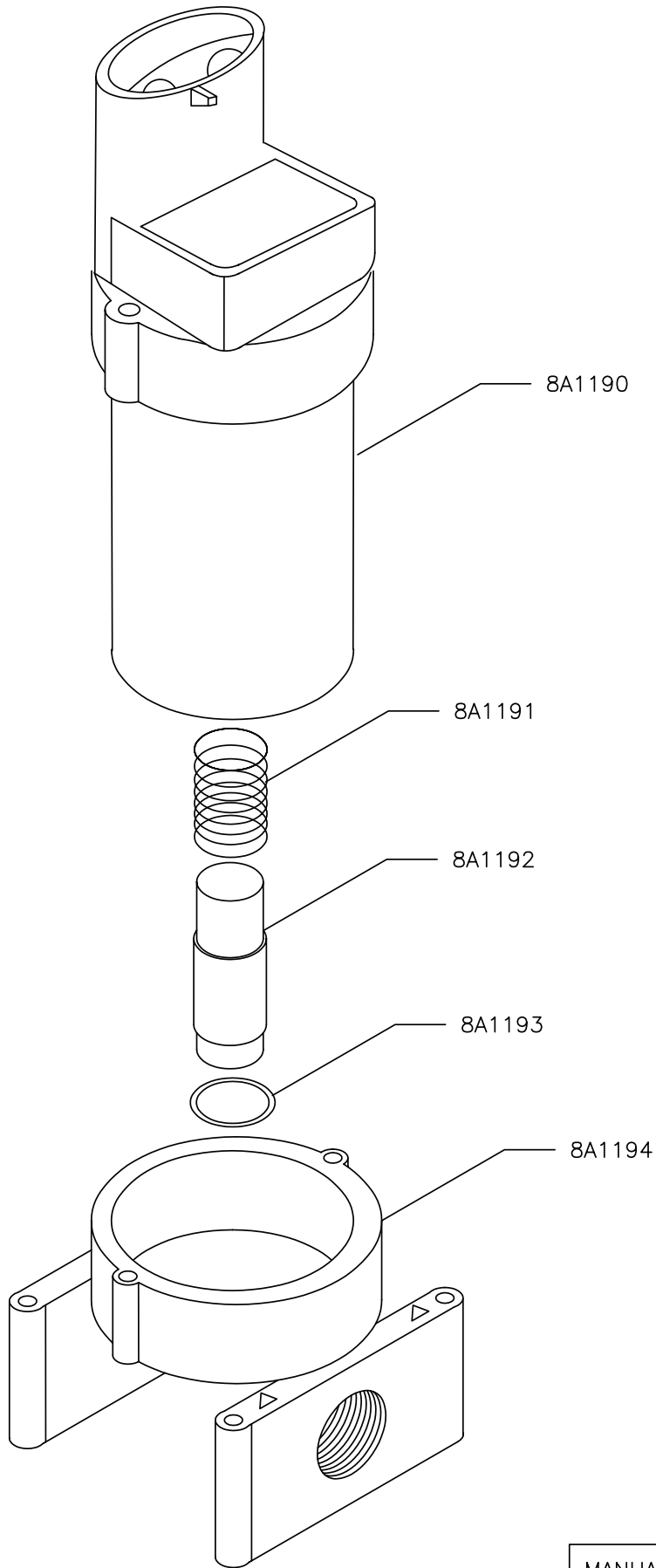
8F3892

8F3601



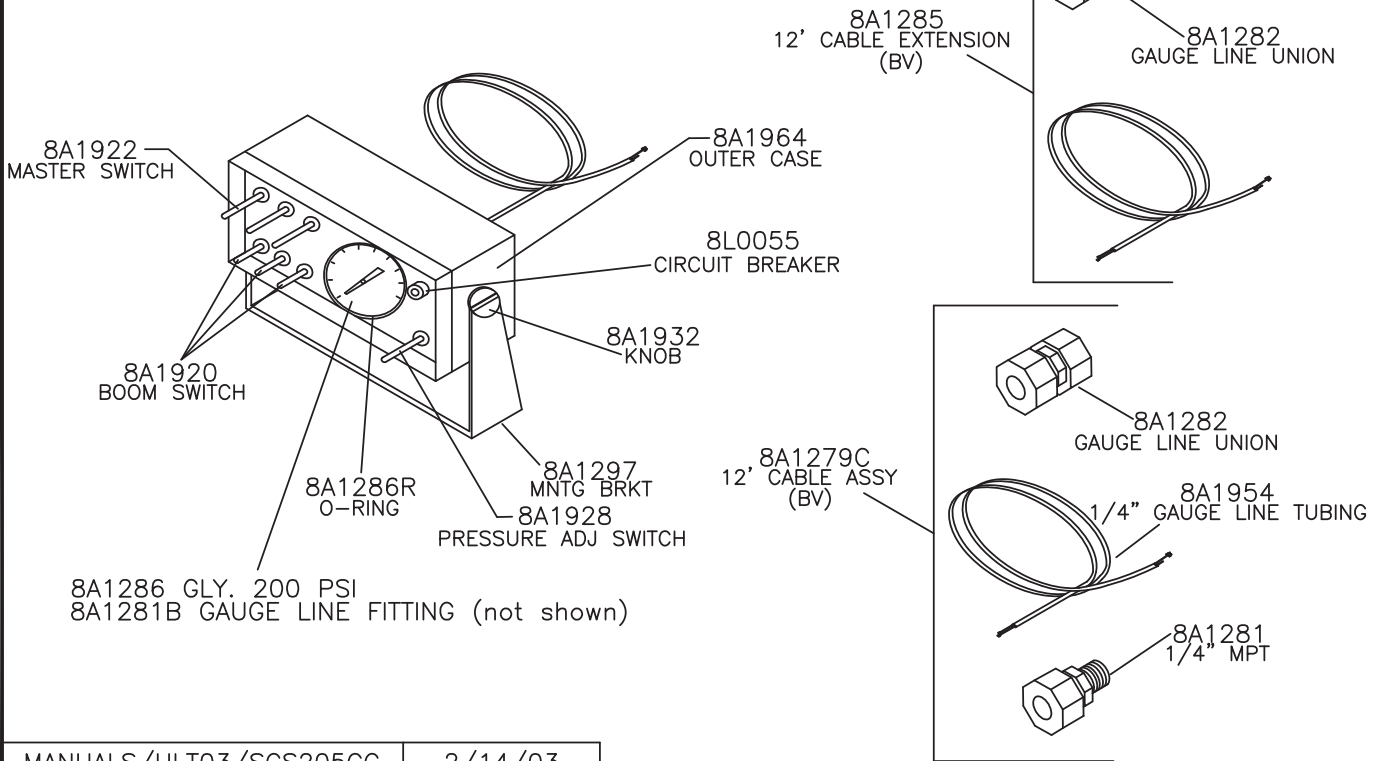
SECTION 8 - PARTS

ELECTRIC
END NOZZLE
SOLENOID



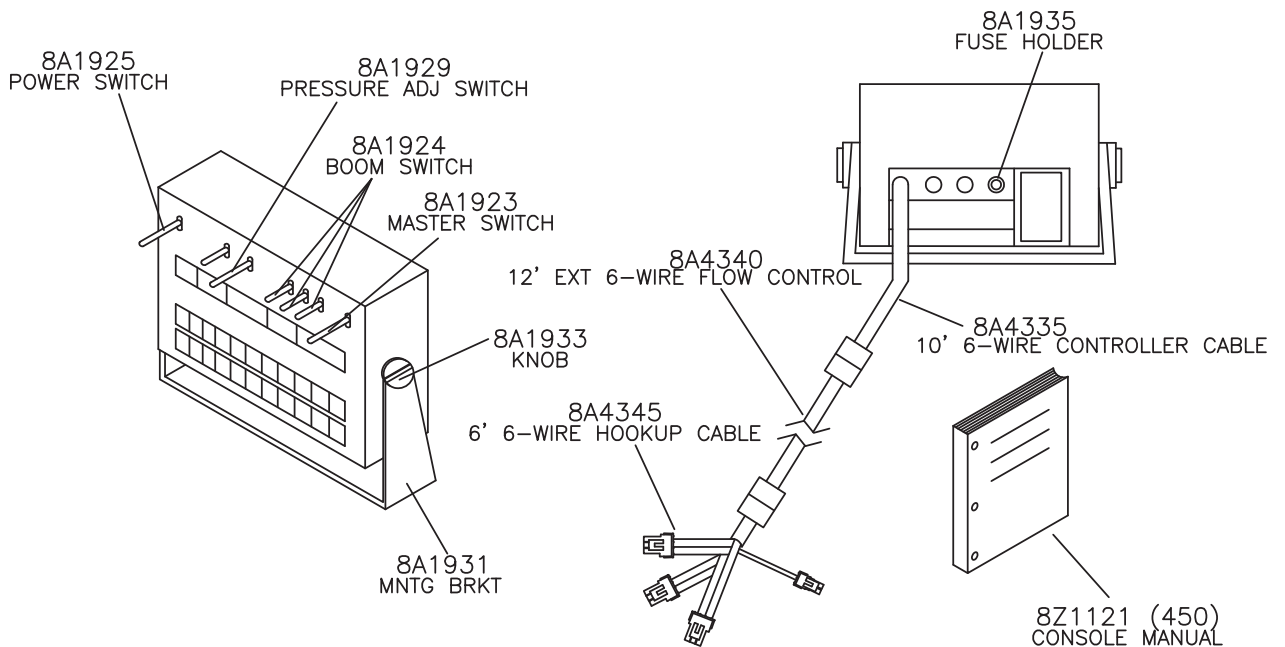
SECTION 8 - PARTS

SCS-205 CONTROL CONSOLE



MANUALS/ULT03/SCS205CC 2/14/03

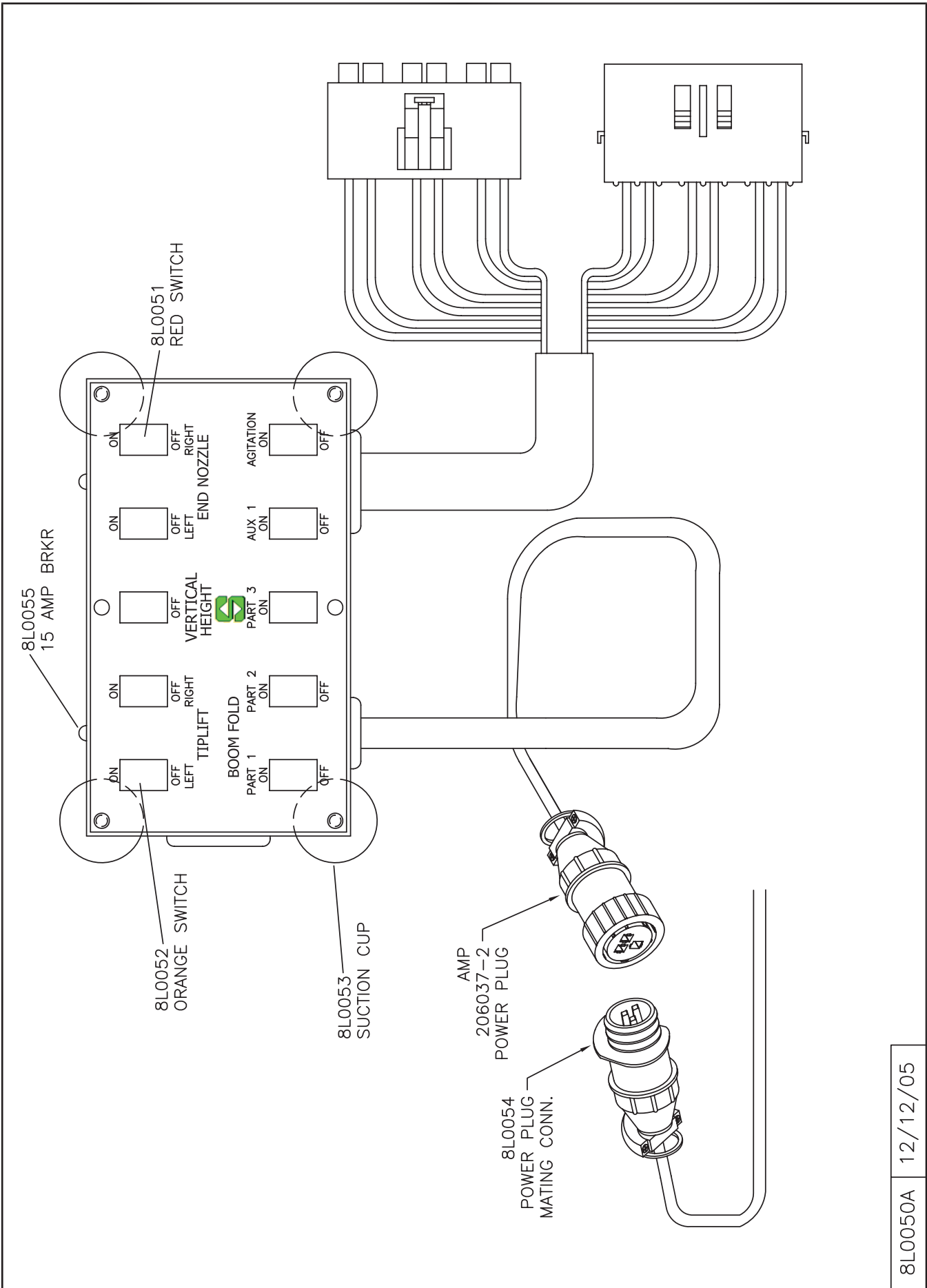
SCS-450 CONTROL CONSOLE



4/17/07

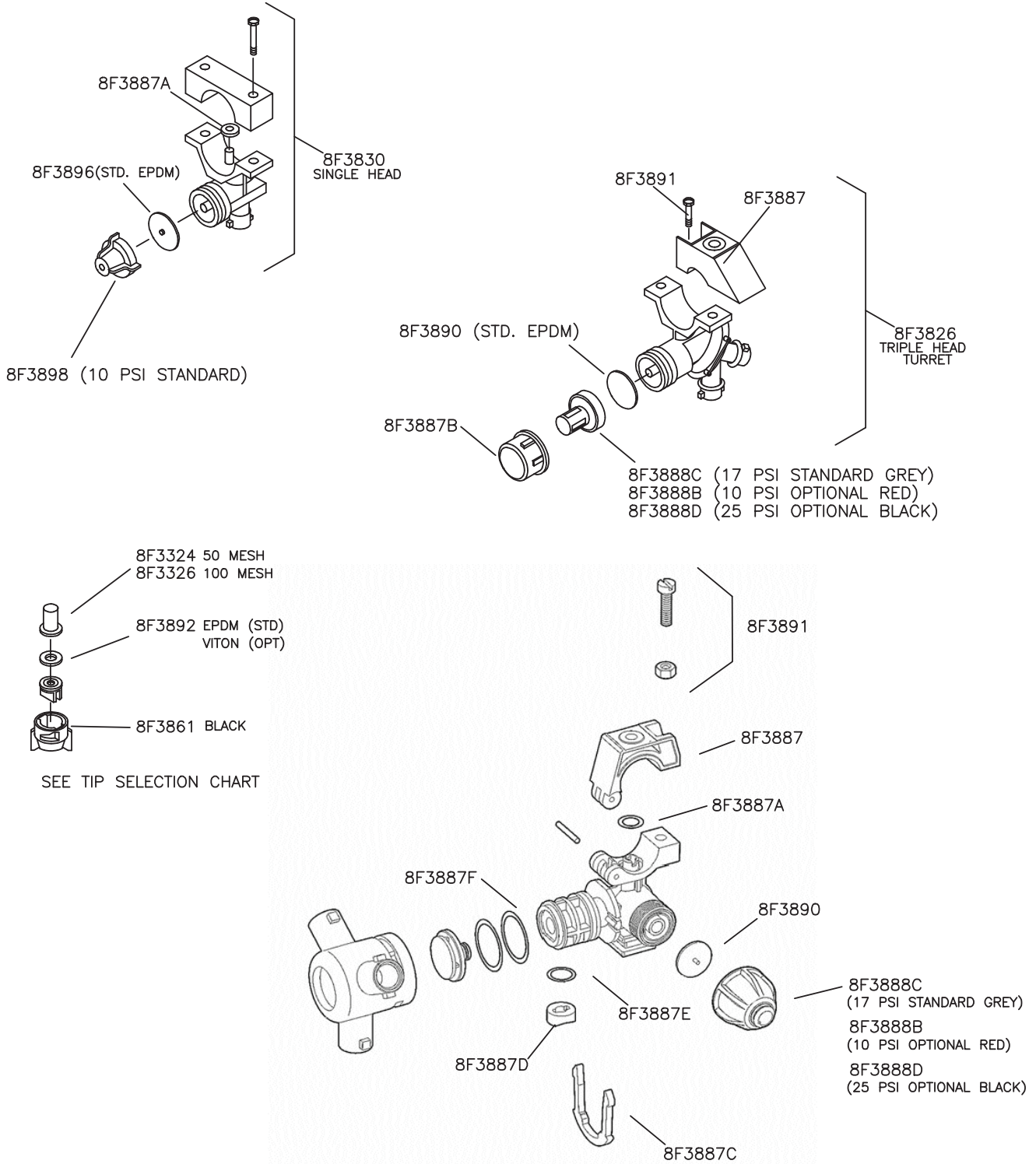
8L1919 - BALL VALVE ONLY HARNESS TO CENTER

SECTION 8 - PARTS



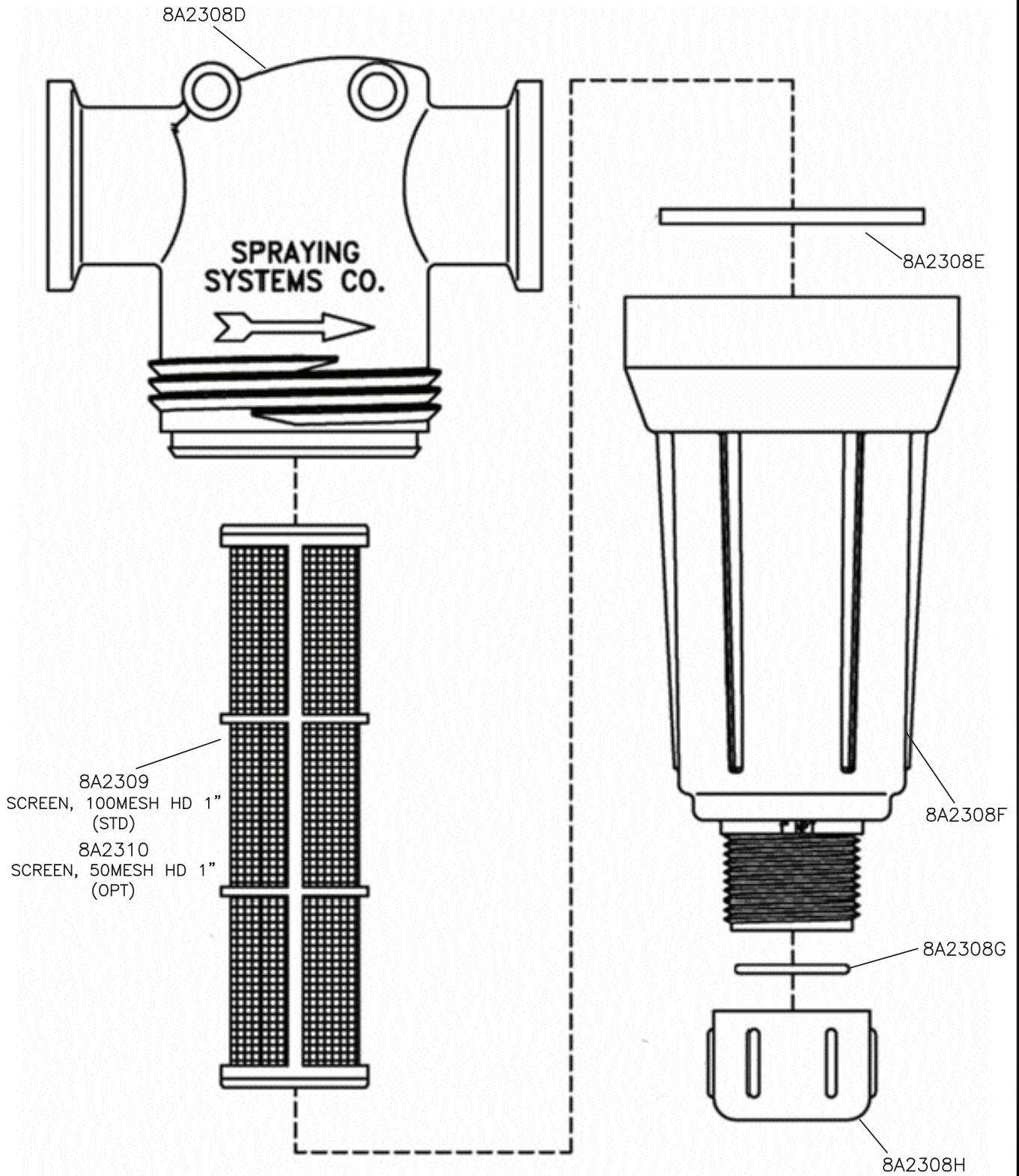
8L0050A 12/12/05

NOZZLE BODY COMPONENTS



SECTION 8 - PARTS

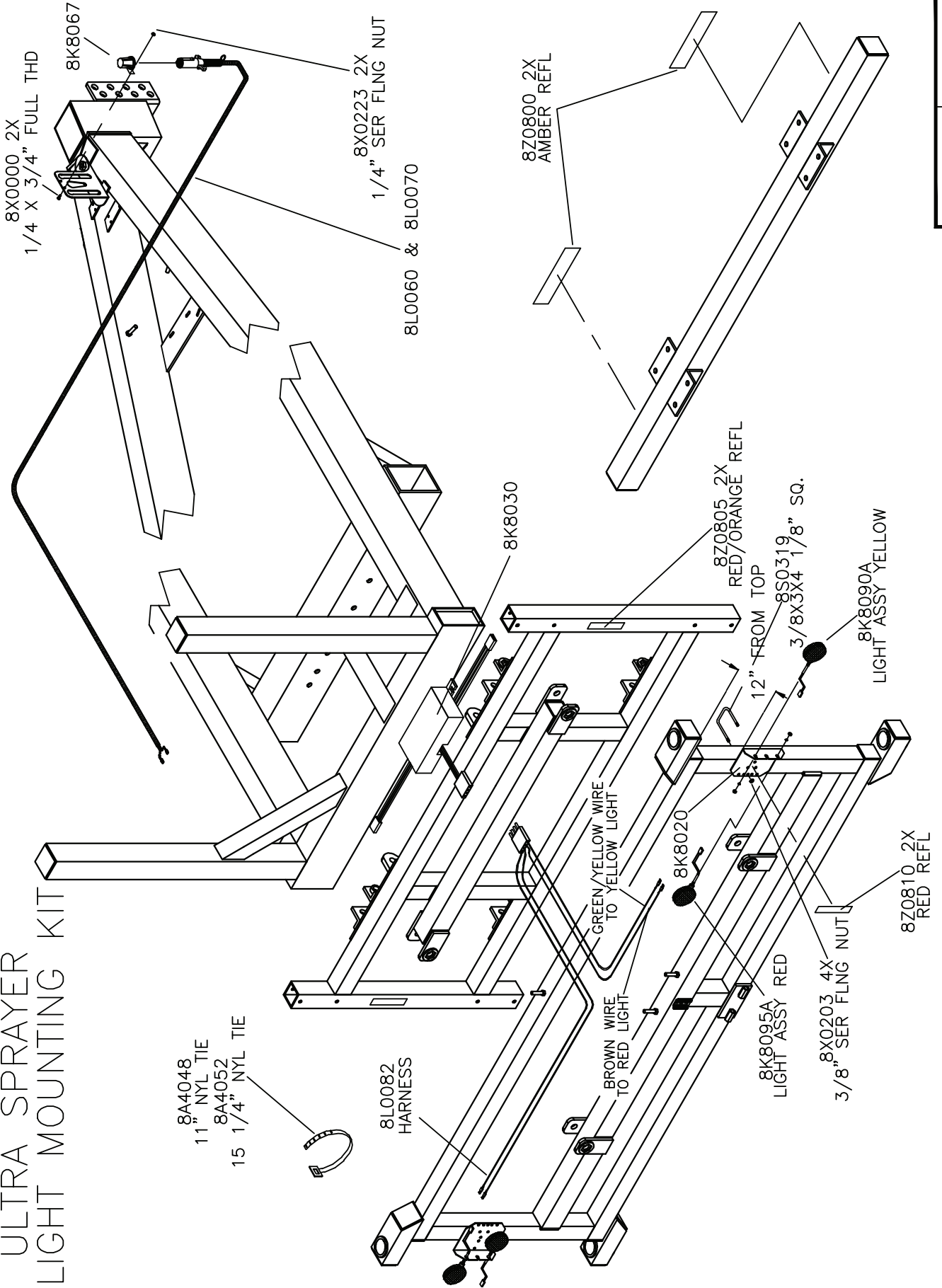
SPRAYING SYSTEMS BOOM LINE STRAINER



8A2308	5/17/10
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SECTION 8 - PARTS

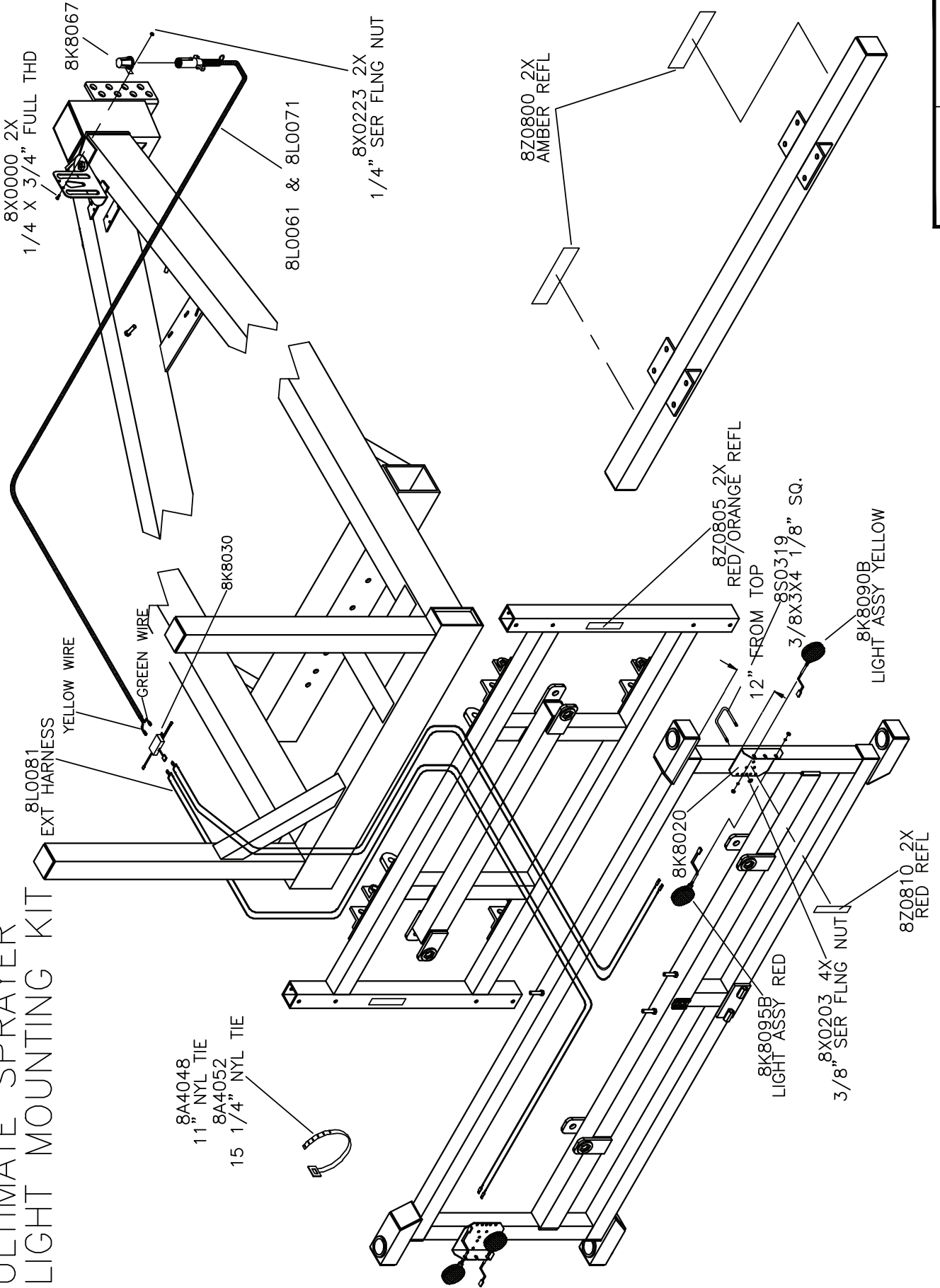
ULTRA SPRAYER
LIGHT MOUNTING KIT



8K8172 3/13/14

SECTION 8 - PARTS

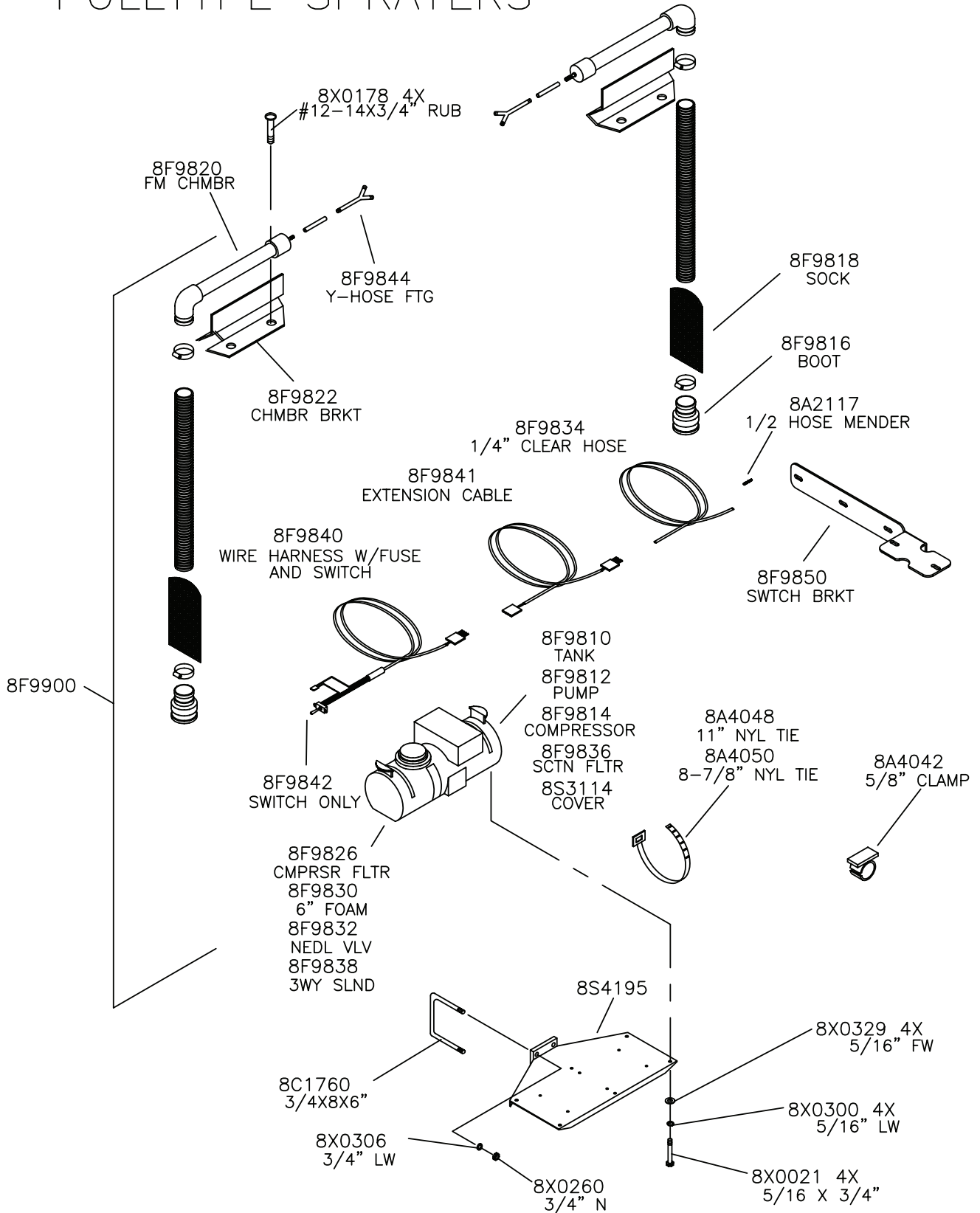
ULTIMATE SPRAYER
LIGHT MOUNTING KIT



8K8170 1/23/14

SECTION 8 - PARTS

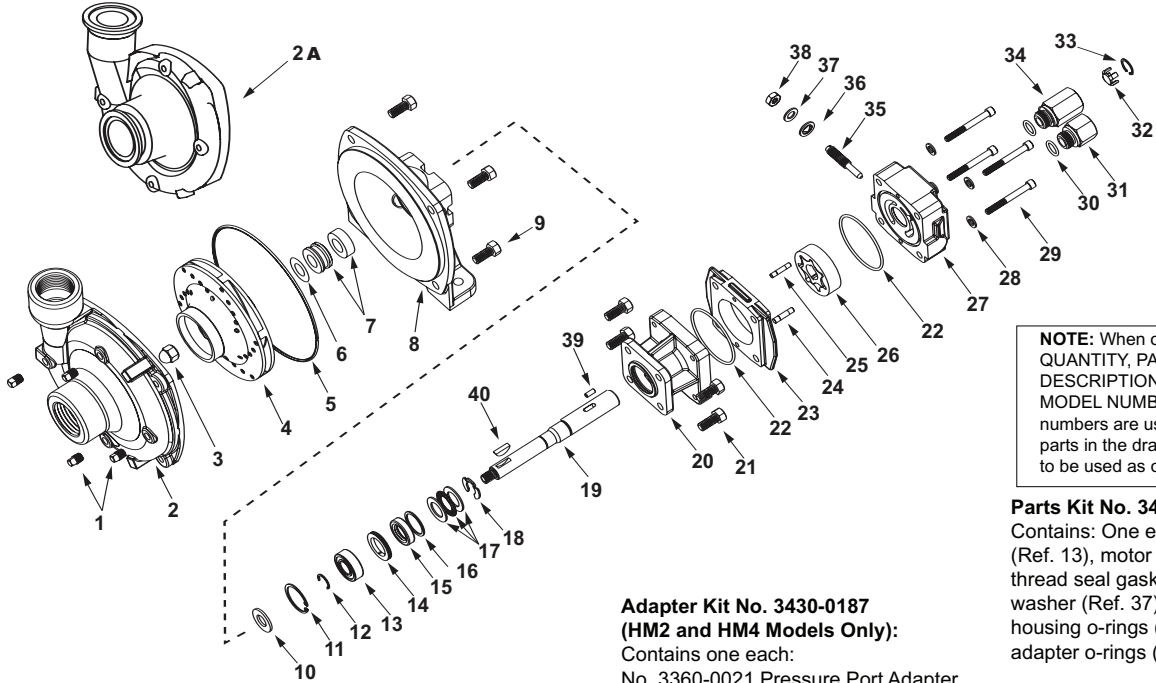
FOAM MARKER OPTION
PULLTYPE SPRAYERS



8F9980 1000GAL ULT 2/12/04

SECTION 8 - PARTS

All 9303C and 9303S Series Pumps



NOTE: When ordering parts, give QUANTITY, PART NUMBER, DESCRIPTION, and COMPLETE MODEL NUMBER. Reference numbers are used ONLY to identify parts in the drawing and are NOT to be used as order numbers.

Repair Parts Kit No. 3430-0332

Contains: One o-ring (Ref. 5), one rubber gasket (Ref. 6), and one mechanical seal (Ref. 7).

Silicon Seal Kit No. 3430-0589

Contains one each: 1720-0083 o-ring (Ref. 5) and one mechanical seal (silicon carbide) (Ref. 7).

Adapter Kit No. 3430-0187 (HM2 and HM4 Models Only):

Contains one each:
 No. 3360-0021 Pressure Port Adapter
 No. 3373-0020 (Size #1)
 No. 3373-0021 (Size #2)
 No. 3373-0022 (Size #3).
 No. 1720-0108 Adapter O-ring and
 No. 1720-0105 Orifice O-ring (Qty 3).

Parts Kit No. 3430-0178

Contains: One each ball bearing (Ref. 13), motor shaft seal (Ref. 15), thread seal gasket (Ref. 36), and washer (Ref. 37); two each motor housing o-rings (Ref. 22), and port adapter o-rings (Ref. 30).

Hydraulic Motor Part Nos.

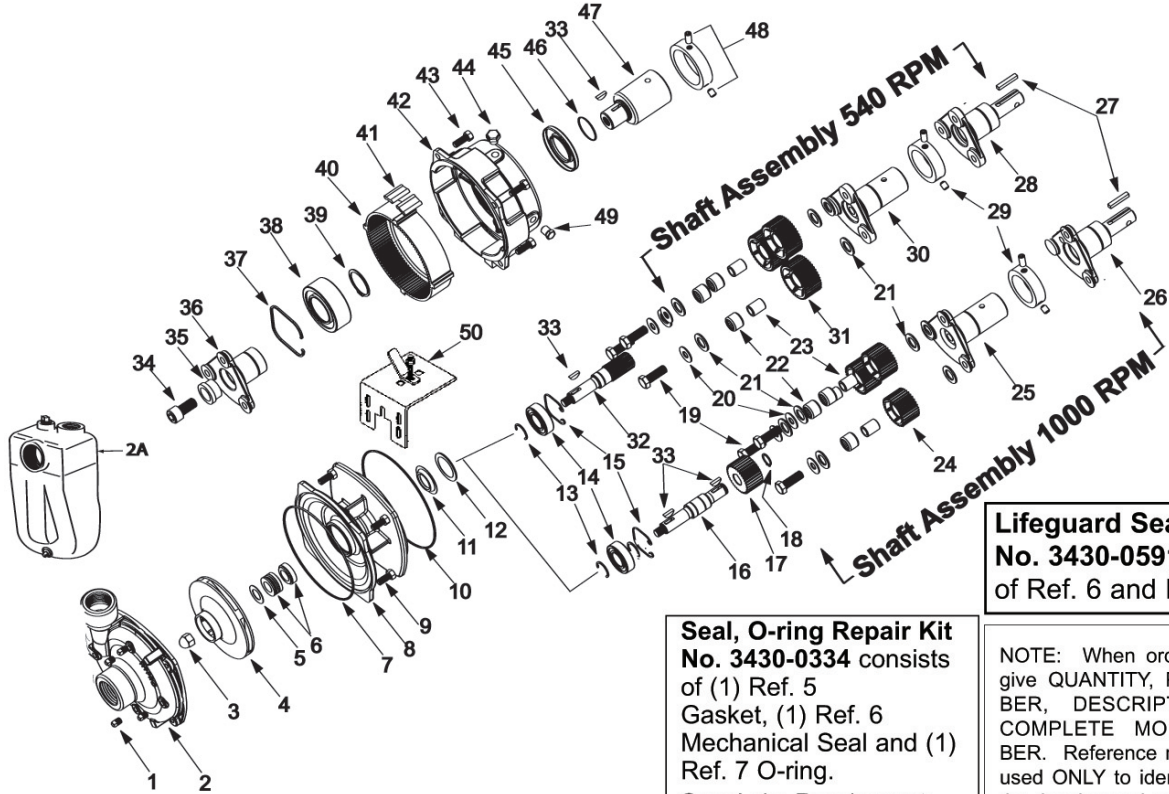
2500-0009C (HM1C Models)
 2500-0010C (HM2C Models)
 2500-0011C (HM3C Models)
 2500-0012C (HM4C Models)
 2500-0018C (HM5C Models)

Ref. No.	Qty. Req'd.	Part No.	Description
1	4	2406-0007	Drain/Vent Plug (9303C)
1	4	2406-0016	Drain/Vent Plug (9303S)
2	1	0150-9000C	Pump Casing (Model 9303C)
2	1	0150-9000S	Pump Casing (Model 9303S)
2A	1	0153-9000C	Pump Casing (Universal Flange)
3	1	2253-0002	Impeller Nut (9303C)
3	1	2253-0006	Impeller Nut (Model 9303S)
4	1	0401-9100P	Impeller (Nyglass, std.)(9303C)
4	1	0402-9100P	Impeller (Optional Polypropylene) (Std 9303S)
5	1	1720-0083	O-ring
6	1	1700-0100	Rubber Gasket (9303C)
7	1	2120-0009	Mechanical Seal (Viton) (Std 9303C)
7	1	3430-0589	Mechanical Seal (Silicon Carbide) (Std 9303S)
8	1	0750-9300C	Mounting Flange
8	1	0756-9300S	Mounting Flange (Model 9303S)
9	4	2210-0020	Hex Head Cap Screw (9303C)
9	4	2210-0125	Hex Head Cap Screw (Model 9303S)
10	1	1410-0056	Slinger Ring
11	1	1820-0013	Retaining Ring
12	1	1810-0014	Snap Ring
13	1	2000-0010	Ball Bearing
14	1	1410-0073	Spacer
15	1	2104-0005	Shaft Seal
16	1	1410-0074	Seal Spacer
17	1	2029-0014	Thrust Bearing Assembly—Consists of: (1) Thrust Bearing & (2) Thrust Brg. Races
18	1	1810-0026	Snap Ring
19	1	0509-2500	Shaft (HM2C & HM4C Models) 6-3/4" Long
19	1	0511-2501	Shaft (HM1C & HM5C Models) 7" Long
19	1	0510-2500	Shaft (HM3C Models) 7 -1/2" Long
20	1	0151-2500C	Motor Body (Includes Main Bearing)
21	4	2210-0005	Hex Head Cap Screw
22	2	1720-0110	O-ring
23	1	0701-2500C1	Gerotor Housing (HM2C Models) 1/4" Wide

Ref. No.	Qty. Req'd.	Part No.	Description
23	1	0700-2500C1	Gerotor Housing (HM1C Models) 1/2" Wide
23	1	0703-2500C1	Gerotor Housing (HM4C Models) 5/16" Wide
23	1	0702-2500C1	Gerotor Housing (HM3C Models) 1" Wide
23	1	0704-2500C1	Gerotor Housing (HM5C Models) 5/8" Wide
24	1	1600-0045	Dowel Pin (HM2C & HM4C Models)
24	1	1600-0044	Dowel Pin (HM1C & HM5C Models)
24	1	1600-0052	Dowel Pin (HM3C Models)
25	1	1600-0042	Dowel Pin (HM2C & HM4C Models)
25	1	1600-0037	Dowel Pin (HM1C & HM5C Models)
25	1	1600-0068	Dowel Pin (HM3C Models)
26	1	3900-0022	Gerotor (HM1C Models)
26	1	3900-0023	Gerotor (HM2C Models)
26	1	3900-0024	Gerotor (HM3C Models)
26	1	3900-0025	Gerotor (HM4C Models)
26	1	3900-0048	Gerotor (HM5C Models)
27	1	0251-2500C2	Motor End Plate (Includes Main Bearing)
28	4	2270-0039	Washer
29	4	2220-0045	Cap Screw (HM2C & HM4C Models)
29	4	2220-0021	Cap Screw (HM1C)
29	4	2220-0044	Cap Screw (HM3C Models)
29	4	2220-0032	Cap Screw (HM5C)
30	2	1720-0108	O-ring
31	1	3360-0021	Pressure Port Adapter
32	1	3260-0068	Poppet
33	1	1820-0038	Retaining Ring
34	1	3320-0049	Tank Port Adapter
35	1	3220-0029	Bypass Adjusting Screw
36	1	1700-0047	Gasket
37	1	2270-0027	Washer
38	1	2250-0038	Lock Nut
39	1	1610-0032	Roll Pin (HM2C & HM4C Models)
39	1	1610-0031	Roll Pin (HM1C & HM5C Models)
39	1	1610-0055	Roll Pin (HM3C)
40	1	1610-0012	Woodruff Key (9303C)
40	1	04432	S.S. Woodruff Key (Model 9303S)

SECTION 8 - PARTS

Models 9006C-O, 9006C-O-SP, 9016C-O, 9016C-O-SP, 9008C-O, 9018C-O, 9028C-O



**Lifeguard Seal Kit
No. 3430-0591** consists of Ref. 6 and Ref. 7.

**Seal, O-ring Repair Kit
No. 3430-0334** consists of (1) Ref. 5 Gasket, (1) Ref. 6 Mechanical Seal and (1) Ref. 7 O-ring.

Gear Lube Requirement:
Phillube SAE 80W90 Oil

NOTE: When ordering parts, give QUANTITY, PART NUMBER, DESCRIPTION, and COMPLETE MODEL NUMBER. Reference numbers are used ONLY to identify parts in the drawing and are NOT to be used as order numbers.

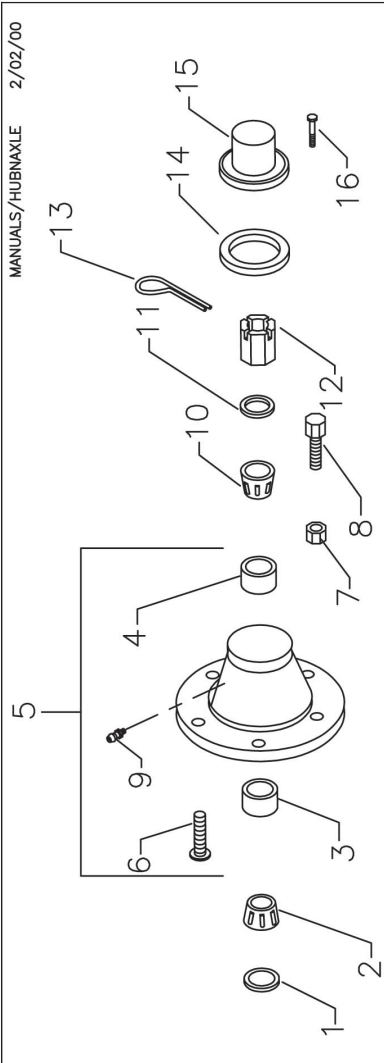
Ref. No.	Qty. Req'd.	Part No.	Description
1	4	2406-0007	Drain Plug
2	1	0150-9000C	Pump Casing (w / SS wear ring)
2A	1	3430-0480SP	Pump Casing (Self-Priming Units)
3	1	2253-0001	Impeller Nut
4	1	0400-9000P	Impeller (Nylon)
5	1	1700-0101	Gasket
6	1	2120-0010	Mechanical Seal (Optional Buna-N)
6	1	2120-0011	Mechanical Seal (Standard Viton)
7	1	1720-0083	O-ring
8	1	0752-9000C	Mounting Flange Adapter
9	4	2210-0020	Hex Head Capscrew
10	1	1720-0139	O-ring
11	1	2130-0018	Bearing Lip Seal
12	1	1700-0098	Gasket
13	*	1810-0013	Retaining Ring — (1) required for 540 rpm, (2) for 1-3/8" and (3) for 1-3/4" 1000 rpm
14	1	2008-0001	Ball Bearing
15	1	1820-0025	Retaining Ring
15	3	2210-0046	Capscrew
16	1	0500-9002	Impeller Shaft (1000 rpm)
17	1	3900-0013	Sun Gear (1000 rpm)
18	1	1810-0011	Retaining Ring (1000 rpm)
19	3	2210-0046	Hex Head Capscrew
20	3	2270-0003	Washer
21	6	2265-0003	Thrust Washer
22	3	2007-0052	Bearing (included with driver gear)
23	3	2007-0022	Bearing Inner Race
24	3	3900-0040	Driver Gear w/Bearing (1000 rpm) 32 teeth, Dia. 2.13"

Ref. No.	Qty. Req'd.	Part No.	Description
25	1	0562-9002D	Driver Hub (Model 9008C-O)
26	1	0501-9018D	Driver Hub (Model 9018C-O)
27	1	1610-0005	Key
28	1	0501-9016D	Driver Hub (Model 9016C-O)
29	1	3435-0058	Locking Collar Kit (hollow shaft)
30	1	0562-9000D	Driver Hub (Model 9006C-O)
31	3	3900-0039	Driver Gear w/Bearing (540 rpm) 39 teeth, Dia. 2.6"
32	1	3900-0010	Impeller Shaft/Pinion Gear (540 rpm)
33	**	1610-0012	Woodruff Key ** (1) req'd for 540 rpm, (2) req'd for 1000 rpm models.
34	1	2220-0035	Capscrew (Model 9028C)
35	1	2403-0012	Bushing (Model 9028C)
36	1	0501-9018D1	Driver Hub (Model 9028C)
37	1	1800-0014	Retaining Ring
38	1	2005-0002	Ball Bearing
39	1	1810-0001	Retaining Ring
40	1	3900-0009	Ring Gear
41	8	1450-0004	Cushion Bumper
42	1	0754-9000C	Gear Casing
43	4	2210-0026	Hex Head Capscrew
44	1	2404-0193	Breather Vent
45	1	2102-0025	Oil Seal
46	1	1720-0022	O-ring
47	1	0550-1322F4	Driver Hub (9028C) 1-3/4" Hub 20 Teeth
48	1	3430-0190	Locking Collar Kit (Model 9028C)
49	4	2406-0019	Oil Plug
50	1	1520-0034	Mounting Clip

SECTION 8 - PARTS

HUB AND AXLE COMPONENTS

MANUALS/HUBAXLE 2/02/00



Assembly Notes:

- A. Before towing machine, pack wheel bearings and fill 1/2 of hub cavity with high quality bearing grease.
- B. Tighten axle nut to 50 ft.-lbs, loosen nut until first slot is aligned with hole in axle, install cotter pin and bend to retain.

Legend:

SMC	Part Number
INDUSTRY	Part Number or Size

HUB	1. SEAL	2. INNER BEARING	3. INNER RACE	4. OUTER RACE	5. HUB ASSY	6. WHEEL STUD	7. WHEEL NUT	8. WHEEL BOLT	9. HUB ZERK	10. OUTER BEARING	11. AXLE WASHER	12. AXLE NUT	13. COTTER PIN	14. HUB CAP GASKET	15. HUB CAP	16. HUB CAP BOLT
H211	8G8220 SE10	8G8217 L44643	8G8230 8L44610	8G8230 L44610	8G8211 HDA211	N/A	N/A	8D5114 WB10	8X0708 1/4-28NF	8G8217 L44643	8D5119 3/4" I.D.	8D5112 3/4"-16	8X0410 3/16X1"	N/A	8G8213 DC11	N/A
H517	8D5234 8D5236 8D5238	8D5217 LM48548	8D5332 LM48510	8D5336 LM67010	8D5210 H517	8D5215 WB16	8D5214 1/2-20UNF	N/A	8X0708 1/4-28NF	8D5117 LM67048	8D5219 7/8" I.D.	8D5212 7/8"-14	8X0415 3/16X1-1/2"	N/A	8D5213 DC13	N/A
H611	8D5221 SE13	8D5317 LM29749	8D5334 LM29710	8D5336 LM67010	8D5311-09 8D5316-10 H611	N/A	N/A	8D5114 WB10-09 8R6914 WB12 10-	8X0708 1/4-28NF	8D5117 LM67048	8D5319 1" I.D.	8D5312 1"-14	8X0415 3/16X1-1/2"	N/A	8D5213 DC13	N/A
H614	8R6922** SEE GBGI INSTRUCTIONS	8R6917 LM603049	8R6925 LM603011	8D5332 LM48510	8R6911 H614	N/A	N/A	8R6914 WB12	8X0708 1/4-28NF	8D5217 LM48548	8D5319 1" I.D.	8D5312 1"-14	8X0415 3/16X1-1/2"	N/A	8R6913 DC15	N/A
HD812	8K7127*** SEAL SE77	8K7117 LM3780	8K7130 LM3720	8K7132 LM2720	8K7111 HD812	8K7115-9/16*** 8K7122-5/8"	8K7116-9/16*** 8K7123-5/8"	N/A	8X0708 1/4-28NF	LM2790	1" I.D.	1"-14	3/16X1-1/2"	N/A	DC17	N/A
HD817	8K7344 SE42	7K7342 LM387AS	8K7346 382A	8K7347 LM501310	8K7340 HD817	8K7122-5/8" WB41 WB46	8K7123-5/8" WB40 WB118	N/A	8X0708 1/4-28NF	8K7343 LM501349	8X0328 1.312 I.D.	8D5314 1-1/4"-12	8X0414 1/4X2"	N/A	8K7341 DC26	N/A
HI010 LT	8K7220 SE48	7K7217 39585	8K7230 453A	8K7232 453A	8K7211 HI010-9	8K7215 WB51	8K7216 WB52	N/A	8X0708 1/4-28NF	8K7218 460	8X0328 1.312 I.D.	8D5314 1-1/4"-12	8X0414 1/4X2"	8K7212 SE49	8K7213 DC27	8K7214 WB53
HI010 HVV	8K7221 SE67	8K7219 33275	8K7231 453A	8K7232 453A	8K7210 HI010-11	8K7215 WB51	8K7216 WB52	N/A	8X0708 1/4-28NF	8K7218 460	8X0328 1.312 I.D.	8D5314 1-1/4"-12	8X0414 1/4X2"	8K7212 SE49	8K7213 DC27	8K7214 WB53
HI020	8K7320 SE55	8K7317 HMD18248	8K7330 HM218210	8K7332 HM212010	8K7209 HDA1020	8K7215 WB51	8K7216 WB52	N/A	8X0708 1/4-28NF	8K7318 HM212049	8X0366 2.03" ID	8D5318 2" - 12WB65	8X0418 5/16 X 2-1/2"	8K7312 SE59	8K7313 DC28	8K7214 WB53

* Pre-2000

** GBGI (Not Shown), 8R6921 Triple Lip (Shown)
*** Pre 2006 8K7120 (SE17)

CD2/MANUALS10 2-26 HUB-AXLE COMPONENTS

LAST REVISION: 1/17/2011

MANIFOLD VALVE REPLACEMENT PARTS

063-0171-926 (1 Section) - Rev. A or Higher*

063-0171-928 (3 Section) - Rev. A or Higher*

063-0172-039 (5 Section - Not Shown) - Rev. A or Higher*

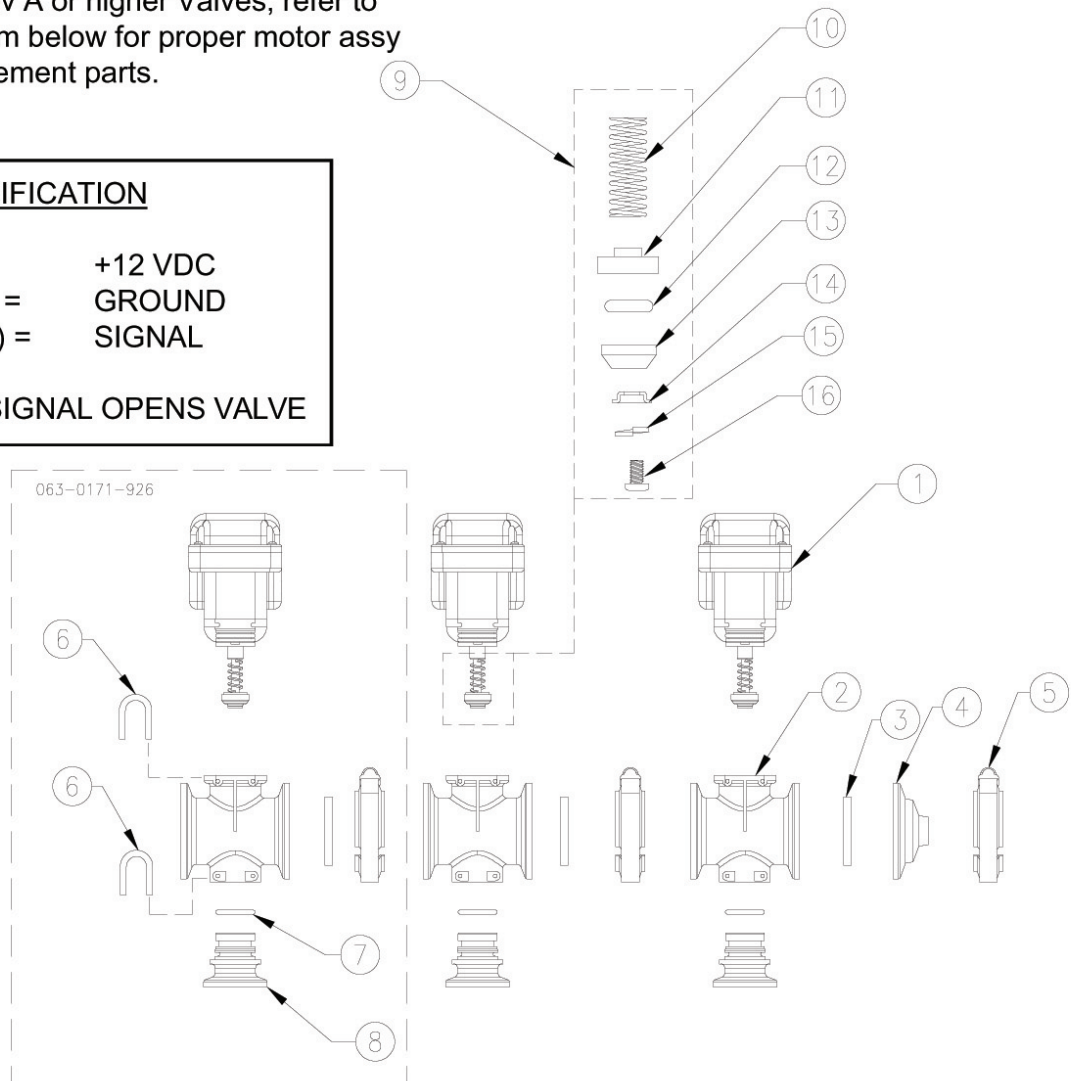
ITEM	DESCRIPTION	RAVEN PART #	SMC PART #
1	Motor Assembly*	063-0172-330	8A1600A
2	Body	106-0159-522	8A1600B
3	Gasket	219-0000-097	8A1402
4	End Plate	106-0159-524	8A2331A
5	Clamp, V-Band	435-3003-038	8A2233
6	Clip	107-0171-327	
7	O-Ring	219-0002-214	8A1600C
8	Outlet	106-0159-523	8A1600D
9	Kit, Plunger Seat	117-0159-906	8A1600E
10	Spring	314-0000-011	
11	Seat Retainer	106-0159-534	
12	O-Ring	219-0002-010	
13	Plunger Seat, Recessed	219-0000-121	
14	Washer, Recessed	107-0171-464	
15	Washer, Split Lock, #8	313-1000-011	
16	Screw, #8-32 x 3/8"	311-0007-045	

*** NOTE:** For Rev A or higher Valves, refer to diagram below for proper motor assy replacement parts.

WIRING SPECIFICATION

RED (PIN A) = +12 VDC
 WHITE (PIN B) = GROUND
 BLACK (PIN C) = SIGNAL

+12 VDC ON SIGNAL OPENS VALVE

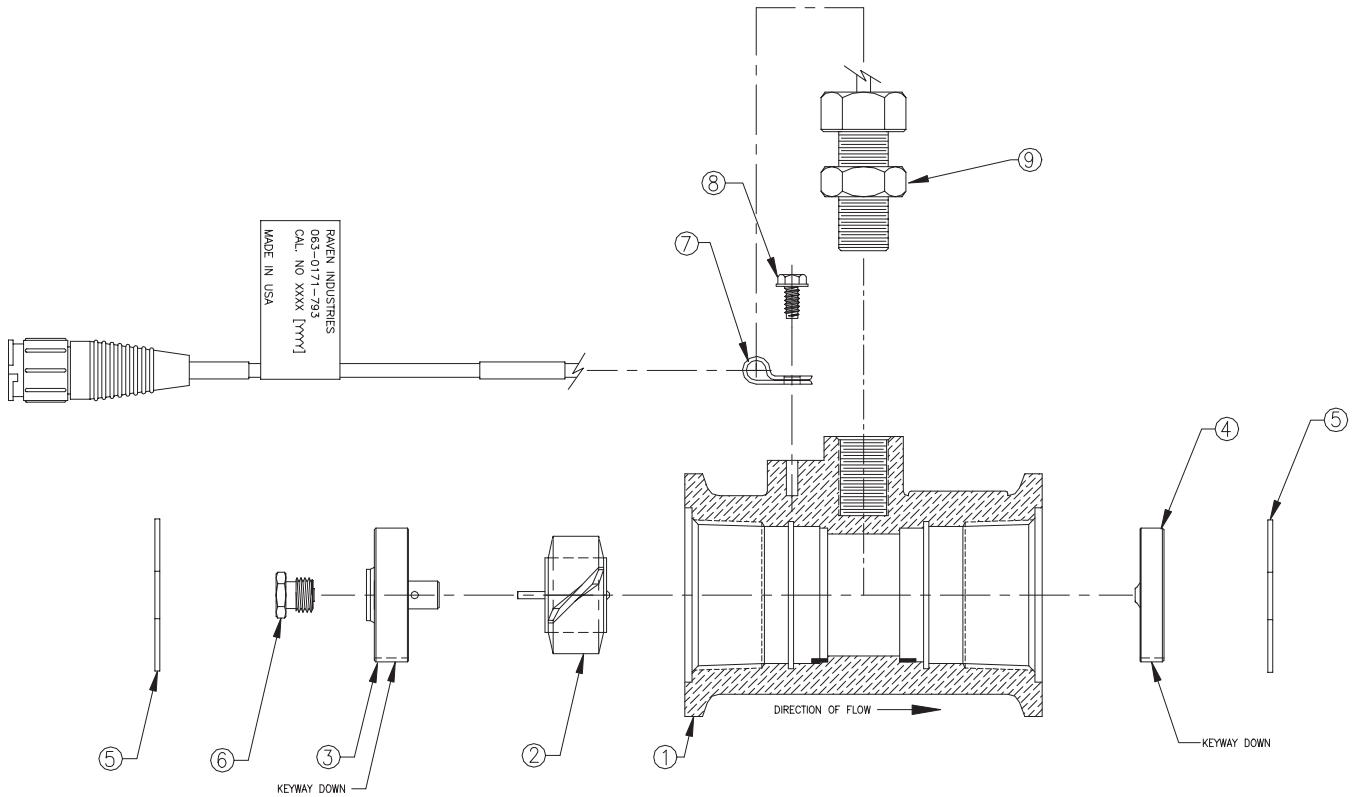


SECTION 8 - PARTS

RFM 60 P FLOWMETER REPLACEMENT PARTS

063-0171-793

ITEM	DESCRIPTION	RAVEN PART #
1	Body, RFM 60 P Flowmeter	106-0159-514
2	Rotor/Magnet Assembly	063-0171-673
3	Hub/Bearing Assy, Upstream	063-0171-674
4	Hub assembly, Downstream	063-0171-769
5	Ring, Retaining, Internal	335-0000-278
6	Stud Bearing	063-0159-570
7	Clamp, Cable	435-3002-017
8	Screw, Thread Forming	310-0002-137
9	Sensor, assembly, External	063-0171-669



Stock #	Description	Stock #	Description
1S1516	POLY 16" WIDE PER/FT	8A0868	O-RING HYPRO GEAR CASING
1S1518	PERFORATED POLY 18"WIDE PER/FT	8A0900	DRAIN/VENT PLUG
7L0315	STIFFENER 3 RDPT1 35.19" 05-	8A0903	PUMP CASTING BODY 220X200FLNGD
7L0315A	STIFFENER 3 RDPT1 35.19" 08-	8A0904	IMPELLER NUT
7L0360	STL 4.13X8X10GA BOOM GST	8A0906	IMPELLER HM1-4
7L2150	STL 1/2 X 7-1/2"OD X 2-9/16"ID	8A0907	MOUNTING FLANGE
7L2795	RND CR 1.625X1.135"- 2-3/8"	8A0908	SLINGER RING
7L2797	RND CR 1.625X1.135-2-3/8 W/ZRK	8A0912	WOODRUFF KEY
7L2818	TUBE 1.875X.75"ID- 2.94" 93-	8A0914	SCREW HEX HEAD CAP
7L2928	SHAFT 2.25 X 45" YZ PLT 99-	8A0922	RETAINING RING
7L2929	SHAFT 2.25 X 49.13" YZ PLT 05-	8A0924	SNAP RING
7L3145	PIN PART 2 BOOM HINGE ULTIMATE	8A0928	SPACER -10
7L3146	PIN PART 3 BOOM HINGE ULTRA	8A0930A	SHAFT SEAL REPAIR KIT HM1-4
7L3147	PIN PART 2 BOOM HINGE ULTRA	8A0932	THRUST BEARING ASSEMBLY
7L3920	STL 1/4" STIFFNR FLAT 11-	8A0934	SNAP RING
7S4698	L2X2X3/8" W/HLS LTCH ANGLBRKT	8A0938	ROLL PIN HM4
8A0126	HOOP REAR 1000 GAL NARROW P/C	8A0939	ROLL PIN HM1 & HM5
8A0130	HOOP 1000GAL CRPCARE P/C 03-	8A0962	SCREW BYPASS ADJUSTING
8A0148	HOOP REAR 1650 NRRW PTD 12-	8A0968	LOCK NUT
8A0150	HOOP 1500GAL CRPCARE P/C 03-	8A1000	CLAMP HOSE 1/4" MINI
8A0152	HOOP 1650GAL CRPCARE P/C 10-	8A1002	CLAMP HOSE 2" #36
8A0154	AXIAL TANK SPRT TUBE P/C 03-	8A1003	CLAMP HOSE 1/2" MINI
8A0158	HOOP 1650 NRW CRPCR PTD 12-	8A1004	CLAMP HOSE 5" #72
8A0160	SPACER 1000 NRRW TNK HP 2.25"	8A1005	CLAMP HOSE 4" #60
8A0162	SPACER 1500 NRRW TNK HP 3.25"	8A1006	CLAMP HOSE 1-1/2" #24
8A0164	SPACER 1500 NRRW TNK HP 5.75"	8A1007	CLAMP HOSE 3/4" #12
8A0804	IMPELLER (PLASTIC)	8A1008	CLAMP HOSE 1-1/4" #20
8A0805	IMPELLER 1551 HYPRO PUMP	8A1009	CLAMP HOSE 1" #16
8A0806	MECHANICAL SEAL VITON	8A1017	CLAMP HOSE SIZE J .82 - .93
8A0809	GASKET 1551 HYPRO PUMP	8A1041	CHECK VLV ASSY TNK 3/4X16ORB
8A0810	BEARING RETAINER RING	8A1044	PORT ADAPTER HYPRO PUMP
8A0811	O-RING HYPRO 1551 PUMP	8A1046	O-RING (BUNA-N) HM1-4/PTO
8A0812	BALL BEARING	8A1047	MECHANICAL SEAL (VITON) HM1-4
8A0813	SEAL VITON 1551 HYPRO PUMP	8A1048	MECHANICAL SEAL SILICON CARBID
8A0814	RETAINING RING	8A1050	C9006 540 RPM CENT PUMP VITON
8A0816	LIP SEAL BEARING 9006C/9008C	8A1052	C9008 1000 RPM CENT PUMP VITON
8A0820	THRUSTWASHER	8A1053	90029 1000RPM 8-SPLN PTO VITON
8A0822	BEARING INNER RACE	8A1054	9403 BLT DRV 1000RPM PTO PUMP
8A0824	DRIVER GEAR W/BEARING 9006C	8A1056A	9303C-HM1C FLGD HYDPMP W/DRAIN
8A0826	DRIVER GEAR W/BEARING 9008C	8A1056F	9303C-HM1C FLNGD HYDPMP -14
8A0828	OIL SEAL DRIVER 9006C/9008C	8A1057	9303S-HM1C CNTRFGL PUMP HYDDRV
8A0830	SHAFT PINION GEARED IMPELLER	8A1060	9303C-HM3C CNTRFGL PUMP HYDDRV
8A0834	SUN GEAR	8A1062F	9303C-HM4C CNTRFGL FLGD HYDPMP
8A0836	RETAINING RING(FOR SUN GEAR)	8A1064	9303C-HM5C CNTRFGL FLGD HYDPMP
8A0838	DRIVER HUB 9006C	8A1121	SCREEN 50 MESH DRIPLESS
8A0840	DRIVER HUB 9008C	8A1155	U-BOLT 3/8 X 6-1/16 X 5" SQ
8A0842	DRIVER HUB 9008C 8SPLINE 08-	8A1156	U-BOLT 3/8 X 4-1/16 X 5" SQ
8A0847	RETAINING RING	8A1157	U-BOLT 3/8 X 4-1/16 X 7" SQ
8A0848	BALL BEARING	8A1178	MOUNTING CLIP HYPRO PTO PUMP
8A0850	SLINGER	8A1180	LOCKING COLLAR KIT PTO PUMP
8A0852	RETAINING RING	8A1190	ELEC END NOZZLE COIL WP
8A0854	RING GEAR	8A1191	ELEC END NOZZLE SPRING
8A0856	CUSHION BUMPER	8A1192	ELEC END NOZZLE PLUNGR VITON
8A0861	IMPELLER 1538 HYPRO PUMP	8A1193	ELEC END NOZZLE VITON O-RING
8A0862	GASKET 1538 HYPRO PUMP IMPELR	8A1194	ELEC END NOZZLE VALVE BODY
8A0864	BOLT SEAL HYPRO 1538 PUMP	8A1198A	BODY ELEC BALL VALVE MANIFLD
8A0865	BOLT HYPRO 1538 FLANGE-CASING	8A1200	DIRECTOVALVE SPRAY SYSTM 144
8A0867	BEARING SHIELD HYPRO 1538	8A1203F	FUSE HOLDER W/FUSE CLIPS

<u>Stock #</u>	<u>Description</u>
8A1204	VALVE 1" ELECTRIC BALL
8A1204A	TEEJET ELEC MOTOR FILTER W/RES
8A1205	MOTOR ONLY 344 BVLVE 22 RPM
8A1207	VALVE END NOZZLE SOLENOID
8A1208B	INNER CONNECTOR BVALV MANIFLD
8A1208C	0-RING BODY TO BODY BVLV MANIF
8A1250	BALL VALVE 3/4" UNION
8A1251	BALL VALVE 1" 3WAY BOTTMLOAD
8A1255B	BALL VALVE 1" FPT BOLTED
8A1257	BALL VALVE 1.5" 3WAY BOTMLOAD
8A1258	END CAP 1.25"UVBANJO-2010
8A1260	STRAINER 1"-T THREADED W/100M
8A1261	BODY 1"-T STRAINER THREADED
8A1262	SCREEN 80 MESH HD 1"-T THREADD
8A1262B	SCREEN 100 MESH HD 1"-T THRDD
8A1263	GASKET VITON 1/1.25/1.5" THRDD
8A1265	BOWL BLACK 1/1.25/1.5" THRDD
8A1269	REG VALVE 1" POLY FLNGD 360DEG
8A1272	JET AGITATOR 3/4" MPT BLUE
8A1273	JET AGITATOR 3/4"MPT HYPRO
8A1274	CONSOLE ONLY RAVEN SCS-205
8A1279C	HOOKUP CABLE 205 12' 3-WIRE
8A1281	GAUGE LINE FITTING 1/4" MPT
8A1281B	GAUGE LINE FITTING 1/4" FPT
8A1282	GAUGE LINE UNION RAVEN
8A1285	CABLE EXT 12' MECH 205 RAVEN
8A1286	GAUGE ONLY RVN SCS-205 200PSI
8A1286R	O-RING RVN SCS-205 LIQUID GAGE
8A1287	GAUGE ONLY RAVEN SCS-203
8A1297	MNT BRCKT RAVEN SCS-205
8A1299B	PRESSURE GAUGE 0-200 PSI GLY
8A1300A	PRESSURE GAUGE 0-200PSI 4" GLY
8A1301	PRSSR CG 0-200PSICLY PNLMT 4"
8A1309	TANK CLEAN H2O W/TOP BIN 95-
8A1312	TANK 70 GAL SDMNT YEL PLY W/SM
8A1312A	8" PROCAP TANK LID
8A1312G	TANK 70 GAL SDMNT GRY PLY W/SM
8A1313	TANK 150GAL POLY YELW/SUMP ACE
8A1315	TANK 200 GAL POLY RINSE -08
8A1315A	TANK 200GL POLYYLW/SMP ACE 08-
8A1325	TANK 500 GAL 48" RND 3 PNT
8A1328	TANK 500 GAL ELLIPTICAL 2PNT
8A1329	TANK 750 GAL ELLIPTICAL 2PNT
8A1331	TANK 1000GAL CROPCARE 96-04
8A1331N	TANK NARROW 1000 GAL CROPCARE
8A1331NG	TANK NARROW 1000 CROPCARE GRY
8A1331T	TANK TAPERED 1000 GAL CROPCARE
8A1331TG	TANK TAPERED 1000 CROPCARE GRY
8A1332	TANK 1000 GAL ELLIPTICAL -01
8A1333	TANK 1500 GAL WILGER 96-03
8A1334	TANK TAPERED 1500 GAL CROPCARE
8A1334G	TANK TAPERED 1500 CROPCARE GRY
8A1335	TANK NARROW 1500 GAL CROPCARE
8A1335G	TANK NARROW 1500 CROPCARE GRY
8A1335N	TANK NARROW 1650 GAL CROPCARE
8A1335NG	TANK NARROW 1650 CROPCARE GRY
8A1336	TANK TAPERED 1650GAL CROPCARE
8A1336G	TANK TAPERED 1650 CROPCARE GRY

<u>Stock #</u>	<u>Description</u>
8A1337B	COVER 10" W/VENT
8A1337C	VENT 10"
8A1337D	FILLWELL RING 10"
8A1338	COVER 12" W/VENT & RING 08-
8A1346	STRAINER BASKET 16"
8A1400	BANJO 3/4" FITTING COMPLETE
8A1402	FLANGE GASKET M200 EPDM
8A1404	BANJO 1-1/4" FITTING COMPLETE
8A1405	FLANGE GASKET M220 EPDM
8A1410	BANJO 2" FITTING COMPLETE
8A1412	FLANGE GASKET M300 EPDM
8A1413	BANJO 2" ANTI-VORTEX NO SCREEN
8A1414	BANJO 3" FITTING COMPLETE
8A1445	SEAL 16" ARAG HINGED COVER
8A1445A	SEAL 12" ARAG HINGED COVER
8A1446	16" HINGD CVR LESS HANDL HYPRO
8A1447	16" HINGED LID COMPLETE
8A1447A	O-RING FOR ARAG ARM
8A1447B	ARM RED 16" ARAG HINGED COVER
8A1447C	FLYNUT ARAG 2"
8A1447D	ARM RED 12" ARAG COVER
8A1447E	BAFFLE 16" ARAG HINGED COVER
8A1448	RING 16" HINGD FILLWELL HYPRO
8A1450	PIN HINGED COVER
8A1451	HANDLE (BANJO) 1" BLTD BV03-
8A1452	STEM (BANJO) 1" BLTD BV 03-
8A1453	BODY (BANJO) 1" BLTD BV 03-
8A1455	VALVE KIT (BANJO) 1" BLTDBV03-
8A1456	STEM O-RING (BANJO) 1" 03-
8A1457	VLV BALL(BANJO) 1" BLTDBV03-
8A1458	BDY ORING 1" BANJO BLTDBV03-
8A1460	HANDLE (BANJO)3/4&1"3W BV98-
8A1462	BODY (BANJO) 3/4"3WAY BV98-
8A1464	BLLSEAT(BANJO)3/4&1"3W BV98-
8A1467	BODY (BANJO) 3/4"BLTD BV98-
8A1469	VLV KIT(BANJO)3/4"BLTD BV98-
8A1472	BODY (BANJO) 1" 3-WAY BV98-
8A1479	SPARE PARTS KIT 1"BLTD BV95-
8A1480	HANDLE (BANJO)1-1/4"3W BV98-
8A1482	BODY (BANJO) 1-1/4"3W BV98-
8A1483	END CAP(BANJO)1-1/4"3W BV98-
8A1494	HANDLE (BANJO) 3"3-WAY BV14-
8A1495	HANDLE (BANJO) 2"3-WAY BV98-
8A1496	STEM (BANJO) 2" 3-WAY BV98-
8A1497	BODY (BANJO) 2" 3-WAY BV98-
8A1499	BLLSEAT(BANJO) 2"3-WAY BV98-
8A1502	BODY (BANJO) 2" BLTD BV
8A1503	END CAP(BANJO) 2" BLTD BV
8A1504	VLV KIT(BANJO) 2" BLTD BV
8A1600	VALVE 1" ELEC BOOM FLNGD RAVEN
8A1600A	MOTOR ASSY RAVEN MANIFOLD VLV
8A1600B	BODY RAVEN MANIFOLD VLV
8A1600C	O-RING RAVEN MANIFOLD VLV OTLT
8A1600D	OUTLET RAVEN MANIFOLD VLV
8A1600E	SEAT KIT RAVEN MANIFOLD VLV
8A1601	1" RAVEN TRPL BM VALVE W/CON
8A1602	1" RAVEN FIVE BM VALVE W/CON
8A1729	MOUNTING BRCKT BALL VLV 90

Stock #	Description	Stock #	Description
8A1733	HANDLE(BANJO) 2" BLTD BV	8A2017	ELBOW 1" HB X 3/4" MPT
8A1735	BALL VALVE 2" 3WAY SIDELOAD	8A2018	TEE 3/4"MPT X 1"HB X 1"HB A&M
8A1738	BALL VALVE 3" BTTM LD BLD	8A2020	TEE 1.5HBX1.5HBX1.5HB A&M
8A1740	BALL VALVE 3" STUBBY	8A2022	ELBOW 3/4" HB X 1" MPT
8A1742	BALL VALVE 3" STUBBY DBLFLNG	8A2025	BARB HOSE 1" X 1" MPT
8A1752	COUPLER 2" CAMLOCK X 2" HB	8A2031	BARB HOSE 1-1/4" X 1-1/4 MPT
8A1753	COUPLER 2" CAMLOCK X 2" 90*HB	8A2032	STREET ELBOW 1"
8A1756	ADAPTER 2" CAMLOCK X 2" MPT	8A2033	AGITATOR TEE 99-
8A1757	ADAPTER 2" CAMLOCK X 2" FPT	8A2033B	AGITATOR TEE EXTENSION
8A1760	CAP COUPLER 2" CAMLOCK	8A2037	BARB HOSE 1" X 3/4 MPT
8A1762	CAP COUPLER 3" CAMLOCK	8A2039	TEE 1-1/4"
8A1765	3" FEMALE CPLR 2" MALE ADPTR	8A2043	PLUG 1/4" (A&M)
8A1813	SPEED SENSOR EXTENSION 24'	8A2045	PLUG 1-1/4"
8A1825	GPS SPEED SENSOR 4 HERTZ	8A2047	REDUCING COUPLING 1 X 3/4"
8A1828	GEARTOOTH SPEED SENSOR RAVEN	8A2048	PIPE COUPLING 1"
8A1829	CABLE GPS SPEED RS232 9PIN 3'	8A2048A	PIPE COUPLING 1" SWIVEL 99-
8A1830	REG VALVE 1" POLY FLANGED	8A2048B	PIPE COUPLING 1.25"
8A1832	REG VALVE 1.5" POLY FLANGED	8A2048C	PIPE COUPLING 1.5"
8A1846	FLOWMETER 60GPM POLY	8A2049	PIPE COUPLING 1" SS 96-
8A1847	SENSOR ASSY EXTRNL 60P FLWMTR	8A2052	NIPPLE 2"
8A1848	FLOWMETER 100GPM POLY	8A2053	STREET ELBOW 1-1/4"
8A1892	ISO-BODY KIT 1"	8A2058	BUSHING 2 X 1-1/2"
8A1893	ISO-BODY KIT 1-1/2"	8A2059	STREET ELBOW 45*X 2"
8A1904	NORTH MAGNET ASSY RED	8A2060	BARB HOSE 1-1/2"
8A1905	SOUTH MAGNET ASSY BLACK	8A2062	BARB HOSE 2"
8A1914	SWITCH ASSY MAGNET RAVEN	8A2063	STREET ELBOW 45*X 3"
8A1920	SWITCH BOOM 203/205	8A2066	BARB HOSE 1-1/4" X 1" MPT
8A1922	SWITCH MASTER 203/205	8A2079	PLUG ADAPTER 1" CAMLOCK
8A1923	SWITCH MASTER 440/450	8A2084	COUPLER 3/4"CAMLOCK X 3/4"MPT
8A1924	SWITCH BOOM 450 ONLY	8A2085	GASKET 3/4" COUPLER
8A1925	SWITCH POWER 440/450	8A2086	ADAPTER 3/4"CAMLOCK X 3/4" MPT
8A1926	SWITCH MAN/AUTO 440/450	8A2087	COUPLER 1" CAMLOCK X 1"MPT
8A1928	SWITCH PRESSURE ADJUST 203/205	8A2088X	GASKET 1" CAMLOCK COUPLER
8A1929	SWITCH PRESSURE ADJUST 440/450	8A2093	COUPLER 1" CAMLOCK X 1" FPT
8A1930	MOUNTING BRACKET 4400/VIPER	8A2095	COUPLER 1.5"CAMLOCKX1.5"90*HB
8A1931	MOUNTING BRACKET 440/450	8A2098	ADAPTER 1.5"CAMLOCK X 1.5"FPT
8A1932	KNOB 203/205	8A2103	BARB HOSE 3/4 X 1" MPT
8A1933	KNOB 440/450	8A2106	ELBOW 1" 90*
8A1934	KNOB TIPLFT TRUCKSPRYR 11-	8A2110	ELBOW 1" HB X 1 MPT
8A1935	FUSE HOLDER 440/450	8A2112	ELBOW 1-1/4"HB X 1-1/4" MPT
8A1941	FUSE AGC 20 AMP	8A2114	ELBOW 1-1/2"HB X 1-1/2" MPT
8A1949	CABLE FLOWMETER/PRESSURE 6'	8A2115	ELBOW 1-1/2"HB X 2"MPT
8A1954	TUBING GAGE LINE 1/4"OD PER FT	8A2116	ELBOW 2" HB X 2" MPT
8A1964	OUTER CASE SCS-205	8A2117	MENDER HOSE 1/4"
8A2000	NIPPLE 1-1/4"	8A2122	MENDER HOSE 3/4"
8A2001	NIPPLE 1"	8A2123	MENDER HOSE ELBOW 3/4" (A&M)
8A2001B	BUSHING 1 X 1/2"	8A2124	MENDER HOSE 1"
8A2003	NIPPLE 3/4"	8A2127	TEE HOSE BARB 3/4"
8A2004	TEE 1"	8A2128	REDUCING NIPPLE 1 X 3/4"
8A2005G	TEE 3/4"MPT X 3/4"HB X 3/4"HB	8A2130	REDUCING NIPPLE 1-1/4 X 1"
8A2006	BARB HOSE 1/2" X 3/4 MPT	8A2131	REDUCING NIPPLE 1-1/2 X 1"
8A2007	BARB HOSE 3/4" X 3/4 MPT	8A2132	REDUCING NIPPLE 1-1/2 X 1-1/4"
8A2008	STREET ELBOW 3/4"	8A2135	REDUCING NIPPLE 2 X 1-1/2"
8A2009	ELBOW 3/4" HB X 3/4 FPT	8A2137	PIPE CAP 3/4" FPT
8A2010	ELBOW 1/2" HB X 3/4 FPT	8A2138	PIPE CAP 1" FPT
8A2011	NIPPLE 3/4" X 4"	8A2140	PIPE CAP 1"FPT + 1/4 MPT
8A2013B	PLUG 1"	8A2140A	PIPE CAP AL 1"FPTX1/4MPT
8A2015	ELBOW 3/4" HB X 3/4 MPT	8A2152	EXPRSS CLAMP, HRDWR, & O-RINGS

<u>Stock #</u>	<u>Description</u>	<u>Stock #</u>	<u>Description</u>
8A2154	EXPRSS END BODY W/PLUG	8A2308H	CAP 1"-T FLNGD STRNR TJET 04-
8A2156	EXPRSS 1" UNVRSL FLNG STRT	8A2309	SCREEN 100 MESH GREEN FLNGD1"T
8A2158	EXPRSS 1" HB STRAIGHT	8A2310	SCREEN 50 MESH RED FLNGD 1"T
8A2160	EXPRSS 1" HB ELBOW	8A2312	FLANGE CROSS M100
8A2162	EXPRSS 1" MALE CAM LOCK	8A2314	FLANGE CROSS M220 FULL PORT
8A2203	RAVEN SCS-205 CONTROL L/VALV	8A2316	FLANGE CROSS M300
8A2218	FLANGE GASKET DRAIN M200 EPDM	8A2317	FLANGE ELBOW 45 M220
8A2219	FLANGE FOOT GSKT M200EDPM	8A2317A	FLANGE ELBOW 45 M300
8A2220	FITTING 1.25X1.5 POLY BTMDRAIN	8A2318	FLANGE ELBOW 90 M100
8A2224	FLANGE DRAIN MBF200 BOTTOMTANK	8A2319	FLNG ELBOW 220FP SWP 90 10-
8A2226	FLANGE DRAIN MBF300 BOTTOMTANK	8A2320	FLANGE ELBOW 90 M220 FULL PORT
8A2232	FLANGE CLAMP FC100 WORM SCREW	8A2321	FLANGE ELBOW 90 SHORT M200
8A2233	FLANGE CLAMP FC200 WORMSCRW 52	8A2321A	FLANGE ELBOW 90 SWEEP M200
8A2234	FLANGE CLAMP FC220 WORMSCRW 56	8A2322	FLANGE ELBOW 3" 90
8A2235	FLANGE CLAMP FC300 WORM SCREW	8A2323	FLANGE SWEEP ELBOW 3" 90
8A2238	FLANGE GASKET M100 EPDM	8A2324	FLANGE REDUCER M200 X M100
8A2249	FLANGE ELBOW 45 M300 X 3"HB	8A2325	FLANGE REDUCER M220 X M200
8A2250	FLANGE ELBOW 90 M100 X 3/4"HB	8A2328	FLANGE REDUCER M300 X M220
8A2251	FLANGE ELBOW 90 M100 X 1" HB	8A2330	FLANGE PLUG M100
8A2253	FLANGE ELBOW 90 M200 X 1" HB	8A2331	FLANGE PLUG M200
8A2254	FLANGE ELBOW 90 M200 X 1.25"HB	8A2331A	FLANGE PLUG M200 W/1/4" FPT
8A2255	FLANGE ELBOW 90M200X1.5" HB	8A2332	FLANGE PLUG M220 FULL PORT
8A2256	FLANGE ELBOW 90 M200 X 2" HB	8A2333	FLANGE PLUG M300
8A2257	FLANGE ELBOW 90 M220 X 1.5"HB	8A2335	FLANGE COUPLING M200
8A2258	FLANGE ELBOW 90 M220 X 2" HB	8A2336	FLANGE PLUG M200 W/3/4" FPT
8A2259	FLNG ELBOW 220BRB SWP 90 10-	8A2337	FLANGE COUPLING M220 FULL PORT
8A2260	FLANGE ELBOW 90 M300 X 3" HB	8A2338	FLANGE COUPLING M220 6"
8A2261	FLNG ELBOW 300BRB SWP 90 13-	8A2339	FLANGE COUPLING M300 4"
8A2262	FLANGE ELBOW 90M300X2" HB	8A2340	FLANGE M100 X 3/4" FPT
8A2269	FLANGE M200 X 1-1/4"MPT SS	8A2341	FLANGE COUPLING M300 7"
8A2271	FLANGE M200 X 1-1/2" MPT SS	8A2350	BALL VALVE FLANGE M100 (1")
8A2284	FLANGE M100 X 3/4" HB	8A2354	BALL VALVE FLANGE M200 (2")
8A2285	FLANGE M100 X 1" HB	8A2356	BALL VALVE FLANGE M220 (2"FP)
8A2288	FLANGE M200 X 1-1/4" HB	8A2367	BALL VLV FLNG3WAY2"FULLPORT SL
8A2289	FLANGE M200 X 1-1/2" HB	8A2370	FLANGE QUICK COUPLER MALE M220
8A2290	FLANGE M200 X 2" HB	8A2372	FLANGE QUICK COUPLER MALE M300
8A2291	FLANGE M220 X 2" HB FULL PORT	8A2502	TEE 1/2"MP X 1/2"HB CLN LOAD
8A2292	FLANGE M220 X 1.5"HB	8A2503B	BALL VALVE 2"M&F CLN LOAD 10-
8A2293	FLANGE M300 X 3" HB FULL PORT	8A2504	GASKET 2" BSP CLN LOAD
8A2294	FLANGE TEE M100	8A2505	DRAIN HEAD 2" CLN LOAD
8A2295	FLANGE TEE M200 X M200 X M100	8A2506	GASKET 2" CLN LOAD
8A2296	FLANGE TEE M200	8A2507	LOCKING RING CLN LOAD
8A2297	FLANGE TEE M220 FULL PORT	8A2508	BOTTLE RINSE HEAD CLN LOAD -10
8A2298	FLANGE TEE M220 X M220 X M100	8A2508A	BOTTLE RINSE PLUNGER HYPRO
8A2300	STRAINER 2"Y FLANGE W/100MESH	8A2508B	BOTTLE RINSE NOZZLE HYPRO
8A2300A	CAP FLANGE 2" Y-STRAINER	8A2509	GASKET 1" CLEAN LOAD -10
8A2300B	GASKET FLANGE 2" Y-STRAINER	8A2510	LID 12" CLEAN LOAD TANK -10
8A2300C	BODY FLANGE 2" Y-STRAINER	8A2510A	LID 12" HYPRO CLNLOAD TANK 10-
8A2300D	O-RING STRAINER DRN PLG 1.5-2"	8A2511	RINSE ASSY TANK CLN LOAD -10
8A2300E	O-RING STRAINER SCREN 1.5-2"	8A2512	VALVE 1/2" SS CLEAN LOAD
8A2301A	SCREEN 20 MESH FLNGD 2"Y STRNR	8A2513A	GASKET FOR 12" PROCAP LID
8A2303	SCREEN 50 MESH RED FLNGD2"Y	8A3000	SKID 15GAL MIX&FILLTNK 3PT&SKD
8A2304	SCREEN 100 MESH GREEN FLNGD2"Y	8A3010	BAND 15GAL MIX&FILL TNK
8A2308	STRAINER 1"-T FLNGD W/100 MESH	8A3100	FLOAT 9/16 X 2" SIGHT TUBE
8A2308D	HEAD 1"-T FLNGD STRNR TJET 04-	8A4005	HOSE 1/4" EPDM AG 200PSI BLACK
8A2308E	GASKET 1"T FLNG STRNR TJET 04-	8A4008	HOSE 1/2" EPDM AG 200PSI BLACK
8A2308F	BOWL 1"-T FLNGD STRNR TJET 04-	8A4010	HOSE 3/4" EPDM AG 200PSI BLACK
8A2308G	GASKET 1"-T FLNG STRNR TJET04-	8A4014	HOSE 3/4" PVC YELLOW 600#SPRAY

Stock #	Description	Stock #	Description
8A4015	TUBING 3/4" CLEAR VINYL	8D0730	URETHANE CUSHION PERFCTHTCH
8A4020	HOSE 1" EPDM AG 200PSI BLACK	8D0745B	HITCH PC WELDD W/BSH CAT.5 14-
8A4025	HOSE 1.25" EPDM AG 150PSI BLCK	8D2460	SAFETY CHAIN 20200# 3/8" X 4'
8A4026	HOSE 1.5" EPDM AG 200PSI BLACK	8D2470	SAFETY CHAIN 30400# 7/16" X 5'
8A4028	HOSE 2" EPDM AG 200PSI BLACK	8D3150	U-BOLT 1/2 X 3 X 7-1/4" SQ
8A4030	HOSE 1.25" FERTILIZER	8D3152	U-BOLT 1/2 X 3-3/8 X 7-1/4" SQ
8A4032	HOSE 1.5" FERTILIZER	8D3212	MALE TIP 3/4"-16 ORB ISO
8A4035	HOSE 2" FERTILIZER	8D3214	MALE TIP 3/4"-16 ORB FLT FACE
8A4037	HOSE 3" FERTILIZER	8D4024	CLAMP CABLE 1/4" MALLEABLE 84-
8A4042	ADHESIVE BACKED CLAMP 5/8"	8D4026	THIMBLE CABLE 1/4" HVYDUTY 84-
8A4044	CABLE CLAMP BLACK NYLON 7/8"	8D8490	PIONEER/ISO TIP HLDR BNT 97-
8A4046	1" ID RUBBER GROMMET 1.4" OD	8D8500	HYD HOSE HOLDER PNTD BLK 91-
8A4048	NYLON TIE .18 X 11"	8D8521U	JACK SPOOL 3 X 2.56- 2-1/2" 00-
8A4050	NYLON TIE .30 X 8-7/8"	8D8523	JACK 8000# DROPLEG 5/8X4.25PIN
8A4052	NYLON TIE .30 X 15.25"	8D9090	HYD CYL 2.5 X 14" ULT PRNC 99-
8A4054	NYLON TIE .30 X 24" BLK	8D9092	SEAL KIT PRINCE 8D9090/BA-0671
8A4270	440/RADAR INTERFACE DICKEYJOHN	8D9093	HYD CYL 3 X 14" ULTRA PRINCE
8A4272	440/RADAR INTERFACE CASE-IH	8D9094	SEAL KIT PRINCE 8D9093/BE-0454
8A4274	RADAR INTERFACE JD 7-8-9000SER	8D9095	HYD CYL 1.5 X 4" ULTRA/LR PRNC
8A4276	RADAR INTERFACE JD 30 SERIES	8D9107	SEAL KIT PRINCE 8D9109/BG-0341
8A4335	CABLE CONSOLE SCS-450 97-	8D9108	ROLL PIN 1/4 X 2" ZINC
8A4336	CABLE CONSOLE SCS-4400 15'	8D9109	HYD CYL 4 X 6" BLK ULTRA
8A4340	CABLE EXTENSION 12' SCS-450 97-	8D9110	HAIRPIN CLIP LARGE (1" CYL PIN)
8A4345	CABLE FLOW 6' SCS-450 97-	8D9111	SEAL KIT PRINCE 8D9112/BA-0669
8A4347	CABLE FLOW SCS-4400 12' 5BOOM	8D9112	HYD CYL 3 X 6" ULT 99-
8A4348	CABLE FLOW SCS-4400 12' 10BOOM	8D9121	HYD CYL 2.5 X 30" ULT 99-
8A4350C	VALVE ADVANCE CHIP FOR 450	8D9122	SEAL KIT PRINCE 8D9121/BA-0670
8A4350P	CONSOLE RAVEN SCS-450 GPS97-	8D9213	SEAL KIT PRINCE 8D9215/BA-0672
8A4351	CONSOLE RAVEN SCS-4400 03-	8D9215	HYD CYL 3 X 16" 26.5" C-C ULT
8A4355	TRANSDUCER CABLE 44'	8D9215A	CYLINDER CLEVIS FOR 8D9215
8A4356	CONSOLE TO TRANSDUCER CABL 10'	8D9215B	PISTON ROD BA0672 1.375X17"
8A4358	ELECTRONIC PRESSURE TRANSDUCER	8F0540	TANK 350 GAL LOPRO-REAR SUMP
8A4400	SMARTBOOM CONTROLLER PKG 12-	8F0570	TANK 500 GAL LOPRO-CNTR SUMP
8A4402	SMARTBOOM CABLE KIT 4400 12-	8F1810	SPRING CONTROL SWNG ARM PNTD
8A4404	SMARTBOOM CABLE KIT 450 12-	8F3116	O-RING SPRAYBALL SEAL
8A4471	MOUNTING BRCKT FLOWMETER	8F3117	EXTENSION 2-1/2" SPRAYBALL
8A4480	ULTRAGLIDE CONTROL NODE	8F3118	SPRAY BALL TANK RINSE 1" FPT
8A4826	PHOENIX 50 GPS RCVR W/PWR CBL	8F3120	SPRAY NOZ TANK RINSE 3/4"
8C0270	SPLITSTEELBUSH 1.375X 1" ID- 1"	8F3305	CLAMP NOZZLE 1-1/4" SQUARE
8C0600	BREATHER BRONZE 1/2" NPT	8F3308	BLANK PLUG TIP BRASS
8C1700	U-BOLT 3/8 X 2 X 4-7/8" SQ	8F3324	SCREEN 50 MESH TEEJET RED POLY
8C1710	U-BOLT 3/8 X 8 X 9" SQ	8F3326	SCREEN 100MESH TJET GREEN POLY
8C1718	U-BOLT 1/2 X 2-5/8 X 2-5/8" SQ	8F3411X	TIP TEEJET XR 8001VS ORANGE
8C1720	U-BOLT 1/2 X 2-5/8 X 3-3/4" SQ	8F3413A	TIP/CAP COMBO AIC110015VS GRN
8C1736	U-BOLT 1/2 X 4-1/4 X 5-1/4" RND	8F3413C	TIP/CAP COMBO XRC80015VS GRN
8C1740	U-BOLT 1/2 X 4-1/4 X 7-1/4" RND	8F3415A	TIP/CAP COMBO AIC11002VS YLLW
8C1751	U-BOLT 3/4 X 3-1/16 X 6" SQ	8F3415C	TIP/CAP COMBO XRC8002VS YLLW
8C1752	U-BOLT 3/4 X 3-1/16 X 7-1/2" SQ	8F3417C	TIP/CAP COMBO XRC8003VS BLUE
8C1755	U-BOLT 3/4 X 6-1/16 X 6" SQ	8F3419C	TIP/CAP COMBO XRC8004VS RED
8C1760	U-BOLT 3/4 X 8-1/16 X 6" SQ	8F3421C	TIP/CAP COMBO XRC8005VS BRWN
8C1780	U-BOLT 7/8 X 8-1/16 X 10" SQ	8F3423C	TIP/CAP COMBO XRC8006VS GRAY
8C1900	CLAMP 1/2" WIRE ROPE	8F3425X	TIP TEEJET XR 8008VS WHITE
8D0330	U-BOLT 5/8 X 6-1/16 X 5-5/8" SQ	8F3511T	TIP TEEJET TT 11001VP ORANGE
8D0340	U-BOLT 3/4 X 4-1/16 X 7-3/4" SQ	8F3511X	TIP TEEJET XR 11001VS ORANGE
8D0350	U-BOLT 3/4 X 4-1/16 X 10" SQ	8F3513T	TIP TEEJET TT 110015VP GREEN
8D0720	HITCH PIECE CAST CAT.3CTD PNTD	8F3513X	TIP TEEJET XR 110015VS GREEN
8D0722	PERFECT HTCH BACKSTOP W/HDWE	8F3515T	TIP TEEJET TT 11002VP YELLOW
8D0724	CLEVIS OPT.HITCH CAT.3CTD99-	8F3515X	TIP TEEJET XR 11002VS YELLOW

Stock #	Description
8F3516A	TIP/CAP COMBO AIC110025VS PURP
8F3516C	TIP/CAP COMBO XRC110025VS PURP
8F3517A	TIP/CAP COMBO AIC11003VS BLUE
8F3517C	TIP/CAP COMBO XRC11003VS BLUE
8F3517T	TIP TEEJET TT 11003VP BLUE
8F3519C	TIP/CAP COMBO XRC11004VS RED
8F3519T	TIP TEEJET TT 11004VP RED
8F3521C	TIP/CAP COMBO XRC11005VS BRWN
8F3521T	TIP TEEJET TT 11005VP BROWN
8F3601	CAP BLACK FLOODJET Q-JET
8F3819	NOZZLE INLET EXTENSION
8F3820	NOZZLE 3 HEAD PIN WHEEL 1"PIPE
8F3822	NOZZLE 5 HEAD PIN WHEEL 1"PIPE
8F3826	NOZZLE 3 HEAD TURRET 1" PIPE
8F3830	NOZZLE 1 HEAD QUICKJET 1" PIPE
8F3860	NOZZLE BLOCK OFF COVER HYPRO
8F3861	CAP BLACK TEEJET Q-JET
8F3887A	O-RING HYPRO PIN WHEEL NOZZLE
8F3887C	CLIP HYPRO PIN WHEEL NOZZLE
8F3887D	SEAL KIT INTRNL HYPRO PNWHL
8F3888B	SHUT OFF CAP NW HYPRO 10PSI
8F3888C	SHUT OFF CAP NW HYPRO 20PSI
8F3888D	SHUT OFF CAP NW HYPRO 25PSI
8F3890	DIAPHRAGM EPDM HYPRO SHUTOFF
8F3891	SCREW&NUT CLMP HYPRO PNWNZ
8F3892	GASKET EPDM Q-JET TIP SEAT
8F3896	DIAPHRAGM EPDM RUBBER Q-JET
8F3913	STREET ELBOW 1/4" BRASS
8F3913A	STREET TEE 1/4" BRASS
8F3914	FEMALE ELBOW 1/4" BRASS
8F3915	NIPPLE 1/4" BRASS 91-
8F3915A	NIPPLE 1/8" BRASS
8F3917	BARB HOSE 1/4 X 1/8" MPT BRASS
8F3917A	ELBOW 1/4" HB X1/8" MPT BRASS
8F3917C	QUICK DISCONNECT COUPLER 1/4HB
8F3917D	QUICK DISCONNECT ADAPTER 1/8MP
8F3918	VALVE 1/4" M-NPT BRASS
8F3918A	VALVE 1/4"FPT X 1/4"MPT BRASS
8F3919	VALVE 1/8" F-NPT CHROMD BRASS
8F3919A	DRAIN COCK 1/8" MPT BRASS
8F3919D	VALVE 1/2"MPT X 1/2"FPT CHROME
8F3919F	VALVE 1/8"FPT X 1/8"MPT CHROME
8F3920	SWIVEL NOZZLE SINGLE Q-JET
8F3921	BUSHING BRASS1/8"FPT X 1/4"MPT
8F3922	BARB HOSE 1/2"X1/2" MPT BRASS
8F3923	ELBOW 1/2" HB X 1/2" MPT BRASS
8F3930	TIP TEEJET OFF-CNTR OC02 BR
8F3932	TIP TEEJET OFF-CNTR OC03 BR
8F3934	TIP TEEJET OFF-CNTR OC04 BR
8F3936	TIP TEEJET OFF-CNTR OC06 BR
8F3938	TIP TEEJET OFF-CNTR OC08 BR
8F3940	TIP TEEJET OFF-CNTR OC12 BR
8F3942	TIP TEEJET OFF-CNTR OC16 BR
8F5360	PUMP ONLY 1.5 X 1.25" GAS ENG
8F5362	PUMP ONLY 1.5 X 1.5" GAS ENG
8F5364	PUMP ONLY 2 X 1.5" GAS ENGINE
8F5366	PUMP ONLY 2 X 2" SP GAS ENGINE
8F5374	SEAL VITON FG460V5 SCOT

Stock #	Description
8F5376	O-RING CASING 420&460 SCOT
8F5378	FLINGER FG460V5 SCOT
8F5382	SHAFT SLEEVE FG460V5 SCOT
8F5386	IMPELLER FG460V5 SCOT
8F5390	REPAIR KIT VITON FG420V8 SCOT
8F5391	SEAL ONLY VITON FG420V8 SCOT
8F5392	IMPELLER FG420V8 SCOT
8F5393	CASING FG420V5 SCOT
8F5394	ADAPTER FG420V5 SCOT
8F5756	ENGINE 5.5HP HONDA ROPE START
8F5756E	ENGINE 5.5HP HONDA ELEC START
8F5760	ENGINE 8HP HONDA ROPE START
8F5761	ENGINE 9HP HONDA W/CYCLONE
8F5761E	ENGINE 9HP HONDA ELEC START
8F8710	SPRAY GUN GUNJET #2-45-BR
8F8712	RINSE GUN GUNJET 43L-AL-8
8F8712A	ALUMINUM INLET BODY WASH GUN
8F8754	ORIFICE DISK(AH-HSS 45)HANDGUN
8F8790	SWIVEL CONNECTOR 3/4" GHT
8F8792	SWIVEL CONNECTOR 1/2" MXF-NPT
8F9274N	FITTING 1/2 HB X GHT M POLY
8F9410	HOSE APPLICATOR 3/8" PER FT
8F9810	TANK 25 GALLON FOAM
8F9812	PUMP FOAM MARKER
8F9814	COMPRESSOR HIGH VOLUME
8F9816	COLLECTOR BOOT FOAM MARKR
8F9818	COLLECTOR SOCK FOAM MARKR
8F9820	FOAM CHAMBER FOAM MARKER
8F9822	CHAMBER MOUNTING BRACKET
8F9826	FILTER WHITE COMPRESSOR
8F9830	6" SQUARE COMPRESSOR FILTER
8F9832	NEEDLE VALVE FOAM MARKER
8F9834	HOSE 1/4" CLEAR
8F9836	FILTER IN TANK SUCTION
8F9838	SOLENOID 3-WAY FOAM MARKER
8F9840	HARNESS W/SWITCH FOAM MARKR
8F9841	CABLE 15' EXTENSION FOAM MRKR
8F9842	SWITCH ONLY FOAM MARKER
8F9844	"Y" HOSE ASSY FOAM MARKER
8F9850	MNT BRCKT SWTCH FOAM/REMOTE01-
8G0007	FLAT 3/8X2- 15.38" L ULT 05-
8G0012	BRACKET SPRAYER BV MNT 07-
8G0013	FLAT .38X1.5- 20" SNSRBRKT 08-
8G0014	STRIKER ROD 1.25X7.5" PNTD99-
8G0015	COVER NORAC SENSOR BLK 08-
8G0024	TUBE 2 X IID- .56" SPACER 08-
8G0028	FLAT .31 X 2 X 10.75" SPACR12-
8G0030	L SHAPED HOSE BRACKET 13-
8G1830	HOOK HOSE HAND GUN 1/2 X 13.5"
8G2016	BREAKAWAY BOOM W/TUBE GREEN
8G2023	BREAKAWAY CAST CNTR W/FLAT4.5"
8G2027	BRKAWAY CAST CNT W/FLT ADJ4.5"
8G2041	SPRING BFSA HD 1.6 X 16" GALV
8G2050	SPRING 1.6"ID X 4.4" COMP PNTD
8G2055	SPRING 1.6"ID X 6" COMP PNTD
8G2060	WASHERGUIDE SPRING .75"ID 84-
8G2080	RUBBER ENGINE MNT 1.5"OD W/HL
8G2160	SWING ARM (3/4"ID) 83-

<u>Stock #</u>	<u>Description</u>	<u>Stock #</u>	<u>Description</u>
8G2200	JACK LEG SKID SPRAYER 83-	8J5800	3/8" FPT X #6 JIC (F-SW) STR
8G2240	SPACER BLOCK SKID KNOCKON89-	8J5810	1/2" FPT X #10 JIC(F-SW) STR
8G2280	VALVE BRCKT SKID BTTMFL 85-	8J5980	9/16"-18ORB M X 3/4"-16ORB F
8G2281	NYLON TIE .187 X 7-1/2" BROWN	8J6000	9/16"-18 ORB X #6 JIC(M)90*ADP
8G2282	NYLON TIE .187 X 7-1/2" RED	8J6002	9/16"-18ORB X #6 JIC(M)BRNCH T
8G2283	NYLON TIE .187 X 7-1/2" ORANGE	8J6004	9/16"-18ORB X #6 JIC(M)RUN TEE
8G2284	NYLON TIE .187 X 7-1/2" YELLOW	8J6010	3/4"-16 ORB X #6 JIC(M)90*ADP
8G2285	NYLON TIE .187 X 7-1/2" GREEN	8J6020	3/4"-16 ORB X #10 JIC(M)90*ADP
8G2286	NYLON TIE .187 X 7-1/2" BLUE	8J6030	7/8"-14 ORB X #10 JIC(M)90*ADP
8G2380	CONTROL BOX LESS COVER TL/EEN	8J6060	3/4"-16ORB X #6JIC(F-SW)90*ADP
8G2384	COVER TIPLIFT CONTROL BOX	8J7000	BALL VALVE HYD 9/16"-18ORB(2X)
8G2390	MNTNG BRCKT TIPLIFT CONTRL BOX	8J7040	THERMAL RELIEF MANIFLD 4000PSI
8G2540	CORRUGATED LOOM .50" ID	8J7110	CHECKVLV TNK 7/8-14ORB ML/FML
8G2542	CLIP CORRUGATED LOOM	8J7116	3/4"-16 ORB(2X)1WAY 1/16"RESTR
8G2544	OUTLET CORRUGATED LOOM	8J7216	#6JIC(M)X6JIC(F)1/16"RSTR BLKZ
8G4224	SWINGARM CNTRL 1.25"SQ 83-	8J7250	RELIEF VLV 2250PSI 9/16"-18ORB
8G4230	TEE HANDLE 7/16"NC 83-	8K1109	SPINDLE W/H1010 15K 3.38"03-
8G4280	END STOP TUBE ASSY 83-	8K1110A	SPINDLE W/H1020 25K BLK 13-
8G5160	BASE CNTRL SWNGARM MIDMNT90-	8K5350	SPLITSTEELBUSH 2" X 1.5"ID- 2"
8G5185	VERTICAL UPRIGHT ASSY LT 95-	8K5400	SPLITSTEELBUSH 4 X 3.5ID- 1.5"
8G5195	VERTICAL UPRIGHT ASSY RT 95-	8K5505	U-BOLT 3/4 X 2-1/8 X 4-1/4" SQ
8G5200	BRCKT TRNS ADJ W/JCKATTCH 83-	8K5515	U-BOLT 3/4 X 4-1/16 X 6" SQ
8G7390	BRACKET TRUCK CLEAN H20 95-	8K5520	U-BOLT 3/4 X 6-1/8 X 7-1/2" SQ
8G8000	POLY BOOM PROTECTR FOR 1"SQ-6"	8K7209	HUB H1020 W/CUPS&ZERK 10BLT25K
8G8010	U-BOLT 3/8 X 1-5/16 X 2-1/4"SQ	8K7210	HUB H1010 W/CUPS&ZRK 10BLT 15K
8G8020	U-BOLT 3/8 X 2-9/16 X 3-1/2"SQ	8K7211	HUB H1010 W/CUPS&ZRK 10BLT 12K
8G8211	HUB HDA211 W/CUPS&ZRK 4BLT	8K7212	GASKET HUB CAP H1010
8G8213	DUST CAP H211	8K7213	HUB CAP H1010 DC27
8G8217	BEARING INNER & OUTER HDA211	8K7214	BOLT HUB CAP H1010
8G8220	SEAL H211	8K7215	STUD WHEEL 3/4-16 UNF X 2-5/8"
8G8230	RACE INNER & OUTER H211 L44610	8K7215B	STUD WHEEL 3/4-16UNF X 3.3"
8G9220	BRACKET DIRECTO/RADAR MNT93-	8K7216	NUT 3/4"-16UNF FLANGE
8H1304	SPRING HVY 1.19"ID- 2.88" PNTD	8K7217	BEARING INNER 12K H1010 39585
8J5100	#6 JIC(M) X #6 JIC(M) UNION	8K7218	BEARING OUTER 12&15K H1010 460
8J5102	#6 ORB TO 3/8" FPT ADAPTR SWVL	8K7219	BEARING INNER 15K H1010 33275
8J5104	#4 ORB(M) X #6 JIC(M) ELBOW	8K7220	SEAL 3" ID 12K H1010 SE48
8J5106	#4 HEX SOCKET ORB PLUG	8K7221	SEAL 3.3"ID 15K H1010 SE67
8J5110	#10 JIC(M) X #10 JIC(M) UNION	8K7222	NUT 3/4"-16UNF INNER BUDD
8J5150	3/8" MPT X #6JIC(M)STR ADPTR	8K7223	NUT 1-1/8"-16UNF OUTER BUDD
8J5152	#8 JIC(F) X #6 JIC(M) RDCR	8K7230	RACE INNER 12K H1010 39520
8J5170	1/2" MPT X #10 JIC(M)STR ADPTR	8K7231	RACE INNER 15K H1010 33462
8J5200	#10 JIC(F) X #6 JIC(M)HEX BUSH	8K7232	RACE OUTER 12K&15K H1010 453A
8J5298	TEE #6 SWIVELNUTRUN(M+M+F-SW)	8K7250	AXLE 12K 1010 3.0 X 12-1/8 96-
8J5300	TEE #6 JIC (MALE) 3X	8K7251	AXLE 15K 1010 3.38"X12.13 03-
8J5312	TEE #10JIC(M2X)X3/4-16ORBBRNCH	8K7252	AXLE 25K 4.5 X 12.09" 06-
8J5500	9/16"-18 ORB X #6 JIC(M) STR	8K7252A	AXLE 25K 4.5 X 12.84" 13-
8J5510	3/4"-16 ORB X #6 JIC(M) STR	8K7312	GASKET HUB CAP H1020 06-
8J5520	3/4"-16 ORB X #10 JIC(M) STR	8K7313	HUB CAP HDA 1020 06-
8J5522	3/4MPT X #10JIC(M) STR	8K7317	BEARING INNER HDA1020 25K
8J5540	7/8"-14 ORB X #10 JIC(M) STR	8K7318	BEARING OUTER HDA1020 25K
8J5550	1-1/16" - 12ORB X #10JIC(M)STR	8K7320	SEAL 4.37" ID 25K H1020 06-
8J5600	9/16"-18 ORB X #6 JIC(F-SW)STR	8K7330	RACE INNER HDA1020 25K 06-
8J5620	3/4"-16 ORB X #6 JIC(F-SW)STR	8K7332	RACE OUTER HDA1020 25K 06-
8J5680	3/4"-16 ORB X 3/4"-16ORB UNION	8K8000	STL 7K2045 3/8X3.5 PNTDLGHT09-
8J5682	3/4"-16ORB(2X)ADJUSTABLE UNION	8K8005	TUBE LGHT BRKT SHRT 1.5SQ PNTD
8J5690	3/4-16X3/4-16 ORB M-SW90*UNION	8K8010	TUBE LGHT BRCKT 1.5SQ PNTD 00-
8J5700	#6 JIC(F-SW) X #6 JIC(M)90*ADP	8K8015	TUBE LGHTBRKT 1.5SQ STR PTD11-
8J5710	#10 JIC(F-SW)X#10 JIC(M)90*ADP	8K8020	STL 12GA MNTNG BRCKT LIGHT 00-

<u>Stock #</u>	<u>Description</u>
8K8030	MODULE AG ENHNCD LGHT4PIN07-09
8K8030A	MODULE AG ENHNCDW/BRAKE6PIN08-
8K8060B	EXT HRNSS 12'6PIN DEUTSCH09-
8K8067	DUST CAP FOR 7PIN CONNECT00-
8K8070B	MAIN HRNSS 7PNLNG W/BRAKE 09-
8K8074	2ND IMP JUMP HARNESS 09-
8K8075A	EXT HRNSS NONDRAWBR DTSCH 07-
8K8080A	EXT HRNSS DRAWBAR DEUTSCH 07-
8K8088	LENS ONLY AMBER GROTE LGHT 00-
8K8090B	LIGHT LED AMBER 2WR DTSCH 12-
8K8092	LENS ONLY RED GROTE LGHT 00-13
8K8095B	LIGHT LED RED 3WIRE DTSCH 12-
8K8105A	EXT HARNESS 26'2WIRE DTSCH 07-
8K8200	BRCKT SMV ATTCH 4-8"FRAME98-
8K8202	BRCKT SMV ATTCH BNT45* LR 05-
8K8210	BRCKT W/SCKT SMV ATCH4-8"98-
8K8220	BRCKT LGHT.25X1.75-18.4" 04-
8K9102	PIN 1 X 4" CYL-FOR1/4"ROLL PIN
8K9106	PIN 1-1/4 X 4-3/8" HRDND 1/4HL
8K9108	PIN 1-1/4 X 5-1/8" HRDND 3/8HL
8L0001	TORX DRIVER BIT #40 TAMPROOF
8L0011	SWITCH ORANGE CONTROL GRIP
8L0012	SWITCH BLUE CONTROL GRIP
8L0013	SWITCH YELLOW CONTROL GRIP
8L0022	MANIFOLD VALVE BLK 5-BANK 05-
8L0024	MANIFOLD VALVE BLK 6-BANK 05-
8L0030	SWITCH SPRING TOGGL NORM-OPEN
8L0036	DOUBLE PILOT OPERATED CHECK
8L0042	VALVE ELEC/HYD 9/16"-18 05-
8L0050A	SWITCH BOX W/HRNSS ULT/RA 05-
8L0051	SWITCH NEON RED SPST 99-
8L0052	SWITCH NEON ORANGE SPST 99-
8L0053	SUCTION CUP CONTROL BOX MNT
8L0054	POWER CONNECTOR W/LEADS 99-
8L0055	BREAKER 15 AMP RESETABLE 99-
8L0056	CAP W/STRAP CNTRL GRIP PORT
8L0060	WIRING HARNESS- CART ULT 99-
8L0061	CART HARNESS W/ENHNCD LTG07-
8L0070	WIRING HARNESS-VALVE ULT 07-
8L0071A	VLVE HARNESS W/ENHNCD BRKLTG08
8L0075	HARNESS ADAPTOR WP TO DEUTSCH
8L0081	HARNESS BOOM ULT W/ENHNCD 07-
8L0082	WIRE HARNESS BOOM ULTRA 05-
8L0083	HARNESS BOOM ULTRA W/EHNCD 07-
8L0100	ACCUMULATOR PISTON TYPE
8L0104	ACCUMULATOR INNER CUSHION
8L0105	CHECK VALVE W.025 ORF #8
8L0110	CUSHION BUMPER 1.25"DIA.RED
8L0130	WELD ASSY TOUCH DOWN CRUTCH
8L0148	STL 8L0146 SAFETY LNK PNTD 07-
8L0152	STL 8L0150 3/8"FOLDLNK PNTD99-
8L0162	STL 8L0160 3/4"FOLDLNK PNTD99-
8L0170	ACCUMULATOR SADDLE 08-
8L0172	ACCUMULATOR RETAINER 08-
8L0242	SAFETY CHAIN 6400# 7MM X 42"
8L0243	SPINDLE W/211 HUB TOUCHDWN 07-
8L0246	BUSHING 2.875X2.5ID- 3" 97-
8L0247	BUSHING 2.625X2.25ID- 2.5" 99-

<u>Stock #</u>	<u>Description</u>
8L0248	BUSHING 2.125X1.765ID- 3" 96-
8L0250	BOLT 3/4-10NC X 14" WELDASSY
8L0251	WASHER 3/4"ID X 3-1/16"ODX 1/4
8L0252	WASHER 1.28"IDX4.5ODX 1/4" YZ
8L0258	U-BOLT 5/16 X 1-1/2 X 2-1/2"SQ
8L0260	U-BOLT 3/8 X 1-3/4 X 3" SQ
8L0262	U-BOLT 5/16 X 1 X 2" SQ
8L0266	U-BOLT 1/2 X 3-1/2 X 5" SQ
8L0268	U-BOLT 5/16 X 3 X 4" SQ
8L0270	SLIDE BOLT LATCH ZNC PLTD 96-
8L0272	U-BOLT 5/16 X 3 X 7" SQ
8L0300	EYEBOLT 1/2"-13NC X 1"EYE X 4"
8L0310	PROTECTOR WETBOOM 1-1/4 X 10"
8L0320	PLATE 2PNT&LR CASTER WEAR 96-
8L0400	WINDSHIELD SQ MNTG BRCKT 96-
8L0410	WINDSHIELD RD MNTG BRCKT 96-
8L0502	FLAT 1/4 X 1- 7.5" HNDL 13-
8L0510	STL 10GA BOOMBRACE FINSHD 99-
8L0512	STL 10GA PT1 & REAR BMBRC09-
8L0625	BUMPER THERMOPLASTIC
8L0626	BUMPER NEOPRENE 80DURO W/PLT
8L0630	SADDLE 1" DBL HOSE ULT/RA 02-
8L0650	SPRING BOOM SUSPEN 12" LT BLK
8L0652	SPRING BOOM SUSPEN 12" HVY GRN
8L0660	SPRING CABLE TENSION 1/2 X 24"
8L0903	TUBE EXT 1 X 21-3/8" SSTEEL
8L0906	TUBE EXT 1 X 21-3/8" ALUM 93-
8L0908	TUBE EXT 1 X 41-3/8" ALUM 93-
8L0908S	TUBE EXT 1 X 41-3/8" SSTEEL
8L0908U	TUBE PRT2 WTBM 1 X 45"ULT99-
8L0910	TUBE EXT WB 1 X 59" ALUM 93-
8L0910B	TUBE WB 1 X 49" 22"SPC 3NOZ
8L0912	TUBE EXT WB 1 X 45" SSTEEL
8L0913	TUBE WB 1 X 81.5" 22"SPCG 4NOZ
8L0920	TUBE MID WETBOOM 1 X 105"
8L0921	TUBE WB 1 X 145" 20" SPC 8NOZ
8L0921A	TUBE WB 1 X 159" 22" SPC 8NOZ
8L0922	TUBE MID WTBOOM 1X115" 22"SP
8L0923	TUBE MID WB 1 X 105" SSTEEL
8L0925	TUBE WB 1 X 145" 20"SP SS 8NOZ
8L0930	TUBE PART 2 WETBOOM 1 X 165"
8L0931	TUBE WB 1 X 143.5" 22SPC 7NOZ
8L0932	TUBE WB 1 X 167.8" 22SPC 8NOZ
8L0933	TUBE PT2 WB 1 X 165" SSTEEL
8L0940	TUBE PART 1 WETBOOM 1 X 225"
8L0942	TUBE PRT1&2 AL WTBOOM 1 X 285"
8L0943	TUBE PT1 WB 1 X 225" SSTEEL
8L0944	TUBE WB 1 X 265" 20"SP 14NOZ
8L0952	TUBE WB 1 X 264" 20"SP SS 14NZ
8L0953	TUBE PT1 WB 1 X 285" SSTEEL
8L0962	TUBE WB 39-3/8" 2NZ 22" SP 03-
8L0964	TUBE WB 71" 4NZ 22" SP 03-
8L0966	TUBE WB 141-1/2" 6NZ 22"SP 03-
8L0968	TUBE WB 1 X 190" 22"SPC 9NOZ
8L0969	TUBE WB 185-1/2" 9NZ 22"SP 03-
8L0971	TUBE WB 29-3/4" 22" SP 2NZ 04-
8L0973	TUBE WB 63-1/8" 3NZ 22" SP 04-
8L0975	TUBE WB 215-1/8 10NZ22"SP04-

Stock #	Description
8L0977	TUBE WB 252-1/4" 12NZ22"SP 04-
8L1015	SHOCK ABSORBER PAINTED 95-
8L1045	UHMW FLAT 1/4X5-11" CNTR 95-
8L1046	UHMW FLAT 1/4X5-11"W/NTCH95-
8L1052	TIVAR WEAR STRIP W/HLS 99-
8L1053	UHMW ANGL 3/8X3X3-7-1/2"R99-
8L1054	UHMW ANGL 3/8X3X3-7-1/2"L99-
8L1055	UHMW FLAT 1/4X2-1/2- 24" 99-
8L1056	UHMW DISK 3.5"ODX2.28"ID 99-
8L1060	QUICKLINK 3/8" YEL ZINC
8L1070	TURNBUCKLE 3/8" X 6" TAKE-UP
8L1110	CHAIN 5/16"GR30 PROOF Z 18.25"
8L1145	CABLE 1/4 X 161.25" SPRING 96-
8L1150	CABLE 1/4 X 219.25" SPRING 93-
8L1155	CABLE 1/4 X 342" SPRING 96-
8L1160	CABLE 1/4 X 456.5" SPRING 93-
8L1430	KIT RETROFIT PT1 PILOT CHK JIC
8L1432	KIT RETROFIT PT1 PILOT CHK NPT
8L1450A	DBL BLCKNG VLV 2WAY NC
8L1450B	DBL BLCKNG VLV 2WAY NC SMLLCOL
8L1451	BODY ONLY -8CAVITY Z-6 PORTS
8L1452B	POPPET 2WAY NC 5K DEUTSCH
8L1453	RELIEF VALVE CAVITY PLUG 2WAY
8L1454A	POPPET 2WAY NO
8L1455	SEAL KIT FOR 8L1454 & 8L1456
8L1456	SPOOL 2WAY NORMALLY OPEN PT2
8L1457	CART WATERPRF SEAL KIT METLCAP
8L1459	SPOOL 2WY NRMLLY OPN FOR ECOIL
8L1460	RELIEF DIFFERETIAL AREA POPPET
8L1462	CHECK VALVE HYD MANIFOLD ULT
8L1463	CHECK VALVE FOR BLOCKING CIRCT
8L1464	SEAL KIT FOR 8L1452A/B
8L1465	COIL NUT NOT WEATHERPROOF
8L1466	COIL NUT NOT WEATHERPROOF
8L1467	#8 PILOT PISTON W/SEALS
8L1468	SMALL CART WATERPRF SEAL KIT
8L1469	LARGE CART WATERPRF SEAL KIT
8L1470	LARGE COIL W/WPAC 12V 1.67AMPS
8L1471	#10 E-COIL 12VDC DEUTSCH 1.6A
8L1472	SMALL COIL W/WPAC 12V 1.22AMPS
8L1473	#07 E-COIL 12VDC DEUTSCH 1.4A
8L1475	MANIFOLD VALVE BLOCK BARE 5BNK
8L1476	ORFICE DISC .50D X .060"DROPIN
8L1476A	ORIFICE DSC .50D X .05" OFFSET
8L1476B	ORIFICE DISC .50D X .06" OFFSET
8L1477	ORFICE DISC .50D X .032"DROPIN
8L1477A	ORIFICE DSC .50D X .04" OFFSET
8L1478	ORIFICE DISC.50D X.032" THREAD
8L1478A	ORIFICE DSC .50D X .06" THREAD
8L1479	ORIFICE DISC ONE WAY DROP IN
8L1480	#6 SAE PLUG
8L1481	#8 SAE PLUG
8L1501	SPOOL VALVE 4WAY 2POSITION
8L1502	SEAL KIT FOR 8L1501
8L1503	POPPET VALVE 2WAY NC
8L1504	SEAL KIT FOR 8L1456/1462/1503
8L1505	SPOOL VALVE 4WAY 3POS MOTOR
8L1508	SCREW 1/4-20X2" SOCKETHEADCAP

Stock #	Description
8L1509	O-RINGS MANIFLD TO POWER UNIT
8L1519	FENNER PLASTIC RESERVOIR
8L1520	FILL CAP HYDRAULIC POWER UNIT
8L1521	SOLENOID POWER UNIT MOTOR
8L1522	MOTOR ONLY FENNER POWER UNIT
8L1523	FENNER UNIT TANK O-RING
8L1603	HYD POWER UNIT W/CNTL & E-COIL
8L1710	WP CABLE SEAL GRAY
8L1810	GROUND CABLE ASSY BLACK
8L1814	HONDA ENGINE STARTER CABLE RED
8L1815	POWER CABLE ASSY RED
8L1902	HARNESS 77'ELEC ENDNOZ WETB91-
8L1904	HARNESS 61'ELECENDNOZ WET09-
8L1907A	HARNESS UPPER PLUGIN DTSH 11-
8L1908	HARNESS LOWER WIRE DTSH 08-
8L1909	BRKT TIPLIFT CNTRL BOX 10-
8L1910A	TIPLIFT CNTRL BOX WO/HRNS 10-
8L1912	HARNESS 4.5' AGITATOR EXT09-
8L1919	HARNESS 20' BV EXTENSION 04-
8L2200	LEG 2SQ X 43.5" SCLTR&2PT 96-
8L2911	CLEANOUT PKG QUICK SINGL WETBM
8L3015	WELD ASSY CROSS BRACE SKID 95-
8L3022	VERTICAL SLIDE WETBM TRCK 95-
8L3028	TOUCHDOWN WHEEL BRCKT ULTRA07-
8L3035	PUSH BRCKT BOOM WNDSHLD 96-
8L3042	WELD ASSY CNTR BEAM TRCK 95-
8L3050	WELD ASSY LEFT CABLE YOKE 93-
8L3055	WELD ASSY RGHT CABLE YOKE 93-
8L3060	WELD ASSY LEFT BOOM PIVOT 93-
8L3065	WELD ASSY RGHT BOOM PIVOT 93-
8L3070	WELD ASSY INNER HINGE 93-
8L3075	JACK ATTCH BLT-ON WS TRCK 96-
8L3080	WELD ASSY 20' PRT1 LEFT 12N91-
8L3083	WELD ASSY 15' PRT1 LEFT 9N 96-
8L3090	WELD ASSY 20' PRT1 RGHT 12N91-
8L3093	WELD ASSY 15' PRT1 RGHT 9N 96-
8L3100	WELD ASSY LEFT MIDHING 2PT&SKD
8L3110	WELD ASSY RGHT MIDHING 2PT&SKD
8L3117	WELD ASSY 10' PRT2 LEFT 6N 93-
8L3120	WELD ASSY 15' PRT2 LEFT 9N 93-
8L3127	WELD ASSY 10' PRT2 RGHT 6N 93-
8L3130	WELD ASSY 15' PRT2 RGHT 9N 93-
8L3133	WELD ASSY BOOM EXT LEFT 1N 93-
8L3137	WELD ASSY BOOM EXT LEFT 2N 93-
8L3140	WELD ASSY BOOM EXT LEFT 3N 91-
8L3143	WELD ASSY BOOM EXT RGHT 1N 93-
8L3147	WELD ASSY BOOM EXT RGHT 2N 93-
8L3150	WELD ASSY BOOM EXT RGHT 3N 91-
8L3160	TRANSPRT LOCK LEFT TRUCK 93-
8L3170	TRANSPRT LOCK RGHT TRUCK 93-
8L3191	PUMP MNT FLAT.5X7- 10.25" 94-
8L3200	WELD ASSY LEFT BOOM LATCH 93-
8L3210	WELD ASSY RGHT BOOM LATCH 93-
8L3220	LEFT BOTTOM BREAKAWAY ASSY 93-
8L3230	RGHT BOTTOM BREAKAWAY ASSY 93-
8L3240	BRCKT SKID HOLD DOWN 92-
8L3280	WELD ASSY LEFT BOX LOCK 93-
8L3285	WELD ASSY RGHT BOX LOCK 93-

<u>Stock #</u>	<u>Description</u>	<u>Stock #</u>	<u>Description</u>
8L3290	WELD ASSY TRNSPRT LOCK EXT 93-	8L4677	PART 3 RDBOOM 20' RGHT 07-
8L3300	WELD ASSY LEFT REARBOOM ADJ93-	8L4679	WIDE SWNGNG CNTR WLDMNT 05-
8L3310	WELD ASSY RGHT REARBOOM ADJ93-	8L4682A	PT 1 RDBOOM 23' LFT RVSD 08-
8L3320	STOP ASSY LEFT BOOM PVT 93-	8L4682B	PT1 LFT 23' RVSD ERLY DSN -08
8L3330	STOP ASSY RGHTBOOM PVT 93-	8L4683A	PT 1 RDBOOM 23' RGT RVSD 08-
8L3352	LDDR ASSY NRRW CART 36" 08-11	8L4683B	PT1 RGT 23' RVSD ERLY DSN -08
8L3353	LDDR ASSY NRRW CART 47" 08-11	8L4684	PART 3 RDBOOM 10' LEFT 05-
8L3355	LDDR ASSY NRRW CART 56" 08-11	8L4685	PART 3 RDBOOM 10' RGHT 05-
8L3359	LADDER ULTIMATE (30") 99-11	8L4687	LEFT SNGL NOZ ULTRA EXT 07-
8L3374	WELD ASSY RNSGUN HOLSTR 05-	8L4688	RGHT SNGL NOZ ULTRA EXT 07-
8L4000	SUPERSKID 350/500 GAL MM	8L4692	PART 2 RDBOOM 20' LEFT 05-
8L4002	CRADLE 70GAL RINSE TNK 10-	8L4693	PART 2 RDBOOM 20' RGHT 05-
8L4003	RETAIN STRP 70GAL RNS CRADL10-	8L4694	PART 3 RDBOOM 16'8" LEFT 05-
8L4550	PIN SWING ARM GREASE 07-	8L4695	PART 3 RDBOOM 16'8" RGHT 05-
8L4594	PIN MID BOOM LOCK ULTRA YZ 08-	8L4697	LEFT DBL NOZ ULTRA EXT 07-
8L4596	TOP SWIVEL ASSY HVYDUTY 08-	8L4698	RGHT DBL NOZ ULTRA EXT 07-
8L4601	ROD SPRING CLEVIS GUIDE YZ	8L4702	HOSE PROTECTOR BRACKET 99-
8L4602	PIN 1 X 4.19" PLTD YZ 07-	8L4702A	CENTER HOSE PROTECTR BRKT05-
8L4605	SWING GLIDE STRAP REINFRCD 05-	8L4703	CYLINDER MOUNTING CLEVIS 99-
8L4607	FOLD BRCKT ADJSTBL BOOM 06-	8L4704	TUBE 1"ODX.562"IDX3-5/8" 99-
8L4608L	BRACKET LEFT BOOM FOLD L 06-	8L4705	SWING GLIDE STRAP ULT/RA 99-
8L4608R	BRACKET RGHT BOOM FOLD L 06-	8L4706	ACCUMULATOR BRACKET 99-
8L4609	PIN 1 X 2.38" PLTD YZ 08-	8L4707	REAR JACK ATTCH ULT/ULTRA 99-
8L4611L	WELD ASSY LFT MIDBM PIN BRKT	8L4709	CLEVIS SPRING CUSHION ULT 99-
8L4611R	WELD ASSY RGT MIDBM PIN BRKT	8L4710A	SWING ARM CAST 1" PNTD 08-
8L4613L	WELD ASSY LFT OTR BM PIN BRKT	8L4711	WELD ASSY LEFT HNG PIN BRK 00-
8L4613R	WELD ASSY RGT OTR BM PIN BRKT	8L4712	WELD ASSY RGHT HNG PIN BRK 00-
8L4615	PARALLEL LNK ANGLE BRACE 05-	8L4713	PT2 TRNSPT REST PIN SHORT 99-
8L4616	CYL MNTG CLEVIS HVY DUTY 08-	8L4713A	LG PT2 TRNSPT PIN SHORT 01-
8L4617	ULTRA PART 2 CABLE ANCHOR 08-	8L4714	PT2 TRNSPT REST PIN LONG 99-
8L4620	SPACER PRT2 EYEBOLT ULTRA P/C	8L4714A	LG PT2 TRNSPT PIN LONG 01-
8L4625L	CYLINDER MNTNG BRKT LEFT 09-	8L4715	LINK ARM ASSY ULT/ULTRA 99-
8L4625R	CYLINDER MNTNG BRKT RGHT 09-	8L4716	PT2 TRNSPT REST SUPPORT 99-
8L4626	EYEBOLT 1.5"DIAX1"EYE YZ 07-	8L4716A	LG PT2 TRANS REST SUPPORT01-
8L4628	EYEBOLT 1.5"DIAX1.26"EYE YZ07-	8L4717	CABLE ANCHOR BOTTOM PT2 99-
8L4629	LEFT REAR CYLINDER ATTCH 08-	8L4718	CABLE ANCHOR TOP PT1 99-
8L4630	RGHT REAR CYLINDER ATTCH 08-	8L4720L	LEFT PIVOT MNTNG ASSY ULT 99-
8L4635L	LEFT KNUCKL HINGE ULTRA 06-	8L4720R	RGHT PIVOT MNTNG ASSY ULT 99-
8L4635R	RGHT KNUCKL HINGE ULTRA 06-	8L4724	TOP ATTACH BOLT ZINC PL 99-
8L4636	LEFT PT3 INNR HINGE ASSY 05-	8L4725	MOUNTNG BRCKT CYL ULT/RA 99-
8L4637	RGHT PT3 INNR HINGE ASSY 05-	8L4726A	EYEBOLT 1.25DIAX1"EYE 1PCYZ06-
8L4640	LEFT PT2 INNR HINGE ASSY 05-	8L4727	LEFT REAR CYLINDER ATTCH 99-
8L4641	RGHT PT2 INNR HINGE ASSY 05-	8L4728	RGHT REAR CYLINDER ATTCH 99-
8L4646	LEFT PT2 OUTR HINGE ASSY 05-	8L4729	EYEBOLT 1"DIAX1"EYE PT2 YZ99-
8L4647	RGHT PT2 OUTR HINGE ASSY 05-	8L4730	SHOCK MNTNG BRCKT LEFT ULT 99-
8L4650	LEFT PT1 OUTR HINGE ASSY 05-	8L4731	SHOCK MNTNG BRCKT RGHT ULT 99-
8L4651	RGHT PT1 OUTR HINGE ASSY 05-	8L4732	CROSS SUPPORT ULTIMATE 99-
8L4658L	TRANSPORT REST LFT VRTCL 08-	8L4732A	CROSS SUPPORT W/LRG UBOLTS
8L4658R	TRANSPORT REST RGT VRTCL 08-	8L4734	CROSS SUPPORT W/BRKT 99-
8L4660L	TRANSPORT REST LFT VRTCL 05-	8L4734A	CROSS SUPPORT W/BRKT & LRG BLT
8L4660R	TRANSPORT REST RGT VRTCL 05-	8L4735L	LEFT REAR BOOM ATCH ULT/RA 04-
8L4661	TRANSPORT CROSS BRACE 05-	8L4735R	RGHT REAR BOOM ATCH ULT/RA 04-
8L4662	FLAT 3/8 X3- 70" TRNSBRACE 07-	8L4736A	PIN KNUCKLE HINGE ULT YZ 01-
8L4663	TRANSPORT REST TRIFOLD 05-	8L4736C	PIN KNUCKLE HINGE ULT YZ12-
8L4667	TRANS CROSS BRACE ULTRA 11-	8L4736D	PIN KNUCKLE HINGE ULTRAYZ12-
8L4670	WIDE REAR BOOM ASSY ULTRA 05-	8L4737	KNUCKLE CAST HINGE ULT FINISHD
8L4675	WIDE FIXED CNTR MNT ULTRA 05-	8L4745	TOP SWIVEL ASSY ULT 99-
8L4676	PART 3 RDBOOM 20' LEFT 07-	8L4746	PIVOT BUSHING ASSY ULT 99-

<u>Stock #</u>	<u>Description</u>
8L4760L	TRANSPORT REST LFT VRTCL 99-
8L4760R	TRANSPORT REST RGT VRTCL 99-
8L4762L	TRANS REST ULTIMATE LEFT 10-
8L4762R	TRANS REST ULTIMATE RGHT 10-
8L4763	TRANSPORT REST ULTIMATE 99-
8L4764L	TRANSPORT REST LFT ULT NRWCR
8L4764R	TRANSPORT REST RGT ULT NRWCR
8L4765	TRNSPRT REST BOTM SUPPORT99-
8L4770	REAR BOOM ASSY ULT 99-
8L4775	STATIONARY CENTER ULT 99-
8L4779	SWINGING CNTR WELD ASSY 99-
8L4782	PART 1 BOOM 25' LEFT ULT 01-
8L4783	PART 1 BOOM 25' RGHT ULT 01-
8L4785A	PART 1 BOOM 20' LEFT ULT 01-
8L4786A	PART 1 BOOM 20' RGHT ULT 01-
8L4788	PART 2 BOOM 25' LEFT ULT 01-
8L4789	PART 2 BOOM 25' RGHT ULT 01-
8L4790	PART 2 BOOM 20' LEFT ULT 99-
8L4791	PART 2 BOOM 20' RGHT ULT 99-
8L4792	PART 2 BOOM 15' LEFT ULT 99-
8L4793	PART 2 BOOM 15' RGHT ULT 99-
8L4794	PART 2 BOOM 10' LEFT ULT 99-
8L4795	PART 2 BOOM 10' RGHT ULT 99-
8L4796	2 NOZZLE BOOM EXT ULT 99-
8L4797	1 NOZZLE BOOM EXT ULT 99-
8L4798	PART 2 BOOM 5' LEFT ULT 99-
8L4799	PART 2 BOOM 5' RGHT ULT 99-
8L4804	3 NOZZLE BOOM EXT ULT
8L4817	KIT PRT 2 LATCH HYDFLDBOOM ULT
8L4969	WELD ASSY ULT REAR BTTMFL05-
8L4970	WELD ASSY 2ND ULT BTTMFL07-
8L4972	STABILIZR LEFT BOOM 2PT&SKD96-
8L4974	STABILIZR RGHT BOOM 2PT&SKD96-
8L4978	STABILIZR LTCH ASSY LT TRCK96-
8L4979	STABILIZR LTCH ASSY RT TRCK96-
8L4981	BRCKT PT3 LATCH POST ULTRA 05-
8L4982	BRACKET LEFT PRT2 LATCH 96-
8L4984	BRACKET RGHT PRT2 LATCH 96-
8L4987	CAST LATCH CLIP CASTDESIGN 09-
8L4988	MIDDLE BOOM LOCK CNTR PC 08-
8L4990	5' PART 2 LATCH BRCKT ULT 99-
8L4992	MIDDLE BOOM NORAC SNSR BRCKT
8L6400	CABLE KIT ULTRA PT1-PT2 RETRO
8L9992	NORAC RETRO UPGRADE PKG OPT" F"
8L9998	SAFETY LINK UPDATE PKG
8N0101	NORAC VALVE PKG 2 STATION
8N0103	NORAC FOAM SENSOR DISK
8N0105	NORAC ORING 06-
8N0109	NORAC BOOM SENSOR REBUILT
8N0110	NORAC BOOM SENSOR NEW UC4+
8N0111	NORAC BOOM SENSOR NEW UC5+
8N0113	NORAC ELEC COIL DEUTSCH 09-
8N0115	NORAC MOUNTING BRKT BRKWY BASE
8N0116	NORAC SENSOR MOUNT BRACKET
8N0121	SEVERE TERRAIN PKG UC5 09-
8N0122	NORAC CABLE BOOM SENSOR 06-
8N0129	NORAC CABLE VALVE EXT SM2 09-
8N0134	NORAC CABLE SEVR TERN 4&5 09-

<u>Stock #</u>	<u>Description</u>
8N0137	ECHO DISPLAY ONLY W/SWITCH
8N0138	PULSE DISPLAY TRML KIT UC5 10-
8N0139	CABLE UC5 BAT PIGTAIL 5A FUSED
8N0140	PANEL NORAC BOOM CONTROL 08-
8N0141	NORAC RAM MOUNT PANAL UC4 08-
8N0143	UC4+ ROLL SNSW/TMP PRB 10-
8N0145	UC4+ ROLL SENSOR 10-
8N0146	UC5 ROLL SENSOR 10-
8N0150	NORAC SEAL KIT CHECK VALVE 06-
8N0152	NORAC SEAL KIT PILOP CKVLV 06-
8N0154	NORAC O-RING - FILTER CAP 06-
8N0157	NORAC CNTR LIFT CNTRL UC5
8N0160	NORAC SENSOR TEST KIT
8N0162	UC4+ ENHANCED STABILTY
8N0164	UC5 ENHANCED STABILITY
8N0168	NORAC TRANSDUCER FOR SNSR 06-
8N0170	NORAC CBLE PWR BM CNTL SM2 09-
8N0172	NORAC CBLINRFC UC4 PWRAMPT 09-
8N0174	NORAC CBLINTRFC UC4 ROL DT 09-
8N0176	NORAC CBLINTFC UC4 RMT MAN 09-
8N0178	NORAC CBLVLV UC4 BC MNLIFT 09-
8N0180	UC5-GRNSR2 INTERFACE CBLE10-
8N0182	UC5-PR0600 INTERFACE CBLE 12-
8N2012	1/4X 12"HYD HOSE #6FJX3000PSI
8N2024	1/4X 24"HYD HOSE #6FJX3000PSI
8N2036	1/4X 36"HYD HOSE #6FJX3000PSI
8N2050	1/4X 50"HYD HOSE #6FJX3000PSI
8N2054	1/4X 54"HYD HOSE #6FJX3000PSI
8N2060	1/4X 60"HYD HOSE #6FJX3000PSI
8N2072	1/4X 72"HYD HOSE #6FJX3000PSI
8N2076	1/4X 76"HYD HOSE #6FJX3000PSI
8N2088	1/4X 88"HYD HOSE #6FJX3000PSI
8N2096	1/4X 96"HYD HOSE #6FJX3000PSI
8N2110	1/4X 110"HYD HOSE #6FJX3000PSI
8N2120	1/4X 120"HYD HOSE #6FJX3000PSI
8N2135	1/4X 135"HYD HOSE #6FJX3000PSI
8N2160	1/4X 160"HYD HOSE #6FJX3000PSI
8N2190	1/4X 190"HYD HOSE #6FJX3000PSI
8N2210	1/4X 210"HYD HOSE #6FJX3000PSI
8N2248	1/4X 248"HYD HOSE #6FJX3000PSI
8N2250	1/4X 250"HYD HOSE #6FJX3000PSI
8N2360	1/4X 360"HYD HOSE #6FJX3000PSI
8N2400	1/4X 400"HYD HOSE #6FJX3000PSI
8N2410	1/4X 410"HYD HOSE #6FJX3000PSI
8N3018	3/8X 18"HYD HOSE #6FJX3000PSI
8N3028	3/8X 28"HYD HOSE #6FJX3000PSI
8N3035	3/8X 35"HYD HOSE #6FJX3000PSI
8N3048	3/8X 48"HYD HOSE #6FJX3000PSI
8N3060	3/8X 60"HYD HOSE #6FJX3000PSI
8N3070	3/8X 70"HYD HOSE #6FJX3000PSI
8N3084	3/8X 84"HYD HOSE #6FJX3000PSI
8N3096	3/8X 96"HYD HOSE #6FJX3000PSI
8N3108	3/8X 108"HYD HOSE #6FJX3000PSI
8N3124	3/8X 124"HYD HOSE #6FJX3000PSI
8N3136	3/8X 136"HYD HOSE #6FJX3000PSI
8N3150	3/8X 150"HYD HOSE #6FJX3000PSI
8N3156	3/8X 156"HYD HOSE #6FJX3000PSI
8N3160	3/8X 160"HYD HOSE #6FJX3000PSI

<u>Stock #</u>	<u>Description</u>	<u>Stock #</u>	<u>Description</u>
8N3180	3/8X 180"HYD HOSE #6FJX3000PSI	8S1076	QUICKLINK 1/4" YELLOW ZINC
8N3204	3/8X 204"HYD HOSE #6FJX3000PSI	8S1082	CABLE CLAMP 3/16" MALLEABLE YZ
8N3216	3/8X 216"HYD HOSE #6FJX3000PSI	8S1100	CHAIN #3 X 4 LINK (6") 91-
8N3228	3/8X 228"HYD HOSE #6FJX3000PSI	8S1120	SIGN SLOW MOVING VEHICLE(SMV)
8N3252	3/8X 252"HYD HOSE #6FJX3000PSI	8S1124	MOUNTING SOCKET SMV SIGN
8N3276	3/8X 276"HYD HOSE #6FJX3000PSI	8S1126	MNT SPADE W/HRDWR SMV SIGN
8N3288	3/8X 288"HYD HOSE #6FJX3000PSI	8S1270	WHEEL 38 X 16" 10 BOLT YLW
8N3312	3/8X 312"HYD HOSE #6FJX3000PSI	8S1270G	WHEEL 38 X 16" 10 BOLT GRY
8N3330	3/8X 330"HYD HOSE #6FJX3000PSI	8S1275	TIRE 480/80R38 155B TL TRACTOR
8N3348	3/8X 348"HYD HOSE #6FJX3000PSI	8S1280L	WHLW-480/80R38-155 ULTRTORQ LH
8N3360	3/8X 360"HYD HOSE #6FJX3000PSI	8S1280R	WHLW-480/80R38-155 ULTRTORQ RH
8N3390	3/8X 390"HYD HOSE #6FJX3000PSI	8S1288	WHEEL 38X16" 10BLT 13"OFFSET
8N3408	3/8X 408"HYD HOSE #6FJX3000PSI	8S1288G	WHEEL 38X16 10BLT 13"OFFST GRA
8N3432	3/8X 432"HYD HOSE #6FJX3000PSI	8S1289	WHEEL 50 X10" 10 BLT 10"OFFSET
8N3462	3/8X 462"HYD HOSE #6FJX3000PSI	8S1289G	WHEEL 50X10 10BLT 10"OFFST GRA
8N3534	3/8X 534"HYD HOSE #6FJX3000PSI	8S1289ZG	WHEEL 46X10 10BLT 0 OFFST GRAY
8N3570	3/8X 570"HYD HOSE #6FJX3000PSI	8S1290	WHEEL 46 X12" 10 BLT 0 OFFSET
8N3606	3/8X 606"HYD HOSE #6FJX3000PSI	8S1291	WHEEL 50 X10" 10 BLT 0 OFFSET
8N4016	1/2X 16"HYD HOSE#10FJX3000PSI	8S1291G	WHEEL 50X10 10BLT 0 OFFST GRAY
8N4060	1/2X 60"HYD HOSE#10FJX3000PSI	8S1292	WHEEL 46 X12" 10 BLT 11"OFFSET
8N4114	1/2X 114"HYD HOSE#10FJX3000PSI	8S1292G	WHEEL 46X12 10BLT 11OFFST GRAY
8N4120	1/2X 120"HYD HOSE#10FJX3000PSI	8S1293	WHEEL 50 X10" 10 BLT 11"OFFSET
8N4138	1/2X 138"HYD HOSE#10FJX3000PSI	8S1293G	WHEEL 50X10 10BLT 11"OFFST GRA
8N4160	1/2X 160"HYD HOSE#10FJX3000PSI	8S1294	WHEEL 46 X12" 10 BLT 15"OFFSET
8N4198	1/2X 198"HYD HOSE#10FJX3000PSI	8S1294G	WHEEL 46 X12" 10 BLT 15OFFST G
8N4216	1/2X 216"HYD HOSE#10FJX3000PSI	8S1295	TIRE 380/90R46 159A8 TL TRACTR
8N4228	1/2X 228"HYD HOSE#10FJX3000PSI	8S1298	TIRE 320/90R50 159 TL TRACTOR
8N4546	1/2X 546"HYD HOSE#10FJX3000PSI	8S1300L	WHL-380/90R46 159A ULTTOR TLLH
8N4624	1/2X 624"HYD HOSE#10FJX3000PSI	8S1300R	WHL-380/90R46 159A ULTTOR TLRH
8N5114	5/8X 114"HYD HOSE#10FJX3000PSI	8S2980	HYD HOSE CLAMP-SMALL-NYLON
8N5120	5/8X 120"HYD HOSE#10FJX3000PSI	8S2990	HYD HOSE CLAMP-LARGE-NYLON
8N5138	5/8X 138"HYD HOSE#10FJX3000PSI	8S3010	CLAMP 1" RIBBED-BLACK-PAIR91-
8S0003	SEPARATOR BRACE FORMED&P/C'D	8S3025	CLAMP 2.375"ID PAIR 91-
8S0005	TCHDWN BRACE ULTRA FRMED&PNTD	8S3038	CVR PLT 1-3/16X2-3/4"(1-1.5ID)
8S0006	STL 12GA FORMED CLEANLOAD BRC	8S3043	CVR PLT 1 X 4-5/8"(2.4ID)PUNCH
8S0074	MUFFLER CLAMP HD 2-1/8" PLATED	8S3059	CAPLUG FITS 2.067"ID TUBE96-
8S0080	PIPE CLAMP 1.90" ID PLATED YZ	8S3104	CAP CLEAN H2O TANK
8S0100	BUCKLE 2" TANK STRAP 91-	8S3108	SPIGOT ONLY CLEAN H2O TANK
8S0118	POLYESTER STRAP 2" X 114" BLK	8S3111	TANK 5 GAL H2O SAFETY-NT TNK
8S0120	POLYESTER STRAP 2" X 140" BLK	8S3114	COVER MARKER/5GLCLEAN H2O 96-
8S0280	U-BOLT 5/16 X 2 X 2-3/4" RND	8S3115	COVER CROPCARE CLEAN H2O 01-03
8S0295	U-BOLT 3/8 X 2-5/8 X 4-1/4"RND	8S3130	CHEMICAL GOGGLE
8S0315	U-BOLT 3/8 X 3 X 4-1/8" RND	8S3140	VINYL COATED GLOVES
8S0317	U-BOLT 3/8 X 3.63 X 5.88" RND	8S4008	SPACER 10" FOR ULT DUALS 07-
8S0319	U-BOLT 3/8 X 3 X 4-1/8" SQ	8S4010	SPACER 11" FOR ULT DUALS 06-
8S0330	U-BOLT 1/2 X 3 X 4-1/4" SQ	8S4012	SPACER 15" FOR ULT DUALS 06-
8S0340	U-BOLT 1/2 X 4 X 5-1/4" SQ	8S4020	CART TRUSS ULTRA 10-
8S0345	U-BOLT 1/2 X 5 X 6-1/4" SQ	8S4021	CART TRUSS NRRW ULTRA 10-
8S0358	U-BOLT 5/8X3.06X 4.5" SQ1.25"T	8S4028A	CART HITCH EXT BLTON LONG08-
8S0360	U-BOLT 5/8 X 6-1/16 X 4-1/2"SQ	8S4029A	CART HITCH EXT BLTON SHRT08-
8S0660	SPRING 1.42"ODX 7.81"EXT PNTD	8S4030	CART HITCH BOLT ON RECEIVR 07-
8S0684	SPRING SHOCK ABSORBER SSV96-01	8S4036	RETAINER LWR CAST AXL PTD03-
8S0820	SIDE RAILING BOTTOM PEG 03-11	8S4037	RETAINER FRT SLIDING AXL 03-
8S1000	SHOCK ABSORBER 91-01	8S4041	WIDE AXLE WELD ASSY NRRW CART
8S1001	SHOCK ABSORBER ULTIM 99-	8S4042	AXLE WELD ASSY NARROW NT 03-
8S1002	ADJUSTING CAM 91-01	8S4043	NRRW AXLE WELD ASSY NRRWCART
8S1004	UPPER SPRING RETAINER 91-01	8S4047	AXLE WELD ASSY BEET SPCL 03-
8S1060	STEEL PULLEY 2" DIA 1/2"ID 91-	8S4048A	AXLE SLIDE LFT NRW HVYAXL10-

<u>Stock #</u>	<u>Description</u>	<u>Stock #</u>	<u>Description</u>
8S4049A	AXLE SLIDE RGT NRW HVYAXL10-	8S4426	RAIL STAIR UPPR PTD 10-
8S4052	AXLE WELD ASSY WIDE NT 03-	8S4427	RAIL UPPER RGHT PTD 10-
8S4058A	AXLE SLIDE LFT WIDEAXL NT06-	8S4428	RAIL UPPER LFT PTD 10-
8S4059A	AXLE SLIDE RGT WIDEAXL NT06-	8S4430	UPPR STAIR BRKT RIGHT PTD 10-
8S4060	AXLE SLIDE LFT NRW DUALS 06-10	8S4431	UPPR STAIR BRKT LEFT PTD 10-
8S4060A	AXLE SLIDE LFT NRW DUALS 10-	8S4432	PT2 STAIR BRKT BNT-LEFT 10-
8S4061	AXLE SLIDE RGT NRW DUALS 06-10	8S4433	PT2 STAIR BRKT BNT-RGHT 10-
8S4061A	AXLE SLIDE RGT NRW DUALS 10-	8S4434	STAIR LOWER PT1 10-
8S4062	AXLE SLIDE LFT NRW SINGL 06-10	8S4435	STAIR TREAD 16-3/8X6 PTD 10-
8S4062A	AXLE SLIDE LFT NRW SING 10-	8S4440	LOWER STAIR HINGE PIVOT 10-
8S4063	AXLE SLIDE RGT NRW SINGL 06-10	8S4450	RAIL STAIR UPPER NRRW PTD10-
8S4063A	AXLE SLIDE RGT NRW SING 10-	8S4452	RAIL STAIR UPR 1000GAL PTD10-
8S4081B	12K SPNDL HLDR 1010 LGBLT10-	8S4460	UPPR STAIR BRKT NRRW PTD-L 10-
8S4083A	15K SPNDL HLDR 1010 LGBLT10-	8S4461	UPPR STAIR BRKT NRRW PTD-R 10-
8S4083L	LEFT SPNDL HLDR 1010 15K 03-10	8S4462	UPPR STAIR BRKT 1000 PTD-L 10-
8S4083R	RGHT SPNDL HLDR 1010 15K 03-10	8S4463	UPPR STAIR BRKT 1000 PTD-R 10-
8S4084L	LEFT SPNDL HLDR 1020 25K 10-	8S4464	UPPR STAIR BRKT 1000N PTD-L10-
8S4084R	RGHT SPNDL HLDR 1020 25K 10-	8S4465	UPPR STAIR BRKT 1000N PTD-R10-
8S4138	STRAP 1500GAL NT TANK END03-	8S4554	BRCKT SAFETY H2O FAUCET 03-
8S4192	SPACER TUBE FOAM 1.5X3X7"99-	8S4560	BRACKET NOZZLE MNTNG PLTD 05-
8S4193	SPACER TUBE FOAM 3SQ X 7"99-	8S4562	BRCKT RUBBER BOOMSTOP PLTD 05-
8S4195	PLATFORM FOAM MARKER MNT 99-	8S5250	1.25" SPINDLE FOR 211 HUB 07-
8S4201	HANDLE SIDE RAILING LTCH 03-11	8S5857	DECAL BRACKET 1500NT SING03-
8S4202	RETAINER SIDE RAILNG HNDL03-11	8S9398	AXLE PKG ULT/RA NARROW 03-10
8S4206	LADDER ASSY FLIPOVRFRNTPLFM13-	8S9399	AXLE PKG ULT/RA WIDE 03-10
8S4208L	PIVOT LEFT FLIP OVER LADDR 13-	8S9400	AXLE PKG BEETSPL 88-132" 03-10
8S4208R	PIVOT RGHT FLIP OVER LADDR 13-	8S9401	WIDE AXLE PKG NRRW CART 06-10
8S4210L	SIDE LEFT FOLD OVER LADDER 13-	8S9462	BELT DRV PTO PUMP PKG 8-SPLNE
8S4210R	SIDE RGHT FOLD OVER LADDER 13-	8S9496	450 SMARTBM PKG WO/ANT 12-
8S4216L	SUPPORT LFT1500GALSIDEPLTFM-11	8S9498	450 SMARTBM PKG W/ANT 12-
8S4216R	SUPPORT RGT1500GALSIDEPLTFM-11	8S9500	4400 SMARTBM PKG WO/ ANT 12-
8S4217	HAND RAIL 1500NT FAR END 03-11	8S9502	4400 SMARTBM PKG W/ ANT 12-
8S4219	HAND RAIL 1500NT BIG SIDE03-11	8S9911	INTEGRAL ELEC AGITATOR RETRO
8S4220	LADDER STRUT 1500GAL ULTRA 05-	8S9970	NORAC UPDATE PKG UC4 - 4+ 3SNS
8S4221A	HANDRAIL SHORT ALUM SIDE 02-	8S9972	NORAC UPDATE PKG UC4 - 4+ 5SNS
8S4222	PLATFORM SIDE1000ULT/NRW 07-11	8T2986	CLAMP 1/2"(-8)WRNG RUBBERBACK
8S4230A	PLATFORM 1500CC SIDE P/C 07-11	8T2988	CLAMP 3/8"(-6)WRNG RUBBERBACK
8S4232A	SKID 200 RINSE ACE TANK 08-	8T2990	HYD HOSE CLAMP MTL/RUB BACK
8S4235	BRKT REMOTE GAUGE MNT ULT 03-	8W1200	U-BOLT 1/2 X 2 X 3-1/4" SQ
8S4237	FLAT 1/4 X 3- 8.5" GA MNT05-	8W1204	U-BOLT 1/2 X 3 X 3" SQ
8S4272	PTO PLUMBING BRKT SUC/DIS00-	8W1205	U-BOLT 5/8 X 3.06 X 3.25" SQ
8S4276	BOLT FLAT UNVRSL.25X4X3.1 96-	8W1588	3/4"-16ORB PORT RESTRICTR.032"
8S4278	THREADED BRKT SUCTION 96-	8W1589	3/4"-16ORB PORT 1WAYRESTR1/16"
8S4280	3"MANIFLD BRKT FLNGD UNIV 12-	8X0000	BOLT 1/4-20X3/4" FLLTHD GR5 YZ
8S4281	MANIFLD BRKT FLNGD UNIVRSL 99-	8X0000B	BOLT 1/4-20NC X 1" GR5 YZ
8S4282	THREADED BRKT PRESSURE 96-	8X0001	BOLT 3/8-16NC X 3/4" GR5 YZ
8S4286	BUSHING BRKT FLOWMETER 96-	8X0002	BOLT 3/8-16NC X 1" GR5 YZ
8S4288	THREADED BRKT FLOWMETER 96-	8X0004	BOLT 3/8-16NC X 1-1/4" GR5 YZ
8S4289	BOLT PLATE HONDA TO ULT 05-	8X0005	BOLT 1/4-20NC X 3-3/4" GR5 YZ
8S4291	BOLT PLATE BOTTOM FILLPTD01-	8X0006	BOLT 3/8-16NC X 2-1/2" GR5 YZ
8S4296	DRAIN BRACKET ULT/ULTRA 96-	8X0007	BOLT 3/8-16NC X 1-1/2" GR5 YZ
8S4297	CHEMICAL INDUCTOR BRCKT 03-	8X0008	BOLT 3/8-16NC X 2" GR5 YZ
8S4302A	SIGHT TUBE BRKT ULTRA 10-	8X0009	BOLT 1/4-20NC X 2" GR5 YZ
8S4305	SIGHT TUBE BRKT 1000 GAL 10-	8X0010	BOLT 1/4-20NC X 1-1/4" GR5 YZ
8S4308	SIGHT TUBE BRKT 1500-1650 10-	8X0011	SCREW RDHD SLOT1/4-20X1.5" YZ
8S4420	PLTFRM FRT UPPER 10-	8X0012	BOLT 1/4-20NC X 5" GR5 YZ
8S4422	PLTFRM FRONT LOWER 10-	8X0013	BOLT 1/4-20NC X 2-1/2" GR5 YZ
8S4425	RAIL STAIR LOWER PTD 10-	8X0014	BOLT 1/4-20 X 3" GR5 ZNCOAT

<u>Stock #</u>	<u>Description</u>	<u>Stock #</u>	<u>Description</u>
8X0015	BOLT 3/8-16NC X 3-3/4" GR5 YZ	8X0106	BOLT 3/4X2.75"W/1.38THD GR8 YZ
8X0016	BOLT 3/8-16NC X 3" GR5 YZ	8X0107	BOLT 3/4-10NC X 2" GR5 YZ
8X0017	BOLT 3/8-16NC X 5" GR5 YZ	8X0110	BOLT 3/4-10NC X 1-1/4" GR5 YZ
8X0019	BOLT 3/8-16NC X 4-1/2" GR5 YZ	8X0111	BOLT 3/4-10NC X 2-1/2" GR5 YZ
8X0020	BOLT 3/8-16X3.5"FULLTHDGR5 YZ	8X0111A	BOLT 3/4-10NC X 2-3/4" GR5 YZ
8X0021	BOLT 5/16-18NC X 3/4" GR5 YZ	8X0112	BOLT 3/4-10NC X 2-1/4" GR5 YZ
8X0021A	BOLT 5/16-18NC X 1" GR5 YZ	8X0113	BOLT 3/4-10NC X 5" GR5 YZ
8X0021B	BOLT 5/16-18NC X 1-1/4"GR5 YZ	8X0114	BOLT 3/4-10NC X 3" GR5 YZ
8X0022	SCKT CAP 5/16-18 X 1" GR5 YZ	8X0115	BOLT 3/4-10NC X 3-1/2" GR5 YZ
8X0023	BOLT 5/16-18NC X 2" GR5 YZ	8X0115A	BOLT 3/4NCX 3.5"FULLTHD GR5 YZ
8X0030	BOLT 5/16-18NC X 5" GR5 YZ	8X0115B	BOLT 3/4-10NC X 3-1/2" GR8 YZ
8X0031	BOLT 7/16-14NC X 1" GR5 YZ	8X0116	BOLT 3/4-10NC X 6" GR5 YZ
8X0033	BOLT 7/16X1.25 5/8"THD GR5 YZ	8X0117	BOLT 3/4-10NC X 7" GR5 YZ
8X0034	BOLT 7/16-14NC X 1.75" GR5 YZ	8X0118	BOLT 3/4-10NC X 4" GR5 YZ
8X0036	BOLT 7/16-14NC X 2" GR5 YZ	8X0118A	BOLT 3/4-10NC X 4-1/4" GR5 YZ
8X0037	PLOWBOLT 1/2-13NC X 2" GR5 YZ	8X0119	BOLT 3/4-10NC X 7-1/2" GR5 YZ
8X0037A	PLOWBOLT 1/2-13NCX2.25" GR5 YZ	8X0120	BOLT 3/4-10NC X 9" GR5 YZ
8X0038	BOLT 7/16-14NC X 2-1/2"GR5 YZ	8X0121	BOLT 3/4-10NC X 6-1/2" GR5 YZ
8X0041	BOLT 7/16-14NC X 3" GR5 YZ	8X0122	BOLT 3/4-10NC X 4-1/2" GR5 YZ
8X0044	BOLT 7/16-14NC X 3-1/2"GR5 YZ	8X0123	BOLT 3/4-10NC X 5-1/2" GR5 YZ
8X0045	BOLT 7/16-14NC X 4-1/2"GR5 YZ	8X0125	BOLT 3/4-10NC X 10" GR5 YZ
8X0046	BOLT 7/16-14NC X 7-1/4" GR5 YZ	8X0126	BOLT 3/4-10NC X 7-1/2" GR8 YZ
8X0047	BOLT 7/16-14NC X 6" GR5 YZ	8X0128	BOLT 3/4-10NC X 8-1/2" GR8 YZ
8X0048	CRG 7/16-14NC X 3-1/2" GR5 YZ	8X0130	BOLT 7/8-9NC X 2" GR5 YZ
8X0061	BOLT 1/2-13NC X 1-1/4" GR5 YZ	8X0132	BOLT 7/8-9NC X 2-1/2" GR5 YZ
8X0062	BOLT 1/2-13NC X 2" GR5 YZ	8X0133	BOLT 7/8-9NC X 3" GR5 YZ
8X0063	BOLT 1/2-13NC X 1-1/2" GR5 YZ	8X0133A	BOLT 7/8-9NCX3" GR5 FULL THD
8X0064	CRG 1/2-13NC X 1-1/2" GR5 YZ	8X0134	BOLT 7/8-9NC X 4" GR5 YZ
8X0065	CRG 1/2-13NC X 2" GR5 YZ	8X0138	BOLT 1-8NC X 5-1/2" GR5 YZ
8X0065L	CRG 1/2-13NC X 3" GR5 ZINC	8X0139	BOLT 1-8NC X 3" GR5 YZ
8X0065S	SCKT CAP 1/2-13 X 1.62"GR8 PLN	8X0140	BOLT 1-8NCX7" W/1.5"THDGR5 YZ
8X0066	BOLT 1/2-13NC X 1-3/4" GR5 YZ	8X0141	BOLT 1-8NC X 7.5" GR5 YZ
8X0067	BOLT 1/2-13NC X 2-1/4" GR5 YZ	8X0142	BOLT 1-8NC X 3.5" GR5 YZ
8X0068	BOLT 1/2-13NC X 2-1/2" GR5 YZ	8X0143	BOLT 1-8NC X 5" GR5 YZ
8X0069	BOLT 1/2-13NC X 3" GR5 YZ	8X0145	BOLT 1-8NC X 10-1/2" GR5 YZ
8X0070	BOLT 1/2-13NC X 3-1/4" GR5 YZ	8X0146	BOLT 1-8NC X 8-1/2" GR5 YZ
8X0071	BOLT 1/2-13X 3"SHOULDR GR2 YZ	8X0149	BOLT 1-8NC X 18" GR5 YZ
8X0072	BOLT 1/2-13NC X 3-3/4" GR5 YZ	8X0150	BOLT 1-8NC X 20" GR5 YZ
8X0073	BOLT 1/2-13NC X 5" GR5 YZ	8X0158	SCREW SS SQDRV SMS 8X1
8X0074	BOLT 1/2-13NC X 4-1/2" GR5 YZ	8X0160	SCREW NO. 10 X 24- 5/8"
8X0075	BOLT 1/2-13NC X 6" GR5 YZ	8X0164	SCRW TRSS HD SLOT#10X24-3" YZ
8X0077	BOLT 1/2-13NC X 7-1/2" GR5 YZ	8X0165	SCRW TRSS HD PHPLS1/4-20-3/4SS
8X0078	BOLT 1/2-13X3.62" SHLDR GR2 YZ	8X0166	SCREW PAN HD PHLPS 1/4X20X1"SS
8X0080	BOLT 1/2-13NC X 11" GR5 YZ	8X0168	SCRW TORXTAMPPRF 5/16-18X2" YZ
8X0082	BOLT 1/2-13NC X 6-1/2" GR5 YZ	8X0169	SCREW FLOORING 1/4 X 1.25" PLN
8X0083	BOLT 1/2-13NC X 8" GR5 YZ	8X0176	SELF-DRILL SCRW 10-16X1/2" RUB
8X0084	BOLT 1/2-13NC X 9" GR5 YZ	8X0178	SELF-DRL SCRW 12-14X3/4"RUB YZ
8X0087	BOLT 5/8-11NC X 1-1/2" GR5 YZ	8X0180	SELF-DRL SCRW 12-14 X 1"RUB YZ
8X0090	BOLT 5/8-11NC X 2-1/4" GR5 YZ	8X0182	SELF-DRL SCRW 12-14X1.5"RUB YZ
8X0091	BOLT 5/8-11NC X 1-3/4" GR5 YZ	8X0201	NUT 3/8"-16NC HEX GR2 YZ
8X0092	BOLT 5/8-11NC X 2-3/4" GR5 YZ	8X0202	NUT 3/8"-16NC NY-LOCK GR2 YZ
8X0093	BOLT 5/8-11NC X 2" GR5 YZ	8X0203	NUT 3/8"-16NC SERFLANG GR2 YZ
8X0095	BOLT 5/8-11NC X 5" GR5 YZ	8X0204	NUT 3/8"-16NC HEX GR2 GALV
8X0096	BOLT 5/8-11NC X 4" GR5 YZ	8X0205	NUT 10-24 HEX YZ
8X0098	BOLT 5/8-11X 3.5"FULLTHDGR5 YZ	8X0210	NUT 5/16"-18NC HEX GR2 YZ
8X0099	BOLT 5/8-11X6.75"W/3.5THDGR5YZ	8X0211	NUT 5/16"-18NC SERFLANG GR2 YZ
8X0100	BOLT 5/8-11NC X 8" GR8 YZ	8X0212	NUT 5/16"-18NC NY-LOCK GR2 YZ
8X0101	BOLT 5/8-11NC X 8" GR5 YZ	8X0218	NUT 1/4"-20NC SQ GR2 SS
8X0102	BOLT 5/8-11NC X 9" GR5 YZ	8X0220	NUT 1/4"-20NC HEX GR2 YZ

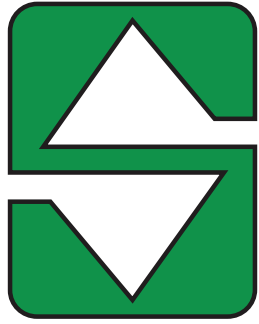
Stock #	Description
8X0222	NUT 1/4"-20NC NY-LOCK GR2 YZ
8X0223	NUT 1/4"-20NC SERFLANG GR2 YZ
8X0232	NUT 7/16"-14NC HEX GR2 YZ
8X0234	NUT 7/16"-14NC NY-LOCK GR2 YZ
8X0240	NUT 1/2"-13NC HEX GR2 YZ
8X0242	NUT 1/2"-13NC NY-LOCK GR2 YZ
8X0244	NUT 1/2"-13NC FLANG TOP LOCK Z
8X0246	NUT 1/2"-13NC SERFLANG GR2 YZ
8X0249	NUT, H-PILOT WELD 5/8"-11NC
8X0250	NUT 5/8"-11NC HEX GR2 YZ
8X0251	NUT 5/8"-11NC JAM GR2 YZ
8X0253	NUT 5/8"-11NC NY-LOCK GR2 YZ
8X0256	NUT 5/8"-11NC SERFLANG GR2 YZ
8X0259	NUT 3/4"-10NC JAM GR2 YZ
8X0260	NUT 3/4"-10NC HEX GR2 YZ
8X0261	NUT 3/4"-10NC NY-LOCK GR2 YZ
8X0264	NUT 3/4"-10NC BEVL CNTRLCK YZ
8X0265	NUT 3/4"-10NC CNTRLOCK GR2 YZ
8X0266	NUT 3/4"-10NC SERFLANG GR2 YZ
8X0268	NUT 7/8"-9NC HEX GR2 YZ
8X0269	NUT 7/8"-9NC JAM GR2 YZ
8X0270	NUT 7/8"-9NC CNTRLOCK GR2 YZ
8X0274	NUT 7/8"-9NC FLNG GRF YZ
8X0277	NUT 1"-8NC JAM GR2 YZ
8X0278	NUT 1"-8NC JAM TOPLOCK GR2 YZ
8X0280	NUT 1"-8NC HEX GR2 YZ
8X0281	NUT 1"-8NC NY-LOCK GR2 YZ
8X0282	NUT 1"-14TPI TOPLOCK GR B Z
8X0283	NUT 1-1/4"-7NC JAM GR2 YZ
8X0284	NUT 1-1/4"-7NC HEX GR2 YZ
8X0285	NUT 1-1/2"-6NC HEX GR2 YZ
8X0286	NUT 1-1/2"-6NC JAM GR2 YZ
8X0290	NUT 1-1/4"-7NC HEXSLOT GR2 YZ
8X0292	NUT 2"-4.5 HVY HEXSLOT GR2 PLN
8X0292S	NUT 2"NC HEXSLOT MACHIND 1.75"
8X0299	LOCKWASHER 1/4" EXT TOOTH SS
8X0300	LOCKWASHER 5/16" YLW ZNC
8X0301	LOCKWASHER 3/8" YLW ZNC
8X0302	LOCKWASHER 7/16" YLW ZNC
8X0303	LOCKWASHER 1/2" YLW ZNC
8X0304	LOCKWASHER 5/8" YLW ZNC
8X0306	LOCKWASHER 3/4" YLW ZNC
8X0307	LOCKWASHER 7/8" YLW ZNC
8X0308	LOCKWASHER 1/4" YLW ZNC
8X0309	LOCKWASHER 1" YLW ZNC
8X0311	LOCKWASHER 1-1/4" YLW ZNC
8X0312	WASHER 1/4" X 1-1/4" FENDER SS
8X0315	LOCKWASHER 1-1/2" YLW ZNC
8X0316	WASHER 1" SAE FLAT YZ
8X0317	WASHER 3/4" SAE FLAT YZ
8X0318	WASHER 3/4"(13/16"ID)FLAT YZ
8X0319	WASHER 17/32"IDX7/8ODX16GA YZ
8X0320	WASHER 3/8"(7/16" ID)FLAT YZ
8X0323	WASHER 5/8" SAE FLAT YZ
8X0325	WASHER 3/4"(13/16"ID)FLAT PLN
8X0326	WASHER 1.257"IDX2.75"OD PLN
8X0327	WASHER 1-1/4" SAE FLAT YZ
8X0328	WASHER 1.312"IDX2.5 OD-1/4" BL
8X0329	WASHER 5/16"(3/8" ID)FLAT YZ

Stock #	Description
8X0330	WASHER 17/32"ID X 1.25"OD YZ
8X0331	WASHER 15/32"ID X 1.25"OD YZ
8X0332	WASHER 1/4"(5/16" ID) FLAT YZ
8X0333	WASHER HARROW TOOTH YZ
8X0354	WASHER 1-1/2"IDX2.25"X14GA YZ
8X0355	WASHER 1-1/2"IDX2.25"X10GA PLN
8X0362	WASHER 2.03IDX2-7/8ODX 9GA PLN
8X0364	WASHER 2.5 IDX3.5 ODX 14GA YZ
8X0366	WASHER 2.03IDX2-7/8ODX 1/4"PLN
8X0367	WASHER 1-3/4"IDX3.25"X14GA PLN
8X0368	WASHER 1-1/2" SAE FLAT PLN
8X0370	WASHER 3.016"IDX 3.93"ODX 14GA
8X0380	WASHER 3.06"IDX4.25" X 3/16"
8X0400	HAIRPIN CLIP 1/8 X 1-15/16"
8X0402	HAIRPIN CLIP 1/8 X 2-9/16"
8X0405	SNAPPER PIN 1/4 X 1.75"
8X0410	COTTER PIN 3/16 X 1" YZ
8X0414	COTTER PIN 1/4 X 2" YZ
8X0415	COTTER PIN 3/16 X 1-1/2"
8X0418	COTTER PIN 5/16 X 2-1/2" YZ
8X0420	CLEVIS PIN 7/16 X 1-3/4" YZ
8X0422	CLEVIS PIN 1/2 X 2-1/4" YZ
8X0425	CLEVIS PIN 1/2 X 3" YZ
8X0428	CLEVIS PIN 1/2 X 5-1/4" YZ
8X0432	CLEVIS PIN 1/2 X 6" YZ
8X0440	CLEVIS PIN 5/8 X 3-7/8" YZ
8X0462	CLEVIS PIN 3/8 X 3" W/HL YZ
8X0480	HITCH PIN W/LYNCH 5/8X4"YZ
8X0492	LYNCH PIN 3/16 X 1-1/4" YZ
8X0505	S-HOOK .125 X 1-3/8" ZINC
8X0520	ROLL PIN 3/16 X 2" ZINC CLEAR
8X0523	ROLL PIN 5/16 X 2-1/2" PLN
8X0528	ROLL PIN 3/8 X 2-1/2" ZINC
8X0560	RIVET 3/16 SML FLNG .700"
8X0605	SET SCRW SQ HD 7/16-14X 1" YZ
8X0632	SET SCRW SCKT 7/16-14X 1.5"PLN
8X0665	SET SCRW SQ HD 3/4-10X4.5" YZ
8X0708	ZERK 1/4"-28 NF STR YZ
8X0710	ZERK 1/4"-28 NF 90 DEG YZ
8X0721	ZERK 5/16"-24 NF STR YZ
8X0725	ZERK 1/8" MPT STR YZ
8X0727	ZERK 1/8" MPT 90 DEG YZ
8X0850	STUD 3/4-10 X 2.5 B7 YZ
8X1110	CRG 3/8-16NC X 1" GR2 ZN
8X1115	CRG 3/8-16NC X 1-1/2" GR2 ZN
8X1120	CRG 3/8-16NC X 2" GR2 ZN
8X1130	CRG 3/8-16NC X 3" GR2 ZN
8X1135	CRG 3/8-16NC X 3-1/2" GR2 ZN
8X1140	CRG 3/8-16NC X 4" GR2 ZN
8Z0070	DECAL "SUMMERS" 1.25 X 6"
8Z0079	DECAL "SUMMERS" 5 X 20"
8Z0080	DECAL BOOM RELEASE NOTICE 95-
8Z0082	DECAL SPRYR PARKNG WARNNG 97-
8Z0086	DECAL ELECTROCUTN DANGER SPRYR
8Z0087	DECAL "WARNING"PINCH POINT03-
8Z0089	DECAL "DANGER" CONFINED SPACE
8Z0101	2" SUMMERS DECAL
8Z0143	DECAL ID ULTIMATE NT 03-
8Z0144	DECAL ID ULTRA SPRAYER 05-

<u>Stock #</u>	<u>Description</u>	<u>Stock #</u>	<u>Description</u>
8Z0202	3.5" SUMMERS DECAL 14-	8Z0522	TAG MN TANK SUCTION ID 03-
8Z0276	DECAL GENERAL CAUTION 91-	8Z0524	TAG MN TANK BOTTOM FILL 03-
8Z0278	DECAL WHEEL TIGHTENING 96-	8Z0526	TAG MN TANK CHEMICAL FIL 03-
8Z0284	DECAL NT TELESCOPE AXLE 03-	8Z0528	TAG MN TANK AGITATOR ID 03-
8Z0286	DECAL NARROW CART ADJAXLE07-	8Z0530	TAG MN TANK PUMP FILL ID 03-
8Z0288	DECAL RNS TNK PLMBNG TRLR99-11	8Z0532	TAG MN TANK VENT ID 03-
8Z0288A	TRAILR RINS SYS DECAL MOLDON	8Z0542	TAG FRNT TANK SUCTION ID 03-
8Z0290	DECAL SINGLE TANK PLUMBING 96-	8Z0544	TAG FNT TANK BOTTOM FILL 03-
8Z0290A	DECAL SNGL TANK PLBNG MOLDON	8Z0546	TAG FNT TANK CHEMICAL FL 03-
8Z0292	DECAL DUAL TANK PLUMBING 96-	8Z0548	TAG FNT TANK AGITATOR ID 03-
8Z0296	DECAL 1500NW SIGHT TUBE 11-	8Z0550	TAG FNT TANK PUMP FILL ID 03-
8Z0297	DECAL 1000NT SIGHT TUBE 03-	8Z0552	TAG FRNT TANK VENT ID 03-
8Z0298	DECAL 1650NW SIGHT TUBE 12-	8Z0800	REFLECTOR AMBER ADHSVBCK98-
8Z0299	DECAL 1500NT SIGHT TUBE 03-	8Z0805	REFLCTR REDORANGE ADHSVBK99-
8Z0300	DECAL 1650NT SIGHT TUBE 10-	8Z0810	REFLECTOR RED ADHSV-BACK 98-
8Z0450	DECAL MONOGRAM FOR RAVEN CONSL	8Z1000	MANUAL-PAK 3DIA X 11.75" 09-
8Z0500	DECAL GAUGE PANEL 11-	8Z1106S	OPERATORS MANUAL ULT/ULTRA
8Z0514	TAG RINSE TANK ID 2X2" 98-	8Z1107	APPLICATION RATE CARD TEEJET
8Z0518	TAG TANK NOZZLE ID 2X2" 98-	8Z1121	SCS450 INSTLLN&SERVICE MANUAL
8Z0520	TAG RINSE WAND ID 2X2" 98-	8Z1121R	SCS450 RSSN INST&SRVC MANUAL

History of Summers Manufacturing Co., Inc.

- 1965 – Summers Manufacturing is founded by Harley Summers, who purchases patent rights for Goebel truck and pickup hoists from the Goebel Brothers of Lehr, ND. These hoists, produced in Harley Summers' blacksmith shop the first year, were distributed nationwide by a Cincinnati, Ohio, dealer. With increasing sales, the company soon outgrows the small shop. Summers wins the Herman harrow contract, beginning the company's Herman culti-harrow line. Summers builds a 7,200 square-foot factory in Maddock to meet the demand for truck and pickup hoists, as well as Herman harrows.
- 1969 – Firm incorporates and becomes officially known as Summers Manufacturing Company, Inc.
- 1970 – Summers purchases rights to manufacture/market the Herman Harrow.
- 1973 – Company builds new 20,000 square-foot plant and offices in Maddock, adding a 20,000 square-foot assembly plant in the fall of 1975 (completed in January 1976), bringing total square footage of Maddock factories to 47,000.
- 1977 – Summers introduces the Agri-sprayer, used in conjunction with the Herman culti-harrow to incorporate herbicides and liquid fertilizer.
- 1980 – Company purchases manufacturing and distributing rights to Crown rockpickers from Crown Manufacturers of Regina, Saskatchewan. This forces another expansion project – a 26,000 square foot factory on a 24 acre site in Devils Lake, ND Industrial Park.
- 1981 – Company establishes a branch facility in Regina, Saskatchewan.
- 1982 – Devils Lake plant begins operations in January, manufacturing supersprayers and rockpickers. The Maddock factory begins producing the Superweeder, a combination cultivator and harrow.
- 1983 – Summers buys manufacturing and distributing rights to the Fargo Field Sprayer line from Mid America Steel (formerly Fargo Foundry), Fargo. This field sprayer line is manufactured at the Devils Lake plant. Harley Summers is selected North Dakota's small-businessman of the year by the Small Business Administration.
- 1984 – Herman Diamond Disk, a disk harrow made in a diamond shape to reduce blade breakage from rocks, comes off the assembly line.
- 1985 – Summers signs a contract with Melroe Company of Bismarck to obtain exclusive manufacturing rights to the Melroe harrow line.
- 1989 – Summers purchases TorMaster Company of Hordean, Manitoba, giving the company a line of rolling packer equipment, comprised of harrow packers and hydraulic fold coil packers.
- 1992 – A new engineering office/parts department is added to the Devils Lake factory.
- 1993 – Company adds two new products: a pickup-mounted sprayer with booms of 80 and 90 feet, and the Summers Superharrow, an extra-heavy-duty residue-management tool designed for the minimum and no-till farmer.
- 1994 – a 50 by 125 foot addition to the Maddock factory is completed. Construction begins on a 24,576 square-foot addition to the Devils Lake factory, which enables the company to increase production of truck-mounted and pull-type supersprayers and rockpickers.
- 1996 – 1500 square foot office area added to the Maddock plant. Company introduces Chisel Plow with floating hitch and 700# trip assembly.
- 1997 – 16,800 square foot warehouse in Maddock purchased from local business.
- 1999 - Company introduces the Ultimate suspended boom trailer sprayer with hydraulic folding booms. Additional sizes added to the Chisel Plow line, now ranging from 28' to 54'.
- 2000 - Company introduces the Supercoulter, the innovative solution for excessive field residue management on no-till, minimum-till, and conventional-till farming operations.
- 2001 - Cold storage building completed at Devils Lake. Company extends boom lengths up to 110 feet on the Ultimate Supersprayer.
- 2002 - Company adds a warehouse and service man in Aberdeen, SD.
- 2003 - Company introduces the Ultimate NT Supersprayer featuring a bolt on axle for easier adjustment, and a new family of tanks that feature a drainable sump and a common width dimension.
- 2004 - A 124 ft. x 310 ft. addition is added onto the current Devils Lake plant.
- 2005 - The Summers Superroller is added to the "Field Tested Tough" product line. Additional sizes of 56', 58' and 60' are added to the Superchisel line. Ultimate-Ultra NT Supersprayer introduced featuring 120' & 133' booms.
- 2006 - The Summers Coulter-Chisel, Rolling Choppers and 30' Superroller were included in product line.
- 2007 - 62' & 84' 5 Section Landrollers and a 20' Coulter-Chisel were introduced.
- 2008 - Disk-Chisels, ranging from 16' to 40' widths, are added to product line.
- 2009 – M105 and M108 Mounted Harrows added to selection of Mounted Attachments. SuperHarrow 2650, 50' SuperCoulter, Hydraulic Fold Rolling Chopper and 36" diameter Landrollers introduced.
- 2010 – Rolling Basket and 47' Diamond Disk added to product line. A 124 ft. x 310 ft. addition to Devils Lake factory built for a state of the art paint system.
- 2011 – Additional Supercoulter sizes were added along with larger tires for tillage implements. Ultimate and Ultra Supersprayers received an additional tank size of 1650 gallons. Front Caster Wheel option was made available for chisel implements.
- 2012 – 41', 46' & 53' Trail Type Landroller added to product line. Additional Superchisel sizes of 16' & 20' were added.
- 2013 – DT9530 added to product line. Internal Scraper in Rolling Baskets introduced. Finishing Coulter Gang becomes standard on the Diamond Disk and 2510 DT. Corporate offices opened at Devils Lake plant. New building and location for the Aberdeen warehouse.
- Summers distributes on a wholesale level to dealers and distributors throughout markets in North Dakota, South Dakota, Minnesota, Montana, Iowa, Washington, Idaho, Oregon, Utah, Colorado, Kansas, Nebraska, Oklahoma, Texas, Manitoba, Saskatchewan, Alberta, British Columbia, Kazakhstan, Russia and Australia, making it an international company.



SUMMERS

... Field Tested **TOUGH!**



Tillage

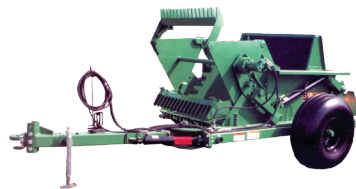


Rock Picker



Cultivators/Harrows

Mounted Attachments



Land Rollers/Packers



Sprayers



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