68/68XL
Field Sprayer

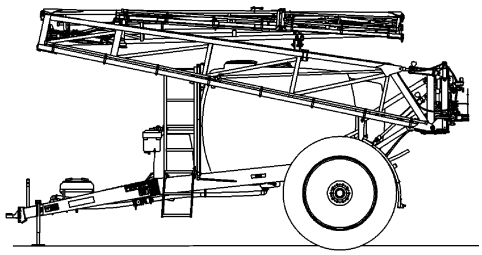
Service Manual

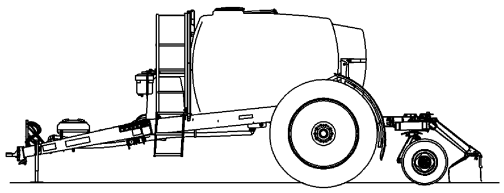
P.I.N. Y9S005001 and After

87655441 4/09
1st Printing

Flexi coil

SERVICE MANUAL





68XL
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87655441 28/04/2009

Contents

INTRODUCTION

Contents

INTRODUCTION

Foreword

Technical Information and ICE

This information in this manual has been structured using the Integrated Coding Environment (ICE). ICE is the way in which technical information is created, stored and retrieved in the Technical Information Database.

ICE coding classifies all information in three ways.

The first category is the Location, the second category is the Information Type and the third category is the Product:

- LOCATION - is the component or function on the machine, that the piece of technical information is going to describe e.g. Fuel tank.
- INFORMATION TYPE - is the piece of technical information that has been written for a particular component or function on the machine e.g. Capacity would be a type of Technical Data that would describe the amount of fuel held by the Fuel tank.
- PRODUCT - is the model that the piece of technical information is written for.

Every piece of technical information will have those 3 categories attached to it. You will be able to use any combination of those categories to find the right piece of technical information you need to resolve that customers concern on his machine.

That information could be:

- the description of how to remove the cylinder head
- a table of specifications for a hydraulic pump
- a fault code
- a troubleshooting table
- a special tool

How to Use this Manual

This manual is divided into Sections. Each Section is then divided into Chapters. Contents pages are included at the beginning of the manual, then inside every Section and inside every Chapter. An alphabetical Index is included at the end of a Chapter. Page number references are included for every piece of technical information listed in the Chapter Contents or Chapter Index.

Each Chapter is divided into four Information types:

- Technical Data (specifications) for all the mechanical, electrical or hydraulic devices, components, and assemblies.
- Functional Data (how it works) for all the mechanical, electrical or hydraulic devices, components, and assemblies.
- Diagnostic Data (fault codes, electrical and hydraulic troubleshooting) for all the mechanical, electrical or hydraulic devices, components and assemblies.
- Service data (remove disassembly, assemble, install) for all the mechanical, electrical or hydraulic devices, components and assemblies.

Sections

Sections are grouped according to the main functions or systems on the machine. Each Section is identified by a letter A, B, C etc. The number of Sections included in the manual will depend on the type and function of the machine that the manual is written for. Each Section has a Contents page listed in alphabetic/numeric order. This table illustrates which Sections could be included in a manual for a particular product.

PRODUCT	SECTION A - Distribution Systems	B - Power Production	C - Power Train	D - Travelling	E - Body and Structure	F - Frame Positioning	G - Tool Positioning	H - Working Arm	J - Tools and Couplers	K - Crop Processing	L - Field Processing
Tractors	X	X	X	X	X	X		X	X		
Vehicles with working arms: backhoes, excavators, skid steers, ...	X	X	X	X	X	X	X	X	X		
Combines, forage harvesters, balers, ...	X	X	X	X	X	X			X	X	
Seeding, planting, floating, spraying equipment, ...	X	X	X	X	X	X	X		X		X
Mounted equipment and tools, ...					X	X	X		X		

SECTION	LETTER	DESCRIPTION
DISTRIBUTION SYSTEMS	A	This Section covers the main systems that interact with most of the functions of the product. It includes the central parts of the hydraulic, electrical, electronic, pneumatic, lighting and grease lubrication systems. The components that are dedicated to a specific function are listed in the Chapter where all the technical information for that function is included.
POWER PRODUCTION	B	This Section covers all the functions related to the production of power to move the machine and to drive various devices. In the case of a pulled-type machine, this Section covers the power take-off function where power is provided from the towing machine.
POWER TRAIN	C	This Section covers all the functions related to the transmission of power from the engine to the axles and to internal or external devices. This Section also covers the power take-off function where power is provided to the pull-type machine and additional Process Drive functions.
TRAVELLING	D	This Section covers all the functions related to moving the machine, including tracks, wheels, steering and braking. It covers all the axles; both driven axles and non-driven axles, including any axle suspension.
BODY AND STRUCTURE	E	This Section covers all the main functions and systems related to the structure and the body of the machine, including the frame, the shields, the operators cab and the platform. The functions related to the positioning of the machine frame are included in Section F, Frame Positioning.
FRAME POSITIONING	F	This Section covers all the main functions and systems related to positioning of the machine frame or to positioning the attachment on the supporting machine frame.
TOOL POSITIONING	G	This Section covers all the functions related to the final and/or automatic positioning of the tool once the tool is positioned using the Working Arm or the machine frame.
WORKING ARM	H	This Section covers all the functions related to the articulated or single arms mounted on the front or rear of the machine. A working arm can have various tools and quick couplers mounted on to it. The tools and quick couplers are included in Section J, Tools and Couplers.

SECTION	LETTER	DESCRIPTION
TOOLS AND COUPLERS	J	This Section covers all the functions related to the specific tools that mount on the front, rear or beside the machine. The tools described here can be mounted with the positioning systems (lifting, side shift, swing) listed in Section G Tool Positioning. This Section covers all the quick coupling systems, located between the tool and the positioning system. The tools used for field preparation, soil preparation and treatment, planting and seeding are included.
CROP PROCESSING	K	This Section covers all the functions related to crop processing.
FIELD PROCESSING	L	This Section covers all the field processing functions of the machine.

This manual contains these sections.

Contents

Your manual contains these Sections. The contents of each Section are explained over the following pages.

Section Contents

SECTION A, DISTRIBUTION SYSTEMS

SECTION D, TRAVELLING

SECTION E, BODY AND STRUCTURE

SECTION H, WORKING ARM

SECTION L, FIELD PROCESSING

Chapters

Each Chapter is identified by a letter and number combination e.g. Spraying L.20.A. The first letter is identical to the Section letter i.e. Chapter L.10.A is inside Section L, Field Processing. The Chapter Contents lists all the "Technical Data" (specifications), "Functional Data" (how it works), "Service Data" (remove, install adjust, etc.,) and "Diagnostic Data" (fault codes and troubleshooting) that have been written in that Chapter for that function or system on the machine.

The Chapter Index lists in alphabetical order all the types of information (called Information Units) that have been written in that Chapter for that function or system on the machine.

Information Units and Information Search

Each chapter is composed of information units. The ICE coding is not included in the Information Unit title.

Page Header and Footer

The page header will contain the following references:

- Section and Chapter description

The page footer will contain the following references.

Printed references found at the base of each page then equate to

- The publication number for that Manual, Section or Chapter.

- Revision number of the publication
- Publication date
- Chapter reference (n/a)
- Page number

Legal advice

All repair and maintenance works listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given; and using, whenever possible, the special tools.
Anyone who carries out the above operations without complying with the procedures shall be responsible for the subsequent damages.
The manufacturer and all the organizations of it's distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages due to the anomalous behavior of parts and/or components not approved by the manufacturer himself, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages due to an anomalous behavior or parts and/or components not approved by the manufacturer.
The information in this manual is up-to-date at the date of the publication. It is the policy of the manufacturer for continuous improvement. Some information could not be updated due to modifications of a technical or commercial type, as well as to suit the law regulations of different countries.
In case of disagreement, refer to your Sales and Service Networks.

Safety rules

0960012c 1

SAFETY ALERT SYMBOL

The safety-alert symbol is used to denote possible danger and care should be taken to prevent bodily injury. This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! This symbol appears with text reading "Danger!", " Caution!", or "Warning!". These words indicate three levels of possible hazards, which are described below.

THREE WORDS USED IN CONJUNCTION WITH THE SAFETY-ALERT SYMBOL.

DANGER! - Indicates an immediate hazardous situation which if not avoided, will result in death or serious injury. The color associated with Danger is RED.

WARNING! - Indicates a potentially hazardous situation that if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.

CAUTION! - Indicates a potentially hazardous situation which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT.

⚠ CAUTION ⚠

Use rubber gloves, protective eye wear and protective clothing when cleaning or working with components covered with active chemical. Failure to comply will result in death or serious injury.

M870

⚠ CAUTION ⚠

Shut down the machine, remove key, be sure all moving parts have stopped and all pressure in the systems is relieved before cleaning, adjusting or lubricating the equipment. Failure to comply will result in death or serious injury.

M871

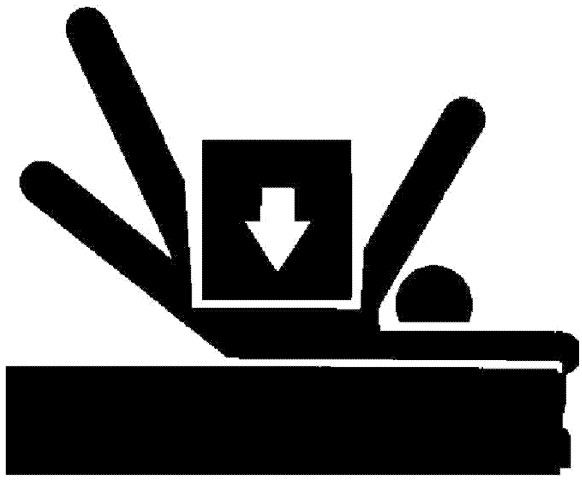
⚠ CAUTION ⚠

Always be certain that all pressure in the hydraulic circuits is relieved before servicing or disconnecting the hydraulics. Failure to comply could result in serious injury.

M880

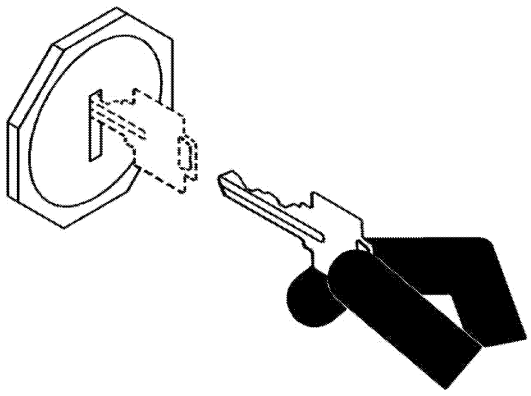
GENERAL SAFETY PRACTICES

- REVIEW this manual before each season of use.
- NEVER allow anyone unfamiliar, untrained, or complacent to operate the implement.
- USE EXTREME CARE when cleaning, filling, or adjusting the implement.
- MAINTAIN YOUR IMPLEMENT in proper working condition. Unauthorized modifications to the machine may impair function and/or safety and affect machine life.
- KEEP CHILDREN AWAY from chemicals and equipment
- PARK ON LEVEL GROUND and block adequately.
- AVOID moving machines.



098001M1 2

- DISENGAGE POWER AND SHUT DOWN the tractor engine (remove the key from the tractor ignition) and be certain that all moving parts have stopped, and all pressure in the system is relieved before cleaning, adjusting, or lubricating the equipment.



192169C 3

- KNOW the operator's manual well.
- KEEP service area clean.

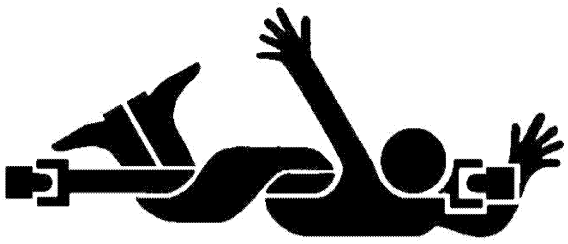
098002M1 4

- DO NOT enter tank unless another person is present.

196149S 5

- DO NOT enter tight areas.
- BE CERTAIN machine is tagged 'Out of Order' or work area is supervised.

- DO NOT work around rotating equipment. Loose clothing, rings, watches, etc. may get caught and cause serious injury.

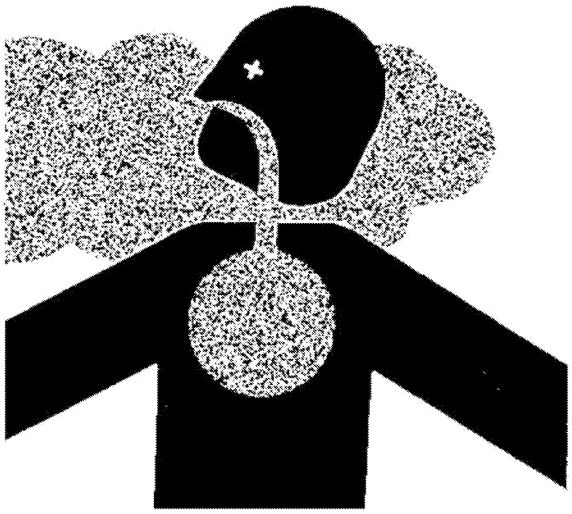


097001M1 6

- BE CERTAIN all moving parts have stopped before servicing.

098004M1 7

- AVOID toxic vapors. Breathe clean air.

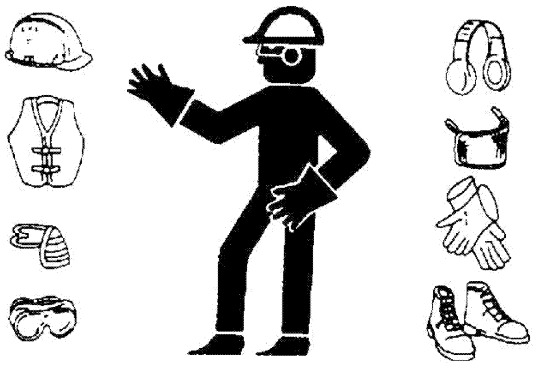


0960039m1 8

- DO NOT permit smoking.

196150M1 9

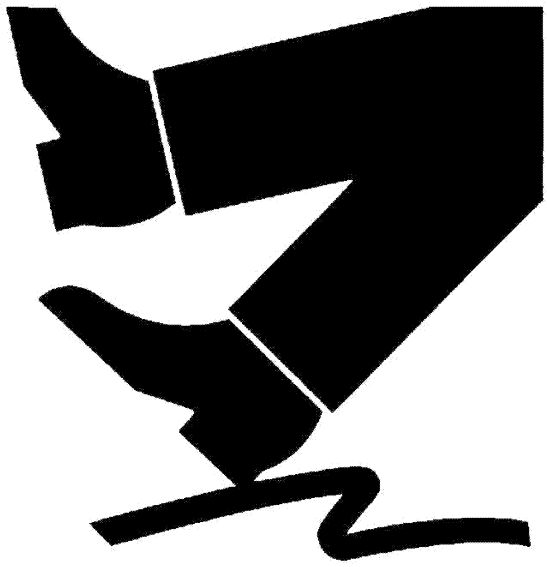
- WEAR protective clothing.



192078M1 10

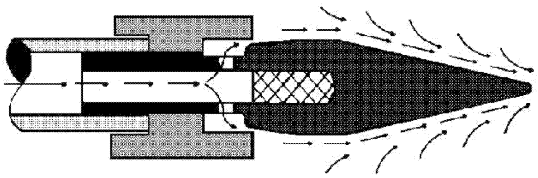
AIR AND AIR HOSES

- COMPRESSOR HOSES may move unexpectedly when suddenly disconnected.



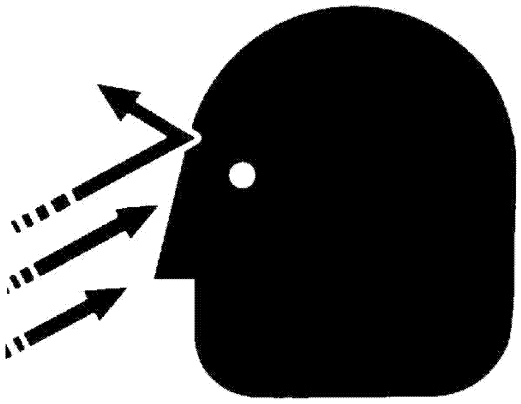
098005M1 11

- USE PROPER air nozzles. Never use compressed air to clean off clothes or otherwise direct it toward yourself.



098006M1 12

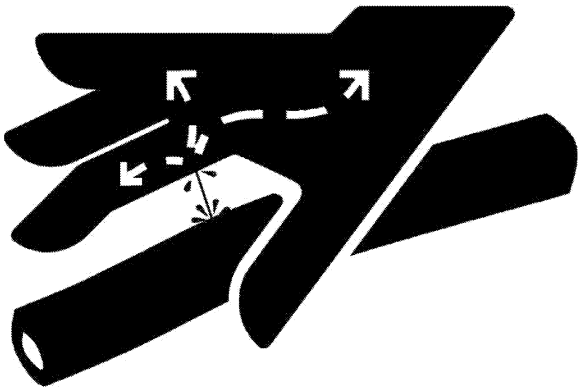
- AVOID getting chemicals into eyes. Use eye protection.



098007M1 13

HYDRAULICS AND HYDRAULIC LEAKS

- AVOID high-pressure fluids.
- ESCAPING HYDRAULIC FLUID IS A SERIOUS HAZARD. Escaping hydraulic fluid that is under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting the hydraulic lines. Check/tighten all connections BEFORE applying pressure.

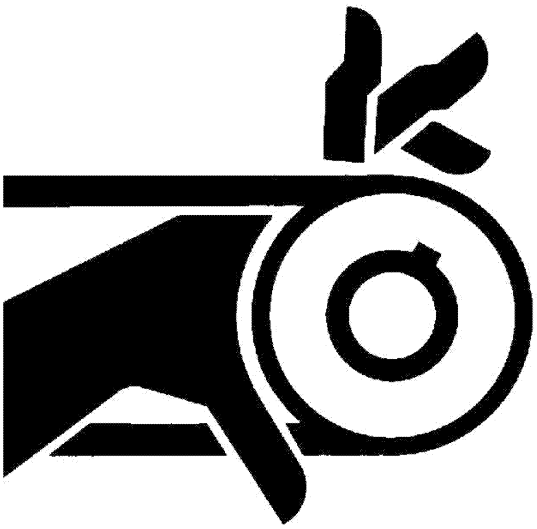


000002C 14

- BEWARE excessive hydraulic pressure. Explosive structural failure can result.
- BEWARE air locks in cylinders. Large cylinder displacements can occur without hydraulic oil flow.

SHIELDS

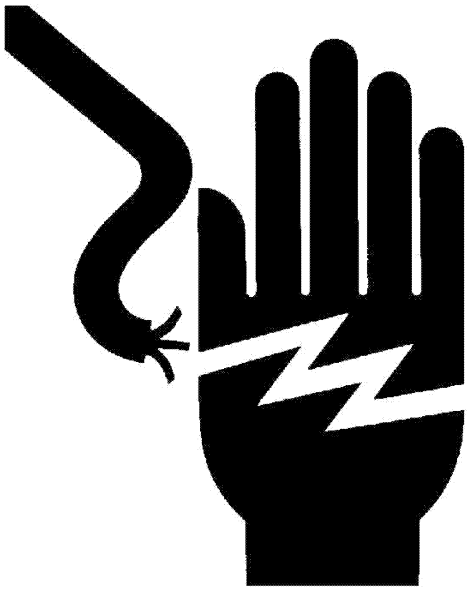
- REPAIR any damaged shields
- KEEP all shields in place.
- BE EXTRA CAUTIOUS when repairing or servicing without protective shields.



098008M1 15

ELECTRICAL

- REMOVE the ground wire to avoid arcing contacts.
- REMOVE the ground wire when welding.



098009M1 16

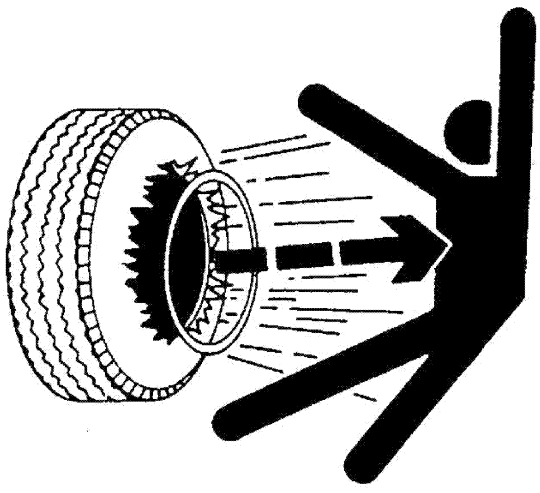
TIRES

⚠ WARNING ⚠

Do not remove, install or make repairs to a tire on a rim. Take the tire and rim to a tire shop where persons with special training and special safety tools are available. If the tire is not in correct position on the rim, or if too full of air, the tire bead can loosen on one side and cause air to leak at high speed and with large force. Because the air leak can thrust the tire in any direction, and with much force, you will be in danger of injury.

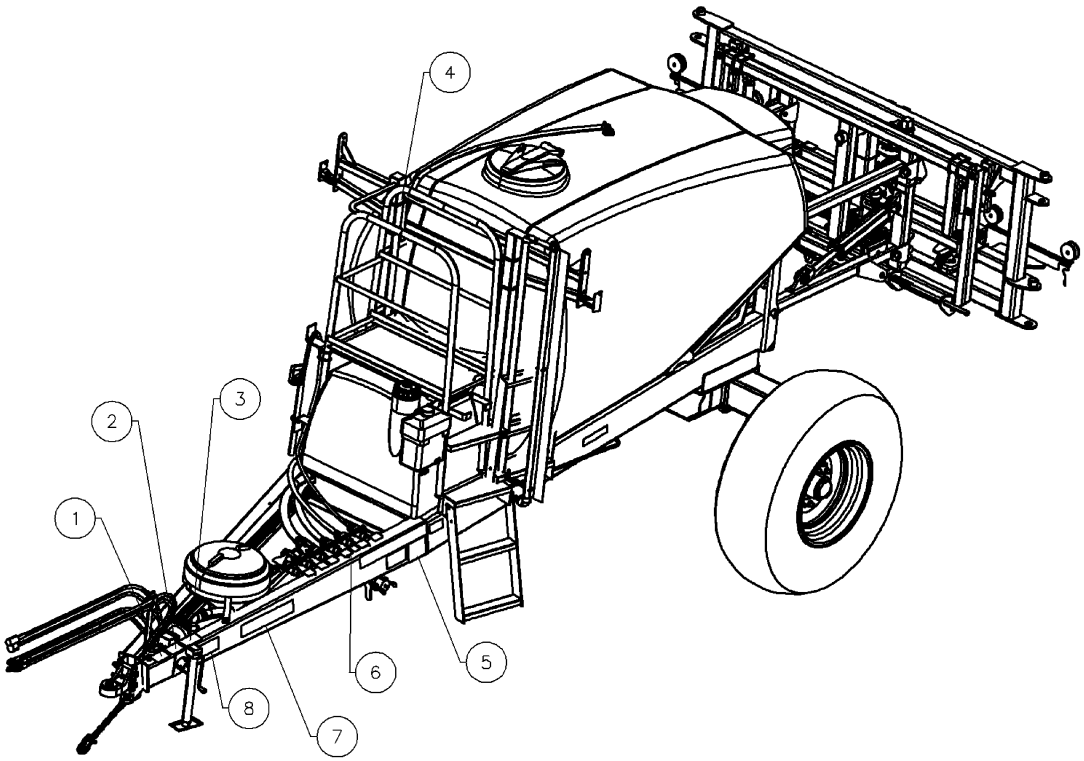
M169B

- USE A CAGE if possible when setting tires on rims.
- AVOID excessive air pressure.
- DO NOT OVER-INFLATE tires. NEVER lean over a tire while inflating it.



960041M1 17

Decals Suspended Boom

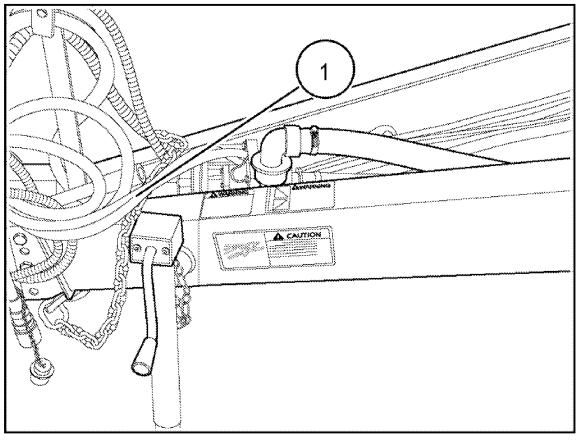


707058C 1

Safety Decal Locations

Danger - Hitch Upending Hazard **(1)**.

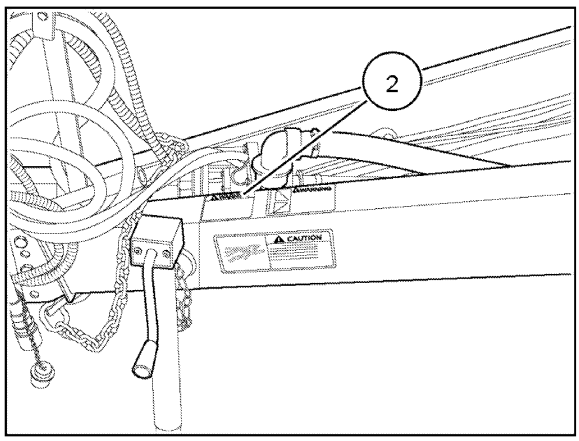
23347 2



707017S 3

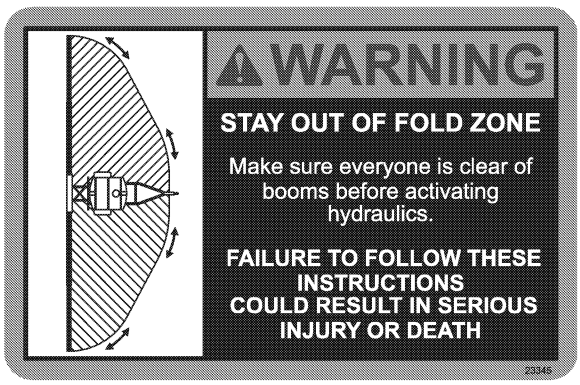
Warning - Electrocution Hazard **(2)**.

23346 4

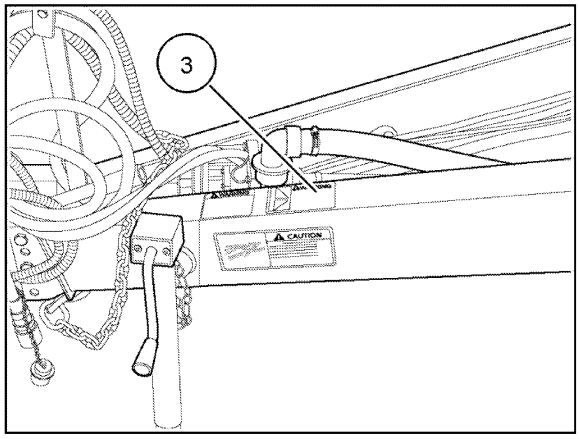


707017S 5

Warning - Stay Out of Fold Zone **(3)**.



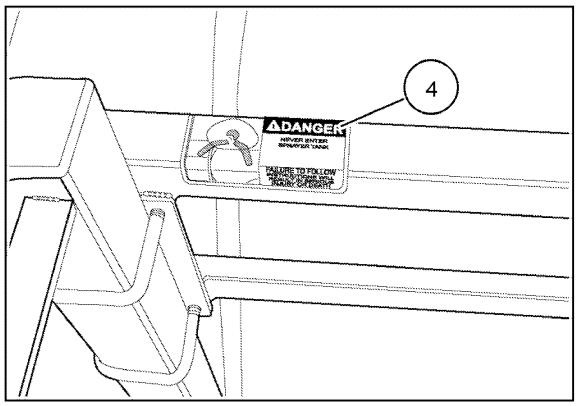
23345 6



707017S 7

Danger - Never Enter Sprayer Tank **(4)**.

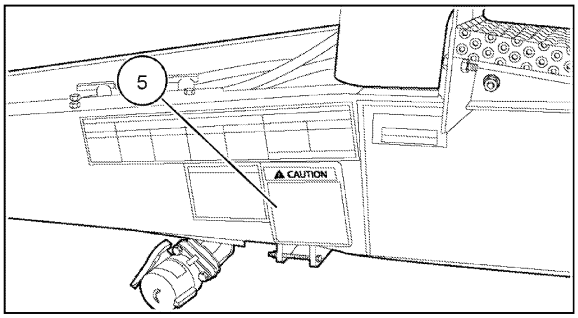
SQ78032 8



707020S 9

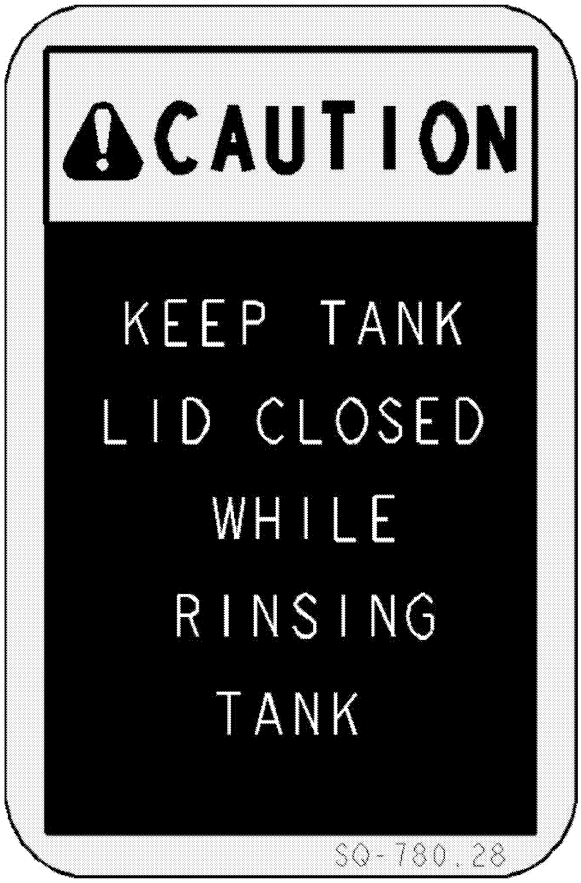
Caution - Operation and Service **(5)**.

GD50072 10

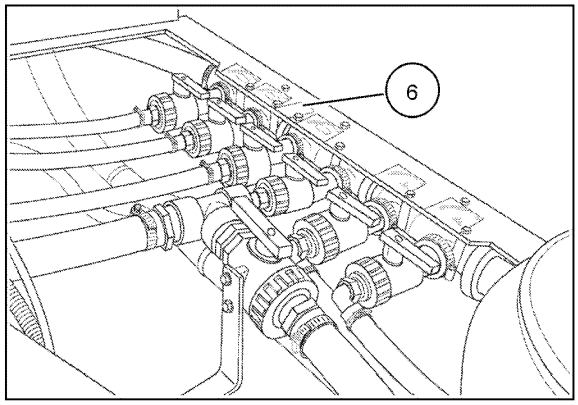


707019S 11

Caution - Keep Tank Lid Closed **(6)**.

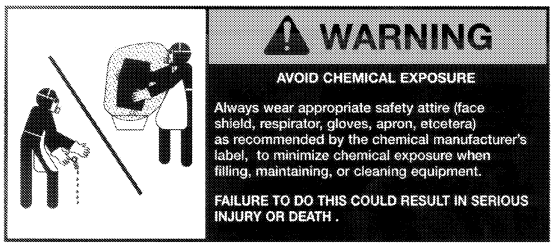


SQ78028 12



705025S 13

Warning - Avoid Chemical Exposure **(7)**.



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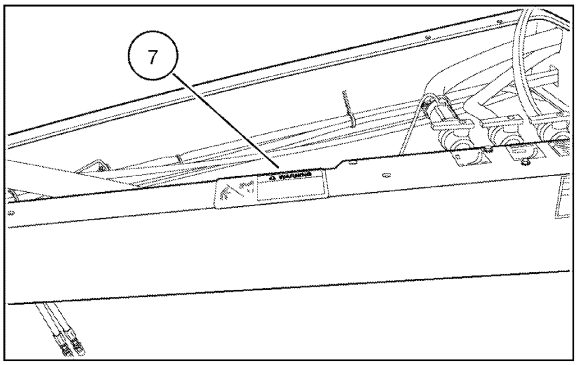
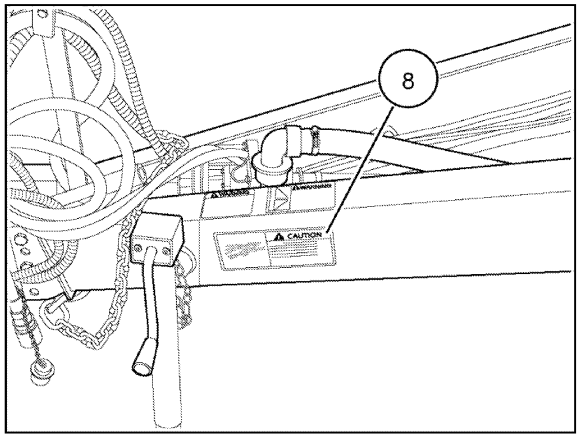


707018S 15

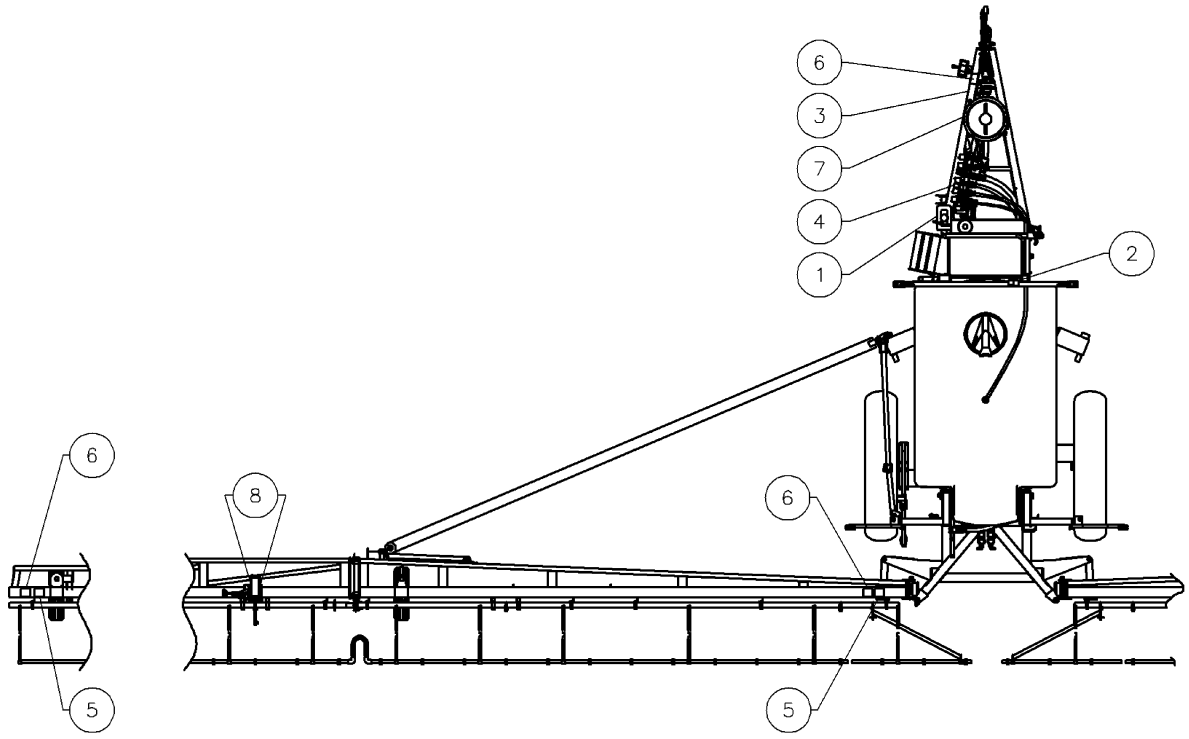
Caution - Escaping Fluid Hazard **(8)**.

GD50077 16



707017S 17

Decals Wheeled Boom

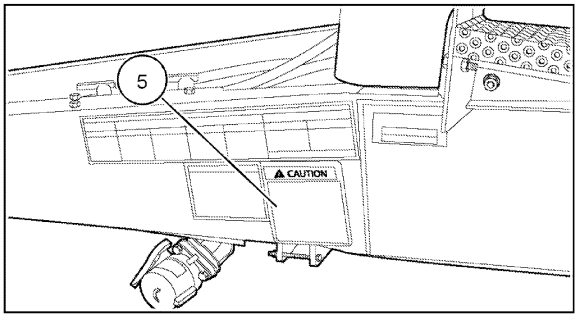


707066C 1

Safety Decal Locations

Caution - Operation and Service **(1)**.

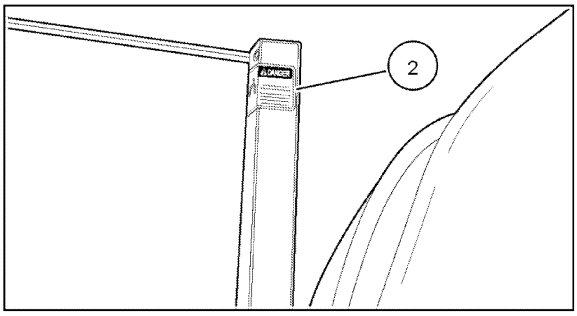
GD50072 2



707019S 3

Danger - Never Enter Sprayer Tank **(2)**.

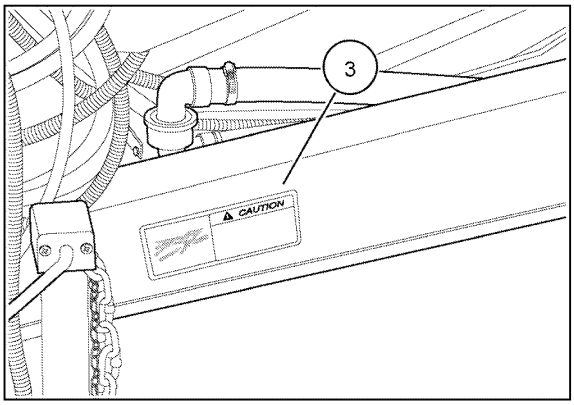
SQ78032 4



707001S 5

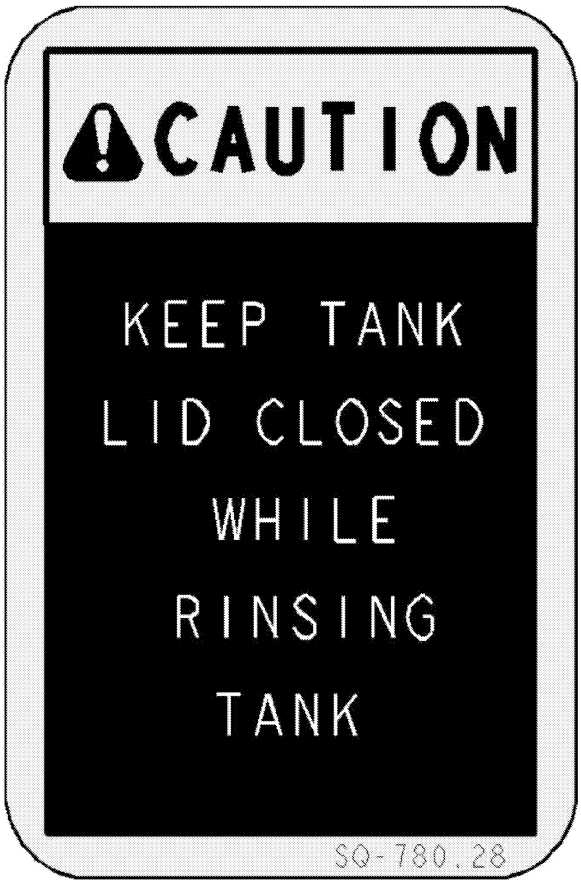
Caution - Escaping Fluid Hazard **(3)**.

GD50077 6



707021S 7

Caution - Keep Tank Lid Closed **(4)**.



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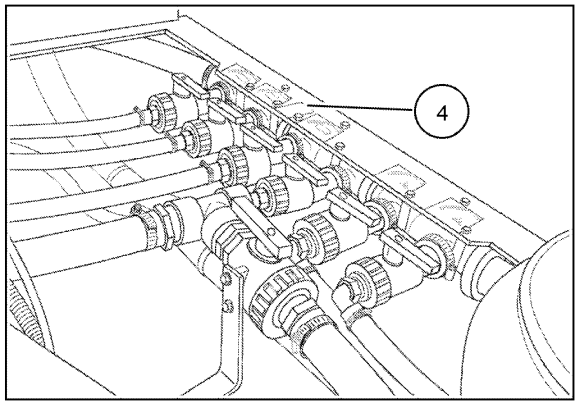
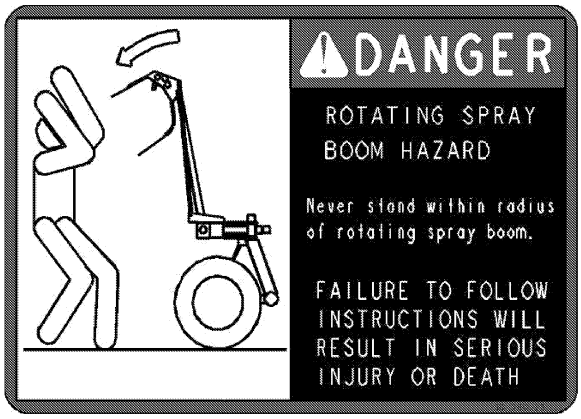


705025S 9

Danger - Rotating Spray Boom Hazard **(5)**.



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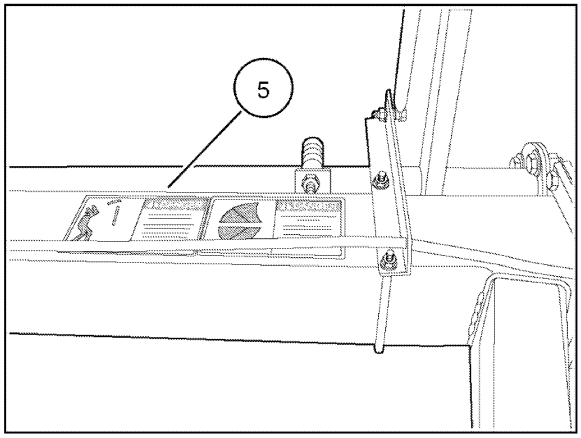
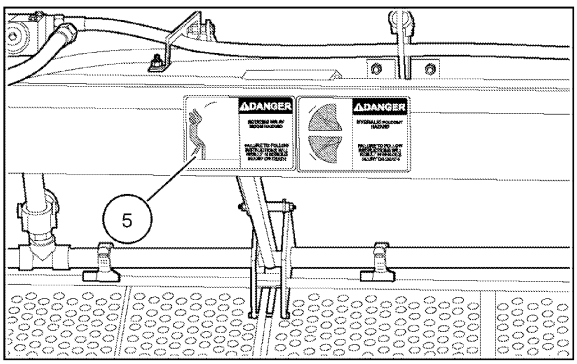


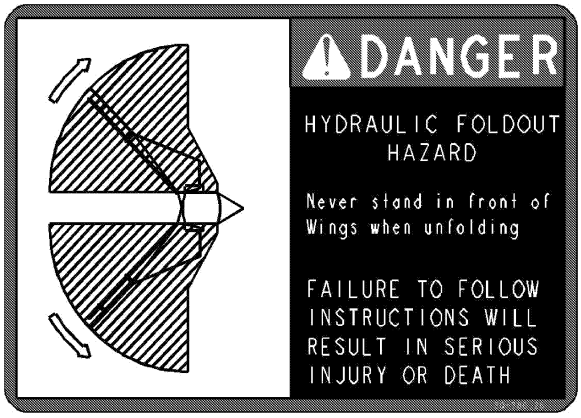
707002S 11

Inner Boom

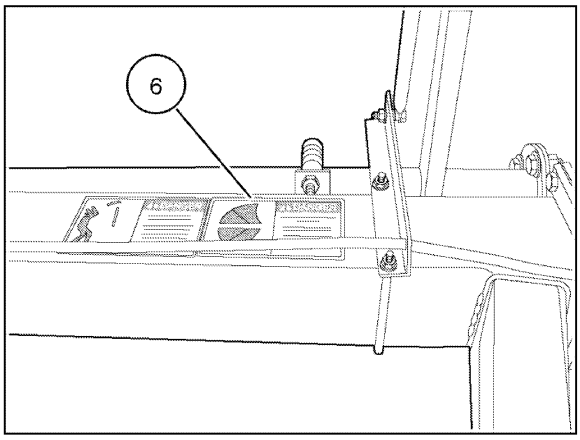


707022S 12

Warning - Stay Out of Fold Zone **(6)**.

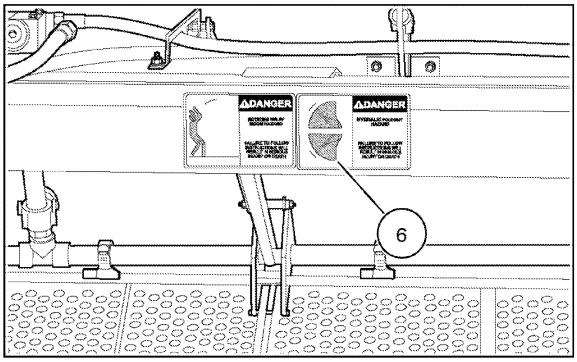


SQ78026 13



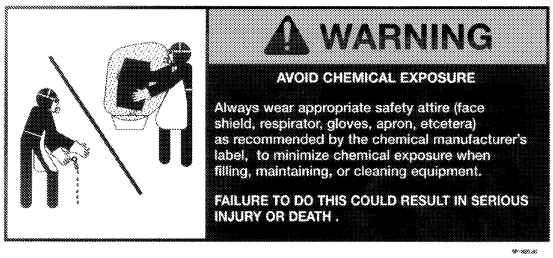
707002S 14

Inner Boom

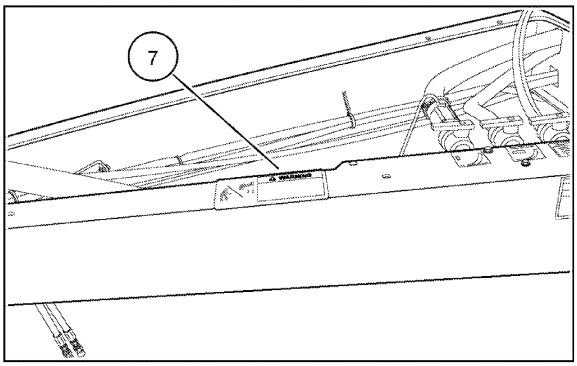


707022S 15

Warning - Avoid Chemical Exposure **(7)**.

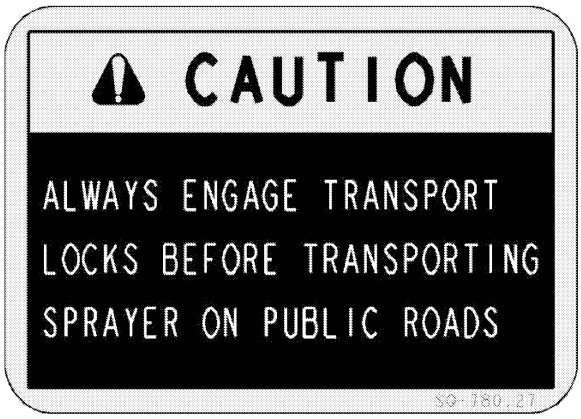


SP92030 16

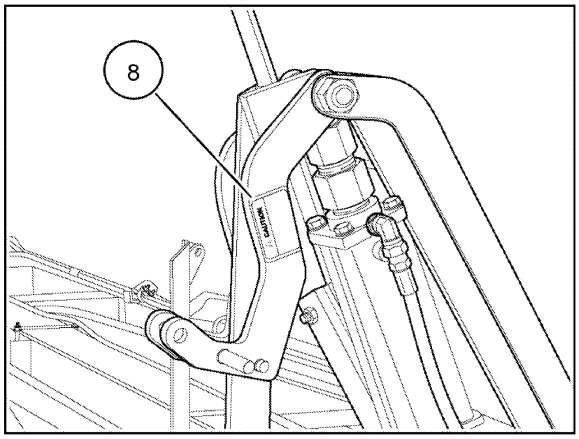


707018S 17

Caution - Always Engage Transport Locks



SQ78027 18



707023S 19

Basic instructions

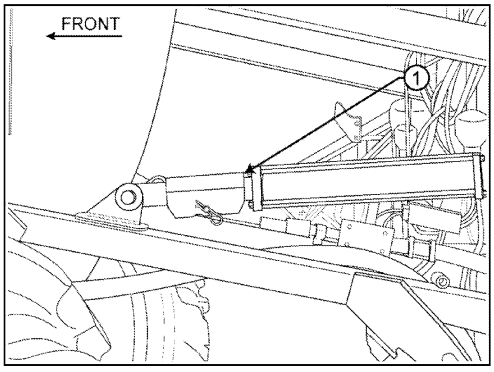
Suspended Boom Sprayer Service Safety

⚠ DANGER ⚠

NEVER disconnect the sprayer in field position. Serious injury or death will result due to hitch upending because of negative hitch weight.

M916

When servicing the sprayer in field position, make sure that the cylinder service locks **(1)** are installed.



705021M1 1

Basic instructions

HOW TO MEASURE VOLTAGES IN THE ELECTRONICS SYSTEM

When asked to measure a voltage, the voltage being measured is always at one point with respect to (relative to) the voltage at another point.

Example: To measure the voltage at point A with respect to point B, place one meter probe (typically red in color, and connected to the meter connector labeled “V“). Place the other meter probe (typically black in color, and connected to the meter connector labeled “COM“).

If the units of voltage are specified as “volts dc”, be sure your meter is set to “dc”. If the units of voltage are specified as “volts ac”, be sure your meter is set to “ac”.

North American automotive electrical systems often use the chassis (metal frame) of the automobile as the return path (often referred to as ground) for electrical current. The electronics system does not use the chassis for a return path, and no voltage measurements should be made with respect to the chassis. All components in the electronics system should be considered to be electrically isolated from the chassis, although at the tractor the electronics system return is connected to the battery negative terminal which is in turn connected to the tractor chassis.

ELECTRICAL ISOLATION

Two points are electrically isolated when the resistance between them is “infinite” (very large, greater than **10,000,000 ohms**). To verify two points are electrically isolated

1. Set your meter to measure resistance (usually labeled with the ohm symbol).
2. Hold the two probes apart from each other in the air. The meter must indicate infinite resistance (usually indicated by the infinity symbol or on digital multimeters, “++++” or “0L” for overload).
3. Hold the two probes together. The meter must indicate a very low resistance, less than **1.0 ohms**. The resistance measured will vary depending on what scale the meter is set to.
4. Place one probe on one point and the other probe on the other point. It does not matter which probe is placed on which point when measuring resistance. The meter must indicate infinite resistance as it did in 2 above for the two points to be electrically isolated.

ELECTRICAL CONTINUITY

Two points have electrical continuity when the resistance between them is very small, less than **0.1 ohms** . To verify two points have electrical continuity

1. Set your meter to measure resistance (usually labeled with the ohm symbol).
2. Since we are expecting to measure a resistance of **0 ohms**, set the scale to the lowest available.
3. Hold the two probes apart from each other in the air. The meter must indicate infinite resistance (usually indicated by the infinity symbol or on digital multimeters, “++++” or “0L” for overload).
4. Hold the two probes together. The meter must indicate a very low resistance, less than **1.0 ohms**. Record or memorize this resistance. This is the probe resistance.
5. Place one probe on one point and the other probe on the other point. It does not matter which probe is placed on which point when measuring resistance. Subtract the probe resistance measured in 4 above from the meter reading. If the meter reading minus the probe resistance is less than **0.1 ohms**, the two points have electrical continuity.

RESISTANCE

To measure the resistance between two points.

1. Set your meter to measure resistance (usually labeled with the ohm symbol).
2. Hold the two probes apart from each other in the air. The meter must indicate infinite resistance (usually indicated by the infinity symbol or on digital multimeters, “++++” or “0L” for overload).
3. Hold the two probes together. The meter must indicate a very low resistance, less than **1.0 ohms**. The resistance measured will vary depending on what scale the meter is set to.