



22956 Highway 61 Morley, MO 63767 Phone: (573) 262-3545 Fax: (573) 262-3369

# Owner's Manual

## VIKING-CIVES TOW PLOW RTH/LTH WHELEN LIGHT KIT 2016



Record the **MODEL** and **SERIAL NUMBER** of equipment for parts ordering information.

**PURCHASED FROM:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_  
**MODEL:** \_\_\_\_\_  
**SERIAL NUMBER:** \_\_\_\_\_



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**\*\*\*LIMITED WARRENTY\*\*\***

**VIKING-CIVES MIDWEST, INC.** warrants products of its manufacture against defects in workmanship and material for a period of one year from the date of shipment to the customer. In consequence of this warranty, any component part or parts of such products proving defective within the above specified time will be repaired or replaced F.O.B. factory.

Providing such parts are returned, transportation prepaid, to the factory and found defective by **VIKING-CIVES MIDWEST, INC.**

This warranty will not apply to any product which has been repaired or altered outside of **VIKING-CIVES MIDWEST, INC.** factory in any way, so as in **VIKING-CIVES MIDWEST, INC.**'s judgment, to affect its stability or reliability, nor which has been subject to misuse or accident.

The obligations of **VIKING-CIVES MIDWEST, INC.** under this warranty are limited to the replacement of defective parts. Such obligations are exclusive and in lieu of all other remedies, warranties, guarantees of liabilities, expressed or implied, with respect to each product delivered, hereunder, arising by law or otherwise (including without limitation any obligation or liability by **VIKING-CIVES MIDWEST, INC.** arising from negligence or with respect to fitness, merchantability, loss of use, revenue, or profit, or consequential damages or injuries).

This limited warranty shall not be extended, altered, or varied except by a written instrument signed by **VIKING-CIVES MIDWEST, INC.**

**VIKING-CIVES MIDWEST, INC.** assumes no responsibility for engines, electrical equipment or any other equipment and accessories not manufactured by **VIKING-CIVESMIDWEST, INC.** beyond the warranty of the manufacturer of such equipment of accessories.

All warranty work done on **VIKING-CIVES MIDWEST, INC.** equipment must have prior authorization from **VIKING-CIVES MIDWEST, INC.** along with a "Return Goods Authorization" number. All labour and parts issued by user for **VIKING-CIVES MIDWEST, INC.** warranty without an authorization number and a signed authorization warranty form will be at the users own cost.



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## REGISTRATION OF EQUIPMENT AND WARRANTY INFORMATION

You should register your equipment with VIKING-CIVES MIDWEST, INC., by filing out a warranty certificate and registration card and returning them to VIKING-CIVES MIDWEST, INC.. The warranty period becomes effective upon date of delivery of equipment unless other arrangements have been made with VIKING-CIVES MIDWEST, INC.. The information required to register the equipment may be found on the serial number and/or VIN tag secured to the equipment/vehicle. Check for damage before using this equipment. Report any damage to equipment at once to VIKING-CIVES MIDWEST, INC..

Viking-Cives Midwest, Inc. will not commend any modification to its products without prior written approval. Any modifications carried out without prior approval from VCM will VOID ALL WARRANTY, and will be the responsibility of the party who completed the modifications.

Viking-Cives Midwest, Inc.  
Hwy 61, Morley, MO (573) 262-3545

SERIAL NO: \_\_\_\_\_  
MODEL: \_\_\_\_\_ DATE: \_\_\_\_\_

( SERIAL NUMBER TAG )

Viking-Cives Midwest, Inc.  
Morley, MO 63767 Phone 573-262-3545

VIN \_\_\_\_\_

( VIN TAG )

MFD. BY: VIKING-CIVES MIDWEST INC.  
MONTH AND YEAR OF MANUFACTURE:  
MO. JULY YR. 2016  
GVWR: 15,328 KG( 36,000 LB)  
GAWR-FRONT:  
8,164 KG( 18,000 LB)  
WITH 385/65R22.5 TIRES,  
12.25X22.5 RIMS, @ 830 KPA  
( 120 PSI) COLD DUAL  
GAWR-INTERMEDIAT (1): \_\_\_\_\_ LB)  
KG( \_\_\_\_\_  
WITH \_\_\_\_\_ TIRES,  
RIMS @ \_\_\_\_\_ KPA  
( \_\_\_\_\_ PSI) COLD  
GAWR-INTERMEDIAT (2): \_\_\_\_\_ LB)  
KG( \_\_\_\_\_  
WITH \_\_\_\_\_ TIRES,  
RIMS @ \_\_\_\_\_ KPA  
( \_\_\_\_\_ PSI) COLD  
GAWR-REAR:  
8,164 KG( 18,000 LB)  
WITH 385/65R22.5 TIRES,  
12.25X22.5 RIMS @ 830 KPA  
( 120 PSI) COLD DUAL

THIS VEHICLE CONFORMS TO ALL  
APPLICABLE FEDERAL MOTOR  
VEHICLE SAFETY STANDARDS IN  
EFFECT ON THE DATE OF  
MANUFACTURE SHOWN ABOVE

VEHICLE IDENTIFICATION NUMBER:  
0V0PP000G000000  
VEHICLE TYPE: TRAILER

( MANUFACTURE TAG )



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## **WARRANTY REQUEST PROCEDURE**

All repairs considered for warranty that are performed outside of VIKING-CIVES MIDWEST, INC.; require prior written authorization from VIKING-CIVES MIDWEST, INC.. Failure to obtain written warranty authorization prior to repairs may result in the rejection of the warranty claim. **To obtain warranty consideration one must provide all required VIKING-CIVES MIDWEST, INC. with unit information including date of manufacture and serial numbers.** In most cases, this information is easily obtained from the “Shipped Unit Tag” (located in most cases inside the driver’s side door) and/or individual unit serial tag.

### **(A) To obtain Parts Warranty Consideration:**

In the event that repairs are required outside of VIKING-CIVES MIDWEST, INC. facility that may be considered for warranty the following steps must occur. **Notification of VIKING-CIVES MIDWEST, INC. customer service must take place prior to the start of any repairs.**

- (1) Contact VIKING-CIVES MIDWEST, INC. customer service to obtain a Return Goods Authorization (RGA) number. Any product arriving at VIKING-CIVES MIDWEST, INC. without a RGA number will be rejected and returned to the sender at his or her own expense.
- (2) Goods are to be shipped prepaid to VIKING-CIVES MIDWEST, INC., 22956 Highway 61, Morley MO 63767. **All items should be clearly marked with the appropriate RGA number.**
- (3) When a replacement item is shipped to replace a defective part for warranty consideration the following additional steps will occur:
  - An invoice will be generated for the value of the replacement item(s).
  - The defective part(s) must be returned (prepaid) to VIKING-CIVES MIDWEST, INC..
  - Upon receiving the defective part(s), VIKING-CIVES MIDWEST, INC. will issue and process a Discrepant Material Report (DMR). Once the evaluation of the DMR report is complete and the parts are deemed warranty, a credit will be issued against the outstanding invoice. **If the part(s) are deemed Non-warranty, the invoice will remain outstanding to be paid to VIKING-CIVES MIDWEST, INC..** Any part(s) to be returned to the customer will be at his or her own expense.

### **(B) To obtain Labour Parts Repair Warranty Consideration:**

In the event that repairs are required outside of VIKING-CIVES MIDWEST, INC. facility that may be considered for warranty the following steps must occur. **Notification of VIKING-CIVES MIDWEST, INC. customer service must take place prior to the start of any repairs.**

- (1) Contact VIKING-CIVES MIDWEST, INC. customer service to obtain a Warranty Claim Form (WCF) and warranty authorization number.
- (2) Fill out all required WCF information and fax or mail the completed form to VIKING-CIVES MIDWEST, INC., attention Customer Service Department.
- (3) Once the WCF report has been reviewed, warranty authorization will be granted or denied. **NOTE: VIKING-CIVES MIDWEST, INC. warranty labour rates will apply unless specifically determined otherwise.** Any part(s) involved in a WCF request must follow the Parts Warranty Consideration procedures.

### **For Customer Service and/or Parts requests please contact:**

Customer Service:

Viking-Cives Midwest Inc.: Ralph Parker ([rparker@vikingcivesmidwest.com](mailto:rparker@vikingcivesmidwest.com)) P: (573) 318-0755

Parts Service:

Viking-Cives Midwest Inc.: DeWayne Stroder ([dstroder@vikingcivesmidwest.com](mailto:dstroder@vikingcivesmidwest.com)); P: (573) 262-3545  
F: (573) 262-3540



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## ORDERING PARTS

Delays and errors can be eliminated when ordering instructions are followed correctly.

1. Place orders direct with Viking - Cives Midwest, Inc. / nearest dealer.
2. State Company name, address, and postal zip code.
3. Give the exact model and serial number of the equipment/unit (stamped on the unit identification plate.)
4. Furnish part number, description and quantities required. *Note: An alpha designation in the Item ID column indicates a sub-component for that parent item. When placing parts orders reference the parent item to receive a complete assembly. Individual items can be ordered separately if required by ordering the alpha designated item number.*
5. Print or type order clearly. **Note: A purchase order is required for the warranty parts.**
6. Give specific shipping instructions.

**VIKING - CIVES MIDWEST, INC.** – 22956 Hwy 61 Morley, MO 63767  
(573) 262-3545 Phone; (573) 262-3369 Fax

## A WORD ABOUT SAFETY

The equipment described in this manual is normally being operated in winter conditions with bad weather and snow & ice conditions. Due to these adverse operating conditions it is important that you the operator use good safety practices at all times to protect yourself, co-workers, and others when using the equipment.

It is not practical or possible to warn you about all the hazards associated with the operation and maintenance of this equipment. You use your own good judgment supplemented with the information found on the safety decals, instructions in this manual, your employer's safety programs, safety codes, local, state/provincial, and federal laws, rules and regulations.

When operating/performing maintenance on this equipment, trouble shooting equipment operations and loading or unloading the sanders/spreaders with material observe and obey all safety decals on the equipment and warnings listed in the manual. Failure to do this could result in serious injury or death to you or others.

Remember at all times that as the operator you are responsible for the safe operation of this equipment and responsible for the safety of others. Good safety practices not only protect you but also protect the people around you

## SAFETY DECAL SHEET



### SAFETY ALERT SYMBOL

THIS SYMBOL MEANS **ATTENTION!**  
**BECOME ALERT!**  
**YOUR SAFETY IS INVOLVED!**

PLEASE READ AND UNDERSTAND ALL SAFETY AND MAINTENANCE INSTRUCTIONS COMPLETELY BEFORE CONTINUING FURTHER!

### SAFE EQUIPMENT INSTALLERS and OPERATORS:



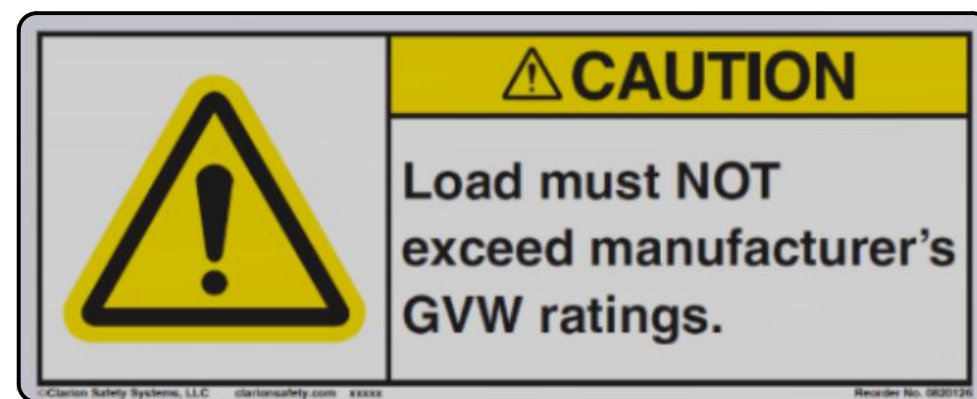
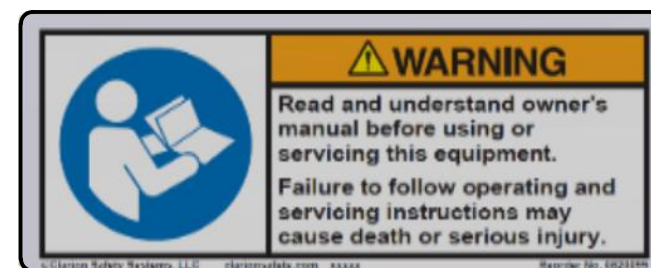
**TURN OFF ALL POWER BEFORE PERFORMING ANY SERVICE OPERATIONS**

FOLLOW RECOMMENDED OPERATING PROCEDURES.

KEEP EQUIPMENT IN SAFE OPERATING CONDITION AT ALL TIMES.

RECOGNIZE AND AVOID HAZARDS WHILE OPERATING, SERVICING AND MAINTAINING EQUIPMENT.

## THE BEST SAFETY DEVICE IS A CAREFUL OPERATOR!





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## DEFINITION OF SAFETY TERMS AND SYMBOLS

Throughout this manual, the terms **CAUTION**, **DANGER**, and **WARNING** are used to indicate the degree of hazard to personnel if proper safety procedures are not followed. These words will be used in conjunction with the Safety Alert Symbol: a dark triangle containing a white exclamation mark.



**The Safety Alert Symbol means: ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

<b>CAUTION</b>	Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury; OR may also be used to alert against unsafe practices that may result in personal injury.
<b>DANGER</b>	Indicates an imminently hazardous situation that, if not avoided, <u><b>WILL</b></u> result in death or serious injury.
<b>WARNING</b>	Indicates an imminently hazardous situation that, if not avoided, could result in death or serious injury.
<b>NOTE</b>	Identifies tips, helpful hints, and maintenance information the owner/operator should know.

## SAFETY INSTRUCTIONS

### WARNING SECTION



#### **WARNING**

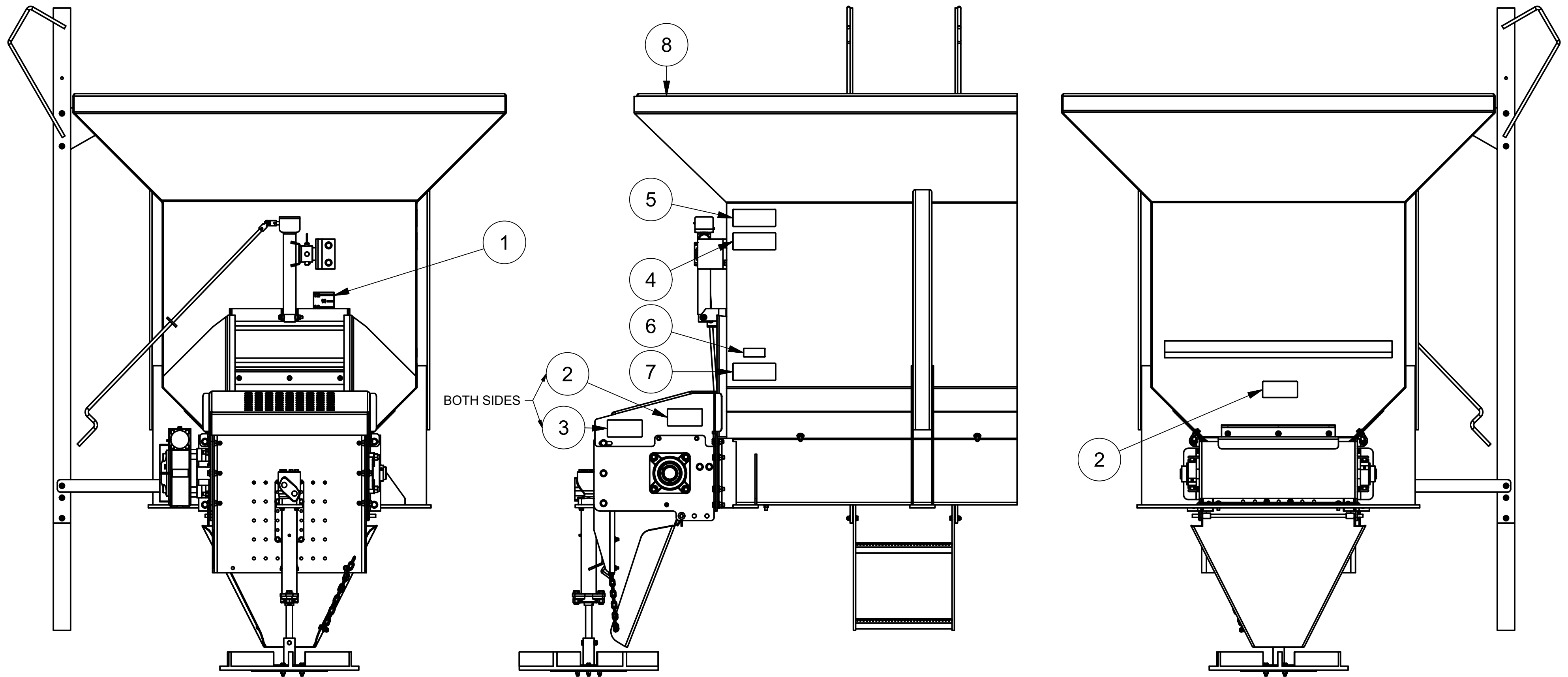
**Obey all the safety instructions listed in this section and throughout this manual. Failure to obey instructions in this section could result in death or serious injury.**

**BEFORE ATTEMPTING ANY TYPE OF ASSEMBLY, OPERATION, MAINTENANCE, OR OTHER WORK ON OR NEAR THIS PRODUCT:**

- **READ AND COMPLETELY UNDERSTAND THIS MANUAL.**
- **READ AND COMPLETELY UNDERSTAND THE MANUALS PROVIDED WITH YOUR PRIME MOVER/VEHICLE.**
- Read and understand all safety signs on this product and on your prime mover/vehicle.
- Know all your controls and know how to quickly stop all equipment and vehicle movement in case of an emergency.
- Know and follow good work practices when assembling, mounting, maintaining, repairing, removing, and storing this product.
- Never allow anyone, except the operator, to be around the prime mover or this product when either is in motion. Do not start-up unless others are clear of the work area.
- Do not stand or climb on this product.
- Before leaving the operators position or beginning any type of work on this product, lower this product to the ground, apply the prime mover's parking brake, stop the engine, remove the starter key, wait for all moving parts to stop, and then relieve all pressure in the hydraulic system.



**SAFETY DECAL LOCATIONS**



EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL  
TO MAINTAIN OUR ON-GOING PRODUCT AND DEVELOPMENT IMPROVEMENT PROGRAM, VIKING-GIVES RESERVES THE RIGHT TO CHANGE EQUIPMENT & SPECIFICATION WITHOUT NOTICE.



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## SAFETY DECAL LOCATIONS

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	0820052		DECAL GATE DOOR HEIGHT	1
2	0820092		DECAL WARNING CHAIN	3
3	0820094		DECAL CAUTION SPINNER	2
4	0820096		DECAL CAUTION SCREENS	1
5	0820098		DECAL DANGER ENTER BODY	1
6	0820099		DECAL WARNING READ MANUAL	1
7	0820126		DECAL CAUTION LOAD GVW RATING	1
8	51401274		TOW PLOW HOPPER SS ASSEMBLY	1

EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL  
TO MAINTAIN OUR ON-GOING PRODUCT AND DEVELOPMENT IMPROVEMENT PROGRAM, VIKING-CIVES RESERVES THE RIGHT TO CHANGE EQUIPMENT & SPECIFICATION WITHOUT NOTICE.





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## INTRODUCTION

Congratulations and thank you for your purchase of new Viking-Cives Snow & Ice Control equipment. This manual has been created to provide you with installation, set-up, operation, and maintenance information for the Viking-Cives **Tow Plow**. It has been prepared to familiarize you or any other person who will be assembling, operating, maintaining, or working with this product with the design features, and to instruct you in the recommended operation and maintenance of the unit.

Read this manual carefully before you operate or service your **Tow Plow**. Remember that you are working with heavy equipment that can injure you or someone else. You can help lessen the chance of injury by following the procedures in this manual carefully.

**DANGER: If incorrectly used, this equipment can cause severe injury.** Your chance of injury can be greatly reduced by following all safety decal notifications. All decals must be kept clean and complete. Replace any decals that are unreadable. Decals may be purchased directly from Viking-Cives Group and/or your nearest authorized dealer. All Operator/Service people should review this manual carefully and become familiar with its contents. **If anyone else beside you operates or services this equipment, make sure they read this manual and are instructed to follow all the safety procedures related to this equipment. Keep this manual available for reference whenever this product is being handled or used. Provide this manual to any new owners and/or operators.**

The Tow Plow is primarily used in conjunction with either a one-way or reversible front plow to provide additional plowing width. The snow discharge from a plow truck's front mounted plow, is picked up by the Tow Plow and carried/pushed further back onto the road shoulder; the width of the road cleared is thereby increased in a single pass.

The Viking-Cives Midwest, Inc. (VCL) Tow Plow has been engineered and built with durability and safety of operation in mind. The Tow Plow has been designed to cushion sudden shock, in the event contact between the plow cutting edge and an obstruction such as railway tracks, manhole covers, etc.

To ensure safe and trouble free operation of the Tow Plow, careful attention must be given to the critical adjustments during the initial installation and set-up, as well as following periodic maintenance and inspection schedules. This operation manual is designed to assist in the repair, inspection, adjustment, and operation of the Tow Plow. It also sets out the recommended method for mounting and dismounting the plows and the general maintenance necessary to keep them in proper working order.

## GENERAL INFORMATION

The purpose of this manual is to assist in assembling, mounting, operating, and maintaining your new Viking-Cives Snow & Ice Control equipment. Read this manual carefully to obtain valuable information and instructions that will help you achieve years of safe and dependable service.

The illustrations and data used in this manual were current at the time of printing, but due to possible engineering and/or production changes, the actual product may vary slightly in detail. Viking-Cives reserves the right to redesign and/or change components as may be necessary without notification.

Throughout this manual, references may be made to:

Prime Mover	The chassis/vehicle to which this product is attached.
Right, Left, Front, Rear, Drivers Side, Curb Side	Directions as determined in relation to the operator when seated in the normal operation position.
<b>IMPORTANT</b>	Precautions that must be followed to prevent damage to equipment.
<b>NOTICE</b>	Precautions that must be followed to prevent substandard performance.



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## **DAILY INSPECTION AND LUBRICATION** **PERIODIC MAINTENANC INSPECTION**

Daily inspection along with periodic preventive maintenance will reduce the chance of any major repairs and down time during equipment use. Before any plow is attached onto the vehicle, all equipment should be inspected and checked to ensure that everything is in safe operating condition. Any and all defects, when noted, should be scheduled for repair(s) and/or immediate replacement. The following checklist should be performed prior to and at the completion of each plowing shift, to ensure operational readiness when required.

1. Check the fluid level in the hydraulic oil reservoir. If the sight indicates low oil level, add the appropriate amount of the specified hydraulic fluid.
2. Grease all required components:
  - All plow harness sheave nipples.
  - All pump drive shaft nipples.
  - All moldboard arm attachment points.
  - All hydraulic cylinders mount points.
  - All front harness pivot points.
3. Check all components for loose and/or missing fasteners, if required tighten and/or replace.
4. Visually inspect all hydraulic connections and hoses for cracks and/or leaks.
5. Check all cables, chains, and sheaves for excessive wear or damage.
6. Visually inspect front plow and Tow Plow units. Check cutting edges and wear shoes. If cutting edge has excessive wear, remove and rotate, or if required, replace. NOTE: Do not allow cutting edge to wear down to mounting angle. Any wear to the mounting angle may affect the operation and safety of the equipment. Replacement is costly.
7. At the beginning of each shift, visually inspect all caution and warning decals. All decals should be complete and legible. If decals are not legible, clean them. If cleaning the decals does not make them legible, install new decals.

## **GENERAL OPERATING INSTRUCTIONS**

1. The operator should familiarize himself with all equipment prior to operation. The cab controls are placed at a comfortable reach of the operator, with an allowable amount of adjustment. If necessary, the controls can be adjusted for either driver or passenger use.  
The in cab control levers are clearly marked as to the equipment/function they control.
2. To raise the Tow Plow, pull back on the appropriate control level, to lower the Tow Plow, push the control level forward.  
**NOTE:** The in cab controls are proportional to the hydraulic valve, therefore, the further the control lever is moved the faster the plow or Tow Plow will raise or lower.
3. Before putting any equipment into use, check for any worn, damaged or loose components, if necessary repair or replace. Listen for any unusual sounds, if necessary repair and/or replace worn or damaged parts.
4. Before operating any equipment, be sure to read and fully understand all caution and safety warnings. Familiarize yourself and others with all caution/warning labels and their locations. Make sure all labels are complete and legible. Replace any labels that have become unreadable and/or missing. Replacement labels can be purchased directly from Viking-Cives Group and/or your nearest authorized dealer.



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## TOW PLOW INSTALLATION



**SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS BEFORE PROCEEDING WITH ANY INSTALLATION.**

**NOTE:** These installation instructions are intended as a guide to aid in the mounting of your Viking-Cives Midwest, Inc. **Tow Plow**. All dimensions provided in these instructions are approximate and could vary due to variables such as: chassis make and model, tire size, type of suspension, customer preference, and/or unknown interference caused by immovable attachments. Viking-Cives Midwest, Inc. assumes no responsibility/liability for improper Tow Plow installation, unless installed by Viking-Cives Midwest, Inc.. The Tow Plow mounting location should be discussed with the end-user, chassis dealer, and the installer prior to beginning installation in order to achieve the best possible installation.

### ATTACHMENT TO PRIME MOVER

The VCL Tow Plow attaches to the prime mover by means of a pintle hook. Care must be taken to ensure the size of the pintle hook on the prime mover is compatible with the Tow Plow requirements. Check to ensure the trailer attachment items such as air glad hand connectors, lighting connector(s), safety chains, hydraulic quick disconnects, and pintle hook components are in good working order. Any damaged components should be repaired or replaced.

During the initial installation of the Tow Plow to the vehicle, some adjustments will be necessary to insure proper operation of the plow and trip mechanisms.



**WARNING: All Viking-Cives Midwest, Inc. installed cab controls for steering of TowPlow, have a two-stage lockout device to prevent the chance for accidental deployment of the steering feature. In the event you have chosen to purchase the TowPlow without Viking-Cives Midwest, Inc. installing the controls, we STRONGLY RECOMMEND that you install a lockout mechanism to prevent accidental steering deployment. DO NOT OPERATE without the correct type of controls.**

**Viking-Cives Midwest, Inc. takes no responsibility whatsoever for any issues arising from or related to cab controls not installed by Viking-Cives Midwest, Inc.**

**When plow is being raised or lowered – STAND CLEAR!**



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## **TOW PLOW INSTALLATION**

1. Set Tow Plow unit on a firm, level surface (such as a concrete garage floor or paved area) that is large enough to safely accommodate this product.
2. Drive the prime mover into position. **DANGER: NEVER stand between the prime mover and the Tow Plow when the vehicle is being moved into position.** Before connecting the Tow Plow to the prime mover, shut the vehicle engine down and make sure that the parking brake is engaged.
3. Position the pintle ring over the pintle hook and slowly lower the ring by using the handle provided on the Tow Plow frame jacks (landing gear) to raise the landing gear. When the pintle hook is fully connected, continue to raise landing gear and ensure adequate ground clearance.
4. Connect the trailer safety chains.
5. Connect the main and auxiliary trailer lighting plug(s).
6. Connect the plow lift hydraulic circuit (single acting).
7. Connect the steering hydraulic circuit (double acting).
8. With prime mover running, test all functions to ensure:
  - a. Moldboards move freely from stored (up) position to deployed (down) position. **CAUTION:** When removing lock pins from moldboard arms, always remove the two pins at the centre of the Tow Plow first. Then remove the two pins at the outside ends of the moldboards. When replacing the lock pins, reverse the order. Begin by putting the two outside pins in place and then install the two centre pins. **WARNING: Lock pins must always be in place when the Tow Plow moldboards are in transport position.**
  - b. Steering wheel moves freely thru full stroke of activating cylinder.
  - c. All lights on rotating light bar are clear and working, and that the light bar rotates the full 30°.



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## **TOW PLOW SET-UP AND OPERATION**



**SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS BEFORE PROCEEDING WITH ANY SET-UP AND/OR OPERATION.**

When all conditions of installation have been met, the Tow Plow is ready to operate. The levers for controlling the Tow Plow lift and steering functions are located in the cab of the prime mover. **WARNING: When the moldboards are being raised or lowered – STAND CLEAR!**

### **DAILY INSPECTION INSTRUCTIONS**

Before any plow is attached onto the vehicle, all equipment should be inspected and checked to ensure that everything is in safe operating condition. Any and all defects, when noted, should be scheduled for repair(s) and/or immediate replacement. The following checklist should be performed prior to and at the completion of each plowing shift, to ensure operational readiness when required.

1. The operator should familiarize himself with all equipment prior to operation.
2. Inspect Tow Plow for damaged or worn cutting edges and/or wear shoes.
3. Inspect moldboard for signs of damage such as broken or worn bolts and pins, cracked welds, bent sections and/or excessive rusting.
4. Inspect mounting arms for signs of damage such as cracked welds, bent or broken sections, and excessive rusting.
5. Inspect mounting holes on the arms and lugs for excessive wear. Holes having greater than 3/16-inch clearance are to be repaired.
6. Inspect plow for broken, worn or stretched lift chains, grab links and clevises.
7. Inspect plow assembly to ensure that all fasteners (bolts, nuts, cotter pins, lock rings, etc.) are properly secured. Replace any components that are damaged and/or missing.

### **OPERATING INSTRUCTIONS**

**WARNING: The Tow Plow swings out to the right and the operator must be alert at all times to ensure the area is clear when deploying and using the Tow Plow in the deployed position.**

#### **GENERAL:**

- Similar to other snowplows and wings, the operator must ensure plow area is free from any and all people and obstacles when lowering the moldboard.
- The Tow Plow should always be moved to its transport position prior to negotiating turns, especially right turns.
- The Tow Plow is designed to operate on pavement and shoulders constructed of solid materials. The Tow Plow was not designed to be deployed over inslopes or ditches. Caution should be used when plowing shoulders that may have obstacles or grade changes, such as side entrances and curbs, which are higher than the shoulder grade.
- The Tow Plow is to be used on multilane roads that enable the operator to clear up to approximately 28 feet without encountering any obstacles.
- The Tow Plow is intended to operate internally in gang plowing situations. Owners may wish to add additional lights or signs to provide better warning to traffic.



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## **OPERATOR INSTRUCTIONS PRIOR TO OPERATING TOW PLOW ON ROADWAY:**

- Operators must read the owners manual and demonstrate their ability to fully manoeuvre the Tow Plow on an off-road site before actively plowing on roadways. Before operating the unit on the roadway, the operator should be able to:
  - Operate the Tow Plow from a towed to deployed position, with accuracy in judging its clearing width to clear any roadway obstacles (Cone test with 2 or more cones. Operator must plow the first cone without touching the rest).
  - Steer in and out to clear obstacles (Cone test with offset cones at 80' spacing and 10' laterally).
  - Operate the Tow Plow from a towed position, plow up to an obstacle, and then back the unit while correcting the steering to cause the Tow Plow to move directly behind the truck (Plow up to the cones, pick up the moldboards, back up until the Tow Plow is behind the prime mover, stop, reset the steering to the towed position, proceed forward to clear obstacle (two cones), and then deploy the Tow Plow to full width again).
- Operators should perform test runs on off-road sites to ensure they understand the Tow Plow motions and speed of the transition from the towed position to the deployed position and back to the towed position again. Operators should practice on an obstacle course to ensure they are familiar with the movement and reaction of the Tow Plow.
- Operators must become aware of the Tow Plow motion when backing up. If an operator has the Tow Plow in the deployed position and backs up, the trailer will swing back behind the truck and to the left. The operator must first steer the trailer to its towed position to prevent it from swinging to the left. Practicing on an obstacle course is very beneficial to gain experience with this motion.

## **TO DEPLOY THE TOW PLOW:**

- The Tow Plow should be deployed in the following sequence:

1. Remove lock pins from the moldboard arms, starting with the centre pins.
2. Lower the moldboards to a position 6 to 12 inches above ground level.
3. Steer wheels to extended position.
4. Move unit ahead until plow is fully positioned to the right side of the prime mover. **WARNING: Adequate mirrors must be installed on the prime mover to allow the driver to fully see the unit in the deployed position.**
5. Lower moldboards to road level.

## **TO RETURN THE TOW PLOW TO THE TRANSPORT POSITION:**

- To return the Tow Plow to the transport position:

1. Raise moldboards slightly (6-12 inches).
2. Steer wheels to 0° position.
3. Move the unit ahead until the Tow Plow is directly behind the prime mover.
4. Fully raise the moldboards.
5. Insert lock pins, starting with the two outside pins.
6. **WARNING: Make sure the 2-stage lockout device for steering is employed.**



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**SAFETY FIRST!! READ AND UNDERSTAND THE SAFETY INSTRUCTIONS BEFORE BEGINNING ANY MAINTENANCE OPERATION.**

In preparation for the snow plowing season a visual equipment inspection must be performed. Look for any damaged components, bends, cracked welds, hydraulic leaks, etc. Inspect all fasteners; tighten any that have loosened and replace any that are damaged. Check all hydraulic hoses for cuts, cracks, and/or leaks. Visually check plow lift chains and cable(s) for loose clamps and frays. **Immediately replace any damaged chains and/or frayed cables.**

Periodically during plowing, stop to inspect plow cutting edges and moldboard shoes for wear. At the first sign of excessive wear, discard and replace with new parts.

When the Tow Plow is disconnected from the prime mover, be sure to couple the hydraulic hoses together, to prevent damage to the quick disconnect hose ends and to help prevent the introduction of foreign material into the hydraulic system.

**BEFORE EACH USE**

- Make sure that all nuts and bolts are in place and properly tightened.
- Make sure that all other fasteners are in place and are performing their specified function.
- Make sure all safety signs are in place, are clean, and are legible.
- Replace any damaged parts or excessively worn parts.
- Inspect for damage to any part of the plow moldboard or push frame, such as broken or worn bolts or pins, cracked welds, bent sections and/or excessive rusting.
- Inspect for damage to trip mechanisms, such as broken springs, cracked welds, worn or broken bolts.
- Check all hoses for cuts, cracks and leaks.

**AFTER EVERY 10 HOURS OF USE**

- Grease all grease fittings and pivot points: see Parts Pages and Parts Lists for reference.

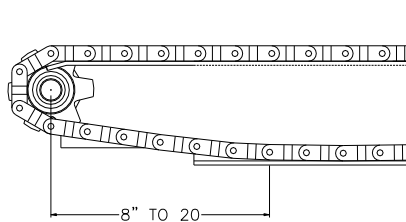
**REPLACEMENT OF CUTTING EDGE**

1. Park the prime mover/vehicle on a level surface (such as a concrete garage floor or paved area) that is large enough to safely accommodate unit with the Tow Plow attached.
2. Place the vehicle's transmission in "Park," and set the parking brake.
3. Lower the Tow Plow moldboards onto suitable blocking, positioned immediately behind the moldboard. This blocking must be of sufficient height to hold the cutting edge approximately 6 to 8 inches above the level surface.
4. Shut off the prime mover's engine, remove the starter key, wait for all moving parts to come to a stop, and relieve all pressure in the hydraulic lines.
5. Loosen the nuts on all the cutting edge bolts; remove all nuts and bolts except the bolts on each end of the cutting edge.
6. While holding up the end of the cutting edge, remove the nut and bolt from that end and allow the cutting edge to pivot down to the level surface.
7. Repeat Step 6 for the other end of the cutting edge. If using a standard centre punched reversible cutting edge, flip the edge from top-to-bottom and reinstall. Properly dispose of worn-out edges and all bolts and nuts.
8. Reinstall a new wear edge by reversing the procedures in steps 7 thru 5; tightening all nuts to recommended torque values.

## PREVENTIVE MAINTENANCE INSPECTION AND LUBRICATION RECOMMENDATIONS

Daily inspection along with periodic preventive maintenance will reduce the chance of any major repairs and down time during equipment use.

1. Check the fluid level in the hydraulic oil reservoir. If the sight indicates low oil level, add the appropriate amount of the specified hydraulic fluid.
2. Grease all required components: beginning of each season, then once a week.
  - All main conveyor, cross conveyor and spinner bearings.
3. Check all components for loose and/or missing fasteners, if required tighten and/or replace.
4. Visually inspect all hydraulic connections and hoses for cracks and/or leaks.
5. Check all conveyor chains, chain covers, sprockets, and conveyor beds for excessive wear or damage.
6. Adjust conveyor chains as required.
7. Oil conveyor chains frequently, at least every five working days and once monthly off-season.
8. At the beginning of each shift, visually inspect all caution and warning decals. All decals should be complete and legible. If decals are not legible, clean them. If cleaning the decals does not make them legible, install new decals.
9. Chain Tension:
  - The main conveyor chain assembly should not be tightened any more than necessary to prevent the chain links from jumping the sprocket teeth, or jamming between the back side of drive sprocket teeth and the under side of the conveyor floor. Over-tightening of the conveyor chain will cause excessive wear on all parts and/or jamming, as well as higher working pressures. It is recommended that the tension should be checked with a loaded box which will show a greater slackening of the chain on the under side. New chains will stretch in the first month of operation and therefore require greater attention to proper adjustment during this break-in period.
  - Drag chain slack should be checked periodically and taken up until distance between centreline of idler sprocket and where chain contacts lower flange on longitudinal is 8 inches to 20 inches.



- Cross conveyor chain will also require adjustment especially in the first month of use. When the pintle chain is lifted off conveyor floor, allow approximately 1" gap between chain bottom and floor.





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## **MAINTENANCE SCHEDULE**

### **AFTER FIRST 20 HOURS OF OPERATION**

- Inspect hydraulic fluid for contamination and level.
- Change hydraulic system filter(s).
- Inspect main conveyor gearbox oil for contamination and level. Oil sample should be taken from the oil level hole, not the drain hole.
- Thoroughly lube all mechanical parts – bearings, hoist mounting, chains, and adjusters.
- Inspect for loose bolts, pins, conveyor chains, and tighten/adjust as required.

### **AFTER FIRST 50 AND 100 HOURS OF OPERATION**

- Change main conveyor planetary gearbox gear oil. **NOTE: Never mix mineral and synthetic oils in gearbox.** Viking-Cives Group recommends using an antifoaming gear oil grade SAE80/90EP.

### **DAILY MAINTENANCE**

- Check fluid level in the hydraulic oil reservoir, if the sight indicates low oil level, add appropriate amount of the specified oil.
- Adjust conveyor chains as required.
- Check all conveyor beds for excessive wear or damage.
- Clean unit - wash all areas clean of salt and road dirt to prevent corrosion.
- Visually inspect all battery terminals and electrical connections, wires, switches, etc. for signs of corrosion, wear, loose and/or broken connections, etc. At the beginning of each shift review all lighting accessories to ensure proper working conditions, immediately replace any broken or non-functioning bulbs and/or lenses.
- At the beginning of each shift, visually inspect all caution and warning decals. All decals should be complete and legible. If decals are not legible, clean them. If cleaning the decals does not make them legible, install new decals.

### **WEEKLY MAINTENANCE**

- As part of an on-going preventive maintenance program, your Hopper Sander should be regularly lubricated. The following list indicates both the location and number of lubrication points for the Hopper Sander. Additional lubrication points may exist on your particular unit. Please consult Viking-Cives and/or nearest authorized dealer for specific lubrication diagrams.
  - Total number of grease fittings: five.
    - Drive shaft bearing (1)
    - Idle shaft bearings (2)
    - Gear Reducer (2)



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## MAINTENANCE SCHEDULE

### MONTHLY MAINTENANCE

- Check bolt tightness at valve, cab controls, body guides, and drive shaft bearings.
- Check structural welds on the body for cracks due to fatigue or overload.
- Inspect conveyors for possible wear; check set screws/bolts for tightness on sprockets, glider blocks, and gearbox coupler.
- Inspect hydraulic fluid colour for possible contamination. If oil appears thick or dirty, drain and replace fluid/filter(s).  
**NOTE: Excessive foaming can be an indication of air and/or moisture presence in the hydraulic system.**
- Check for oil leaks in all hydraulic fittings and hoses. Retighten and/or replace fittings and hoses as required.

### SEMI-ANNUAL/ SIX-MONTH MAINTENANCE

- Replace hydraulic system return oil filter (10-micron absolute) element.
- Inspect oil(s) for contaminants in conveyor gearbox and hydraulic reservoir.
- Replace oil(s) and all filters if excessive dirt or metallic particles are evident.

### END OF SEASON MAINTENANCE

- Remove spinner(s) inspect bearings, couple hoses on spinner and on truck.
- Inspect sprockets, chains, chain covers, bearings, and shafts for wear or damage.
- Thoroughly wash down conveyor chains and conveyor beds, and lubricate each with a non-water soluble lubricant.
- Change main conveyor gearbox oil and hydraulic fluid and filters.

The following electronic spreader control systems require additional filtration and shall be equipped with an in-line high-pressure filter and element. Viking-Cives Group recommends changing filter elements more frequently at three (3) month intervals.

- GRESEN GRS II & GRS 31
- DICKEY JOHN W/ VICKERS VALVE
- COMPU SPREAD 220

The following is a list of recommended filter units and lubricants approved for use by Viking-Cives Group. **NOTE: Viking-Cives recommends that all hydraulic filter elements are 10 micron absolute.**

### FILTER PARTS

<u>ITEM Number</u>	<u>ALT ITEM Number</u>	<u>DESCRIPTION</u>
0560011	80225H	Inline High Pressure Filter Assembly - STAUFF
0560032		Inline High Pressure Filter Assembly - MP FILTRI
0560010	80225HE	Inline High Pressure Filter Element 10 Micron – STAUFF
0560004	80225K	Inline High Pressure Filter Element 10 Micron – PARKER
0560031		Inline High Pressure Filter Element 10 Micron – MP FILTRI
0560009	80225A	Return Manifold Filter Element 10 Micron



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## **OPERATING INSTRUCTIONS FOR HOPPER SANDER**

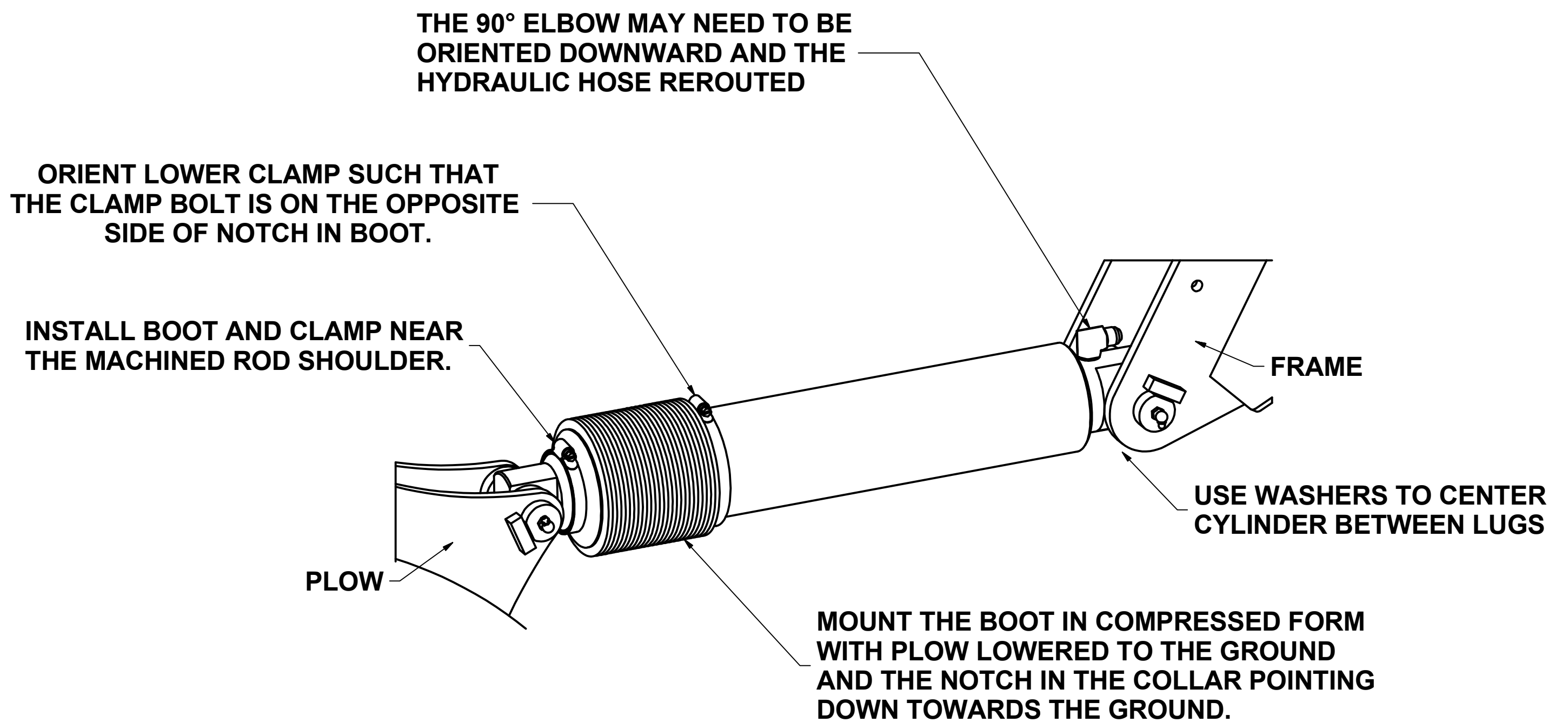
1. Before putting any equipment into use, check for any worn, damaged or loose components, if necessary repair or replace. Listen for any unusual sounds, if necessary repair and/or replace worn or damaged parts.
2. Before operating any equipment, be sure to read and fully understand all caution and safety warnings. Familiarize yourself and others with all caution/warning labels and their locations. Make sure all labels are complete and legible. Replace any labels that have become unreadable and/or missing. Replacement labels can be purchased directly from Viking-Cives Group, and/or nearest authorized dealer.
3. The operators should familiarize themselves with all equipment prior to operation. The in cab controls are placed at a comfortable reach of the operator and are clearly marked as to the equipment/function they control.
4. Sander Operation (Manual Spreader System)
  1. The sander valve is located to the right of the driver's seat. To operate the conveyor chain and spinner, raise the lever with the round black knob to the on position. Both spinner and conveyor will begin to move. The two knobs on top of the valve block control the speed of the conveyor and spinner. Warning: Do not use flow knobs to shut off hydraulic flow, this would cause oil to blow past the relief valve and causing excessive heat.
  2. To stop sander operation, push the lever with black knob down.
  3. One method of controlling the discharge rate is with the control gate. Each unit is equipped with a manually operated gate.
  4. The spinner chute can be adjusted to locate sand in various locations on the spinner. In addition, by relocating the six bolts connecting the spinner to the support plate, the spinner disc to ground height can be adjusted.
  5. For operation of an Electronic Spreader System refer to and follow the operating instructions supplied by the individual equipment vendor.

## TOW PLOW CYLINDER MAINTENANCE

Refer to figure below.

The cylinder boot is designed to keep debris away from the cylinder rod. However, there may still be a chance that sand, dirt and moisture will enter the boot. **Viking-Cives Midwest, Inc. recommends disassembling the boot and cleaning out the inside after every operating season.**

Lower the plow and detach the cylinder rod from the plow **ONLY**, leaving it attached on the frame side. Remove both clamps holding the boot and slide the boot off. Clean out the inside and outside of the boot. Remove any dirt and debris that may have accumulated on the cylinder. Reinstall the boot following the instruction in this manual.




## REINSTALLING TOW PLOW CYLINDERS

Refer to above figure

1. With the plow resting on the ground slip the cylinder boot and gear clamps over the rod and onto the body of the cylinder, starting with the larger end. Do not tighten gear clamp at this point.
2. Install cylinder back onto the plow.
3. Secure the top end of the boot with the gear clamp near the machined shoulder of the rod.
4. Without stretching the boot, secure the bottom side of the boot with the gear clamp. There is a notch in the collar of the boot. This notch should be on the bottom side of the cylinder facing the ground. This allows air to inter and exit the boot as it is compressed and expanded. It also provides a drain for any liquid that may enter the boot. **NOTE: ensure the bolt of the clamp is on the opposite side of the notch on the inside of the boot collar.**
5. Repeat steps 1 - 4 for the other cylinder.

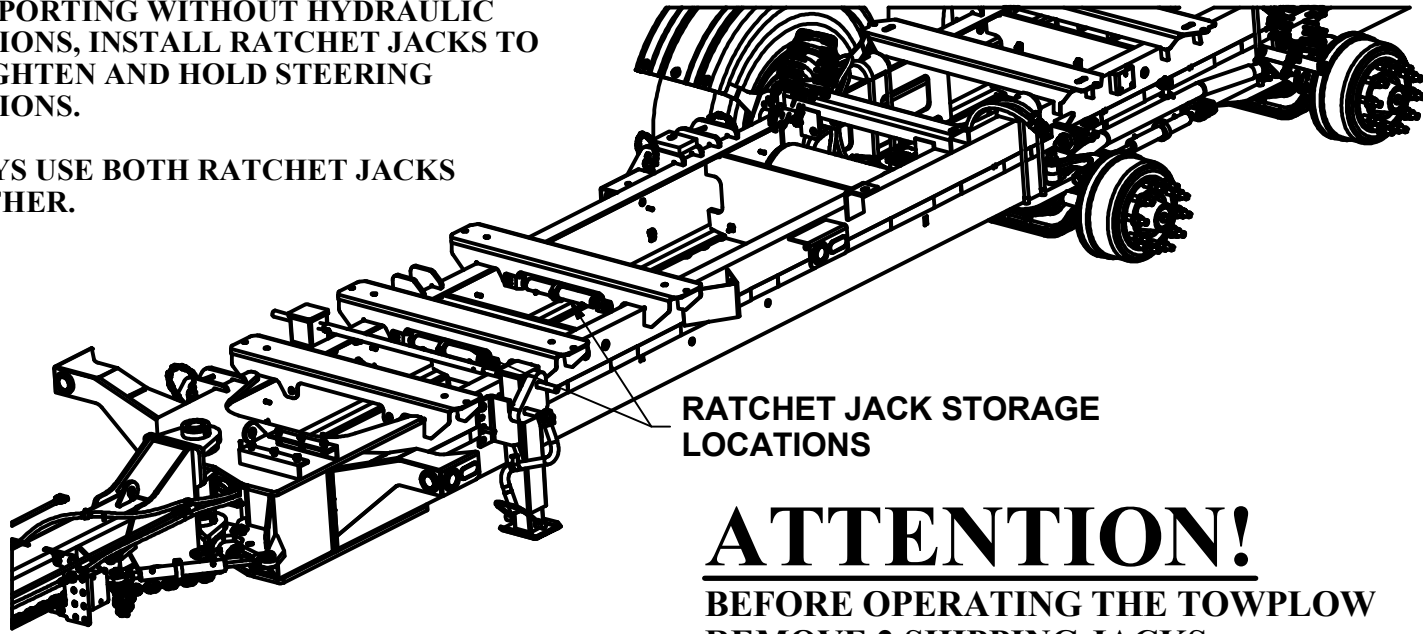
## INSTALLATION & STORAGE OF RATCHET JACKS



P.O. Box 295 Morley, MO 63767 (573) 262-3545

IN CASE OF BLOWN HOSE OR TRANSPORTING WITHOUT HYDRAULIC FUNCTIONS, INSTALL RATCHET JACKS TO STRAIGHTEN AND HOLD STEERING FUNCTIONS.

ALWAYS USE BOTH RATCHET JACKS TOGETHER.




RATCHET JACK STORAGE LOCATIONS

**ATTENTION!**  
BEFORE OPERATING THE TOWPLOW  
REMOVE 2 SHIPPING JACKS

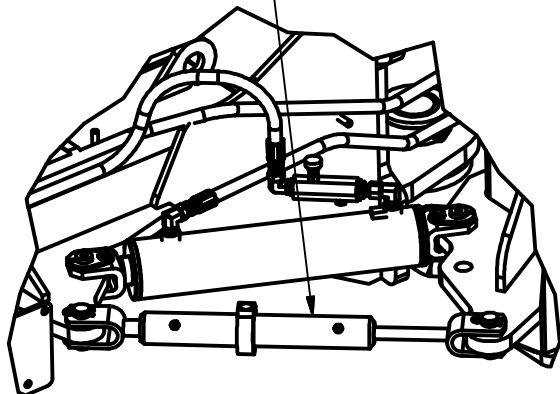
EQUIPMENT MAY NOT BE AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL. TO MAINTAIN OUR ON-GOING PRODUCT DEVELOPMENT AND IMPROVEMENT PROGRAM VIKING-CIVES MIDWEST RESERVES THE RIGHT TO CHANGE EQUIPMENT & SPECIFICATION WITHOUT NOTICE.

LOCATED NEAR TONGUE OF TOW PLOW

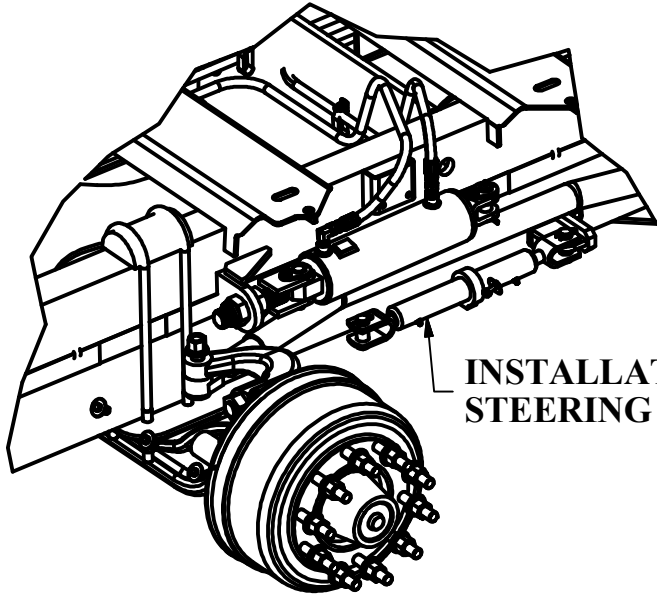


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INSTALLATION OF TONGUE JACK



INSTALLATION OF STEERING JACK



**ATTENTION!**  
BEFORE OPERATING THE TOWPLOW  
REMOVE 2 SHIPPING JACKS

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LOCATED BETWEEN DRIVER SIDE AXLES



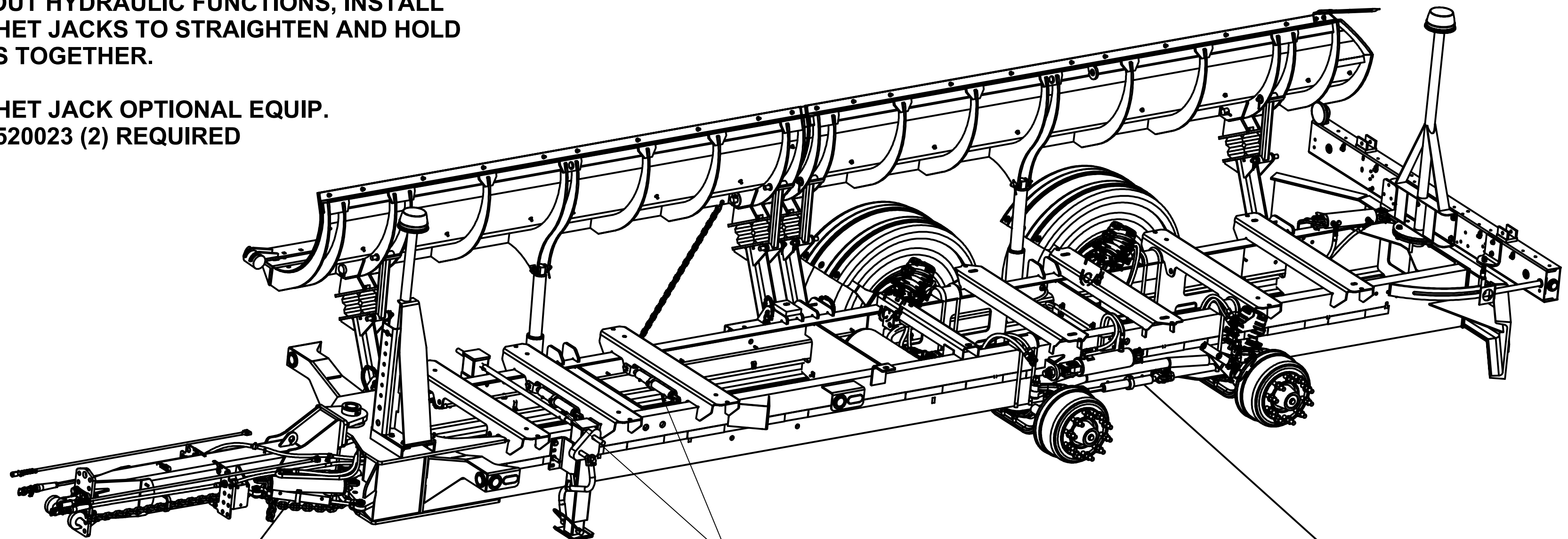
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## RATCHET JACK STORAGE LOCATIONS PART NUMBER 0520023

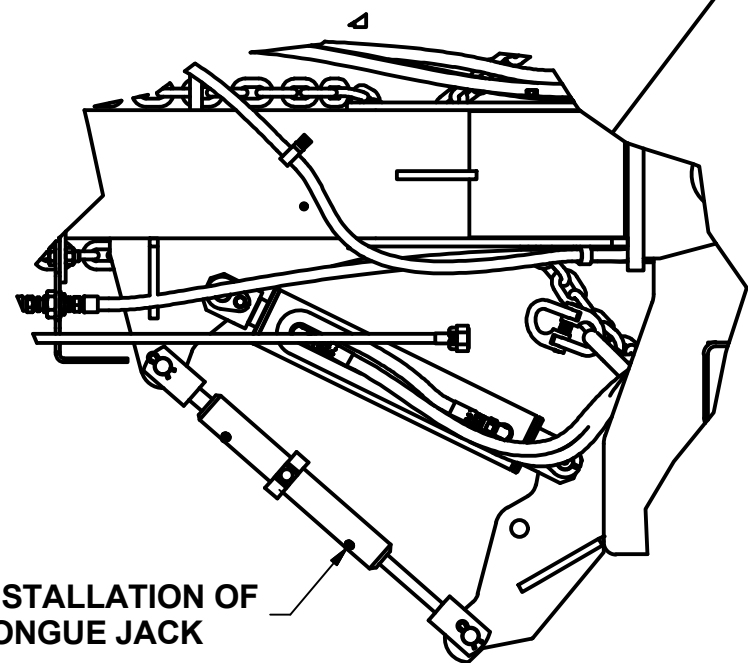
### **NOTE:**

**IN CASE OF BLOWN HOSE OR TRANSPORTING WITHOUT HYDRAULIC FUNCTIONS, INSTALL RATCHET JACKS TO STRAIGHTEN AND HOLD JACKS TOGETHER.**

**RATCHET JACK OPTIONAL EQUIP.  
P.N. 0520023 (2) REQUIRED**



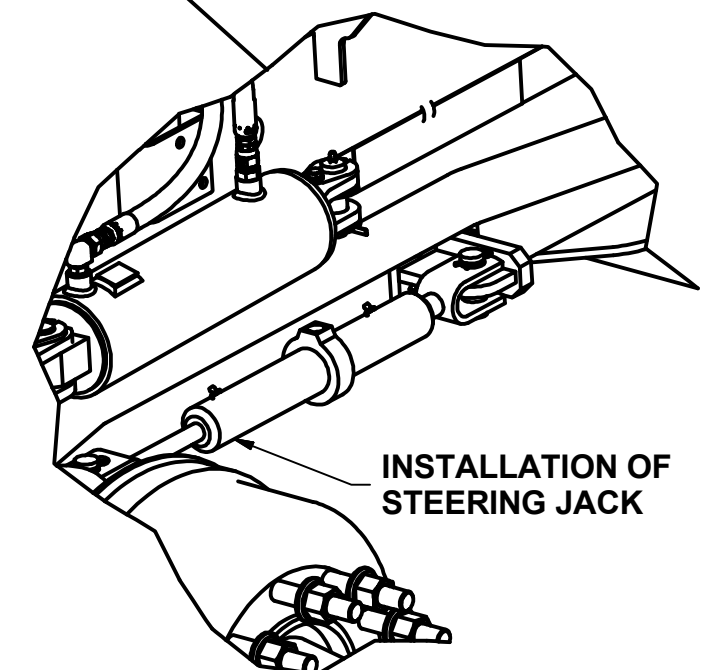
RATCHET JACK  
STORAGE LOCATIONS



INSTALLATION OF  
TONGUE JACK

### **ATTENTION!**

**NEVER OPERATE HYDRAULICS WITH RATCHET JACKS INSTALLED.  
ALWAYS RETURN TO STORAGE LOCATION BEFORE USE.**



INSTALLATION OF  
STEERING JACK

EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL  
TO MAINTAIN OUR ON-GOING PRODUCT AND DEVELOPMENT IMPROVEMENT PROGRAM, VIKING-GIVES RESERVES THE RIGHT TO CHANGE EQUIPMENT & SPECIFICATION WITHOUT NOTICE.

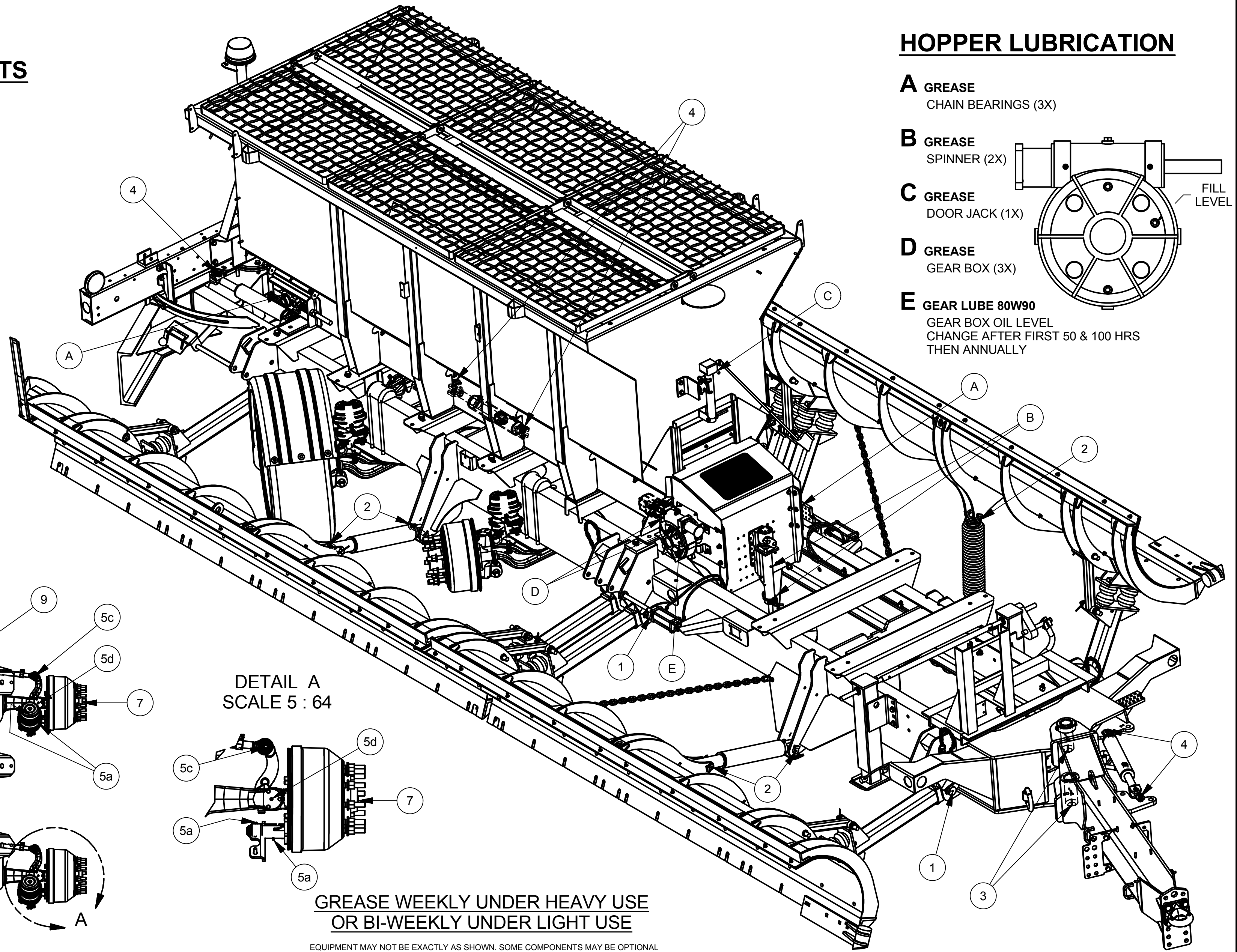
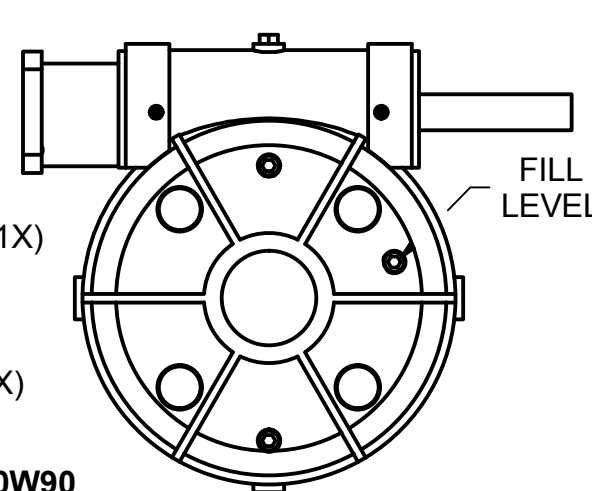


**TOW PLOW FRAME  
LUBRICATION POINTS**

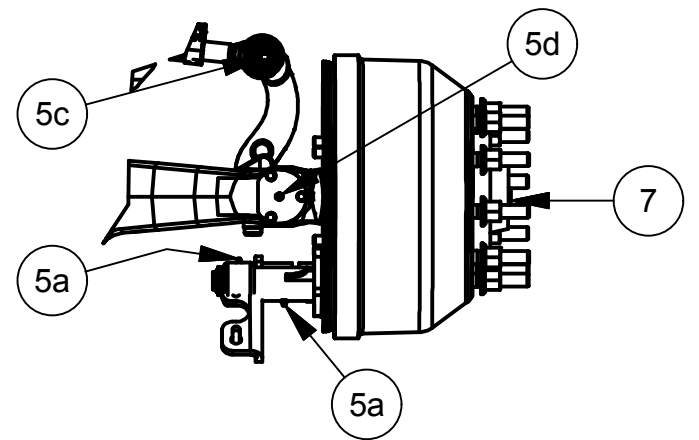
- 1 GREASE**  
LOWER PLOW LIFT ARMS (8X)
- 2 GREASE**  
LIFT CYLINDERS (8X)
- 3 GREASE**  
TONGUE PINS (2X)
- 4 GREASE**  
STEERING CYLINDERS (5X)
- 5 GREASE**
  - a. SLACK ADJUSTERS (8X)
  - b. S-CAM (4X)
  - c. TIE ROD ENDS (10X)
  - d. KING PINS (8X)
- 6 GREASE**  
LANDING GEAR (5X)
- 7 GEAR LUBE 80W90**  
AXLE BEARINGS (4X)  
FILL TO MARKED LEVEL
- 8 GREASE**  
RATCHET JACKS (4X)
- 9 GREASE**  
STEERING GATE (1X)
- 10 GREASE**  
STEERING PIVOTS (2X)

**HOPPER LUBRICATION**

- A GREASE**  
CHAIN BEARINGS (3X)
- B GREASE**  
SPINNER (2X)
- C GREASE**  
DOOR JACK (1X)
- D GREASE**  
GEAR BOX (3X)
- E GEAR LUBE 80W90**  
GEAR BOX OIL LEVEL  
CHANGE AFTER FIRST 50 & 100 HRS  
THEN ANNUALLY



DETAIL A  
SCALE 5 : 64



**GREASE WEEKLY UNDER HEAVY USE  
OR BI-WEEKLY UNDER LIGHT USE**

EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL  
TO MAINTAIN OUR ON-GOING PRODUCT AND DEVELOPMENT IMPROVEMENT PROGRAM, VIKING-CIVES RESERVES THE RIGHT TO CHANGE EQUIPMENT & SPECIFICATION WITHOUT NOTICE.

**TRUCK REQUIREMENTS WITH ALL VALVING ON CHASSIS:**

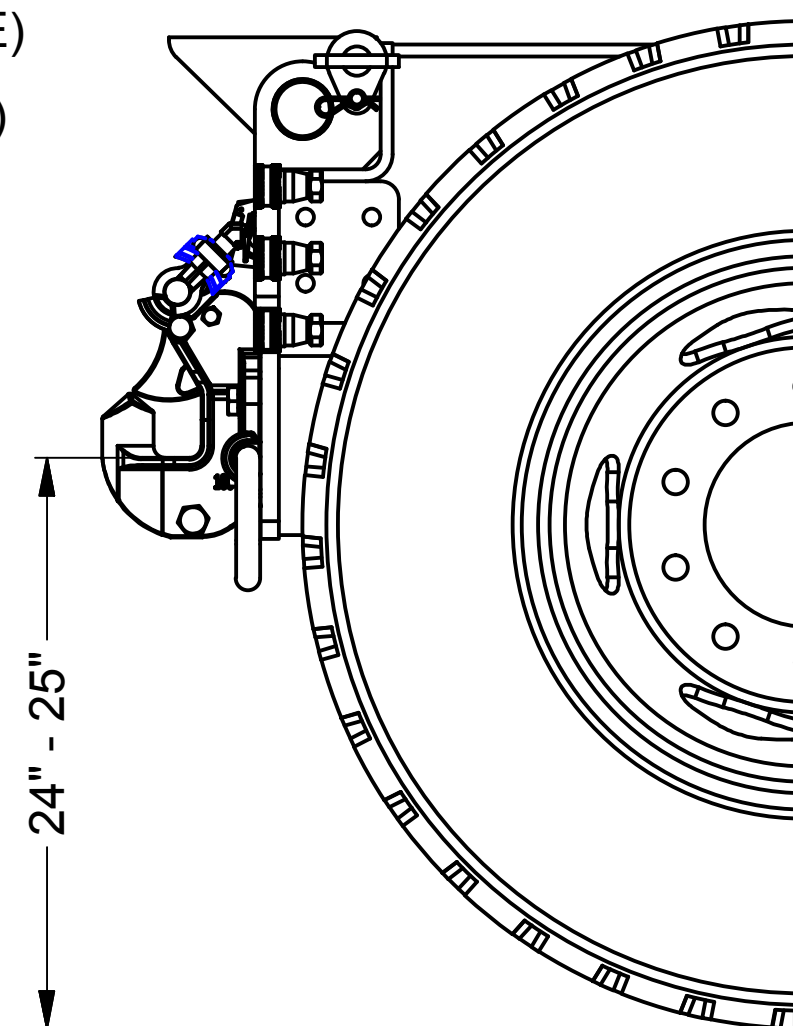
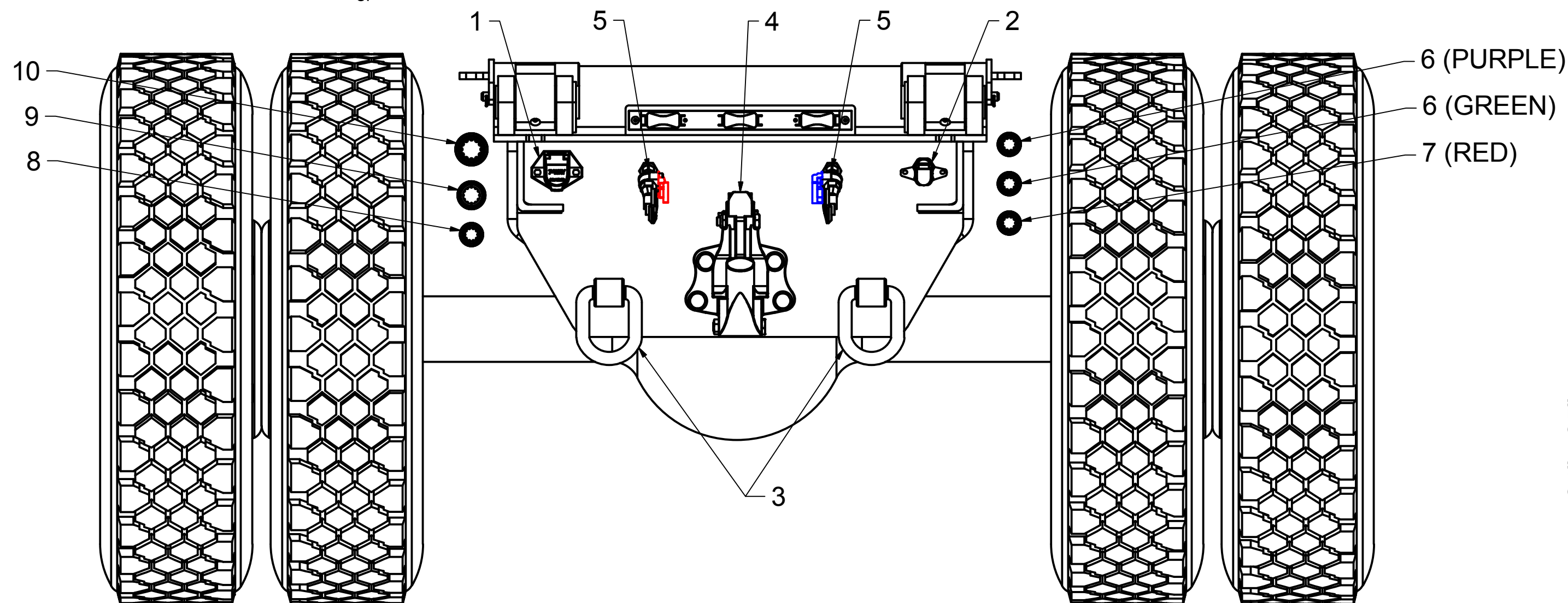
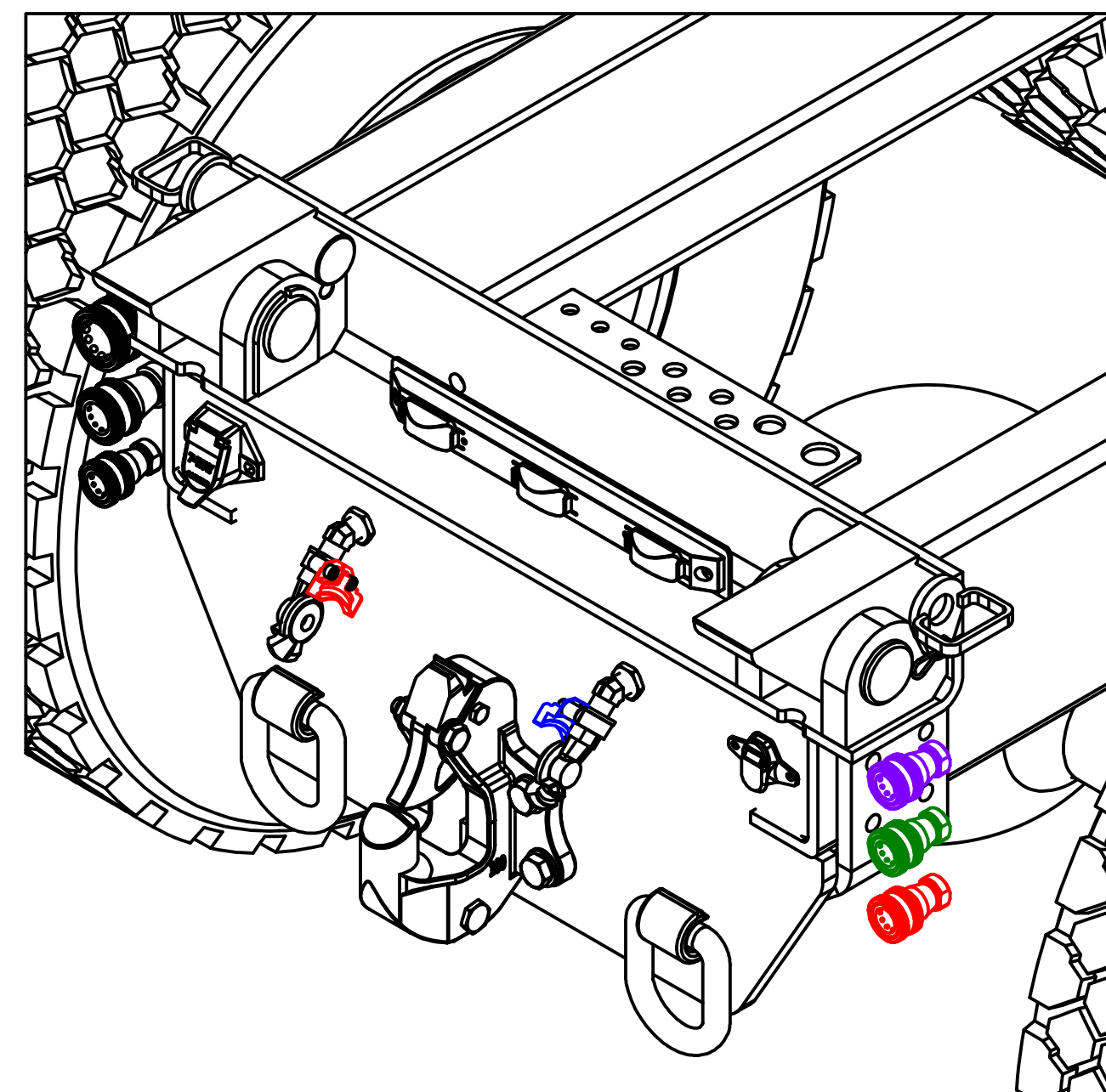
IT IS STRONGLY RECOMENDED TO HAVE 2-STAGE LOCKOUT TO PREVENT ACCIDENTAL TOW PLOW DEPLOYMENT OF CAB CONTROLS!

- 1 STANDARD 7 WIRE TRAILER LIGHT RECIEVER. BRAND = BOB TAIL
- 2 ADDITIONAL 6 WIRE RECIEVER (AUX. LIGHTS). BRAND = BOB TAIL
- 3 SAFETY CHAIN 1" D-RINGS, (2X) 46,700 LBS. BREAKING STRENGTH.
- 4 PINTLE HOOK. BRAND = PREMIER SAFETITE 100 (20,000 Lbs. VERT. LOAD 100,000 Lbs. GROSS)
- 5 AIR BRAKE GLAD HANDS. (SERVICE BLUE AND EMERGENCY RED)
- 6 STEERING, (2X) 1/2" FEMALE QUICK CONNECT. DOUBLE ACTING, BRAND = HANSEN 1/2" HOSE, 6 gpm. MIN FLOW @ 2000 psi.
- 7 PLOW LIFT, (1X) 1/2" FEMALE QUICK CONNECT, SINGLE ACTING, BRAND = HANSEN 1/2" HOSE, 10 gpm. MIN FLOW @ 2000 psi.

**NOTE:** ALL QUICK DISCONNECTS WILL BE SHIPPED WITH TOW PLOW

**HOPPER SANDER OPTIONS:**

- 8 CONTROLLED SPINNER CIRCUIT. (OR ANTI-ICE) BRAND = HANSEN (1X) 1/2" FEMALE QUICK CONNECT, 1/2" HOSE, 6 gpm. MIN.
- 9 CONTROLLED MAIN CONVEYOR CIRCUIT. BRAND = HANSEN (1X) 3/4" FEMALE QUICK CONNECT, 3/4" HOSE, 15 gpm. MIN.
- 10 CONVEYOR /SPINNER OR ANTI-ICE RETURN. BRAND = HANSEN (1X) 1" FEMALE QUICK CONNECT, 1" HOSE, 21 gpm. MIN.



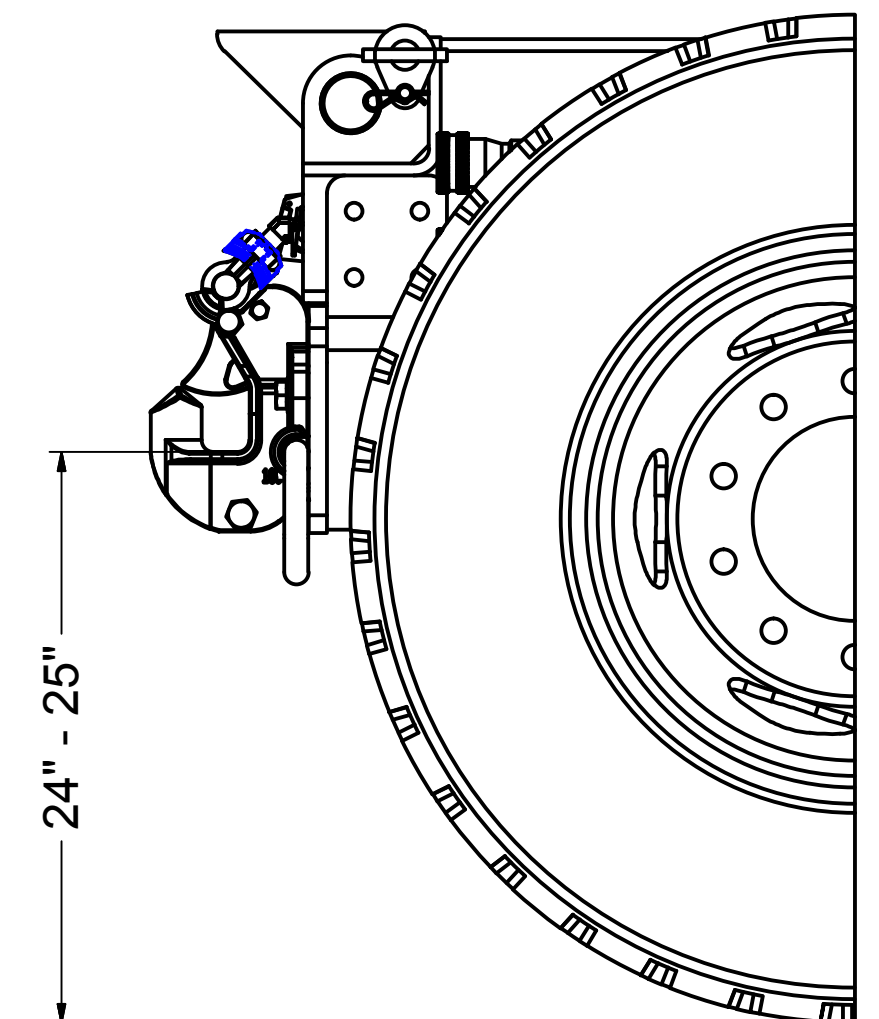
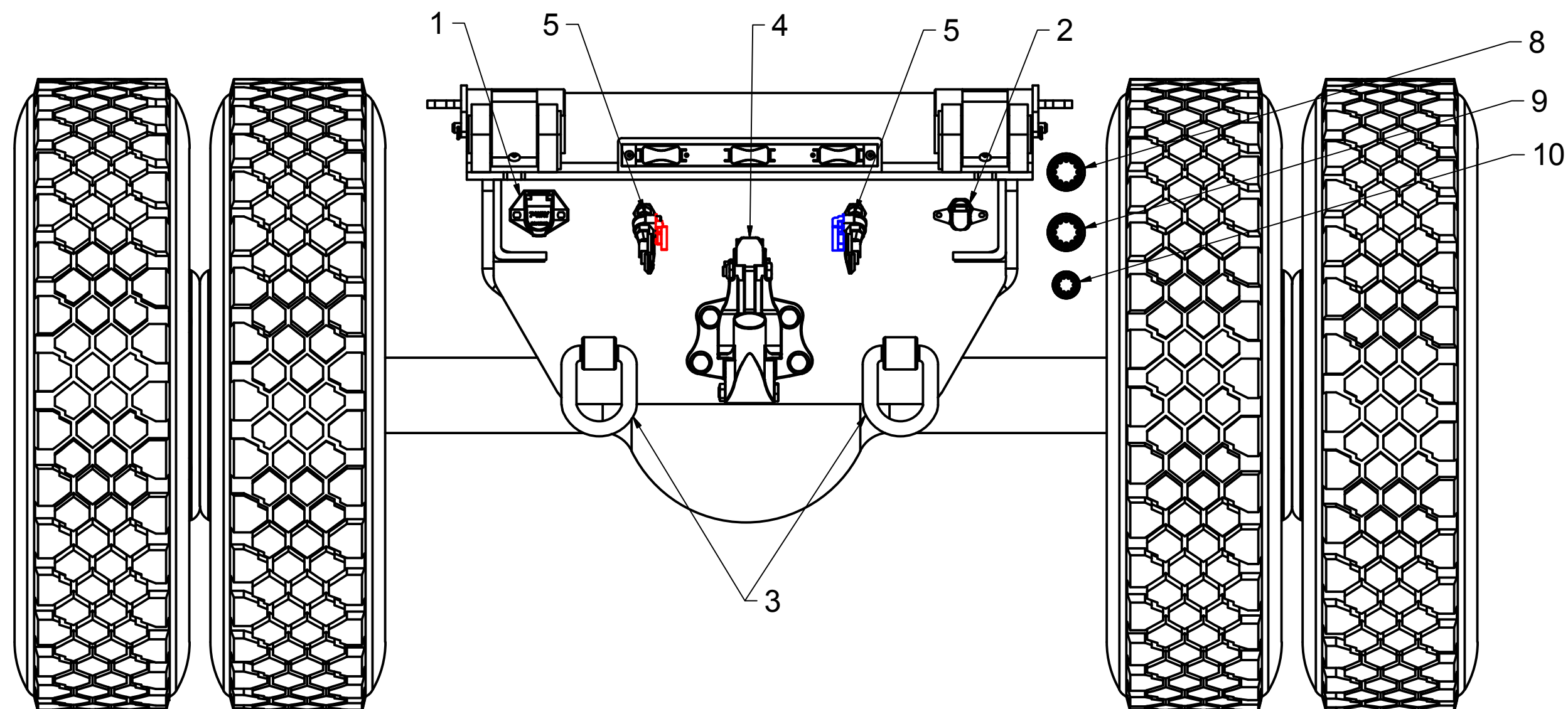
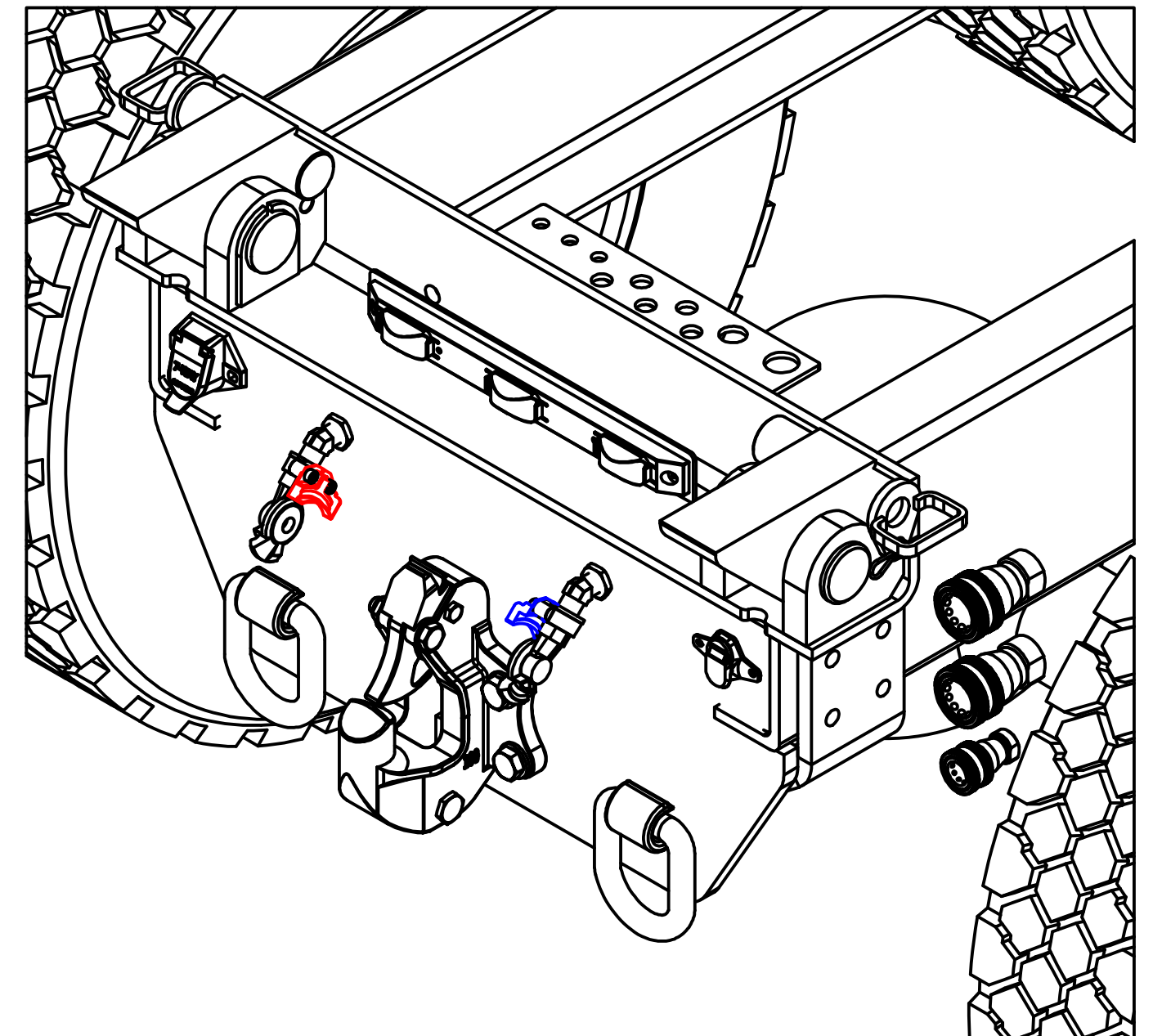
EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL  
TO MAINTAIN OUR ON-GOING PRODUCT AND DEVELOPMENT IMPROVEMENT PROGRAM, VIKING-CIVES RESERVES THE RIGHT TO CHANGE EQUIPMENT & SPECIFICATION WITHOUT NOTICE.



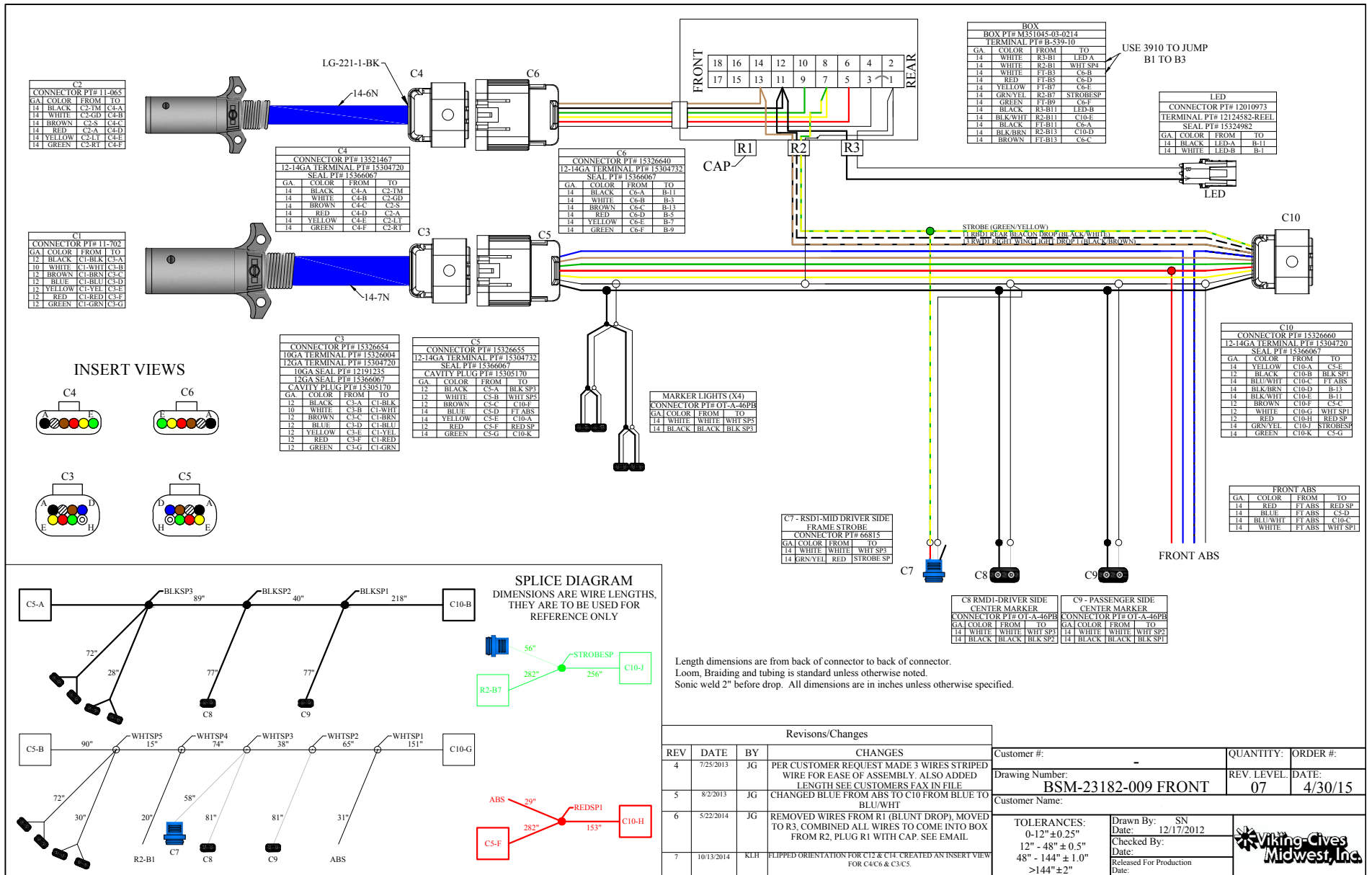
**TRUCK REQUIREMENTS WITH VALVING ON TOW PLOW:**

IT IS STRONGLY RECOMENDED TO HAVE 2-STAGE LOCKOUT TO PREVENT ACCIDENTAL TOW PLOW DEPLOYMENT OF CAB CONTROLS!

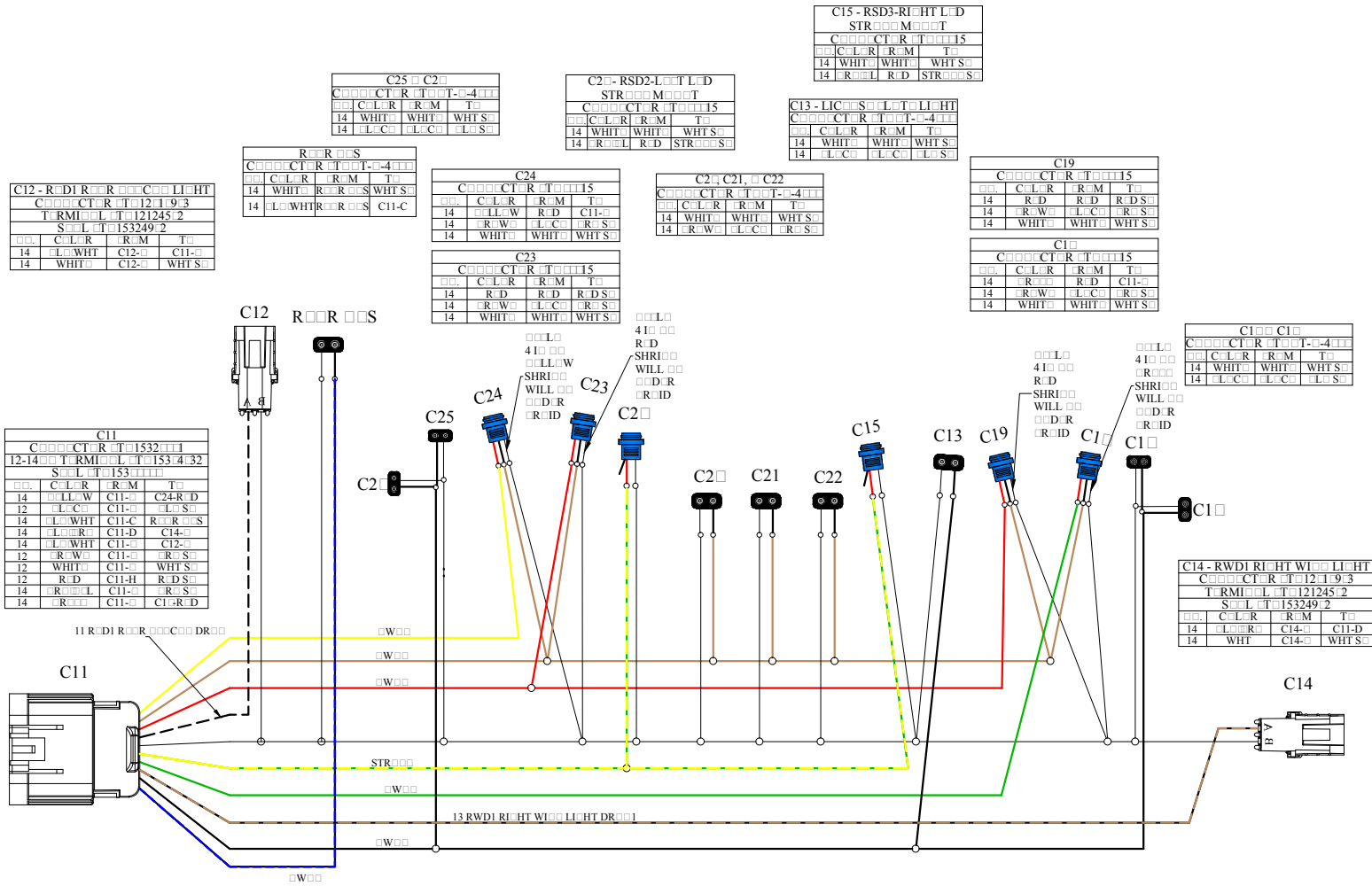
- 1 STANDARD 7 WIRE TRAILER LIGHT RECIEVER. BRAND = BOB TAIL
- 2 ADDITIONAL 6 WIRE RECIEVER (AUX. LIGHTS). BRAND = BOB TAIL
- 3 SAFETY CHAIN 1" D-RINGS, (2X) 46,700 IBS. BREAKING STRENGTH.
- 4 PINTLE HOOK. BRAND = PREMIER SAFETITE 100 (20,000 Lbs. VERT. LOAD 100,000 Lbs. GROSS)
- 5 AIR BRAKE GLAD HANDS. (SERVICE BLUE AND EMERGENCY RED)
- 6 HYD. PRESSURE TO TOW PLOW MOUNTED VALVE. BRAND = HANSEN (1X) 1" FEMALE QUICK CONNECT, 1" HOSE, 21 gpm. MIN.
- 7 HYD. RETURN FROM TOW PLOW MOUNTED VALVE. BRAND = HANSEN (1X) 1" FEMALE QUICK CONNECT, 1" HOSE, 21 gpm. MIN.
- 8 HYD. LOAD SENSE. BRAND = HANSEN (1X) 3/8" FEMALE QUICK CONNECT, 3/8" HOSE, 3 gpm. MIN.



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NOTE: ALL WIRE IS GXL UNLESS OTHERWISE NOTED



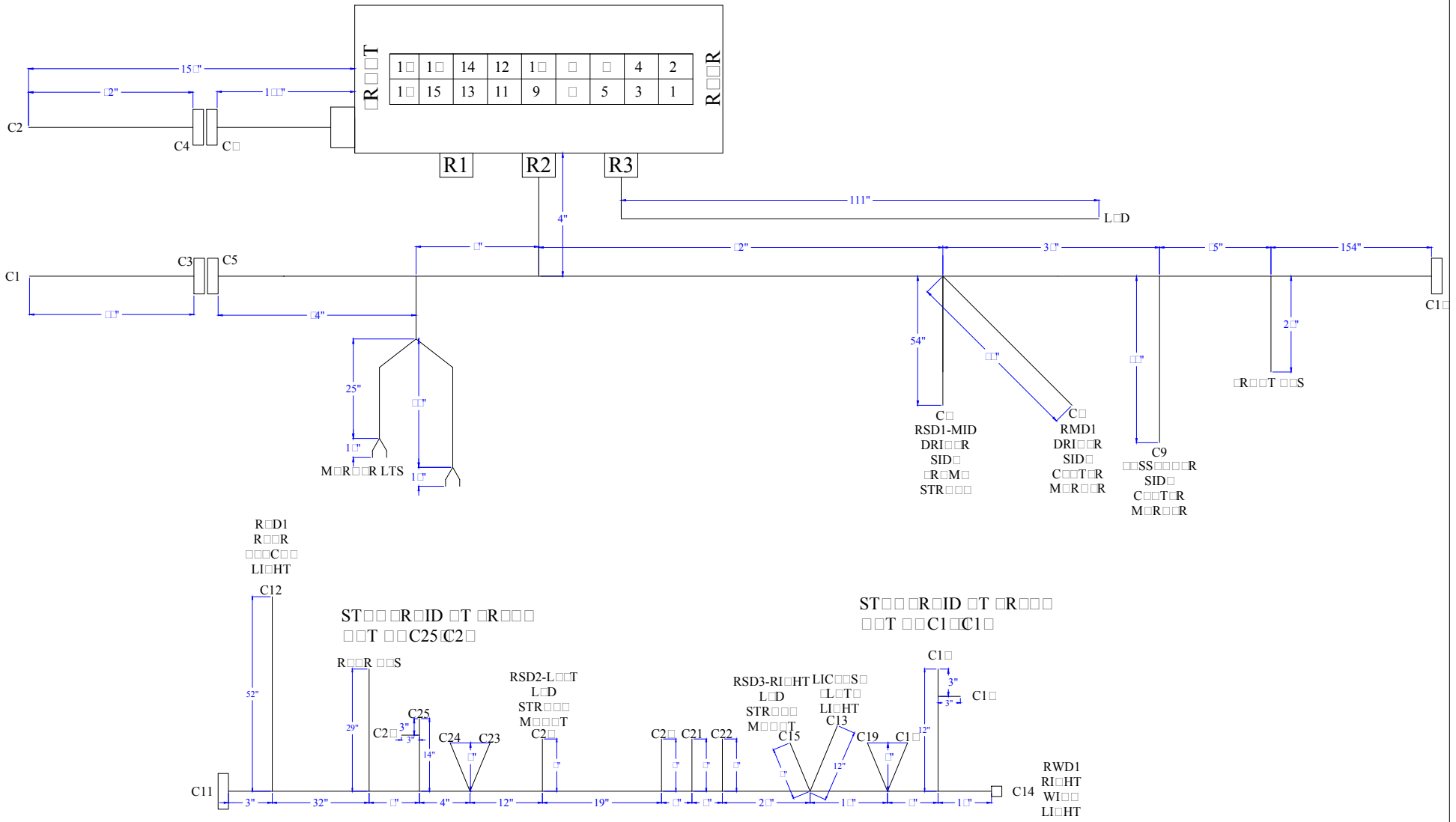
DR...L...S...T...R...S...S...R...D...2...R...M...C...  
 DR...L...S...T...R...S...S...C...D...

Length dimensions are from back of connector to back of connector.  
 Loom, braiding and tubing is standard unless otherwise noted.  
 Sonic weld 2" before drop. All dimensions are in inches unless otherwise specified.

Revisions/Changes		
R	D	CHANGES
4	25213	CHANGED...DS...WIRE COLORS...CUSTOMERS REQUEST
5	22313	CHANGED...FROM...TO...C...R...M...L...T...L...WHT
	522214	R...M...D...W...R...M...R...1...L...O...T...D...R...M...D...T...R...3...C...M...D...L...L...W...R...S...T...C...M...L...T...R...M...R...2...L...O...R...1...W...I...T...H...C...S...M...O...I...L
	1033214	L...I...E...D...R...I...E...T...T...O...R...C...1...2...C...1...4...C...R...E...T...E...D...I...E...S...T...O...W...R...C...4...C...C...3...C...5...

Customer	-	RD-R
Drawing Number	SM-2312-09 ROR	11314
Customer Name		
Tolerance Class	12" ± .025"	Drawn by
	12" - 4" ± .05"	Date
	4" - 144" ± 1.0"	Checked by
	>144" ± 2"	Date
		Released for production
		Date





THIS DRAWING IS A PRELIMINARY DESIGN. IT IS SUBJECT TO CHANGE WITHOUT NOTICE. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

Revisions/Changes		
REV	DATE	DESCRIPTION
3	04/21/13	CHANGED LIGHT FIXTURES TO CUSTOMERS DRAWING
4	05/21/13	ADDED LIGHT FIXTURES TO CUSTOMERS DRAWING
5	09/21/13	CHANGED LIGHT FIXTURES TO CUSTOMERS DRAWING
6	02/12/14	RE-REVIEWED LIGHT FIXTURES TO CUSTOMERS DRAWING, CHANGED LIGHT FIXTURES TO LIGHTING FIXTURES, CHANGED LIGHT FIXTURES TO LIGHTING FIXTURES, CHANGED LIGHT FIXTURES TO LIGHTING FIXTURES
7	03/21/14	RE-REVIEWED LIGHT FIXTURES TO CUSTOMERS DRAWING, CHANGED LIGHT FIXTURES TO LIGHTING FIXTURES, CHANGED LIGHT FIXTURES TO LIGHTING FIXTURES

Customer Name:

Drawing Number:  SM-2312-09 LIGHTING

Customer Name:

Drawn By:


Date: 04/21/13

Checked By:

Date:

Released for production Date:

TOLERANCES:  
 ±12" ±0.25"  
 12" - 48" ±0.5"  
 48" - 144" ±1.0"  
 >144" ±2"



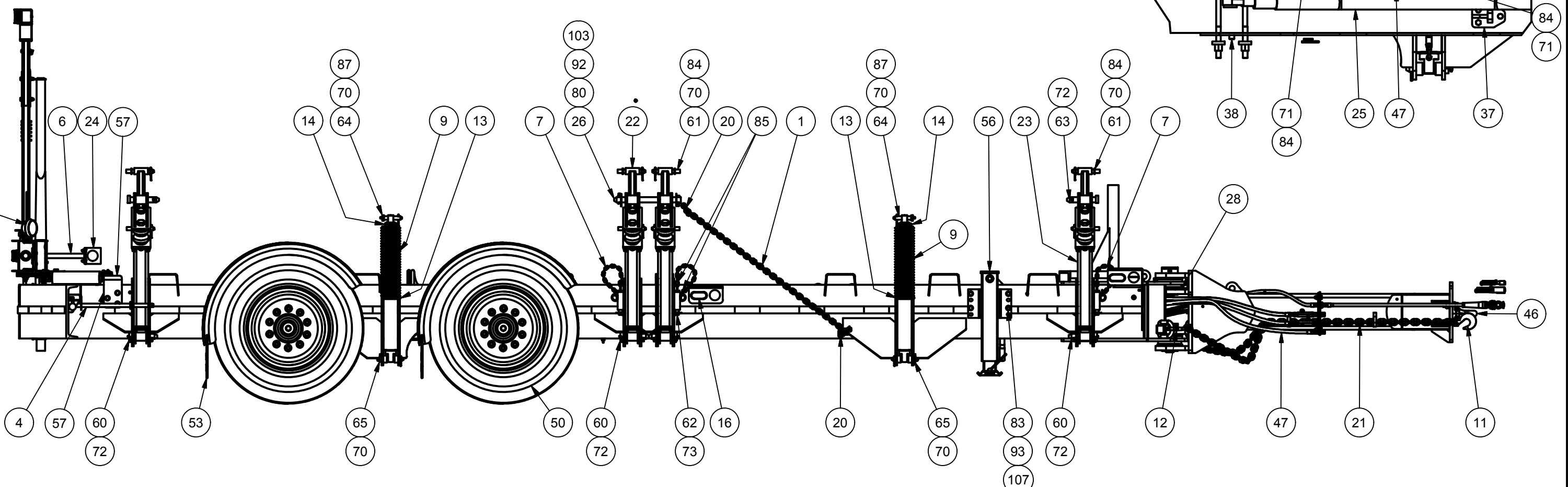
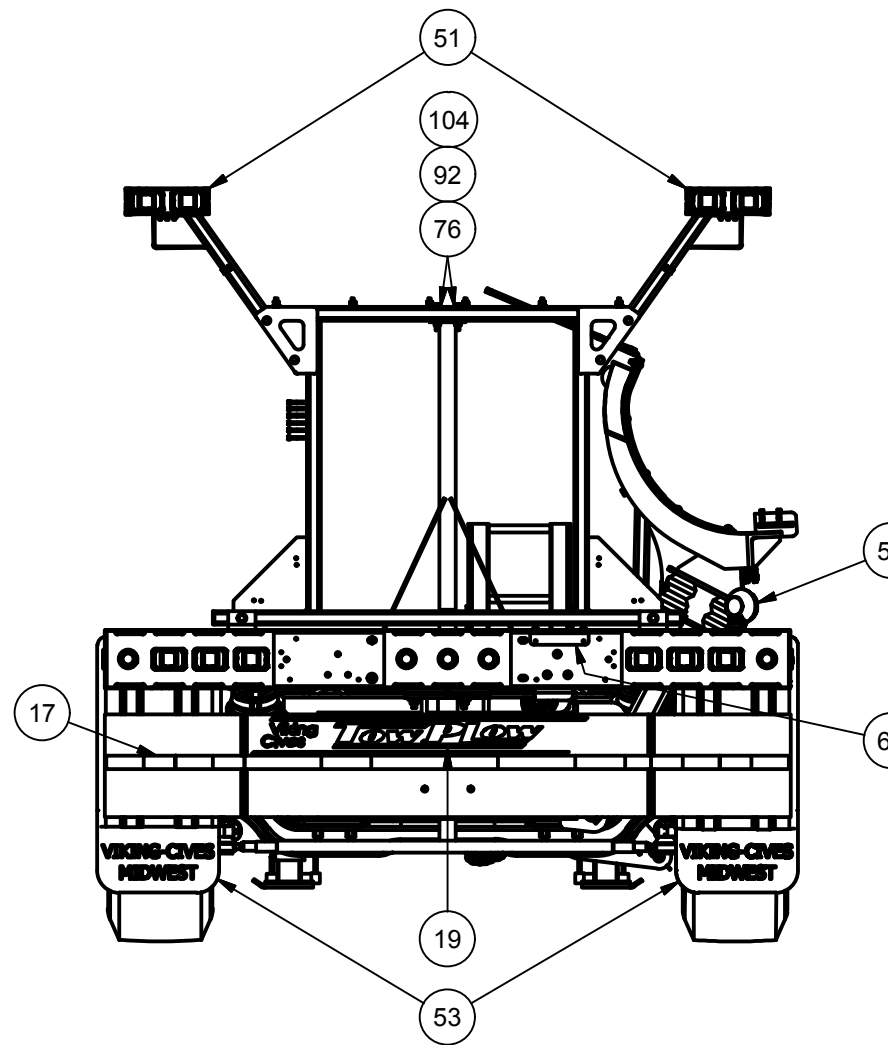
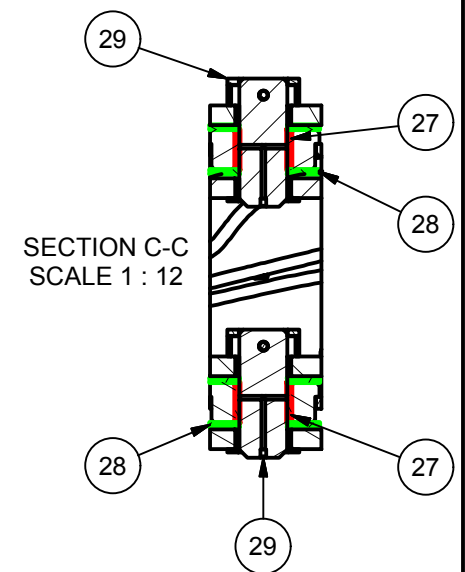
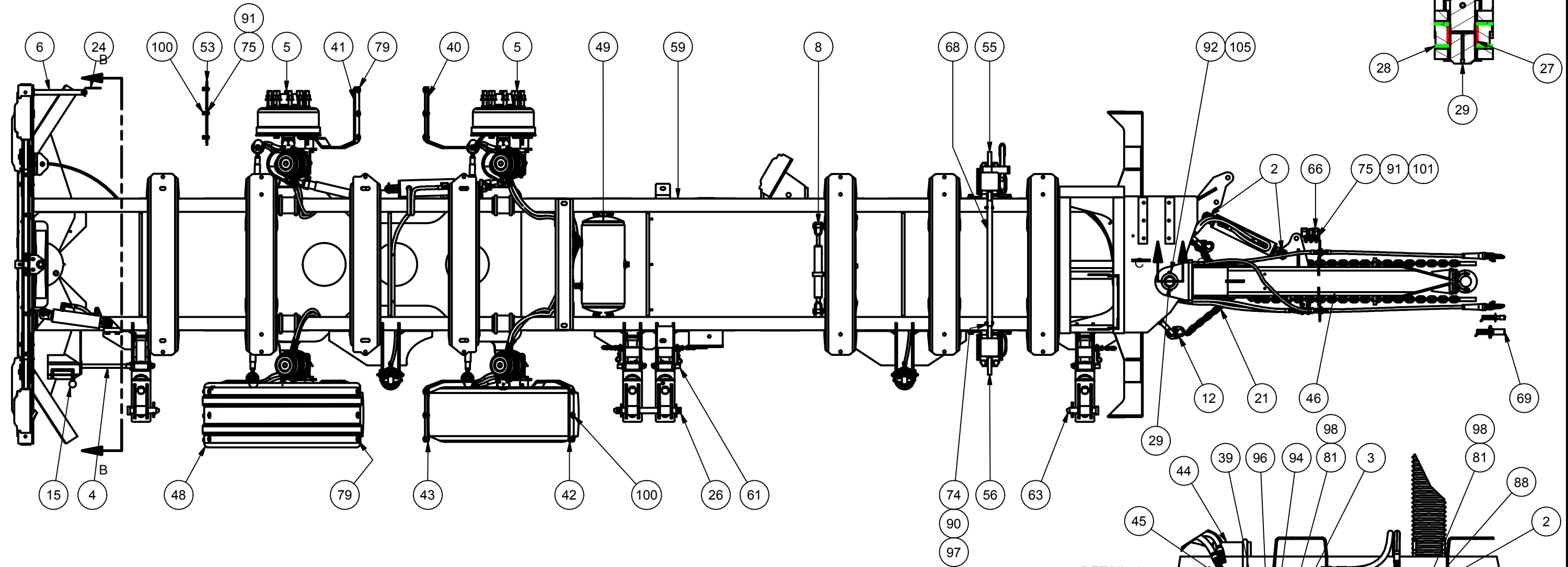
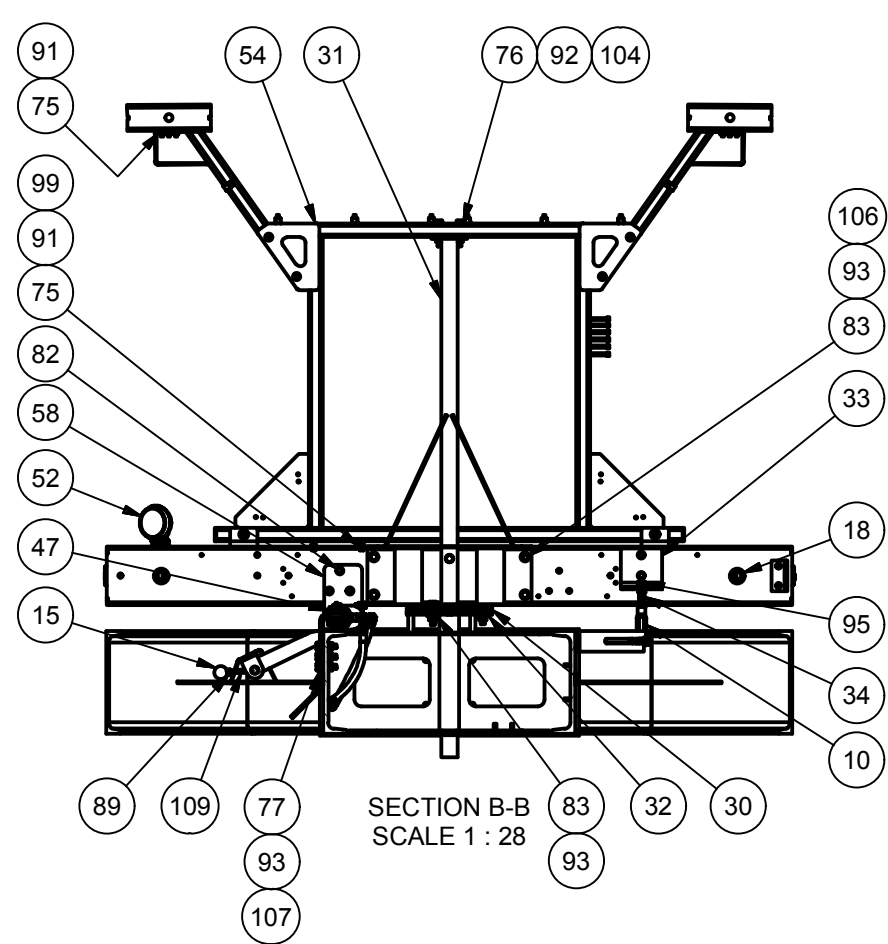




22956 HWY 61, MORLEY, MO 63767, PH: 573.262.3545, FX: 573.232.3369

# BASE RIGHT HAND DEPLOY / WHELEN LIGHT KIT TOW PLOW ASSEMBLY

## PART NUMBER 51401124



NOTE: NOT ALL ITEMS SHOWN IN ALL THE VIEWS.

NOTE: PLOWS REMOVED FOR CLAIRITY  
FRONT PLOW: 41412561  
REAR PLOW: 41412564

NOTE: ALL AXLE U-BOLTS TO BE TORQUED TO 300 FT/LBS

NOTES: RIMS TO BE TORQUED TO 500 FT/LBS  
TIE ROD ARMS TO BE OILED + WET  
AND TORQUED TO 600 FT/LBS.

SEE DWG: BSM-23182-009 REV 7 FOR ELECTRICAL HARNESS AND FOR ELECTRICAL SCHEMATIC.  
SEE DWG: 41412900 FOR REPHASING HYDRAULIC KIT.

EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL  
TO MAINTAIN OUR ON-GOING PRODUCT AND DEVELOPMENT IMPROVEMENT PROGRAM, VIKING-CIVES RESERVES THE RIGHT TO CHANGE EQUIPMENT & SPECIFICATION WITHOUT NOTICE.



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## BASE RIGHT HAND DEPLOY / WHELEN LIGHT KIT TOW PLOW ASSEMBLY PART NUMBER 51401124

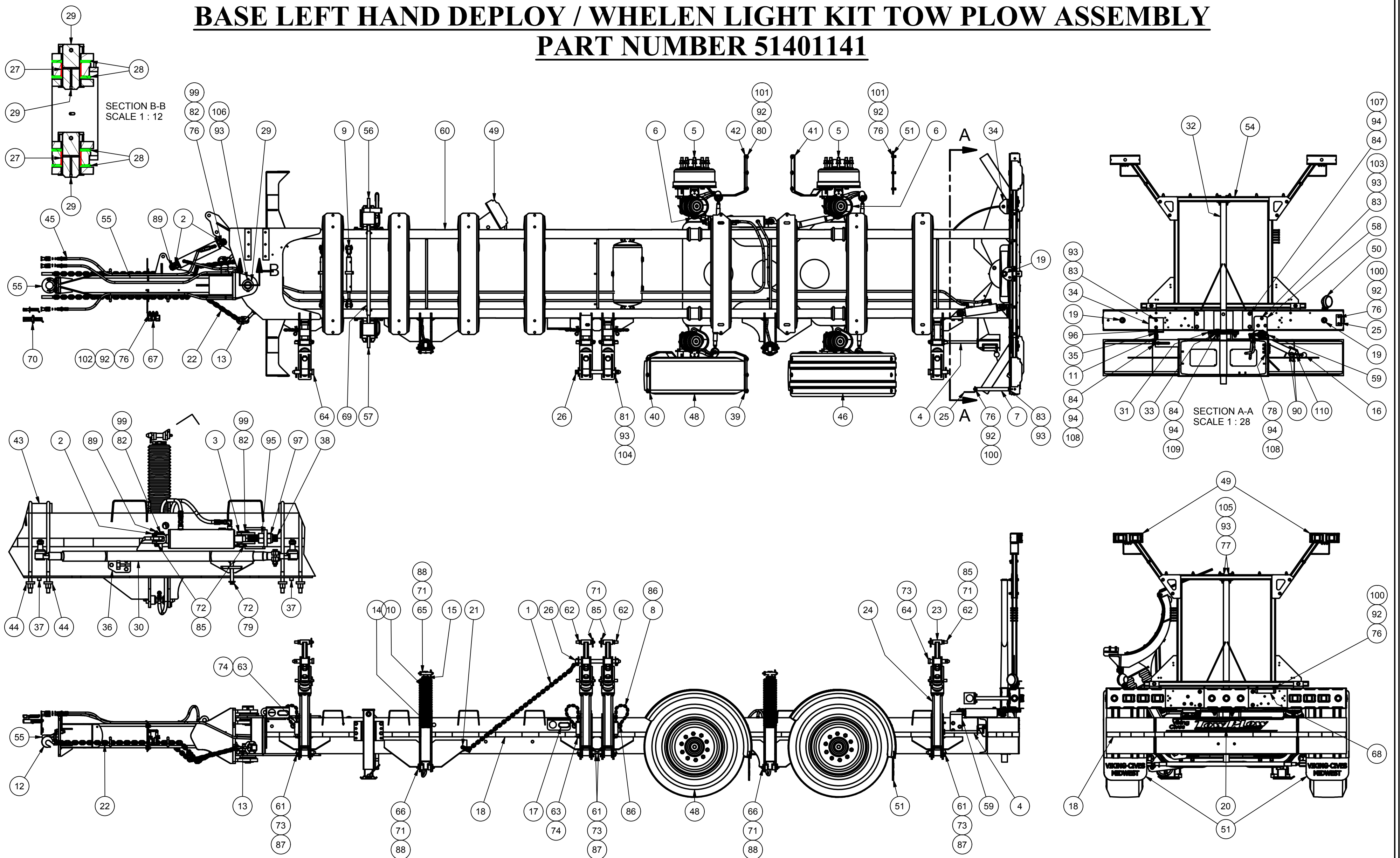
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY	ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY	ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	00402496		CHAIN 3/8 GR 70 X 62 LG	1	37	41412572		TIE ROD/RATCHET JACK LUG WELD'T	1	73	HW13P-7GA56	80536	COTTER HAIRPIN 3/16" X 3 3/4" ZINC	3
2	00900353		PIN 1.000 DIA X 2.563 WELD'T	5	38	41412577		TOW PLOW AXLE DOWEL	4	74	HW14A-05	IMP76512	FLATWASHER SAE 5/16 ZINC	4
3	00900355		PIN 1.000 DIA X 3.063 WELD'T	1	39	41412580		STEER CYL ADJ. ROD WELD'T	1	75	HW14A-06		FLATWASHER SAE 3/8 ZINC	53
4	00900421		SAFETY PIN 1.000 DIA X 23.75 FR REAR PLOW	1	40	41412685		LH BACKING PLATE FENDER BRK'T WELD'T	2	76	HW14A-08		FLATWASHER SAE 1/2 ZINC	4
5	01401180		FL943LX124 AXLE RH	2	41	41412689		S-CAM FENDER BRK'T LH	2	77	HW14A-10	81070A	FLATWASHER SAE 5/8 ZINC	6
6	01925004		LIGHT PEDESTAL WELD'T - 14 IN	1	42	41412690		S-CAM FENDER BRK'T RH	2	78	HW14A-12	81062X	FLATWASHER SAE 3/4" ZINC	1
7	02100540	102-2316	CHAIN 3/16 GR 30 X 18.000 LG	3	43	41412691		RH BACKING PLATE FENDER BRK'T WELD'T	2	79	HW14B-06		FLATWASHER USS 3/8 ZINC	24
8	0520023	80317	RATCHET JACK AHW	2	44	41412732		HALF ROUND U-BOLT BLOCK	4	80	HW14B-24		FLATWASHER USS 1 1/2 ZINC	2
9	0540400		CYLINDER BOOT FOR 0540398 TOW PLOW	2	45	41412734		U-BOLT KIT TOW PLOW ROUND 3/4 DIA	8	81	HW14C-06		LOCKWASHER SPLIT 3/8" ZINC	6
10	0590054		CLEVIS YOKE ASSEMBLY 5/8 NF	1	46	41412948		TONGUE TOWPLOW ONE PIECE ASS'Y RH VCM	1	82	HW14D-08		FLATWASHER HARDENED 1/2 ZINC	14
11	0590080		CHAIN CLEVIS 1/2 GR70 SLIP HOOK CV LATCH	2	47	41412900		HYDRAULIC ASS'Y THRU FRAME REPHASING MW 2016	1	83	HW14D-10	81070E	FLATWASHER HARDENED 5/8 ZINC	32
12	0590081		CONNECTOR LINK 1/2 FOR SAFETY CHAIN G70	2	48	42940022	0720241	MINIMIZER FENDER 18 IN BLK	4	84	HW14D-16	81013A	FLATWASHER HARDENED 1 ZINC	20
13	0620031		GEAR CLAMP 3-5 INCH STAINLESS	2	49	42940026		ABS INSTALL KIT	1	85	HW24C-02		3/16 QUICK LINK	6
14	0620065		GEAR CLAMP 2 1/2 -3 1/2 STAINLESS	2	50	42940039	0510066	385/65 R22.5 TIRE AND RIM ASSEMBLY	4	86	HW29A-02	80577	GREASE FITTING 1/8 NPT STR	4
15	0620075		BALL KNOB W BRASS INSERT, SAFETY PIN	1	51	44843026		LIGHT PACKAGE FOR RIGHT HANDED TOW PLOW	1	87	HW29B-02		GREASE FITTING 1/8 NPT 90 DEG	4
16	0650001	41033	REFLECTOR AMBER SELF ADHEV OVAL	4	52	44843417		SPREADER LIGHT (GROTE)	1	88	HW29E-04	80577D/80579	GREASE FITTING 1/4 28 STR	5
17	0650058		REFLECTIVE MARKING TAPE x 40 FEET	1	53	46867050		12" X 17 3/4" HD MUDFLAPS, PER PAIR	4	89	HW30A-08		NUT HEX 1/2 UNC ZINC	3
18	0650181		GROMMET RUBBER RND 1 1/2 X 2 1/8 X 1/4	3	54	51401123		STANDARD HIGH VISABILITY LIGHT BAR ASSEMBLY	1	90	HW30E-05		NUT HEX TOPLOCK 5/16 UNC ZINC	2
19	0820114		DECAL "TOW PLOW"	1	55	51403015		TWO SPEED LANDING GEAR WELD'T LTH	1	91	HW30E-06		NUT HEX 3/8 UNC TOPLOCK ZINC	52
20	3SK3488		MIDLINK 1/2" - 7/16"	2	56	51403016		TWO SPEED LANDING GEAR WELD'T RH	1	92	HW30E-08		NUT HEX 1/2 UNC TOP LOCK ZINC	15
21	40401267		CHAIN 1/2 GR 70 X 103.250 LG	2	57	51403134		LIGHT BAR CYL BRK'T WELD'T RTH	1	93	HW30E-10		NUT HEX 5/8 UNC TOPLOCK ZINC	19
22	41412014		BACK BRACE WELD'T	4	58	51403135		LIGHT BAR STEERING BRK'T WELD'T RTH	1	94	HW31A-24		NUT HEX 1 1/2 UNF ZINC	1
23	41412030		PLOW LIFT ARM ASS'Y	4	59	51403147		TOW PLOW FRAME WELDMENT RTH W/PRE-WET	1	95	HW31B-10		NUT HEX JAM 5/8 UNF ZINC	4
24	41412118		LIGHT PLATE FOR ABS	1	60	51409000	41412019	PIN 1.500 DIA X 5.563 UH	4	96	HW31D-24		NUT HEX 1 1/2 UNF ZINC STOVER	1
25	41412166		STEERING WELD'T	1	61	51409001	41412033	PIN 0.938 DIA X 5.313 UH	8	97	HW40A-0516		BOLT HEX 5/16 X 2 UNC ZINC	2
26	41412206		PIN 1.500 DIA X 16.25 BODY	1	62	51409003	41412150	TOW PLOW MOLDBOARD SAFETY PROP PIN	3	98	HW40A-0606		BOLT HEX 3/8 X 3/4 UNC ZINC	6
27	41412318		JOURNAL BEARING 3.5 OD X 3.0 ID X 2.5 LENGTH	2	63	51409004	41412566	MOLDBOARD TO STANDOFF ARM OUTSIDE PIN	2	99	HW40A-0608		BOLT HEX 3/8 X 1 UNC ZINC	4
28	41412320		THURST BEARING 7.0 OD X 3.062 ID	4	64	51409005	41412035	UPPER CYLINDER TO MOLDBOARD PIN	2	100	HW40A-0610		BOLT HEX 3/8 X 1 1/4 UNC ZINC	36
29	41412330		PIN 3.000 X 7.625 WELD'T	2	65	51409006	41412037	LOWER CYLINDER TO FRAME PIN	2	101	HW40A-0612	81091	BOLT HEX 3/8 X 1 1/2 UNC ZINC	3
30	41412470		BEARING DISC REAR LIGHT BAR	1	66	51415029		CABLE CADDY	1	102	HW40A-0812		BOLT HEX 1/2" X 1 1/2" UNC ZINC	5
31	41412483		STD.REAR LIGHT WELDMENT	1	67	51422091		TOW PLOW LICENSE PLATE MOUNTING PLATE	1	103	HW40A-0820		BOLT HEX 1/2 X 2 1/2 UNC ZINC	5
32	41412485		POLYMER WASHER FOR DISC, REAR LIGHT BAR	3	68	51429003	42940045	CONNECTING TUBE 2 SPEED TOW PLOW JACK	1	104	HW40A-0828		BOLT HEX 1/2 X 3 1/2 UNC ZINC	2
33	41412493		LIGHT BAR SECTOR ANGLE	1	69	BSM-23182-009		TOW PLOW HARNESS	1	105	HW40A-0840		BOLT HEX 1/2 X 5 UNC ZINC	2
34	41412495		THREADED ROD 5/8 NF X 5	1	70	HW13A-0648	80507A	COTTER PIN 3/16 X 3 ZINC	12	106	HW40A-1012	81072	BOLT HEX 5/8 X 1 1/2 UNC ZINC	4
35	41412561		TOW PLOW WING ASS'Y 12 FT	1	71	HW13A-0832		COTTER PIN 1/4 X 2 ZINC	7	107	HW40A-1020	81075E	BOLT HEX 5/8 X 2 1/2 UNC ZINC	12
36	41412564		TOW PLOW WING ASS'Y 14 FT WITH CROP	1	72	HW13A-1248		COTTER PIN 3/8 X 3 ZINC	6	108	HW40A-1024		BOLT HEX 5/8 X 3 UNC ZINC	3
										109	HW56A-0848		THREADED ROD 1/2-13 UNC x 6	1

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# BASE LEFT HAND DEPLOY / WHELEN LIGHT KIT TOW PLOW ASSEMBLY

## PART NUMBER 51401141



NOTE: NOT ALL ITEMS SHOWN IN ALL THE VIEWS.

NOTE: PLOWS REMOVED FOR CLAIRITY  
REAR PLOW: 51401064  
FRONT PLOW: 51401065

NOTE: ALL AXLE U-BOLTS TO BE TORQUED TO 300 FT/LBS

NOTES: RIMS TO BE TORQUED TO 500 FT/LBS  
TIE ROD ARMS TO BE OILED + WET AND TORQUED TO 600 FT/LBS.

SEE DWG: BSM-23182-009 REV 7 FOR ELECTRICAL HARNESS AND FOR ELECTRICAL SCHEMATIC.  
SEE DWG: 41412900 FOR REPHASING HYDRAULIC KIT.

EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL TO MAINTAIN OUR ON-GOING PRODUCT AND DEVELOPMENT IMPROVEMENT PROGRAM, VIKING-CIVES RESERVES THE RIGHT TO CHANGE EQUIPMENT & SPECIFICATION WITHOUT NOTICE.



22956 HWY 61, MORLEY, MO 63767, PH: 573.262.3545, FX: 573.232.3369

## BASE LEFT HAND DEPLOY / WHELEN LIGHT KIT TOW PLOW ASSEMBLY

### PART NUMBER 51401141

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY	ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY	ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	00402496		CHAIN 3/8 GR 70 X 62 LG	1	38	41412580		STEER CYL ADJ. ROD WELD'T	1	75	HW14A-05	IMP76512	FLATWASHER SAE 5/16 ZINC	4
2	00900353		PIN 1.000 DIA X 2.563 WELD'T	5	39	41412685		LH BACKING PLATE FENDER BRK'T WELD'T	2	76	HW14A-06		FLATWASHER SAE 3/8 ZINC	53
3	00900355		PIN 1.000 DIA X 3.063 WELD'T	1	40	41412689		S-CAM FENDER BRK'T LH	2	77	HW14A-08		FLATWASHER SAE 1/2 ZINC	4
4	00900421		SAFETY PIN 1.000 DIA X 23.75 FR REAR PLOW	1	41	41412690		S-CAM FENDER BRK'T RH	2	78	HW14A-10	81070A	FLATWASHER SAE 5/8 ZINC	6
5	01401180		FL943LX124 AXLE RH	2	42	41412691		RH BACKING PLATE FENDER BRK'T WELD'T	2	79	HW14A-12	81062X	FLATWASHER SAE 3/4" ZINC	1
6	01401349	3133T7352	STEER ARM LH AXLE	2	43	41412732		HALF ROUND U-BOLT BLOCK	4	80	HW14B-06		FLATWASHER USS 3/8 ZINC	24
7	01925004		LIGHT PEDESTAL WELD'T - 14 IN	1	44	41412734		U-BOLT KIT TOW PLOW ROUND 3/4 DIA	8	81	HW14B-24		FLATWASHER USS 1 1/2 ZINC	2
8	02100540	102-2316	CHAIN 3/16 GR 30 X 18.000 LG	3	45	41412900		HYDRAULIC ASSY THRU FRAME REPHASING	1	82	HW14C-06		LOCKWASHER SPLIT 3/8" ZINC	6
9	0520023	80317	RATCHET JACK AHW	2	46	42940022	0720241	MINIMIZER FENDER 18 IN BLK	4	83	HW14D-08		FLATWASHER HARDENED 1/2 ZINC	14
10	0540400		CYLINDER BOOT FOR 0540398 TOW PLOW	2	47	42940026		ABS INSTALL KIT	1	84	HW14D-10	81070E	FLATWASHER HARDENED 5/8 ZINC	32
11	0590054		CLEVIS YOKE ASSEMBLY 5/8 NF	1	48	42940039	0510066	385/65 R22.5 TIRE AND RIM ASSEMBLY	4	85	HW14D-16	81013A	FLATWASHER HARDENED 1 ZINC	20
12	0590080		CHAIN CLEVIS 1/2 GR70 SLIP HOOK CV LATCH	2	49	44843026		LIGHT PACKAGE FOR LEFT HANDED TOW PLOW	1	86	HW24C-02		3/16 QUICK LINK	6
13	0590081		CONNECTOR LINK 1/2 FOR SAFETY CHAIN G70	2	50	44843417		SPREADER LIGHT (GROTE)	1	87	HW29A-02	80577	GREASE FITTING 1/8 NPT STR	4
14	0620031		GEAR CLAMP 3-5 INCH STAINLESS	2	51	46867050		12" X 17 3/4" HD MUDFLAPS, PER PAIR	4	88	HW29B-02		GREASE FITTING 1/8 NPT 90 DEG	4
15	0620065		GEAR CLAMP 2 1/2 -3 1/2 STAINLESS	2	52	51401064		TOW PLOW WING ASS'Y 14 FT WITH CROP LH	1	89	HW29E-04	80577D/80579	GREASE FITTING 1/4 28 STR	5
16	0620075		BALL KNOB W BRASS INSERT, SAFETY PIN	1	53	51401065		TOW PLOW WING ASS'Y 12 FT LH	1	90	HW30A-08		NUT HEX 1/2 UNC ZINC	3
17	0650001	41033	REFLECTOR AMBER SELF ADHEV OVAL	4	54	51401123		STANDARD HIGH VISABILITY LIGHT BAR ASSEMBLY (WLK)	1	91	HW30E-05		NUT HEX TOPLOCK 5/16 UNC ZINC	2
18	0650058		REFLECTIVE MARKING TAPE x 40 FEET	1	55	51401133		TONGUE TOWPLOW ONE PIECE ASS'Y LH	1	92	HW30E-06		NUT HEX 3/8 UNC TOPLOCK ZINC	52
19	0650181		GROMMET RUBBER RND 1 1/2 X 2 1/8 X 1/4	3	56	51403015		TWO SPEED LANDING GEAR WELD'T LTH	1	93	HW30E-08		NUT HEX 1/2 UNC TOP LOCK ZINC	15
20	0820114		DECAL "TOW PLOW"	1	57	51403016		TWO SPEED LANDING GEAR WELD'T RH	1	94	HW30E-10		NUT HEX 5/8 UNC TOPLOCK ZINC	19
21	3SK3488		MIDLINK 1/2" - 7/16"	2	58	51403171		LIGHT BAR STEERING BRK'T WELD'T LTH	1	95	HW31A-24		NUT HEX 1 1/2 UNF ZINC	1
22	40401267		CHAIN 1/2 GR 70 X 110.000 LG	2	59	51403172		LIGHT BAR CYL BRK'T WELD'T LTH	1	96	HW31B-10		NUT HEX JAM 5/8 UNF ZINC	4
23	41412014		BACK BRACE WELD'T	4	60	51403179		LEFT HAND DEPLOY TOW PLOW WELDMENT	1	97	HW31D-24		NUT HEX 1 1/2 UNF ZINC STOVER	1
24	41412030		PLOW LIFT ARM ASS'Y	4	61	51409000	41412019	PIN 1.500 DIA X 5.563 UH	4	98	HW40A-0516		BOLT HEX 5/16 X 2 UNC ZINC	2
25	41412118		LIGHT PLATE FOR ABS	1	62	51409001	41412033	PIN 0.938 DIA X 5.313 UH	8	99	HW40A-0606		BOLT HEX 3/8 X 3/4 UNC ZINC	6
26	41412206		PIN 1.500 DIA X 16.25 BODY	1	63	51409003	41412150	TOW PLOW MOLDBOARD SAFETY PROP PIN	3	100	HW40A-0608		BOLT HEX 3/8 X 1 UNC ZINC	4
27	41412318		JOURNAL BEARING 3.5 OD X 3.0 ID X 2.5 LENGTH	2	64	51409004	41412566	MOLDBOARD TO STANDOFF ARM OUTSIDE PIN	2	101	HW40A-0610		BOLT HEX 3/8 X 1 1/4 UNC ZINC	36
28	41412320		THURST BEARING 7.0 OD X 3.062 ID	4	65	51409005	41412035	UPPER CYLINDER TO MOLDBOARD PIN	2	102	HW40A-0612	81091	BOLT HEX 3/8 X 1 1/2 UNC ZINC	3
29	41412330		PIN 3.000 X 7.625 WELD'T	2	66	51409006	41412037	LOWER CYLINDER TO FRAME PIN	2	103	HW40A-0812		BOLT HEX 1/2" X 1 1/2" UNC ZINC	5
30	41412407		STEERING TIE-ROD WELD'T FOR LS PLOW	1	67	51415029		CABLE CADDY	1	104	HW40A-0820		BOLT HEX 1/2 X 2 1/2 UNC ZINC	5
31	41412470		BEARING DISC REAR LIGHT BAR	1	68	51422091		TOW PLOW LICENSE PLATE MOUNTING PLATE	1	105	HW40A-0828		BOLT HEX 1/2 X 3 1/2 UNC ZINC	2
32	41412483		STD.REAR LIGHT WELDMENT	1	69	51429003	42940045	CONNECTING TUBE 2 SPEED TOW PLOW JACK	1	106	HW40A-0840		BOLT HEX 1/2 X 5 UNC ZINC	2
33	41412485		POLYMER WASHER FOR DISC, REAR LIGHT BAR	3	70	BSM-23182-009		TOW PLOW HARNESS	1	107	HW40A-1012	81072	BOLT HEX 5/8 X 1 1/2 UNC ZINC	4
34	41412493		LIGHT BAR SECTOR ANGLE	1	71	HW13A-0648	80507A	COTTER PIN 3/16 X 3 ZINC	12	108	HW40A-1020	81075E	BOLT HEX 5/8 X 2 1/2 UNC ZINC	12
35	41412495		THREADED ROD 5/8 NF X 5	1	72	HW13A-0832		COTTER PIN 1/4 X 2 ZINC	7	109	HW40A-1024		BOLT HEX 5/8 X 3 UNC ZINC	3
36	41412572		TIE ROD/RATCHET JACK LUG WELD'T	1	73	HW13A-1248		COTTER PIN 3/8 X 3 ZINC	6	110	HW56A-0848		THREADED ROD 1/2-13 UNC x 6	1
37	41412577		TOW PLOW AXLE DOWEL	4	74	HW13P-7GA56	80536	COTTER HAIRPIN 3/16" X 3 3/4" ZINC	3					

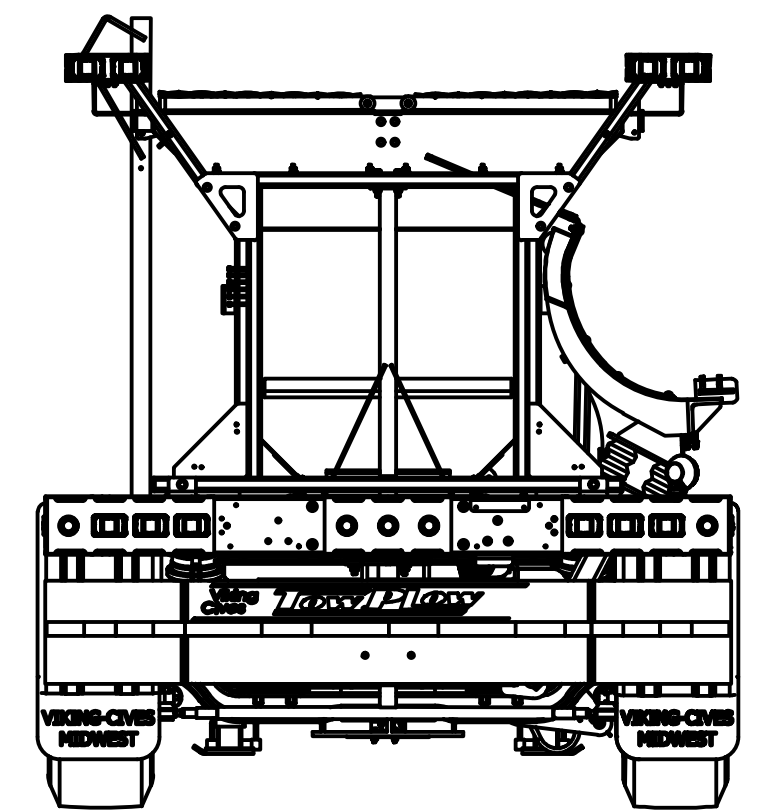
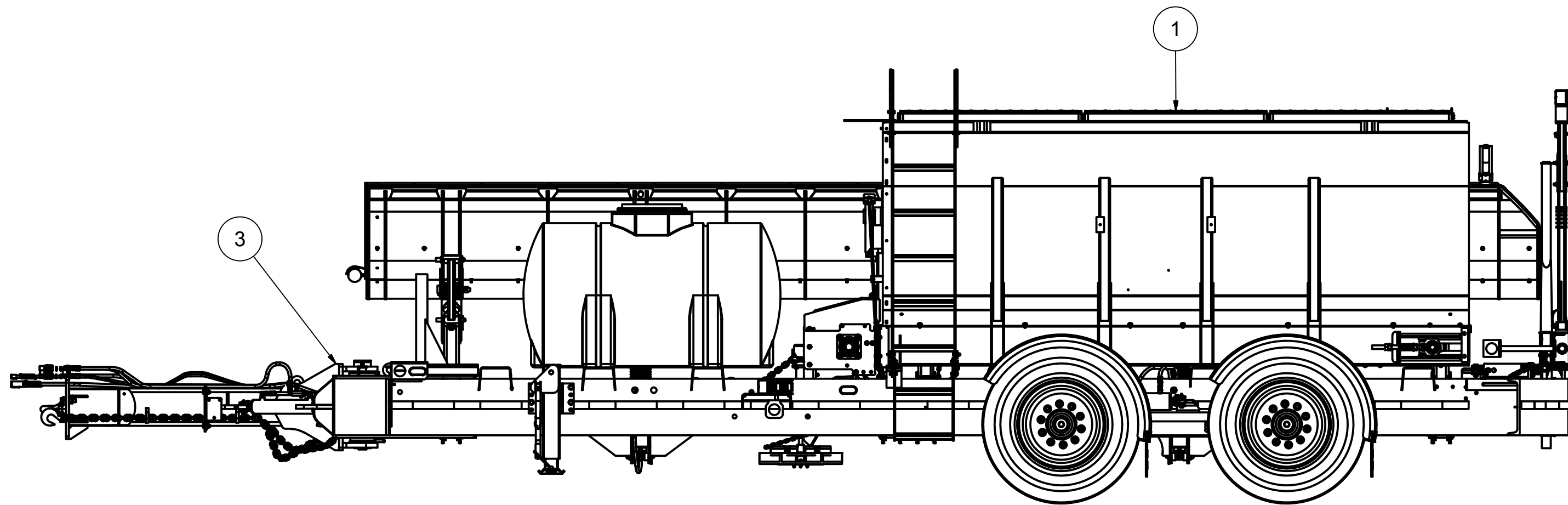
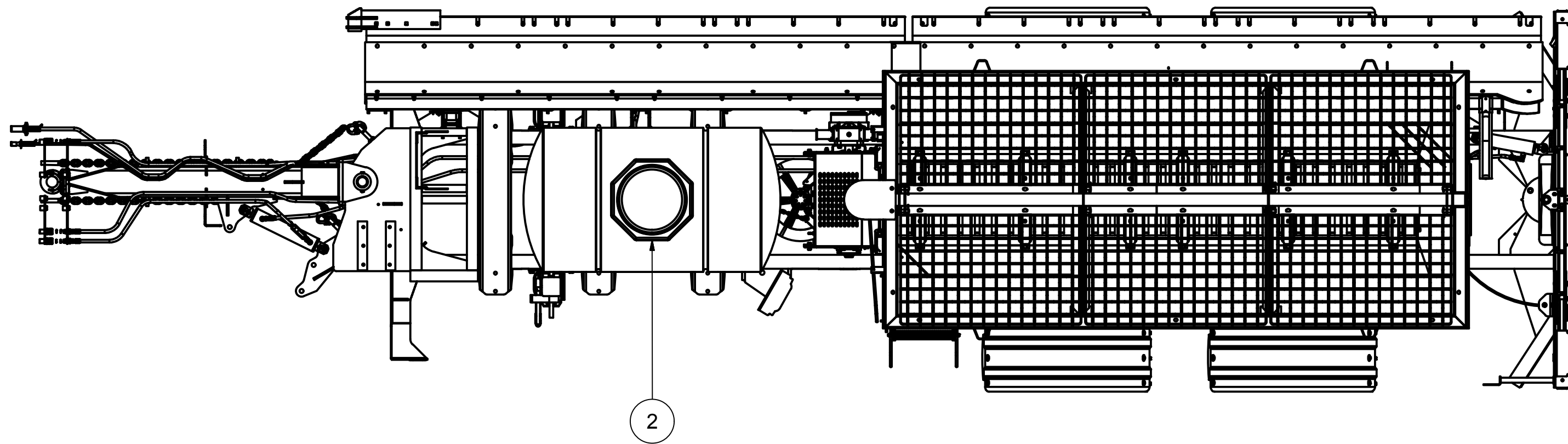
EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL  
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# 325 GALLON TANK / SPREADER / WHELEN LIGHT KIT TOW PLOW ASSEMBLY PART NUMBER 51401125



EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL  
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**325 GALLON TANK / SPREADER / WHELEN LIGHT KIT TOW PLOW ASSEMBLY**  
**PART NUMBER 51401125**

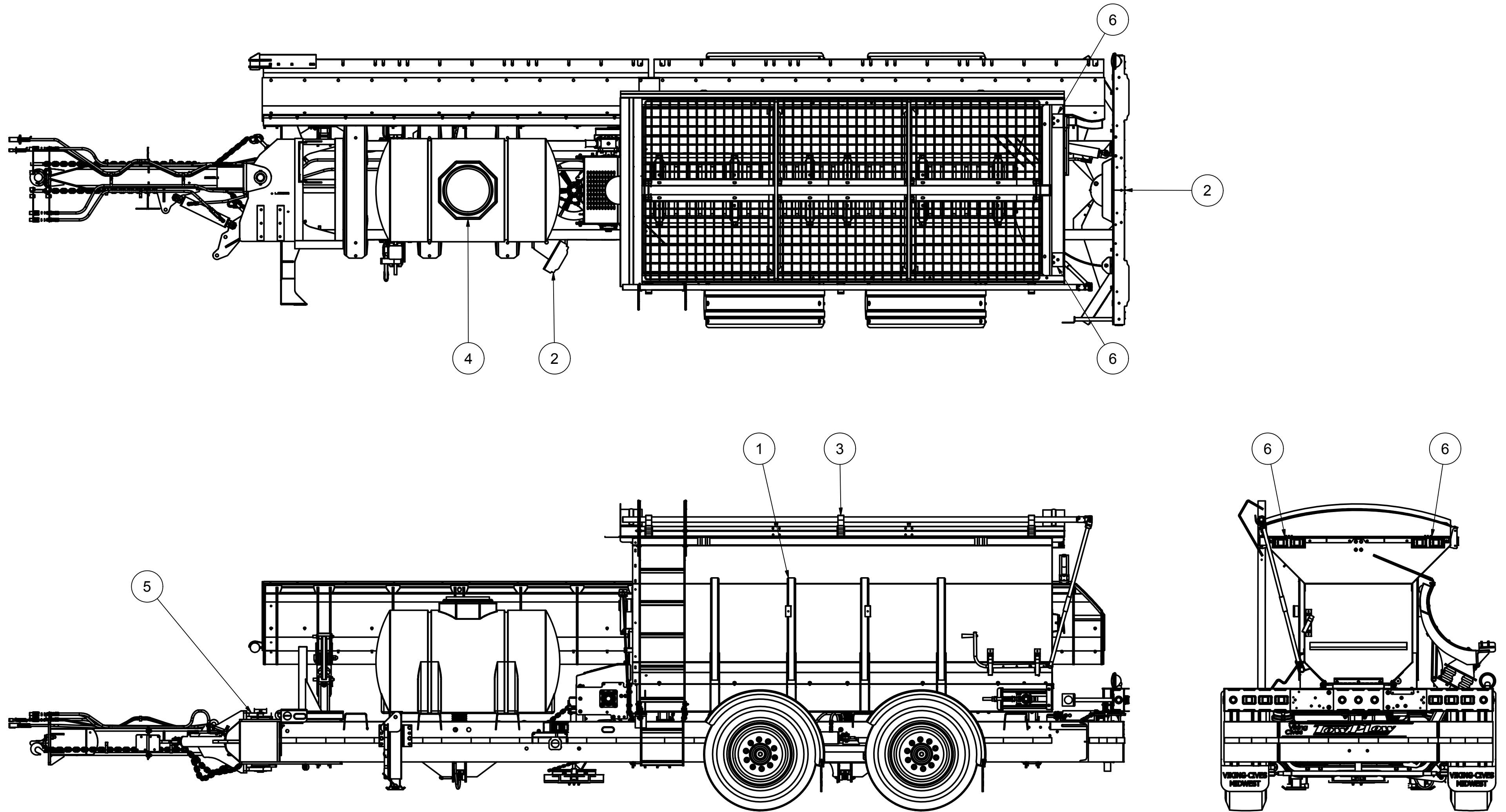
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	42939010		TOW PLOW HOPPER ASSEMBLY (SSTL)	1
2	51401056		NORWESCO 325 GALLON HORIZONTAL LEG TANK W/BANDS	1
3	51401124		TOW PLOW FRAME ASSEMBLY RTH W/PRE-WET BRKT & WHELEN LIGHT KIT	1

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# 325 GALLON TANK / SPREADER / LOAD COVER / WHELEN LIGHT KIT TOW PLOW ASSEMBLY PART NUMBER 51401127



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**325 GALLON TANK / SPREADER / LOAD COVER / WHELEN LIGHT KIT TOW PLOW ASSEMBLY**  
**PART NUMBER 51401127**

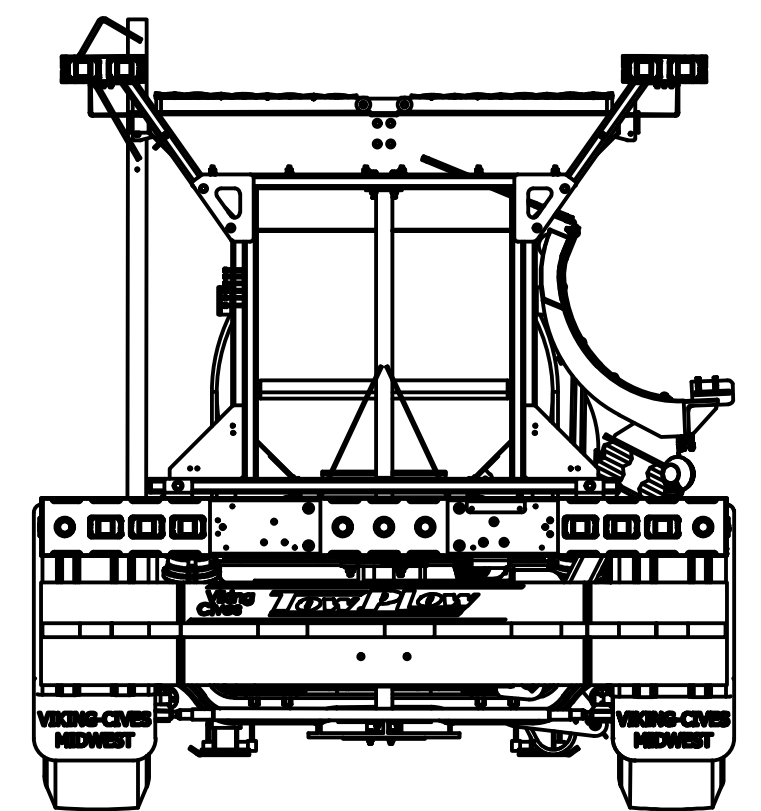
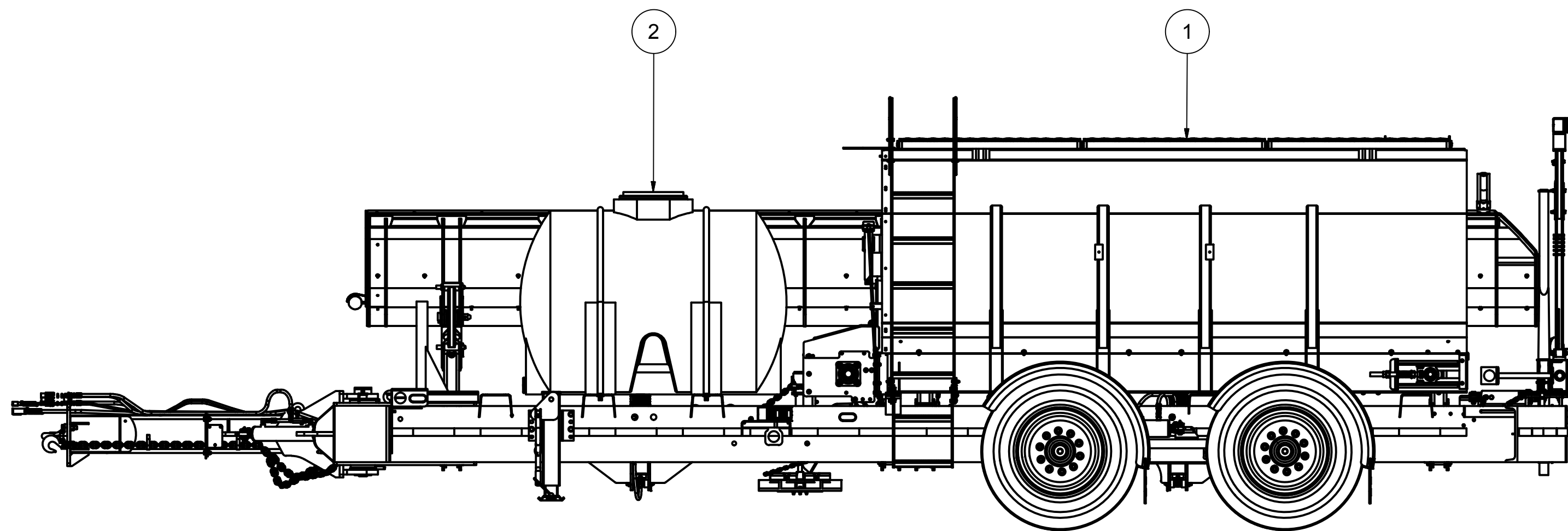
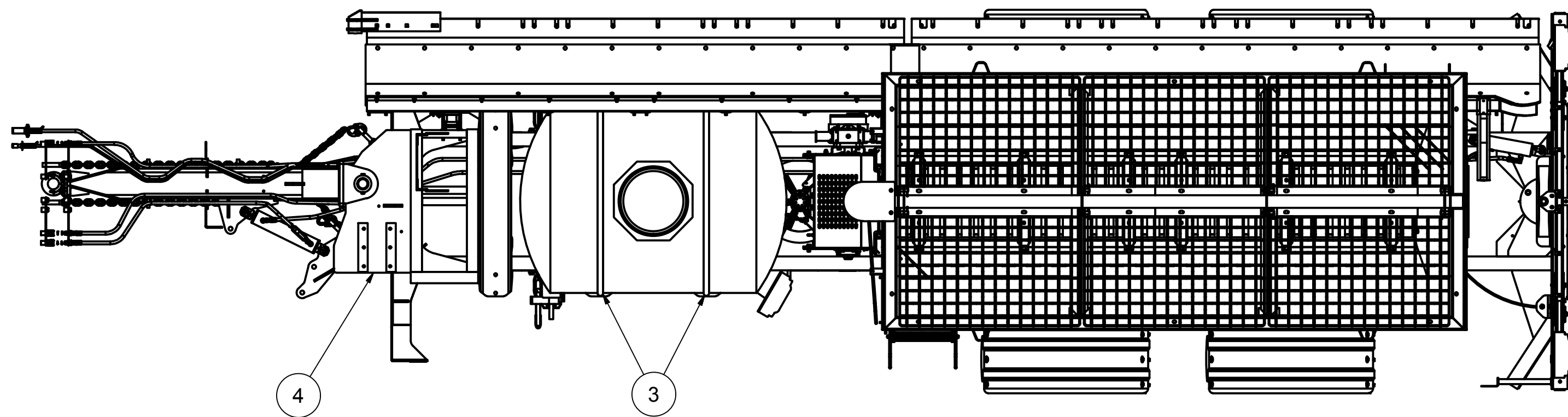
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	42939010		TOW PLOW HOPPER ASSEMBLY (SSTL)	1
2	44843026		LIGHT PACKAGE FOR RIGHT HANDED TOW PLOW	1
3	51401032		TOW PLOW TARP ASSEMBLY	1
4	51401056		NORWESCO 325 GALLON HORIZONTAL LEG TANK W/BANDS	1
5	51401126		RTH TOW PLOW ASSEMBLY W/WHELEN LIGHT KIT / SPREADER W/LOAD COVER	1
6	51404051		WHELEN STROBE MOUNT BACKING PLATE	2

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# 525 GALLON TANK / SPREADER / WHELEN LIGHT KIT TOW PLOW ASSEMBLY PART NUMBER 51401138



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**525 GALLON TANK / SPREADER / WHELEN LIGHT KIT TOW PLOW ASSEMBLY**  
**PART NUMBER 51401138**

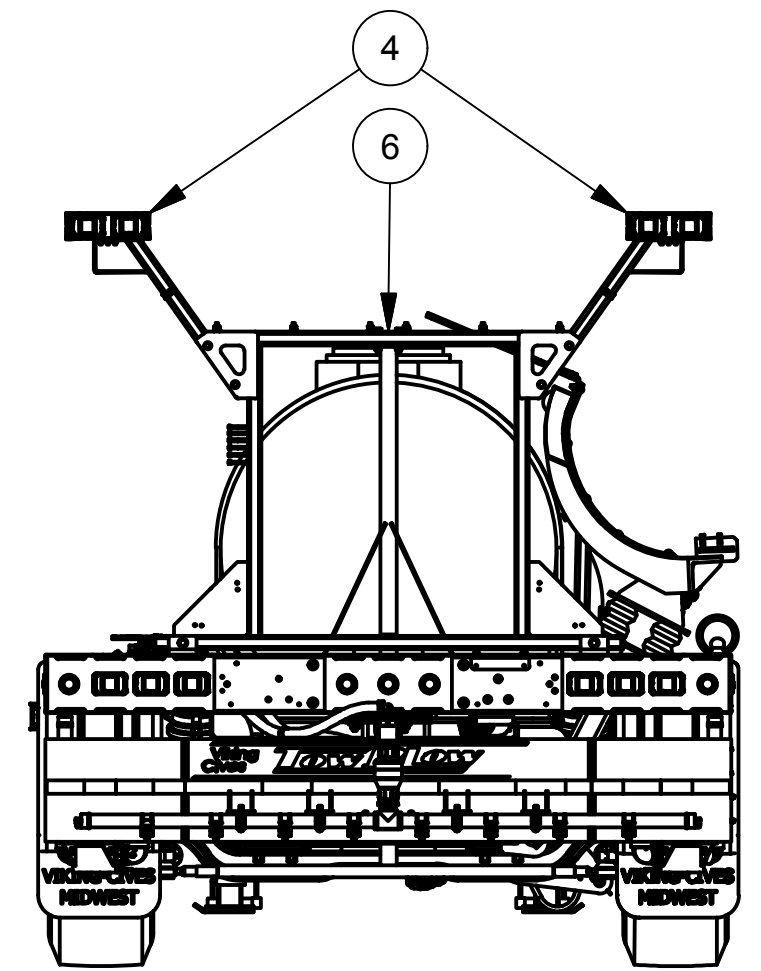
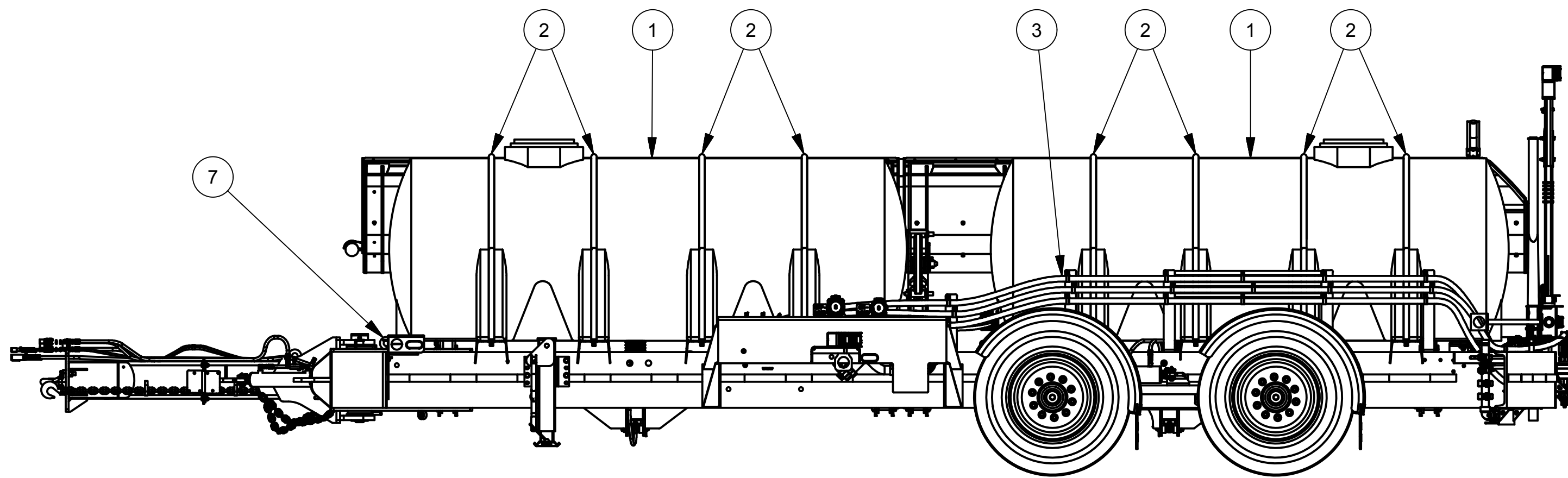
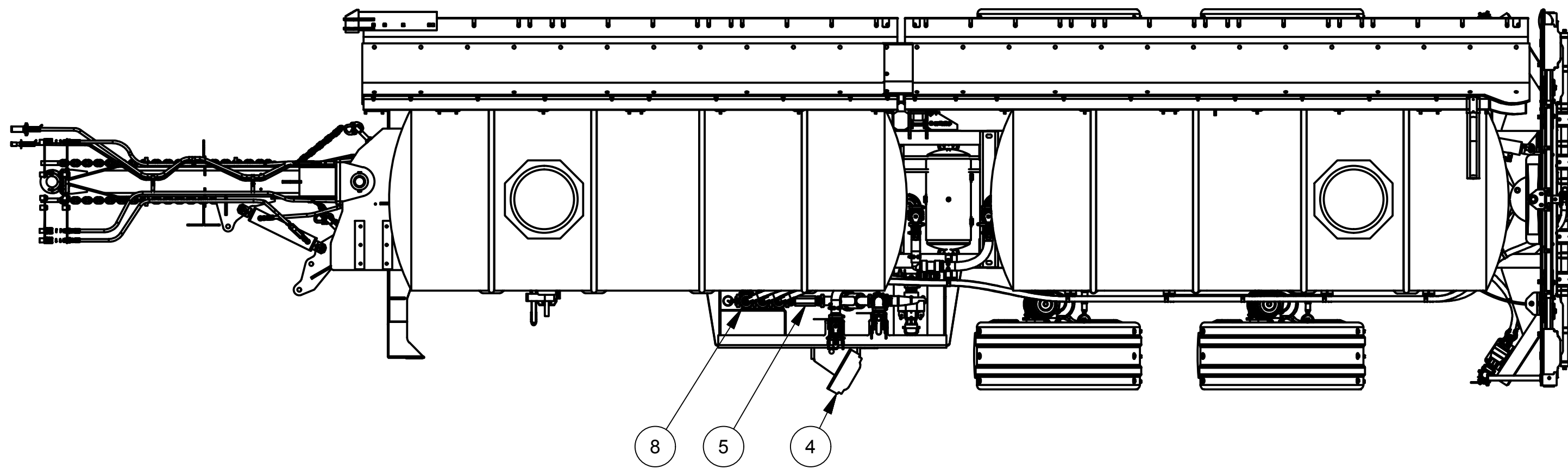
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	42939010		TOW PLOW HOPPER ASSEMBLY (SSTL)	1
2	42940005		NORWESCO 525 GALLON HORIZONTAL TANK	1
3	42940100		BAND FOR 1025, 725, 525 TANK	2
4	51401124		TOW PLOW FRAME ASSEMBLY RTH W/PRE-WET BRKT & WHELEN LIGHT KIT	1

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# TWO 1025 GALLON TANKS / ANTI-ICE / WHELEN LIGHT KIT TOW PLOW ASSEMBLY PART NUMBER 51401139



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**TWO 1025 GALLON TANKS / ANTI-ICE / WHELEN LIGHT KIT TOW PLOW ASSEMBLY**  
**PART NUMBER 51401139**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	0810504		TANK POLY TOW PLOW 1025 GALLON	2
2	42940100		BAND FOR 1025, 725, 525 TANK	8
3	44040016S		1" GENERAL PURPOSE BLACK HOSE (PER FOOT)	1
4	44843026		LIGHT PACKAGE FOR RIGHT HANDED TOW PLOW	1
5	46640072		ANTI-ICE KIT	1
6	51401123		STANDARD HIGH VISABLILITY LIGHT BAR ASSEMBLY (WHELEN LIGHT KIT)	1
7	51403174		RTH TWO 1020 GAL TANK FRAME WELDMENT (WHELEN LIGHT KIT)	1
8	51430006		VALVE MTG BRACKET RUBBER DAMPENER	1

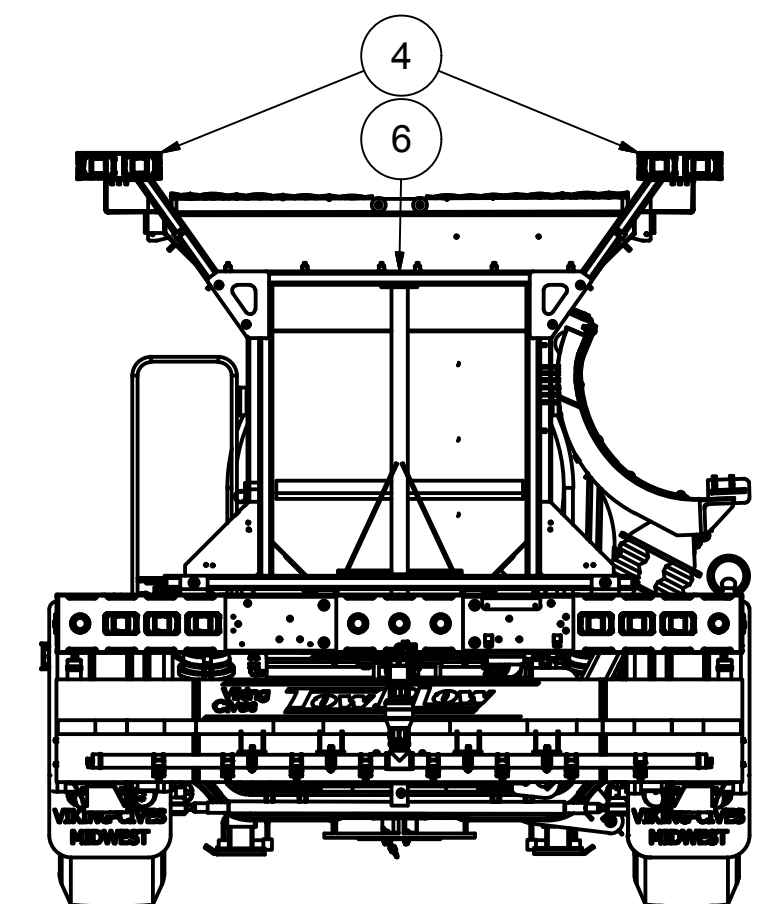
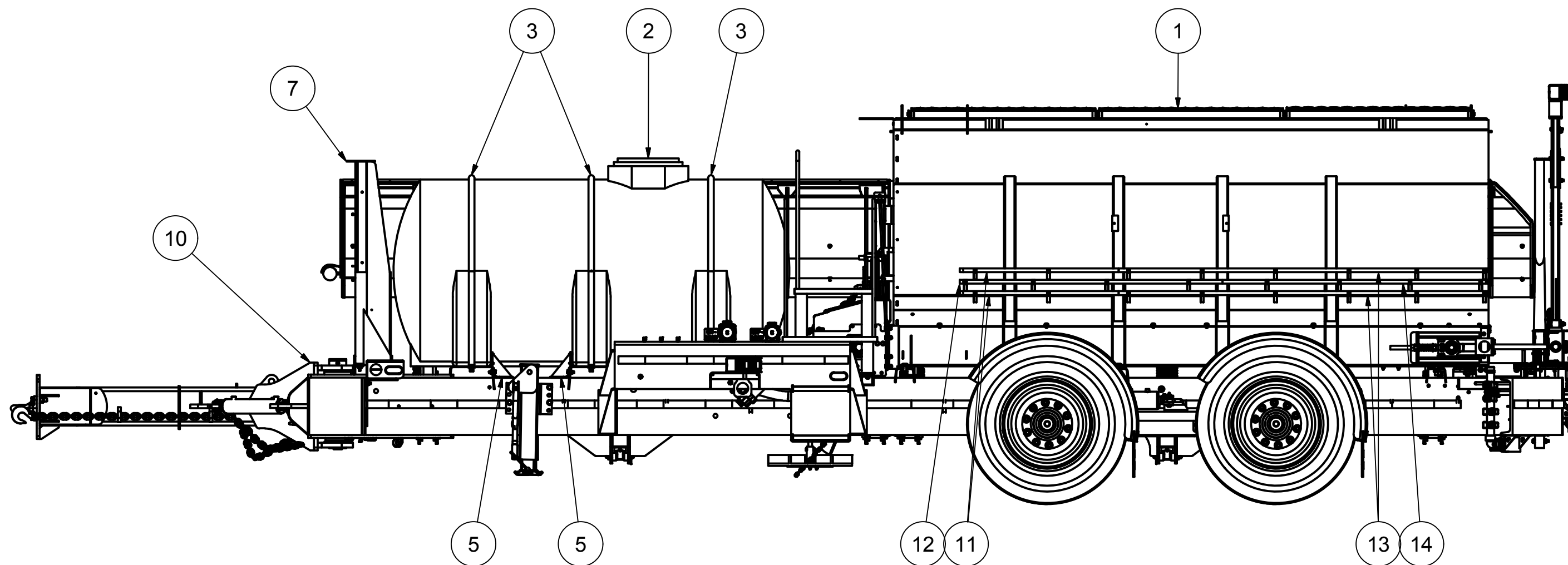
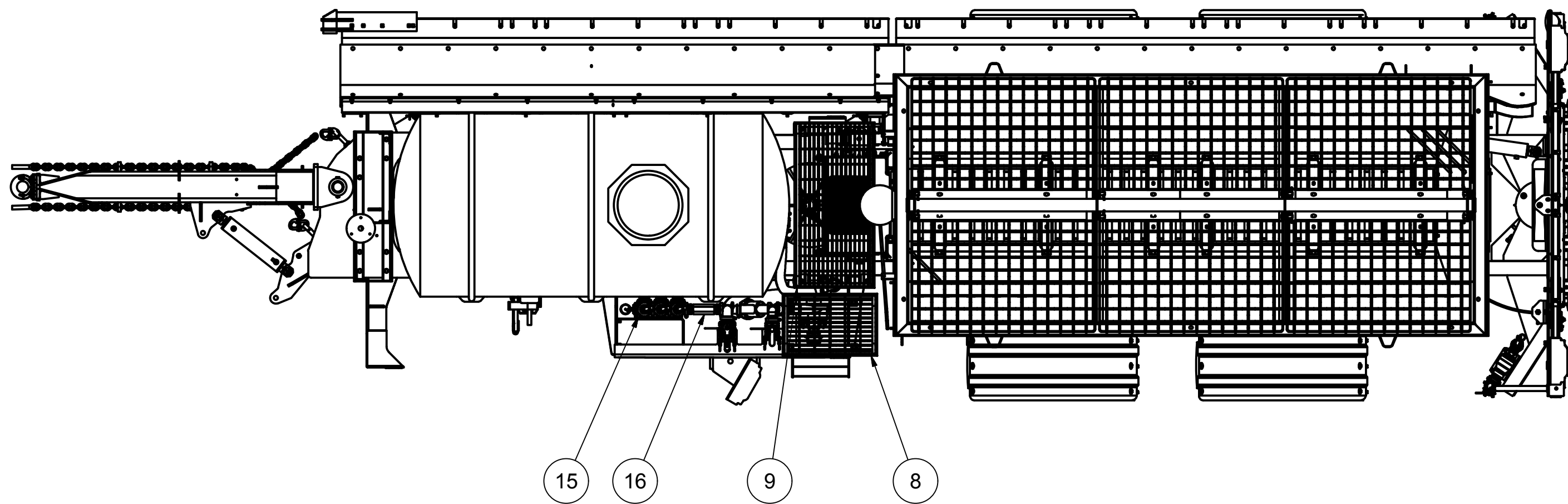
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# 725 GALLON TANK / SPREADER / WHELEN LIGHT KIT TOW PLOW ASSEMBLY PART NUMBER 51401140



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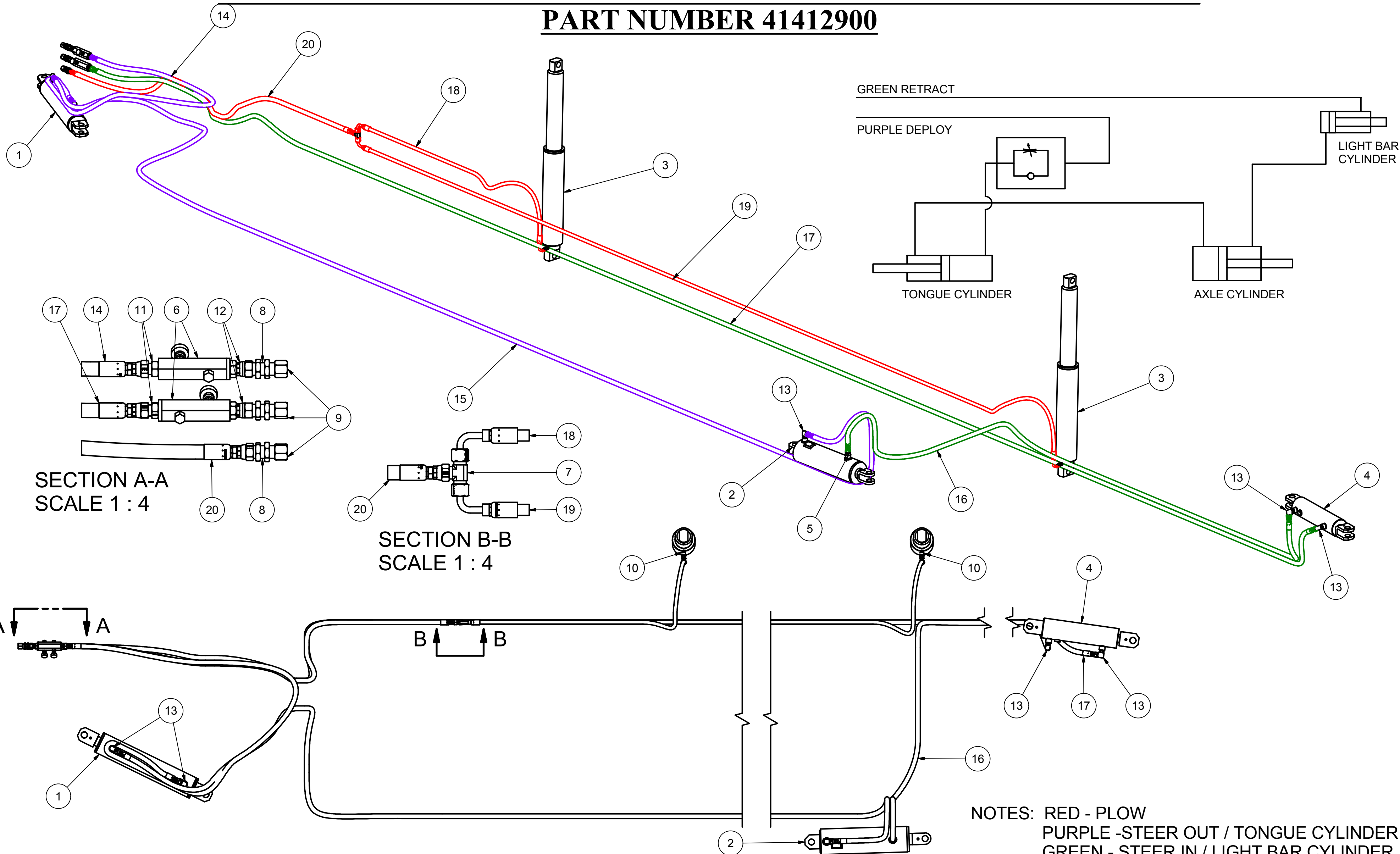
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**725 GALLON TANK / SPREADER / WHELEN LIGHT KIT TOW PLOW ASSEMBLY**  
**PART NUMBER 51401140**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	01326689		TOW PLOW HOPPER SS ASSEMBLY NO LADDER	1
2	3176T35	42913001	VIBRATION-DAMPENING U-BOLT CLAMP	1
2	42940011		735 GALLON TANK ASSEMBLY	1
3	42940100		BAND FOR 1025, 725, 525 TANK	3
4	44843026		LIGHT PACKAGE FOR RIGHT HANDED TOW PLOW	1
5	51401058		735 GALLON ANTI-SLIDING BRACKET ASSEMBLY	4
6	51401123		STANDARD HIGH VISABLILITY LIGHT BAR ASSEMBLY (WHELEN LIGHT KIT)	1
7	51403060		PRE-WET/VALVE/LIGHT HEAD MTG BRACKET	1
8	51403063		SMALL PLATFORM WELDMENT	1
9	51403064		SPREADER OBSERVATION PLATFORM WELD'T	1
10	51403177		RTH FRAME WELD'T SPRD/750 GAL TANK/ WHELEN LIGHT KIT	1
11	51422086		HOSE HANGER TOP & BOTTOM FLAT BAR #1	2
12	51422087		HOSE HANGER MIDDLE FLAT BAR #1	1
13	51422092		HOSE HANGER TOP & BOTTOM FLAT BAR #2	2
14	51422093		HOSE HANGER MIDDLE FLAT BAR #2	1
15	51430006		VALVE MTG BRACKET RUBBER DAMPENER	1
16	51501076		ANTI-ICE KIT 750/535 GALLON TANK COMBO	1

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**RIGHT/LEFT HAND DEPLOYED TOW PLOW HYDRAULIC SCHEMATIC**  
**PART NUMBER 41412900**



NOTES: RED - PLOW  
PURPLE - STEER OUT / TONGUE CYLINDER  
GREEN - STEER IN / LIGHT BAR CYLINDER

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**RIGHT/LEFT HAND DEPLOYED TOW PLOW HYDRAULIC SCHEMATIC**  
**PART NUMBER 41412900**

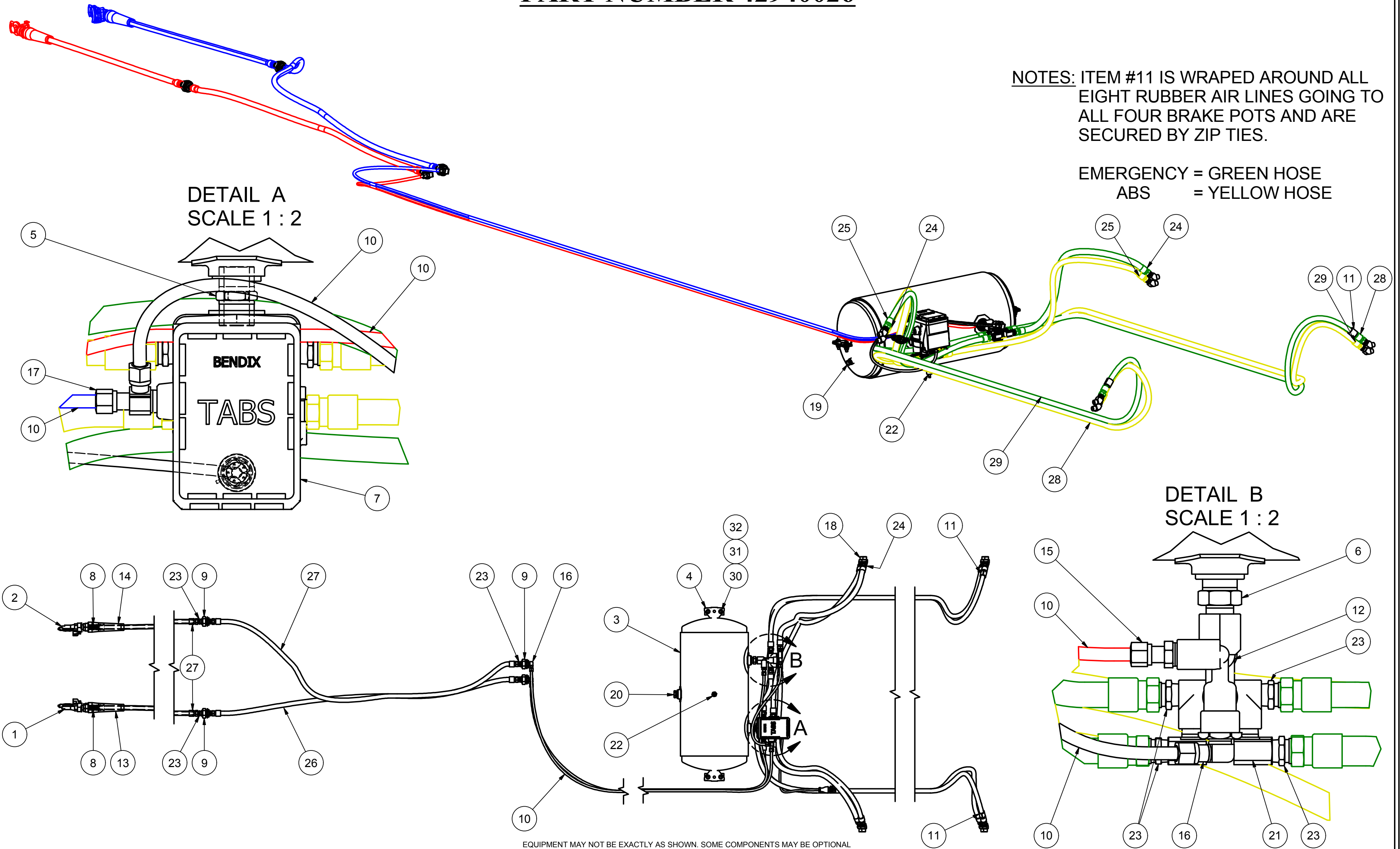
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	0540357		CYL HYD 3 1/4 X 12 DA TOW PLOW REPHASE	1
2	0540358		CYL HYD DA 4 X 5 5/8 TOW PLOW REPHASE	1
3	0540398		CYLINDER HYD SA 3 1/2 X 16 TOW PLOW	2
4	0540432		CYLINDER HYD TOWPLOW 3 X 7 1/2 REFZ LTE	1
5	0630562		HYD ADAPTER 3/8 MORB 1/2 MJIC STR	1
6	4394EFM825S	80239B	#8 FLOW CONTROL	2
7	441402603-8		8MJ - 8MJ - 8MJ UNION TEE	1
8	441402700LN-8-8		8MJ-8MJ MALE BULKHEAD W/LOCK NUT	3
9	44140304C-8		8FJIC HEX CAP	3
10	441406400-6		6MJ-6MB O-RING CONN	2
11	441406400-8		8MJ-8MB O-RING CONNECTOR	2
12	441406402-8-8		8MB-8FJX O-RING/FEMALE 37 DEGREE SWIVEL ADAPTOR	2
13	441406801-8-6		8MJ-6MB 90 DEG	5
14	51415610		BULKHEAD TO BASE END TONGUE CYLINDER HYD. HOSE ASSEMBLY	1
15	51415612		ROD END TONGUE CYLINDER TO BASE END OF STEER CYLINDER HYD. HOSE ASSEMBLY	1
16	51415614		ROD END STEER CYLINDER TO BASE END OF LIGHT BAR CYLINDER HYD. HOSE ASSEMBLY	1
17	51415616		ROD END LIGHT BAR CYLINDER TO BULKHEAD HYD. HOSE ASSEMBLY	1
18	51415618		TEE TO BASE END OF FRONT MOLDBOARD LIFT CYLINDER HYD. HOSE ASSEMBLY	1
19	51415620		TEE TO BASE END OF REAR MOLDBOARD LIFT CYLINDER HYD. HOSE ASSEMBLY	1
20	51415622		BULKHEAD TO TEE HYD. HOSE ASSEMBLY MOLDBOARDS	1

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**TOW PLOW ABS INSTALL KIT**  
**PART NUMBER 42940026**

**NOTES:** ITEM #11 IS WRAPPED AROUND ALL EIGHT RUBBER AIR LINES GOING TO ALL FOUR BRAKE POTS AND ARE SECURED BY ZIP TIES.

EMERGENCY = GREEN HOSE  
ABS = YELLOW HOSE



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**TOW PLOW ABS INSTALL KIT**  
**PART NUMBER 42940026**

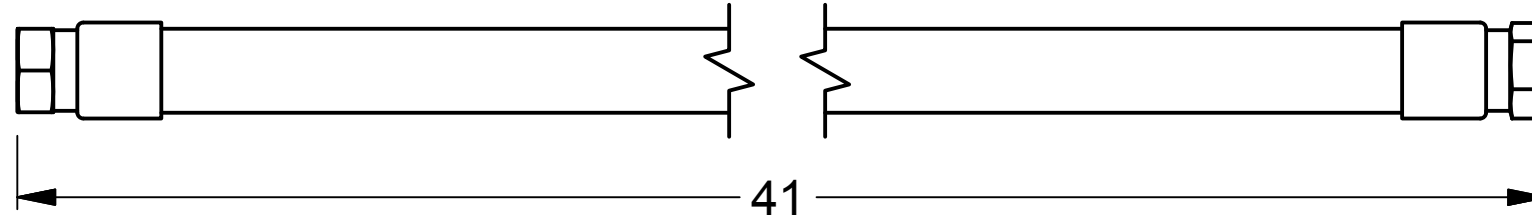
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	46850041	TEC1011E	GLADHAND RED RETAINER	1
2	46850041-2	TEC1011S	GLADHAND BLUE RETAINER	1
3	51415065	HOSHT-1231	LARGE AIR TANK TOW PLOW	1
4	51415284	TEC2000 FB	RUBBER ISOLATOR MOUNTING PAD	2
5	51415285	TECS1022-E	FITTING HEX NIPPLE 3/4MP-3/4MP	1
6	51415286	TECS1022-ED	FITTING HEX NIPPLE 3/4MP-1/2MP	1
7	51415287	BND802997	BENDIX ABS REPLACEMENT KIT TABS-6	2
8	51415290	TEC161201-8	FITTING	2
9	51415291	IMP90641	BULK HEAD FITTING 3/8 FEMALE	4
10	51415292	TEC1926-01	TUBING A/B BLACK PER FT 3/8	30
11	51415293	GAT28405	THERMOID 3/4" HEATER HOSE PER FT	55
12	51415573	ATM170.110500	SPRING BRAKE CONTROLE VALVE	1
13	51415578	TEC1011FG	FLEX GRIP(RED)	1
14	51415579	TEC1011FG	FLEX GRIP (BLUE)	1
15	51415580	IMP90684	MALE CON NT 3/8 X 3/8	1
16	51415581	1369-6C	90 MALE ELBOW 3/8 X 3/8	3
17	51415582	TEC1371-6C	MALE RUN TEE 3/8	1
18	51415583	IMP90372	PIPE 45 DEG STREET ELBOW	8
19	51415584	IMP90314	PIPE HD PLUG 3152X6	2
20	51415585	TEC121-E	PLUG HEX HEAD 3/4	1
21	51415586	TEC115-C	STREET ELBOW 90 DEG 3/8	6
22	51415587	ATM177.4010	AIR TANK DRAIN VALVE W/ 60" WIRE ROPE	1
23	51415588	TEC161201-6	FITTING	22
24	51415591		RUBBER AIR LINE ASSEMBLY 41" LONG	2
25	51415594		RUBBER AIR LINE ASSEMBLY 55" LONG	2
26	51415597		RUBBER AIR LINE ASSEMBLY 64" LONG	1
27	51415600		RUBBER AIR LINE ASSEMBLY 71" LONG	3
28	51415604		RUBBER AIR LINE ASSEMBLY 108" LONG	2
29	51415607		RUBBER AIR LINE ASSEMBLY 121" LONG	2
30	HW14A-05	IMP76512	FLATWASHER SAE 5/16 ZINC	8
31	HW36D-05	IMP42308	NUT HEX ELASTIC 5/16 UNC ZINC	4
32	HW40A-0510	IMP16626	BOLT HEX 5/16 X 1 1/4 UNC ZINC	4

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**ABS INSTALL KIT HOSE ASSEMBLIES**

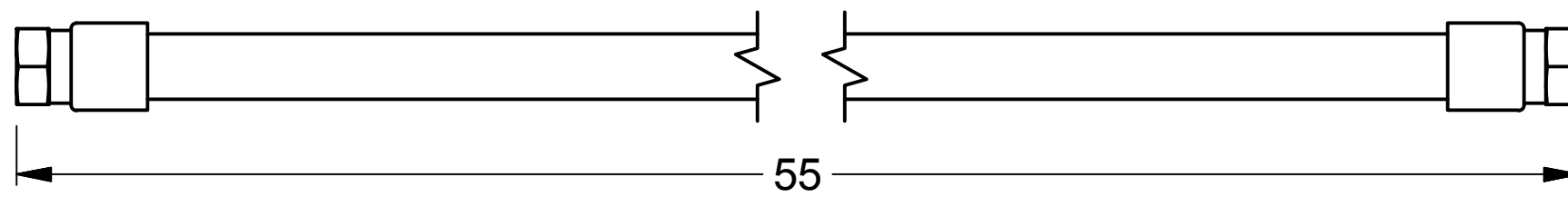
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**QTY: 2**



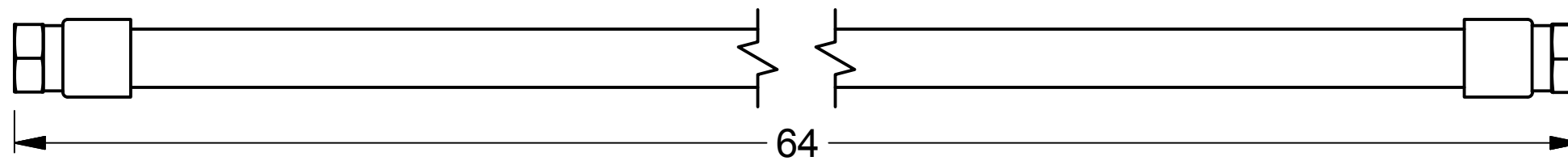
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**QTY: 2**



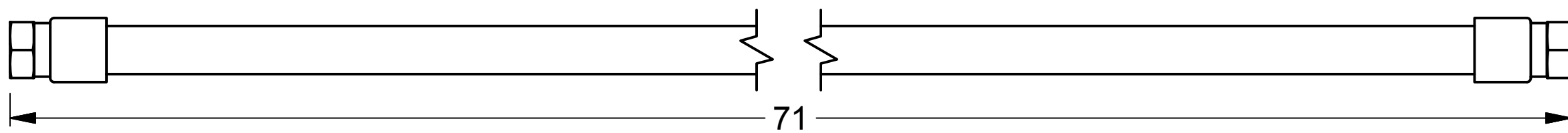
**PART NO. 51415597**

**QTY: 1**



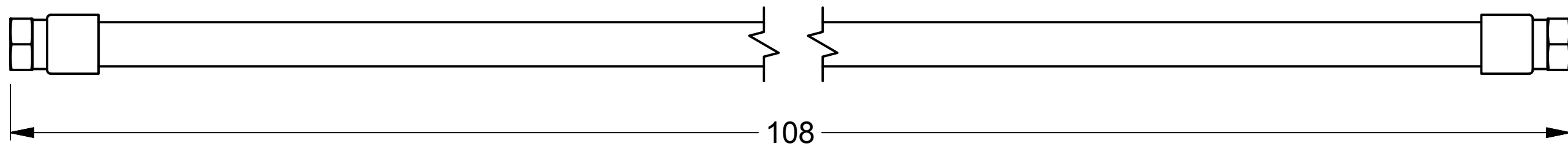
**PART NO. 51415600**

**QTY: 3**



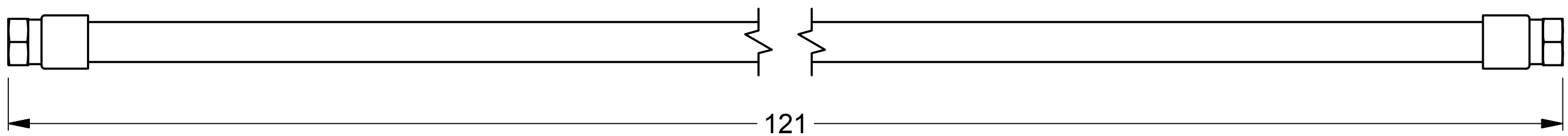
**PART NO. 51415604**

**QTY: 2**



**PART NO. 51415607**

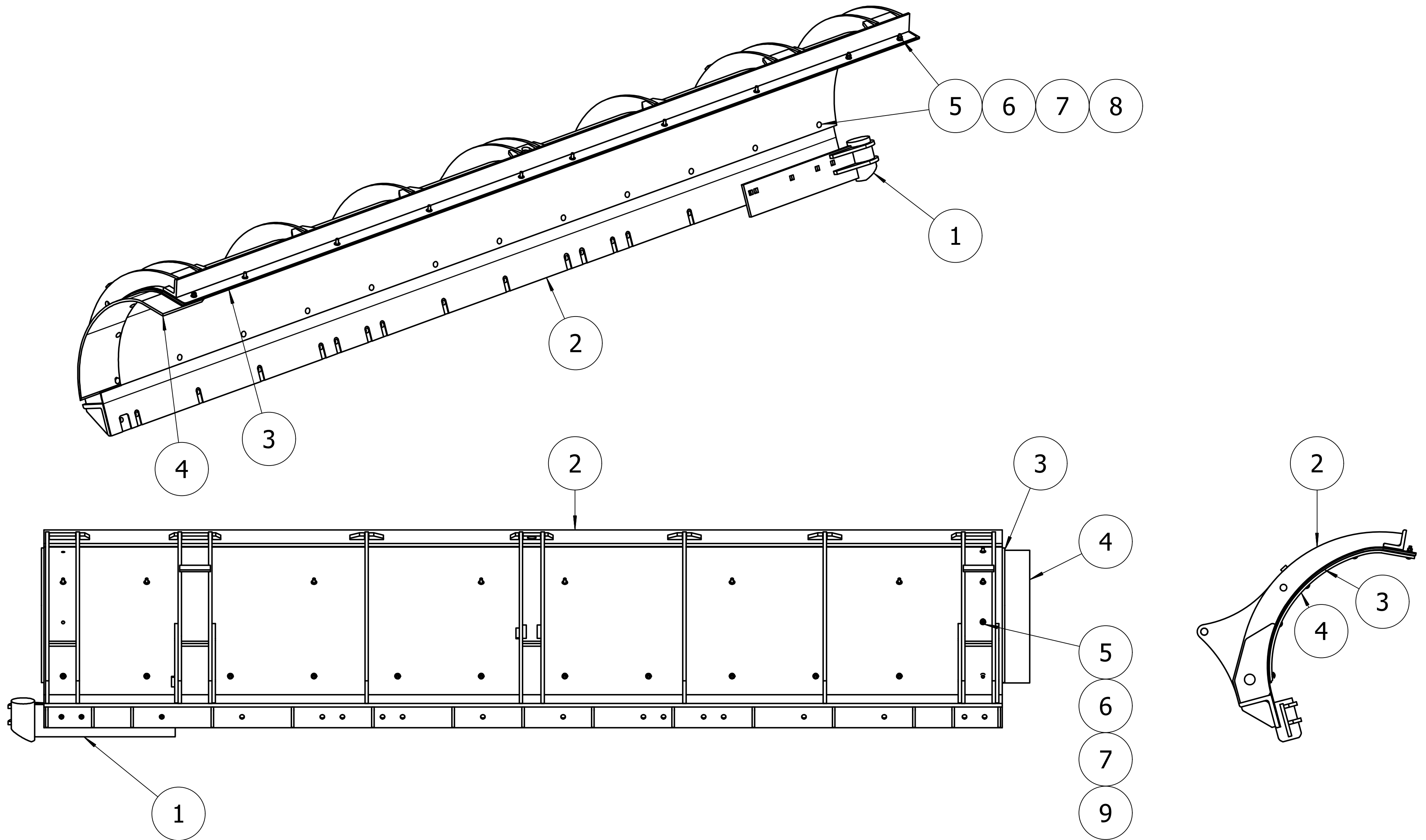
**QTY: 2**







**TOW PLOW WING ASSEMBLY 12 FT. (RTH)**  
**PART # 41412561**



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**TOW PLOW WING ASSEMBLY 12FT. (RTH)**  
**PART # 41412561**

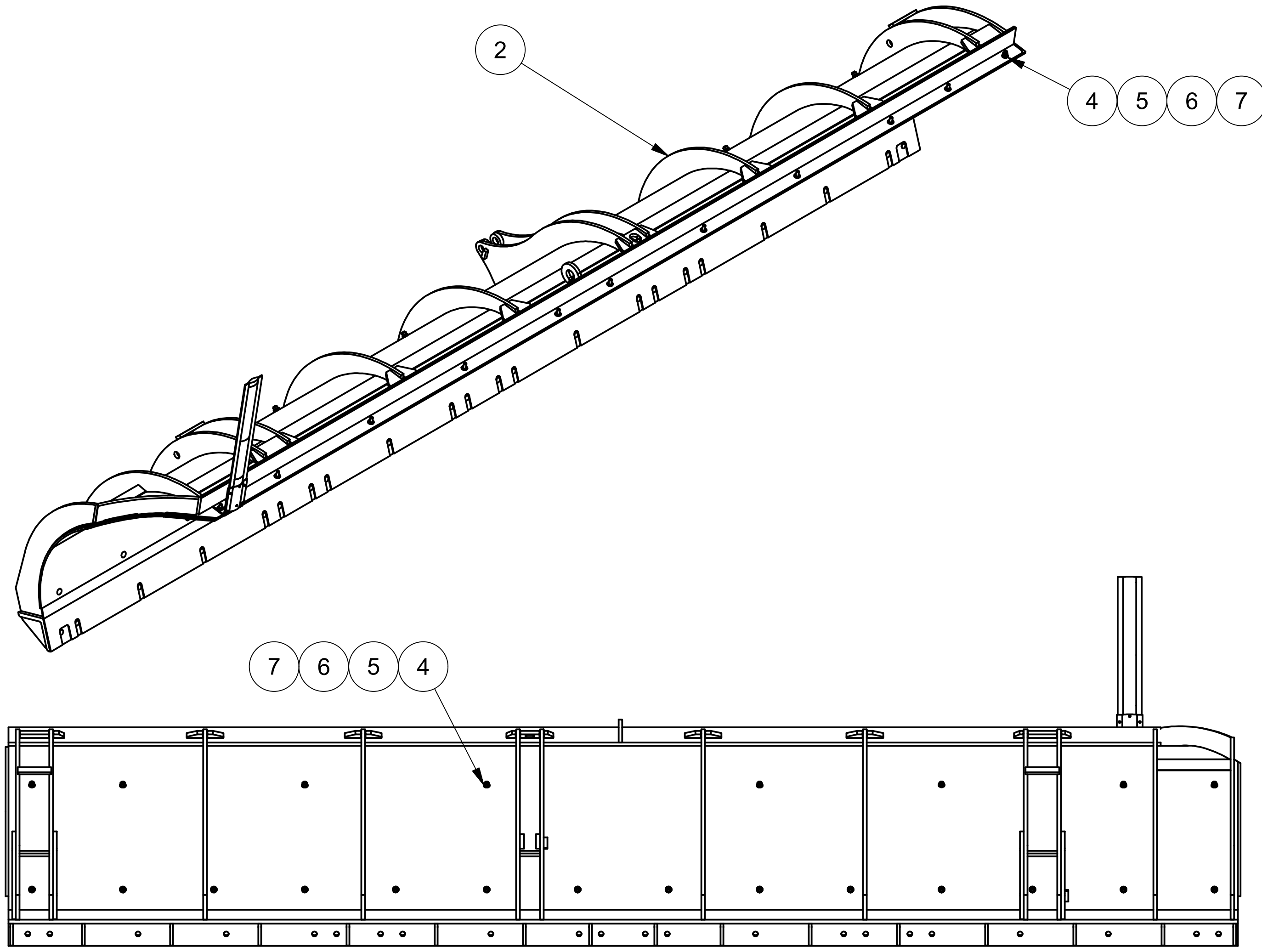
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	41412092		PLOW SHOE WELD'T TOW PLOW	1
2	41412553		FRONT PLOW WELD'T 12 FT WITH SKIN	1
3	41412562		TOW PLOW POLY SKIN 12 FOOT	1
4	41412569		TOW PLOW OVERLAPPING POLY	1
5	HW14A-06		FLATWASHER SAE 3/8 ZINC	32
6	HW14C-06		LOCKWASHER SPLIT 3/8" ZINC	34
7	HW30A-06		NUT HEX 3/8 UNC ZINC	34
8	HW40C-0610		BOLT CARRIAGE 3/8 X 1 1/4 UNC ZINC	27
9	HW40C-0612	81104A	BOLT CARRIAGE 3/8 X 1 1/2 UNC ZINC	5

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# TOW PLOW WING ASSEMBLY 14 FT. (RTH) PART# 41412564



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This Owner's Manual File is Contained Within 41412564-1.idw



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**TOW PLOW WING ASSEMBLY 14 FT. (RTH)**  
**PART# 41412564**

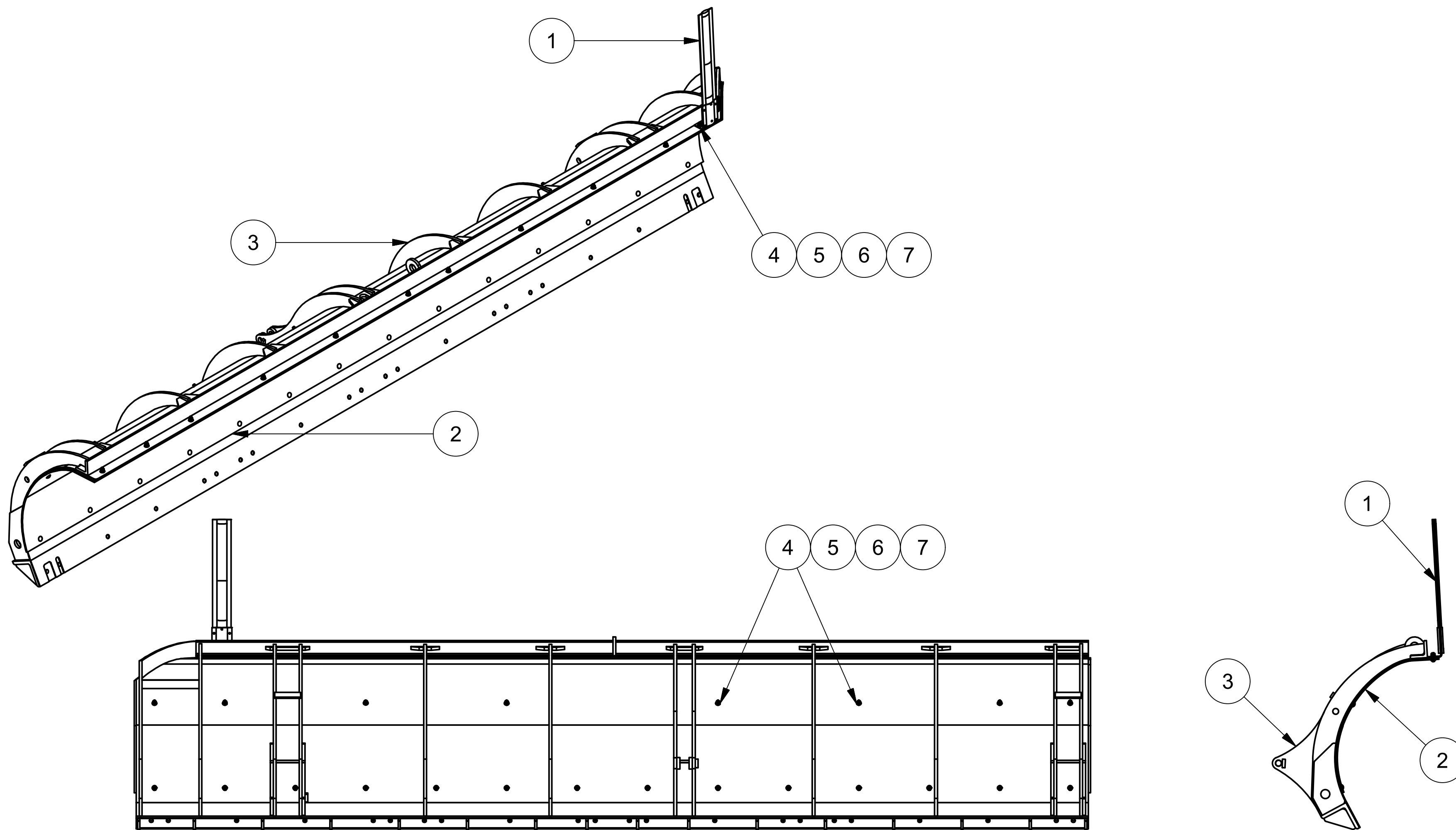
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	0820051		MTO MARKER STICK	1
2	41412556		REAR PLOW WELD'T 14 FT WITH SKIN & CROP	1
3	41412563		TOW PLOW POLY SKIN 14 FOOT	1
4	HW14A-06		FLATWASHER SAE 3/8 ZINC	34
5	HW14C-06		LOCKWASHER SPLIT 3/8" ZINC	34
6	HW30A-06		NUT HEX 3/8 UNC ZINC	35
7	HW40C-0610		BOLT CARRIAGE 3/8 X 1 1/4 UNC ZINC	34

EQUIPMENT MAY NOT BE EXACTLY AS SHOWN. SOME COMPONENTS MAY BE OPTIONAL  
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# TOW PLOW WING ASSEMBLY 14 FT. (LTH) PART# 51401064



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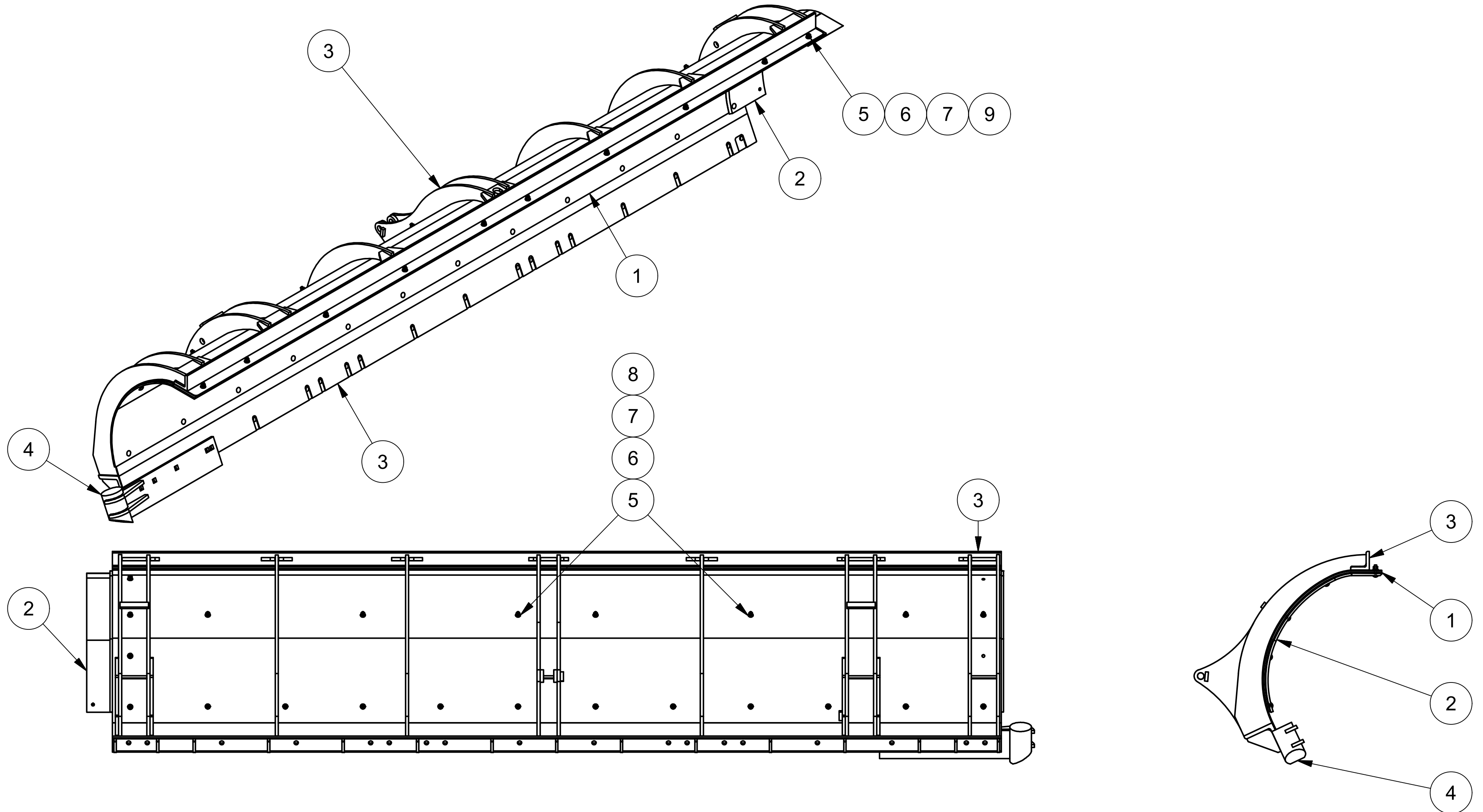
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**TOW PLOW WING ASSEMBLY 14 FT. (LTH)**  
**PART# 51401064**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	0820051		MTO MARKER STICK	1
2	41412563		TOW PLOW POLY SKIN 14 FOOT	1
3	51403092		REAR PLOW WELD'T 14 FT W/SKIN & CROP LH	1
4	HW14A-06		FLATWASHER SAE 3/8 ZINC	34
5	HW14C-06		LOCKWASHER SPLIT 3/8" ZINC	34
6	HW30A-06		NUT HEX 3/8 UNC ZINC	34
7	HW40C-0610		BOLT CARRIAGE 3/8 X 1 1/4 UNC ZINC	34

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**TOW PLOW WING ASSEMBLY 12FT. (LTH)**  
**PART# 51401065**



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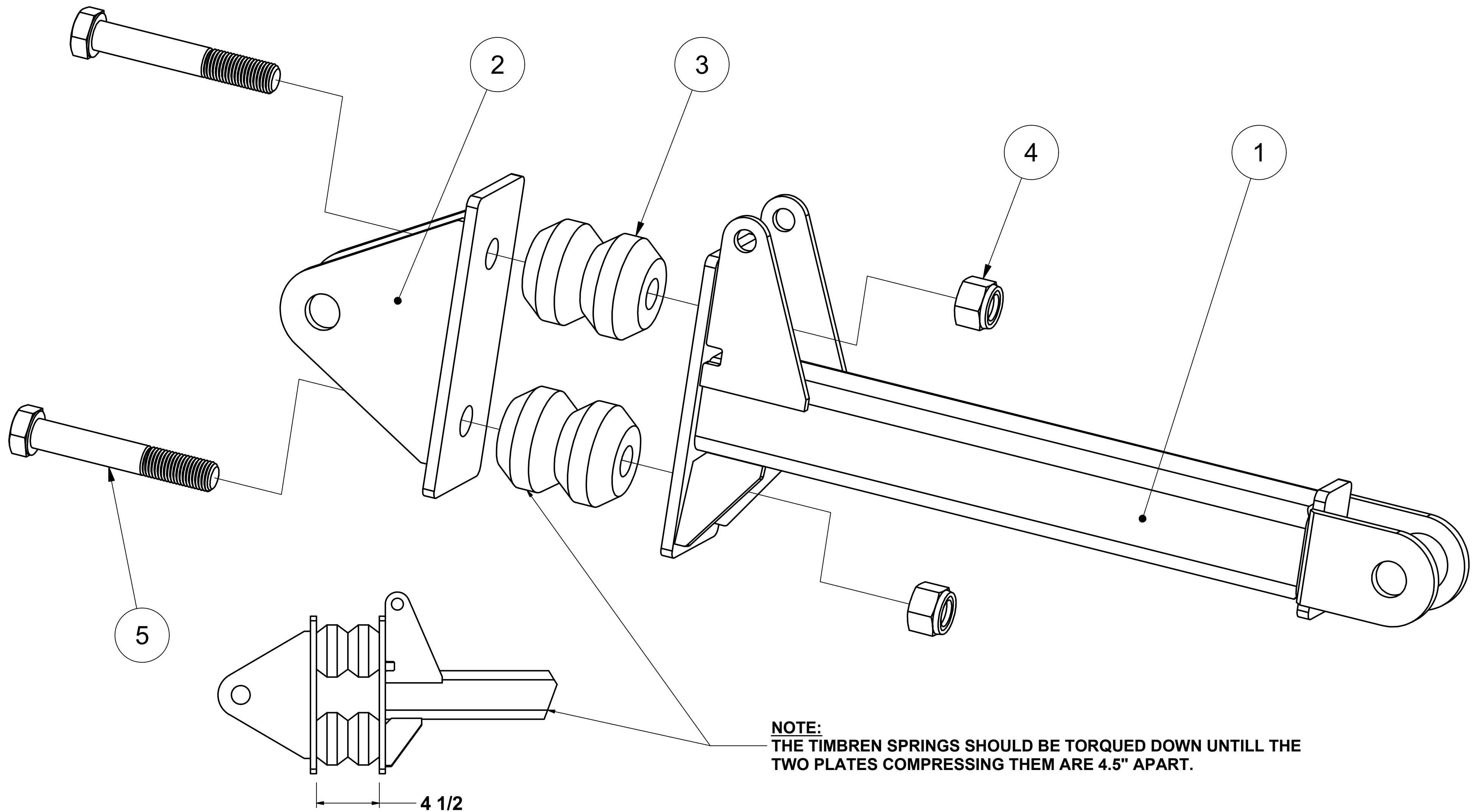
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**TOW PLOW WING ASSEMBLY 12 FT. (LTH)**  
**PART# 51401065**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	41412562		TOW PLOW POLY SKIN 12 FOOT	1
2	41412569		TOW PLOW OVERLAPPING POLY	1
3	51403091		FRONT PLOW WELD'T 12 FT WITH SKIN LH	1
4	51403093		LTH PLOW SHOE WELD'T TOW PLOW	1
5	HW14A-06		FLATWASHER SAE 3/8 ZINC	32
6	HW14C-06		LOCKWASHER SPLIT 3/8" ZINC	32
7	HW30A-06		NUT HEX 3/8 UNC ZINC	33
8	HW40C-0610		BOLT CARRIAGE 3/8 X 1 1/4 UNC ZINC	27
9	HW40C-0612	81104A	BOLT CARRIAGE 3/8 X 1 1/2 UNC ZINC	5

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**TOW PLOW LIFT ARM ASSEMBLY**  
**PART# 41412030**





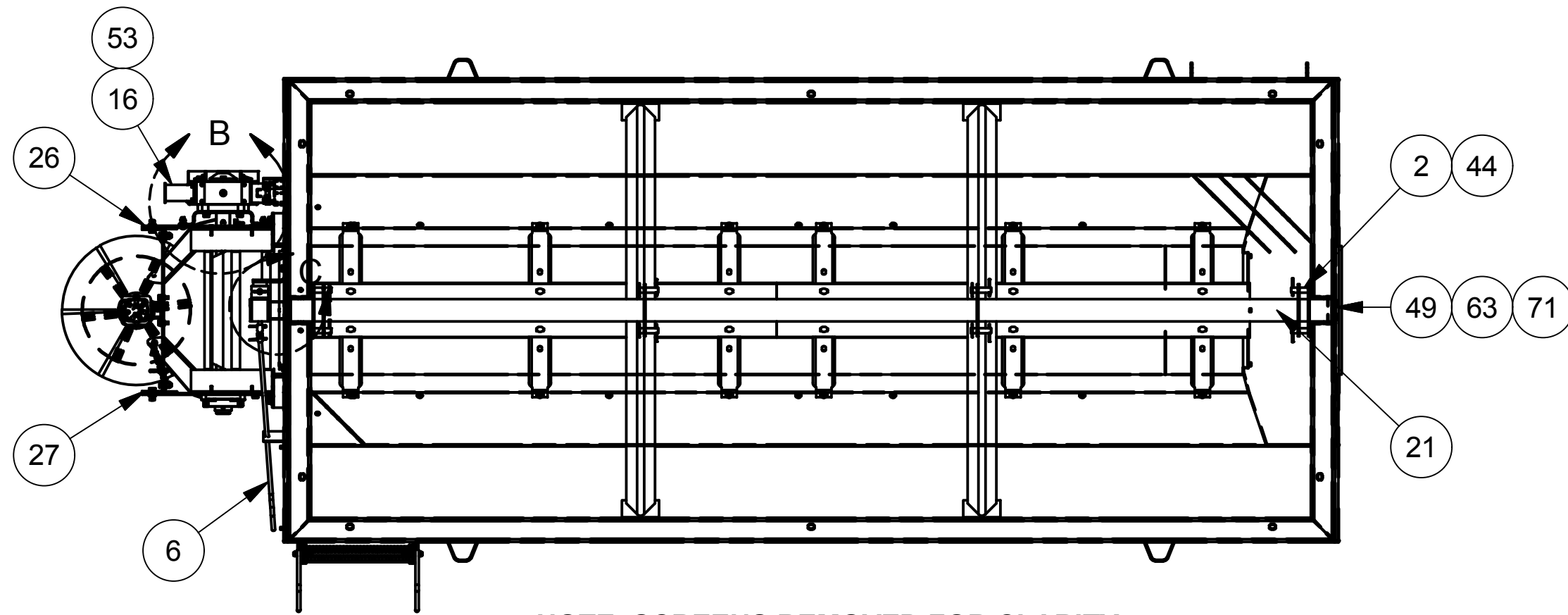
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**TOW PLOW LIFT ARM ASSEMBLY**  
**PART# 41412030**

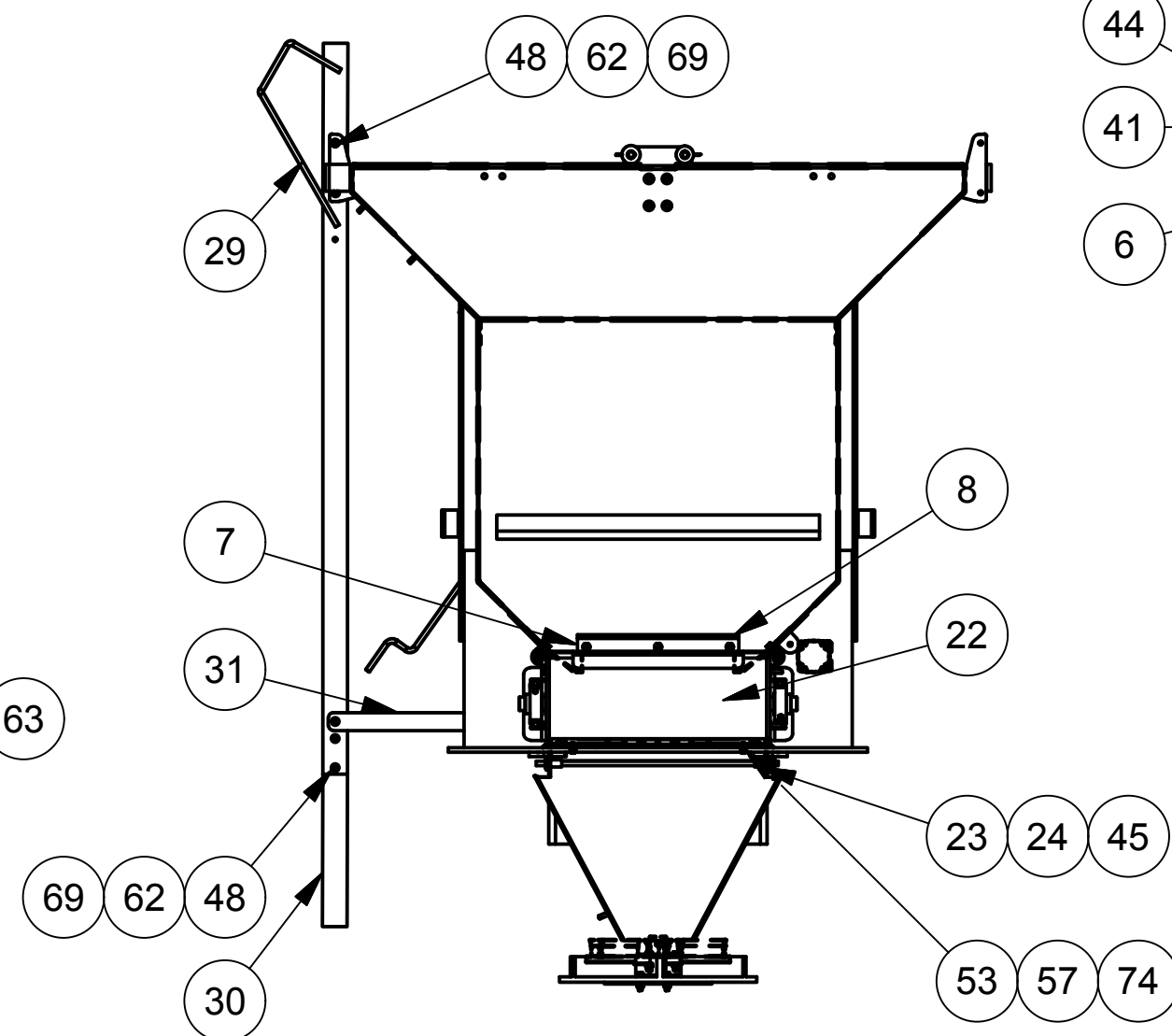
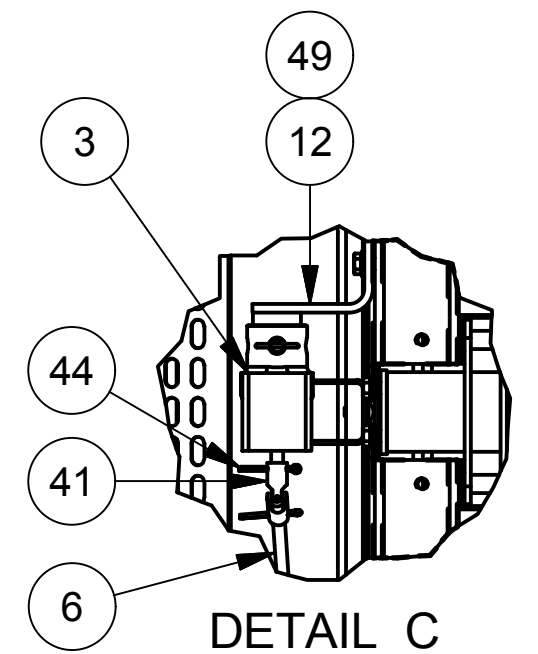
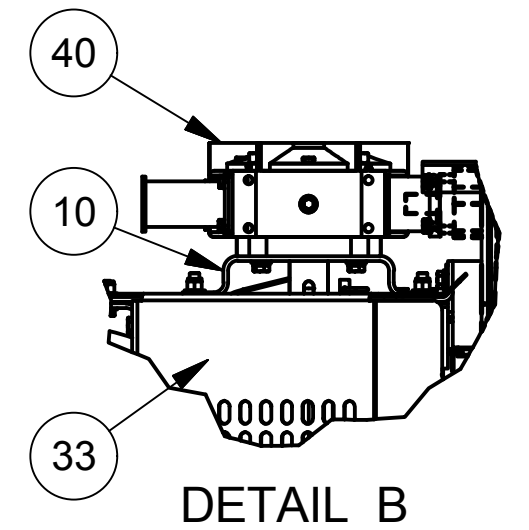
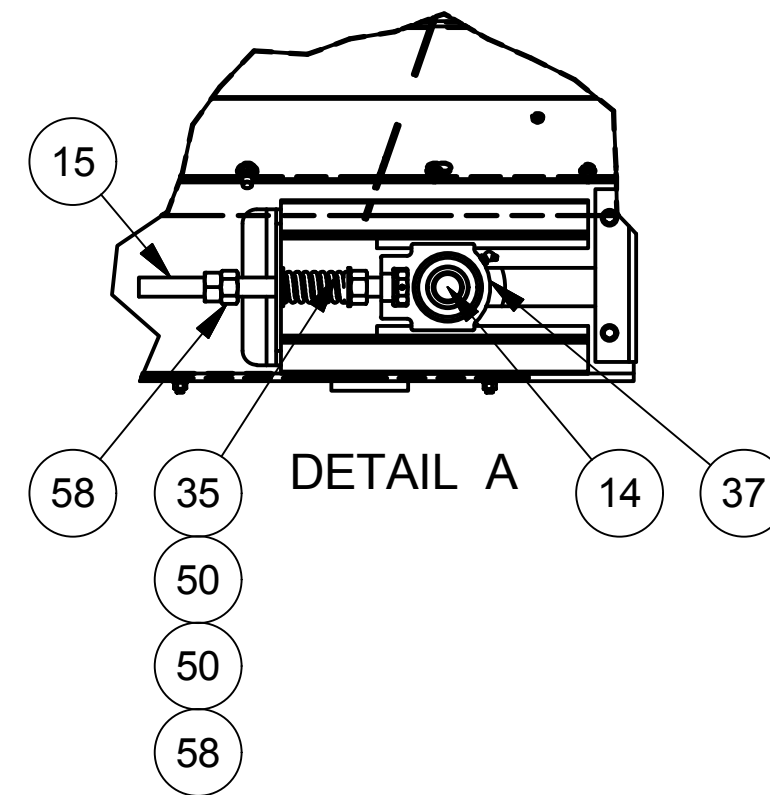
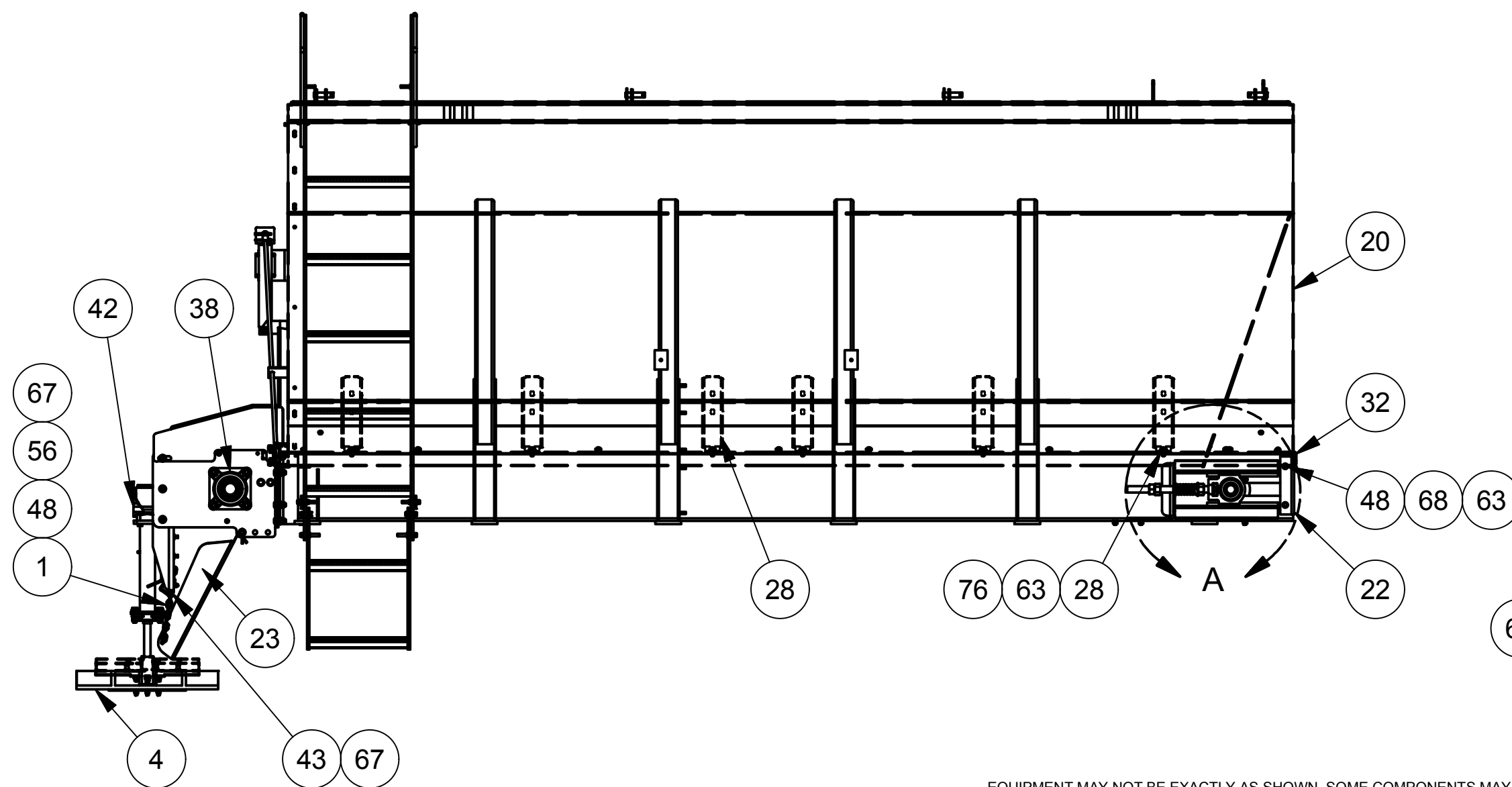
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	41412020		PLOW LIFT ARM WELD'T	1
2	41412031		LUG WELD'T	1
3	0720029	01200120	HELPER RUBBER TIMBREN A540-7500D	2
4	HW36D-20	80999D	NUT HEX ELASTIC 1 1/4 UNC ZINC	2
5	HW40A-2064		BOLT HEX 1 1/4 X 8 UNC ZINC	2

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**TOW PLOW HOPPER ASSEMBLY (SSTL)**  
**PART# 01326689**



NOTE: SCREENS REMOVED FOR CLARITY.





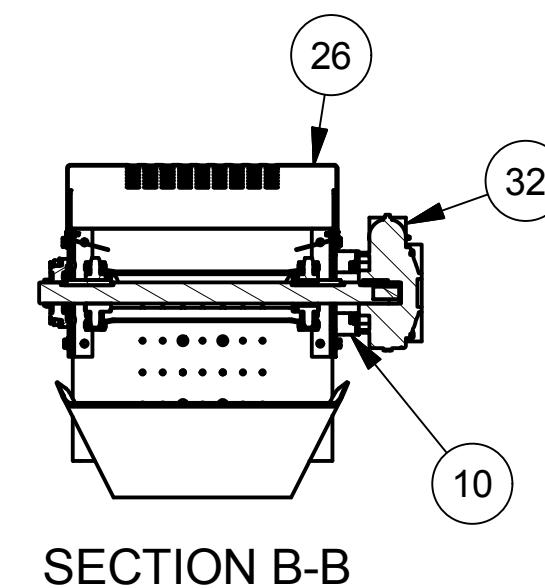
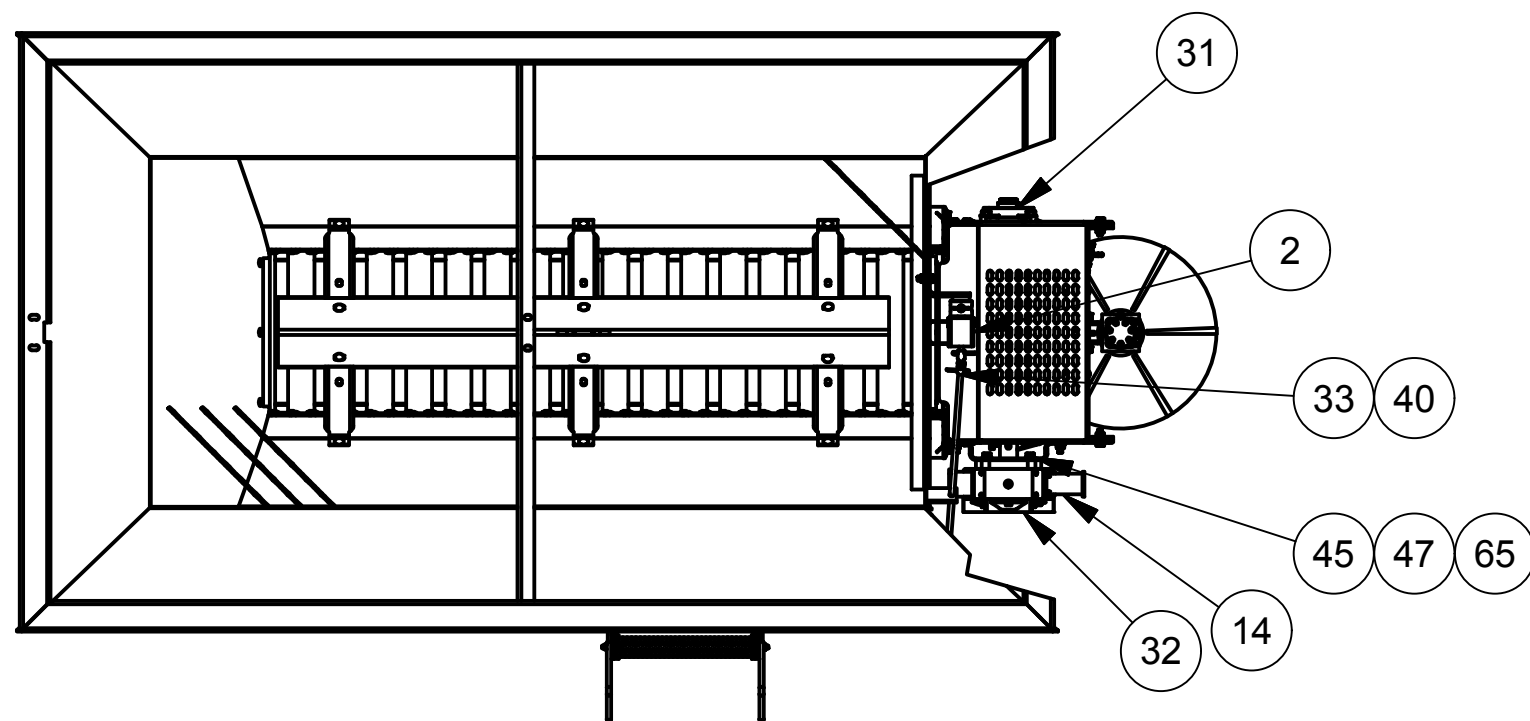
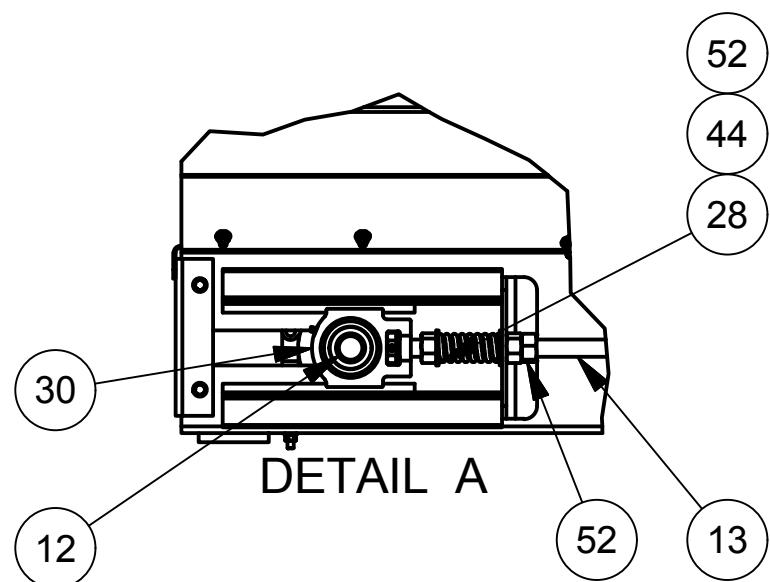
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## TOW PLOW HOPPER ASSEMBLY (SSTL) PART# 01326689

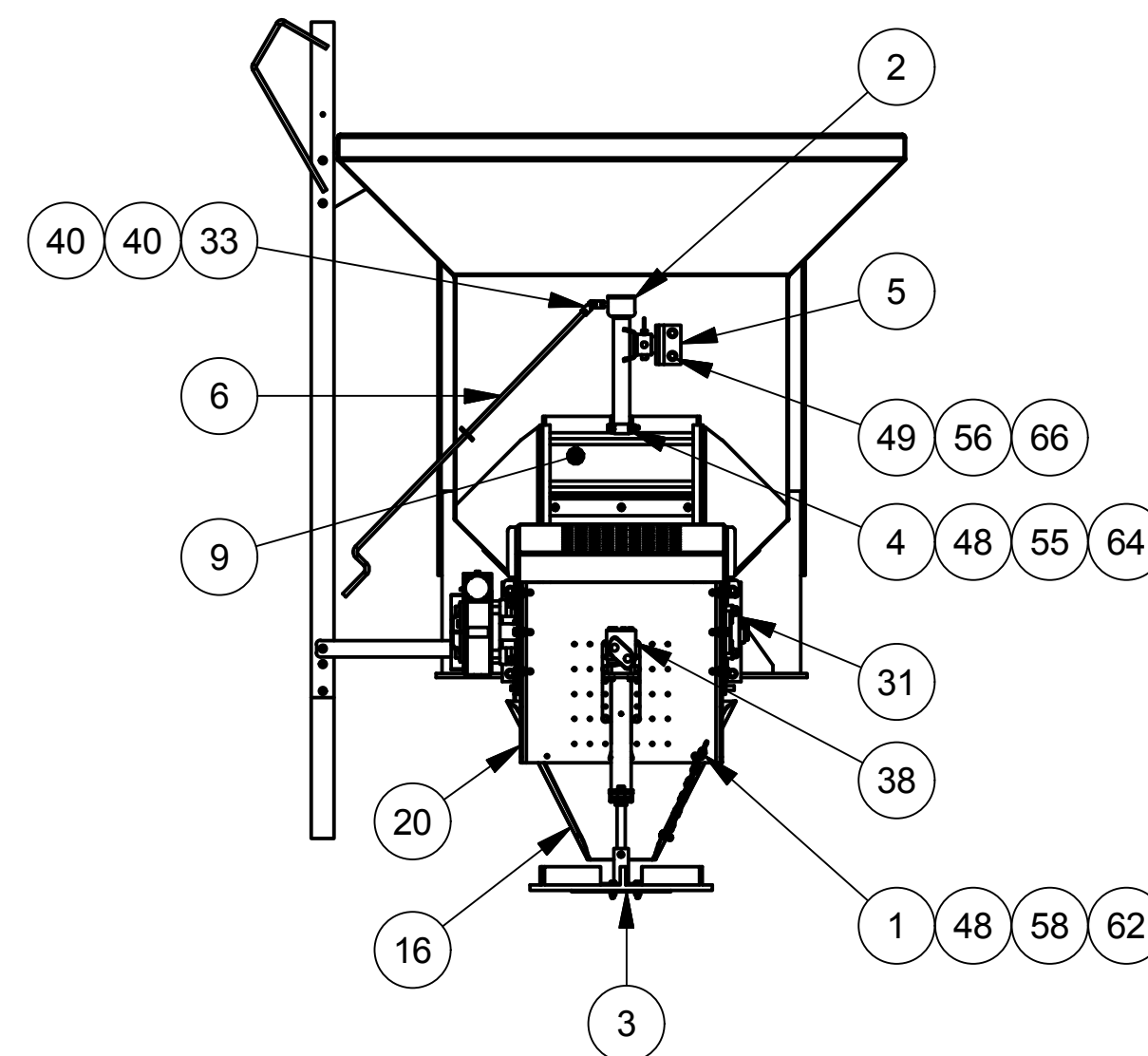
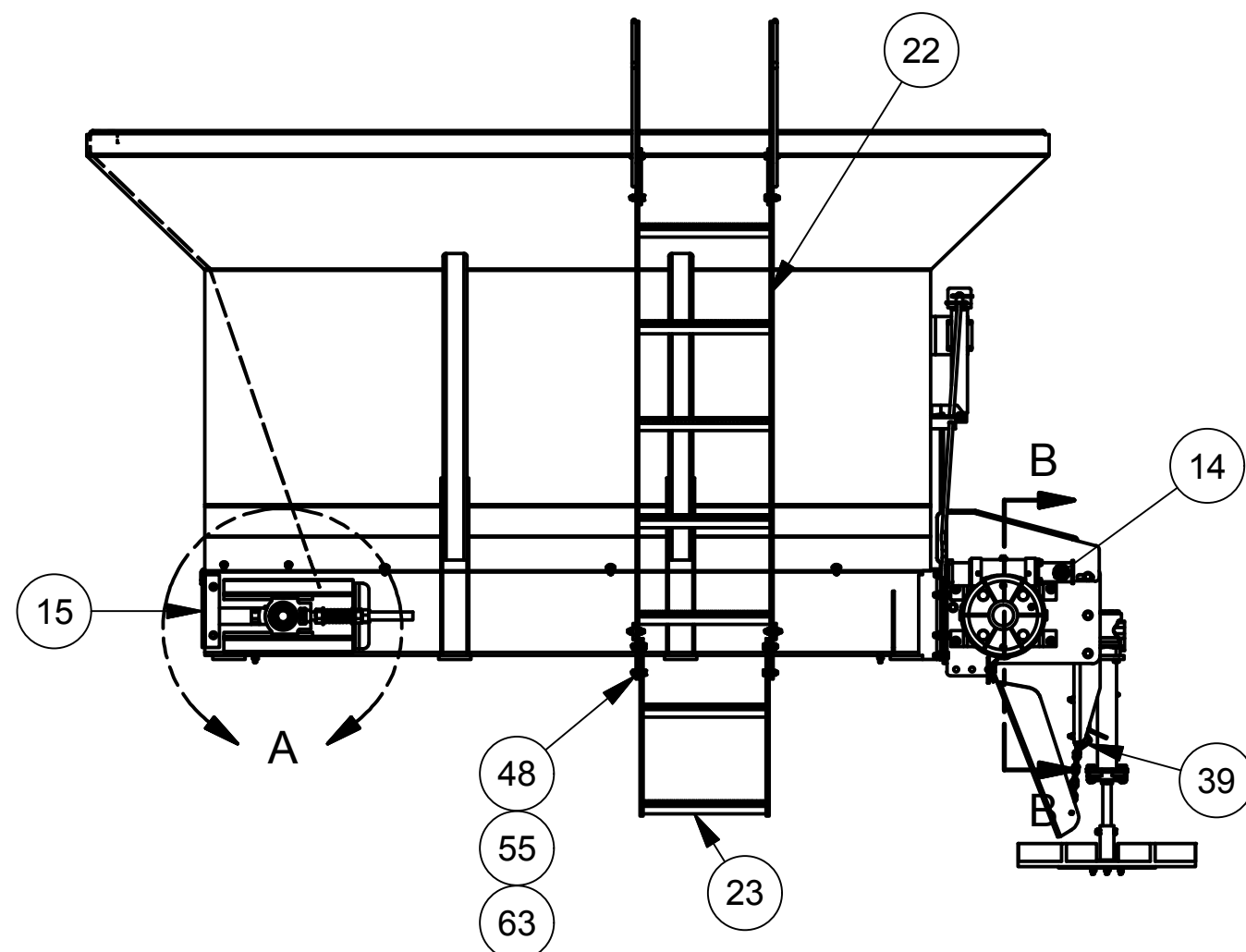
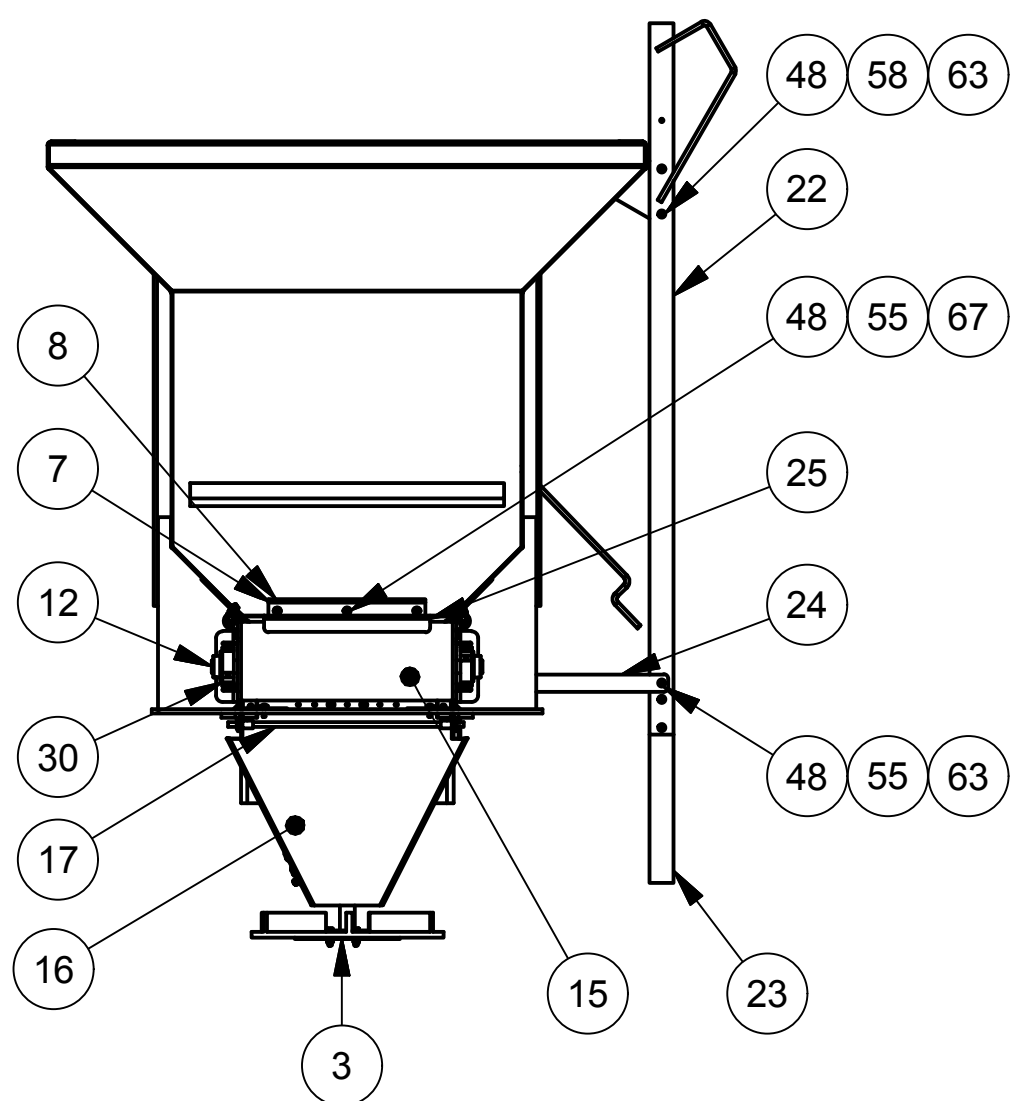
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY	ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	00401519		CHAIN 3/16 GR 30 X 14.000 LG	1	40	0730069		GEAR REDUCER HOPPER US 25 : 1	1
2	00900290		PIN 0.750 DIA X 2.500 WELD'T	8	41	0750001		U JOINT 1/2 BORE JACK HANDLE	1
3	01302097		SCREWJACK P-LINE LW	1	42	DB-37196		SPINNER ASS'Y COMPLETE (LESS DISC)	1
4	01303467		SPINNER DISC ASS'Y 22 IN	1	43	HH-01251-003		COLD SHUT 5/16" DIA, PLATED	1
5	01305053		FRONT DOOR SPACER 5/16 X 3/8 XH ZINC	2	44	HW13AS-0632		COTTER PIN 3/16 X 2 STAINLESS	10
6	01324690		HANDLE 45 3/8 IN CRANK (SSTL)	1	45	HW13P-7GA56	80536	COTTER HAIRPIN 3/16" X 3 3/4" ZINC	1
7	01326048		RUBBER PLT BODY VBS (SSTL)	2	46	HW14A-05	IMP76512	FLATWASHER SAE 5/16 ZINC	2
8	01326052		RUBBER REAR BODY VBS	2	47	HW14AS-04	81062Z	FLATWASHER SAE 1/4 SS	8
9	01326053		DOOR ASS'Y BODY VBS (SSTL)	1	48	HW14J-06		FLATWASHER SAE 3/8 STAINLESS	62
10	01326058		GEARBOX MTG BRACKET BODY VBS (SSTL)	2	49	HW14J-08		FLATWASHER SAE 1/2 STAINLESS	76
11	01326059		CHAIN SHIELD EXTENSION BODY VBS (SSTL)	2	50	HW14AS-16		FLATWASHER SAE 1 STAINLESS	4
12	01313333		JACK MOUNTING WELD'T VBS (SSTL)	1	51	HW14C-08	81080	LOCKWASHER SPLIT 1/2 ZINC	4
13	01326285		CONVEYOR FLOOR WELD'T VBS13	1	52	HW14CS-05		LOCKWASHER SPLIT 5/16 STAINLESS	1
14	01326354		IDLER SHAFT WELD'T VBS	1	53	HW14F-06		LOCKWASHER SPLIT 3/8 STAINLESS	12
15	01326371		THREADED ROD ASS'Y VBS	2	54	HW14D-08		FLATWASHER HARDENED 1/2 ZINC	24
16	01326384		GEARBOX SHAFT COVER WELD'T VBS	1	55	HW14D-10	81070E	FLATWASHER HARDENED 5/8 ZINC	4
17	01326465		POLYMER RETURN COVER HOPPER (LONG)	1	56	HW30AS-05		NUT HEX 5/16 UNC STAINLESS	1
18	01326472		SCREEN WELD'T TOW PLOW HOPPER	6	57	HW30AS-06		NUT HEX 3/8 UNC STAINLESS	8
19	01326507		POLYMER RETURN COVER - TOW PLOW HOPPER	1	58	HW30AS-16	81001	NUT HEX 1 UNC STAINLESS	6
20	01326690		TOW PLOW HOPPER WELDMENT (SSTL)	1	59	HW36D-08		NUT HEX TOPLOCK 1/2" UNC ZINC	12
21	01326709		TOW PLOW HOPPER BOLT IN SCREEN WELD'T	1	60	HW36D-10		NUT HEX NYLON 5/8" UNC ZINC	4
22	01326713		REAR CHAIN GUARD (SSTL)	1	61	HW36DS-04		NUT HEX ELASTIC 1/4 UNC STAINLESS	4
23	01326714		SAND CHUTE WELD'T - TOW PLOW (SSTL)	1	62	HW36DS-06		NUT HEX ELASTIC 3/8 UNC STAINLESS	34
24	01326716		CHUTE PIN WELDMENT (SSTL)	1	63	HW36DS-08		NUT HEX ELASTIC 1/2 UNC STAINLESS	50
25	01326718		DISCHARGE MOUNT SIDE PLATE WELDT DS (SSTL)	1	64	HW40A-0808		BOLT HEX 1/2 X 1 UNC ZINC	4
26	01326721		DISCHARGE MOUNT SIDE PLATE WELD'T CS (SSTL)	1	65	HW40A-0812		BOLT HEX 1/2" X 1 1/2" UNC ZINC	8
27	01326723		SPINNER SUPPORT PLATE (SSTL)	1	66	HW40AS-0408		BOLT HEX 1/4 X 1 UNC STAINLESS	4
28	01326724		BRIDGE INVERTED V VBS (SSTL)	6	67	HW40AS-0510		BOLT HEX 5/16 X 1 1/4 UNC STAINLESS	1
29	01326727		TOP LADDER WELD'T (SSTL)	1	68	HW40AS-0610		BOLT HEX 3/8 X 1 1/4 UNC STAINLESS	19
30	01326728		LOWER LADDER WELD'T (SSTL)	1	69	HW40AS-0612		BOLT HEX 3/8 X 1 1/2 STAINLESS	12
31	01326731		LADDER LOWER SUPPORT (SSTL)	2	70	HW40AS-0628		BOLT HEX 3/8 X 3 1/2 UNC STAINLESS	1
32	01326738		PLATE GUARD IDLE END HOPPER (SSTL)	1	71	HW40AS-0812		BOLT HEX 1/2 X 1 1/2 UNC STAINLESS	26
33	01326739		GUARD DRIVE END HOPPER CONV (SSTL)	1	72	HW40C-0812		BOLT CARRIAGE 1/2 X 1 1/2 UNC ZINC	4
34	01326745		INVERTED V WELD'T 6 X 70 IN VBS-13 SS	2	73	HW40C-1016		BOLT CARRIAGE 5/8 X 2 UNC ZINC	4
35	0580037		SPRING COMP 1.625 X 0.281 X 3.500	2	74	HW40CS-0608		BOLT CARRIAGE 3/8 X 1 UNC ZINC	11
36	0600048		SPROCKET 8 TOOTH 667X 2IN BORE	2	75	HW40CS-0610		BOLT CARRIAGE 3/8 X 1 1/4 UNC STAINLESS	3
37	0610004		BEARING TAKE UP 1 1/2 SHAFT	2	76	HW40CS-0812		BOLT CARRIAGE 1/2 X 1 1/2 UNC STAINLESS	24
38	0610042		BEARING 4 BOLT FLANGE MED DUTY 2 IN	1	77	HW70E-0608		SET SCREW HS 3/8 X 1/2 CUP PNT PLN	4
39	0730068		GEAR REDUCER HOPPER US 50:1	1	78	0600056		CHAIN 667X 21 146 ES 3/8X1-1/4 1415LW-II	1

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**TOW PLOW - SMALL HOPPER ASSEMBLY (SSTL)**  
**PART# 51401274**



**NOTE: SCREENS REMOVED FOR CLARITY**



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## TOW PLOW - SMALL HOPPER ASSEMBLY (SSTL) PART# 51401274

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY	ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	00401519		CHAIN 3/16 GR 30 X 14.000 LG	1	36	51430019		POLYMER RETURN COVER HOPPER	1
2	01302097		SCREWJACK P-LINE LW	1	37	54301152		CHAIN 667X 44 88 ES 1/4 X1-1/2 VBS 7.5	1
3	01303467		SPINNER DISC ASS'Y 22 IN	1	38	DB-37196		SPINNER ASS'Y COMPLETE (LESS DISC)	1
4	01305053		FRONT DOOR SPACER 5/16 X 3/8 XH ZINC	2	39	HH-01251-003		COLD SHUT 5/16" DIA, PLATED	1
5	01313333		JACK MOUNTING WELD'T VBS (SSTL)	1	40	HW13AS-0632		COTTER PIN 3/16 X 2 STAINLESS	2
6	01324690		HANDLE 45 3/8 IN CRANK (SSTL)	1	41	HW13P-7GA56	80536	COTTER HAIRPIN 3/16" X 3 3/4" ZINC	1
7	01326048		RUBBER PLT BODY VBS (SSTL)	1	42	HW14AS-04	81062Z	FLATWASHER SAE 1/4 SS	8
8	01326052		RUBBER REAR BODY VBS	1	43	HW14AS-05		FLATWASHER SAE 5/16 STAINLESS	2
9	01326053		DOOR ASS'Y BODY VBS (SSTL)	1	44	HW14AS-16		FLATWASHER SAE 1 STAINLESS	4
10	01326058		GEARBOX MTG BRACKET BODY VBS (SSTL)	2	45	HW14D-08		FLATWASHER HARDENED 1/2 ZINC	4
11	01326059		CHAIN SHIELD EXTENSION BODY VBS (SSTL)	2	46	HW14F-06		LOCKWASHER SPLIT 3/8 STAINLESS	8
12	01326354		IDLER SHAFT WELD'T VBS	1	47	HW14F-08		LOCKWASHER SPLIT 1/2 STAINLESS	4
13	01326371		THREADED ROD ASS'Y VBS	2	48	HW14J-06		FLATWASHER SAE 3/8 STAINLESS	55
14	01326384		GEARBOX SHAFT COVER WELD'T VBS	1	49	HW14J-08		FLATWASHER SAE 1/2 STAINLESS	56
15	01326713		REAR CHAIN GUARD (SSTL)	1	50	HW14J-10		FLATWASHER SAE 5/8 STAINLESS	4
16	01326714		SAND CHUTE WELD'T - TOW PLOW (SSTL)	1	51	HW30AS-06		NUT HEX 3/8 UNC STAINLESS	4
17	01326716		CHUTE PIN WELDMENT (SSTL)	1	52	HW30AS-16	81001	NUT HEX 1 UNC STAINLESS	6
18	01326718		DISCHARGE MOUNT SIDE PLATE WELDT DS (SSTL)	1	53	HW30ES-04		NUT HEX TOPLOCK 1/4 UNC STAINLESS	4
19	01326721		DISCHARGE MOUNT SIDE PLATE WELD'T CS (SSTL)	1	54	HW30ES-05		NUT HEX TOPLOCK 5/16 UNC STAINLESS	1
20	01326723		SPINNER SUPPORT PLATE (SSTL)	1	55	HW30ES-06		NUT HEX TOPLOCK 3/8 UNC STAINLESS	24
21	01326724		BRIDGE INVERTED V VBS (SSTL)	3	56	HW30ES-08		NUT HEX 1/2 UNC TOP LOCK STAINLESS	30
22	01326727		TOP LADDER WELD'T (SSTL)	1	57	HW30ES-10		NUT HEX 5/8 UNC TOPLOCK STAINLESS	4
23	01326728		LOWER LADDER WELD'T (SSTL)	1	58	HW36DS-06		NUT HEX ELASTIC 3/8 UNC STAINLESS	5
24	01326731		LADDER LOWER SUPPORT (SSTL)	2	59	HW36DS-08		NUT HEX ELASTIC 1/2 UNC STAINLESS	6
25	01326738		PLATE GUARD IDLE END HOPPER (SSTL)	1	60	HW40AS-0408		BOLT HEX 1/4 X 1 UNC STAINLESS	4
26	01326739		GUARD DRIVE END HOPPER CONV (SSTL)	1	61	HW40AS-0510		BOLT HEX 5/16 X 1 1/4 UNC STAINLESS	1
27	01326745		INVERTED V WELD'T 6 X 70 IN VBS-13 SS	1	62	HW40AS-0610		BOLT HEX 3/8 X 1 1/4 UNC STAINLESS	17
28	0580037		SPRING COMP 1.625 X 0.281 X 3.500	2	63	HW40AS-0612		BOLT HEX 3/8 X 1 1/2 STAINLESS	12
29	0600048		SPROCKET 8 TOOTH 667X 2IN BORE	2	64	HW40AS-0628		BOLT HEX 3/8 X 3 1/2 UNC STAINLESS	1
30	0610004		BEARING TAKE UP 1 1/2 SHAFT	2	65	HW40AS-0808		BOLT HEX 1/2 X 1 UNC STAINLESS	4
31	0610042		BEARING 4 BOLT FLANGE MED DUTY 2 IN	1	66	HW40AS-0812		BOLT HEX 1/2 X 1 1/2 UNC STAINLESS	20
32	0730069-50		GEAR REDUCER HOPPER US 25 : 1	1	67	HW40CS-0610		BOLT CARRIAGE 3/8 X 1 1/4 UNC STAINLESS	7
33	0750001		U JOINT 1/2 BORE JACK HANDLE	1	68	HW40CS-0812		BOLT CARRIAGE 1/2 X 1 1/2 UNC STAINLESS	16
34	51401268		CONVEYOR FLOOR WELD'T VBS13	1	69	HW40CS-1016		BOLT CARRIAGE 5/8 X 2 UNC STAINLESS	4
35	51403159		TOW PLOW HOPPER WELDMENT	1	70	HW70E-0608		SET SCREW HS 3/8 X 1/2 CUP PNT PLN	4

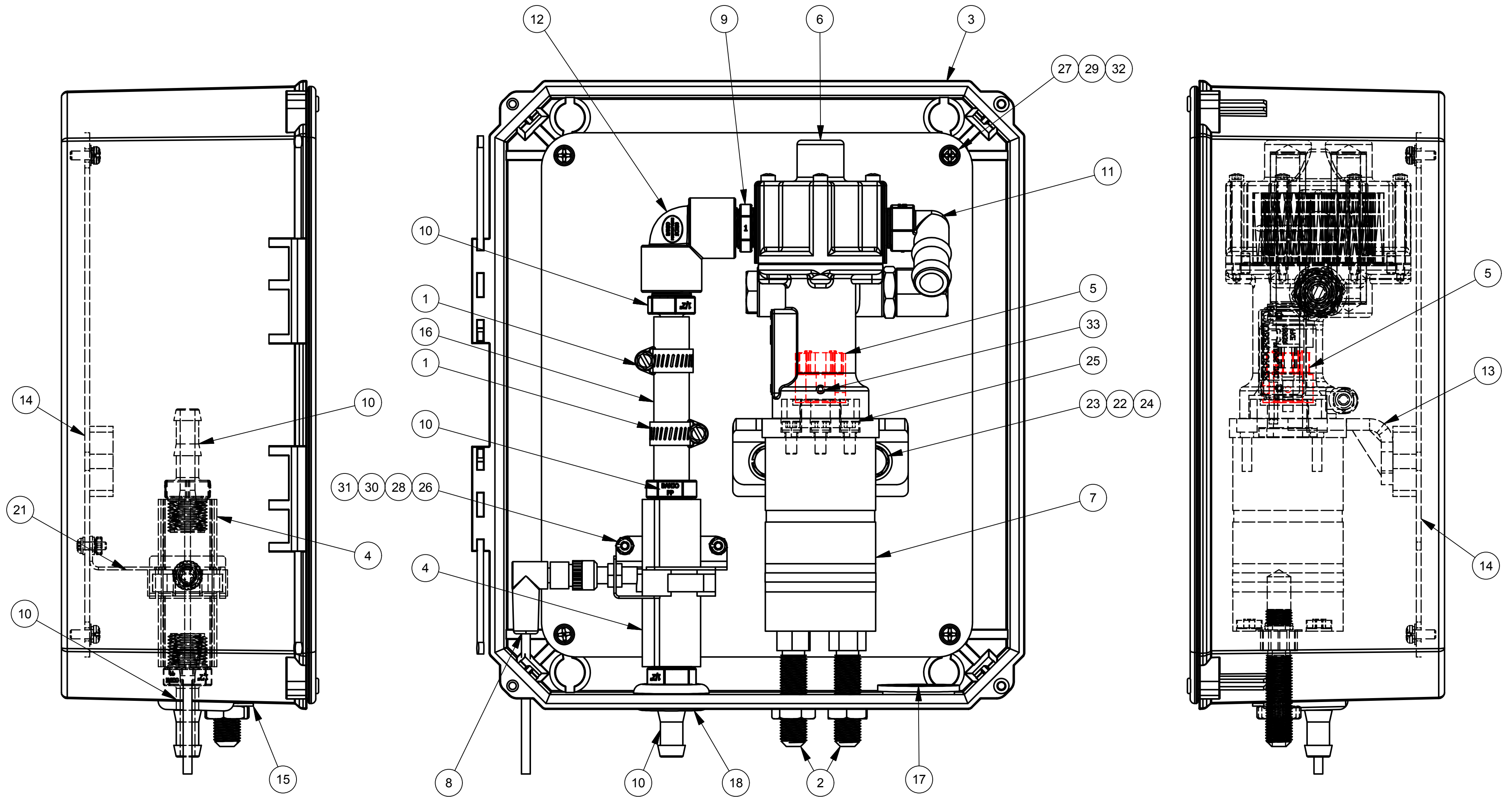
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# CLOSED LOOP PRE-WET BOX ASSEMBLY

## PART NUMBER 51401104



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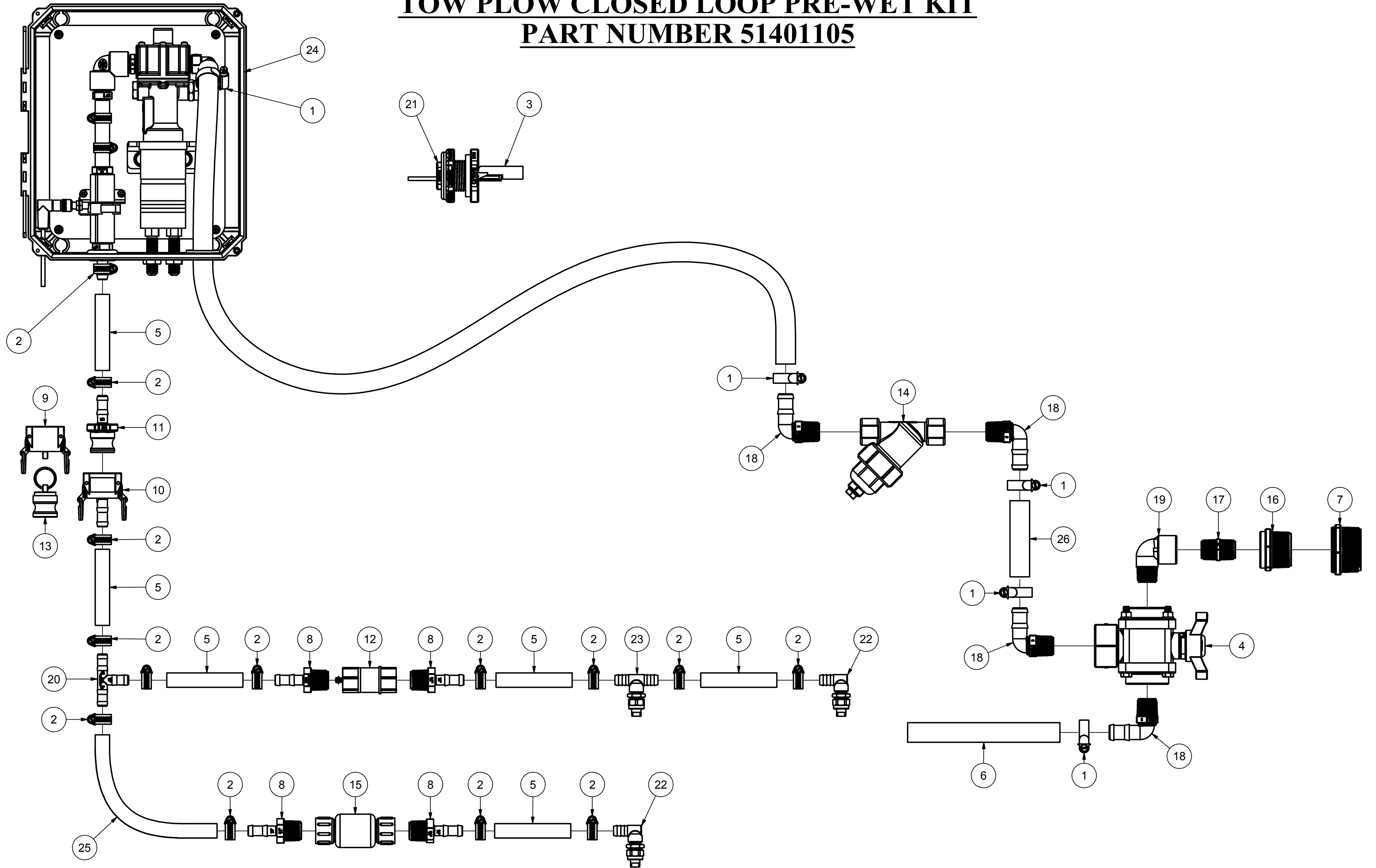
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**CLOSED LOOP PRE-WET BOX ASSEMBLY**  
**PART NUMBER 51401104**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	280818AS		3/4" STAINLESS WORM GEAR CLAMP	2
2	44140960062LN-06-06		6ORB-6MJ BULKHEAD FITTING (LONG 3")	2
3	44240147	DS121006HW	STAHLIN DIAMONDSHIELD JUNCTION ENCLOSURE	1
4	44240148	FM500	INLINE FLOW METER	1
5	44240157		MOTOR TO PUMP COUPLER & SPIDER (LOVEJOY)	1
6	44254209		OBERDORFER BRONZE CLOSE COUPLED ROTARY GEAR PUMP	1
7	44254210		DANFOSS OMM 12.5 HYD MOTOR 5/8",0.79 CU IN SAE END PORT	1
8	44847466		M12 JUMPER HARNESS FOR PRE-WET BOX	1
9	46842184	NIP050-SH	1/2 IN POLY NIPPLE, SHORT	1
10	46842200	HB050	MALE THREAD 1/2 X 1/2 HOSE BARB	3
11	46842201	HB050-075-90	3/4" BARB X 1/2" MALE NPT 90	1
12	46842423		1/2" 90 DEG. ELBOW	1
13	51403131		PRE-WET MOTOR TO PUMP MOUNTING WELD'T	1
14	51403132		PRE-WET MOUNTING PLATE WELDMENT 10/1/15	1
15	51404040		OUTSIDE BOX HYDRAULIC FITTING DOUBLE WASHER	1
16	51415263	H20108BK	1/2" WATER HOSE BLACK (PER FOOT)	1
17	51415265		1 3/4" X 1 3/16" RUBBER GROMET	1
18	51415266		1 9/16" X 7/8" RUBBER GROMET	1
19	51415272		OUTSIDE PRE-WET ENCLOSURE VIKING STICKER	1
20	51415273		INSIDE PRE-WET ENCLOSURE VIKING STICKER	1
21	51422156		FORMED MOUNTING BRACKET FLOW METER	1
22	HW14J-06		FLATWASHER SAE 3/8 STAINLESS	2
23	HW14F-06		LOCKWASHER SPLIT 3/8 STAINLESS	2
24	HW40AS-0608		BOLT HEX 3/8 X 1 UNC STAINLESS	2
25	HW400ES-0612		M6-1 X 12MM HEX HEAD CAP SCREW SS	3
26			#8 FLAT WASHER STAINLESS	4
27			#10 FLAT WASHER STAINLESS	4
28			#8 SPLIT LOCK WASHER STAINLESS	2
29			#10 SPLIT LOCK WASHER STAINLESS	4
30			#8-32 MACHINE HEX NUT STAINLESS	2
31			#8-32 X 1/2 MACHINE SCREW STAINLESS	2
32			#10-32 X 1/2 MACHINE SCREW STAINLESS	4
33			#10-32 X 0.188 SET SCREW	1

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**TOW PLOW CLOSED LOOP PRE-WET KIT**  
**PART NUMBER 51401105**



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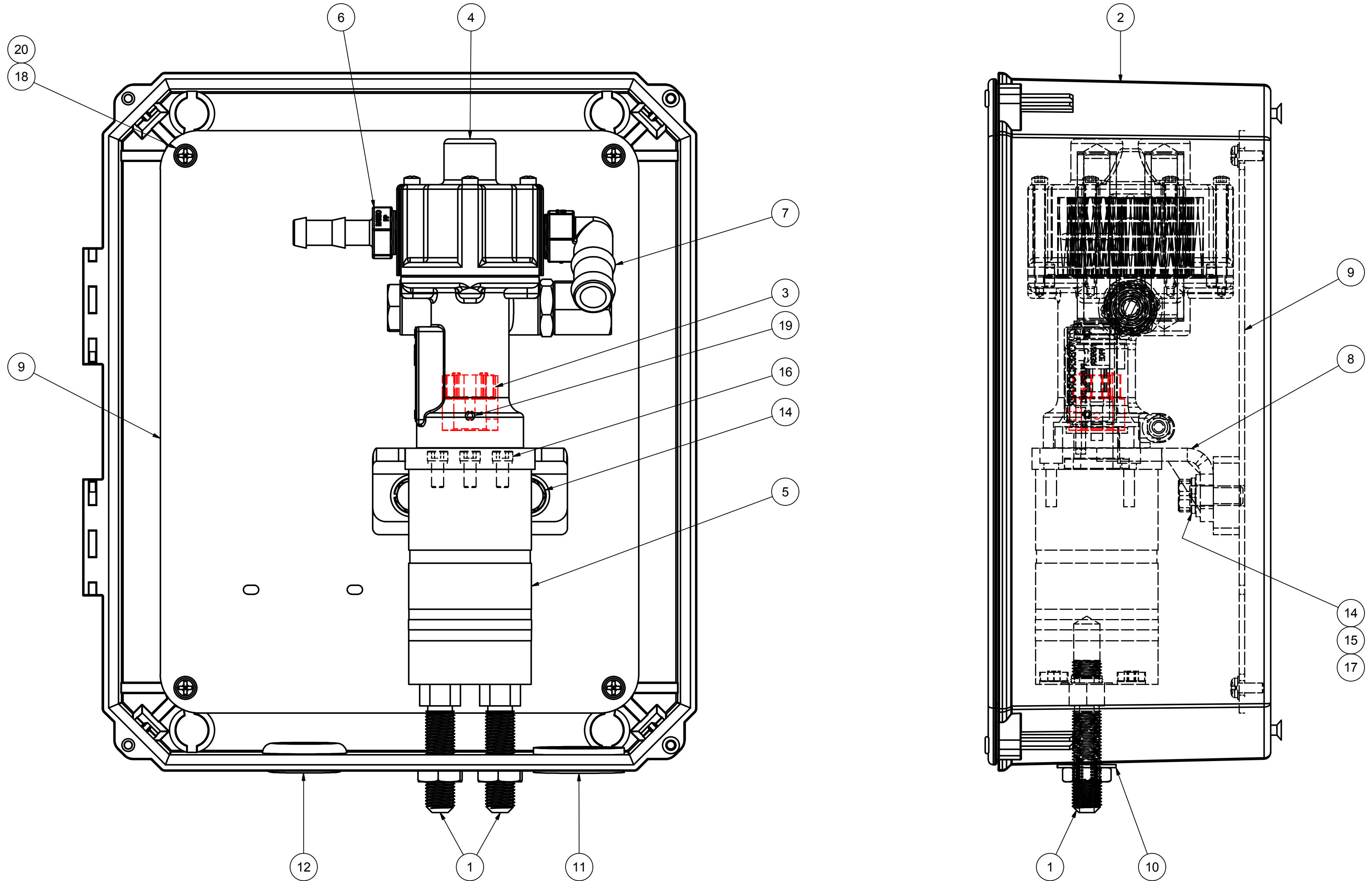
**TOW PLOW CLOSED LOOP PRE-WET KIT**  
**PART NUMBER 51401105**

ITEM	DRAWING N	ALT. ITEM NO.	DESCRIPTION	QTY
1	280817AS		1 1/4" STAINLESS WORM GEAR CLAMP	5
2	280818AS		3/4" STAINLESS WORM GEAR CLAMP	14
3	44240023		POLY FLOAT W/BH CORDED PLUG	1
4	44253076	V075BL	3/4" NPT 3-WAY BALL VALVE, POLY	1
5	46841999	H20108BK	1/2" WATER HOSE BLACK (PER FOOT)	25
6	46842003	H20112BK-250R	3/4" WATER HOSE BLACK (PER FOOT)	6
7	46842108	RB200-150	REDUCER BUSHING 1 1/2 X 2 MPT	1
8	46842111	HB075-050	MALE THREAD 0.75 IN X 0.50 IN HOSE BARB	4
9	46842120	075CAP	3/4" CAP FOR MALE COUPLING ADAPTER	1
10	46842122	050C	FEMALE COUPLER 0.75 IN X 0.50 IN HOSE BARB	1
11	46842123	050E	MALE ADAPTER 0.75 IN X 0.50 IN HOSE BARB	1
12	46842131		3/4" INLINE CHECK 5 PSI ADJ GRAY VALVE (PREWET)	1
13	46842133	075PL	3/4" PLUG FOR FEMALE COUPLING ADAPTER	1
14	46842134	LS075-20	3/4" STRAINER 20 MESH S.S.	1
15	46842136		3/4" FNPT PVC CHECK VALVE 20 PSI (WHITE)	1
16	46842137	RB150-075	REDUCER BUSHING 3/4 X 1 1/2 MPT	1
17	46842146	NIP075-SH	SHORT 3/4 IN NIPPLE	1
18	46842155	HB075-90	3/4 MPT X 3/4 HOSE BARB 90 DEGREE	4
19	46842156	SL075-90	3/4 IN 90 DEGREE STREET ELBOW	1
20	46842207	HBT050	HOSE BARB TEE 0.50 IN	1
21	46842209	TF050	BULKHEAD TANK FITTINGS EPDM: POLY 0.50 IN	1
22	51401088		TEEJET BULKHEAD 90 DEG NOZZLE ASSEMBLY	2
23	51401089		TEEJET BULKHEAD TEE NOZZLE ASSEMBLY	1
24	51401104		CLOSED LOOP PRE-WET BOX ASSEMBLY	1

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**OPEN LOOP PRE-WET BOX ASSEMBLY**  
**PART NUMBER 5141106**



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**OPEN LOOP PRE-WET BOX ASSEMBLY**  
**PART NUMBER 5141106**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	44140960062LN-06-06		6ORB-6MJ BULKHEAD FITTING (LONG)	2
2	44240147	DS121006HW	STAHLIN DIAMONDSHIELD JUNCTION ENCLOSURE	1
3	44240157		MOTOR TO PUMP COUPLER & SPIDER (LOVEJOY)	1
4	44254209		OBERDORFER BRONZE CLOSE COUPLED ROTARY GEAR PUMP	1
5	44254210		DANFOSS OMM 12.5 HYD MOTOR 5/8",0.79 CU IN SAE END PORT	1
6	46842200	HB050	MALE THREAD 1/2 X 1/2 HOSE BARB	1
7	46842201	HB050-075-90	3/4" BARB X 1/2" MALE NPT 90	1
8	51403131		PRE-WET MOTOR TO PUMP MOUNTING WELD'T	1
9	51403132		PRE-WET MOUNTING PLATE WELDMENT 10/1/15	1
10	51404040		OUTSIDE BOX HYDRAULIC FITTING DOUBLE WASHER	1
11	51415265		1 3/4" X 1 3/16" RUBBER GROMET	1
12	51415266		1 9/16" X 7/8" RUBBER GROMET	1
13	51415272		OUTSIDE PRE-WET ENCLOSURE VIKING STICKER	1
14	HW14F-06		LOCKWASHER SPLIT 3/8 STAINLESS	2
15	HW14J-06		FLATWASHER SAE 3/8 STAINLESS	2
16	HW400ES-0612		M6-1 X 12MM HEX HEAD CAP SCREW SS	3
17	HW40AS-0608		BOLT HEX 3/8 X 1 UNC STAINLESS	2
18			#10 FLAT WASHER STAINLESS	4
19			10-32 X 0.188 SET SCREW	1
20			#10-32 X 1/2 MACHINE SCREW STAINLESS	4

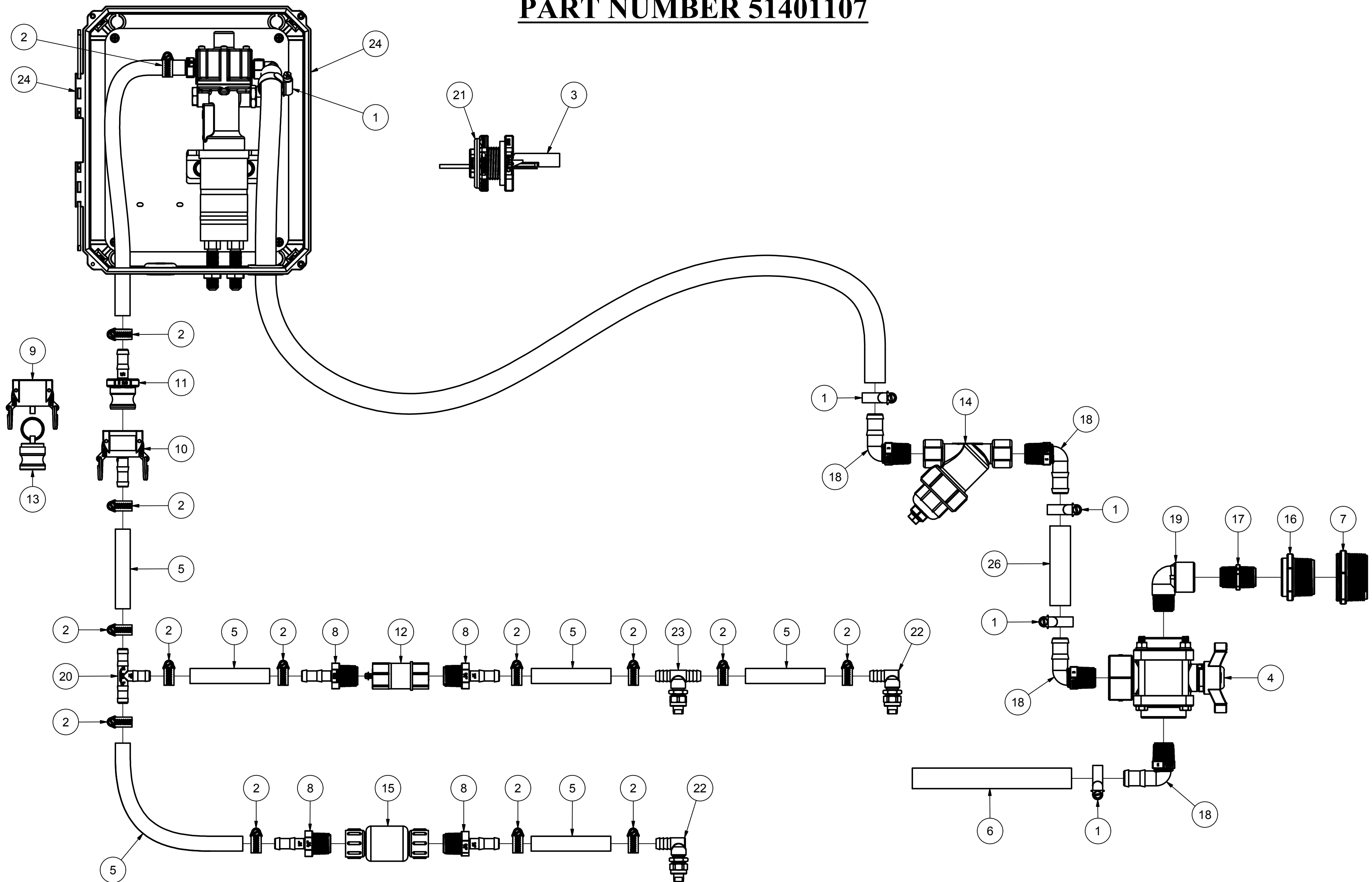
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# TOW PLOW OPEN LOOP PRE-WET KIT PART NUMBER 51401107



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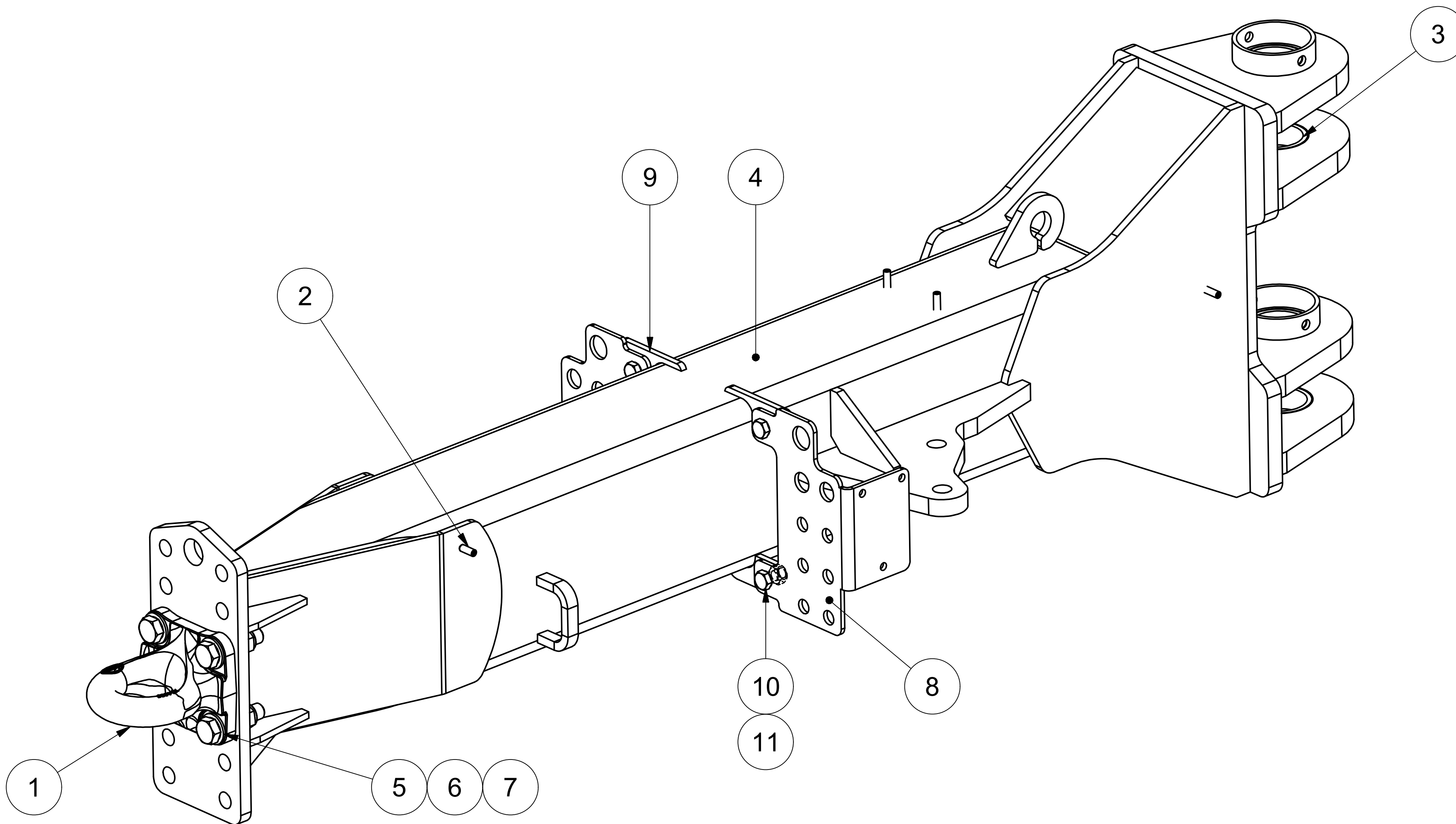
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**TOW PLOW OPEN LOOP PRE-WET KIT**  
**PART NUMBER 51401107**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	280817AS		1 1/4" STAINLESS WORM GEAR CLAMP	5
2	280818AS		3/4" STAINLESS WORM GEAR CLAMP	14
3	44240023		POLY FLOAT W/BH CORDED PLUG	1
4	44253076	V075BL	3/4" NPT 3-WAY BALL VALVE, POLY	1
5	46841999	H20108BK	1/2" WATER HOSE BLACK (PER FOOT)	25
6	46842003	H20112BK-250R	3/4" WATER HOSE BLACK (PER FOOT)	6
7	46842108	RB200-150	REDUCER BUSHING 1 1/2 X 2 MPT	1
8	46842111	HB075-050	MALE THREAD 0.75 IN X 0.50 IN HOSE BARB	4
9	46842120	075CAP	3/4" CAP FOR MALE COUPLING ADAPTER	1
10	46842122	050C	FEMALE COUPLER 0.75 IN X 0.50 IN HOSE BARB	1
11	46842123	050E	MALE ADAPTER 0.75 IN X 0.50 IN HOSE BARB	1
12	46842131		3/4" INLINE CHECK 5 PSI ADJ GRAY VALVE (PREWET)	1
13	46842133	075PL	3/4" PLUG FOR FEMALE COUPLING ADAPTER	1
14	46842134	LS075-20	3/4" STRAINER 20 MESH S.S.	1
15	46842136		3/4" FNPT PVC CHECK VALVE 20 PSI (WHITE)	1
16	46842137	RB150-075	REDUCER BUSHING 3/4 X 1 1/2 MPT	1
17	46842146	NIP075-SH	SHORT 3/4 IN NIPPLE	1
18	46842155	HB075-90	3/4 MPT X 3/4 HOSE BARB 90 DEGREE	4
19	46842156	SL075-90	3/4 IN 90 DEGREE STREET ELBOW	1
20	46842207	HBT050	HOSE BARB TEE 0.50 IN	1
21	46842209	TF050	BULKHEAD TANK FITTINGS EPDM: POLY 0.50 IN	1
22	51401088		TEEJET BULKHEAD 90 DEG NOZZLE ASSEMBLY	2
23	51401089		TEEJET BULKHEAD TEE NOZZLE ASSEMBLY	1
24	51401106		OPEN LOOP PRE-WET BOX ASSEMBLY	1

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**TOW PLOW TONGUE ASSEMBLY (RTH)**  
**PART# 41412948**



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**TOW PLOW TONGUE ASSEMBLY (RTH)**  
**PART# 41412948**

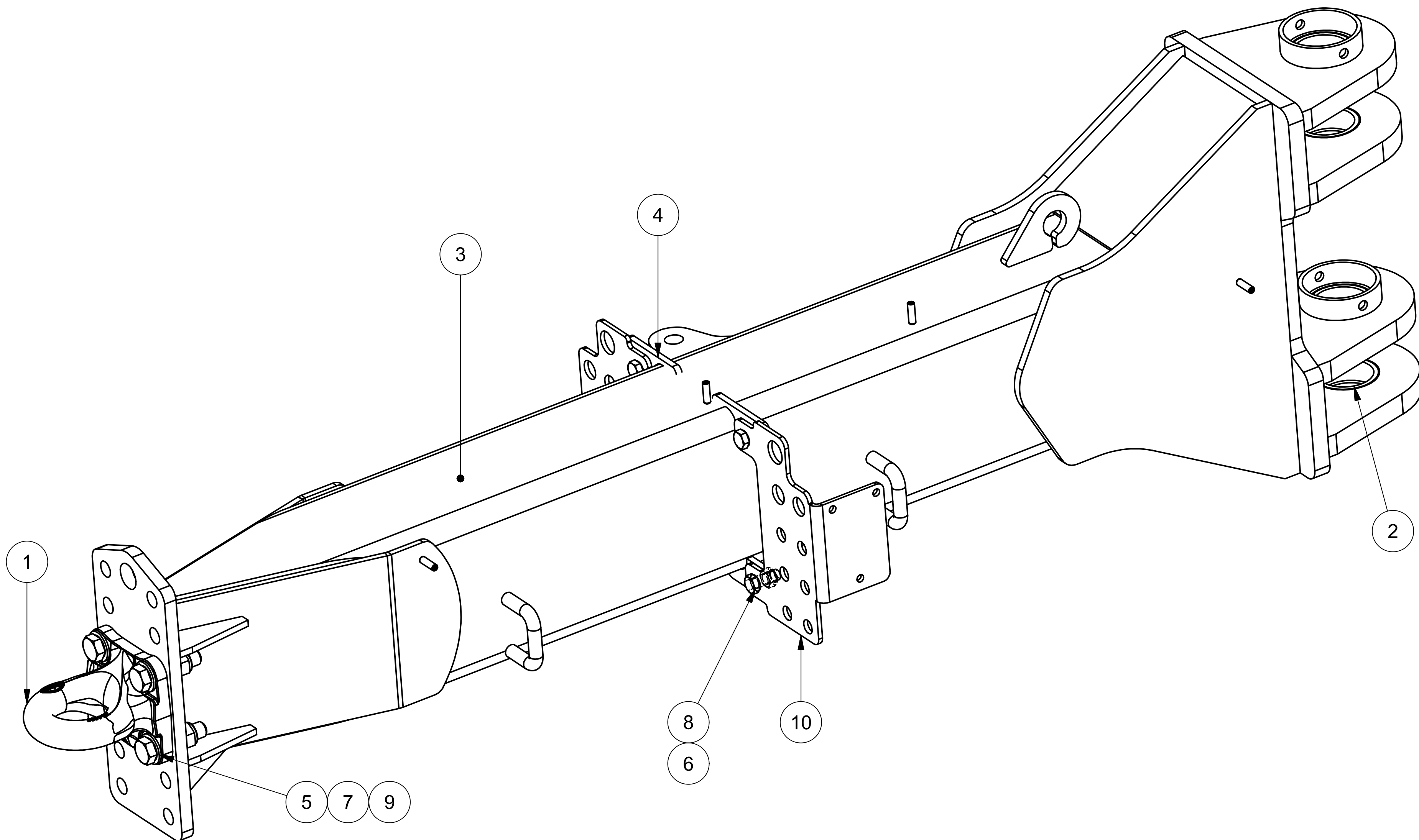
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	0720311		DRAWBAR HOLLAND RIGID MT DB-100FQ1	1
2	41318014	41318014	WELD STUD 3/8 X 1 UNC	2
3	41412319		JOURNAL BEARING 3.5 OD X 3.0 ID X 1.25 LENGTH	4
9	41412947		TONGUE TOWPLOW ONE PIECE WELD'T RH	1
5	HW14D-14	81039B	FLATWASHER HARDENED 7/8 ZINC	8
6	HW36D-14	81040E	NUT HEX ELASTIC 7/8 UNC ZINC	4
7	HW40A-1428		BOLT HEX 7/8 X 3 1/2 UNC ZINC	4
8	51404041		TOW PLOW BULKHEAD / HOSE CADDY PLATE	1
9	51404000		TOW PLOW BULKHEAD MTG PLATE	1
10	HW40A-1012	81072	BOLT HEX 5/8 X 1 1/2 UNC ZINC	4
11	HW30E-10		NUT HEX 5/8 UNC TOPLOCK ZINC	4

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# TOW PLOW TONGUE ASSEMBLY (LTH) PART# 51401133



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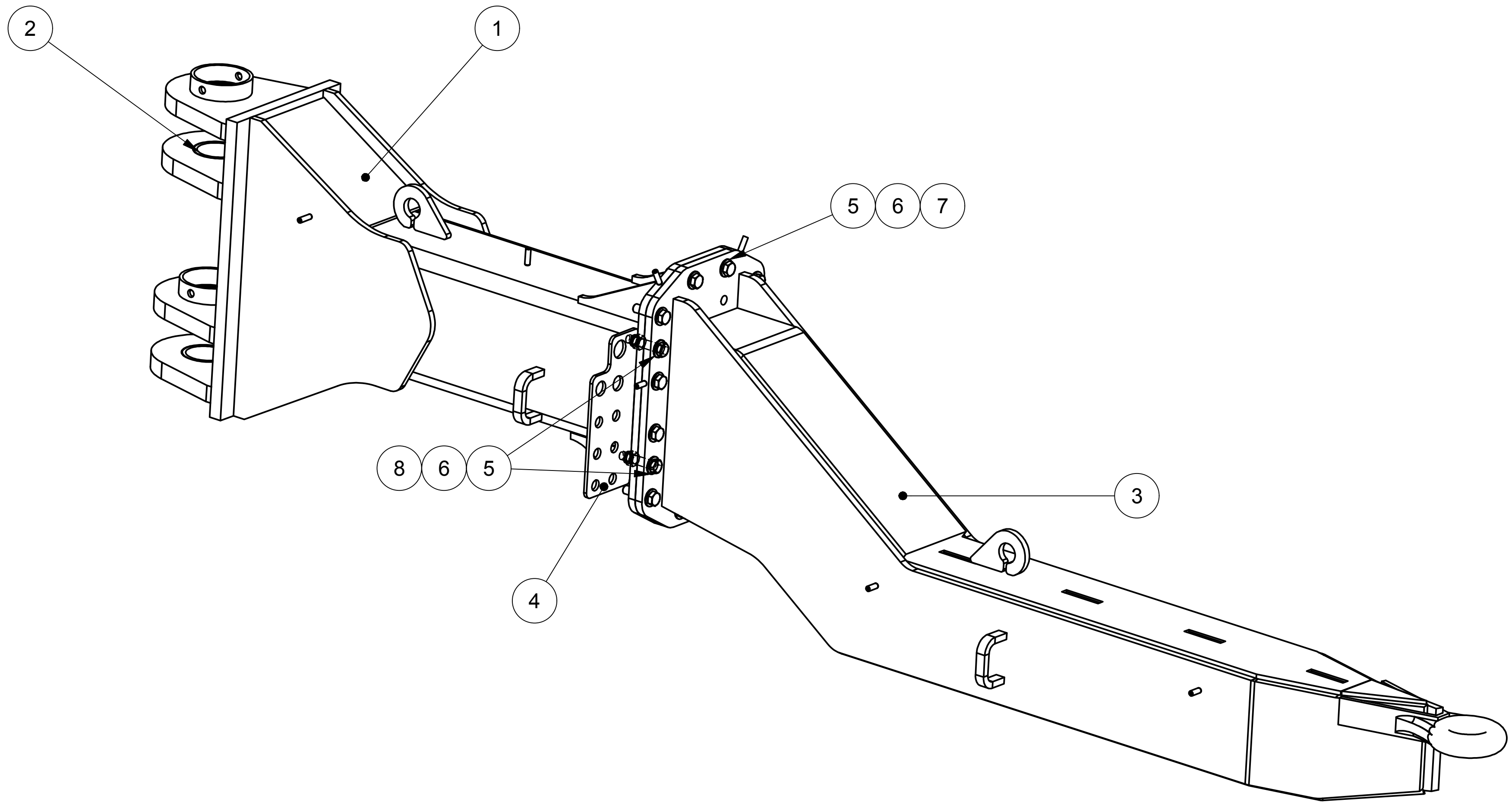
**TOW PLOW TONGUE ASSEMBLY (LTH)**  
**PART# 51401133**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	0720311		DRAWBAR HOLLAND RIGID MT DB-100FQ1	1
2	41412319		JOURNAL BEARING 3.5 OD X 3.0 ID X 1.25 LENGTH	4
3	51403170		TONGUE TOWPLOW ONE PIECE WELD'T LH	1
4	51404000		TOW PLOW BULKHEAD MTG PLATE	1
5	HW14D-14	81039B	FLATWASHER HARDENED 7/8 ZINC	8
6	HW30E-10		NUT HEX 5/8 UNC TOPLOCK ZINC	4
7	HW36D-14	81040E	NUT HEX ELASTIC 7/8 UNC ZINC	4
8	HW40A-1012	81072	BOLT HEX 5/8 X 1 1/2 UNC ZINC	4
9	HW40A-1428		BOLT HEX 7/8 X 3 1/2 UNC ZINC	4
10	51404041		TOW PLOW BULKHEAD / HOSE CADDY PLATE	1

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**TOW PLOW EXTENDED DROP TONGUE ASSEMBLY (RTH)**  
**PART# 51401040**



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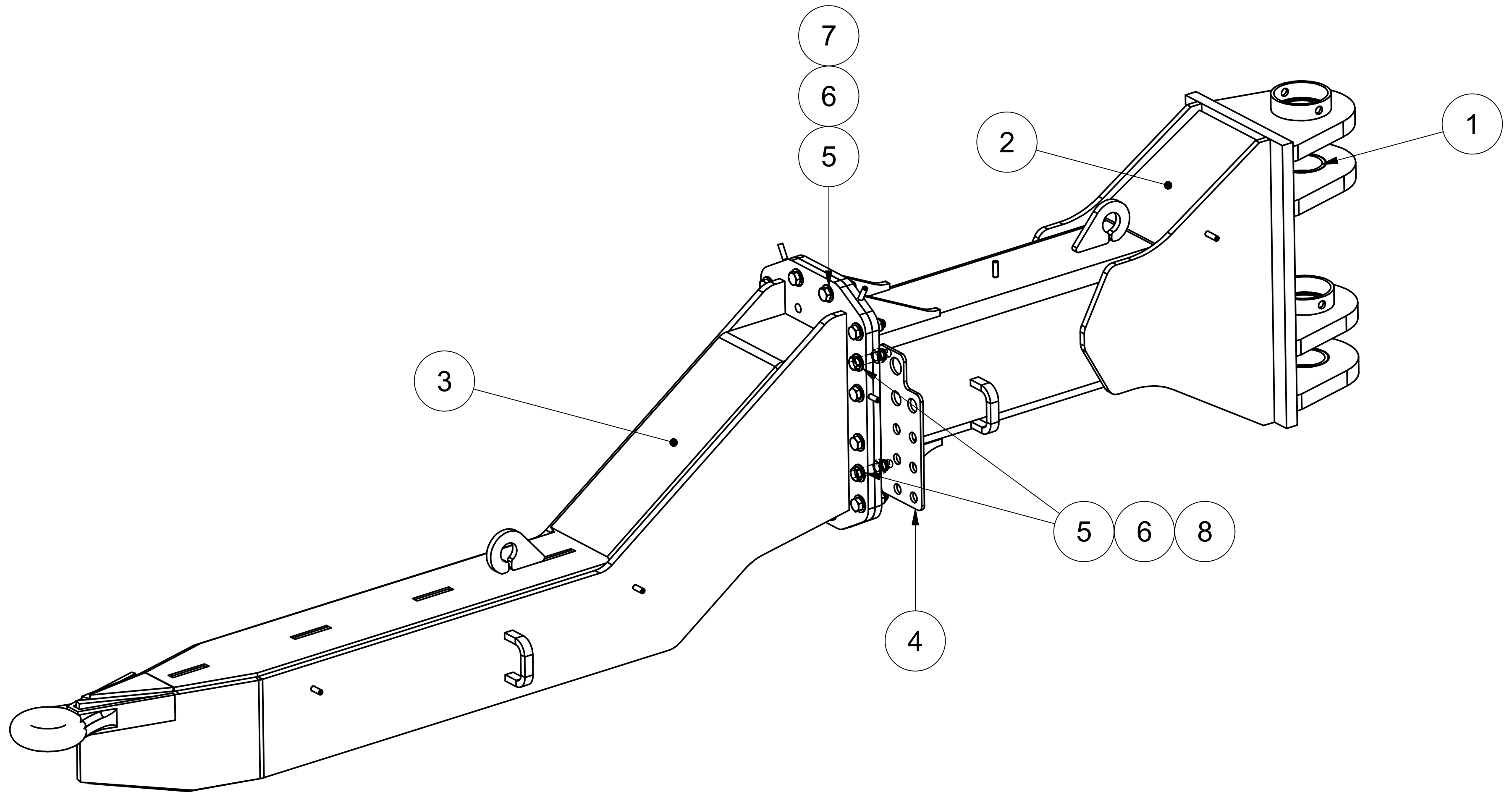
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**TOW PLOW EXTENDED DROP TONGUE ASSEMBLY (RTH)**  
**PART# 51401040**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	41412301		REAR TONGUE WELD'T	1
2	41412319		JOURNAL BEARING 3.5 OD X 3.0 ID X 1.25 LENGTH	4
3	51403052		LOWERED & EXT FRONT TONGUE WELD'T 18"	1
4	51404000		TOW PLOW BULKHEAD MTG PLATE	1
5	HW14D-10	81070E	FLATWASHER HARDENED 5/8 ZINC	32
6	HW36D-10		NUT HEX NYLON 5/8" UNC ZINC	16
7	HW40A-1020	81075E	BOLT HEX 5/8 X 2 1/2 UNC ZINC	14
8	HW40A-1024		BOLT HEX 5/8 X 3 UNC ZINC	2

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**TOW PLOW EXTENDED DROP TONGUE ASSEMBLY (LTH)**  
**PART# 51401136**



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**TOW PLOW EXTENDED DROP TONGUE ASSEMBLY (LTH)**  
**PART# 51401136**

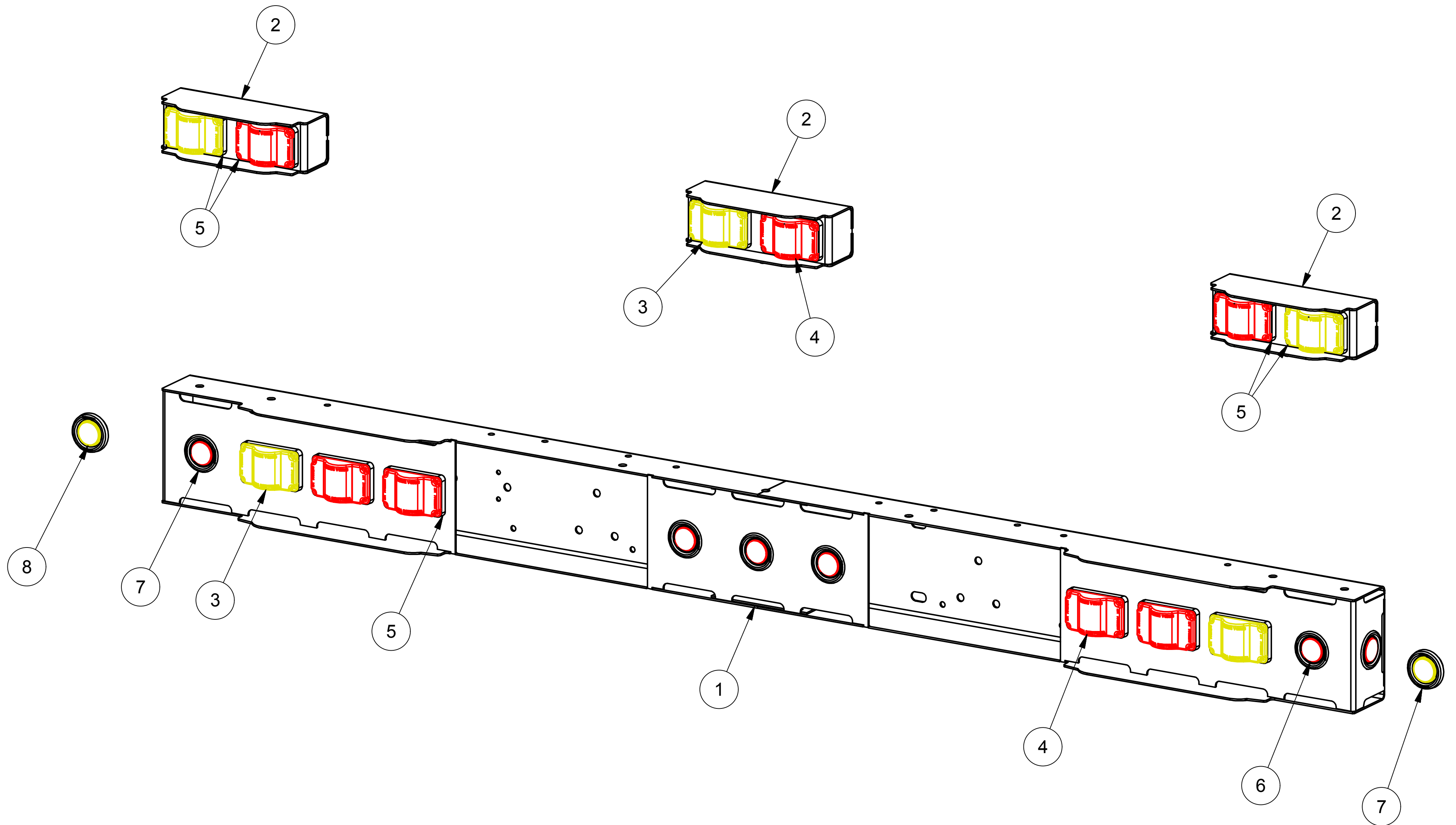
ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	41412319		JOURNAL BEARING 3.5 OD X 3.0 ID X 1.25 LENGTH	4
2	41412406		REAR TONGUE WELD'T LH	1
3	51403052		LOWERED & EXT FRONT TONGUE WELD'T 18"	1
4	51404000		TOW PLOW BULKHEAD MTG PLATE	1
5	HW14D-10	81070E	FLATWASHER HARDENED 5/8 ZINC	32
6	HW36D-10		NUT HEX NYLON 5/8" UNC ZINC	16
7	HW40A-1020	81075E	BOLT HEX 5/8 X 2 1/2 UNC ZINC	14
8	HW40A-1024		BOLT HEX 5/8 X 3 UNC ZINC	2

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# WHELEN LIGHT KIT TOW PLOW RTH/LTH ASSEMBLY PART NUMBER 44843026



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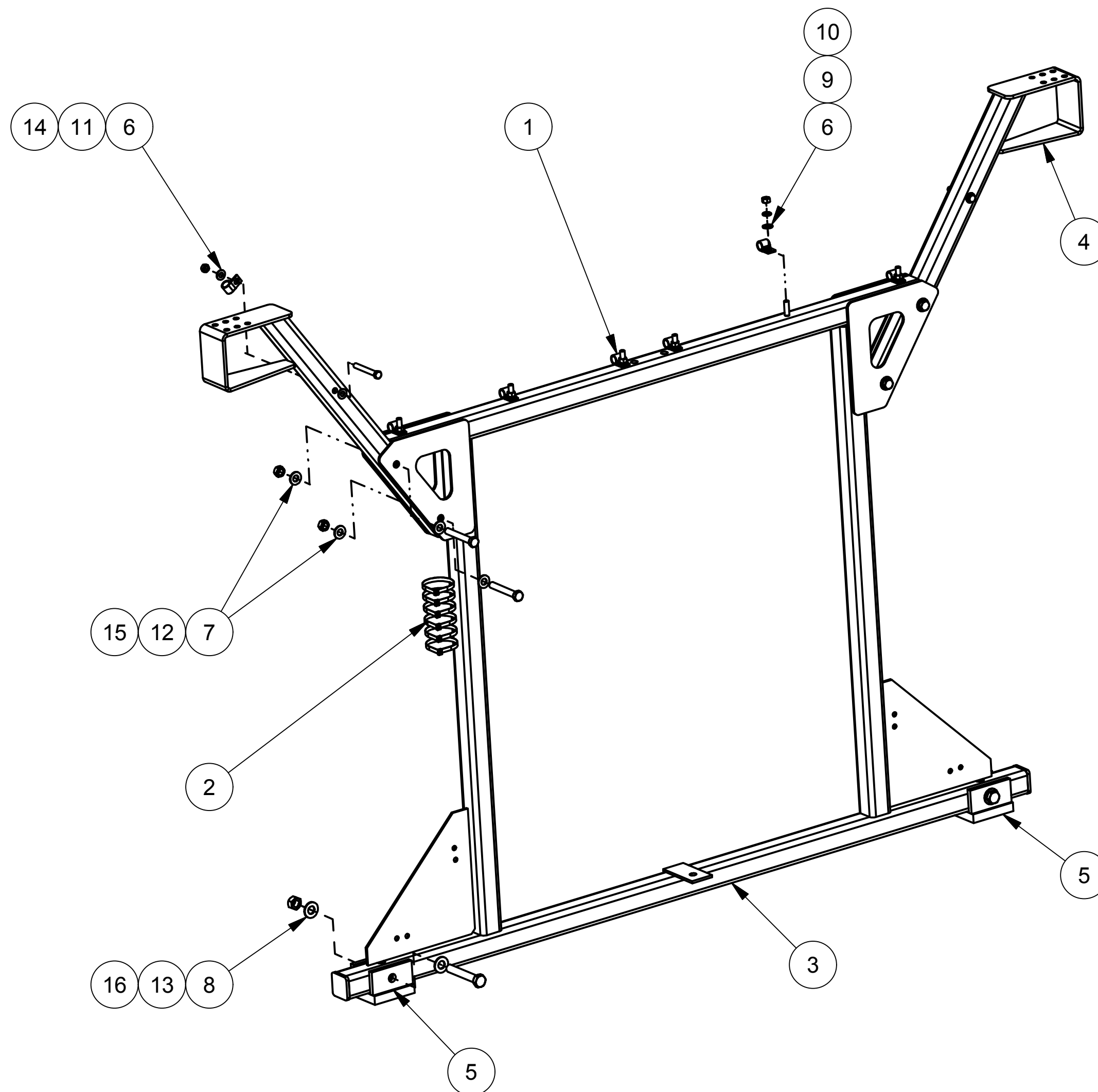
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**WHELEN LIGHT KIT TOW PLOW RTH/LTH ASSEMBLY**  
**PART NUMBER 44843026**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1			REAR LIGHT BAR WELDMENT SS TOW PLOW	1
2			DUAL LIGHT HEAD WELDMENT SS	3
3			WARNGG STROBE	5
4	68-396E977-30A		STOP TAIL TURN	7
5	11-46E976-000		GROMET	12
6	68-1963462-00		RED MARKER LED LIGHT	7
7	21-11017226-0A		GROMET MARKER	13
8			YELLOW MAEKER LED LIGHT	6

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**STANDARD HIGH VISABILITY LIGHT BAR ASSEMBLY**  
**PART NUMBER 51401123**  
**(WHELEN LIGHT KIT)**



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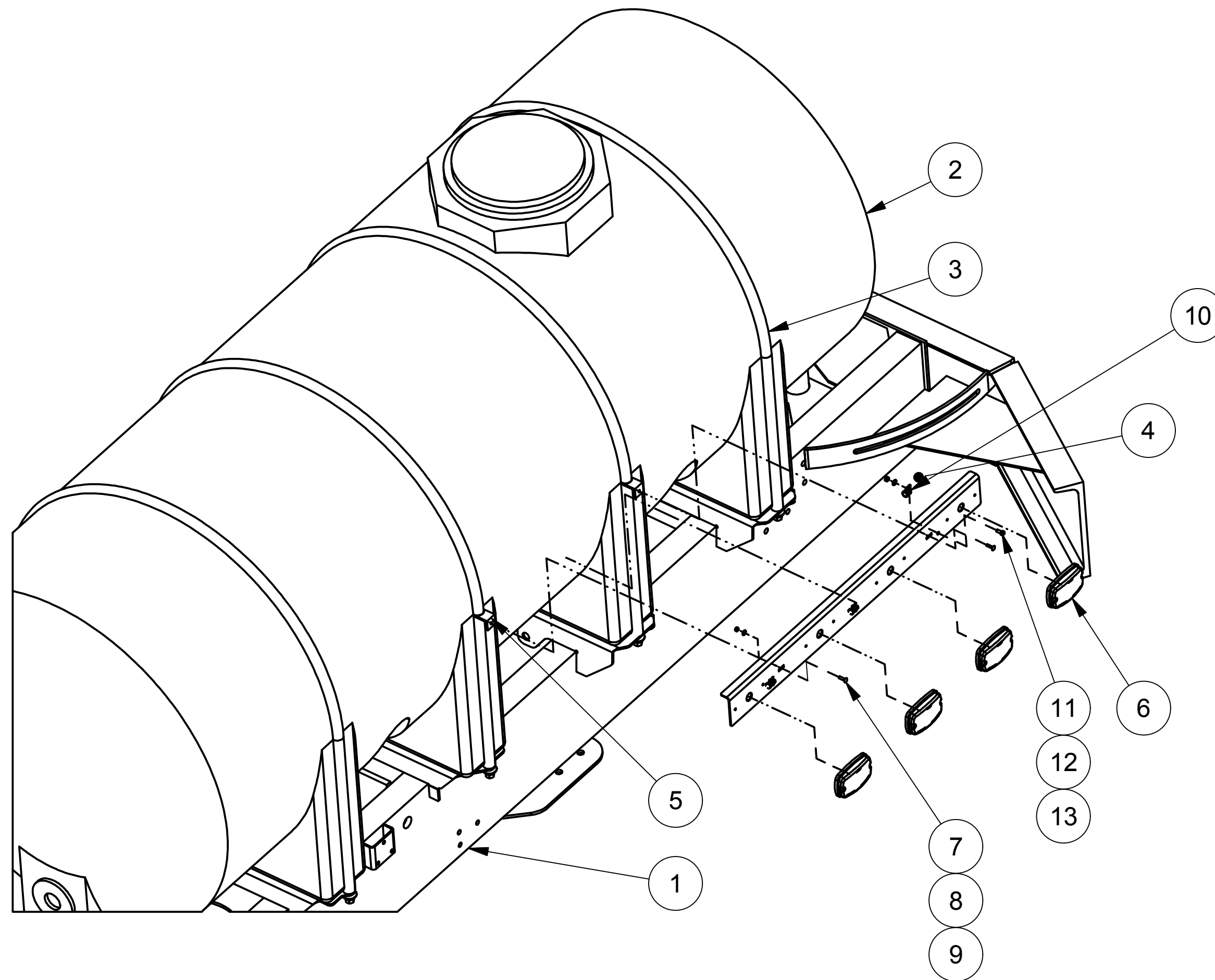
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**STANDARD HIGH VISABILITY LIGHT BAR ASSEMBLY**  
**PART NUMBER 51401123**  
**(WHELEN LIGHT KIT)**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	0630019	80701	HOSE CLAMP 3/8 SINGLE HOSE INSULATED	8
2	0660115		CABLE TIE 5/16 X 14 1/2 BLACK	6
3	41412994		REAR LIGHT BAR WELD'T NDDOT	1
4	51403146		STANDARD HIGH VISABILITY LIGHT BAR LIGHT HEAD MTG WELD'T	2
5	51403149		HIGH VISABILITY LIGHT BAR ATTACHING WELD'T	2
6	HW14A-06		FLATWASHER SAE 3/8 ZINC	10
7	HW14A-08		FLATWASHER SAE 1/2 ZINC	8
8	HW14A-10	81070A	FLATWASHER SAE 5/8 ZINC	4
9	HW14F-06		LOCKWASHER SPLIT 3/8 STAINLESS	6
10	HW30AS-06		NUT HEX 3/8 UNC STAINLESS	6
11	HW30E-06		NUT HEX 3/8 UNC TOPLOCK ZINC	2
12	HW30E-08		NUT HEX 1/2 UNC TOP LOCK ZINC	4
13	HW30E-10		NUT HEX 5/8 UNC TOPLOCK ZINC	2
14	HW40A-0624		BOLT HEX 3/8 X 3 UNC ZINC	2
15	HW40A-0828		BOLT HEX 1/2 X 3 1/2 UNC ZINC	4
16	HW40A-1032		BOLT HEX 5/8 X 4 UNC ZINC	2

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## WHELEN LIGHT BAR - TANK SIDE ASSEMBLY



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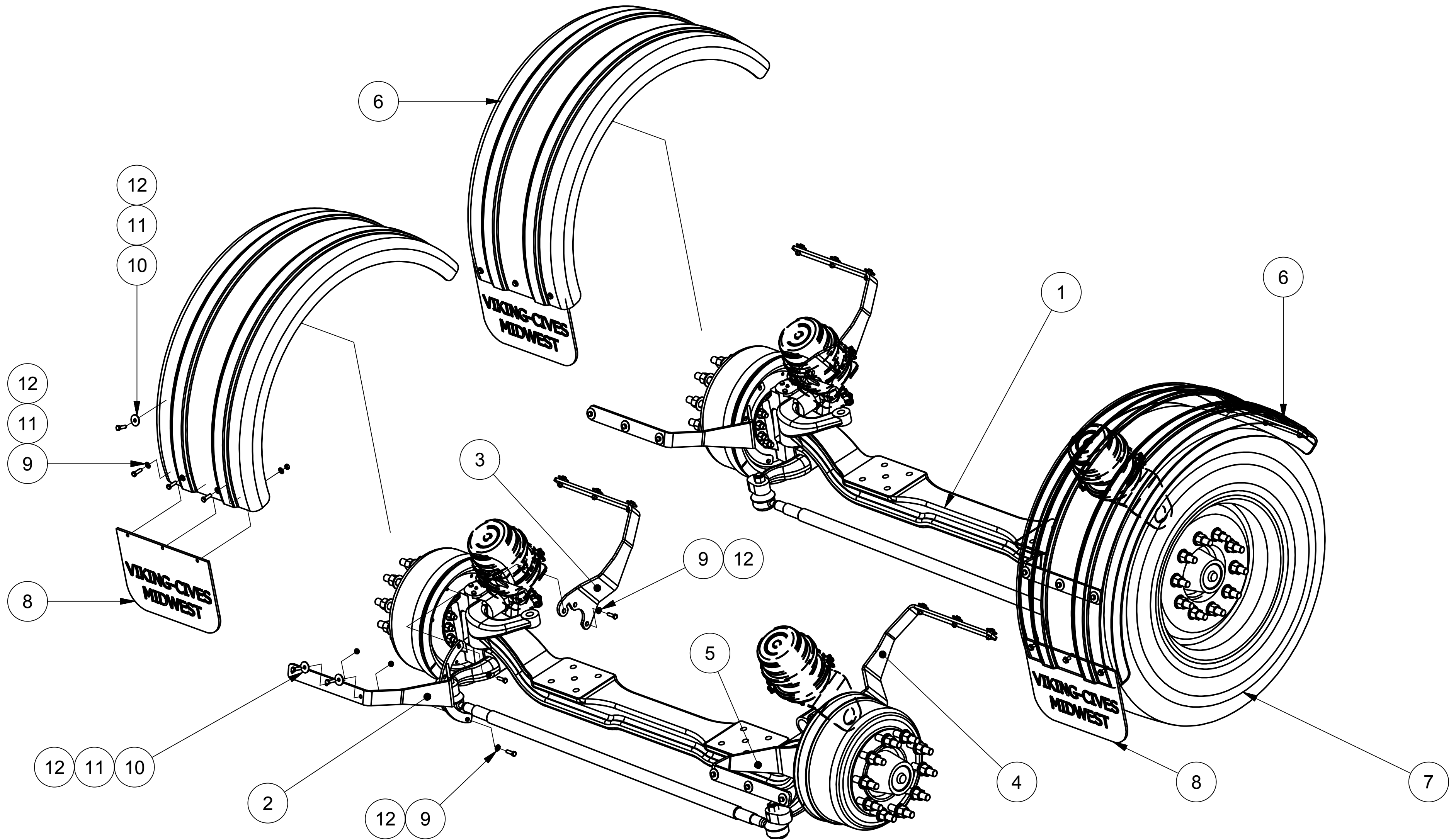
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**WHELEN LIGHT BAR - TANK SIDE ASSEMBLY**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	51403007		FRAME WELD'T RH	1
2	0810504		TANK POLY TOW PLOW 1025 GALLON	1
3	42940100		BAND FOR 1025, 725, 525 TANK	4
4	51422162		POLY TANK LIGHT BAR (M6 WHELEN)	1
5	41412452		POLY TANK BAND ANGLE MTG CLIP	2
6	M6 LIGHT HEAD WARNING		STEP AP214	4
7	HW40C-0408		BOLT CARRIAGE 1/4 X 1 UNC ZINC	2
8	HW14A-04	81062Z	FLATWASHER SAE 1/4 ZINC	2
9	HW30E-04		NUT HEX TOPLOCK 1/4 UNC ZINC	2
10	0630019	80701	HOSE CLAMP 3/8 SINGLE HOSE INSULATED	3
11	HW40A-0506		BOLT HEX 5/16 X 3/4 UNC ZINC	3
12	HW14A-05	IMP76512	FLATWASHER SAE 5/16 ZINC	3
13	HW30E-05		NUT HEX TOPLOCK 5/16 UNC ZINC	3

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**STEERABLE POLY FENDER INSALLATION & ASSEMBLY**  
**PART# 41412684**



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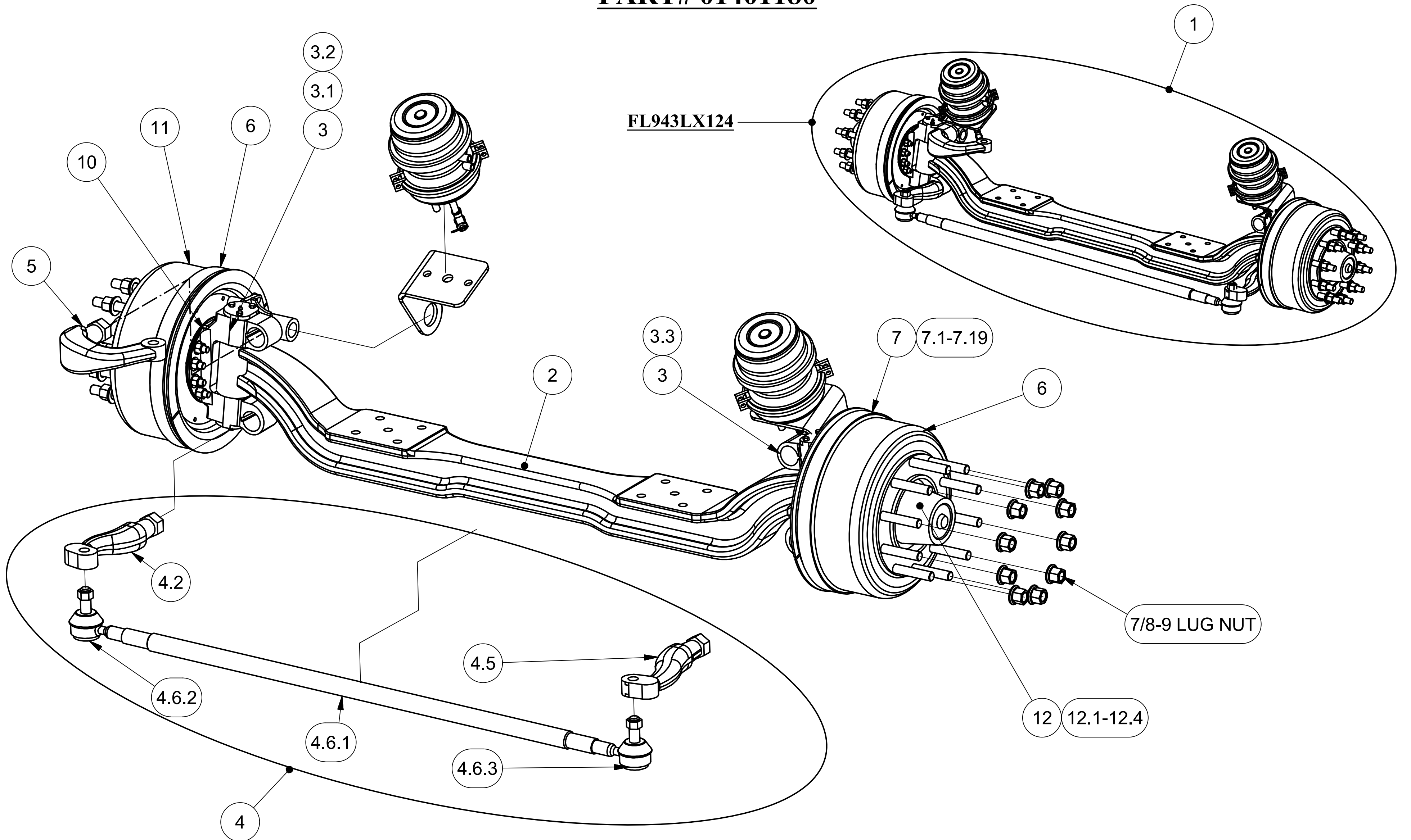
22956 HWY 61, MORLEY, MO 63767, PH: 573.262.3545, FX: 573.232.3369

**STEERABLE POLY FENDER INSTALLATION & ASSEMBLY**  
**PART# 41412684**

ITEM	DRAWING NO.	ALT. ITEM NO.	DESCRIPTION	QTY
1	01401180		FL943LX124 AXLE RH	2
2	41412685		LH BACKING PLATE FENDER BRK'T WELD'T	2
3	41412689		S-CAM FENDER BRK'T LH	2
4	41412690		S-CAM FENDER BRK'T RH	2
5	41412691		RH BACKING PLATE FENDER BRK'T WELD'T	2
6	42940022	0720241	MINIMIZER FENDER 18 IN BLK	4
7	42940039	0510066	385/65 R22.5 TIRE AND RIM ASSEMBLY	4
8	46867050		12" X 17 3/4" HD MUDFLAPS, PER PAIR	4
9	HW14A-06		FLATWASHER SAE 3/8 ZINC	29
10	HW14B-06		FLATWASHER USS 3/8 ZINC	24
11	HW30E-06		NUT HEX 3/8 UNC TOPLOCK ZINC	36
12	HW40A-0610		BOLT HEX 3/8 X 1 1/4 UNC ZINC	41

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**TOW PLOW STEERABLE AXLE ASSEMBLY**  
**PART# 01401180**



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## ARVIN MERITOR AXLE ASSEMBLY

ARM Newark IO  
444 Hebron Road  
Heath, OH 43056-1440  
US

Assembly Item Number: FL943LX124  
Description: AXLE ASSY-STEER

For further breakdown of parts, refer to the Meritor Axle Manual at <http://xpcatalogna.meritor.com/PartNumberLookup.aspx>

ITEM	PART NO.	DESCRIPTION	QTY
1	FL943LX124	BASE MODULE	1
1.1	BP 2974835 2	NAMEPLATE	1
1.1.2	2297P7452	NAMEPLATE	1
1.1.3	9X16	RIVET	2
1.2	9P 2051429 1	SEAL ASSY	4
1.2.3	A 1205Y1429	SEAL ASSY	1
1.3	26X134	SCREW-STOP	2
1.4	N 110 1	NUT	2
1.5	3208N1028	GASKET	4
1.6	1199M3237	CAP-KING PIN	4
1.7	1229E1669P	WASHER-FLAT	12
1.8	S 258P 2	BOLT/CAPSCREW	12
1.9	1199N1860	FITTING-GREASE	4
1.10	3101V178	PIN-KNUCKLE	2
1.11	A 1228D1382	BEARING ASSY	2
1.12	2203N3004	SHIM-.005-USE AS REQD	2
1.13	2203M3003	SHIM-.010-USE AS REQD	2
1.14	2203A2835	SHIM-.015-USE AS REQD	2
1.15	2203B2836	SHIM-.030-USE AS REQD	2
1.16	7X113	KEY-USE AS REQD (UPPER)	2
1.17	7X1003	KEY-USE AS REQD (UPPER)	2
1.18	7X114	KEY-USE AS REQD (LOWER)	2
1.19	1227Z780	NUT	4
1.20	1227S1527	NUT-WHEEL BRG, FIN. INNER	2
1.21	1229H476	RING-LOCK	2
1.22	1229J478	WASHER-LOCK	2
1.23	1227D108	NUT-WHEEL BRG, FIN. OUTER	2
2	3100S7923	CENTER-AXLE, FIN.	1
2.1	3100W6419	CENTER-AXLE, SEMI FIN.	1
3	BP 1113193 2	STEERING KNUCKLE MODULE	1
3.1	A 3111U3193	KNUCKLE ASSY-STEERING (L.H.)	1
3.2	1225S1189	BUSHING (L.H.)	2
3.3	A 3111S3191	KNUCKLE ASSY-STEERING (R.H.)	1
4	BP 1338150 2	TIE ROD MODULE	1





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## ARVIN MERITOR AXLE ASSEMBLY (CONTINUED)

ITEM	PART NO.	DESCRIPTION	QTY
4.1	16X1035	KEY	2
4.2	3133L8150	ARM-TIE ROD, FIN.	1
4.2.1	3133G8145	ARM-TIE ROD, ROUGH	1
4.3	1227Y1715	NUT-SLOTTED	2
4.4	K 2618	COTTER	2
4.5	3133J7576	ARM-TIE ROD, FIN	1
4.5.1	2297A6995	PROTECTOR-SHIPING	1
4.5.2	3133E7571	STEERING ARM-ROUGH	1
4.6	A1 3102B3850	ROD ASSY-END & TIE	1
4.6.1	A3102B3850	ROD ASSEMBLY-CLAMP & TIE	1
4.6.2	A3144F448	TIE ROD END ASSEMBLY (R.H.)	1
4.6.3	A3144G449	TIE ROD END ASSEMBLY (L.H.)	1
4.7	K 2414	COTTER	2
5	BP 1337354 3	STEERING ARM MODULE	1
5.1	16X1035	KEY	1
5.2	3133V7354	ARM-STEERING, FIN.(REAR L.H.)	1
5.3	1227Y1715	NUT-SLOTTED	1
5.4	K 2618	COTTER	1
6	QP6 1656 797	BRAKE ASSY (L.H.)	1
7	QP6 1656 798	BRAKE ASSY (R.H.)	1
7.1	1199N1860	LUBE FITTING	1
7.2	1229D2942	SNAP RING	1
7.3	1229E4685	WASHER	1
7.4	1229J3130	WASHER	2
7.5	1229N4590	WASHER	2
7.6	1229S2697	WASHER	1
7.7	1259N274	ANCHOR PIN	2
7.8	1779W283	GREASE - USE AS REQUIRED	2
7.9	2210F7468	CAMSHAFT, FIN.	1
7.10	2258H1230	RETAINER SPRING	2
7.11	2258Y1273	RETURN SPRING	1
7.12	2297J6588	TAG/SHEET - INSTRUCTIONS	1
7.13	3264S227	DUST SHIELD	1
7.14	3264T228	DUST SHIELD	1
7.15	A23222P2200	SHOE-BREAK, LINING & ROLLER ASSY	2
7.16	A3211C5385	SPIDER ASSY-BRAKE	1
7.17	D73299E3047	BRKT ASSY-BRAKE CHAMBER	1
7.18	S264B	BOLT/CAP SCREW	6
7.19	S2810B2	BOLT/CAP SCREW	4
8	BP 222L 8	HARDWARE MODULE	1
8.1	15X1795	BOLT/CAP SCREW	14
8.2	1229V1556	WASHER-FLAT	28
8.3	NL 112 1	NUT-LOCK, FIN.	14
9	BP 276 30 86	AIR CHAMBER MODULE	1
9.1	A643275Z1144S	AUTO ADJ SLACK-ROCKWELL (L.H.)	1



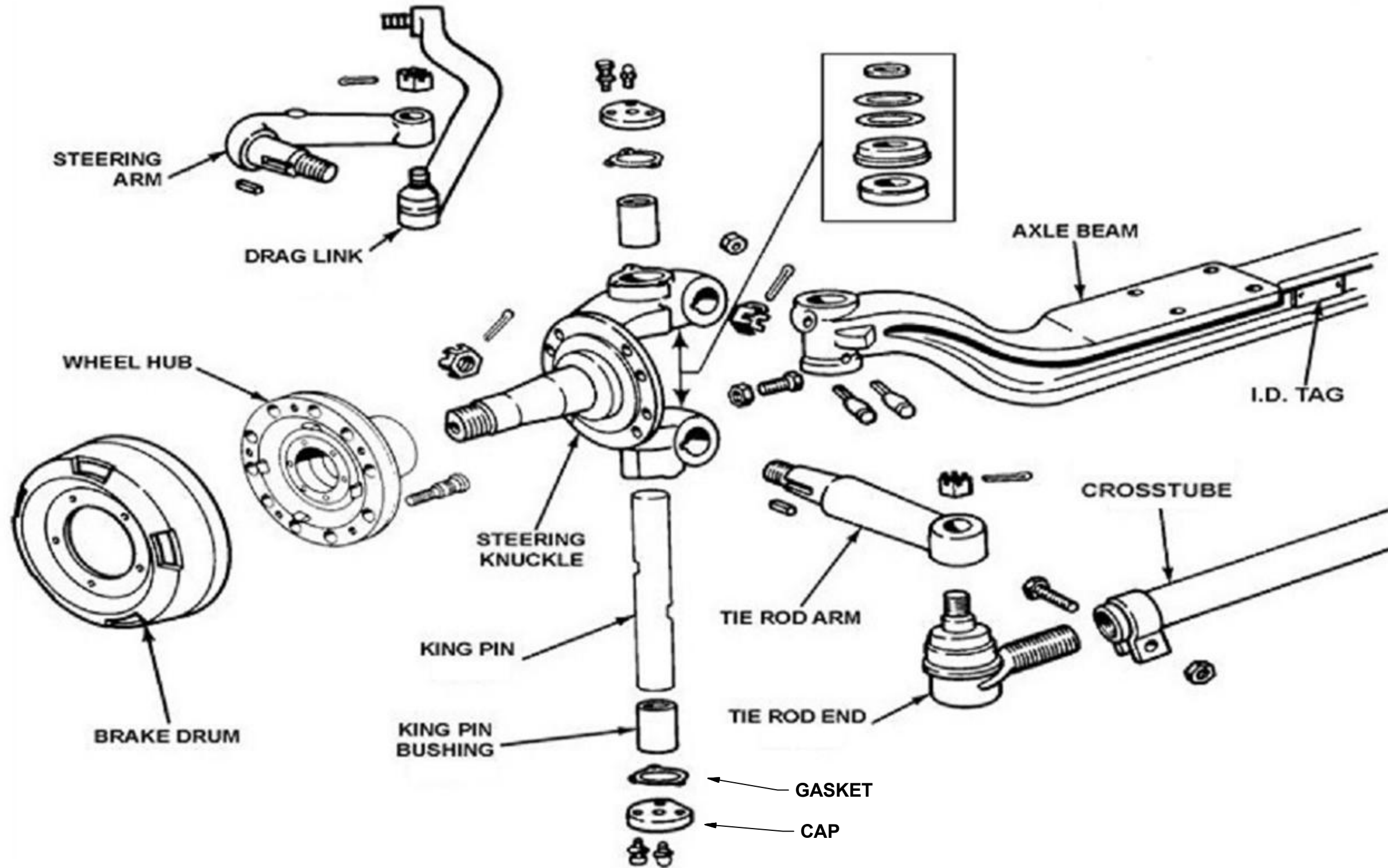
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## **ARVIN MERITOR AXLE ASSEMBLY (CONTINUED)**

<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>
9.2	A643275A1145S	AUTO ADJ SLACK-ROCKWELL (R.H.)	1
9.3	U68 3276D30	SPRING CHAMBER-MGM-SQ IN.(AVAIL./ASSY ONLY/LH)	2
9.4	1229N1626	WASHER-FLAT	4
9.5	N 310 1	NUT	4
10	9ABSWABOFS	AUTOMOTIVE ELECTRONICS	2
10.1	2237Q1005	CLIP	1
10.2	A 2237G1073	SENSOR ASSY	1
10.3	3237H294	TIE-CABLE SENSOR	2
11	HFLF66TK 34 Z 1	HUB & DRUM ASSY (L.H.)	2
11.1	15160261007MTB	HUB & DRUM ASSY (R.H.)	1
11.2	BP 2051108 2	OIL SEAL MODULE	1
11.2.1	6461A	CONE-BEARING (INNER)	1
11.2.2	A 1205P1108	WHEEL SEAL-OIL, CHICO RAWHIDE (INNER)	1
12	BP 2621252 1	HUB CAP MODULE	1
12.1	555S	CONE-BEARING (OUTER)	2
12.2	A 3262D1252	CAP ASSY-HUB	2
12.3	WA 15P	WASHER-LOCK	12
12.4	S 258P 2	BOLT/CAP SCREW	12

## TYPICAL FRONT AXLE COMPONENTS

This exploded view is **ONLY** a representation of a typical front axle assembly and the names of the most common associated parts.



## LOCATION AND IDENTIFICATION OF MERITOR AXLE SPECIFICATIONS

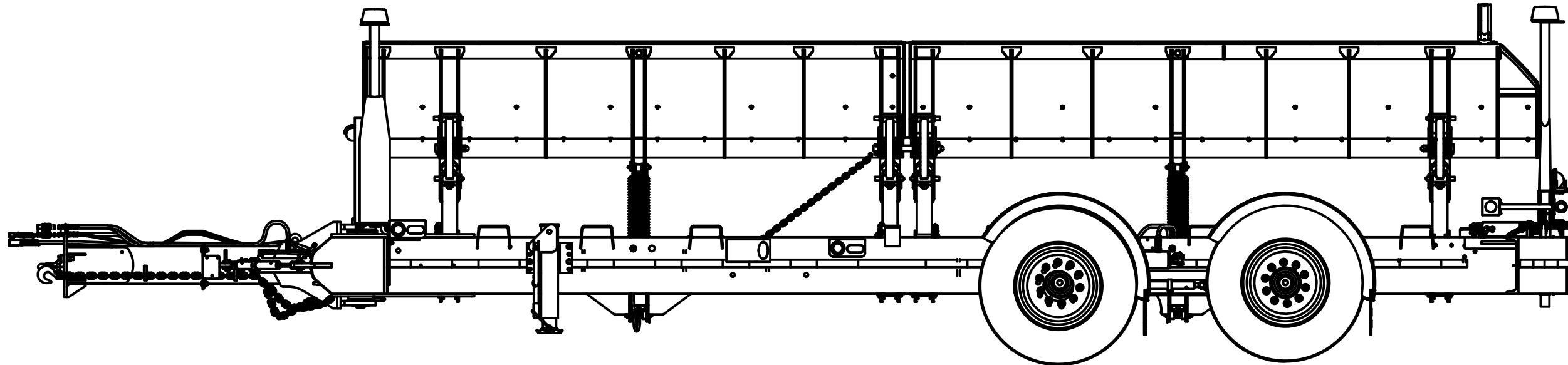
To correctly identify your specific axle model, there is an I.D. tag riveted on the front of the axle beam. The information on this tag will be useful in tracking down parts. This information should also be available when calling Meritor for assistance. Contact the Meritor Information Services Department in Florence, KY at 888-725-9355.

**SPECIFY THIS INFORMATION**

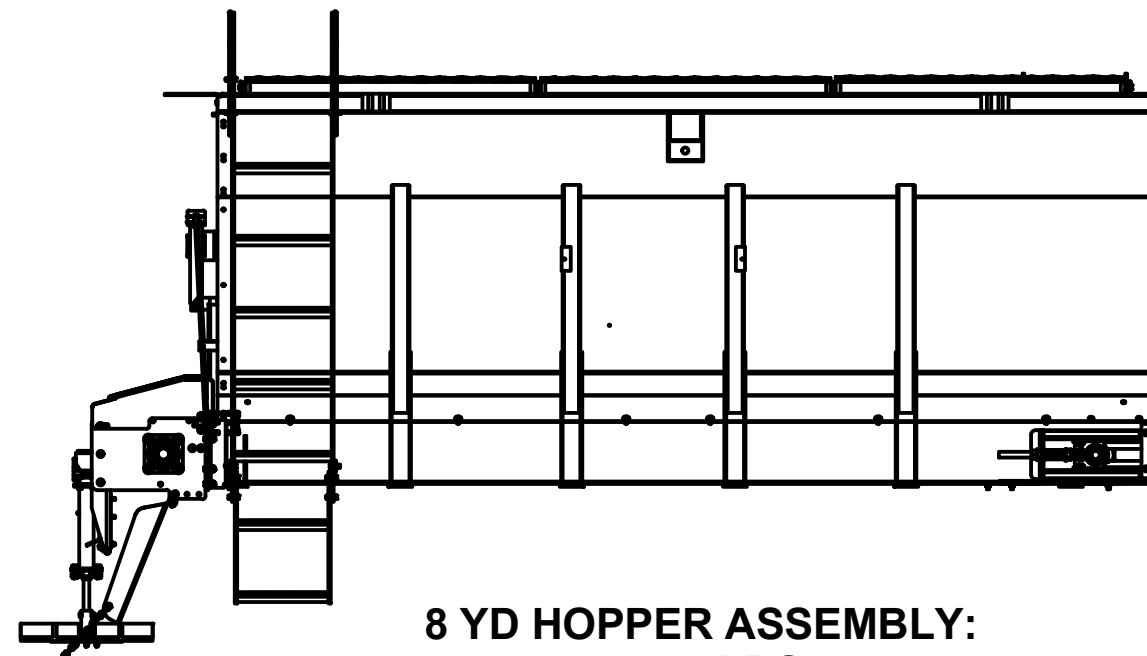
- Model No. ....
  - Customer No. ....
- |                 |             |
|-----------------|-------------|
| Serial No. .... | Plant ..... |
| Ratio .....     | Date .....  |

### EXAMPLE OF THE I.D. TAG

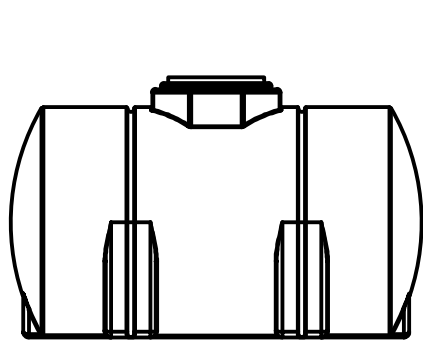
## TOW PLOW EQUIPMENT WEIGHTS



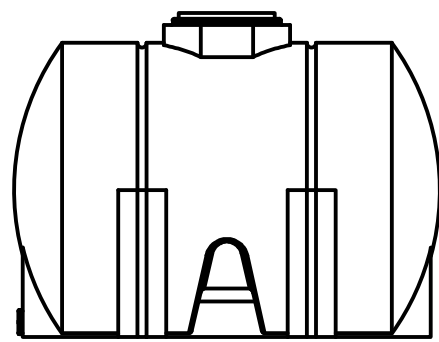
**BARE TOW PLOW:  
13,700 LBS**



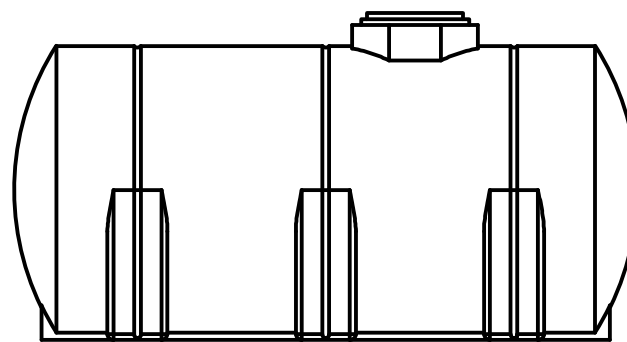
**8 YD HOPPER ASSEMBLY:  
3,500 LBS**



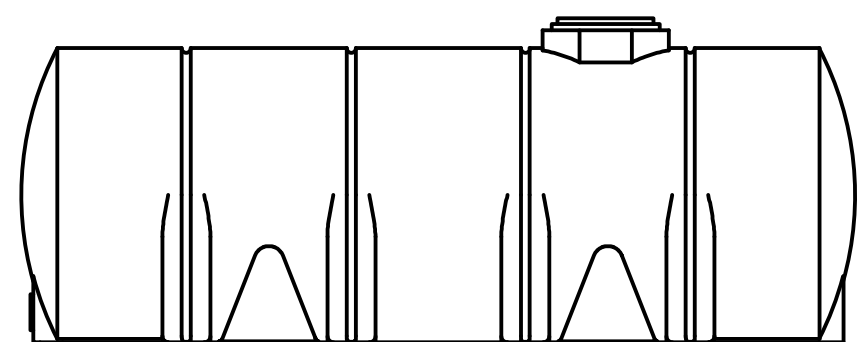
**325 GAL POLY TANK:  
145 LBS**



**525 GAL POLY TANK:  
183 LBS**



**725 GAL POLY TANK:  
320 LBS**



**1025 GAL POLY TANK  
400 LBS**

<b>TOW PLOW TONGUE AND AXLES WEIGHT</b>			
EQUIPMENT SET UP	WEIGHT ON TONGUE (LBS)	WEIGHT ON AXLES (LBS)	TOTAL WEIGHT (LBS)
BARE TOW PLOW	2,572	11,128	13,700
8 YD HOPPER FULL	2,756	32,044	34,800
HOPPER & 325 GAL. TANK FULL	4,254	36,128	40,382
HOPPER & 525 GAL. TANK FULL	5,055	37,024	42,079

NOTE: BARE TOW PLOW INCLUDES WINGS AND BLADES. HOPPER WEIGHT DETERMINED USING SALT/SAND/GRAVEL WEIGHT OF 2,200 LBS/ CU. YD. TANK WEIGHT DETERMINED USING BRINE WEIGHT OF 11 LBS/GAL (US).



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## APPENDIX

### PURCHASED PARTS

<b>DESCRIPTION</b>	<b>MANUFACTURER</b>	<b>MANUFACTURER'S PART NO.</b>
AXLE ASS'Y-STEER	ARVIN MERITOR	01401180
LANDING GEAR	HOLLAND	LG4700-32400000
TIRES	DUNLOP SP231A	385/65R22.5
RIMS, STEEL	ACCURIDE	29806(22.5X12.25)
INNER BEARING CUP	TIMKEN	6420
INNER BEARING CONE	TIMKEN	6461A
OUTER BEARING CUP	TIMKEN	552A
OUTER BEARING CONE	TIMKEN	555S
WHEEL SEAL	ARVIN MERITOR (CR)	A 1205-P1108
PINTLE EYE	HOLLAND	DB-1422