

**W. & A. MANUFACTURING CO.**



**SPECIALIZED FARM EQUIPMENT**

PHONE 870/534-7420 • P.O. BOX 5238 • 1810 OHIO ST. • PINE BLUFF, ARKANSAS 71611



# **DELTA FURROW PLOW OWNER'S MANUAL**

## **Revised 8.21**



This manual is applicable to:           Delta Furrow Plow

Record the model number and serial number of your Delta Furrow Plow along with date purchased:

**MODEL NUMBER** \_\_\_\_\_

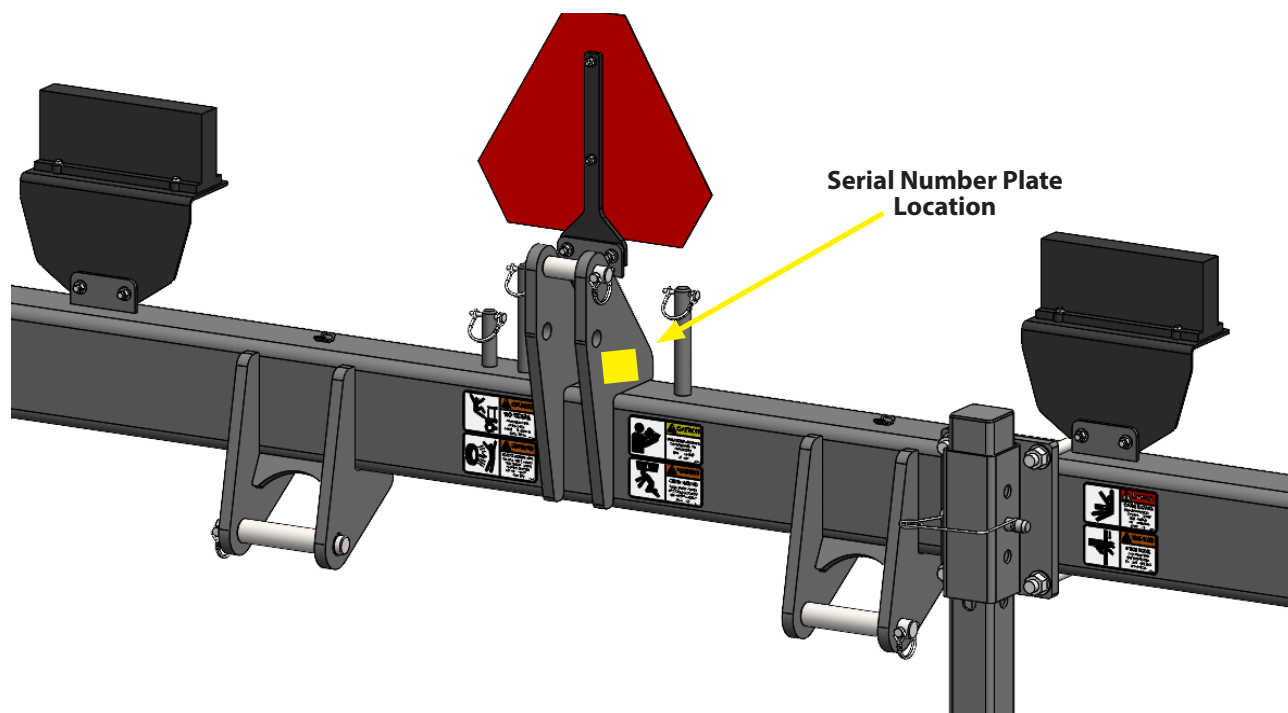
**SERIAL NUMBER** \_\_\_\_\_

**DATE PURCHASED** \_\_\_\_\_

## SERIAL NUMBER

The serial number plate is located on the frame to be readily available. It is suggested that your serial number and purchase date also be recorded above.

The serial number provides important information about your Delta Furrow Plow and may be required to obtain the correct replacement part. Always provide the model number and serial number to your W&A Manufacturing dealer when ordering parts or anytime correspondence is made with W&A Manufacturing.





## TO THE DEALER

Factory to Farm™ service includes full factory assembly. Dealer is responsible for field readiness.

## PRE-DELIVERY CHECKLIST

Use the following checklist after your Delta Furrow Plow is completely assembled. Check off each item as it is found satisfactory or after proper adjustment is made.

- All working parts move freely, bolts are tight, and cotter pins are spread.
- Torque wheel lug bolts and lug nuts as specified in the manual.
- All safety decals correctly located and legible. Replace if damaged.
- All reflective decals and SMV sign correctly located and visible when the plow is in transport position.
- Safety/warning lights correctly installed and working properly.
- Paint all parts scratched during shipment or assembly.
- All safety lockup devices on the Delta Furrow Plow are correctly located.

*The Delta Furrow Plow has been thoroughly checked and to the best of my knowledge is ready for delivery to the customer.*

---

(Signature Of Set-Up Person/Dealer Name/Date)

NAME \_\_\_\_\_ DELIVERY DATE \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_ MODEL NO. \_\_\_\_\_ SERIAL NO. \_\_\_\_\_

CITY, STATE/PROVINCE \_\_\_\_\_ DEALER NAME \_\_\_\_\_

ZIP/POSTAL CODE \_\_\_\_\_ DEALER NO. \_\_\_\_\_



## DELIVERY CHECKLIST

Use the following checklist after your Delta Furrow Plow is delivered as a reminder of very important information which should be conveyed to retail customer/end user. Check off each item as it is fully explained.

- Life expectancy of this or any other machine is dependent on regular maintenance as directed in the Owner's Manual.
- All applicable safety precautions.
- Along with retail customer/end user, check reflective decals and SMV sign are clearly visible with Delta Furrow Plow in transport position and attached to tractor. Check safety/warning lights are in working condition. Tell retail customer/end user to check federal, state/provincial, and local regulations before towing or transporting on a road or highway.
- Give Owner's Manual and all Instruction Sheets to retail customer/end user and explain all operating adjustments.
- Read warranty to retail customer/end user.
- Complete Warranty and Delivery Report form.

*To the best of my knowledge, this machine has been delivered ready for field use and customer has been fully informed as to proper care and operation.*

---

(Signature Of Set-Up Person/Dealer Name/Date)

## AFTER DELIVERY CHECKLIST

The following is a list of items we suggest to check during the first season of use of the equipment.

- Check Delta Furrow Plow performance with retail customer/end user.
- Review importance of proper maintenance and adherence to all safety precautions with retail customer/end user.
- Check for parts that may need to be adjusted or replaced.
- Check all safety decals, reflective decals, and SMV sign are correctly located as shown in the Parts Guide and that decals are legible. Replace if damaged or missing.
- Check safety/warning lights are working properly.

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(Signature Of Set-Up Person/Dealer Name/Date)

All registrations must be submitted to W&A Manufacturing within 5 business days of delivery. Retain a copy of this form for auditing purposes.

All registrations must be submitted to:

**W&A Manufacturing**  
PO Box 5238  
Pine Bluff, AR 71611



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# GENERAL INFORMATION



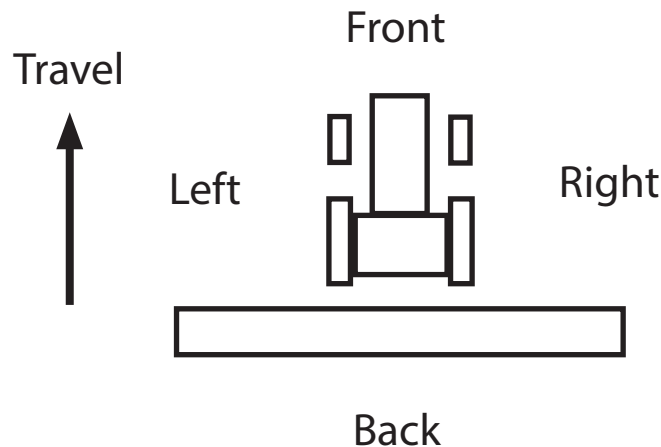
## HOW TO USE THIS MANUAL

This manual is divided into sections. The first section contains a Table of Contents, General Information, and a Part Number Index. The remaining sections divide the machine into assemblies and sub-assemblies which illustrate and list all parts.

W&A Manufacturing parts in this manual are specially designed for this machine and should be replaced with W&A Manufacturing parts only.

Information in this manual was current at time of printing. However, due to W&A Manufacturing's ongoing product improvement, production changes may cause your machine to appear slightly different in detail. W&A Manufacturing reserves the right to change specifications or design without notice and without incurring obligation to install the same on machines previously manufactured.

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel while in use.



## MANUAL REPLACEMENT INFORMATION

Replacement manuals are available. Call the W&A Manufacturing Main Office at 308.708.8185, or download a printable PDF from our website, [www.wamfgco.com](http://www.wamfgco.com).

## MANUAL REVISIONS

When this manual is revised, the modification date is printed on the front cover and on the revised page(s).

## TOUCH-UP PAINT

Repaint parts where paint is worn or scratched to prevent rust. Aerosol touch-up paint is available. To order, call W&A Manufacturing at 308.708.8185.



## INTRODUCTION

Thank you for your purchase of a W&A Manufacturing Delta Furrow Plow. Putting your trust in our equipment is something we don't take lightly and are humbled that you chose W&A Manufacturing. Having designed all of our equipment with farmers like you in mind, we hope you enjoy years of productive use from it. Please read and understand this manual before operation.

## WARRANTY INFORMATION

AGROdeviate LLC (AGROdeviate) warrants each W&A Manufacturing product it manufactures to be free from defects in material and workmanship for a period not to exceed one (1) year from the date of sale to the original owner. The warranty is valid provided written notice of the alleged defect is received by AGROdeviate during said period and within ten (10) working days after its discovery.

In addition, AGROdeviate warrants each TOOLBAR FRAMEWORK to be free from defects in material and workmanship for a period not to exceed three (3) years from the date of sale to the original owner. The warranty is valid providing written notice of the alleged defect is received by AGROdeviate during said period and within ten (10) working days after its discovery.

This warranty is subject to completion of Product Registration and submission to AGROdeviate. Warranty applies only if product is installed, operated, and maintained according to product manual and instructions. Warranty will be void if the product has been subject to misuse, misapplication, neglect, collision with obstruction, or alteration.

For products, parts, and components NOT manufactured by AGROdeviate, the warranty obligations of AGROdeviate shall be limited to the Original Equipment Manufacturers' warranty. Tires on AGROdeviate equipment are warranted through the respective tire manufacturer and their network of dealers.

All returns must be pre-approved by AGROdeviate and authorization issued before return. All returns must include a copy of the original invoice in order to be processed. Any returns without a copy of the original invoice will not be eligible to receive credit.

If determined that the product is defective in material and/or workmanship, the necessary parts will be replaced and/or repaired. All warranty repair or labor is to be performed by an AGROdeviate authorized party. AGROdeviate obligation under this warranty shall be limited to repairing or replacing parts deemed defective. Warranty does not cover travel expenses. AGROdeviate will bear no other costs including loss, incurred labor, rental fees, nor other.

All returns shall be pre-paid. If warranty is approved by AGROdeviate, return freight will be credited.

This warranty by AGROdeviate LLC is expressly in lieu of all other warranties, expressed or implied, including warranty of merchantability and fitness for use. We neither assume, nor authorize, any other entity to accept for us any liability relating to the sale of our products.





## SAFETY

TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY AND THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.



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

### SIGNAL WORDS:

Note the use of signal words DANGER, WARNING, and CAUTION with the safety messages. The appropriate signal word for each has been selected using the following guidelines:



**DANGER:** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.



**WARNING:** Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



**CAUTION:** Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

If you have questions not answered in this manual, require additional copies, or the manual is damaged, please contact W&A Manufacturing, PO Box 5238, Pine Bluff, AR, 71611 308.708.8185, or visit our website: [www.wamfgco.com](http://www.wamfgco.com).



## SAFETY... YOU CAN LIVE WITH IT!



### EQUIPMENT SAFETY GUIDELINES

Safety of the operator is one of the main concerns in designing and developing a new piece of equipment. Designers and manufacturers build in as many safety features as possible. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury, study the following precautions and insist those working with you, or for you, follow them.

In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, equipment should never be operated in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.

Replace any CAUTION, WARNING, DANGER or instruction safety decal that is not readable or is missing. Location of such decals is indicated in this booklet.

Do not attempt to operate this equipment under the influence of drugs or alcohol.

Review the safety instructions with all users annually.

This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible adult familiar with farm machinery and trained in this equipment's operations. Do not allow persons to operate or assemble the unit until they have read this manual and have developed an understanding of the safety precautions and how it works.

To prevent injury or death, use a tractor with a Rollover Protective Structure (ROPS). Do not paint over, remove or deface any safety signs or warning decals on your equipment. Observe all safety signs and practice the instructions on them.

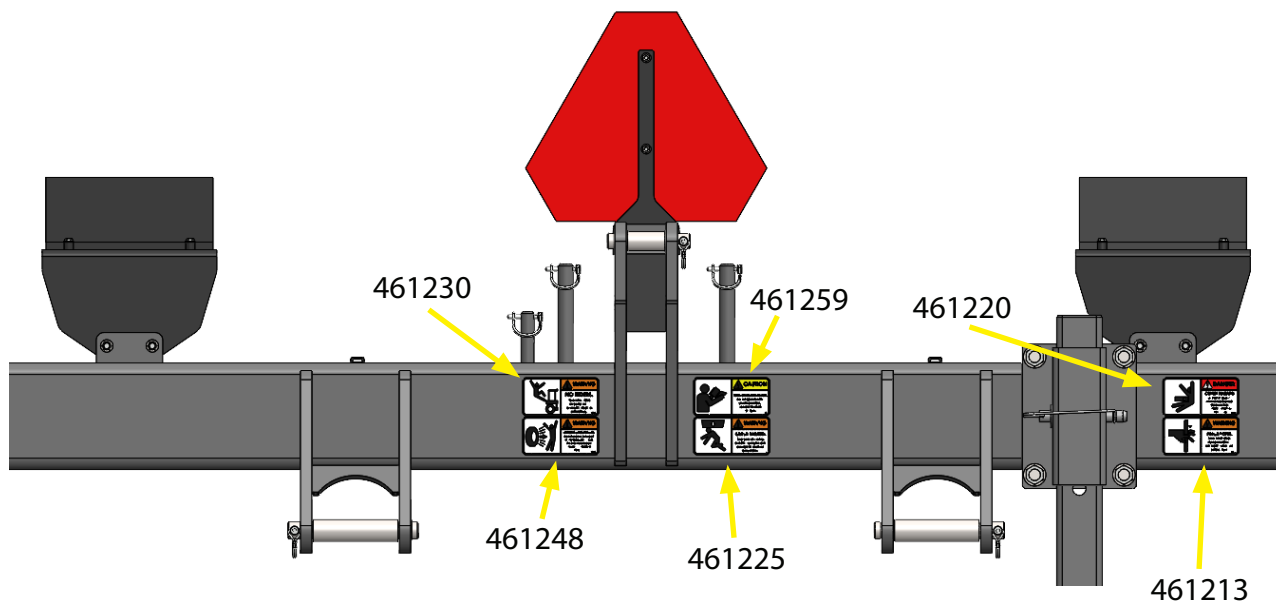
Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - DON'T TRY IT.

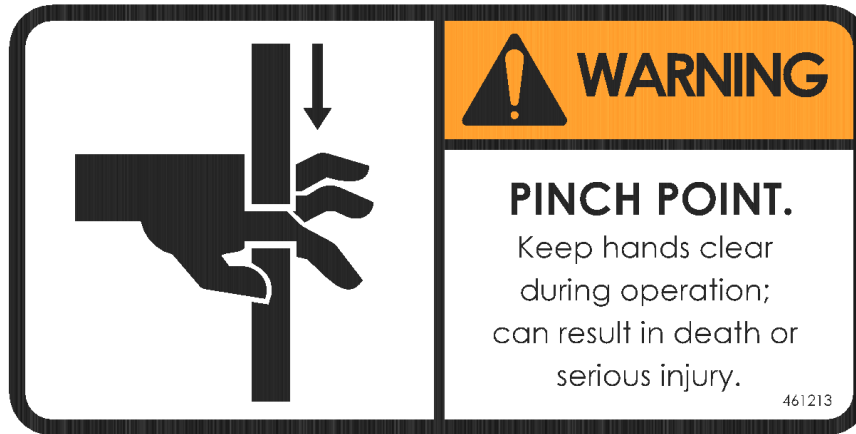




## SAFETY SIGN LOCATIONS

These types of Safety Signs and locations on the equipment are shown in the illustrations below. Good safety requires that you familiarize yourself with the various Safety Signs, the type of warning and the area, or particular function related to that area, that require your SAFETY AWARENESS.

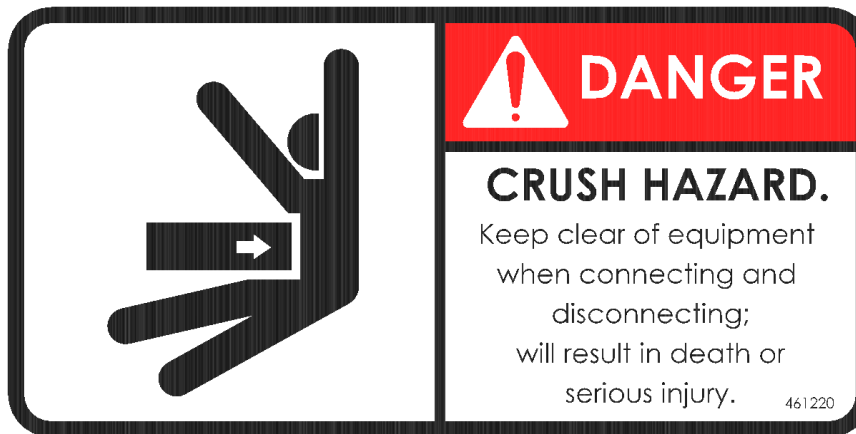




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## **PINCH POINT - WARNING**

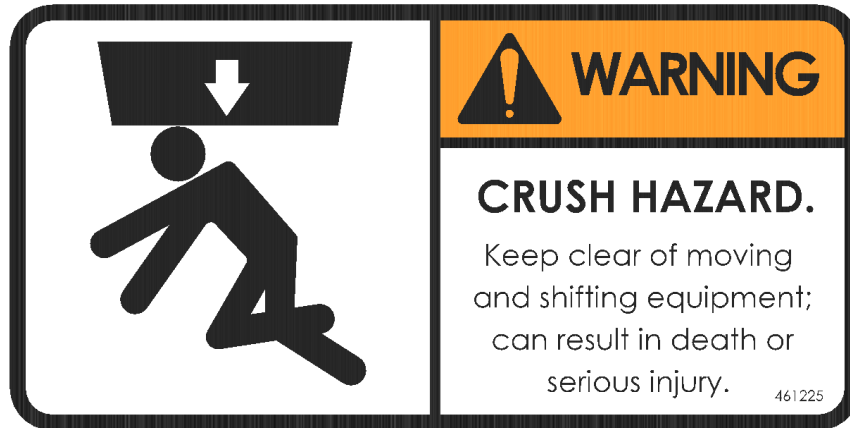
- Keep extremities clear of equipment. Object(s) can move or shift; can result in death or serious injury.
- Hazards may include, but are not limited to, hinge mechanism movement, pin movement, row unit movement and shifting, accessory movement and shifting, etc.



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## **CRUSH HAZARD - WARNING**

- Keep clear of moving and shifting equipment. Equipment movement area; will result in death or serious injury.
- Hazards may include, but are not limited to, connection and disconnection of equipment, unexpected equipment shifting, etc.



461225

## CRUSH HAZARD - WARNING

- Keep clear of moving and shifting equipment. Equipment can move or shift; can result in death or serious injury.
- Hazards may include, but are not limited to, folding wing movement, raised equipment movement and shifting, etc.



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## NO RIDERS - WARNING

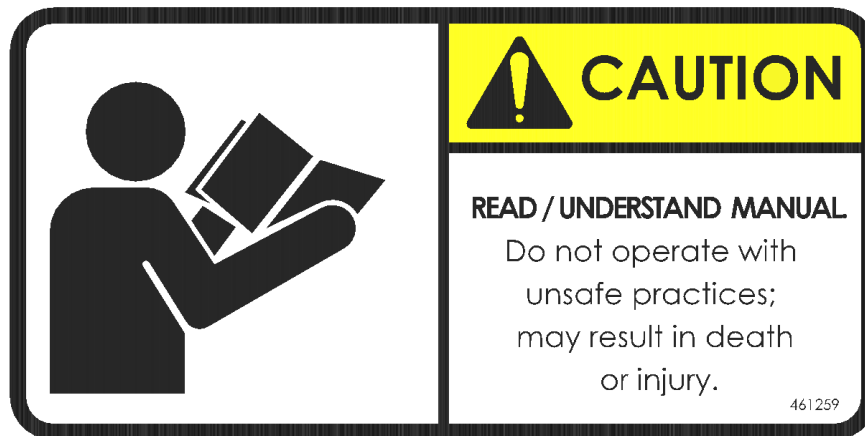
- Never allow riders on equipment; can result in death or serious injury.
- Hazards may include, but are not limited to, falling from equipment, falling into equipment, injury while on equipment, etc.



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## CONTENTS UNDER PRESSURE - WARNING

- Do not operate if damaged or improperly pressurized. Damaged or improperly pressurized components can discharge; can result in death or serious injury.
- Hazards may include, but are not limited to, damaged tire and/or rim, over pressurized tire, excessive tire wear, tire tears or punctures, ect.



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## READ/UNDERSTAND MANUAL - CAUTION

- Do not operate without a complete understanding of the owner's manual. Do not operate with unsafe practices; may result in death or injury.
- Hazards may include, but are not limited to, compromising the safety of yourself and/or others, lack of awareness, damage to equipment, etc.



## SAFETY SIGN CARE

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or have become illegible.
- Replaced parts that displayed a safety sign should also display the current sign.
- Safety signs are available from W&A Manufacturing.

## HOW TO INSTALL SAFETY SIGNS

- Be sure that the installation area is clean and dry.
- Decide on the exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the decal over the specified area and carefully press the small portion with the exposed stick backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.

**REMEMBER: If Safety Signs have been damaged, removed, become illegible or parts replaced without decals, new decals must be applied. New decals are available from W&A Manufacturing.**

**W&A Manufacturing  
PO Box 5238  
Pine Bluff, AR 71611**

**308.708.8185  
[www.wamfgco.com](http://www.wamfgco.com)**





# PREPARATION & SET-UP



This section helps you prepare your tractor and Delta Furrow Plow for use.

## POST-DELIVERY/SEASONAL SET-UP

On initial delivery, use with a new tractor, and seasonally check and as necessary, complete these items before continuing to the routine set-up items:

- Check/Change Hitch Configuration
- Hitching Tractor to Implement
- Light Kit Guide and Relocation
- Electrical Hook-up
- Leveling the Implement

## PRE-TILLAGE SET-UP

Complete this checklist before routine set-up:

- Read and understand important "Safety" information starting on page 3.
- Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
- Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See "Safety Sign Locations" starting on page 5.

# PREPARATION & SET-UP



## CHECK/CHANGE HITCH CONFIGURATION

On initial delivery, use with a new tractor, we recommend you seasonally check and as necessary, complete these items before continuing to the routine set-up items:

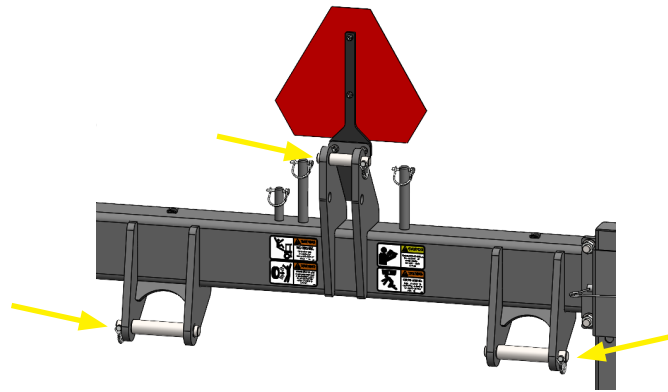
Choose a hitch option that is compatible with your tractor 3-point. The Delta Furrow Plow has two hitch configurations:

- Category 3
- Category 2

Changing between hitch categories requires removing pins at the implement hitch.

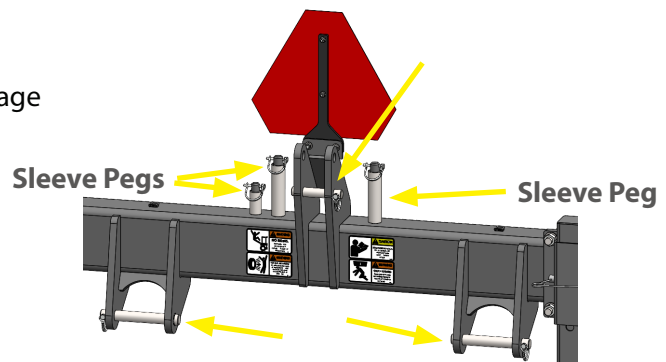
## TO OPERATE AS CATEGORY 3

1. Position pins with sleeves as shown.



## TO OPERATE AS CATEGORY 2

1. Remove sleeves from pins, store on sleeve storage pegs, and move top pin to lower pin position.



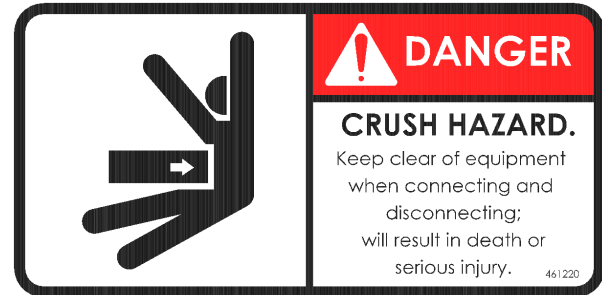
# PREPARATION & SET-UP



## HITCHING TRACTOR TO IMPLEMENT

On initial delivery, use with a new tractor, and seasonally check and as necessary, complete these items before continuing to the routine set-up items:

1. Connect the tractor 3-point lift arms to the lower hitch pins. If using a quick hitch, ensure that the pins lock securely.
2. Connect the top link to the upper hitch pin. Front-to-back leveling is performed in later steps.



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### CRUSH HAZARD - WARNING

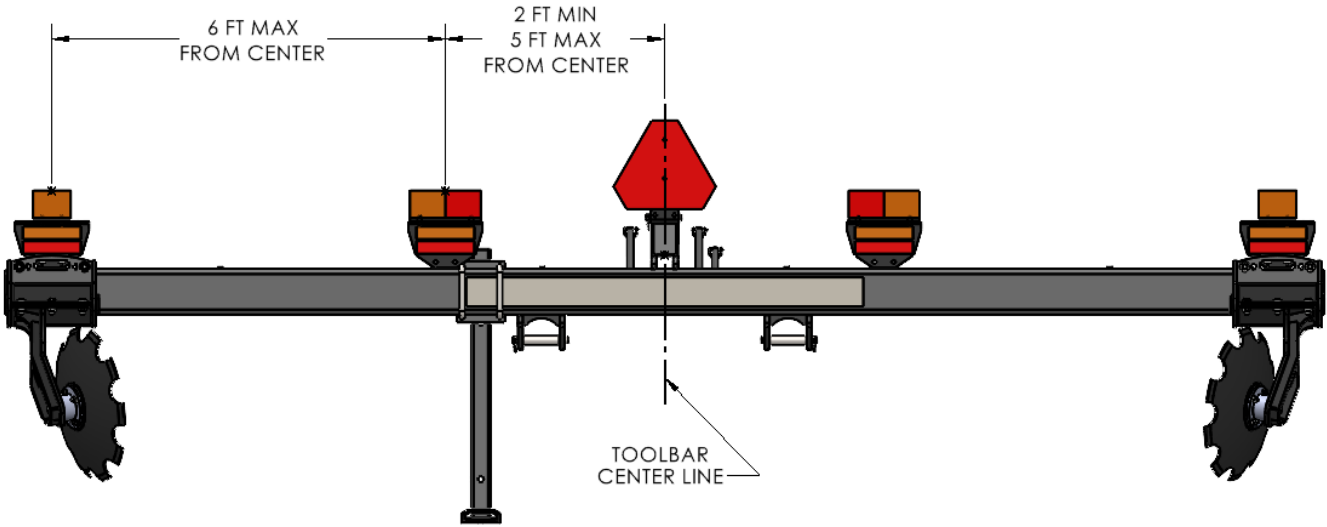
- Keep clear of moving and shifting equipment. Equipment movement area; will result in death or serious injury.
- Hazards may include, but are not limited to, connection and disconnection of equipment, unexpected equipment shifting, etc.



# PREPARATION & SET-UP

## LIGHT KIT GUIDE AND RELOCATION

The light kit is installed at the factory. However, due to shipping requirements and other circumstances, some positions are altered and SMV sign or lights may need relocated before use. Typically, the SMV sign is the only component that needs relocated; please check all components. Check that all forward-facing reflectors and lights are visible from the front and all rear-facing reflectors and lights are visible from the rear. Please refer to the depiction below for component locations.



# PREPARATION & SET-UP



## ELECTRICAL HOOK-UP

Lights are connected using a standard 7-pin connector. To connect, simply lift receptacle cover, align plug and insert. To disconnect, lift receptacle cover and remove plug. Once connected, check to make sure all lights are working properly. If lights are not working properly, contact your dealer to fix before transporting on public roadways.

**7-pin Connector**



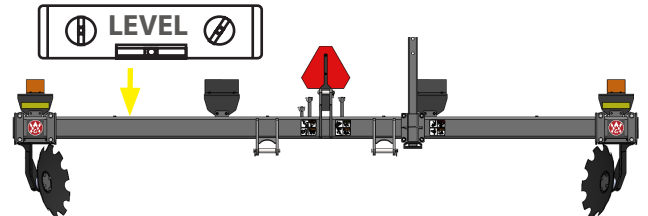


## LEVELING THE IMPLEMENT

### Center Frame L/R Leveling (Figure 1)

1. Hitch the Delta Furrow Plow to a tractor (page 11).
2. Raise the implement.
3. Adjust the tractor 2-point lift arms so that the toolbar is level.

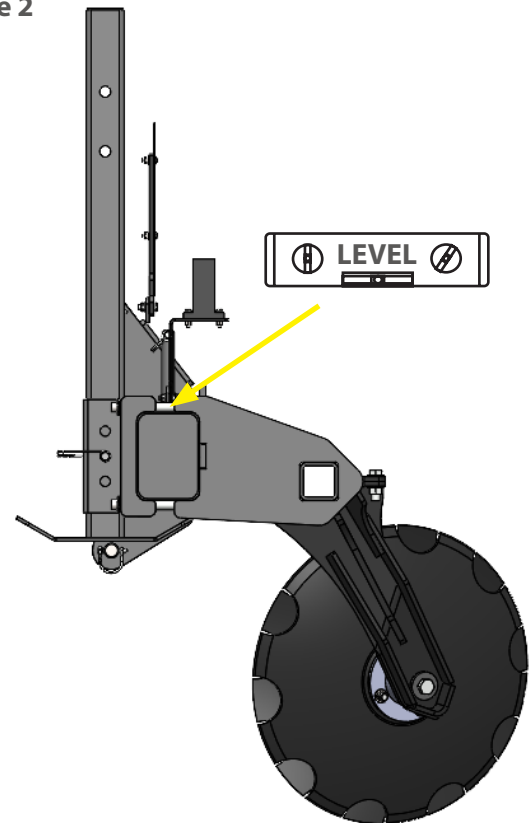
Figure 1



### Front-to-Back Leveling

See “Leveling the Machine” on page 19. This adjustment needs to be completed in field conditions.

Figure 2



## WARNING

### CRUSH HAZARD - WARNING

- Keep clear of moving and shifting equipment. Equipment can move or shift; can result in death or serious injury.
- Hazards may include, but are not limited to, folding wing movement, raised equipment movement and shifting, etc.







## REMEMBER

Your best assurance against accidents is a careful and responsible operator. If there is any portion of this manual or function you do not understand, contact W&A Manufacturing.



## BEFORE OPERATION

- Carefully study and understand this manual.
- Do not wear loose-fitting clothing which may catch in moving parts.
- Always wear protective clothing and substantial shoes.
- It is recommended that suitable eye protection be worn.
- The operator may come in contact with certain materials which may require specific safety equipment (ie: extremely dusty, molds, fungus, bulk fertilizers).
- Keep bolts tightened to specific torque listed on **Bolt Torque Chart**.
- Give the unit a visual inspection for any loose bolts, worn parts or cracked welds, and make necessary repairs. Follow the maintenance safety instructions included in this manual.
- Be sure that there are no tools lying on or near the equipment.
- Do not use the unit until you are sure that the area is clear, especially children and animals.
- Because it is possible that this equipment may be used in dry areas or in the presence of combustibles, special precautions should be taken to prevent fires and fire fighting equipment should be readily available.
- Don't hurry the learning process or take the unit for granted. Ease into it and become familiar with your new equipment.
- Practice operation of your equipment and its attachments. Completely familiarize yourself and other operators with its operation before using.



## DURING OPERATION

- Keep hands, feet, and clothing clear of moving parts.
- Do not clean, lubricate or adjust your equipment while it is moving.
- Be especially observant of the operating area and terrain - watch for holes, rocks or other hidden hazards. Always inspect the area prior to operation.
- Periodically clear the equipment of brush, twigs or other materials to prevent buildup of dry combustible materials.
- Do not walk or work under raised components or attachments unless securely positioned and blocked.
- Keep all bystanders, pets, and livestock clear of the work area.
- Never stand alongside of unit with engine running or attempt to start engine and/or operate machine while standing alongside of unit.
- As a precaution, always recheck the hardware on equipment following every 100 hours of operation. Correct all problems. Follow the maintenance safety procedures.



This section covers general operating procedures. Experience, machine familiarity, and the following information will lead to efficient operation and good working habits. Always operate farm machinery with safety in mind.

## PRE-START CHECKLIST

Perform the following steps before transporting the Delta Furrow Plow to the field.

- Carefully read "Important Safety Information" on pages 3-9.
- Check all bolts, pins, and fasteners. Torque as shown in "Bolt Torque Chart" on page 29.
- Check implement for worn or damaged parts. Repair or replace parts before going to the field.
- Perform all beginning-of-season and daily service items under "Maintenance & Lube" on page 27 & 28.



## TRANSPORT CHECKLIST

Before transporting the implement, check the following items.

- Transport only with a tractor of proper size and adequate ballast.
- Hitch implement securely to tractor. See “Hitching Tractor to Implement” on page 11.
- Plug implement safety lights into tractor seven-pin connector. See page 14.
- Comply with all national, regional, and local safety laws when traveling on public roads.
- Travel with caution.



### DANGER

#### **LOSS OF CONTROL HAZARD:**

Ensure that the towing vehicle is adequate for the task. Using an inadequate tow vehicle is extremely unsafe, and can result in loss of control, serious injury and death. To reduce the hazard, use only a 3-point towing vehicle that is both rated for the implement load, and properly ballasted for the load.



### DANGER

#### **ELECTRICAL SHOCK/ELECTROCUTION HIGH-CLEARANCE DANGER:**

- Keep clear of overhead power lines, maintain 20-foot minimum distance. Electrical shock and/or electrocution can occur; will result in death or serious injury.
- Hazards may include, but are not limited to, high clearance equipment, low clearance power lines, lack of awareness of surroundings, etc.



### CAUTION

#### **BRAKING AND LOSS OF CONTROL HAZARD:**

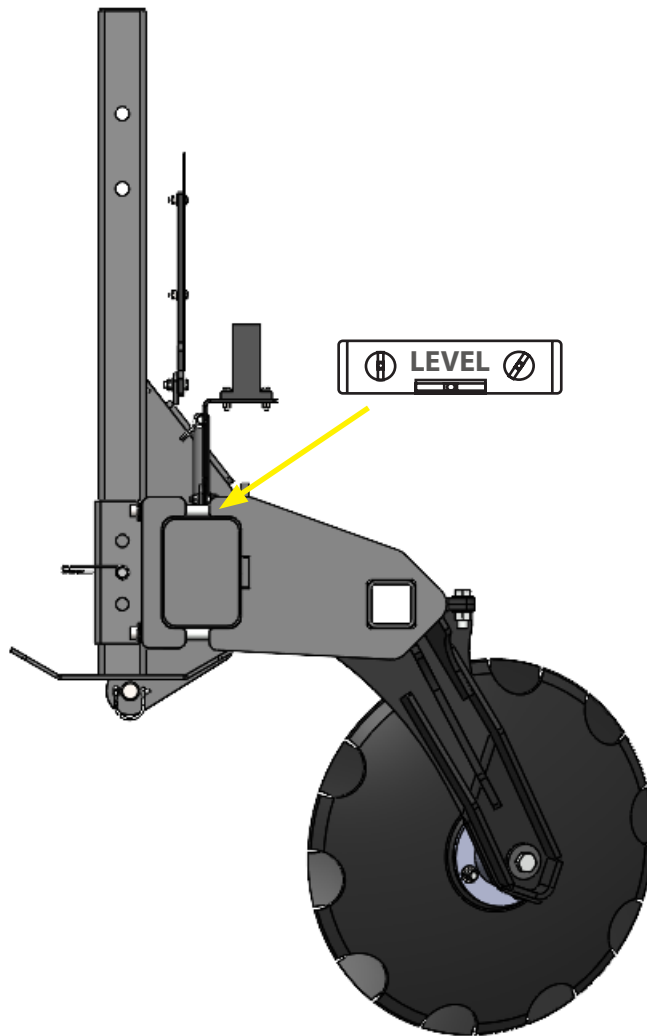
Do not exceed 20 mph (32km/h) when driving straight. Do not exceed 13 mph (21 km/h) in turns. The weight of the implement can cause under-steer, and the height of the implement is a tipping hazard.



## LEVELING THE MACHINE

When initially setting the Delta Furrow Plow up to operate in the field, the machine should be set level front to back and level left to right.

Initial operating setting is level front to back. Adjust third-link on tractor until toolbar is level.

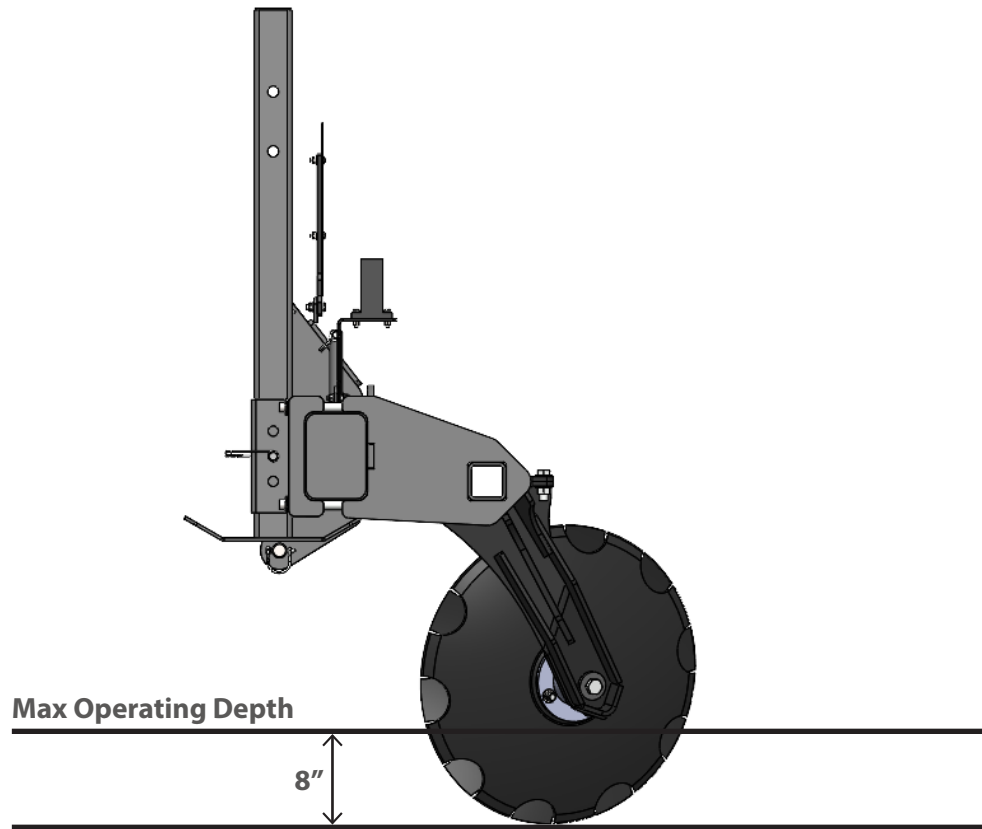




## DEPTH SETTINGS

### DEPTH SETTING FOR DELTA FURROW PLOW

- In operation, raise or lower your plow to achieve your desired furrow depth.
- Maximum operating depth is 8".





## SPEED RECOMMENDATIONS

The ideal operating speed for the Delta Furrow Plow is 6-8 mph. Field conditions can change the effectiveness of the Delta Furrow Plow and need to be taken into consideration by the operator.

- Ideal operating speed: 6-8 mph
- Minimum operating speed: 5 mph
- Maximum operating speed: 10 mph

## SPEED EFFECTS

- In most conditions, speeding up will cause the soil to move further.
- In most conditions, slowing down will cause the soil to move less.
- See troubleshooting section for more information on performance issues related to speed.

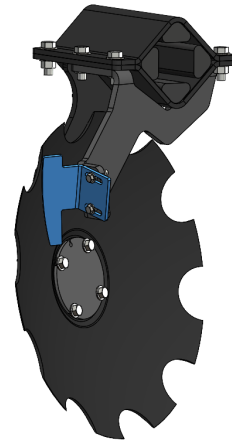


## OPTIONAL SCRAPER ADJUSTMENT

### STANDARD MOUNT ARM SCRAPERS

- To adjust the disk scrapers, loosen bolts shown below that hold the scraper blade to the arm, and move the scraper until it is about 1/8" from the disk blade.
- Once adjusted, ensure blade can spin freely.

#### STANDARD MOUNT



Delta Furrow Plow blades are very sharp. Be careful of pinch points between blade and scraper. Use protective gloves when handling these parts.



## PARKING

For long-term parking, see also “**Storage**” below.

1. Choose a parking location that has room, is level, has firm soil and is unlikely to develop soft soil in rain. With the implement still hitched, maneuver it to the parking location.
2. Lower the implement to just above ground level at the rear of the row units. Set the tractor remote to Neutral to hold at slight lift. Shut off the tractor and remove the key.
3. Unplug implement electrical lines from tractor.
4. Lower Bar Stand to just above the ground.
5. Start the tractor. Lower the 3-point hitch until the implement is supported by the row units and Bar Stand.
6. Disconnect the hitch arms and link.

## STORAGE

Store the Delta Furrow Plow where children do not play. If possible, store the implement inside for longer life.

1. Thoroughly clean implement.
2. Park the implement at the storage location as per “Parking” above.
3. Inspect implement for worn or damaged parts. Make repairs and service during the off-season.
4. Use spray paint to cover scratches, chips, and worn areas on the implement to protect the metal.
5. Cover with a tarp if stored outside.



### **TIP OVER/CRUSHING HAZARD AND EQUIPMENT DAMAGE RISK:**

Never unhitch, park, or store a partially folded implement. A partially folded implement could topple backward or forward immediately or at a later time, causing serious injury or death and certain severe equipment damage. When unhitched, the implement is supported at the rear only by row unit tools and spring tension. Slopes, soft soils, and soils later softened by rain are particularly dangerous.





## FOLLOWING OPERATION

- Store the unit in an area away from human activity.
- Do not park equipment where it will be exposed to livestock for long periods of time. Damage and livestock injury could result.
- Do not permit children to play on or around the stored unit.
- Make sure all parked machines are on a hard, level surface.



## PERFORMING MAINTENANCE

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- Before working on this machine, stop the towing vehicle, set the brakes, shut off the engine and remove the ignition keys.
- Be certain all moving parts on attachments have come to a complete stop before attempting to perform maintenance.
- Always use the proper tools or equipment for the job at hand.
- Use extreme caution when making adjustments.
- Follow the torque chart in this manual when tightening bolts.
- Replace all shields and guards after servicing and before moving.
- After servicing, be sure all tools, parts and service equipment are removed.
- Never replace hex bolts with less than Grade 5 bolts unless otherwise specified. Refer to **Bolt Torque Chart** for head identification marking.
- Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not claim responsibility for use of unapproved parts and/or accessories and other damages as a result of their use.
- If equipment has been altered in any way from the original design, the manufacturer does not accept any liability for injury or warranty.
- A first aid kit should be kept readily accessible while performing maintenance on this equipment.



## **DELTA FURROW PLOW DO'S AND DON'TS**

- DO follow all safety precautions in this manual.
- DO locate and familiarize yourself with the various Safety Signs and instructional decals prior to operation.
- DO inspect equipment for damage and wear before use; repair as needed.
- DO follow recommend maintenance.
- DO level the toolbar for optimum performance.
- DO lift implements completely out of the soil before turning the unit.
- DO use caution when moving large equipment. Using a spotter is recommended when working around obstacles on the ground and/or overhead.
- DON'T exceed the limits of a piece of machinery.
- DON'T modify equipment from factory build; modification may compromise equipment safety and integrity and will void product warranty.



# TROUBLESHOOTING



Troubleshooting		
Problem	Possible Cause	Solution
Blades not turning.	Blade not making contact with the ground.	Make sure the machine is making contact with the ground.
	Residue build-up is preventing the blade from turning.	Remove residue build-up from the blades.
	The bearing has gone out or is seized.	Replace hub.
Blades plugging with mud.	Ground conditions too wet.	Allow soil to dry further before tilling.
	Scrapers set improperly.	Adjust scrapers. (See page 22)
	No scrapers in use.	Add optional scraper package.
Machine is throwing large clods due to buildup on blades.	Operating too fast.	Slow operating speed until problem is alleviated. (See page 21)
	Operating too slow.	Increase operating speed until problem is alleviated. (See page 21)
	No Scrapers in use.	Add optional scraper package.
Furrow depth too shallow.	Operating machine too shallow.	Increase operating depth.
Furrow depth too deep.	Operating machine too deep.	Decrease operating depth.





## MAINTENANCE

- Proper maintenance will ensure longevity and optimum performance of your W&A equipment.
- Visual inspection is recommended before each use. Check for loose bolts, worn parts, cracked welds and other damage. Replace and repair as needed.
- Always replace bolts with the same grade, refer to **Bolt Torque Chart** for grade identification. Tighten bolts according to **Bolt Torque Chart**.
- Always replace parts with W&A parts only.
- Before long-term storage (3 months or more) clean debris from equipment and touch-up paint to prevent corrosion.
- Store in a flat dry place away from human activity and livestock.
- After long-term storage (3 months or more) visually inspect equipment and carefully inspect all components. Especially parts more easily affected by weather damage, such as wiring. Repair and replace as needed before use.

# MAINTENANCE & LUBE

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## DAILY MAINTENANCE

1. Inspect row units for any loose or missing hardware.

## YEARLY MAINTENANCE

1. Clean machine off.
2. Replace all parts as necessary.
3. Check Bolt Torque on Hubs.



## CHECKING BOLT TORQUE

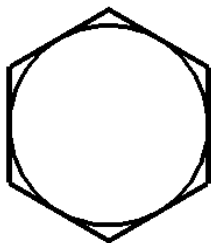
The table shown below gives correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same grade bolt.

## BOLT TORQUE CHART

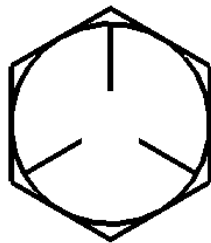
Torque Specifications						
Bolt Diameter	Bolt Torque*					
	SAE Grade 2		SAE Grade 5		SAE Grade 8	
INCH	lbft	(Nm)	lbft	(Nm)	lbft	(Nm)
1/4	6	(8)	9	(12)	12	(17)
5/16	10	(13)	19	(25)	27	(36)
3/8	20	(27)	33	(45)	45	(63)
7/16	30	(41)	53	(72)	75	(100)
1/2	45	(61)	80	(110)	115	(155)
9/16	70	(95)	115	(155)	165	(220)
5/8	95	(128)	160	(215)	220	(305)
3/4	165	(225)	290	(390)	400	(540)
7/8	170	(230)	420	(570)	650	(880)
1	226	(345)	630	(850)	970	(1320)

## BOLT HEAD IDENTIFICATION

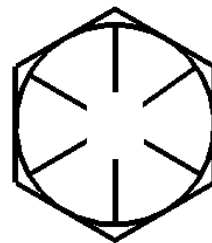
Grade 2



Grade 5



Grade 8

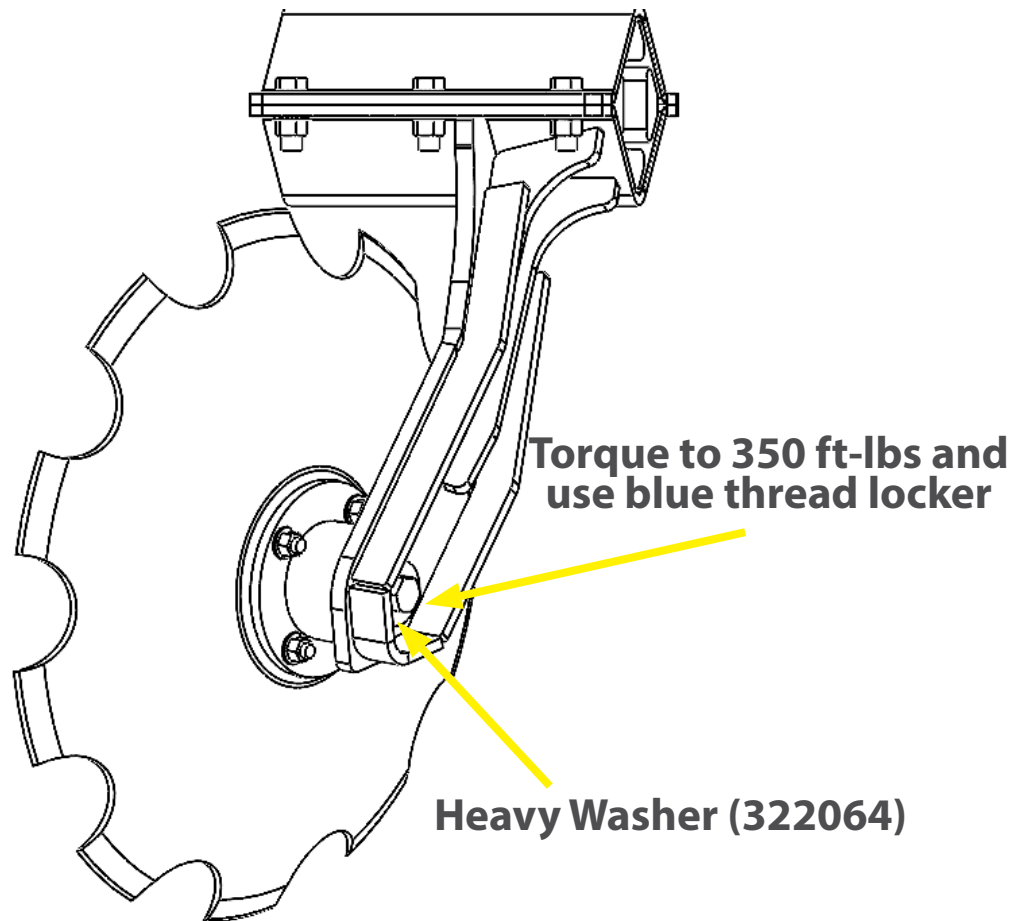






## ROW UNIT BOLT TORQUE

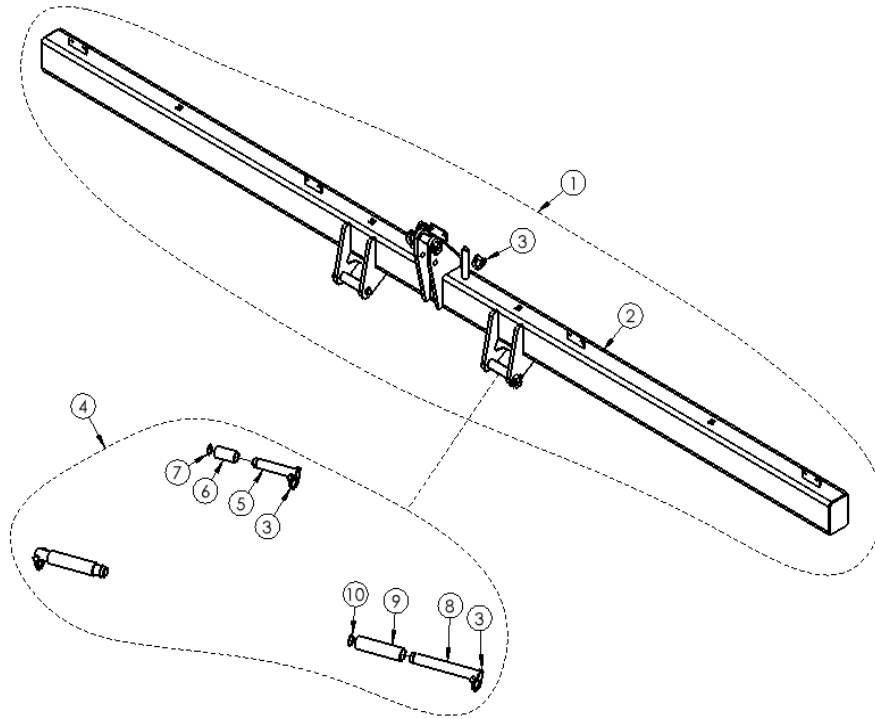
The main bolt that holds the disc blade on must be torqued to **350 ft-lbs** and have blue thread locker (EX: Loctite 243) applied to the threads. The **Heavy Washer (322064)** must also be used.







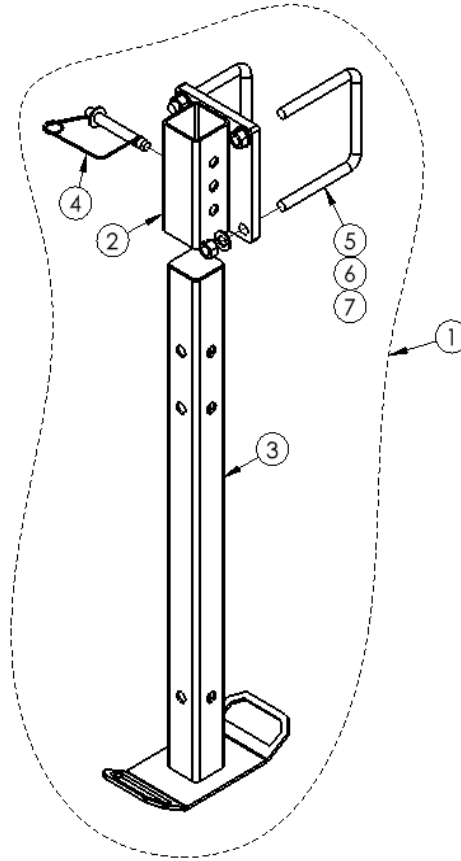
## TOOLBAR AND HITCH



Item Number	Part #	Description	Quantity
1	315141	DELTA FURROW PLOW TOOLBAR ASSEMBLY	1
2	315131	DELTA FURROW PLOW CAT 2 & 3 TOOLBAR	1
3	315162	WIRE LOCKING PIN 1/4 X 1 3/8 USEABLE LENGTH	6
4	315139	CAT 2, 3 & 3N HITCH PIN PACK WITH BUSHINGS	1
5	315135	TOP HITCH PIN CAT 2	1
6	322392	HITCH CAT 2 TO 3 TOP BUSHING	1
7	315137	EXTERNAL RETAINING RING FOR 1" SHAFT	1
8	315136	LOWER HITCH PIN CAT 2	2
9	322395	HITCH CAT 2 TO 3 LOWER BUSHING	2
10	315138	EXTERNAL RETAINING RING FOR 1 1/8" SHAFT	2



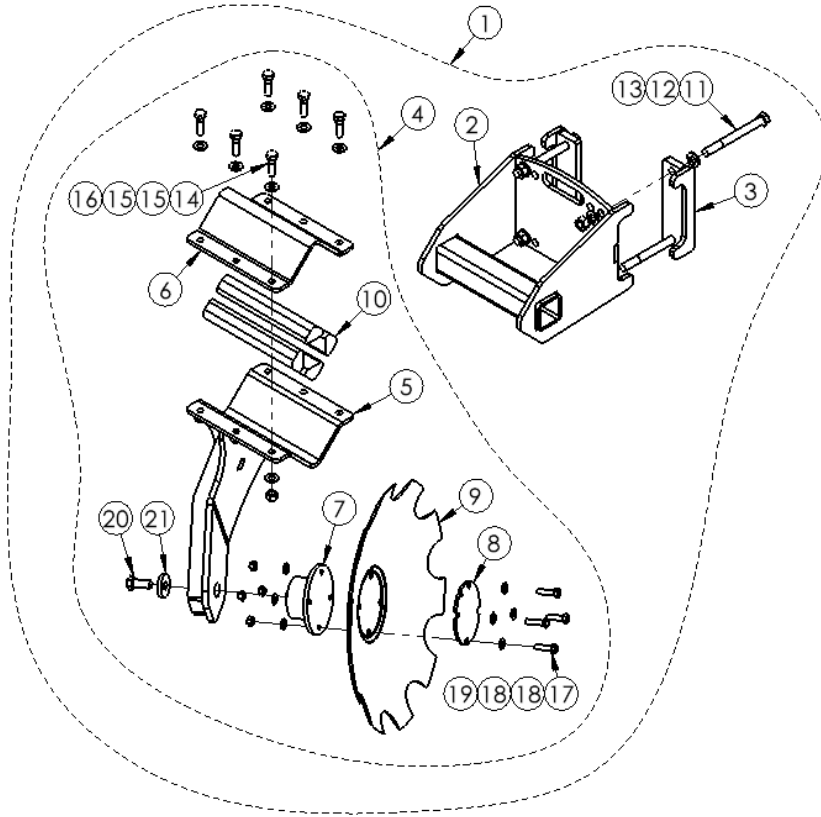
## BAR STAND



Item Number	Part #	Description	Quantity
1	602098	BAR STAND ASSEMBLY	1
2	315201	BAR STAND MOUNT	1
3	315203	LONG LEG BAR STAND	1
4	416230	SNAP LOCK PIN 3/4 X 4 USEABLE LENGTH	1
5	UBT32007	3/4-210 X 7W X 7H X 2TL U-BOLT	2
6	413072	3/4 SAE FLAT WASHER	4
7	410012	3/4-10 CENTER LOCK NUT	4



## LEFT HAND THROW ROW UNIT



Item Number	Part #	Description	Quantity
1	322397	LH THROW ROW UNIT ASSEMBLY	1
2	322399	ROW UNIT MOUNT	1
3	322063	ROW UNIT MOUNT CAP	2
4	322041	LH ROW UNIT ASSEMBLY	1
5	322048	LH ROW UNIT ARM	1
6	322069	ROW UNIT MOUNT CAP	1
7	322001	SEALED 4-BOLT HUB FOR DELTA PLOW	1
8	322068	ROW UNIT DISK DOUBLER PLATE	1
9	322002	24" NOTCHED DISK BLADE	1
10	322066	LONG RUBBER ELEMENT	4

**\*\*CONTINUED ON NEXT PAGE\*\***



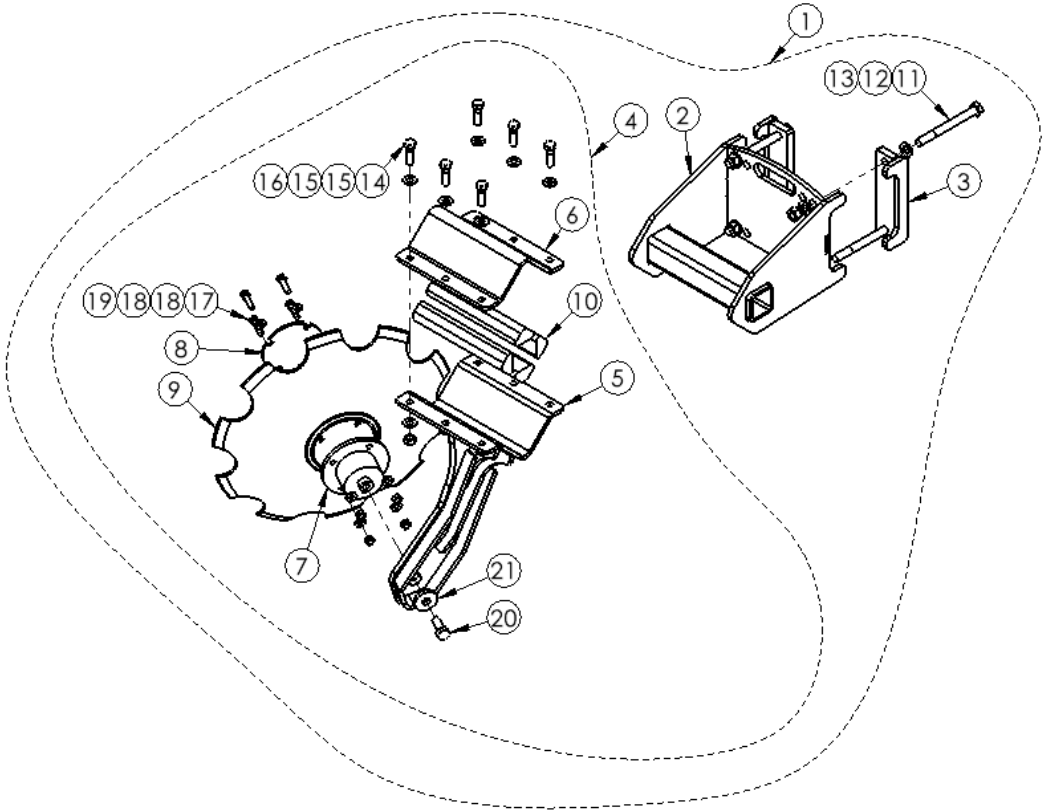
## LEFT HAND THROW ROW UNIT

Item Number	Part #	Description	Quantity
11	411260	3/4-10 X 7 1/2 BOLT GR5	4
12	413072	3/4 SAE FLAT WASHER	8
13	410012	3/4-10 CENTER LOCK NUT	4
14	411561	5/8-11 X 2 BOLT GR5	6
15	413011	5/8 SAE FLAT WASHER	12
16	410009	5/8-11 CENTER LOCK NUT	6
17	411553	1/2-13 X 1 3/4 BOLT GR8	4
18	413007	1/2 SAE FLAT WASHER	8
19	410008	1/2-13 CENTER LOCK NUT	4
20	411583	3/4-16 X 1 3/4 BOLT GR8	1
21	322064	DELTA PLOW HD BLADE WASHER	1



# PARTS GUIDE

## RIGHT HAND THROW ROW UNIT



Item Number	Part #	Description	Quantity
1	322396	RH THROW ROW UNIT ASSEMBLY	1
2	322399	ROW UNIT MOUNT WELDMENT	1
3	322063	ROW UNIT MOUNT CAP	2
4	322042	LH ROW UNIT ASSEMBLY	1
5	322049	LH ROW UNIT ARM	1
6	322069	ROW UNIT MOUNT CAP	1
7	322001	SEALED 4-BOLT HUB FOR DELTA PLOW	1
8	322068	ROW UNIT DISK DOUBLER PLATE	1
9	322002	24" NOTCHED DISK BLADE	1
10	322066	LONG RUBBER ELEMENT	4

**\*\*CONTINUED ON NEXT PAGE\*\***



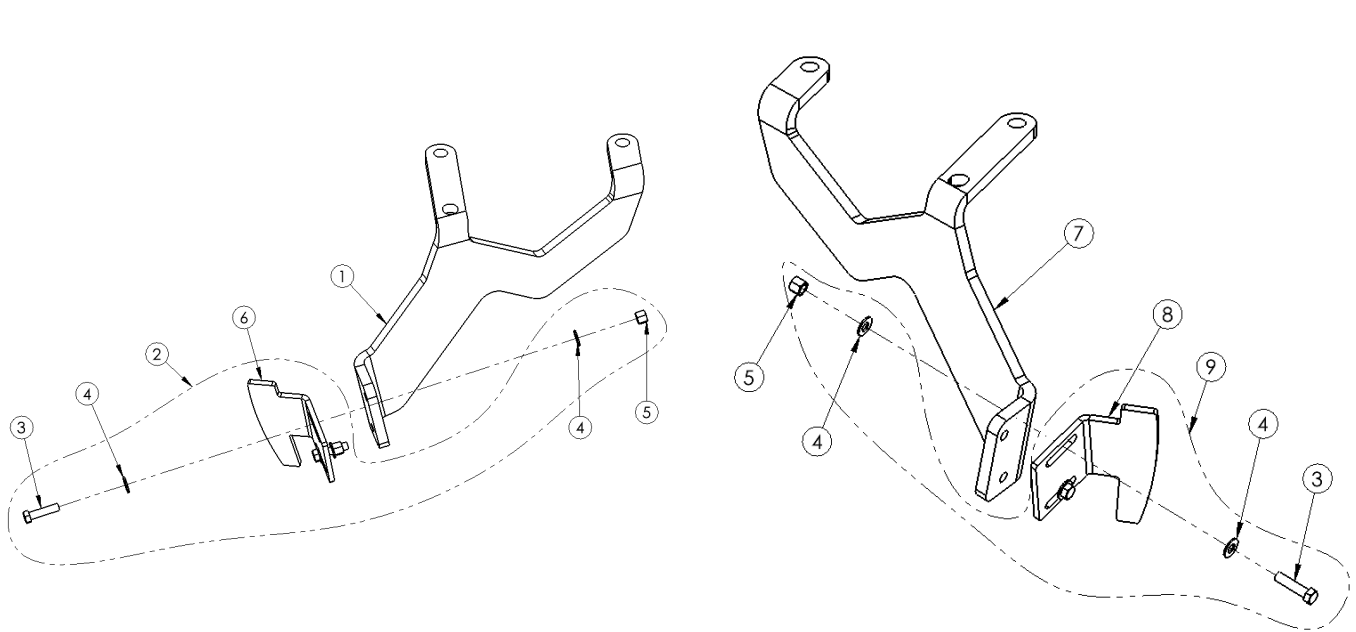
## RIGHT HAND THROW ROW UNIT

Item Number	Part #	Description	Quantity
11	411260	3/4-10 X 7 1/2 BOLT GR5	4
12	413072	3/4 SAE FLAT WASHER	8
13	410012	3/4-10 CENTER LOCK NUT	4
14	411561	5/8-11 X 2 BOLT GR5	6
15	413011	5/8 SAE FLAT WASHER	12
16	410009	5/8-11 CENTER LOCK NUT	6
17	411553	1/2-13 X 1 3/4 BOLT GR8	4
18	413007	1/2 SAE FLAT WASHER	8
19	410008	1/2-13 CENTER LOCK NUT	4
20	411583	3/4-16 X 1 3/4 BOLT GR8	1
21	322064	DELTA PLOW HD BLADE WASHER	1





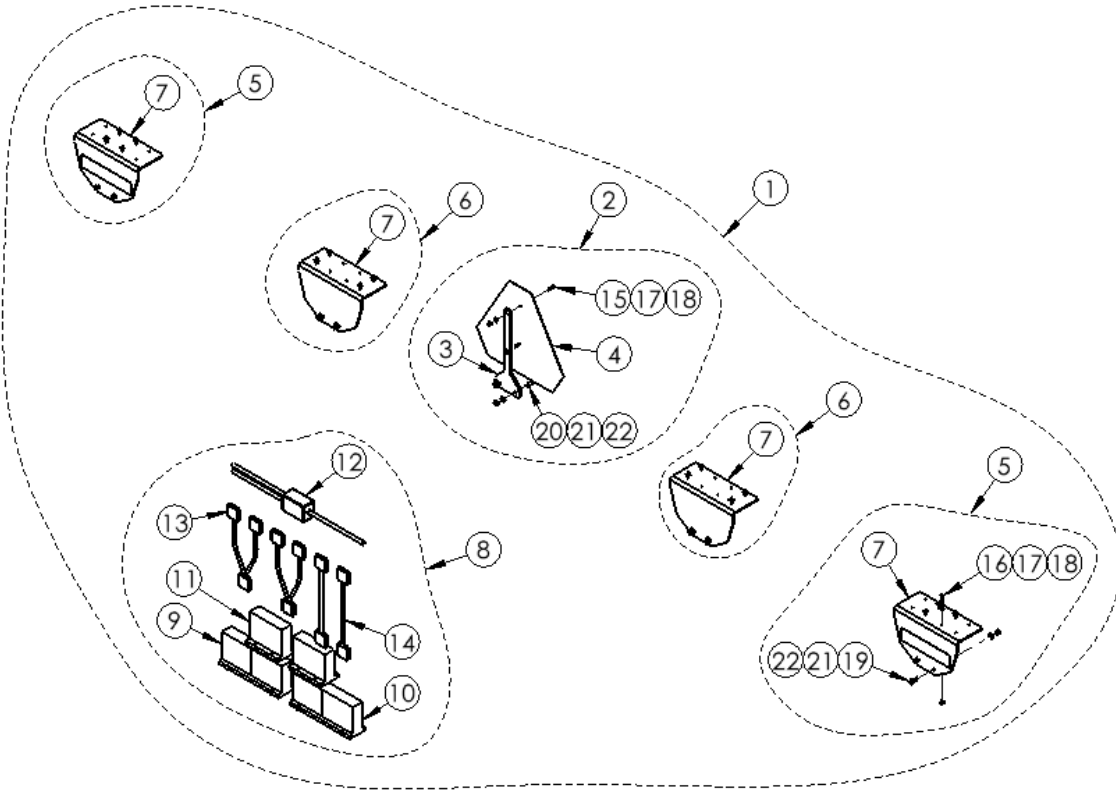
## SCRAPERS



Item Number	Part #	Description	Quantity
1	322116	RH SCRAPER ARM	1
2	322112	RH SCRAPER ASSEMBLY	1
3	411509	3/8-16 X 1 1/2 BOLT GR5	2
4	413009	WASHER 3/8 SAE	4
5	305106	NUT 3/8-16 NYLOC	2
6	322110	RH SCRAPER	6
7	322115	LH SCRAPER ARM	1
8	322108	LH SCRAPER	1
9	322109	LH SCRAPER ASSEMBLY	1



## LIGHT KIT



Item Number	Part #	Description	Quantity
1	302883	LIGHT KIT VERTICAL MOUNT ASSEMBLY	1
2	302882	VERTICAL SMV SIGN W/BACKET ASSEMBLY	1
3	302881	VERTICAL SMV SIGN BRACKET	1
4	204836	SMV SIGN WITH GALVANIZED BACKING	1
5	302886	VERTICAL FRONT BRACKET ASSEMBLY	2
6	302887	VERTICAL REAR BRACKET ASSEMBLY	2
7	302885	VERTICAL FRONT & REAR BRACKET	4
8	302836	LIGHT AND HARNESS KIT ASSEMBLY	1
9	204823	RH REAR LIGHT	1
10	204824	LH REAR LIGHT	1

**\*\*CONTINUED ON NEXT PAGE\*\***



## LIGHT KIT

Item Number	Part #	Description	Quantity
11	204825	FRONT LIGHT	2
12	204826	LIGHT KIT MODULE	1
13	204827	LIGHT KIT "Y" CABLE	2
14	204828	LIGHT KIT EXTENSION CABLE	2
15	411471	1/4-20 X 1 BOLT GR5	2
16	411472	1/4-20 X 1 1/4 BOLT GR5	16
17	413004	1/4 SAE FLAT WASHER	18
18	305144	1/4-20 NYLOC NUT	18
19	411506	3/8-16 X 1 BOLT GR5	8
20	411143	3/8-16 X 1 1/4 BOLT GR5	2
21	413009	3/8 SAE FLAT WASHER	10
22	412006	3/8-16 NUT	10

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