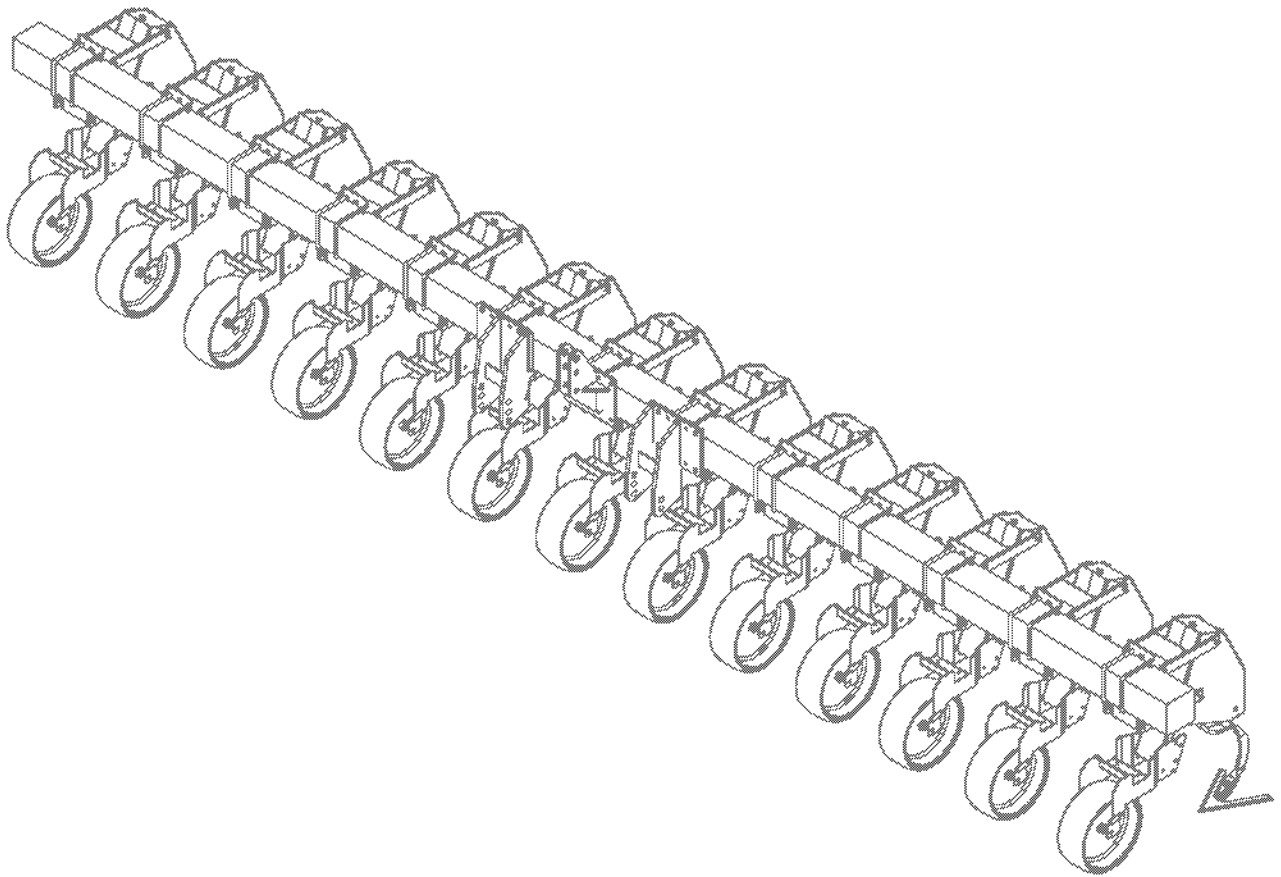


**ALLOWAY**

**2018**

# **ROW CROP CULTIVATOR**



## **OPERATOR'S MANUAL**

## TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Alloway dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Operator's Manual are completed before releasing equipment to the owner.

The dealer must complete the Warranty Registration included in this manual. Both dealer and customer must sign the registration which certifies that all Dealer Check List items have been completed. The dealer is to return the prepaid postage portion to Alloway, give one copy to the customer, and retain one copy. **Note: Warranty credit is subject to this form being completed and returned.**

## TO THE OWNER:

Read this manual before operating your Alloway equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer or, in the United States and Canada, by calling 1-877-275-8714.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

For service, your authorized Alloway dealer has trained mechanics, genuine Alloway service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine Alloway service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

**Model:** \_\_\_\_\_ **Date of Purchase:** \_\_\_\_\_

**Serial Number: (see Safety Decal section for location)** \_\_\_\_\_

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **IMPORTANT** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.



This Safety-Alert Symbol indicates a hazard and means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



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.



Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

**IMPORTANT**

Indicates that failure to observe can cause damage to equipment.

**NOTE**

Indicates helpful information.

# ALLOWAY

## GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your row crop cultivator. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

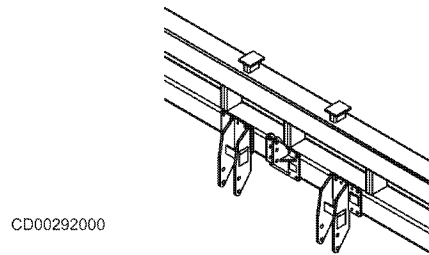
The illustrations and data used in this manual were current at the time of printing but, due to possible inline production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

Throughout this manual, references are made to right and left direction. These are determined by standing behind the equipment facing the direction of forward travel.

# SPECIFICATIONS

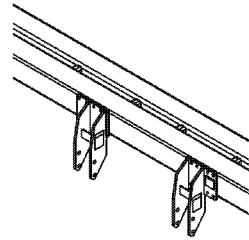
The Alloway Row Crop Cultivator has several toolbar types and a variety of optional equipment for row crop applications. Optional equipment may change these specifications. Cultivator weights do not include optional equipment.

## 3-POINT HITCHES

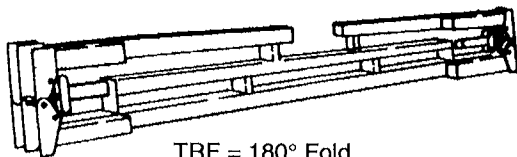


CD00292000

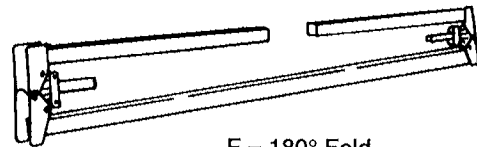
TYPE "D"



TYPE "E" (USE WITH LIFT ASSIST)



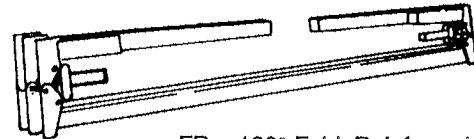
TRF = 180° Fold  
Reinforced Hinges



F = 180° Fold



TRR = Rigid



FR = 180° Fold Reinforced  
Double Bar

## MODEL 3130 SPRING TINE SHANK CULTIVATORS

| Size       | Toolbar | 3-Pt. Hitch | Trans. Width | Weight    |
|------------|---------|-------------|--------------|-----------|
| 6 Row 22"  | R       | D           | 152"         | 1955 lbs. |
| 6 Row 30"  | R       | D           | 200"         | 2215 lbs. |
| 8 Row 22"  | R       | D           | 200"         | 2475 lbs. |
| 8 Row 30"  | R       | D           | 252"         | 2875 lbs. |
| 8 Row 30"  | F       | D           | 145"         | 3305 lbs. |
| 12 Row 22" | R       | D           | 288"         | 3505 lbs. |
| 12 Row 22" | F       | D           | 157"         | 4000 lbs. |
| 12 row 24" | TRR     | D           | 300"         | 3530 lbs. |
| 12 Row 24" | F       | D           | 171"         | 4010 lbs. |
| 12 Row 30" | TRF     | D           | 213"         | 5175 lbs. |
| 16 Row 30" | TRF     | D           | 267"         | 6220 lbs. |
| 18 Row 22" | TRF     | D           | 246"         | 6405 lbs. |
| 24 Row 22" | FR      | E           | 288"         | 8375 lbs. |

Weights are without optional equipment.

## MODEL 3130 RIGID SHANK CULTIVATORS

| Size         | Toolbar | 3-Pt.<br>Hitch | Trans.<br>Width | Weight    |
|--------------|---------|----------------|-----------------|-----------|
| 6 Row 30"    | R       | D              | 200"            | 2215 lbs. |
| 6 Row 36/40" | R       | D              | 252"            | 2475 lbs. |
| 8 Row 30"    | R       | D              | 252"            | 2875 lbs. |
| 8 Row 30"    | F       | D              | 145"            | 3305 lbs. |
| 8 Row 40"    | TRR     | D              | 328"            | 3305 lbs. |
| 8 Row 36"    | TRF     | D              | 200"            | 4000 lbs. |
| 12 Row 30"   | TRF     | D              | 213"            | 5175 lbs. |
| 16 row 30"   | TRF     | D              | 267"            | 6220 lbs. |
| 12 Row 38"   | TRF     | D              | 267"            | 6000 lbs. |
| 8 Row 40"    | TRF     | D              | 210"            | 5000 lbs. |

Weights are without optional equipment.

## OPTIONAL EQUIPMENT

| Description                                   | Part No. | Weight        |
|-----------------------------------------------|----------|---------------|
| <b>Guide &amp; Support Wheels</b>             |          |               |
| Adjustable guide wheel                        | 20013666 | 312 lbs./pair |
| Semi-pneumatic guide wheels                   | 20013699 | 175 lbs./pair |
| Steel guide wheels                            | 20013668 | 220 lbs./pair |
| King guide strut                              | 20013639 | 777 lbs./pair |
| <b>Shields</b>                                |          |               |
| 24" Rolling shields                           | 20013636 | 57 lbs./row   |
| 24" Rolling end shield                        | 20013637 | 84 lbs./pair  |
| Open top shields 22" row                      | 20013691 | 102 lbs./row  |
| Open top shields 30" row                      | 20013642 | 104 lbs./row  |
| Open top shields 36-40" row                   | 20013692 | 105 lbs./row  |
| Flip-up 14" disc with knife mounts and knives | 20013645 | 78 lbs./row   |
| <b>Row Weeder Attachment</b>                  |          |               |
| Row weeder disc with clamp                    | 20013655 | 115 lbs./row  |



# SAFETY RULES

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

## TRAINING

■ Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from dealer or, in the United States and Canada, call 1-877-275-8714.) Failure to follow instructions or safety rules can result in serious injury or death.

■ If you do not understand any part of this manual and need assistance, see your dealer.

■ Know your controls and how to stop engine and attachment quickly in an emergency.

■ Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.

■ Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

■ Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. **CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ Never allow children or untrained persons to operate equipment.

## PREPARATION

■ Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.

■ Air in hydraulic systems can cause erratic operation and allow loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.

■ Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.

■ Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.

■ When attaching a pull-type unit to the tractor drawbar, always use a high-strength drawbar pin. The drawbar pin must have a device that will lock it into position.

■ Make sure attachment is properly secured, adjusted, and in good operating condition.

■ Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in "locked up" position at all times.

■ Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)

■ A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.



# SAFETY RULES

## ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



### OPERATION

- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Never walk, stand, or place yourself or others under a raised wing or in the path of a lowering wing. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause wings to drop unexpectedly and cause severe injury or death.
- Keep bystanders away from equipment.
- Do not operate equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Always comply with all state and local lighting and marking requirements.
- Never allow riders on power unit or attachment.
- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in “locked up” position at all times.
- Always sit in tractor seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting tractor engine.
- Look down and to the rear and make sure area is clear before operating in reverse.
- Do not operate on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Watch for hidden hazards on the terrain during operation.
- Stop tractor and implement immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.
- AVOID INJURY OR DEATH FROM POWER LINES:
  - Stay away from power lines.
  - Electrocutation can occur without direct con-

tact.

- Check clearances before raising implement.
- Do not leave the operator's seat if any part of the tractor or implement contacts electric lines.
- Before folding or unfolding cultivator:
  - Make sure you have adequate clearance on each side and overhead.
  - Make sure wing cylinder restrictor fittings are properly installed.
  - Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.
- Implement can tip over and crush if attached, removed, or stored improperly.
  - Read and follow instructions and safety rules for procedures and use of parking stands.
  - Front parking stands must be on all cultivators.
  - Rear parking stands must be on all folding cultivators unless cultivator has rear lift assist.
  - Parking stands must be kept in good condition and replaced if damaged.
  - Remove on solid, level ground.
  - Before removing from tractor, cultivator must be level and stable with parking stands properly positioned and rear lift assist (when equipped) lowered to rest on cylinder stops.
  - Keep all bystanders away.
- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.
- NEVER GO UNDERNEATH EQUIPMENT. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
  - Service work does not require going underneath.
  - Read Operator's Manual for service instructions or have service performed by a qualified dealer.

*(Safety Rules continued on next page)*



# SAFETY RULES

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



*(Safety Rules continued from previous page)*

- Before servicing, unfold completely to operating position. Do not service with wings in any other position.

## MAINTENANCE

- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

- Before servicing, unfold completely to operating position. Do not service with wings in any other position.

- **NEVER GO UNDERNEATH EQUIPMENT.** Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.

- Service work does not require going underneath.
- Read Operator's Manual for service instructions or have service performed by a qualified dealer.

- Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.

- Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.

- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.

- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.

- Make sure attachment is properly secured, adjusted, and in good operating condition.

- Make sure hydraulic hoses and cylinders are fully purged of air before putting into service. Keep all persons away. Fill the system by raising and lowering all functions several times. Air in the system can allow components to fall unexpectedly.

- Keep all persons away from operator control area while performing adjustments, service, or maintenance.

- Do not handle blades with bare hands. Careless or improper handling may result in serious injury.

- Tighten all bolts, nuts and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.

- Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)

- Do not disconnect hydraulic lines until machine is securely blocked or placed in lowest position and system pressure is released by operating valve levers.

## STORAGE

- Block equipment securely for storage.

- Keep children and bystanders away from storage area.







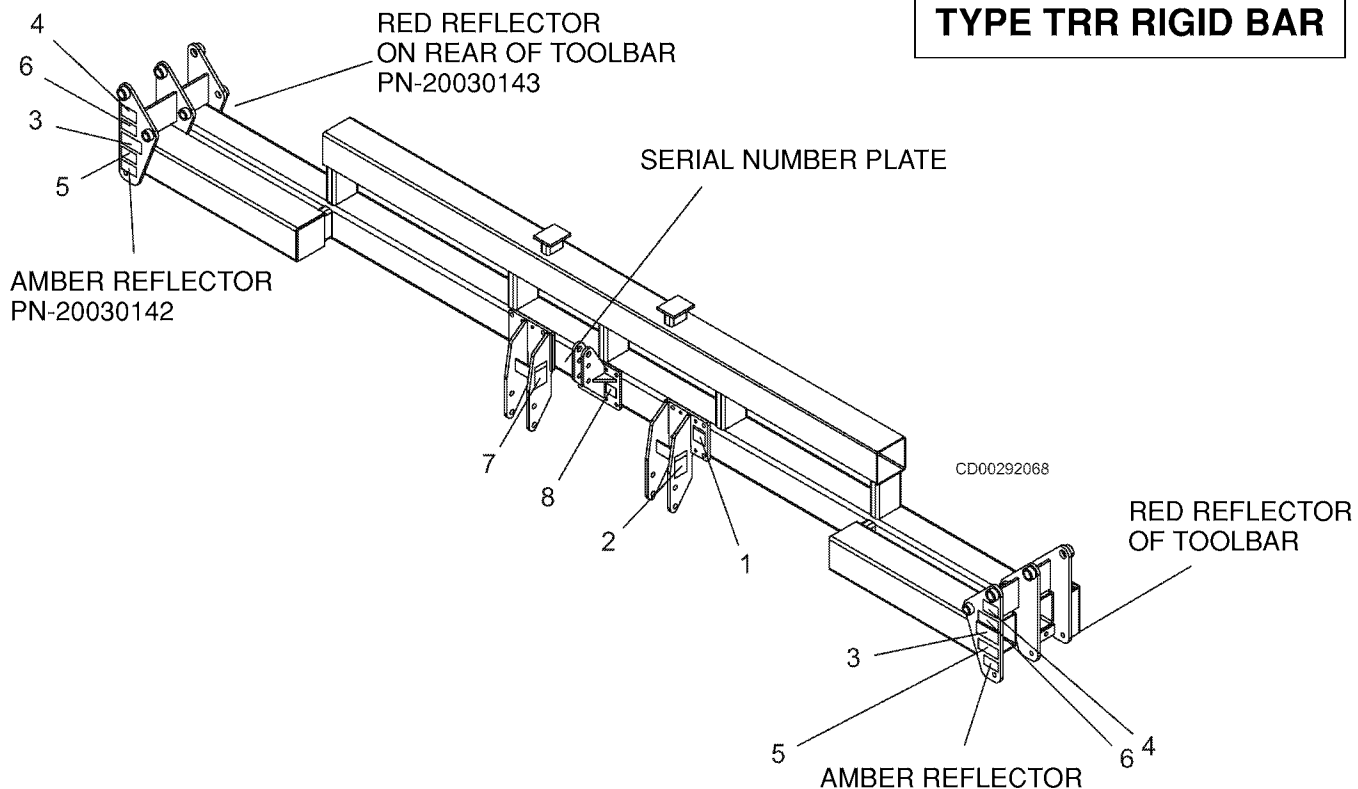
## SAFETY & INSTRUCTIONAL DECALS

**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

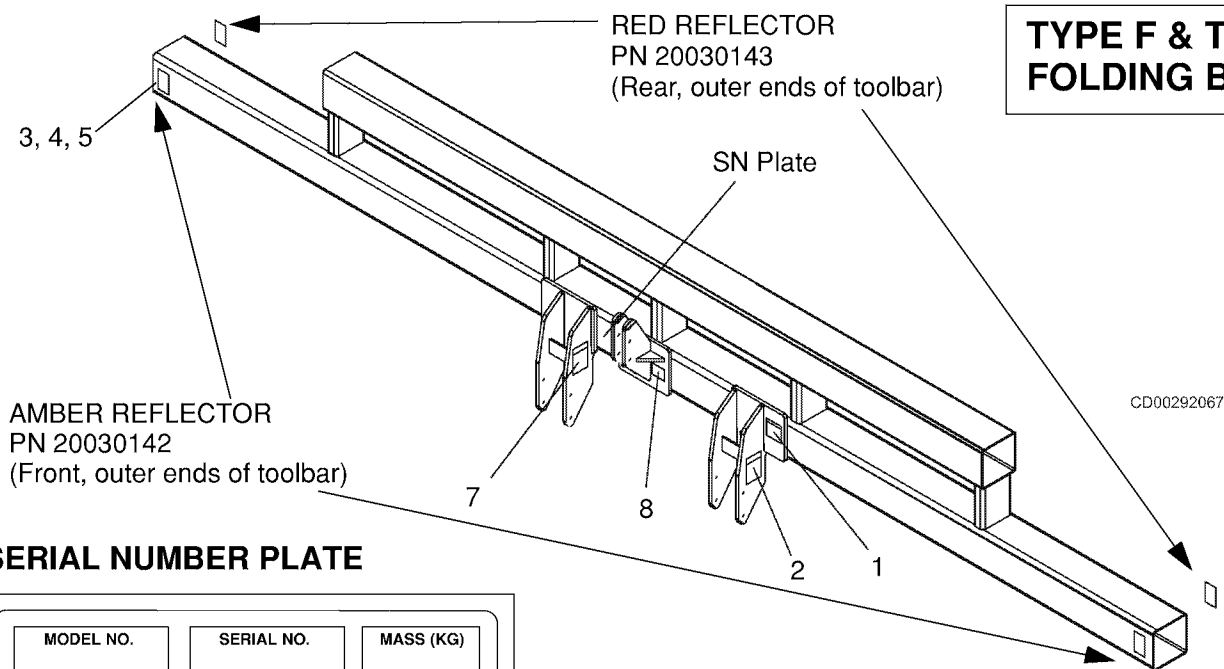


**Replace Immediately If Damaged!**

### TYPE TRR RIGID BAR



### TYPE F & TRF FOLDING BARS



#### SERIAL NUMBER PLATE

|           |            |            |
|-----------|------------|------------|
| MODEL NO. | SERIAL NO. | MASS (KG)  |
| ID NO.    |            | YR OF MFG. |

(Safety Decals continued on next page)



## SAFETY & INSTRUCTIONAL DECALS

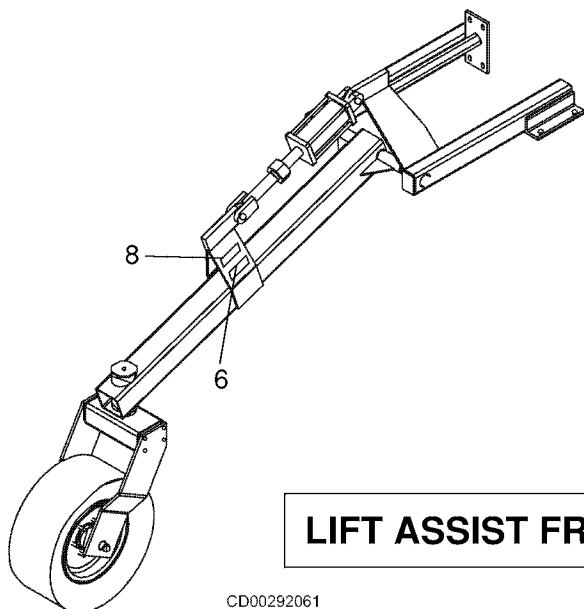
**ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



**Replace Immediately If Damaged!**

(Safety Decals continued from previous page)

7 - PN 20033891



**LIFT ASSIST FRAME**

CD00292061

### **WARNING**

**IMPLEMENT CAN TIP OVER AND CRUSH IF ATTACHED, REMOVED OR STORED IMPROPERLY.**

- Read and follow Operator's Manual instructions and safety rules for procedures and use of parking stands.
- Front parking stands must be on all cultivators.
- Rear parking stands must be on all folding cultivators unless cultivator has rear lift assist.
- Parking stands must be kept in good condition or replaced if damaged.
- Remove on solid, level ground.
- Cultivator must be level and stable with parking stands properly positioned and rear lift assist (when equipped) lowered to rest on cylinder stops before removing from tractor.
- Keep all bystanders away.

**Failure to follow these instructions can result in serious injury or death.**

20033891

1 - PN 20033911

### **WARNING**

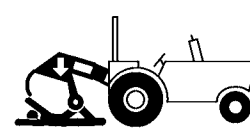
**TO AVOID SERIOUS INJURY OR DEATH:**

- Read Operator's Manual before operating, servicing or repairing equipment. Follow all safety rules and instructions. (Manuals are available from dealer or, in the United States and Canada, call 1-877-275-8714.)
- Operate from tractor seat only.
- Lower equipment to ground, stop engine, remove key and set brake before dismounting tractor.
- Allow no children or untrained persons to operate equipment.

**FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.**

2- PN 20033887

### **WARNING**



**FALLING OFF CAN RESULT IN BEING RUN OVER.**

- Tractor must be equipped with ROPS (or ROPS CAB) and seat belt. Keep foldable ROPS systems in "locked up" position at all times.
- Buckle Up! Keep seat belt securely fastened.
- Allow no riders.

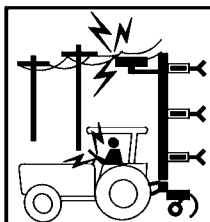
**RAISED IMPLEMENT CAN DROP AND CRUSH.**

- Never go underneath raised implement which can drop from equipment or tractor 3-point hitch hydraulic leak down, hydraulic system failures, movement of control levers or mechanical linkage failures.
- Service work does not require going underneath implement. Read manual instructions.

**FALLING OFF OR GOING UNDERNEATH IMPLEMENT CAN RESULT IN SERIOUS INJURY OR DEATH.**

20033887

3 - PN 20033890



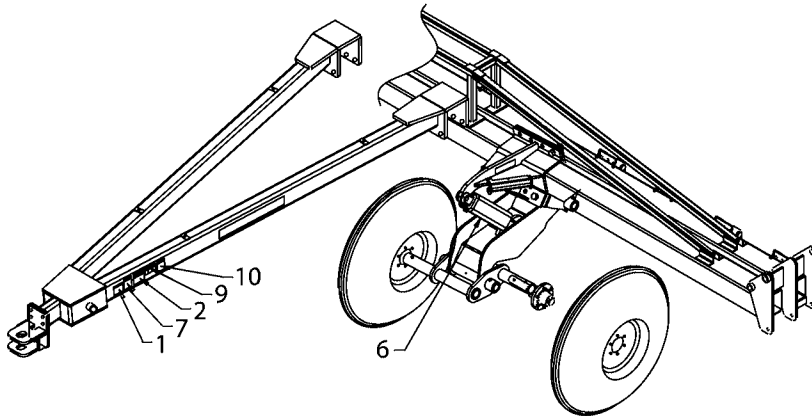
### **DANGER**

**To avoid injury or death, do not contact electric lines.**

20033890

# SAFETY & INSTRUCTIONAL DECALS

**! ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! !**  
**Replace Immediately If Damaged!**



4 - PN 20033889

## ! WARNING

Air in hydraulic systems can allow wings or other components to fall rapidly when being raised or lowered. Before operating or allowing anyone to approach the equipment, purge all air from the system by operating all hydraulic functions several times.

20033889

8 - PN 20033893

## IMPORTANT

Do not use upper 3-point top link when cultivator is equipped with rear lift assist. Damage will occur to equipment.

20033893

6 - PN 50630195



19924-B

## ! WARNING

Check for leaks with cardboard; never use hand. Before loosening fittings: lower load, release pressure, and be sure oil is cool. Consult physician immediately if skin penetration occurs.

5 - PN 20033888



## ! WARNING

To avoid injury or death, stand clear of machine when wings are being folded or unfolded. Mechanical failure, hydraulic system failure, or air in hydraulic system can allow wings to fall rapidly.

20033888

10 - PN 20034030

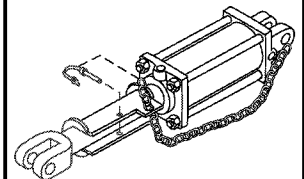
## ! WARNING

### RAISED EQUIPMENT CAN- DROP AND CRUSH

Install locks before transporting or working underneath raised implement.

Locks must be installed correctly, kept in good condition, and stored on implement. Read and follow manual instructions.

FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.



CYLINDER LOCKS

20034030

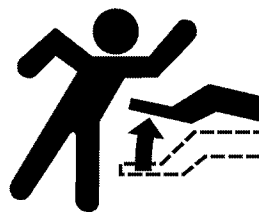
9 - PN 20034028

## ! WARNING

### TIPPING HAZARD

Weight of attachments on rear can cause hitch to raise rapidly during unhitching.

SUPPORT TOOLBAR AND TONGUE ON PARKING STANDS BEFORE LOWERING UNIT.



## ! ADVERTENCIA

### PELIGRO DE VOLCADURA

El peso de los accesorios en la parte trasera puede provocar que el mecanismo de enganche suba con rapidez durante el desenganche.

APOYE LA BARRA Y LA LENGÜETA SOBRE SOPORTES ANTES DE BAJAR LA UNIDAD.

20034028

# NOTES

# OPERATION

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

## WARNING

■ **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from dealer or, in the United States and Canada, call 1-877-275-8714.) Failure to follow instructions or safety rules can result in serious injury or death.**

■ **Know your controls and how to stop engine and attachment quickly in an emergency.**

■ **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ **Never allow children or untrained persons to operate equipment.**

■ **Keep bystanders away from equipment.**

■ **A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.**

## WARNING

■ **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.**

■ **Implement can tip over and crush if attached, removed, or stored improperly.**

- Read and follow instructions and safety rules for procedures and use of parking stands.
- Front parking stands must be on all cultivators.
- Rear parking stands must be on all folding cultivators unless cultivator has rear lift assist.
- Parking stands must be kept in good condition and replaced if damaged.
- Remove on solid, level ground.
- Before removing from tractor, cultivator must be level and stable with parking stands properly positioned and rear lift assist (when equipped) lowered to rest on cylinder stops.
- Keep all bystanders away.

■ **NEVER GO UNDERNEATH EQUIPMENT.** Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.

- Service work does not require going underneath.
- Read Operator's Manual for service instructions or have service performed by a qualified dealer.

■ **Before folding or unfolding cultivator:**

- Make sure you have adequate clearance on each side and overhead.
- Make sure wing cylinder restrictor fittings are properly installed.
- Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.

### **CAUTION**

- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.
- Always sit in tractor seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting tractor engine.
- Always comply with all state and local lighting and marking requirements.

### **DANGER**

- **AVOID INJURY OR DEATH FROM POWER LINES:**
  - Stay away from power lines.
  - Electrocuting can occur without direct contact.
  - Check clearances before raising implement.
  - Do not leave the operator's seat if any part of the tractor or implement contacts electric lines.

## **PRE-OPERATION CHECK LIST** (OWNER'S RESPONSIBILITY)

### **IMPORTANT**

■ **This Pre-Operation Check List is provided for the operator. It is important to follow for both personal safety and maintenance of the row crop cultivator.**

- \_\_\_ Review and follow all safety rules and safety decal instructions on page 4 through page 9.
- \_\_\_ Check that all safety decals are installed and in good condition. Replace if damaged.
- \_\_\_ Check that all hardware and cotter pins are properly installed and secured.
- \_\_\_ Check that equipment is properly and securely attached to tractor.
- \_\_\_ Check all lubrication points and grease as instructed in "Service, lubrication information."
- \_\_\_ Check hydraulic reservoir level.
- \_\_\_ Check that all hydraulic hoses and fittings are in good condition and not leaking before starting tractor. Check that hoses are not twisted, bent sharply, kinked, frayed or pulled tight. Replace any damaged hoses immediately.
- \_\_\_ Raise and lower equipment and wings to make sure air is purged from hydraulic cylinder and hose.
- \_\_\_ Make sure tractor 3-point lift links do not interfere with hydraulic hoses.
- \_\_\_ Make sure tractor ROPS or ROPS cab and seat belt are in good condition. Keep seat belt securely fastened during operation.
- \_\_\_ Before starting engine, operator must be in tractor seat with seat belt fastened. Place transmission in neutral or park, engage brake and disengage tractor PTO.

### Attaching Cultivator (Pull-Type Hitch)

1. Park cultivator on a solid, level, dry area that is free from debris and other foreign objects.

**NOTE:** Before attaching cultivator, be sure the tractor has a clevis type hitch that can handle drawbar loads in both the downward and upward direction. Be sure to use a hardened drawbar pin that allows for a mechanical retainer, such as a klik pin.

2. Clear the area of bystanders, especially children.

#### **WARNING**

#### ■ Keep bystanders away from equipment.

3. Set cultivator hitch height to match tractor drawbar height.

4. Carefully back up the tractor to align with hitch.

5. Pin cultivator to tractor drawbar, using hardened drawbar pin. Attach a mechanical retainer, such as a klik pin.

6. Attach safety chain to tractor.

7. Clean the hydraulic couplers and fittings to avoid oil contamination.

#### **WARNING**

■ Air in hydraulic systems can cause erratic operation and allow loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.

8. Connect wing fold hydraulic lines to the tractor #1 hydraulic couplers. Couplers must be connected so that pushing the control lever forward moves (unfolds) the wings to operating position and pulling the lever rearward moves (folds) the wings to transport position.

9. Connect lift wheel hydraulic lines to the tractor #2 hydraulic couplers. Couplers must be connected so that pushing the control lever forward lowers the cultivator and pulling the lever rearward raises the cultivator.

10. Connect 7-pin electrical connector to the tractor.

11. Raise the tool bar slightly so that rear parking stands are off the ground.

12. Stop engine, set parking brake, wait for all moving parts to stop. Remove the ignition key before dismounting.

13. Raise all parking stands to upper position. Install pin through parking stands and bracket.

### IMPORTANT

■ To prevent damage, raise parking stands to upper position before moving cultivator. parking stands must be replaced if bent or damaged.

■ To prevent damage to cultivator, do not drop. Lower slowly. Dropping cultivator could result in damage to gauge wheel.

## Attaching Cultivator (Quick Hitch)

1. Park cultivator on a solid, level, dry area that is free from debris and other foreign objects.

**NOTE:** Before attaching tractor to cultivator, be sure hitch pins and spacers are completely assembled to match the hitch configuration of your tractor as shown in Figure 1.

2. Set the height of the 3-point hitch so that quick hitch coupler is lower than the mounting pins.

3. Make sure the lower links on the tractor are set in the free-float position (see tractor manual for details).

4. Make sure 3-point hitch is set in the sway position (see tractor manual for details).

5. Align the couplers under the mounting pins while backing up.

**NOTE:** Use the proper size bushings for lower link mounting pins and the correct upper link pin location for Category II, III, or III N operation.

6. Clear the area of bystanders, especially children.

### **WARNING**

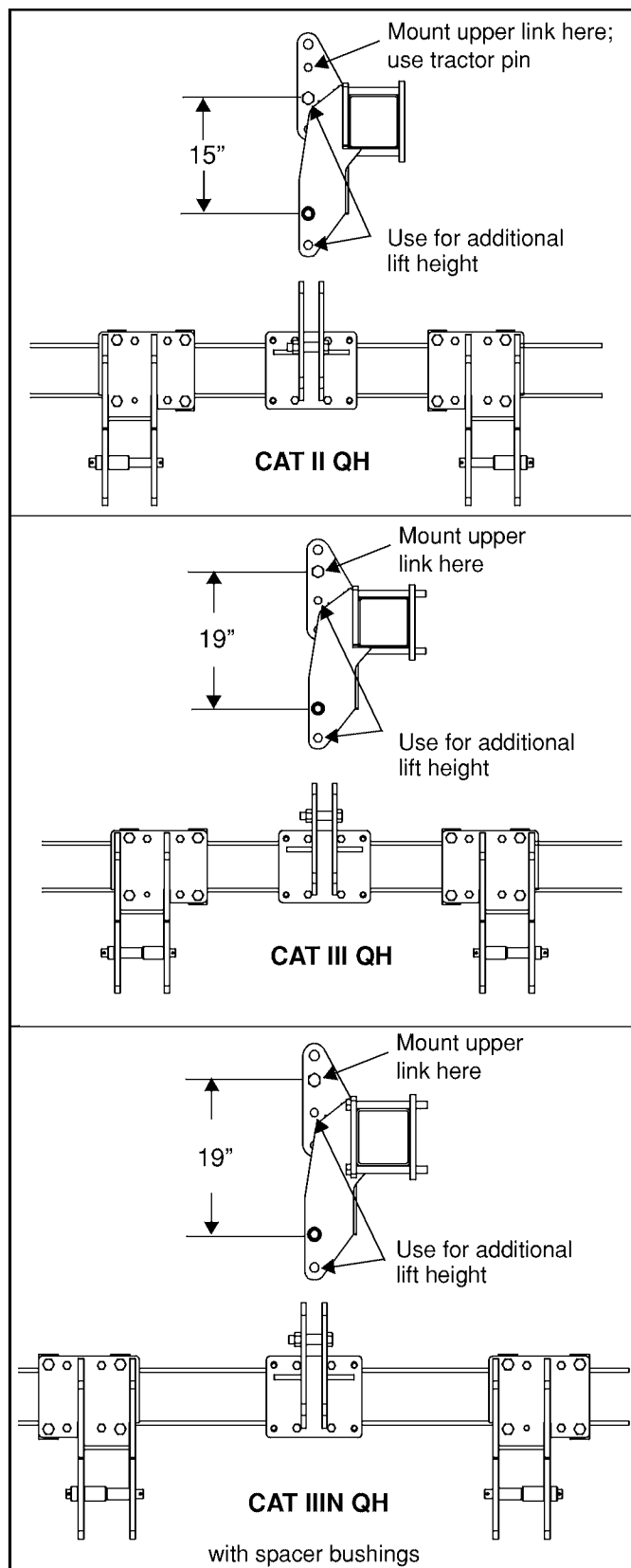
#### ■ Keep bystanders away from equipment.

7. Carefully back up the tractor until the coupler hooks align with the cultivator hitch pins.

8. When the coupler is under the pins, slowly raise the 3-point hitch. Be sure each of the mounting pins seat in their respective coupler hook.

9. Stop engine, set parking brake, wait for all moving parts to stop. Remove the ignition key before dismounting.

10. Release the coupler retainer locks to secure the mounting pins in the coupler.



**Figure 1** Quick Hitch Configurations



### Attaching Cultivator (Quick Hitch) *Cont'd*

11. Clean the hydraulic couplers and fittings to avoid oil contamination.



#### **WARNING**

■ **Air in hydraulic systems can cause erratic operation and allow loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.**

12. Connect hydraulic couplings. Couplings must be completely engaged.

13. Connect wing fold hydraulic lines to the tractor #1 hydraulic couplers. Couplers must be connected so that pushing the control lever forward moves (unfolds) the wings to operating position and pulling the lever rearward moves (folds) the wings to transport position.

14. Connect lift assist hydraulic lines to the tractor #2 hydraulic couplers. Couplers must be connected so that pushing the control lever forward lowers the cultivator and pulling the lever rearward raises the cultivator.

15. Connect 7-pin electrical connector to the tractor.

16. Raise the tool bar slightly.

17. Stop engine, set parking brake, wait for all moving parts to stop. Remove the ignition key before dismounting.

18. Raise all parking stands to upper position. Install pin through parking stands and bracket.

#### **IMPORTANT**

■ **To prevent damage, raise parking stands to upper position before moving cultivator. parking stands must be replaced if bent or damaged.**

■ **To prevent damage to cultivator, do not drop. Lower slowly. Dropping cultivator could result in damage to gauge wheel.**

### Attaching Cultivator to Tractor (Standard Hitch)

1. Park cultivator on a solid, level, dry area that is free from debris and other foreign objects.
2. Clear the area of bystanders, especially children.

#### **WARNING**

■ **Keep bystanders away from equipment.**

3. Make sure hitch pins and spacers are completely assembled to match the hitch configuration of your tractor. See Figure 2.

4. Remove 3-point hitch lower pins and upper link bolt. Back tractor and align lower links with hitch pins.

5. Stop engine, set parking brake, and wait for all moving parts to stop. Remove ignition key before dismounting.

6. Install pins with correct bushings and secure quick-lock pins. Align upper link and fasten with bolt and spacer bushing (or upper link pin for CAT II hitches).

7. Clean the hydraulic couplers and fittings to avoid oil contamination.

8. Connect hydraulic couplings. Couplings must be completely engaged.

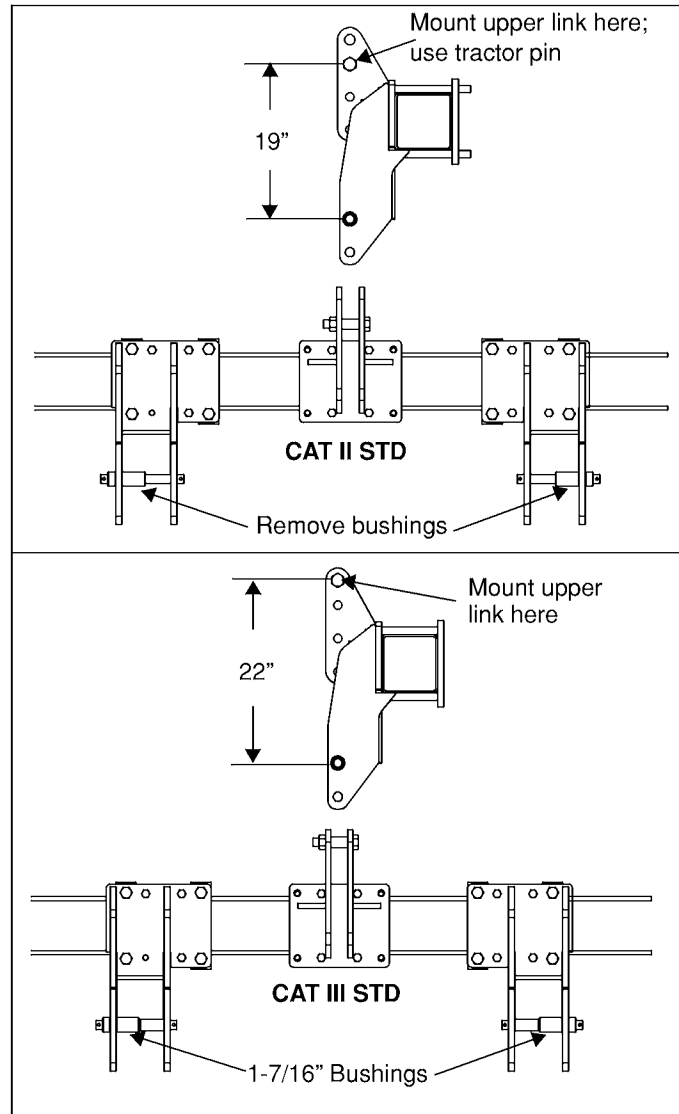
#### **WARNING**

■ **Air in hydraulic systems can cause erratic operation and allow loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.**

9. Connect wing fold hydraulic lines to the tractor #1 hydraulic couplers. Couplers must be connected so that pushing the control lever forward moves (unfolds) the wings to operating position and pulling the lever rearward moves (folds) the wings to transport position.

10. Connect lift assist hydraulic lines to the tractor #2 hydraulic couplers. Couplers must be connected so that pushing the control lever forward lowers the cultivator and pulling the lever rearward raises the cultivator.

11. Connect 7-pin electrical connector to the tractor.



**Figure 2** Standard Hitch Configuration

12. Raise the tool bar slightly.

13. Stop engine, set parking brake, and wait for all moving parts to stop. Remove ignition key before dismounting.

14. Raise all parking stands into upper position. Install pin through parking stand and bracket as shown in Figure 4.

### **IMPORTANT**

■ **To prevent damage, raise parking stands to upper position before moving cultivator.**

■ **To prevent damage to cultivator, do not drop. Lower slowly. Dropping cultivator could result in damage to gauge wheel.**

### Removing Cultivator from Tractor

#### Pull-Type Hitch

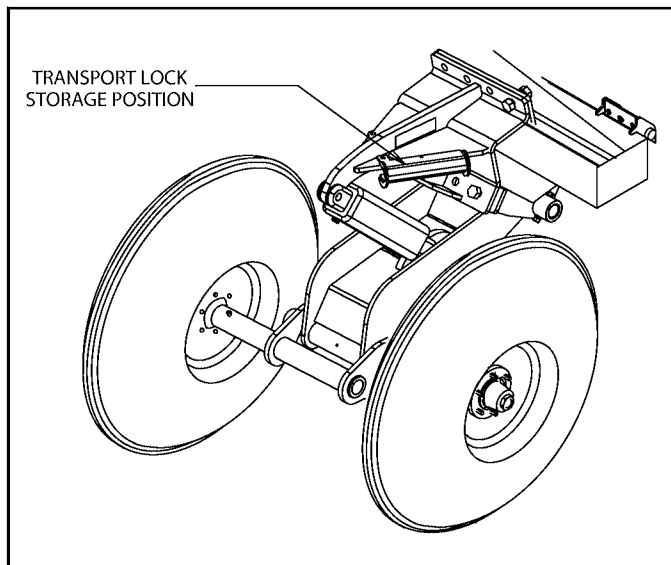
1. Park cultivator on a solid, level, dry area that is free from debris and other foreign objects.
2. Clear the area of bystanders, especially children.



**WARNING**

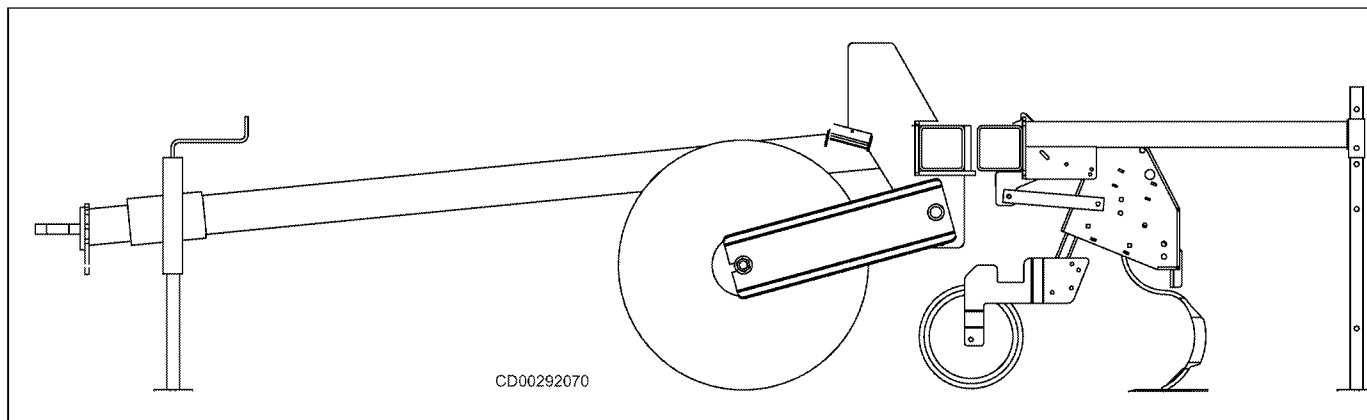
#### Keep bystanders away from equipment.

3. Stop engine, set parking brake, wait for all moving parts to stop. Remove ignition key before dismounting.
4. Lower rear parking stands. Pin in position so the tool bar will be level with the hitch stored at drawbar height. See Figure 4.
5. Lower tongue jack into position.
6. From tractor cab, start engine and raise cultivator.
7. Remove transport locks. Store transport locks as shown in Figure 3.
8. Lower cultivator until weight is carried on the rear parking parking stands and parking jack.
9. Stop engine, set parking brake, wait for all moving parts to stop. Remove ignition key before dismounting.
10. Relieve hydraulic pressure on fold and lift cylinders.



**Figure 3** Storage Position

11. Unhook hydraulic lines.
12. Unhook safety chain from tractor.
13. Unhook electrical connector.
14. Remove hitch pin.
15. Start engine and slowly drive away from cultivator.
16. Stop engine, set parking brake, and remove key.



**Figure 4** Rear parking stand lowered and pinned  
Tongue jack in correct position for storing cultivator

### Removing Cultivator from Tractor

#### Rigid Cultivators or Wing Cultivators Removed in Operating Position (WINGS UNFOLDED)

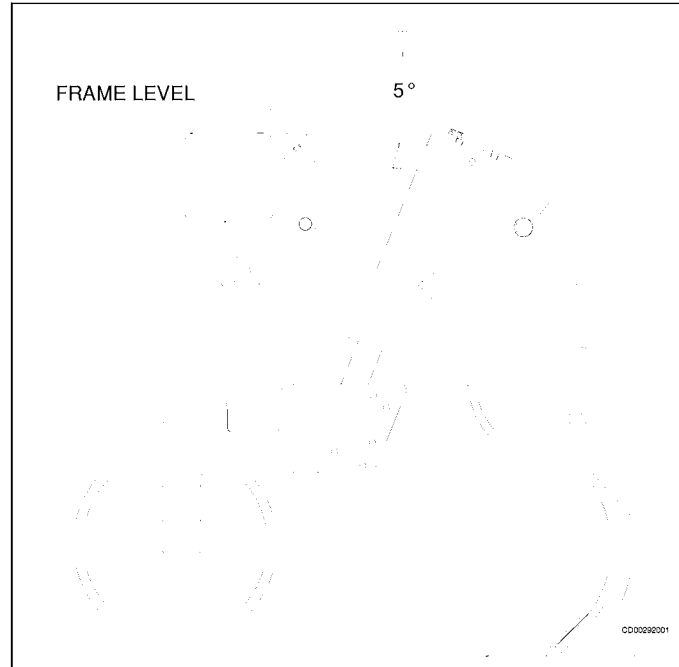
#### **WARNING**

■ Implement can tip over and crush if attached, removed, or stored improperly.

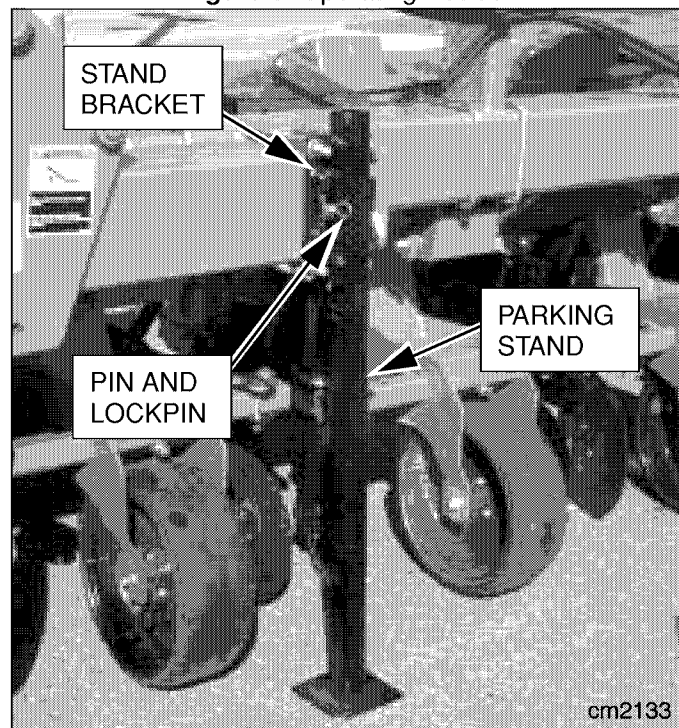
- Read and follow instructions and safety rules for procedures and use of parking stands.
- Front parking stands must be on all cultivators.
- Rear parking stands must be on all folding cultivators unless cultivator has rear lift assist.
- Parking stands must be kept in good condition and replaced if damaged.
- Remove on solid, level ground.
- Before removing from tractor, cultivator must be level and stable with parking stands properly positioned and rear lift assist (when equipped) lowered to rest on cylinder stops.
- Keep all bystanders away.

■ Keep bystanders away from equipment.

1. Park cultivator on a solid, level, dry area that is free from debris and other foreign objects.
2. Make sure bystanders are clear from working area.
3. Lower lift assist wheels (if equipped) to rest on cylinder stops.
4. Lower cultivator so that sweeps and gauge or guide wheels rest on the ground. Position toolbar in the operating position so that cultivator linkage is nearly horizontal. See Figure 5.
5. Stop engine, set parking brake, and wait for all moving parts to stop. Remove ignition key before dismounting.
6. Lower front parking stands to the ground and pin in position so that parking stands will be vertical when the tractor is removed. See Figure 6.
7. Relieve hydraulic pressure in wing fold and lift assist cylinders (if equipped).
8. Adjust center link as necessary to remove load from hitch.
9. With Quick-Hitch: Release coupler latches and lower hitch to release hitch pins.
10. Without Quick-Hitch: Remove hitch pins from upper and lower hitch links.



**Figure 5** Operating Position



**Figure 6** Front Parking Stand Lowered and Pinned

11. Disconnect hydraulic couplers and electrical connector from tractor.

12. Start engine and slowly drive away from cultivator.

### Removing Cultivator from Tractor

#### Wing Cultivators Removed in Transport Position (WINGS FOLDED)

#### **WARNING**

■ Implement can tip over and crush if attached, removed, or stored improperly.

- Read and follow instructions and safety rules for procedures and use of parking stands.
- Front parking stands must be on all cultivators.
- Rear parking stands must be on all folding cultivators unless cultivator has rear lift assist.
- Parking stands must be kept in good condition and replaced if damaged.
- Remove on solid, level ground.
- Before removing from tractor, cultivator must be level and stable with parking stands properly positioned and rear lift assist (when equipped) lowered to rest on cylinder stops.
- Keep all bystanders away.

■ Keep bystanders away from equipment.

1. Park cultivator on a solid, level, dry area that is free from debris and other foreign objects.

2. Clear the area of bystanders, especially children.

3. Lower lift assist wheels (if equipped) to rest on cylinder stops.

4. Lower cultivator so that sweeps and gauge or guide wheels rest on the ground. Position toolbar in the operating position so that cultivator linkage is nearly horizontal. See Figure 7.

5. Stop engine, set parking brake, and wait for all moving parts to stop. Remove ignition key before dismounting.

6. Lower front parking stands to the ground and pin in position so that parking stands will be vertical when the tractor is removed.

7. Lower rear parking stands (folding cultivators without lift assist) to the ground and pin in position so that parking stands will be vertical when tractor is removed. Front and rear stands should be pinned in the same hole position. See Figure 8.

8. Relieve hydraulic pressure in wing fold and lift assist cylinders.

9. Adjust center link as necessary to remove load from hitch.

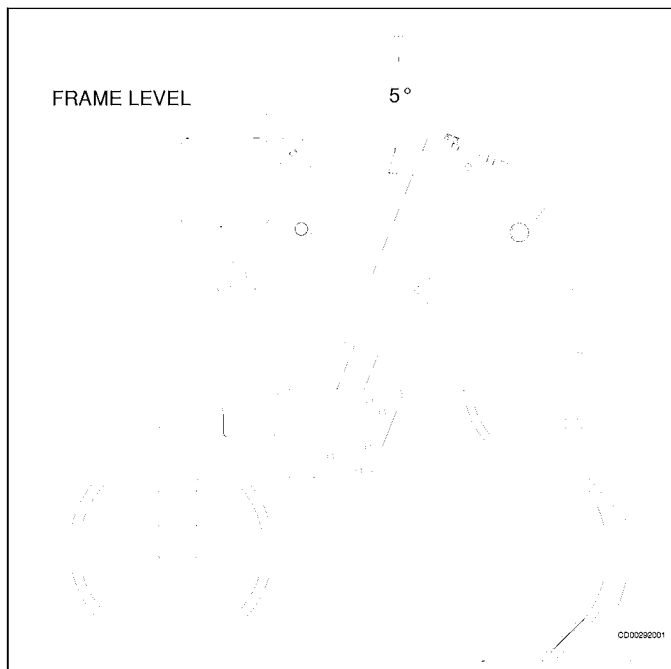


Figure 7 Operating Position

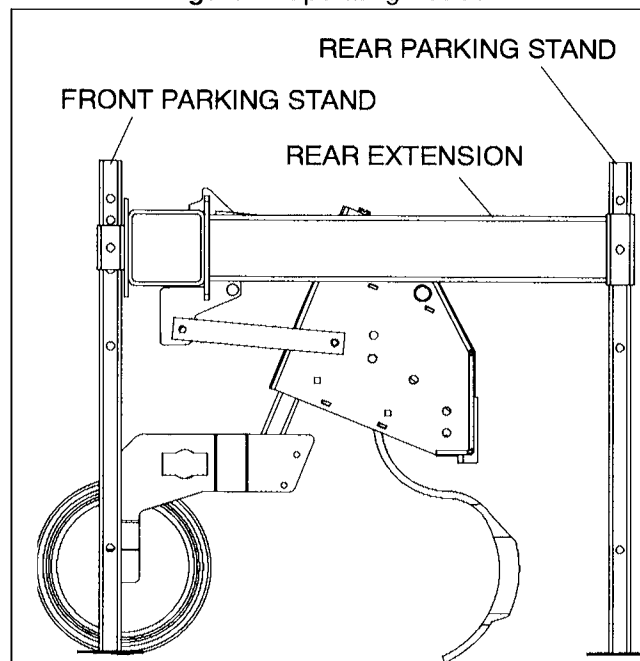


Figure 8 Front & Rear Parking Stands (Type F Toolbar)

10. With Quick-Hitch: Release coupler latches and lower hitch to release hitch pins.

11. Without Quick-Hitch: Remove hitch pins from upper and lower hitch links.

12. Disconnect hydraulic couplers and electrical connector from tractor.

13. Start engine and slowly drive away from cultivator.

### Removing Cultivator from Tractor

#### Wing Cultivators Equipped with Lift Assist Wheels

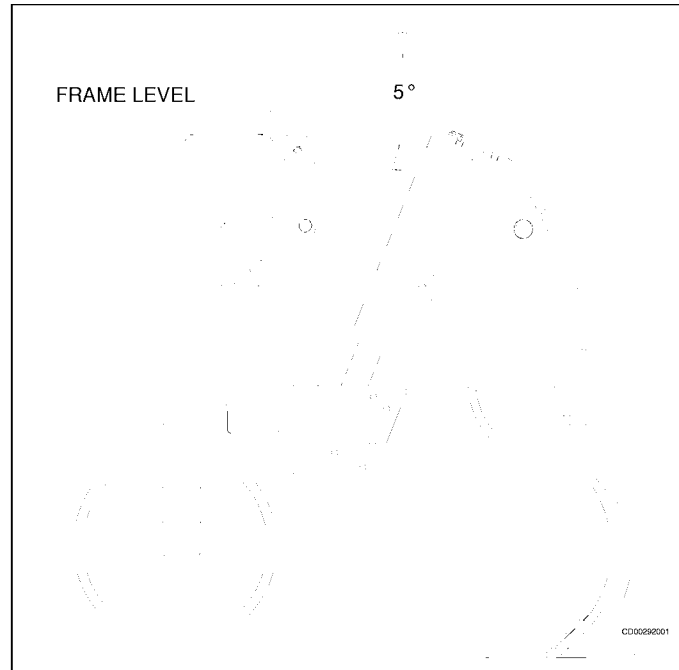
#### **WARNING**

■ Implement can tip over and crush if attached, removed, or stored improperly.

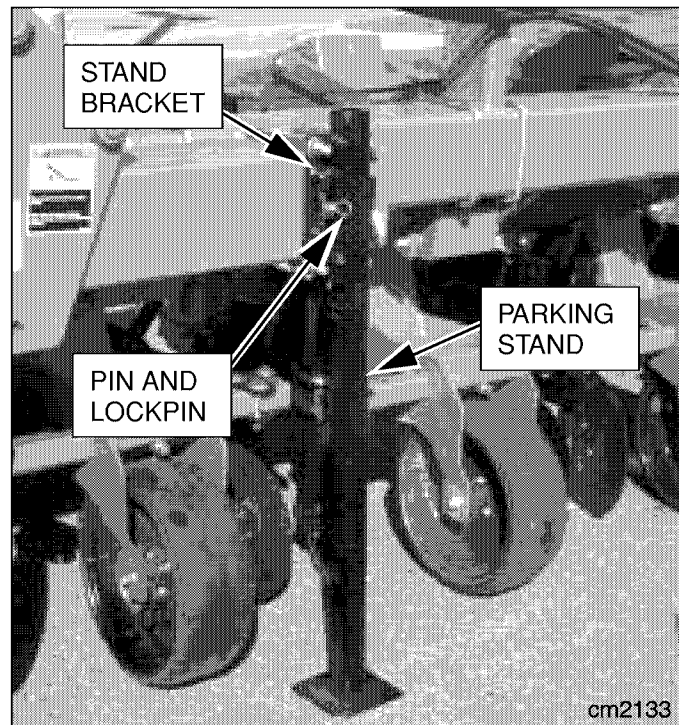
- Read and follow instructions and safety rules for procedures and use of parking stands.
- Front parking stands must be on all cultivators.
- Rear parking stands must be on all folding cultivators unless cultivator has rear lift assist.
- Parking stands must be kept in good condition and replaced if damaged.
- Remove on solid, level ground.
- Before removing from tractor, cultivator must be level and stable with parking stands properly positioned and rear lift assist (when equipped) lowered to rest on cylinder stops.
- Keep all bystanders away.

■ Keep bystanders away from equipment.

1. Park cultivator on a solid, level, dry area that is free from debris and other foreign objects.
2. Clear the area of bystanders, especially children.
3. Lower lift assist wheels to rest on cylinder stops.
4. Lower cultivator so that sweeps and gauge or guide wheels rest on the ground. Position toolbar in the operating position so that cultivator linkage is nearly horizontal. See Figure 9.
5. Stop engine, set parking brake, and wait for all moving parts to stop. Remove ignition key before dismounting.
6. Lower front parking stands to the ground and pin in position so that parking stands will be vertical when the tractor is removed. See Figure 10.
7. Relieve hydraulic pressure in wing fold and lift assist cylinders.
8. Adjust center link as necessary to remove load from hitch.
9. With Quick-Hitch: Release coupler latches and lower hitch to release hitch pins.
10. Without Quick-Hitch: Remove hitch pins from upper and lower hitch links.



**Figure 9** Operating Position



**Figure 10** Front Parking Stand Lowered and Pinned

11. Disconnect hydraulic couplers and electrical connector from tractor.
12. Start engine and slowly drive away from cultivator.

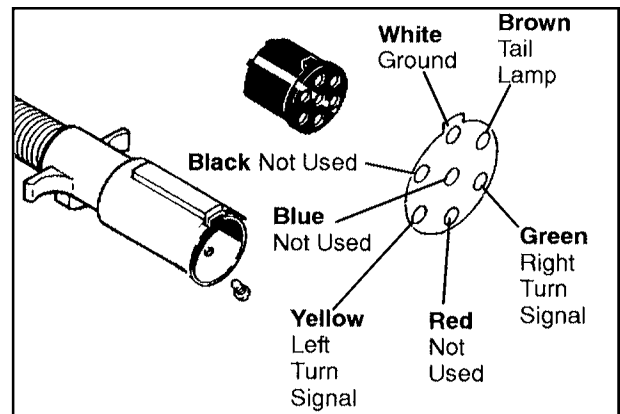
### Electrical System

The tractor must be equipped with an SAE J560a 7-pin electrical connector. This will provide power for turn signals, warning flashers, and tail lights.

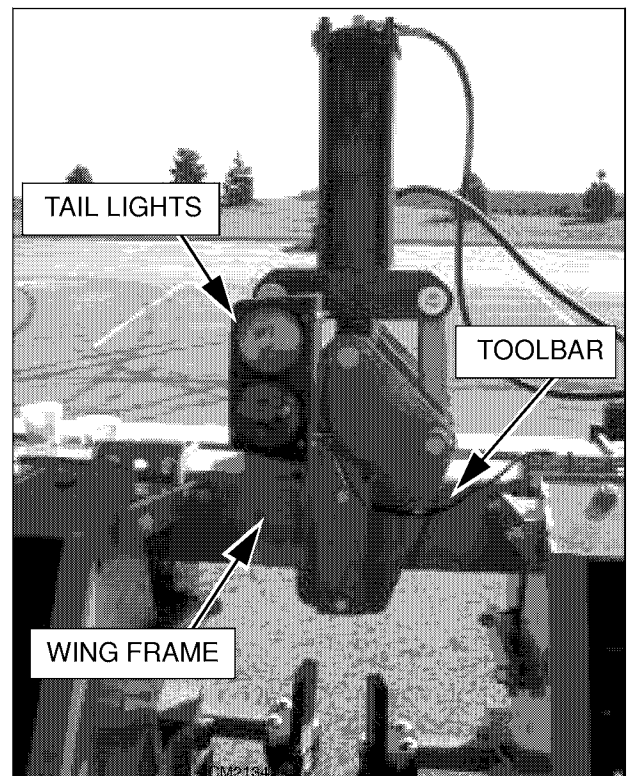
The cultivator is equipped with warning flashers and turn signals, located on each end of the main tool bar. Warning lights must be functional whenever transporting on public highways.

See your tractor operator's manual for instructions on warning light and turn signal operation.

If warning lights, turn signals, and tail lights do not function correctly, see your Alloway dealer.



**Figure 11** 7-Pin Electrical Connector



**Figure 12** Tail Light (Folding Bar, left side shown)

## Operation *Cont'd*

### Front Parking Stands

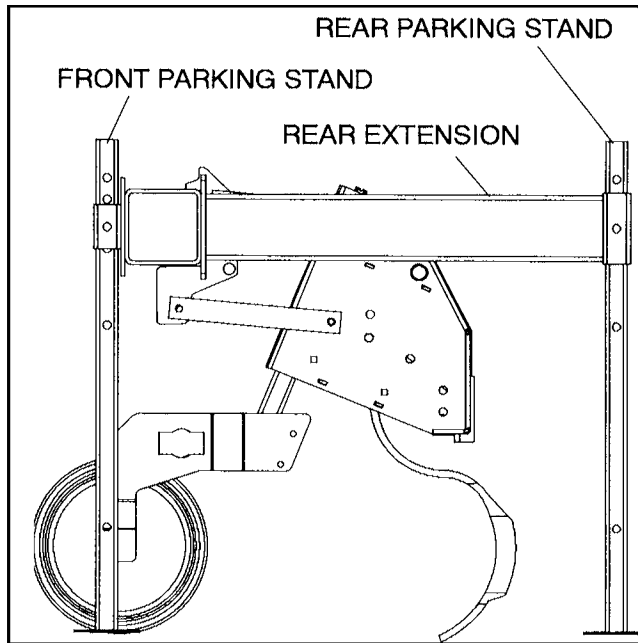
Front parking stands are supplied with all 3130 cultivators. Front stands must be installed to support the cultivator whenever it is removed from the tractor.

1. Lower front parking stands to the ground and pin in position so that parking stands will be vertical when the tractor is removed. See Figure 13.

### Rear Parking Stands

Rear parking stands are supplied with all folding toolbar 3130 cultivators without rear lift assist wheels. Either rear parking stands or lift assist wheels must be installed to support the cultivator whenever it is removed in the folded transport position.

1. Lower rear parking stands (folding cultivators without lift assist) to the ground and pin in position so that parking stands will be vertical when tractor is removed. Front and rear stands should be pinned in the same hole position as shown in Figure 13.



**Figure 13** Front & Rear Parking Stands (type F toolbar)

### Folding the Cultivator

#### **WARNING**

■ **Never walk, stand, or place yourself or others under a raised wing or in the path of a lowering wing. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause wings to drop unexpectedly and cause severe injury or death.**

■ **Before folding or unfolding cultivator:**

- **Make sure you have adequate clearance on each side and overhead.**
- **Make sure wing cylinder restrictor fittings are properly installed.**
- **Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.**

1. Connect wing fold hydraulic lines to the tractor #1 hydraulic couplers. Couplers must be connected so that pushing the control lever forward moves (unfolds) the wings to operating position and pulling the lever rearward moves (folds) the wings to transport position.

#### **DANGER**

■ **AVOID INJURY OR DEATH FROM POWER LINES:**

- **Stay away from power lines.**
- **Electrocution can occur without direct contact.**
- **Check clearances before raising implement.**
- **Do not leave the operator's seat if any part of the tractor or implement contacts electric lines.**

2. Position the tractor and cultivator in a level area, free of overhead obstacles.

3. Use the tractor 3-point hitch and lift assist wheels (if equipped) or pull-type hitch to raise the cultivator to a level position off the ground.

4. Activate fold control lever rearward and move the cultivator wings until they contact the wing rests that are attached to the main frame. Raise the cultivator into transport position.



### Unfolding the Cultivator

#### **WARNING**

■ **Never walk, stand, or place yourself or others under a raised wing or in the path of a lowering wing. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause wings to drop unexpectedly and cause severe injury or death.**

■ **Before folding or unfolding cultivator:**

- **Make sure you have adequate clearance on each side and overhead.**
- **Make sure wing cylinder restrictor fittings are properly installed.**
- **Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.**

1. Connect wing fold hydraulic lines to the tractor #1 hydraulic couplers. Couplers must be connected so that pushing the control lever forward moves (unfolds) the wings to operating position and pulling the lever rearward moves (folds) the wings to transport position.

2. Position the tractor and cultivator in a level area, free of overhead obstacles and with enough clear area to permit the cultivator to unfold.

#### **DANGER**

■ **AVOID INJURY OR DEATH FROM POWER LINES:**

- **Stay away from power lines.**
- **Electrocution can occur without direct contact.**
- **Check clearances before raising implement.**
- **Do not leave the operator's seat if any part of the tractor or implement contacts electric lines.**

3. Use the tractor 3-point hitch and lift assist wheels (if equipped) or pull-type hitch to raise the cultivator to a level position off the ground.

4. Activate fold control lever forward and move the cultivator wings off wing rests into operating position.

5. Move tractor into position for cultivating.

### Connecting Lift Assist

#### 3-Point Hitch Semi-Mounted Cultivator

#### **IMPORTANT**

■ **If the cultivator is used with lift assist wheels, it must be operated as a semi-mounted unit to prevent damage to the 3-point hitch components. Remove the upper link mast and attach the cultivator to the lower 3-point hitch links only. Lift assist wheels will always carry part of the cultivator weight.**

1. Connect lift assist hydraulic lines to the tractor #2 hydraulic couplers. Couplers must be connected so that pushing the control lever forward lowers the cultivator and pulling the lever rearward raises the cultivator.

2. Use the adjustment nuts on the lift assist cylinders to level and control the operating position of the rear of the cultivator.

3. When storing the folding cultivator in the transport position, lower lift assist wheels to rest on the cylinder stops and front parking stands installed as described in *Removing Cultivator from Tractor*, page 18.

### FIELD OPERATION

#### **WARNING**

■ A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.

#### **IMPORTANT**

■ Raise cultivator out of the ground when making sharp turns.

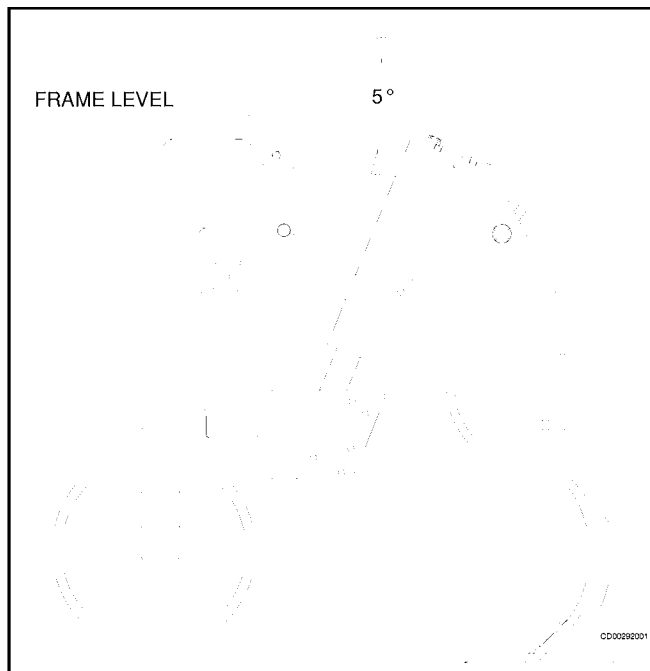
■ Do not back up with sweeps or tools in the ground.

1. Enter the field and straddle rows in the same direction of planter travel.
2. Make sure no one is near the cultivator when raising or lowering wings.
3. Unfold into operating position.
4. Lower cultivator slowly and move forward approximately 20 feet.

#### **IMPORTANT**

■ To prevent damage to cultivator, do not drop. Lower slowly. Dropping cultivator could result in damage to gauge wheel.

5. Check shovel working depth by brushing worked soil aside to determine the amount of ground penetration. Shovel depth is adjusted by raising or lowering the gauge wheel on each gang. Gangs behind tractor wheels are often adjusted deeper to loosen compacted soil.



**Figure 14** Operating Position

6. If necessary, readjust tine placement for proper coverage.

7. After establishing working depth, it may be necessary to reset the 3-point lever stop and adjust the support wheels or to adjust the stops on pull-type wheel cylinders to maintain operating position as shown in Figure 14.

8. To adjust individual attachments, refer to MAKING ADJUSTMENTS, page 26 to page 29.

### STORAGE



- **Block equipment securely for storage.**
- **Keep children and bystanders away from storage area.**

At the end of the season, the cultivator should be thoroughly inspected and prepared for storage. Repair or replace any worn or damage components to prevent unnecessary down time at the beginning of the next season.

To ensure a long, trouble-free life, prepare the unit for storage by carrying out the following procedure:

1. Clear the area of bystanders, especially children.
2. On solid, level ground, lower unit to rest in a stable level position with parking stands properly positioned.
3. Stop engine, set parking brake, and wait for all moving parts to stop. Remove ignition key before dismounting.
4. Thoroughly wash the unit, using a pressure washer to remove all dirt, mud, debris, and residue.
5. Repair or replace damaged parts. Remove any entangled material.
6. Inspect all hydraulic hoses, lines, couplers, and fittings. Tighten all loose fittings. Replace any hose that is badly cut, nicked, abraded, or separating from the crimped end of a fitting.

7. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from pressure washing. Touch up all paint nicks and scratches to prevent rust.

8. Move to storage area. Select a dry area free of debris. Store in an area away from human activity.

9. Unhook from tractor (see Removing Cultivator from Tractor, page 17).

**NOTE:** Do not deflate tires.

10. Store the unit away from human activity

11. Do not allow children to play on or around the stored unit.

### TRANSPORTING



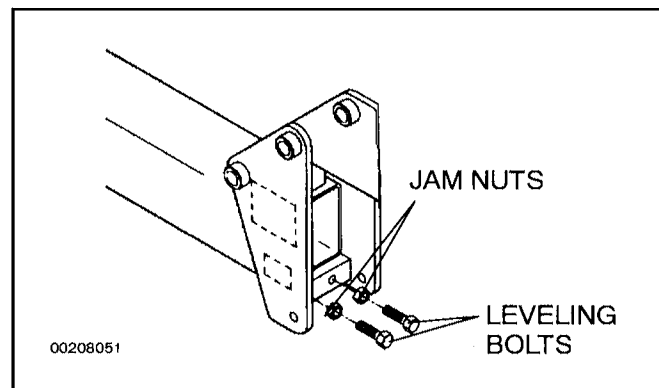
■ Always comply with all state and local lighting and marking requirements.

1. Make sure all bystanders are clear of the unit.
2. Make sure the unit is securely attached to the tractor and all retainer pins are installed.
3. Make sure safety chain is installed on pull-type model.
4. Raise the unit.
5. Check the tire pressure. Be sure tires are at specified pressure.
6. Install transport locks on pull-type cultivator.
7. Make sure you are in compliance with all applicable lighting and marking regulations when transporting. Check with your local authorities.
8. Never transport the unit faster than 10 mph (16 kmph).
9. Know the transport height and width of your unit.
10. Stay clear of overhead power lines when folding and unfolding unit. Electrocution can occur without direct contact.

### MAKING ADJUSTMENTS

#### Leveling Toolbar Wings

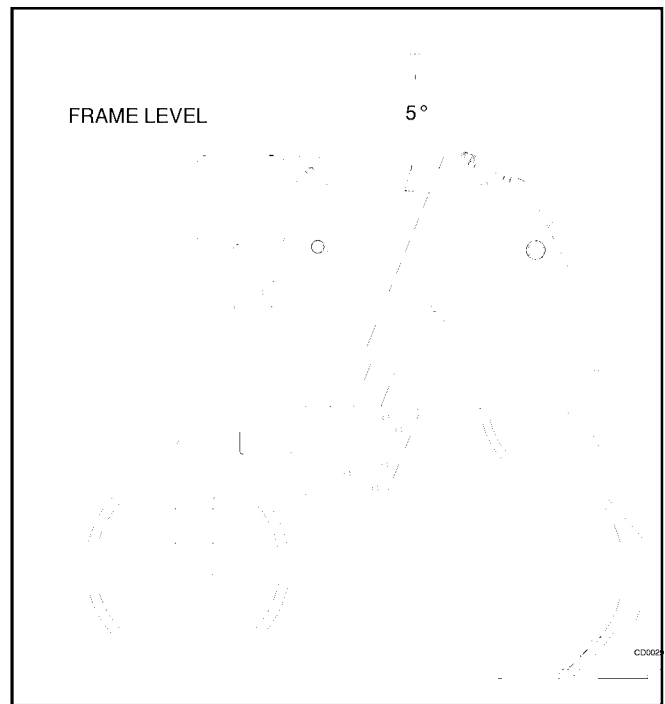
1. Level wings to center toolbar, using leveling bolts.
2. Tighten jam nuts when wings are level.



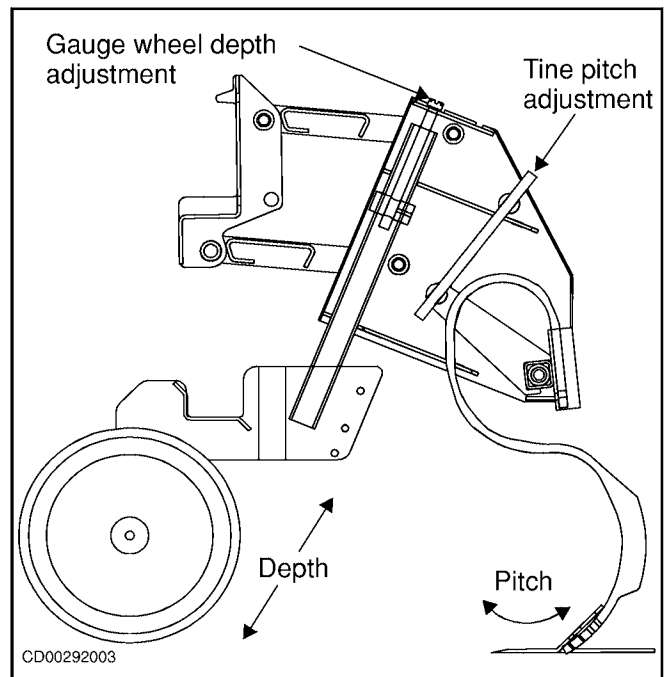
**Figure 15** Toolbar Wings

### Adjusting Gangs

1. Keep cultivator frame level with ground by adjusting upper link on tractor to maintain consistent ground penetration of each tine.
2. Adjust tractor 3-point hitch and frame gauge wheels so that cultivator linkage operates approximately 5 degrees from level as shown in Figure 16.
3. Set working depth by adjusting gauge wheel. Turn adjusting nut clockwise to increase working depth and counterclockwise to decrease working depth.
4. Set tine pitch by adjusting tine pitch adjustment screw as shown in Figure 17.



**Figure 16** Operating Position



**Figure 17** Gang Adjustment

### Adjusting Support Wheels

#### Center Frame Support Wheels

The toolbar weight should be split between the tractor 3-point and the support wheels. To provide level operation of the toolbar, adjust the support wheels mounted on rigid toolbars or on the center section of folding toolbars.

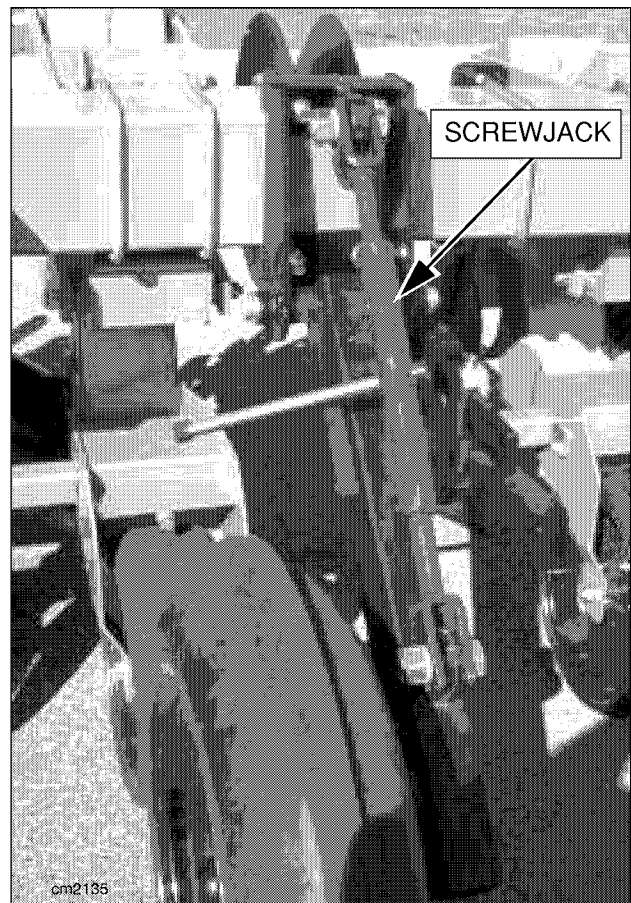
Use field conditions and desired cultivator performance to set support wheel operating height.

1. Shorten the screwjack to lower to toolbar. Lengthen the screwjack to raise the toolbar. See Figure 18.

#### Wing Support Wheels

To maintain a proper working height at the outer end of the toolbar's wings, position and adjust the support wheels. Re-adjust the wing support wheels if the center frame operating position is changed.

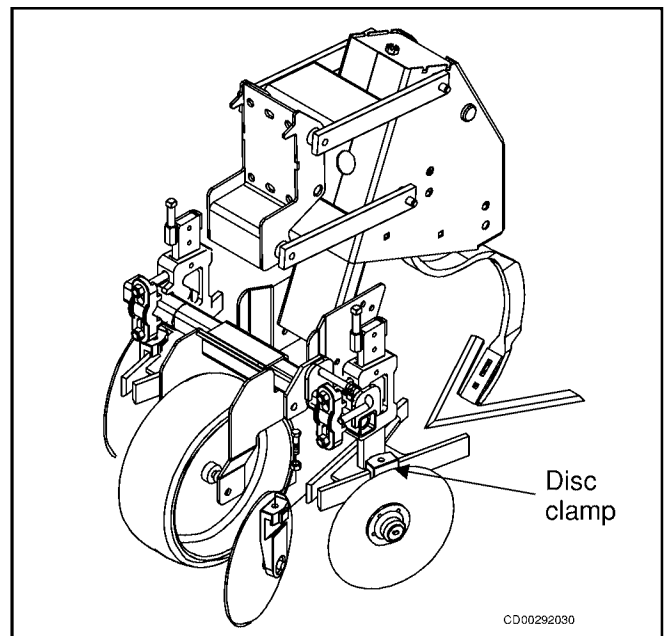
1. Shorten the screwjack to lower to toolbar. Lengthen the screwjack to raise the toolbar. See Figure 18.



**Figure 18** Adjusting Support Wheels

### Adjusting Dual Discs

1. Adjust disc width by loosening bolts and jam nuts on top of the disc clamp.
2. Slide discs on rails until reaching desired width.
3. Tighten bolts and jam nuts.



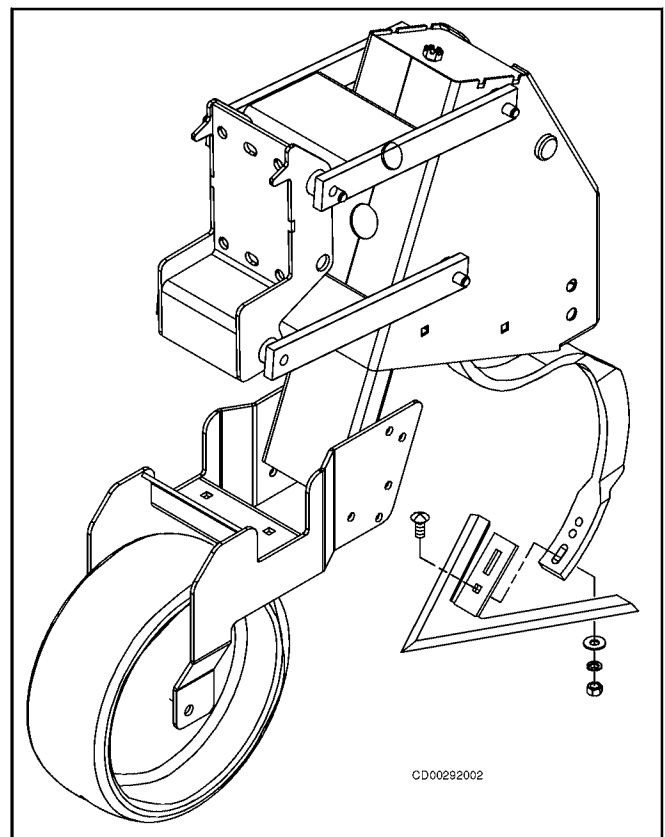
**Figure 19** Adjusting Dual Discs

### Adjusting Sweeps

1. Adjust pitch by selecting a different hole on the tine (straight edge tine). Use pitch adjusting screw. See Figure 20.

### Adjusting Optional Equipment

Refer to ASSEMBLY section for instructions on adjusting additional optional attachments.



**Figure 20** Adjusting Sweep Pitch

# SERVICE

## **WARNING**

■ **NEVER GO UNDERNEATH EQUIPMENT.** Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.

- Service work does not require going underneath.
- Read Operator's Manual for service instructions or have service performed by a qualified dealer.

■ **Know your controls and how to stop engine and attachment quickly in an emergency.**

■ **Keep hands and body away from pressurized lines.** Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

■ **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CON-**

**TACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ **Never allow children or untrained persons to operate equipment.**

■ **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**

■ **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.**

■ **Before servicing, unfold completely to operating position. Do not service with wings in any other position.**

## **CAUTION**

■ **If you do not understand any part of this manual and need assistance, see your dealer.**

■ **Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.**

### **Greasing**

Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance. An SAE multi-purpose lithium-based grease is also acceptable.

1. Use a hand-held grease gun for all greasing.
2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

### **Storing Lubricants**

Your unit can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contaminants.

The recommended lubrication intervals are based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.



### Servicing Intervals

#### 10 Hours

Lubricate 180-degree folding toolbar (Figure 21).

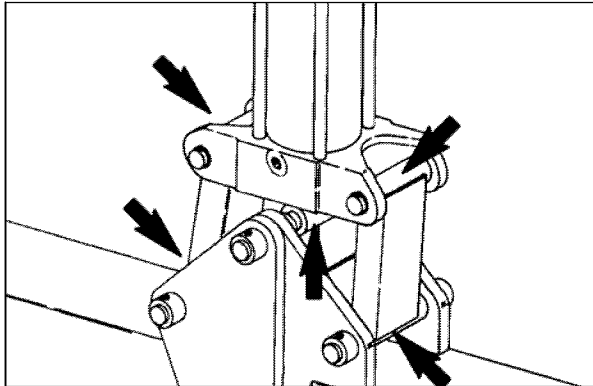


Figure 21

#### 25 Hours

Lubricate guide wheel screw jacks (Figure 22 & Figure 24).

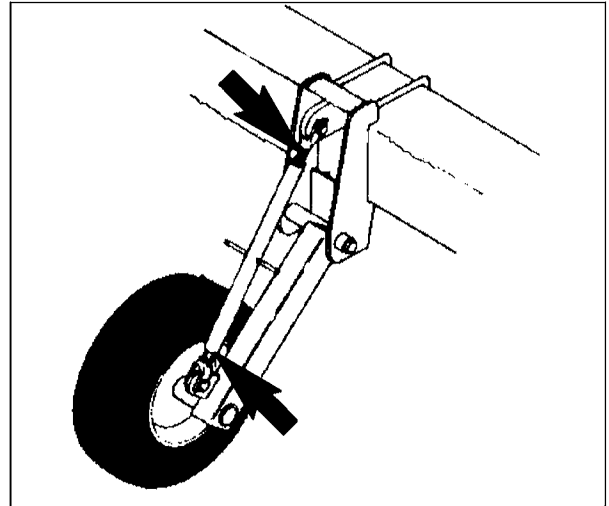


Figure 22

#### 25 Hours

Lubricate lift assist assemblies (Figure 23).

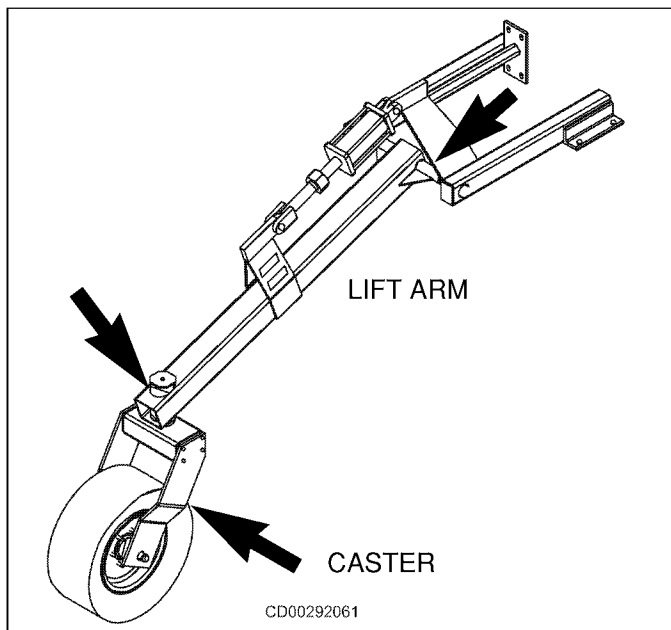


Figure 23

#### 25 Hours

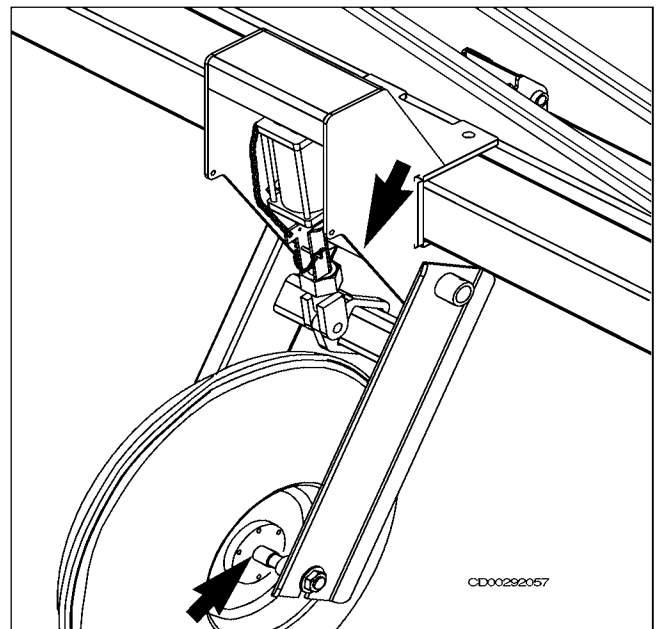


Figure 24 Pull-type Hitch

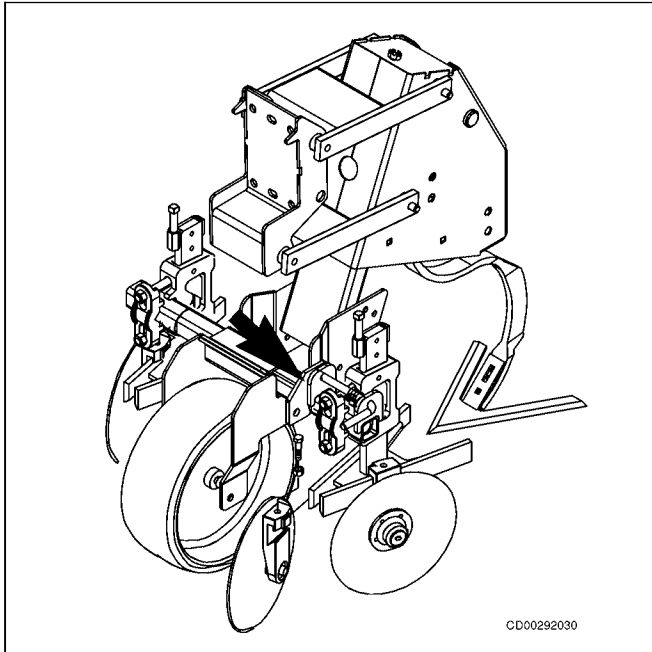
## Service & Maintenance *Cont'd*

### Servicing Intervals (Cont'd)

#### Annually

Repack all wheel bearings.

Lubricate dual knife disc mounting tubes (Figure 25).



**Figure 25**

# ASSEMBLY

## DEALER SET-UP INSTRUCTIONS



### WARNING

■ Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.

■ Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. **CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**

■ Air in hydraulic systems can cause erratic operation and allow loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. **Do this before putting into service or allowing anyone to approach the equipment.**

■ Before folding or unfolding cultivator:

- Make sure you have adequate clearance on each side and overhead.
- Make sure wing cylinder restrictor fittings are properly installed.
- Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.

■ Never allow children or untrained persons to operate equipment.

■ Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.

■ Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.



### WARNING

■ Do not handle blades with bare hands. Careless or improper handling may result in serious injury.



### CAUTION

■ Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.

Assembly of this cultivator is the responsibility of the Alloway dealer. The cultivator should be delivered to the owner completely assembled, lubricated, and adjusted for normal conditions.

Set up cultivator as received from the factory with these instructions. Complete the check lists on page 34 when set-up is completed.

Cultivators are shipped disassembled. When you receive shipment, examine the unit carefully for any hidden damage during shipment. Before assembling the unit, check and compare the parts, bundles, and cartons against the packing list to identify any shortages. If any parts shortages are noted, contact Alloway immediately.

1. Select an assembly location that is clean and level with a firm, dry surface. The area must not have any overhead power lines or obstructions and must be large enough to work safely around the unit and to accommodate the unit when fully assembled.

2. Remove cultivator from the carton. Open the parts box and lay parts out for easy identification. Refer to the parts lists and exploded view drawings in this manual.

**NOTE:** Recommended torque values are given in the Bolt Torque Chart, page 94.

### PRE-DELIVERY CHECK LIST (DEALER'S RESPONSIBILITY)

Inspect the equipment thoroughly after assembly to make sure that it is set up properly before delivering it to the customer.

The following check lists are a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustment is made.

- \_\_\_ Check that all safety decals are installed and in good condition. Replace if damaged.
- \_\_\_ Properly attach implement to tractor and make all necessary adjustments.
- \_\_\_ Check all bolts to be sure they are properly torqued.
- \_\_\_ Check wheel bolts for proper torque.
- \_\_\_ Check that all cotter pins and safety pins are properly installed. Replace if damaged.
- \_\_\_ Check and grease all lubrication points as identified in Servicing Intervals, page 31 and page 32.
- \_\_\_ Check that hydraulic reservoir has been serviced and that hydraulic system and all functions have been operated through full cylinder stroke to purge air from system.

### DELIVERY CHECK LIST (DEALER'S RESPONSIBILITY)

- \_\_\_ Show customer how to make adjustments.
- \_\_\_ Instruct customer how to lubricate and explain the importance of lubrication.
- \_\_\_ Point out the safety decals. Explain their meaning and the need to keep them in place and in good condition. Emphasize the increased safety hazards when instructions are not followed.
- \_\_\_ Present Operator's Manual and request that customer and all operators read it before operating equipment. Point out the manual safety rules, explain their meanings and emphasize the increased safety hazards that exist when safety rules are not followed.
- \_\_\_ Explain to customer the potential crushing hazards of going underneath raised equipment. Instruct customer that service work does not require going underneath unit and never to do so.
- \_\_\_ Show customer the safe, proper procedures to be used when mounting, dismounting, and storing equipment.
- \_\_\_ For mounted units, add wheel weights, ballast in front tires, and/or front tractor weight to enhance front end stability. A minimum 20% of tractor and equipment gross weight must be on front tractor wheels. When adding weight to attain 20% of tractor and equipment weight on front tractor wheels, you must not exceed the ROPS weight certification. Weigh the tractor and equipment. Do not estimate!
- \_\_\_ Explain to customer that when equipment is transported on a road or highway, a Slow Moving Vehicle (SMV) sign should be used to provide adequate warning to operators of other vehicles.
- \_\_\_ Make customer aware of optional equipment available so that customer can make proper choices as required.

### ORDER OF ASSEMBLY

Completely assemble two rows of the cultivator, including all options and accessories, before assembling the entire cultivator. Once you have assembled two rows and approve the configuration, continue assembling the balance of the cultivator. **NOTE:** Application and conditions will determine the exact assembly.

Assemble the cultivator in the following order:

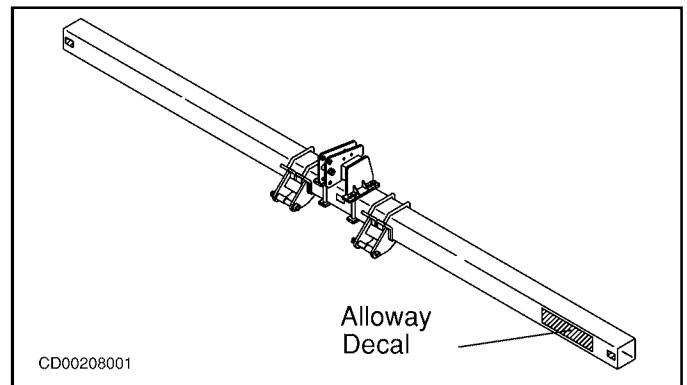
1. Apply Alloway decal, page 35.
2. Mount either 3-point or pull-type hitch, page 36 - 38.
3. Assemble toolbar (folding units only), page 39.
4. Install lights, page 42.
5. Mount row units to toolbar, page 42.
6. Mount shovels or sweeps, page 44.
7. Mount King guide row units, page 45.
8. Install down pressure springs (optional), page 46.
9. Attach rear shanks, page 47.
10. Attach rear extension brackets and shanks (optional) page 47.
11. Mount coulter discs (optional), page 48.
12. Mount semi-pneumatic or steel guide wheels, page 50.
13. Mount front and rear parking stands, page 51.
14. Mount adjustable support wheels, page 52.
15. Install shields, page 53 to 56.
16. Install flip-up tubes and dual discs/dual knives, page 57 to page 60.
17. Install row weeder discs or other options, page 59 to 61.
18. Mount lift assist (optional), page 62.
19. Mount rear stabilizer coulter, page 64.
20. Tighten all bolts to specifications in the Bolt Torque Chart, page 94.
21. Check that all tire pressures are 28-32 psi (38-42 psi for pull-type transport wheels).

### Apply Alloway Decal

All safety and reflector decals are applied at the factory. All model decals are to be applied by the dealer.

**NOTE:** To avoid interference with the cultivator components, apply all other decals after assembling cultivator. On row spacings 36" and above, the Alloway decal can be applied after assembling cultivator.

1. Be sure installation area is clean and dry.
2. Decide on exact position before removing backing paper. The Alloway decal will be placed on the front right side of the toolbar as shown in Figure 1.
3. Remove the smallest portion of the split backing paper.
4. Align decal and carefully press the small portion with the exposed sticky backing in place.
5. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
6. Small air pockets can be pierced with a pin and smoothed out, using the decal backing paper.

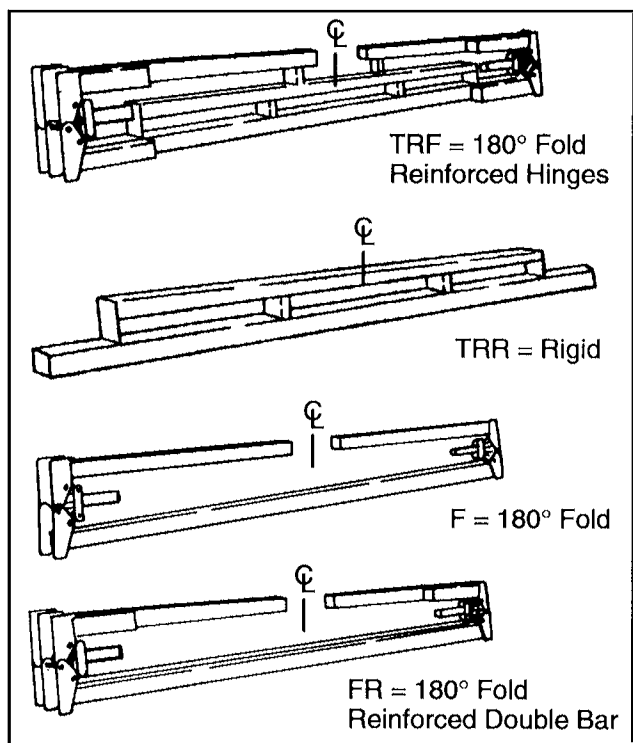


**Figure 1** Alloway Decal Position

### MOUNT HITCHES

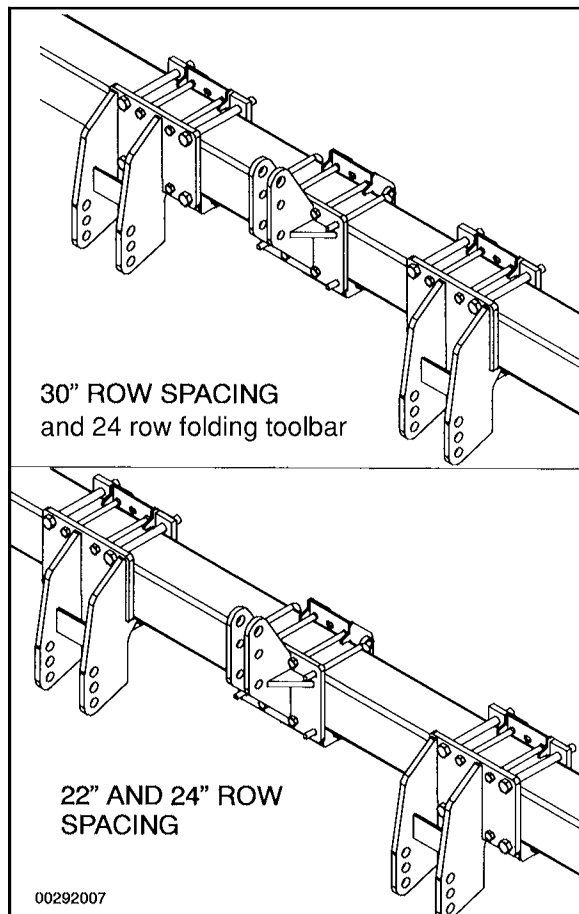
#### Identify Toolbar Type

1. Support the toolbar on suitable stands.
2. Identify toolbar type according to Figure 2. Locate center point and mark for reference during assembly.



**Figure 2** Toolbar Identification

3. Identify hitch mounting positions according to Figure 3.



**Figure 3** Hitch Mounting Positions

## MOUNT HITCH (CONT'D)

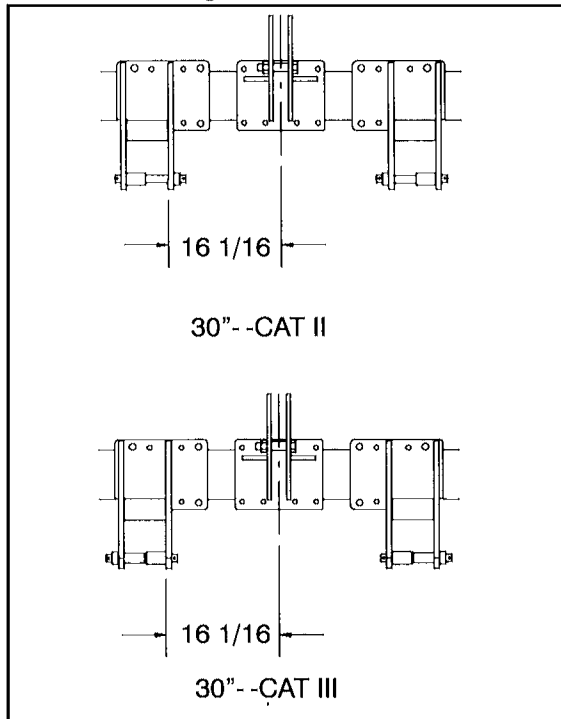
### Install 3-Piece Mast

1. Install upper mast, using U-bolts, lock washers, and nuts.
2. Attach center hitch to toolbar and upper mast, using 7/8 NC x 10" hex bolts, lock washers, and nuts.
3. Fasten the 1-1/4" OD bushings between the plates, using 1 x 5" hex bolts, lock washers, and nuts.
4. See Figure 4, Figure 5, or Figure 6 for the correct bushing location to fit the hitch that will be used. Be sure upper mast is centered on the toolbar.

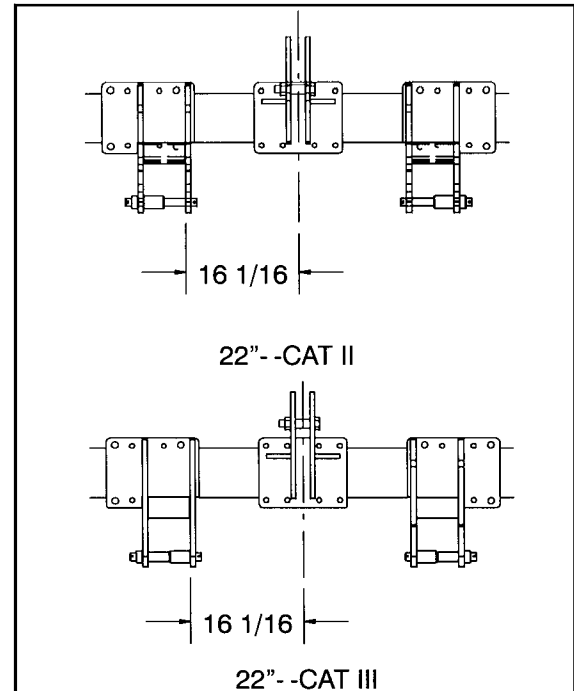
**NOTE:** The short side of the wings must be on the tractor side toolbar.

### IMPORTANT

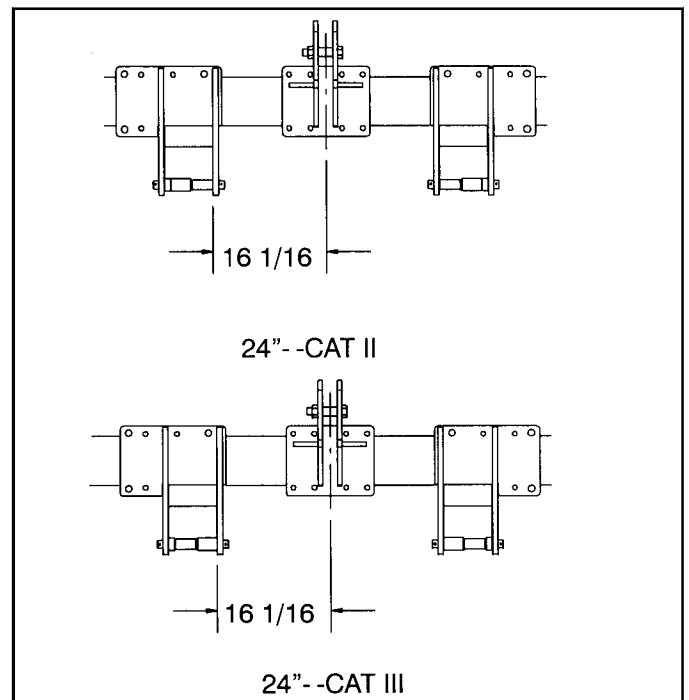
■ If the cultivator is used with lift assist wheels, it must be operated as a semi-mounted unit to prevent damage to the 3-point hitch components. Remove the upper link mast and attach the cultivator to the lower 3-point hitch links only. Lift assist wheels will always carry part of the cultivator weight.



**Figure 4** Hitch Position 30" Row & 22"-24" Row



**Figure 5** Hitch Position 22" Row



**Figure 6** Hitch Position 24" Row

### MOUNT HITCH (CONT'D)

#### Install 3-Piece Mast (Cont'd)

1. Support toolbar and fasten each lower 3-point bracket to toolbar. Install 7/8" hex bolts, lock washers, and nuts through row linkage and lower bracket.
2. Position lower 3-point brackets and spacers to match tractor hitch (Figure 4, Figure 5, or Figure 6). 24" row units use different lower 3-point brackets.

**NOTE:** Linkages attached to the 3-point brackets use 7/8 NC bolts and backstraps to attach the toolbar.

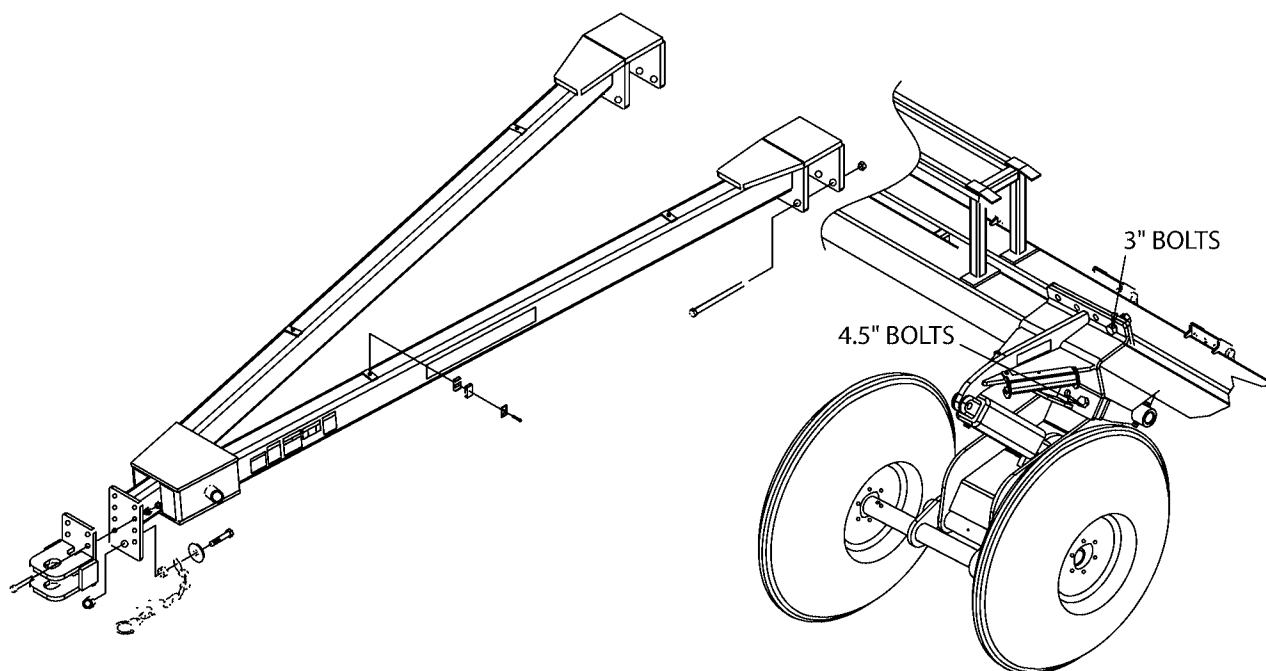
3. Mount spacer to lower 3-point brackets, using 1-1/8" OD x 9-5/16" pins and 7/16 x 2" Klik pin.

**NOTE:** Do not tighten bolts until entire cultivator is assembled.

### Pull-Type Hitch

1. Wheel masts and tongue are assembled at the factory. Install wheel masts in the guide rows, usually at 44" and 88" inches from the center row unit.

2. Attach wheel mast assemblies to the front 7 x 7 tube, using 1" NC x 4.5/3" bolts, lock washer and nut.
3. Center tongue on front 7 x 7 toolbar and attach with 1" NC x 10 bolts and lock nuts.
4. Tighten bolts to specifications in the Bolt Torque Chart, page 94.



**Figure 7** Pull-Type Hitch and Wheel Mast Assembly



## Assembly *Cont'd*

### Assemble Toolbar

1. On toolbars with 180-degree folding wings, assemble the cylinder yoke assembly when mounting the wings.

2. Use the longest pins on 7" x 7" toolbars. The ports on the cylinder should face toward the tractor side of the cultivator.

3. Secure the hinge pins with 5/16 x 2-1/2" bolts and lock nuts.

4. Assemble 3/4" jam nuts onto the 3/4" x 2-1/2" bolts and turn them into the hinge plates, located at the underside of the hinge. The bolt head faces the wings.

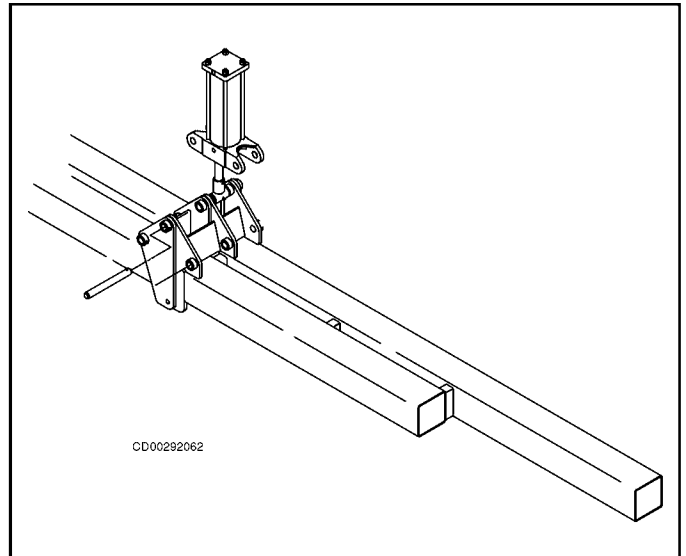
**NOTE:** On double toolbars, make sure the short side of wings are on the tractor side of the toolbar or the bolts used to level the wings will not be in the proper place.

5. Assemble grease zerks in cylinder linkage bars.

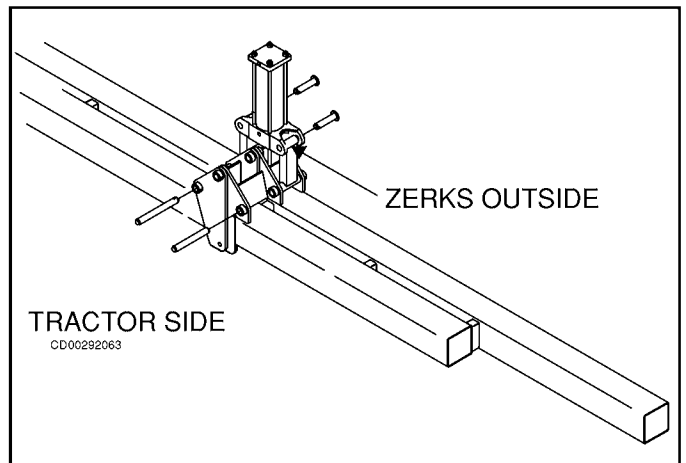
6. Mount the linkage bars to the wings, using medium-length pins. The grease zerks should point outward from the hinge.

7. Secure the linkage bar pins with 5/16" x 2-1/2" bolts and lock nuts.

8. Assemble the linkage bars to the cylinder casting, using welded head pins and snap ring pins as shown in Figure 9. The snap ring pins go through the pin on the tractor side of the cylinder.



**Figure 8** Mounting Wings



**Figure 9** Mounting Cylinder Linkage Bars

### Mount Hydraulics

#### **WARNING**

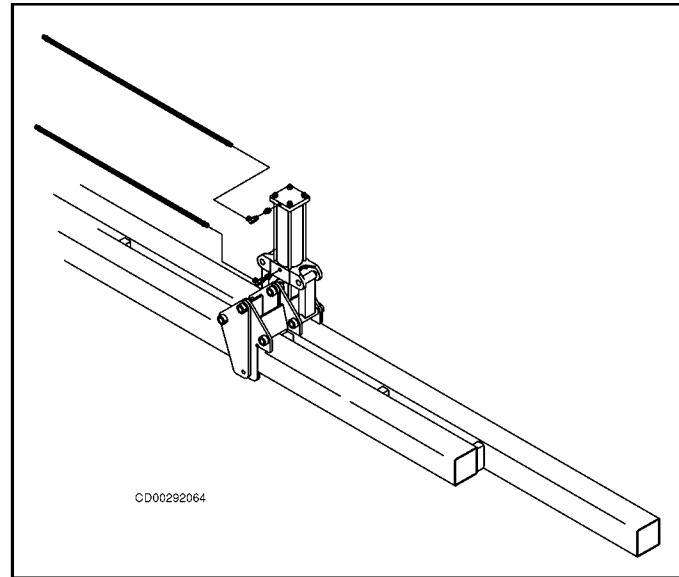
■ Air in hydraulic systems can cause erratic operation and allow loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.

■ Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.

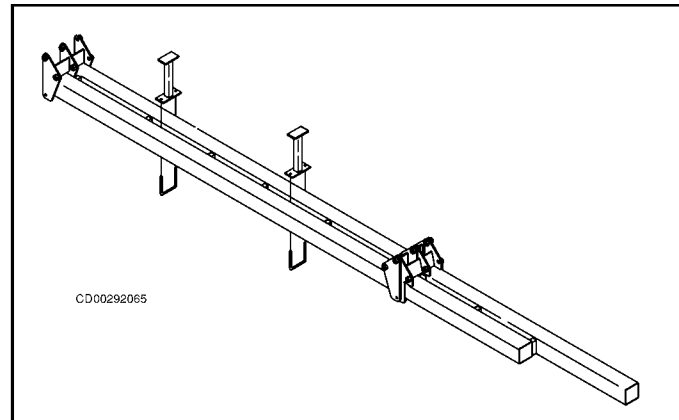
1. Fasten adapters to the cylinders.
2. Attach 90-degree elbows to adapters. Point elbows downwards and toward the center of the cultivator.
3. Fasten the long hoses to the upper ports on cylinders and medium hoses to the lower ports on cylinders.
4. Run the hoses to the center of the toolbar and fasten the two long hoses and two shorter hoses together.
5. After cultivator is completely assembled, fasten two 60" hoses to the toolbar, using the plastic cable ties.
6. Fasten the wing rests to the center section, using 5/8" U-bolts, nuts, and lock washers (not required on TRF) as shown in Figure 11. Locate wing rests by measuring from the hinge pin. Make sure there is no interference with gang assemblies when folded.

**NOTE:** Do not tighten wing rests until entire cultivator has been assembled. They may need to be moved to avoid other components bolted to the center toolbar or wings.

7. Install hydraulic tips and attach 3-point hitch to front of toolbar.



**Figure 10** Installing Hydraulic Fittings



**Figure 11** Wing Rest

8. Torque hydraulic fittings according to specifications given below.

#### **TORQUE SPECIFICATIONS**

| Fitting         | Required Torque  |
|-----------------|------------------|
| 3/8 Flare JIC   | 17 - 19 lbs.-ft. |
| 3/8 O-Ring Boss | 24 - 26 lbs.-ft. |
| 1/2 O-Ring Boss | 50 - 60 lbs.-ft. |

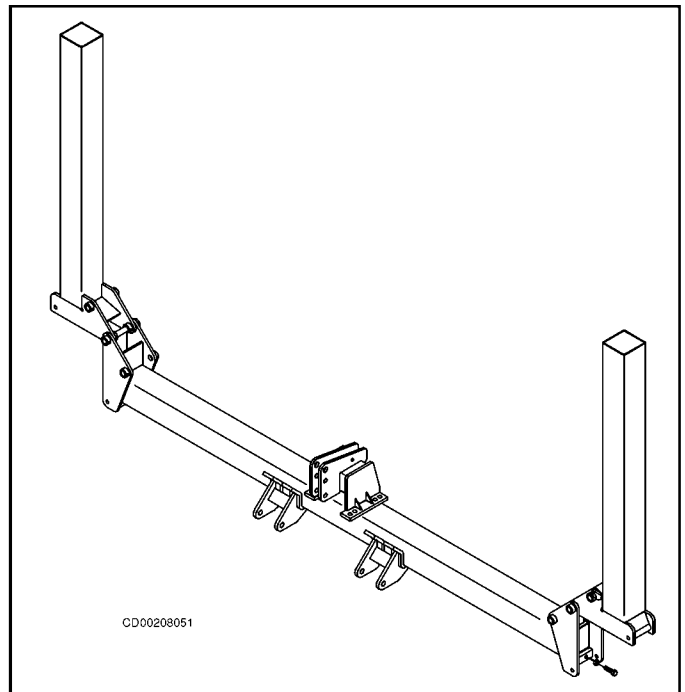
### Make Final Adjustments

1. Attach to tractor and slowly fold and unfold; then make final adjustments.
2. On folding toolbars, charge the hydraulic cylinders by raising the wings 1 foot and unfolding several times to make sure hydraulic cylinders are completely filled with oil.

### IMPORTANT

■ Failure to charge hydraulic cylinders will cause damage to the cultivator and possible personal injury as wings will “free fall” into transport position. Stay clear of folding toolbars when folding.

3. Level wings to the center toolbar, using 3/4 x 2-1/2” hex bolts and jam nuts. These may need to be readjusted after cultivator is completely assembled.



**Figure 12** Leveling Wings

## Assembly *Cont'd*

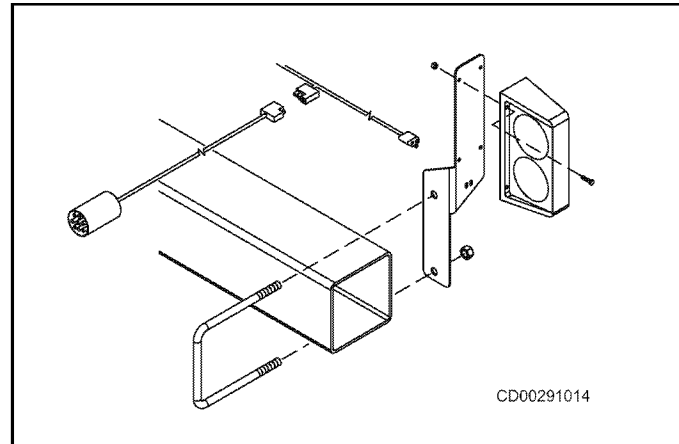
### Install Lights

**1. Rigid Bar (TRR):** Install light brackets to ends of toolbar, using U-bolts and nuts as shown in Figure 13.

**1. Folding Bar (TRR and TRF):** Install light brackets to wing support plates, using 5/8" bolts and nuts.

**2.** Attach tail light assemblies to brackets. Tail lights should be mounted toward the outside of the cultivator with red lens visible to the rear and towards the bottom.

**3.** Connect the light harness to the tail lights and secure to top side of toolbar, using plastic ties. When cultivator is completely assembled, use additional tie straps to secure harness in place.



**Figure 13** Installing Lights  
(Rigid bar shown)

### IMPORTANT

■ **Tail light harness must be installed so that it is not pinched or damaged during operation of the cultivator.**

**4.** Connect tractor harness to tail light harness and secure out of the way during rest of assembly.

**5.** Fasten end cap, using screw provided.

### Mount Row Units

**1.** Locate the center of the toolbar and mark it. Mark off the row spacings on both sides of the center mark.

Example: On even row units (8 or 12 rows), if the cultivator will be used for 30-inch rows, mark off every 30 inches on both sides of the center mark.

**2.** Center the linkage assemblies over the marks made on the toolbar and fasten them, using 5/8" U-bolts and flanged nuts.

**NOTE:** Linkages attached to the 3-point brackets use 5/8 NC bolts and the linkage.

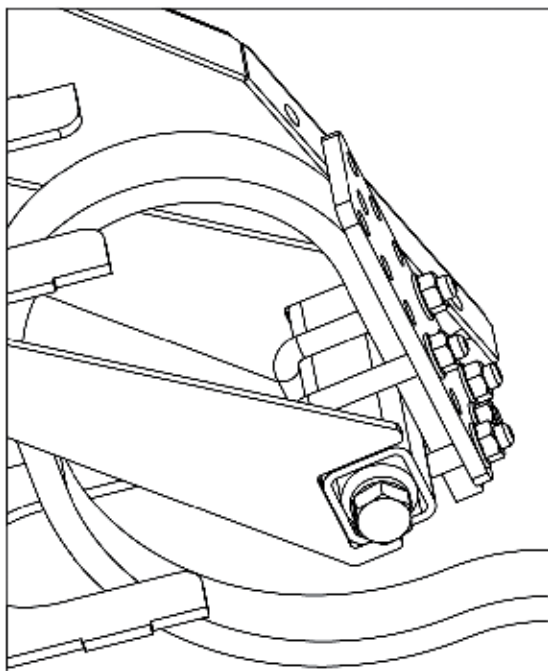
**3.** Install row units with 6 x 12. Set back gauge wheel at 44" or 88" from center if using steel or semi-pneumatic guide wheels.

## Assembly *Cont'd*

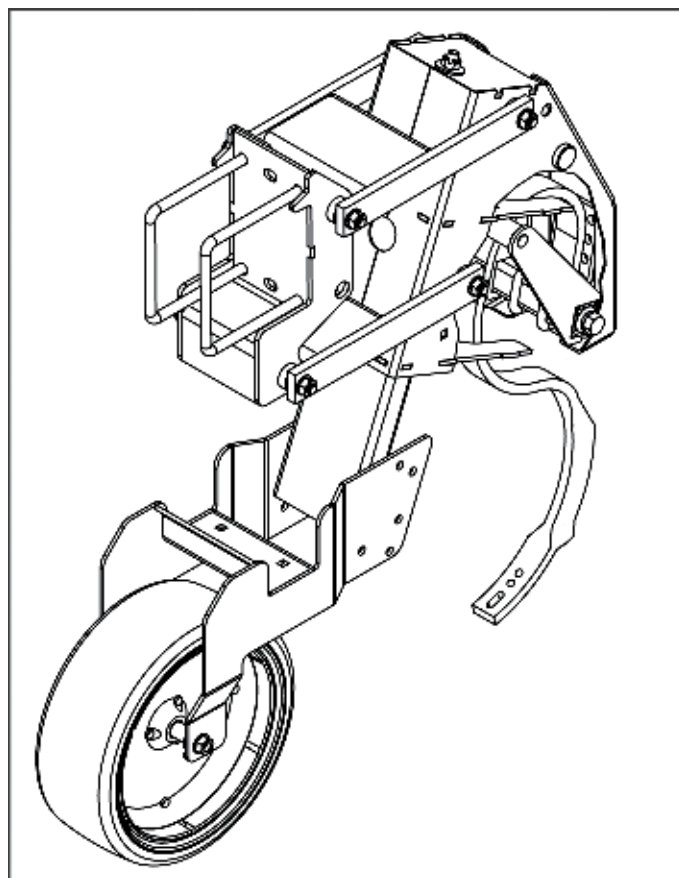
### Mount Tines

#### Straight Edge Tine

1. Fasten tine to tine pitch bracket, using 1/2 x 1-1/2" hex bolt and flange nut.



**Detail**

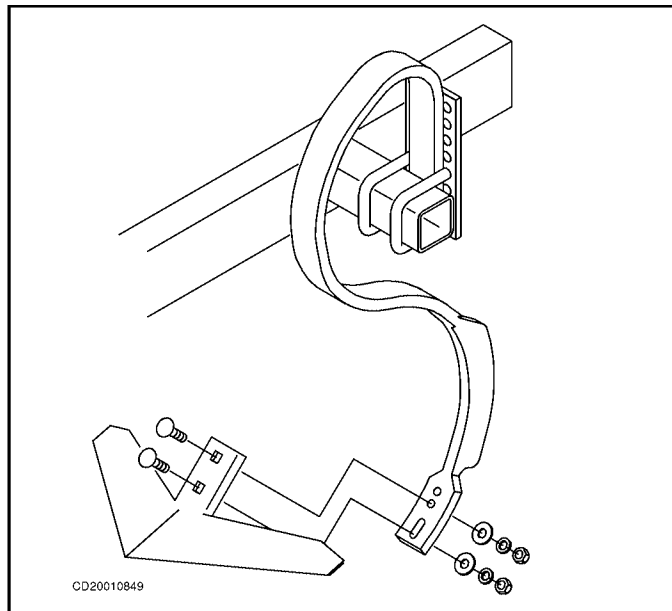


**Figure 14** Mounting Straight Edge Tine

### Mount Shovels & Sweeps

#### Heavy Duty Adjustable Tine

1. Fasten shovels to tine, using two 7/16 x 2" plow bolts with 1/2" heads, flat washers, lock washers, and hex nuts as shown in Figure 15.
2. Adjust shovel pitch by selecting top or bottom holes in tine.

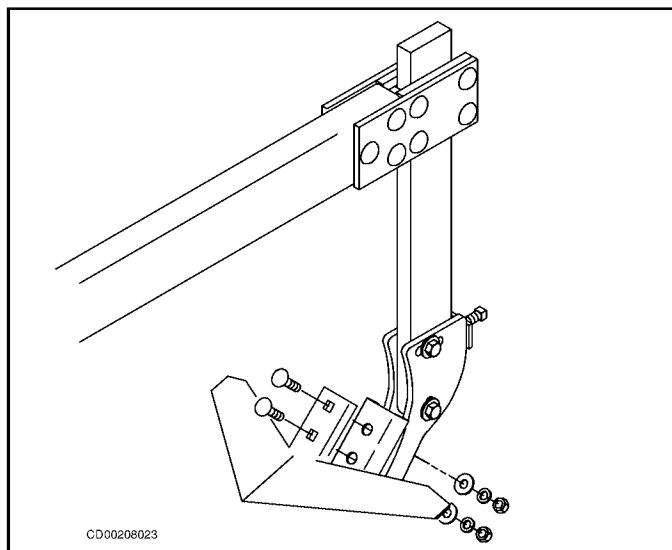


**Figure 15** Straight Edge Tine

#### Rear Shank

1. Fasten shovels to shank, using two 1/2 x 3" plow bolts, flat washers, lock washers, and hex nuts.

Large sweeps use 1/2 x 3-1/2" plow bolts and spacer plates as shown in Figure 16.

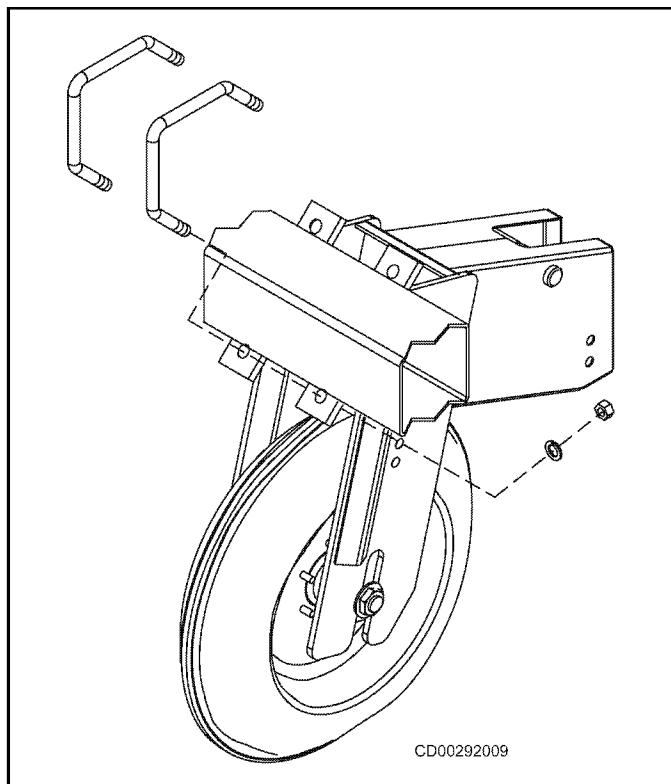


**Figure 16** Rear Shank

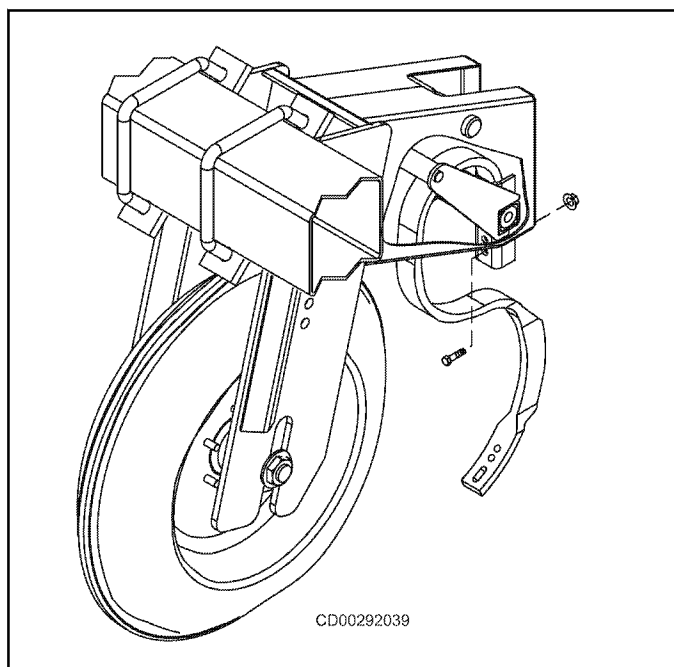
## Assembly *Cont'd*

### Mount King Guide Struts, Shanks, & Extensions

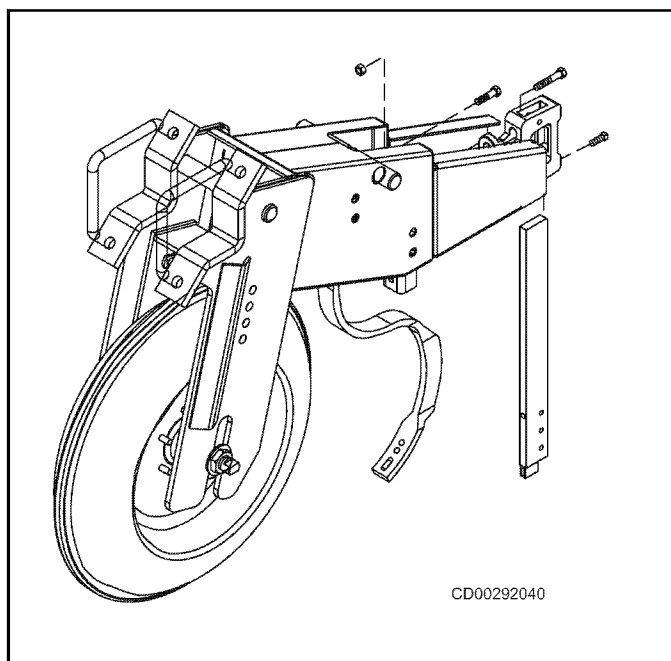
1. Fasten king guide strut to the toolbar, using 7/8" A-bolts, lock washers, and hex nuts as shown in Figure 17.
2. Attach shanks to king guide strut, using 1/2 NC x 1-1/2 bolt and flanged lock nut (Figure 18).
3. Attach extensions to the king guide struts (Figure 19).



**Figure 17** Mounting King Guide Strut



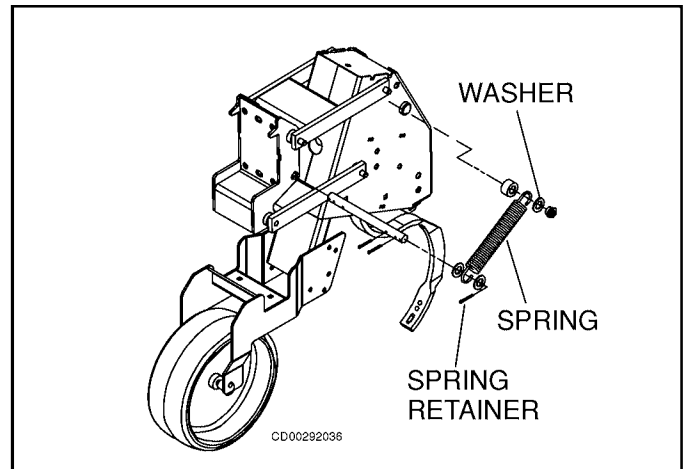
**Figure 18** King Guide Adjustable Shank



**Figure 19** King Guide Shank Extension

### Install Down Pressure Springs

1. Insert spring rod in mounting bracket and install cotter pins.
2. Replace picot bolt retaining nut with new shoulder nut provided.
3. Slide spring into place over spring rod and fasten into place with spring retainers. Use flat washers on each side of spring hook as shown in Figure 20.



**Figure 20** Down Pressure Springs



## Rear Extension with Hiller or Rigid Shank

1. Attach rear extension to linkage, using four cap screws, lock washers, and nuts on each unit.

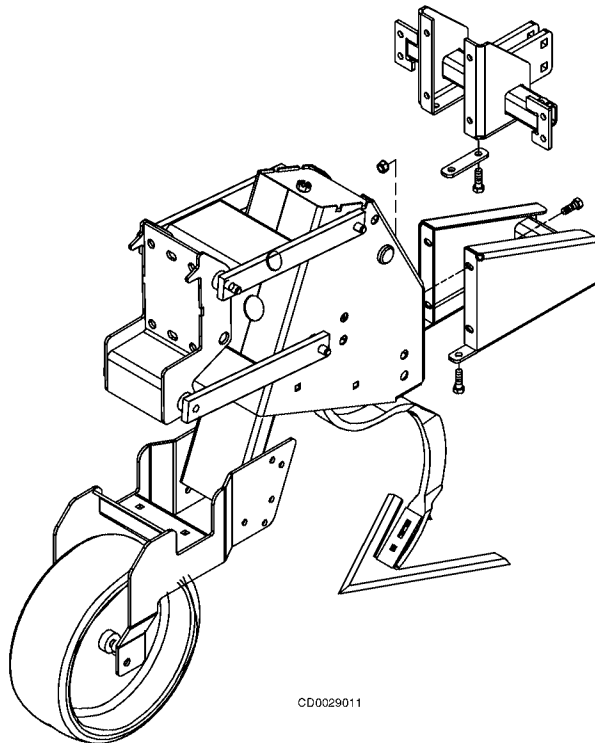


Figure 21

## Rear Extension with Cast Clamp

1. Attach cast clamp body to rear extension and attach shank to clamp.

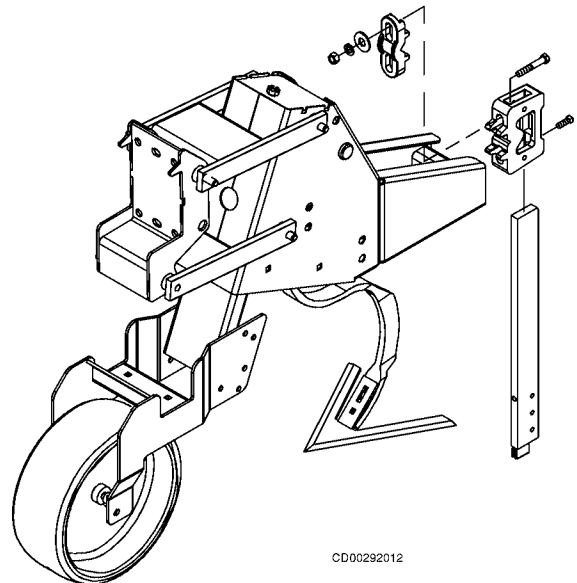


Figure 22

## Rigid Rear Extension with Shank

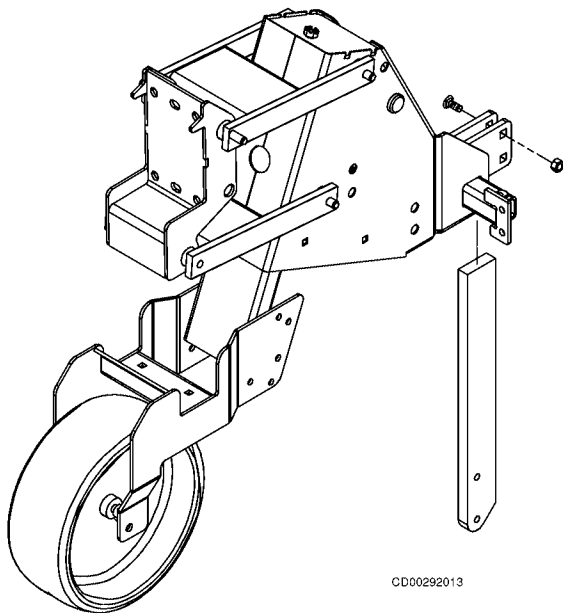


Figure 23

## Rigid Rear Extensions with Tine Adapter

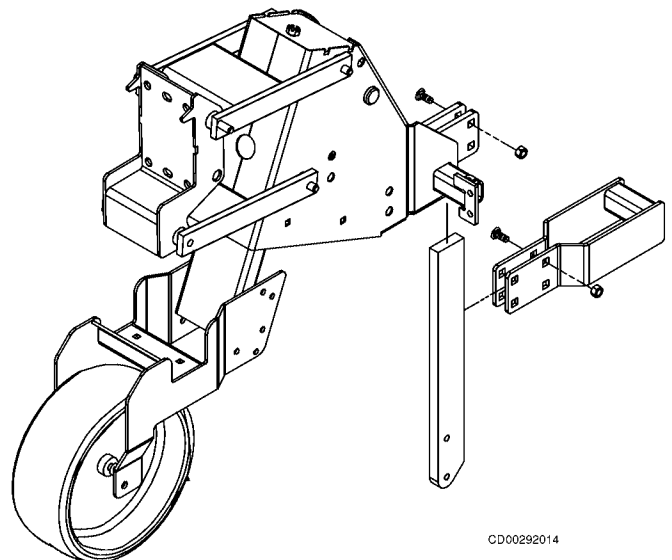


Figure 24

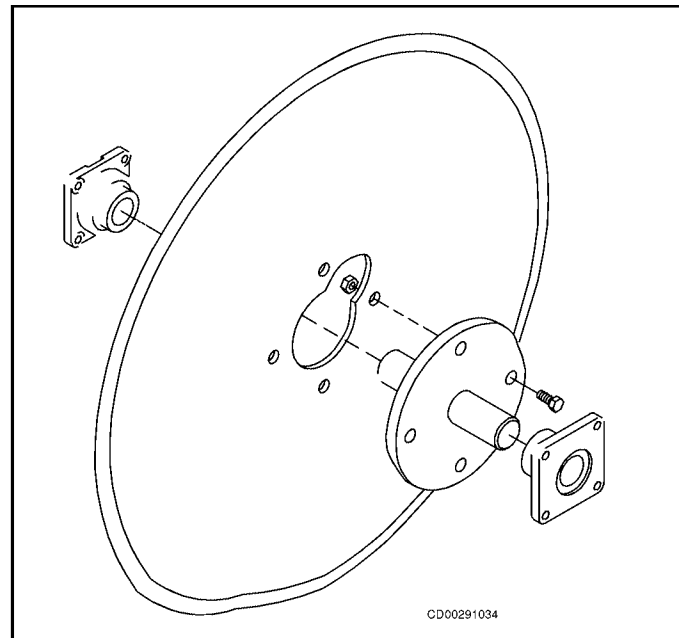
### Mount Coulter Discs

#### Straight Edge Tines

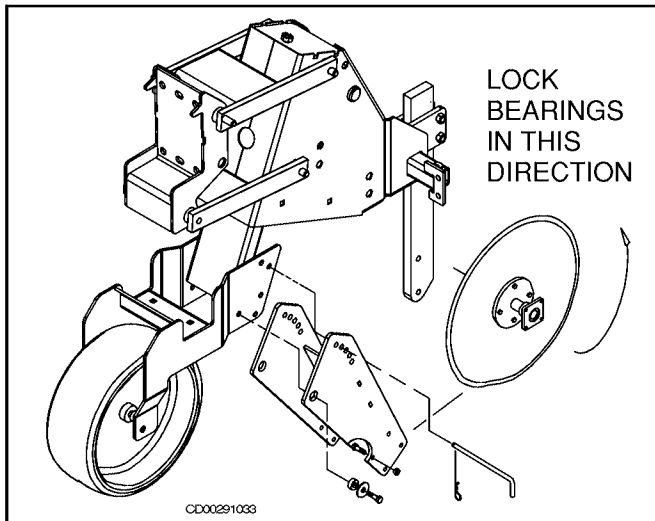
1. Fasten hub assembly to disc, using  $3/8 \times 1-1/4$ " hex bolts, lock washers, and hex nuts as shown in Figure 26.
2. Mount disc/hub assembly to disc mount arms, using  $3/8$  NC  $\times 1-1/2$  hex head cap screw as shown in Figure 27.
3. Attach disc arms with  $1/2$  NC carriage bolts, spacer, washer, and adjustment pin.
4. Lock bearing lock collars in direction of wheel travel (see Figure 25).

#### Rigid Tines

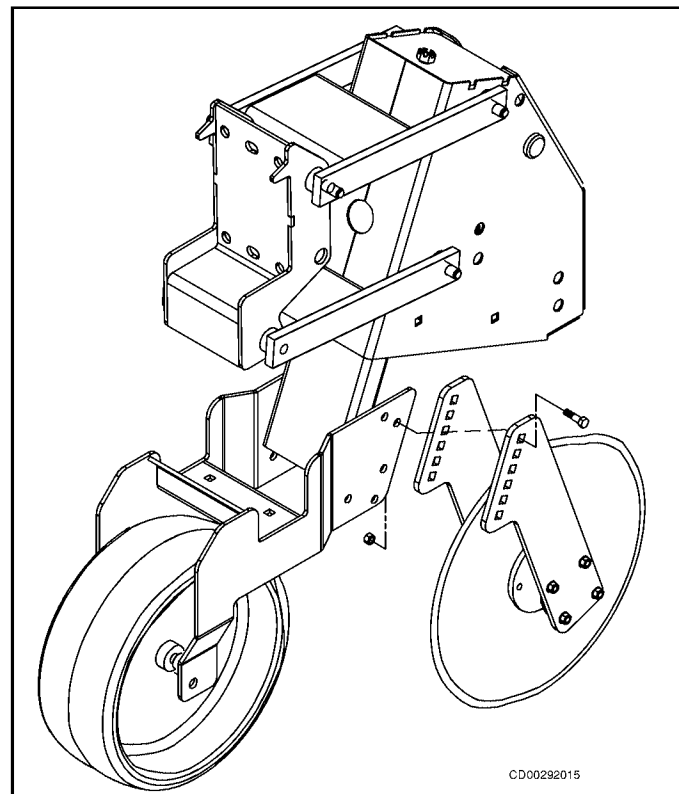
1. Fasten hub assembly to disc, using  $3/8 \times 1-1/4$ " hex bolts, lock washers, and hex nuts as shown in Figure 26.
2. Mount disc/hub assembly to disc mount weldment, using  $3/8$  NC  $\times 1-1/2$  hex head cap screw as shown in Figure 25.
3. Attach disc arms with  $1/2 \times 1-1/2$  bolts, spacer, washer, and adjustment pin.
4. Lock bearing lock collars in direction of wheel travel (see Figure 25).



**Figure 26** Mounting Coulter Disc



**Figure 25** Disc Mount Assembly  
(Rigid shank tine)

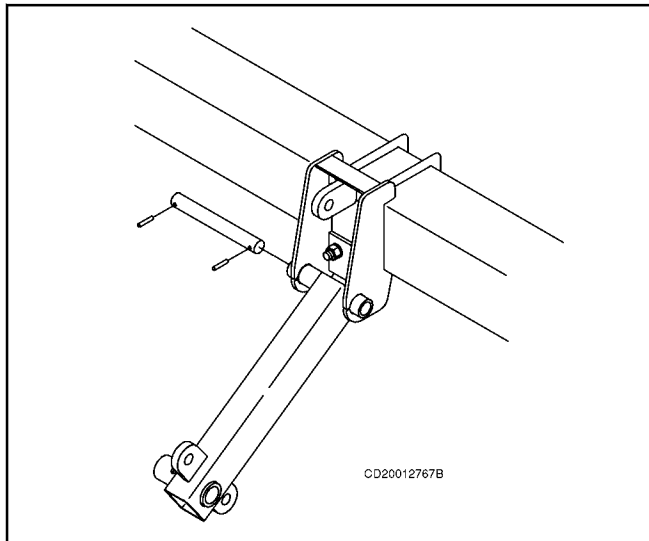


**Figure 27** Disc Mount Assembly  
(Straight edge tine)

### Attaching Adjustable Support Wheels

#### Mount Pivot Arm

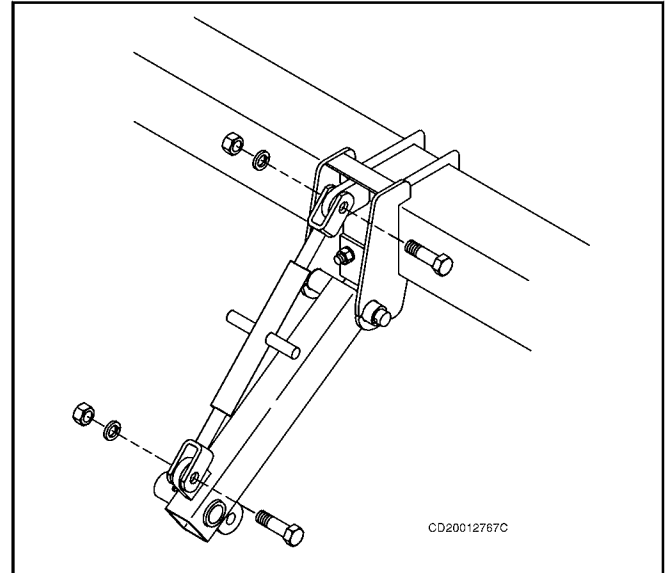
1. Attach pivot arm, using pin and two 5/16 x 1-5/8" roll pins as shown in Figure 28.



**Figure 28** Mounting Pivot Arm

#### Attach Screwjack

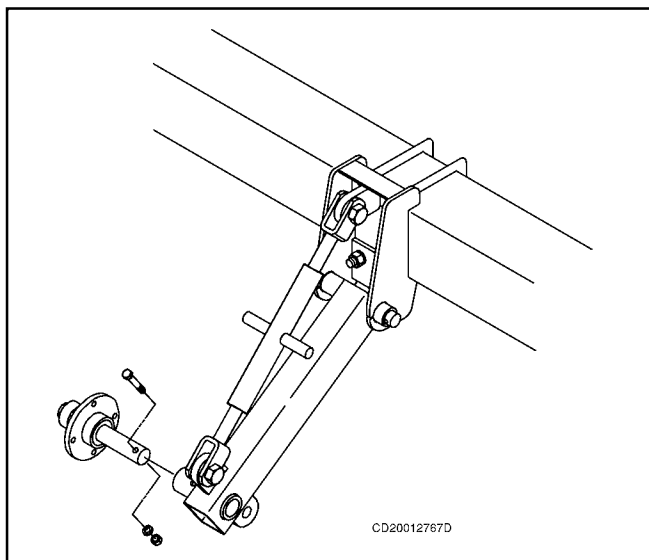
2. Attach screwjack, using two 1 x 3" hex bolts, lock washers, and hex nuts as shown in Figure 29.



**Figure 29** Attaching Screwjack

#### Fasten Hub & Spindle Assembly

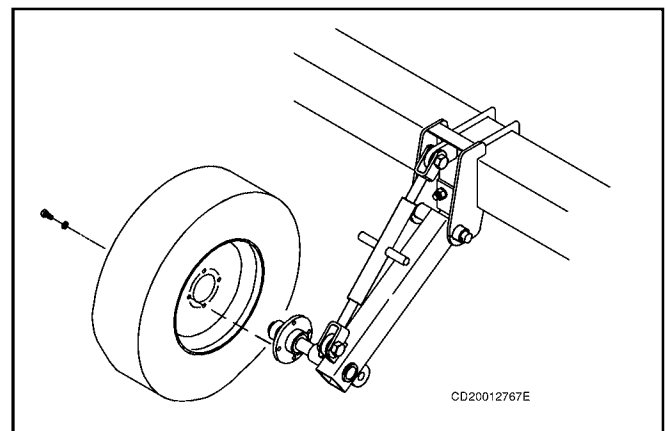
3. Fasten hub and spindle assembly, using 1/2 x 3" hex bolt, lock washer, and hex nut as shown in Figure 30.



**Figure 30** Fastening Hub & Spindle Assembly

#### Fasten Tire & Rim Assembly

4. Fasten tire and rim assembly, using bolts provided in hub as shown in Figure 31.
5. If you have a support wheel, be sure tire is centered over the guide marks; then tighten U-bolts on mount.



**Figure 31** Fastening Tire & Rim Assembly

### Mounting Semi-Pneumatic & Steel Guide Wheels

#### Mount Guide Wheels

1. Mount guide wheels centered over guide marks, using U-bolts provided as shown in Figure 32.

**NOTE:** For some applications, these wheels may need to be mounted behind the tractor tires.

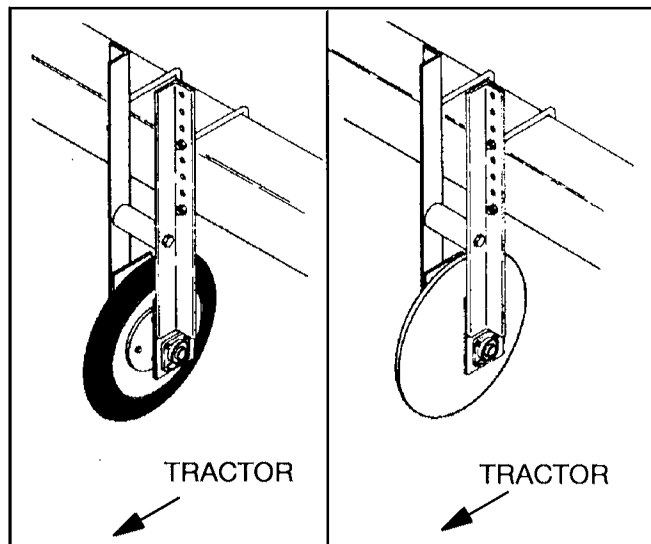
#### IMPORTANT

■ When using semi-pneumatic or steel guide wheels, measure tractor and cultivator carefully. Position wheels so that they will not hit tractor cab when toolbar is folded.

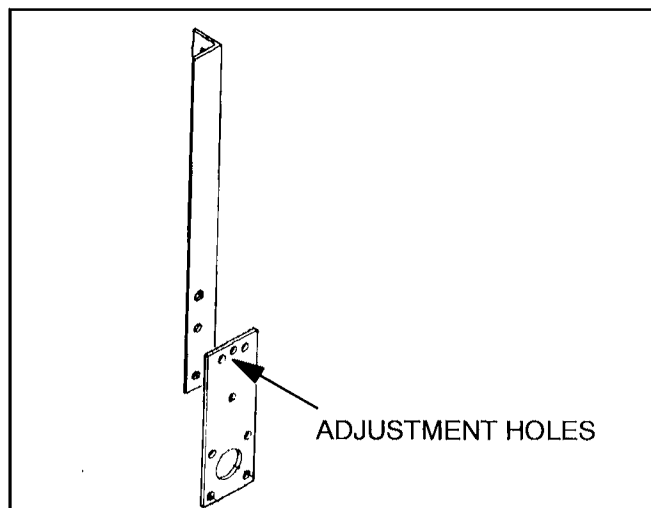
■ When placing behind tractor tires, carefully check the clearance in all positions. Some tractors without quick hitch may not have adequate clearance when the cultivator is raised.

■ Adjustable gauge wheels will interfere with semi-pneumatic or steel guide wheels and may not be used together.

2. Adjust wheels by removing bolt in angle and turning adjustment plate as shown in Figure 33.



**Figure 32** Semi-Pneumatic Wheels (left) & Steel Guide Wheels (right)



**Figure 33** Adjustment Plate

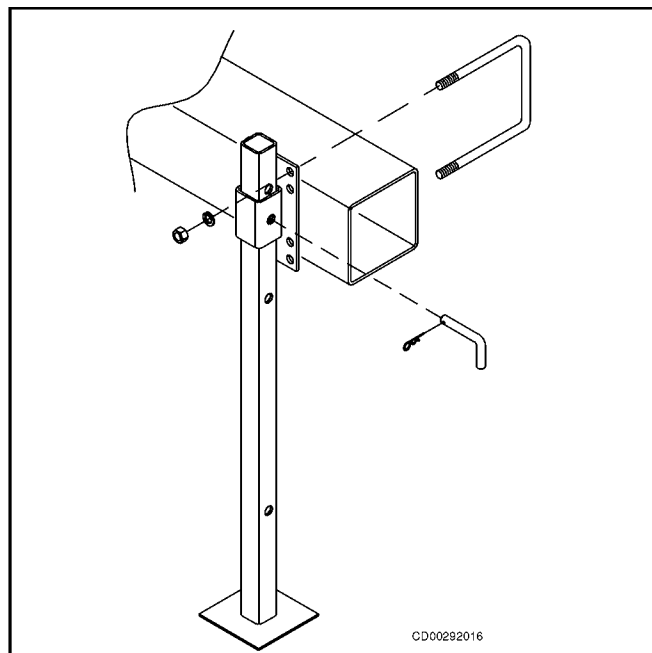
### Mount Front Parking Stands

Two front parking stands are included with all 3130 cultivators.

1. Install front parking stands at each end of the toolbar center section as shown in Figure 34.

2. **TRR and F toolbars:** Position parking stand assembly between row units and fasten to front side of toolbar as shown in Figure 35, using 5/8" U-bolts and flanged nuts.

2. **TRF toolbars:** Attach front parking stands to short hinge tubes of reinforced folding toolbars as shown in Figure 35, using 5/8" U-bolts and flanged nuts.

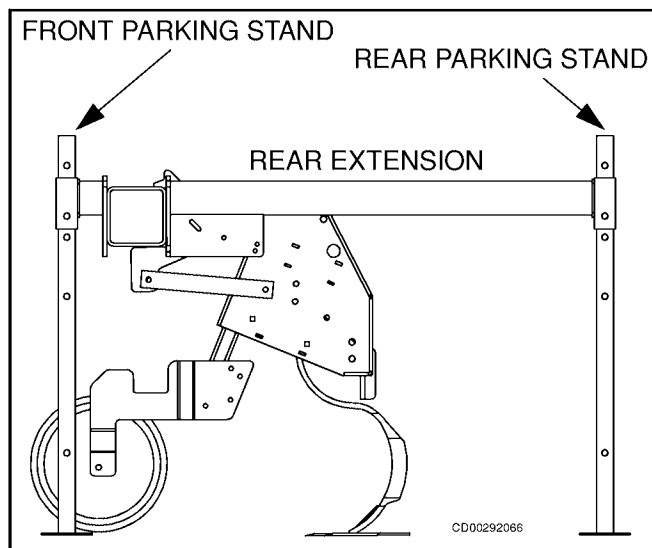


**Figure 34** Mounting Parking Stand

### Rear Parking Stands

Rear parking stands are included with all folding toolbar cultivators (TRF and F). Rear parking stands must be used for all folding toolbar cultivators not equipped with lift assist wheels.

1. Install parking stands at each end of the toolbar center section as shown in Figure 35.



**Figure 35** Front and Rear Parking Stands  
(Type F toolbar)

### Mounting Adjustable Support Wheels

#### **WARNING**

- Before folding or unfolding cultivator:
  - Make sure you have adequate clearance on each side and overhead.
  - Make sure wing cylinder restrictor fittings are properly installed.
  - Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.

#### Measure Support Wheel Location (Figure 36)

Support wheels may need to be adjusted to prevent interference with some tractor cabs or accessories when folding and unfolding the cultivator.

Reposition support wheels following these steps:

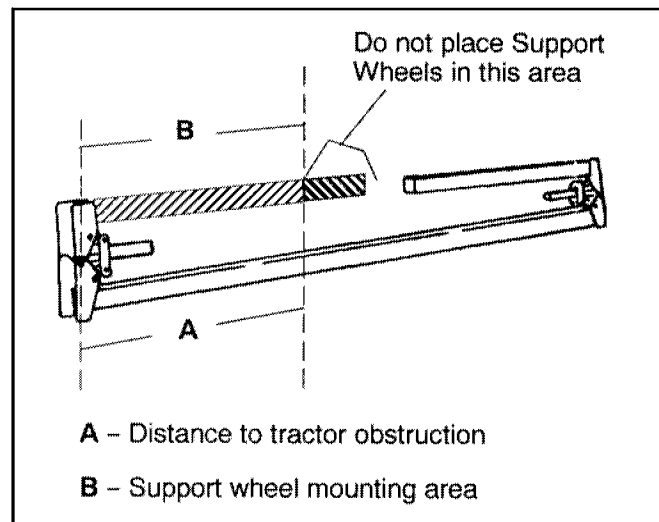
1. Measure and record distance **A** from wing hinge pin to the tractor obstruction (operator cab, etc.).
2. Measure and mark the same distance from hinge pin to a point on wing **B**. Support wheels may be positioned on cultivator wings inside that point.
3. DO NOT position support wheels beyond this point, as shown in shaded area in Figure 36.

#### Fasten Strut Mount

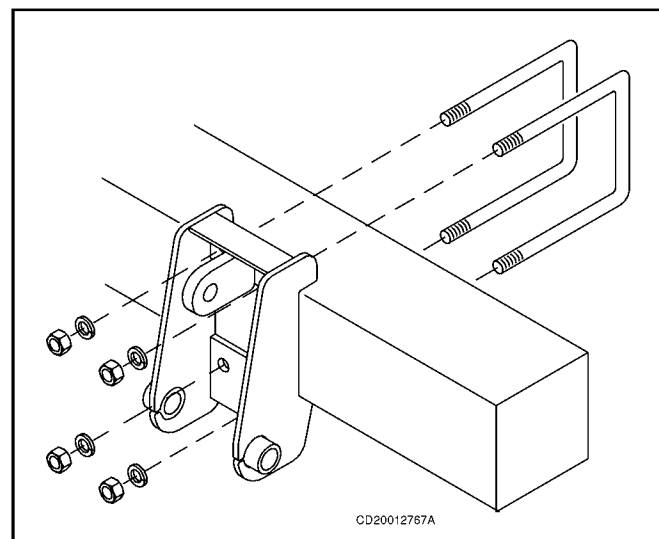
1. Fasten strut mount, using two 3/4" U-bolts, lock washers, and hex nuts as shown in Figure 37.
2. **NOTE:** Mount support wheels over a linkage facing towards the tractor. DO NOT tighten the U-bolts until assembly is complete.

### IMPORTANT

- These wheels may not be used behind tractor tires.
- When using adjustable support wheels, measure tractor and cultivator carefully. Position support wheels so that they will not hit tractor cab when toolbar is folded.



**Figure 36** Measuring for Support Wheels

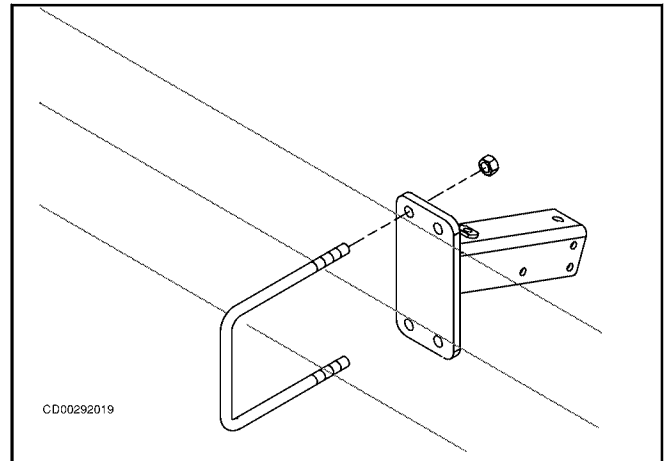


**Figure 37** Fastening Strut Mount

### Install Rolling Shields

#### Toolbar Mounted

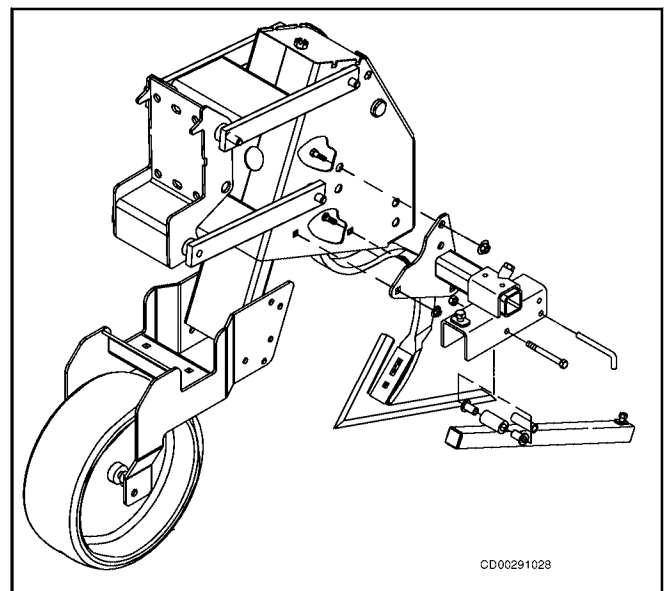
1. Fasten mount to toolbar, using 5/8" U-bolt and flanged nuts as shown in Figure 38. Be sure mounts are centered over the row.



**Figure 38** Toolbar Mounted Rolling Shield

#### Row Unit Mounted

1. Fasten mounting tubes to each side of row unit, using one 5/8 x 1-1/4 hex bolt and two 1/2 x 1 carriage bolts per side as shown in Figure 39.
2. Assemble pivot bracket on tube, set to match row spacing, and tighten set screw.

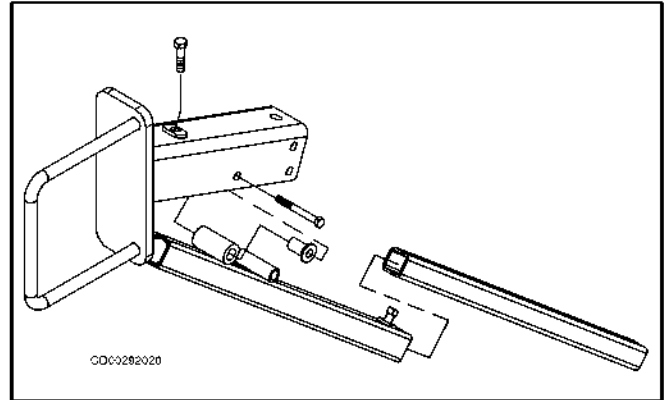


**Figure 39** Row Unit Mounted Rolling Shield

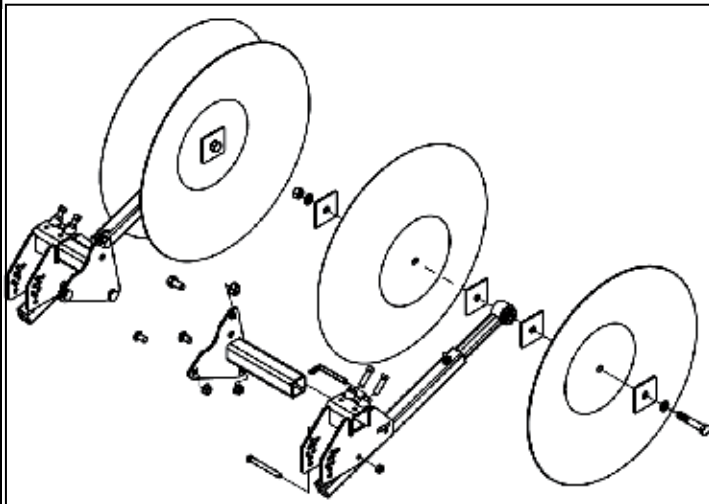
### Install Rolling Shields (Cont'd)

#### Attach Lower Tubes & Shield

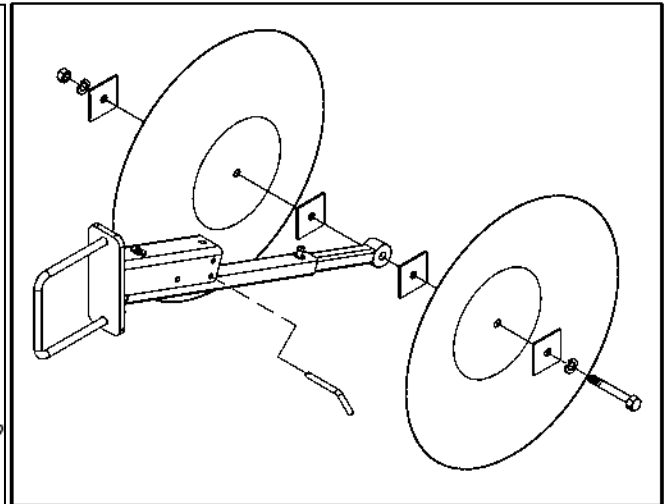
1. Slide lower tube into upper tube and fasten, using bolt on upper tube.
2. Remove nut and lock washer from spindle bolt assembly.
3. Slide spacer plates and shields onto spindle assembly and fasten, using lock washers and nuts.
4. For narrow shields, place spacers on spindle assembly to outside of support plates.



**Figure 40** Fastening Tubes



**Gang Mount**



**Toolbar Mount**

**Figure 41** Fastening Tubes & Shields



### Open Top Shield

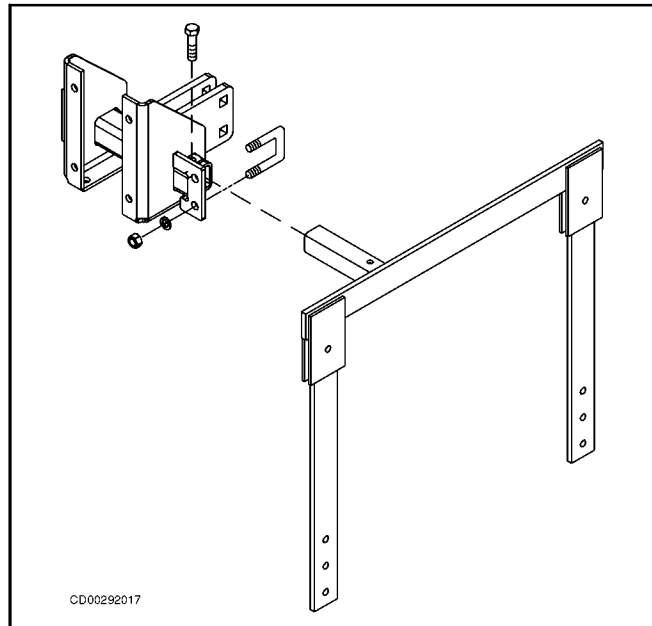
#### Fasten Mount Assembly

Shield must be used with set-back brackets as follows:

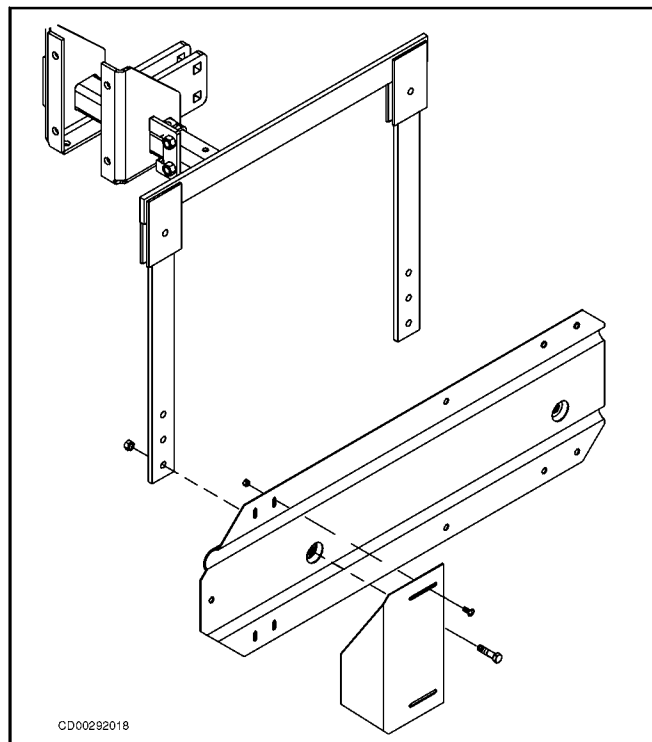
| BRACKET  | ROW |
|----------|-----|
| 20022012 | 40" |
| 20021950 | 30" |
| 20022011 | 22" |

**NOTE:** Long side of shield must point away from tractor.

1. Slide pivot bracket into set-back.
2. Install lock pin and U-bolt as shown in Figure 42.
3. Fasten end shields as shown in Figure 43.



**Figure 42** Fastening Mount Assembly



**Figure 43** Fastening End Shields

## Assembly Cont'd

### Open Top Shield (Cont'd)

#### Assemble Shields

1. Fasten parallel arms to shields, using 7/16 x 1-1/4" hex bolts on back arm and 7/16 x 2" hex bolts on front arm with flat washers and lock nuts.
2. Fasten pivot bracket to parallel arms, using 7/16 x 1-1/4" hex bolts and lock nuts.
3. Attach chain to 7/16 x 2" hex bolt on front parallel arm, using lock nut.
4. Run chain to pivot bracket, fastening with 3/8 x 2-3/4" clevis pin, 5/16" flat washer, and hair pin cotter.

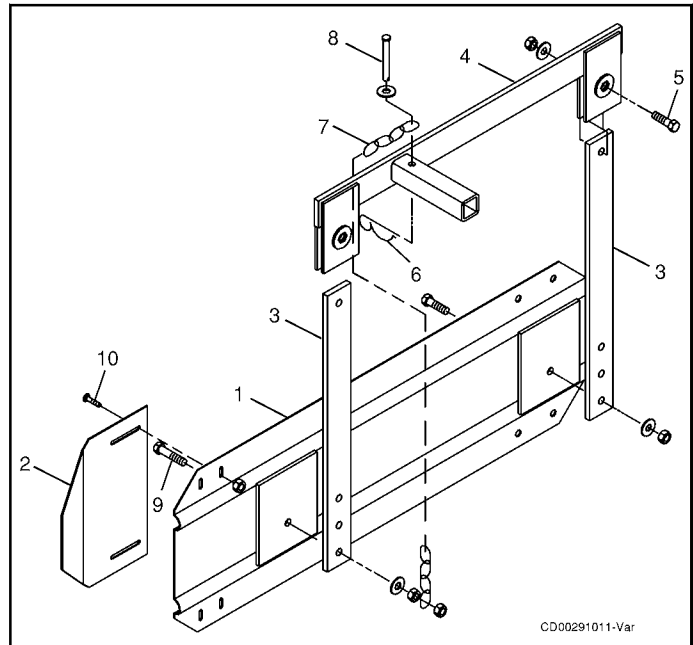


Figure 44 Assembling Shields

#### Attach Shield Guides

1. Attach shield guides, using 1/4 NC x 1" carriage bolts and hex nuts as shown in Figure 45.

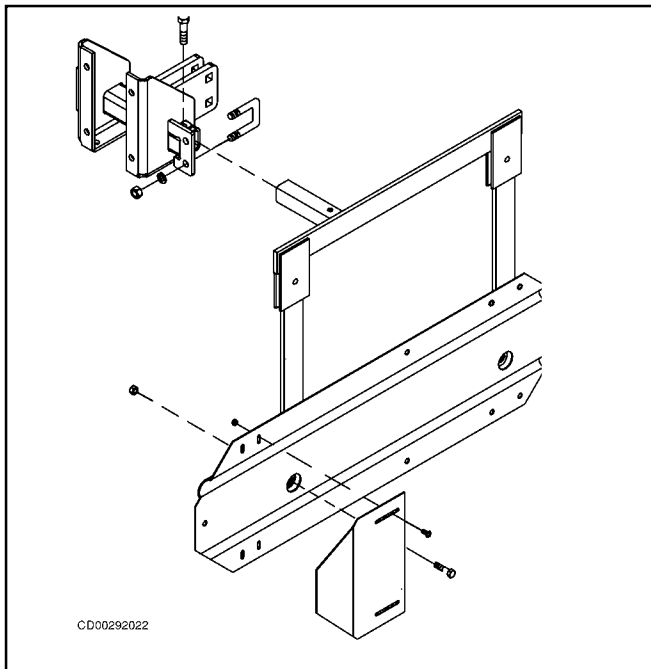


Figure 45 Attaching Shields

#### Attach Rear Extension

1. Fasten rear extension to shield, using 3/8 x 1" hex bolts, flat washers, and flanged nuts.

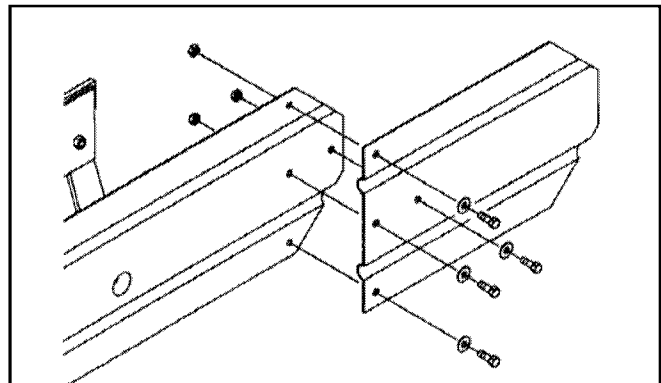


Figure 46 Attaching Rear Extension

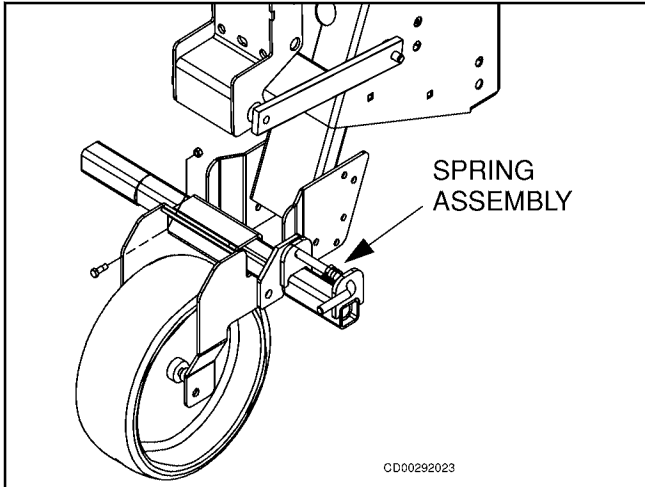
## Assembly Cont'd

### Dual Disc / Dual Knife

#### Fasten Flip-Up Disc Tube

1. Fasten tube assembly to front tube bracket, using front tube clamp, 7/16 x 1-1/2" carriage bolts, lock washers, and hex nuts.

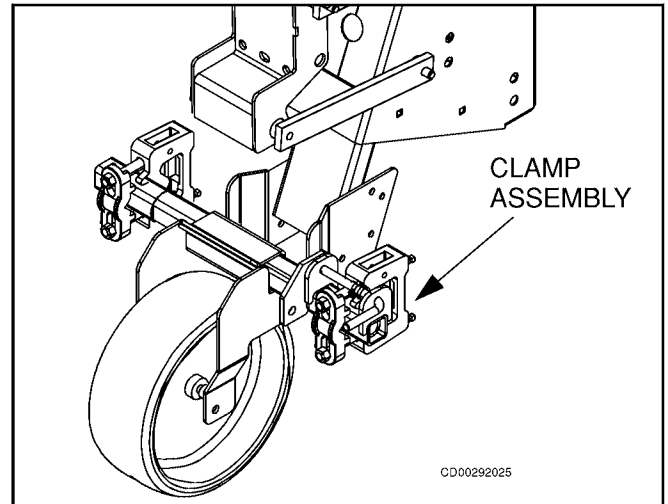
**NOTE:** Make sure tube is centered and spring assembly is on top. Spring assembly should always be on left side of tree as shown in Figure 47.



**Figure 47** Flip-up Disc Tube

#### Fasten Clamp Assembly

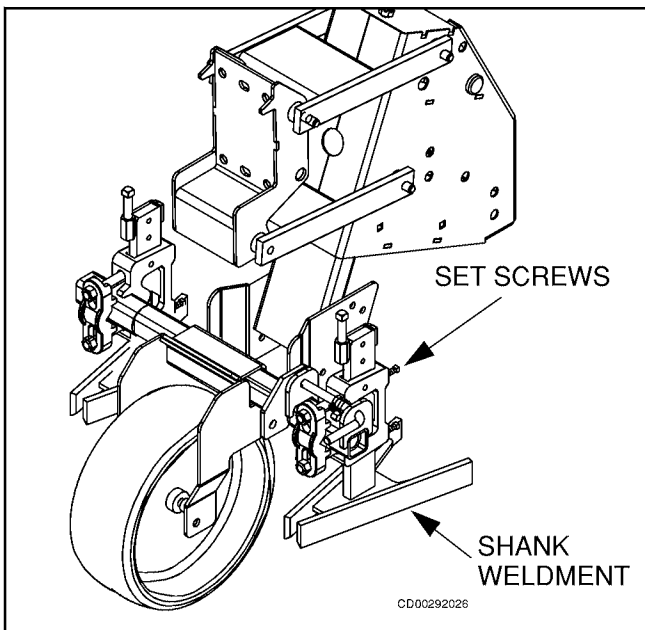
1. Fasten clamp assembly to front tube, using the hardware provided with clamp assembly.
2. Mount clamps on the back side of front tube as shown in Figure 48.



**Figure 48** Fastening Clamp

#### Attach Shank Weldment

1. Slide shank weldment into clamp assembly, as shown in Figure 49.
2. Adjust shank to proper height and tighten set screws in clamp assembly.

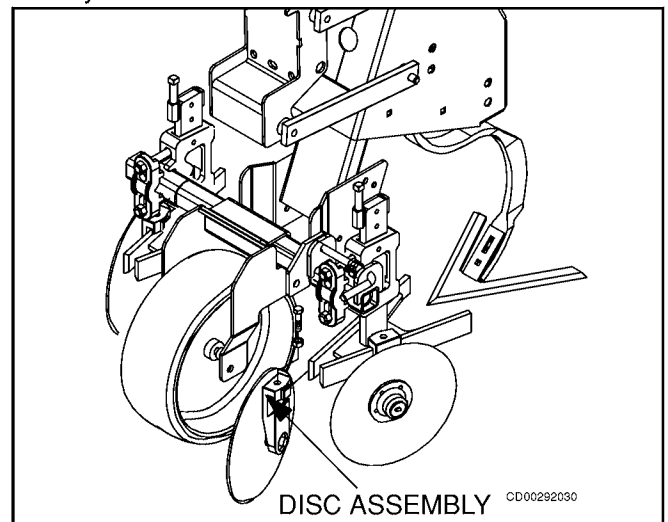


**Figure 49** Attaching Shank Weldment

#### Fasten Dual-Disc Assembly

1. Slide dual disc assemblies over the rail on the shank weldment as shown in Figure 50.
2. Adjust to proper width and tighten hex bolt and jam nut on top of disc assembly.

**NOTE:** There are right and left disc assemblies. When mounted, the back of the disc should be farther away from the rail than the front to throw dirt away from the row.



**Figure 50** Fastening Disc Assembly

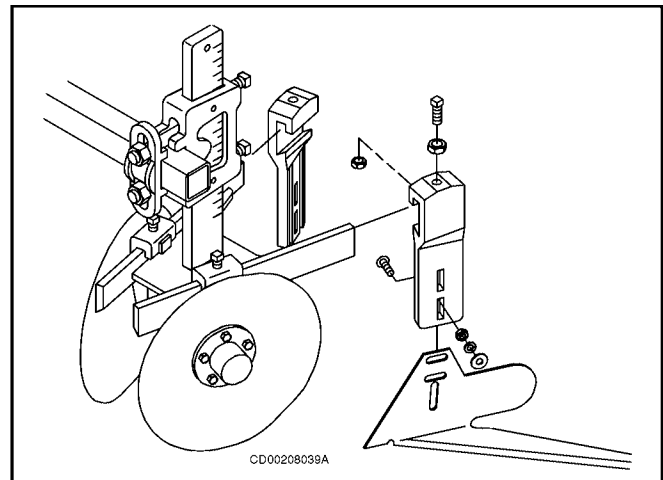
### Dual Disc / Dual Knife (Cont'd)

#### Attach Dual Knife

1. Fasten the knife to the adapter, using two 3/8 x 1-1/2" carriage bolts, flat washers, lock washers, and hex nuts as shown in Figure 51. Knife must go on inside of adapter.

2. Slide dual knife assemblies over the rail on shank weldment and fasten with 1/2" hex bolt and jam nut.

**NOTE:** The mounting surface on the left and right knife adapters must be parallel to the row.

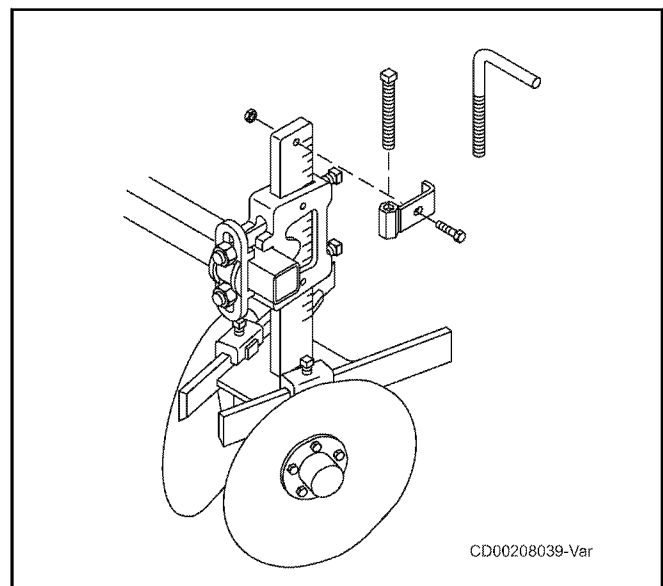


**Figure 51** Dual Knife Assembly

#### Attach Adjustable Screw Kit

1. Fasten adjustment nut to the shank weldment, using a 3/8 x 1-1/2" hex bolt and flanged nut.

2. Thread the 5/8 x 4-1/2" square head set screw or crank into the adjustment nut as shown in Figure 52.



**Figure 52** Adjustable Screw Kit

## Assembly *Cont'd*

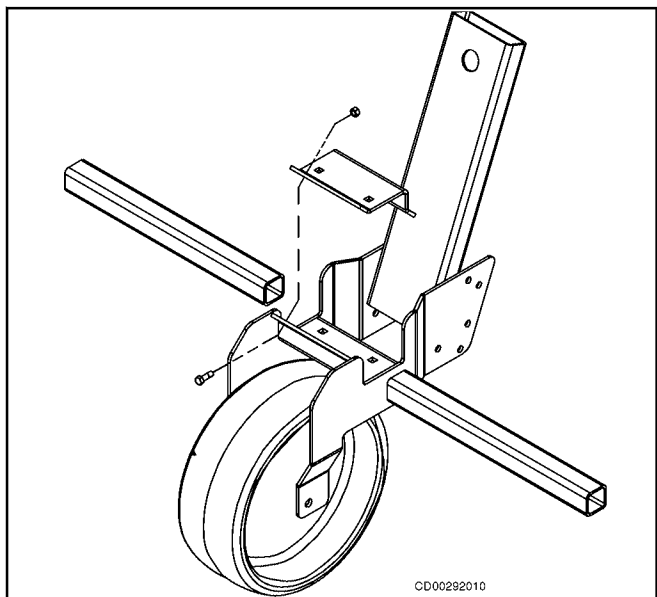
### Row Weeder Discs

Row weeder discs are typically used to remove weeds next to the row. They can be reversed to move direct to the row.

### Fasten Clamps to Tubes

1. Place front tubes in the mast as shown in Figure 53.

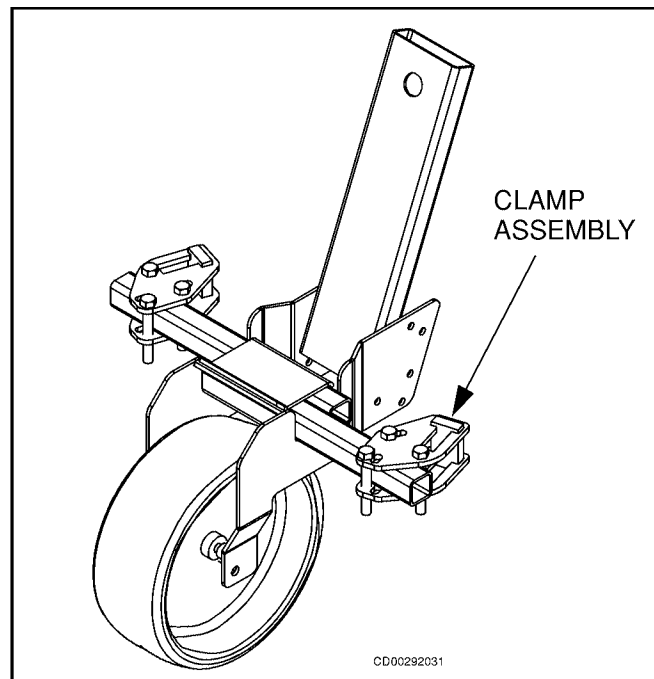
Assemble clamps and attach loosely to tubes as shown in Figure 54. Fasten with 1/2 NC x 3-1/2" bolts and flanged nuts.



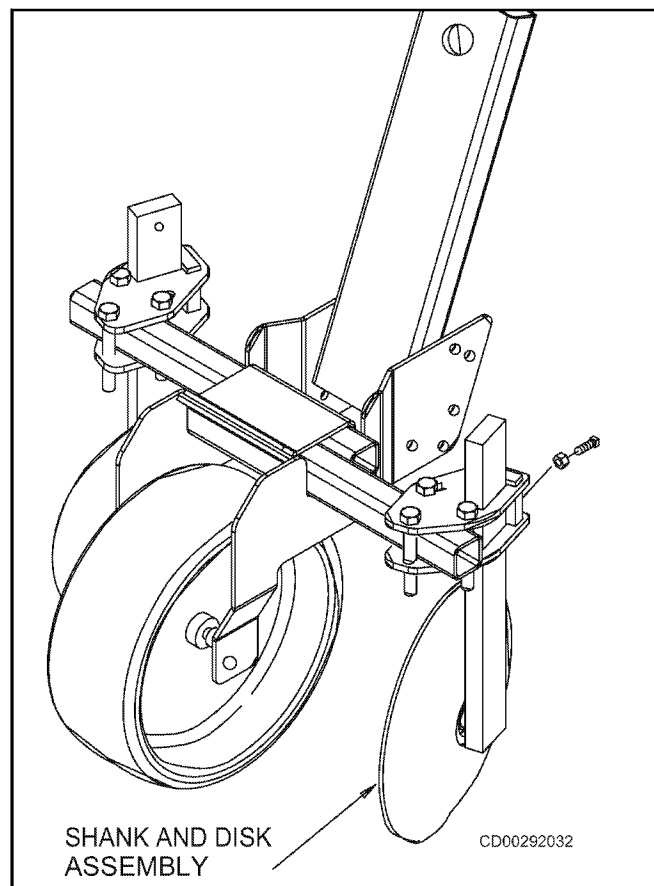
**Figure 53** Front Tubes in Mast

### Fasten Disc Assemblies to Tubes

1. Fasten shank and disc assembly to clamps.
2. Install set screw and jam nut as shown in Figure 55.



**Figure 54** Fastening Clamps to Tubes

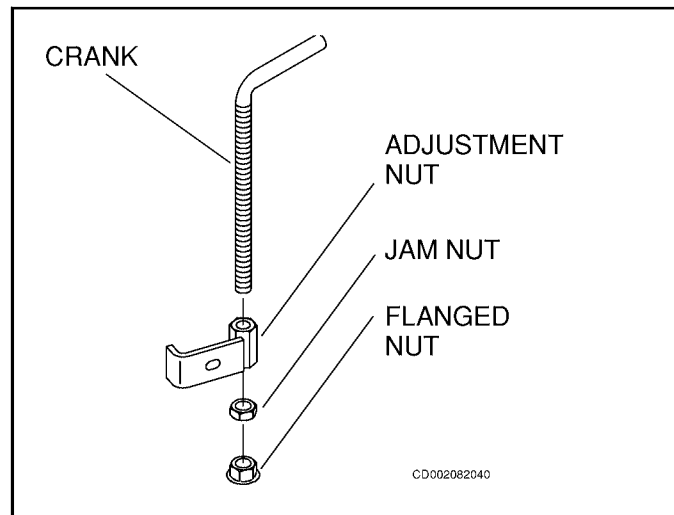


**Figure 55** Mounting Discs

### Row Weeder Disc Crank

#### Assemble Crank

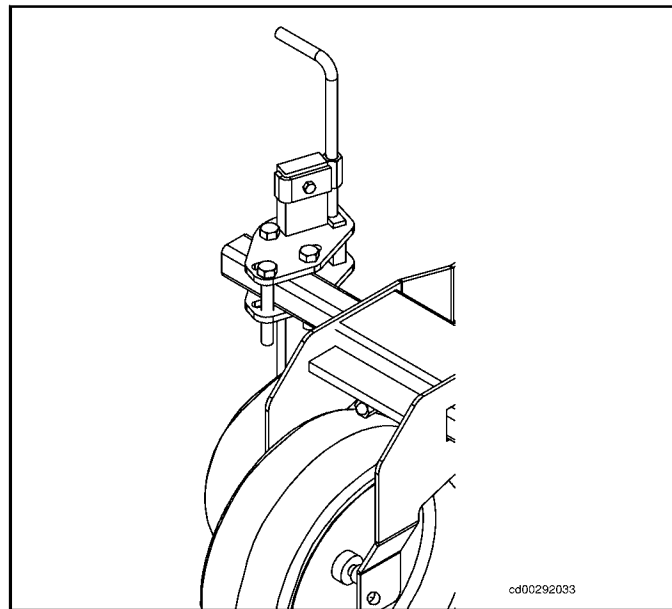
1. Thread crank through adjustment nut and secure with 5/8" jam nut and 5/8" flanged nut as shown in Figure 56.
2. Make sure the nuts are jammed together.



**Figure 56** Disc Crank Assembly

#### Mount Crank Assembly

1. Mount crank assembly to shank, using 3/8 x 1-3/4" hex bolt and flanged nut as shown in Figure 57.
2. Adjust row weeder unit to initial desired setting and tighten all bolts to specifications given in the Bolt Torque Chart.

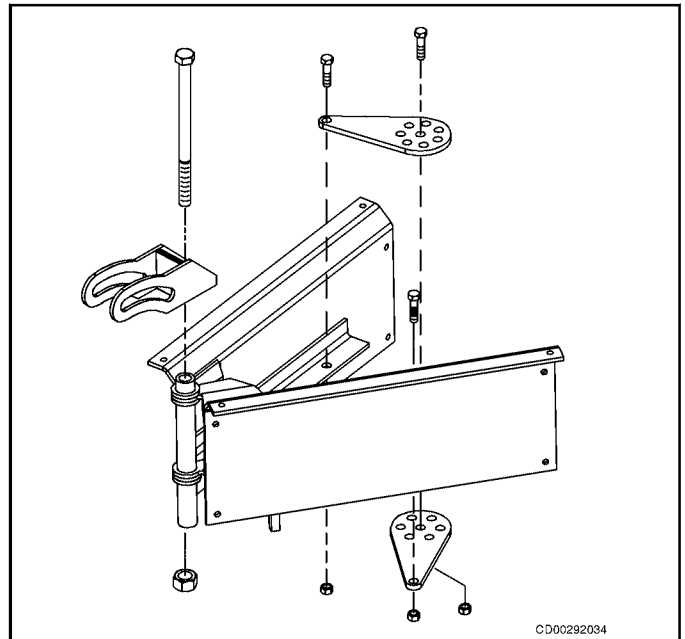


**Figure 57** Mounting Crank Assembly

### Hiller Attachment

#### Assemble Hiller

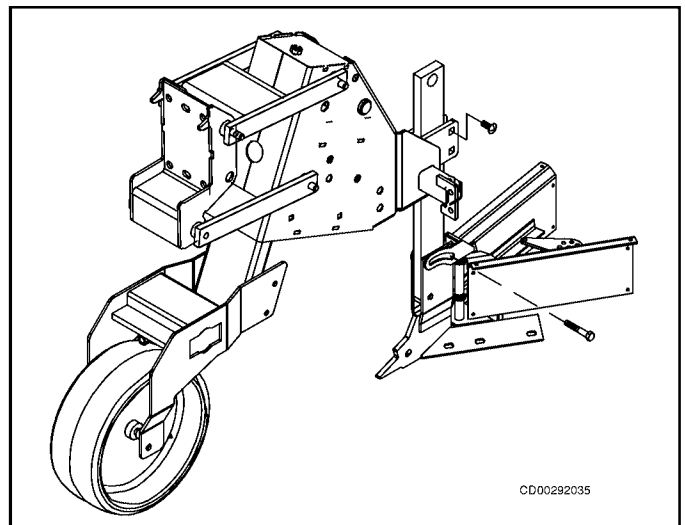
1. Assemble as shown in Figure 58.
2. Install hinge bolt, but do not install nut.



**Figure 58** Assembling Hiller

#### Fasten to Shank

1. Fasten hiller to shank. Use 1/2 NC x 2-1/2" hex bolt and flanged nut through pitch adjustment bracket as shown in Figure 59.
2. Place hinge bolt through sweep shoe and install nut.
3. Adjust hiller assembly to desired setting and tighten nuts to specifications in Bolt Torque Chart.



**Figure 59** Fastening Hiller to Shank

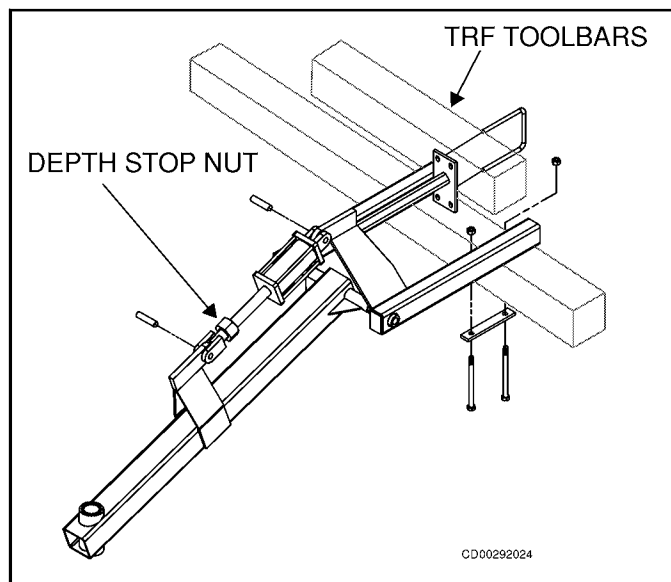
### Lift Assist (TRF or TRR bars only)

#### Fasten Assembly to Toolbar

1. Fasten frame assembly to toolbar, using 7/8" bolts, lock washers, and hex nuts as shown in Figure 60.
2. Fasten top support to TRF bars with 3/4" U-bolts.

#### Fasten Hydraulic Cylinder

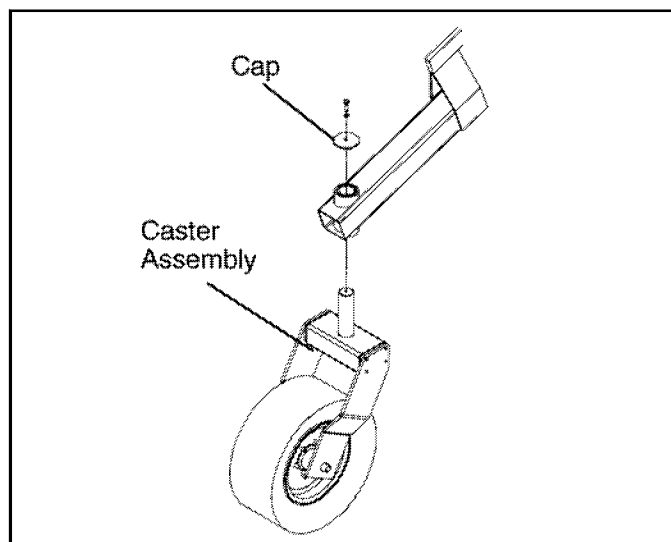
3. Remove clevis from rod end of hydraulic cylinder and attach depth stop nut as shown in Figure 60.
4. Replace clevis.
5. Fasten hydraulic cylinder to ears on frame and fasten, using pins provided with cylinder.



**Figure 60** Fastening Lift Assist to Toolbar

#### Fasten Caster Assembly

1. Remove cap, 1/2 x 1" hex bolt, and lock washer from top of caster assembly as shown in Figure 61.
2. Slide assembly through bushings in frame assembly and fasten, using cap, bolt, and lock washer.
3. Tighten all lift assist bolts to specifications in the Bolt Torque Chart.



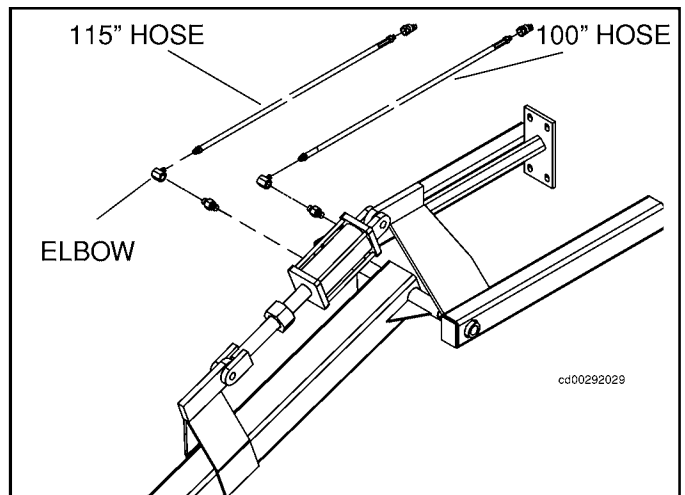
**Figure 61** Caster Assembly



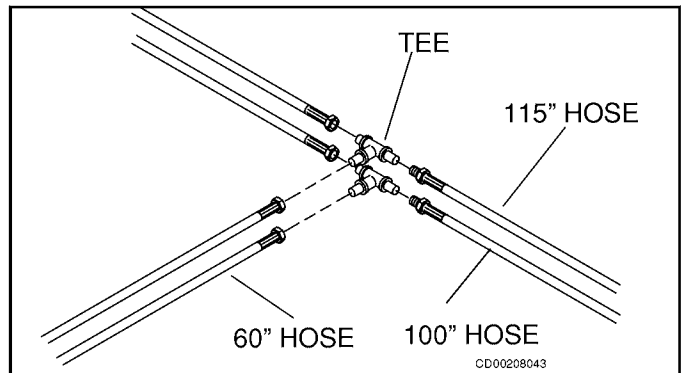
### Lift Assist (Cont'd)

#### Mount Hydraulics

1. Attach 6FJIC x 8MORB to hydraulic cylinder.
2. Attach 6FJIC x 6MJIC elbow.
3. Attach hoses to 6FJIC x 6MJIC elbow as shown in Figure 62.
4. When using double lift assist, run 115" hose and 100" hose up to cylinder. Longer hoses go to rod end ports.
5. Run hoses to center of toolbar and fasten tees to hoses as shown in Figure 63.



**Figure 62** Mounting Hydraulics

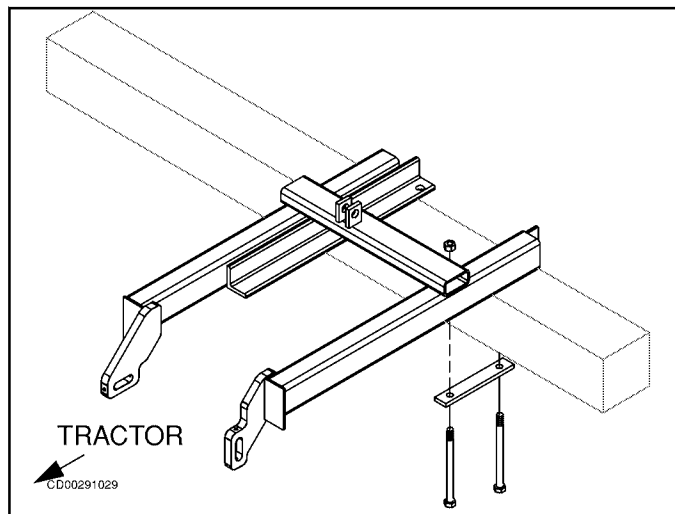


**Figure 63** Fastening Tees

## Rear Stabilizer Coultter

### Fasten Mounting Frame

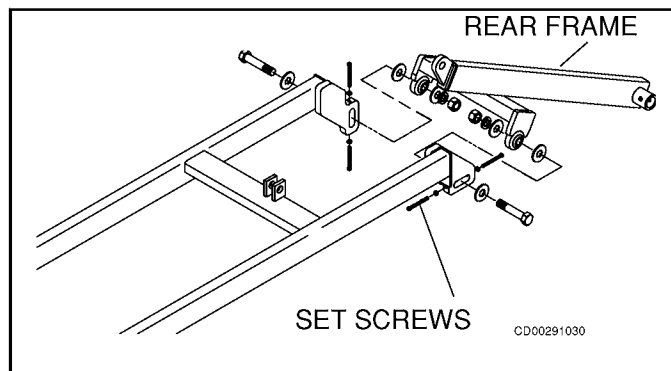
1. Fasten mounting frame to toolbar, using backing plate and 7/8" bolt, lock washers, and hex nuts.
2. Make sure frame is centered over cultivator gang.



**Figure 64** Fastening Mounting Frame

### Mounting Rear Frame

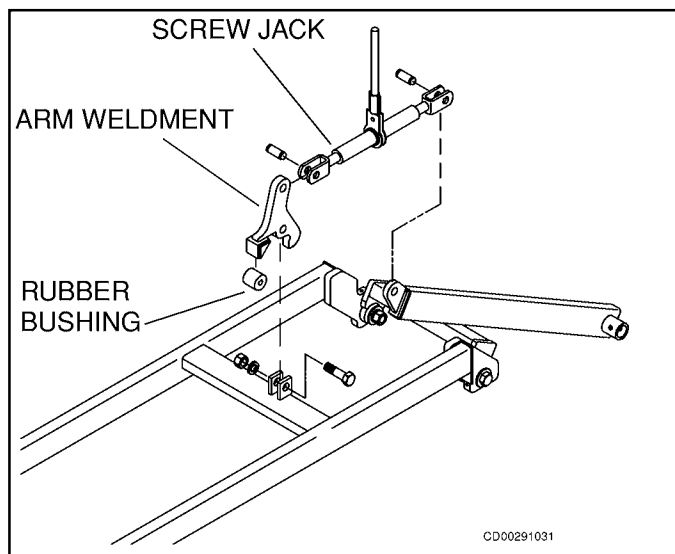
1. Fasten rear frame to mounting frame, using two 1 x 5" hex bolts, flat washers, lock washers, and hex nuts.
2. Make sure to place flat washers as shown.
3. Center rear frame, using four 3/8 x 3-1/2" square head set screws with jam nuts.



**Figure 65** Mounting Rear Frame

### Mounting Screw Jack

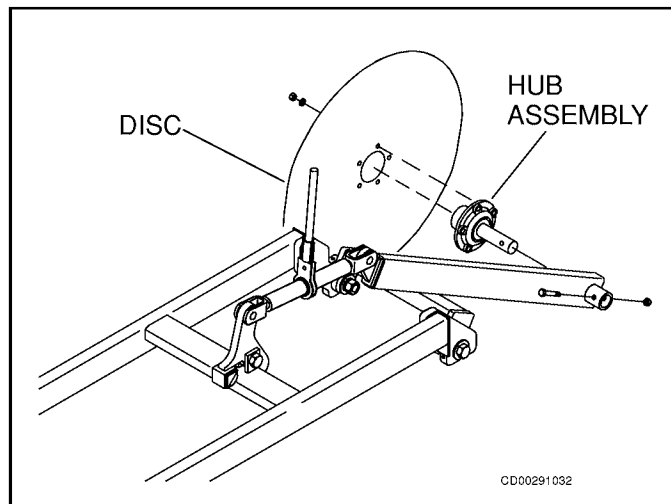
1. Place rubber bushing into arm weldment and fasten to mounting frame, using 1 x 3-1/2" hex bolt, lock washer, and hex nut.
2. Fasten screw jack to arm weldment and rear frame, using pins provided with screw jack.



**Figure 66** Mounting Screw Jack

### Mounting Disc

1. Fasten hub assembly to rear frame, using 1/2 x 3" hex bolt and hex nut.
2. Fasten disc to hub, using 1/2" lock washers and hex nut.

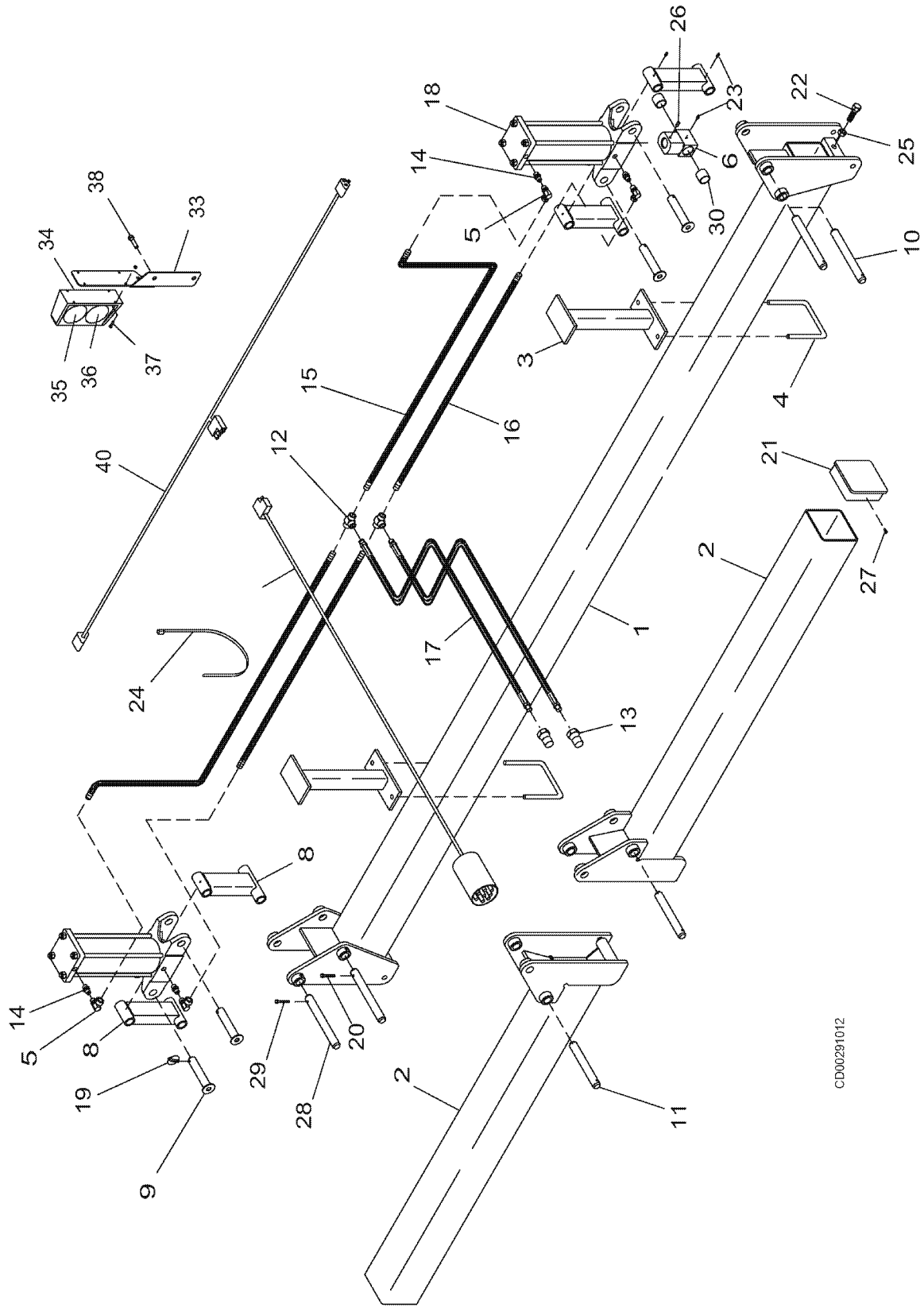


**Figure 67** Mounting Disc

### Row Crop Cultivator Model 3130

|                                                     |       |
|-----------------------------------------------------|-------|
| 180° FOLD TOOLBAR (F) .....                         | 66-67 |
| PULL-TYPE HITCH .....                               | 68    |
| RIGID TOOLBARS (TRR).....                           | 69    |
| HYDRAULICS.....                                     | 70    |
| 3-POINT HITCH .....                                 | 71    |
| 180° SINGLE REINFORCED TOOLBAR (TRF).....           | 72-74 |
| TOGGLE TRIP ASSEMBLY .....                          | 74    |
| KING GUIDE STRUT .....                              | 75    |
| LINKAGE COMPONENTS .....                            | 76-77 |
| ROW UNIT .....                                      | 78-79 |
| HILLER COMPONENTS.....                              | 80    |
| TINE AND ROW GUIDE COMPONENTS .....                 | 81    |
| DUAL DISC & DUAL KNIFE ASSEMBLY .....               | 82    |
| ADJUSTABLE GUIDE AND SUPPORT WHEELS .....           | 83    |
| SEMI-PNEUMATIC GUIDE WHEEL & STEEL GUIDE WHEEL..... | 84    |
| ROW WEEDER DISCS .....                              | 85    |
| COULTER DISC COMPONENTS.....                        | 86-89 |
| LIFT ASSIST.....                                    | 90-91 |
| OPEN TOP SHIELDS.....                               | 91    |
| ROLLING SHIELDS .....                               | 92    |
| PARKING STANDS.....                                 | 93    |

# 180° FOLD TOOLBAR (F)



CD00291012

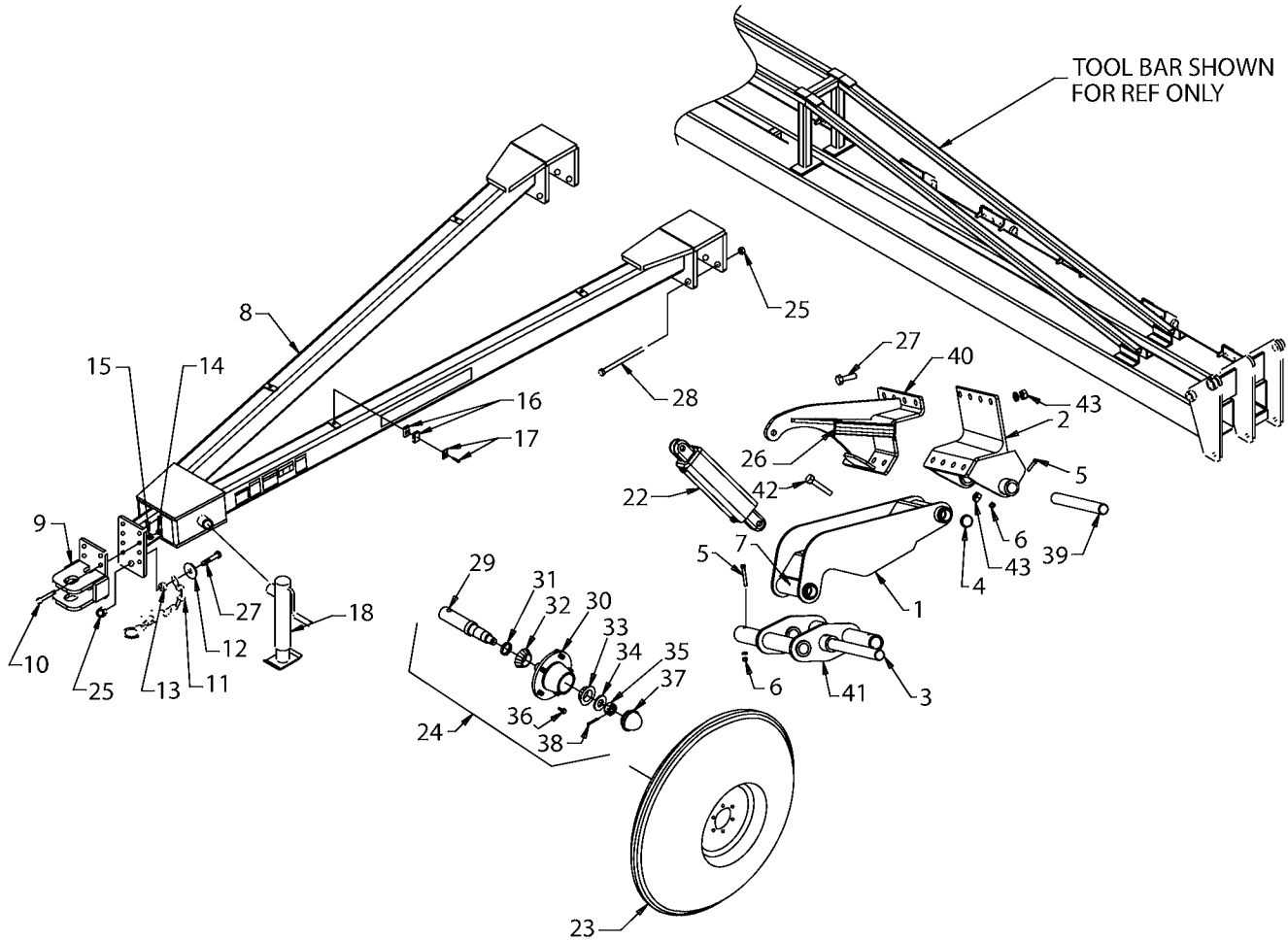
# 180° FOLD TOOLBAR (F) PARTS LIST

1611

| REF | PART       | QTY | DESCRIPTION                        | REF | PART     | QTY | DESCRIPTION                             |
|-----|------------|-----|------------------------------------|-----|----------|-----|-----------------------------------------|
| 1   | 20022042   | 1   | Center section (830)               | 17  | 90519146 | 2   | 3/8" Hose x 6 FJIC x 8 MORB x 60"       |
| 1   | 20022031   | 1   | Center section (1222)              | 18  | 20020503 | 2   | 5 x 12 Cylinder complete with clevis    |
| 1   | 20022032   | 1   | Center section (1224)              | 18  | 20020500 | 2   | 5 x 12 Cylinder less clevis             |
| 2   | 20022018   | 2   | Wing weld (830)                    | 18  | 90521263 | 1   | Seal kit, 5 x 12 cylinder               |
| 2   | 20022017   | 2   | Wing weld (1222 & 1224)            | 19  | 90025010 | 4   | 1/4 x 1-1/4 Klik pin                    |
| 3   | 20020321   | 2   | Wing rest                          | 20  | 90001071 | 4   | 5/16 x 2-1/2 Hex bolt GR5               |
| 4   | 20030344   | 2   | 5/8" U-Bolt for 7 x 7 beam         | 21  | 20032636 | 2   | Rubber tube cap, 7 x 7                  |
| 5   | 90503163   | 4   | Elbow, 6 MJIC x 6 FJIC x 90°       | 22  | 90003024 | 4   | 3/4 NC x 2-1/2 Hex bolt GR5 full thread |
| 6   | 20033324   | 2   | Clevis                             | 23  | 90515024 | 10  | Zerk, 1/4-28 UNF Straight               |
| 6   | 20021776   | 2   | Clevis assy., 1-1/2" I.D.          | 24  | 90507086 | 6   | 32" Plastic cable tie                   |
| 7   | 20020317   | 2   | Cylinder linkage, wing             | 25  | 90006282 | 4   | 3/4 NC Jam nut                          |
| 8   | 20020316   | 2   | Cylinder linkage, center           | 26  | 90016033 | 2   | 3/4 NC x 1 Sq. head set screw           |
| 9   | 200-2-1611 | 4   | Cylinder pin                       | 27  | 90016897 | 4   | #6 x 3/4 Pan head sheet metal screw     |
| 10  | 20030513   | 4   | Cylinder pin 1-1/4" x 11-1/4" long | 28  | 20033431 | 2   | Hinge pin, 1-1/2 x 11-1/4               |
| 11  | 20030526   | 2   | Pin 1-1/4 x 9-5/8" long            | 29  | 90001125 | 2   | 3/8 x 3 Hex bolt GR5                    |
| 12  | 90503112   | 2   | Tee, 6 MJIC                        | 30  | 20033285 | 4   | Garmax bushing, 1-1/2" I.D.             |
| 13  | 90519126   | 2   | Quick coupler, male tip            | 33  | 20033870 | 1   | Light bracket, RH                       |
| 14  | 90503162   | 4   | 6 MJIC x 8 MORB Restrictor, 1/16"  | NS  | 20033869 | 1   | Light bracket, LH                       |
| 15  | 90519119   | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 100" | 34  | 90401150 | 1   | Dual tail light, RH                     |
| 15  | 90519147   | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 111" | NS  | 90401149 | 1   | Dual tail light, LH                     |
| 15  | 90519121   | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 120" | 35  | 90401142 | 4   | Amber tail light                        |
| 15  | 90519148   | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 142" | 36  | 90401146 | 2   | Red tail light                          |
| 16  | 90519152   | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 82"  | 37  | 90001009 | 8   | 1/4 NC x 1 Hex bolt GR5                 |
| 16  | 90519119   | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 100" | 38  | 90001341 | 4   | 5/8 NC x 1-1/2 Hex bolt GR5             |
| 16  | 90519147   | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 111" | 39  |          |     |                                         |
| 16  | 90519151   | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 134" | 40  | 90401152 | 1   | Wire harness                            |
|     |            |     |                                    | NS  | 20013731 | 1   | Safety decal                            |
|     |            |     |                                    | NS  | 90401147 | 4   | Tail light bulb                         |

NS = Not Shown

## PULL-TYPE HITCH COMPONENTS



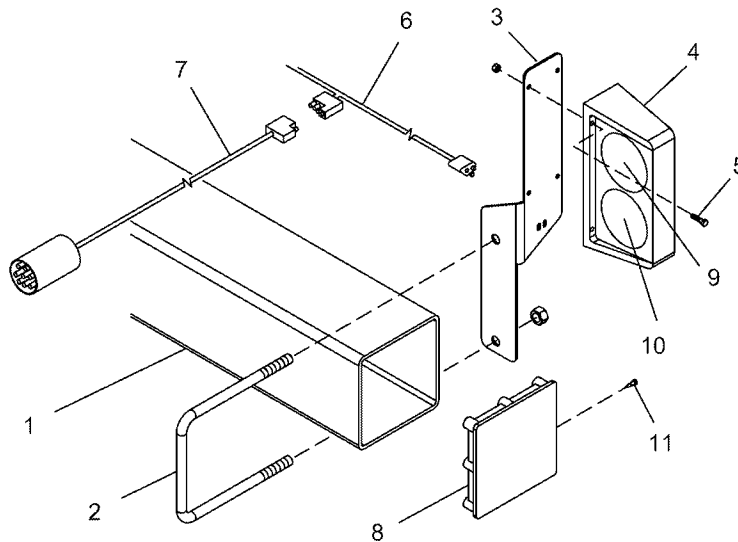
| REF | PART     | QTY | DESCRIPTION                        | REF | PART     | QTY | DESCRIPTION                                                 |
|-----|----------|-----|------------------------------------|-----|----------|-----|-------------------------------------------------------------|
| 1   | 20022131 | 2   | Strut weld                         | 17  | 90031068 | 4   | Top plate                                                   |
| 2   | 20022133 | 2   | Lower mount weld                   | 18  | 90523004 | 1   | Jack                                                        |
| 3   | 20034085 | 2   | Pivot pin, short                   | 19  | 90042055 | 4   | Lock pin                                                    |
| 4   | 20034081 | 4   | Bushing                            | 20  | 50031678 | 2   | Chain                                                       |
| 5   | 90001241 | 4   | 1/2 NC x 3.5 Hex bolt              | 21  | 90023043 | 16  | 3-16 x 1-1/2 Cotter                                         |
| 6   | 90006143 | 4   | 1/2 NC Spiral lock nut             | 22  | 90521414 | 2   | 4 x 12 Hydraulic cylinder                                   |
| 7   | 90515001 | 4   | 1/8 NPT Straight zerk              | 22  | 90521415 | 1   | SEAL-KIT, 4 x 12 Hyd Cyl                                    |
| 8   | 20022107 | 1   | Hitch                              | 23  | 90509145 | 4   | 11 x 24 Wheel/tire assembly                                 |
| 9   | 20022129 | 1   | Clevis Weld                        | 23  | 90509143 | 4   | Tire, 11.0 x 16 single rib                                  |
| 10  | 90003051 | 4   | 5/8 x 2-1/2 Hex head cap screw GR8 | 23  | 90509146 | 4   | Wheel rim, 16 x 10, 8 bolt                                  |
| 11  | 90507113 | 1   | Tow chain                          | 24  | 70020165 | 4   | Hub assembly / pt. hitch<br>(Includes items 29-38, page 69) |
| 12  | 50031631 | 1   | 1.03 x 3.25 Washer                 | 25  | 90006514 | 7   | 1 NC Top lock nut                                           |
| 13  | 50530713 | 1   | Bushing spacer                     | 26  | 20022160 | 2   | Transport lock                                              |
| 14  | 90006281 | 4   | 5/8 NC Jam nut ZP                  | 27  | 90001519 | 8   | 1 NC x 3 Hex bolt                                           |
| 15  | 90006014 | 4   | 5/8 NC Hex nut ZP                  | 28  | 90001551 | 6   | 1 NC x 10 Hex bolt GR5                                      |
| 16  | 90031069 | 4   | 3/8 Hose clamp                     |     |          |     | Continued on next page                                      |

## PULL-TYPE HITCH COMPONENTS (CONT'D)

Continued from previous page

| REF | PART       | QTY | DESCRIPTION     | REF | PART     | QTY | DESCRIPTION        |
|-----|------------|-----|-----------------|-----|----------|-----|--------------------|
| 29  | 700-3-0143 | 1   | Spindle         | 37  | 90109135 | 1   | Dust cap           |
| 30  | 90509136   | 1   | Hub with cups   | 38  | 90023064 | 1   | 1/4 x 2 Cotter pin |
| 31  | 90109215   | 1   | Seal            | 39  | 20034043 | 1   | Pivot Pin          |
| 32  | 90101325   | 1   | Bearing cone    | 40  | 20022132 |     | Ear weld PTH       |
| 33  | 90101326   | 1   | Bearing cone    | 41  | 20022130 |     | Pivot weld 22"     |
| 34  | 90509067   | 1   | Washer          |     | 20022160 |     | Pivot weld 30"     |
| 35  | 90006060   | 1   | 7/8 Slotted nut | 42  | 90001529 |     | 1" x 4.5 HHCS      |
| 36  | 90509039   | 8   | 9/16 Wheel bolt | 43  | 90006019 |     | 1" NC nut          |

## RIGID TOOLBARS (TRR)



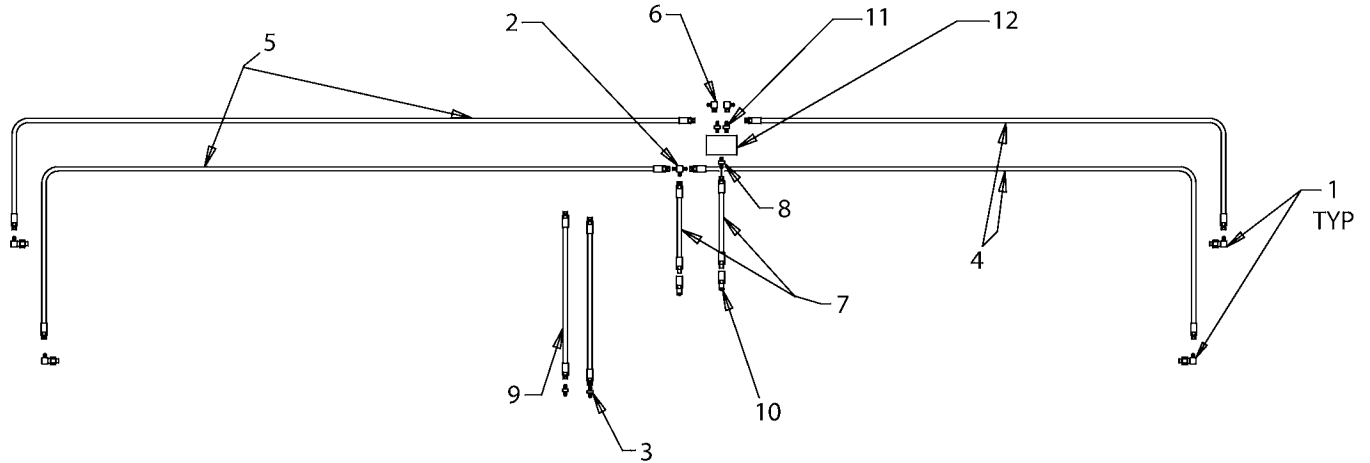
CD00291014

| REF | PART     | QTY | DESCRIPTION                             | REF | PART     | QTY | DESCRIPTION                         |
|-----|----------|-----|-----------------------------------------|-----|----------|-----|-------------------------------------|
| 1   | 20022126 | 1   | Toolbar, 7 x 7 x 157.5" 6-22            | 5   | 90001009 | 4   | 1/4 NC x 1 Hex bolt GR5             |
| 1   | 20022124 | 1   | Toolbar, 7 x 7 x 1/4 x 213.5" 6-30/8-22 | 6   | 90401152 | 1   | Wire harness,                       |
| 1   | 20022125 | 1   | Toolbar, 7 x 7 x 1/4 x 273.5" 8-30      | 7   | XXXXXXX  | 1   | Order Item #6                       |
| 1   | 20022063 | 1   | Toolbar, 7 x 7 x 1/4 x 288" 12-22       | 8   | 20032636 | 2   | Rubber tube cap                     |
| 2   | 20030344 | 2   | U-Bolt, 5/8 NC x 7 x 8.5 long           | 9   | 90401145 | 2   | Amber tail light                    |
| 3   | 20033869 | 1   | Light bracket, LH                       | 10  | 90401146 | 2   | Red tail light                      |
| NS  | 20033870 | 1   | Light bracket, RH                       | 11  | 90016897 | 2   | #6 x 3/4 Pan head sheet metal screw |
| 4   | 90401149 | 1   | Dual tail light, LH                     | NS  | 20013730 | 1   | Safety decal set                    |
| NS  | 90401150 | 1   | Dual tail light, RH                     | NS  | 90401147 | AR  | Tail light bulb                     |

NS = Not Shown

AR = As Required

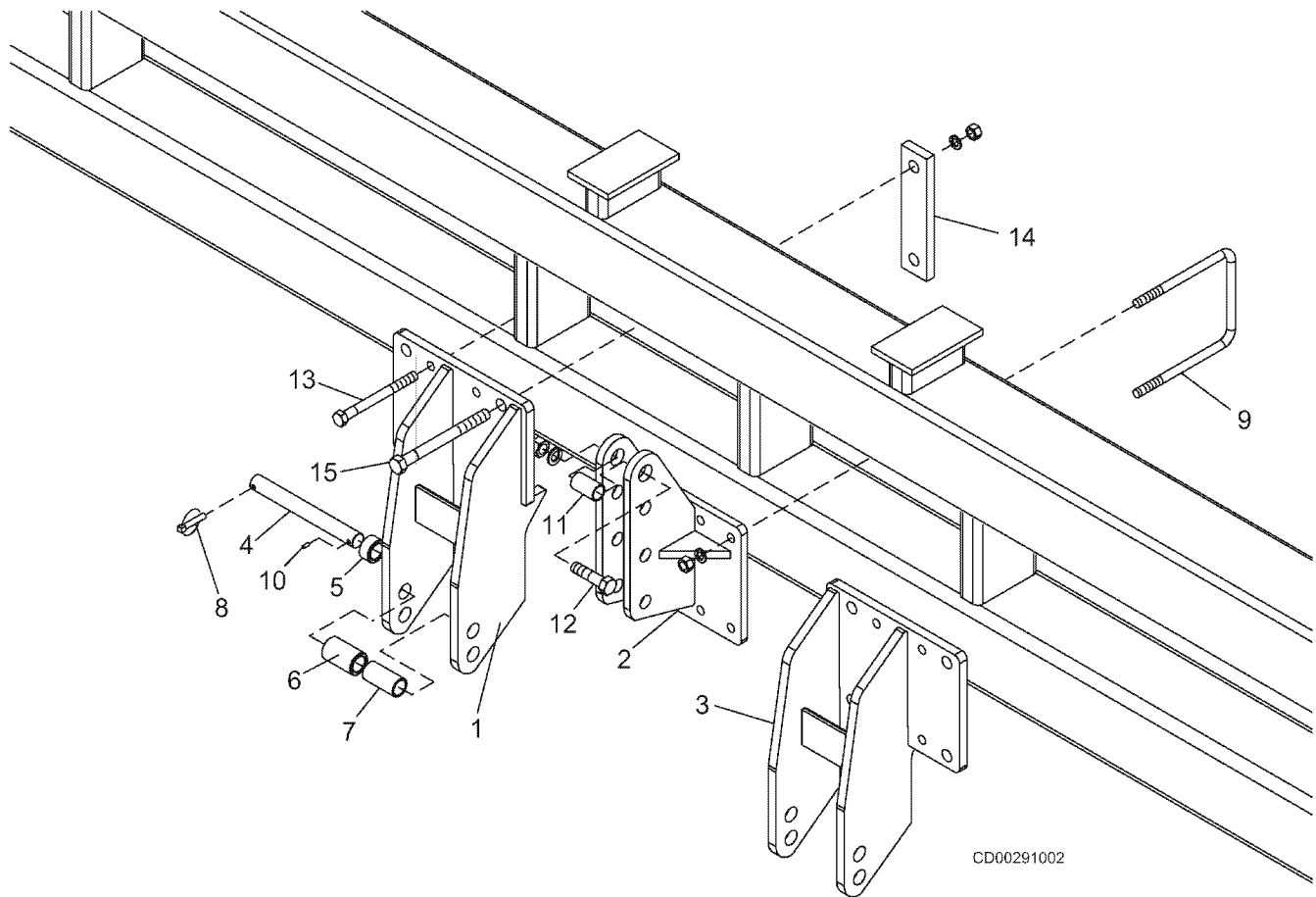
## HYDRAULICS



| REF | PART      | QTY | DESCRIPTION                      | REF | PART      | QTY | DESCRIPTION                      |
|-----|-----------|-----|----------------------------------|-----|-----------|-----|----------------------------------|
| 1   | 905-03114 | 4   | 90° Elbow, 6MJIC x 3/4-16 MORB   | 7   | 905-19157 | 2   | 3/8 Hose 166", 6FJ svl x 8 MORB  |
| 2   | 905-03112 | 1   | Tee, 6 MJIC 3-way                | 8   | 905-03115 | 1   | Adapter, 6MJIC x 3/4-16 MORB     |
| 3   | 905-03111 | 2   | Nipple, 6 MJIC                   | 9   | 905-19155 | 2   | 3/8 Hose 120", 6FJ svl x 6FJ svl |
| 4   | 905-19125 | 4   | 3/8 Hose 62", 6FJ svl x 6FJ svl  | 10  | 901-19126 | 2   | Quick coupler, pioneer end       |
| 5   | 905-19151 | 2   | 3/8 Hose 134", 6FJ svl x 6FJ svl | 11  | 905-03120 | 2   | Adapter, 6MJIC x 6MORB           |
| 6   | 905-03163 | 2   | 90° Elbow, 6-MJIC x 6 FJIC       | 12  | 905-03175 | 1   | Hydraulic flow divider           |



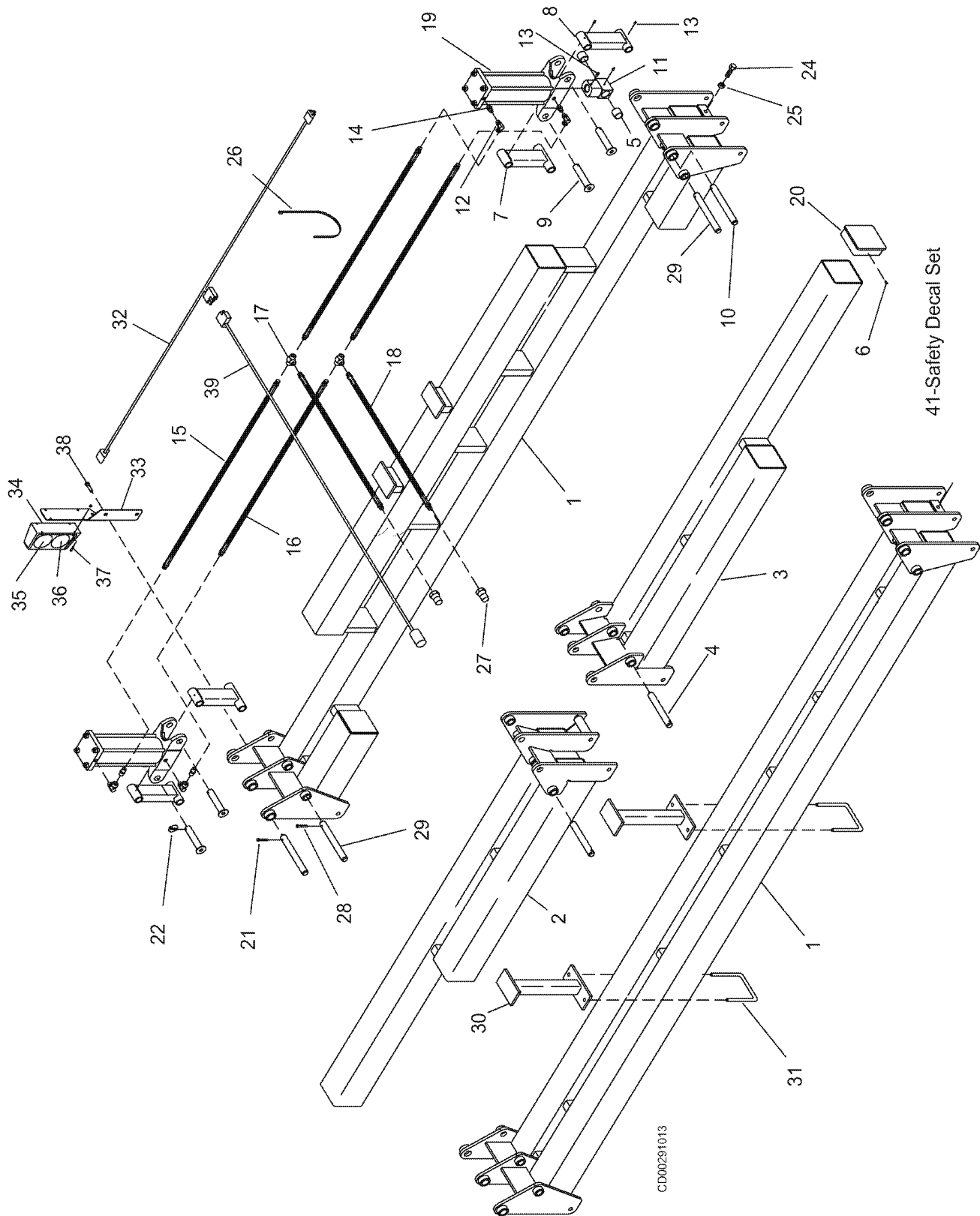
## 3-POINT HITCH



CD00291002

| REF | PART     | QTY | DESCRIPTION                                                 | REF | PART     | QTY | DESCRIPTION                    |
|-----|----------|-----|-------------------------------------------------------------|-----|----------|-----|--------------------------------|
| 1   | 20022043 | 1   | Lower 3-point hitch weld (RH 22" and LH 30" & 24 row units) | 6   | 20030959 | 2   | Spacer, 1-3/4 O.D.             |
| 1   | 20022046 | 1   | Lower 3-point hitch weld (RH, 24" row spacing)              | 7   | 20030961 | 2   | Bushing, 1-7/16 O.D. x 3 long  |
| 2   | 20022045 | 1   | Upper mast weld                                             | 8   | 90025012 | 2   | 7/16 x 2 Klik pin              |
| 3   | 20022041 | 1   | Lower 3-point hitch weld (LH 22" and RH 30" & 24 row units) | 9   | 20030345 | 2   | U-Bolt, 3/4 NC x 7 x 9/12 long |
| 3   | 20022047 | 1   | Lower 3-point hitch weld (LH, 24" row spacing)              | 10  | 90029204 | 2   | Roll pin, 5/16 x 1-5/8 long    |
| 4   | 20030962 | 2   | Pin                                                         | 11  | 20030151 | 1   | Mast spacer bushing, 1" I.D.   |
| 4   | 20020553 | 2   | Pin assembly (Ref 4, 10)                                    | 12  | 90001531 | 1   | 1" NC x 5 Hex bolt GR5         |
| 5   | 20030960 | 2   | Spacer, 1-3/4 O.D. x 1 long                                 | 13  | 90001381 | 8   | 5/8 NC x 9 Hex bolt GR5        |
|     |          |     |                                                             | 14  | 20030970 | 4   | Strap                          |
|     |          |     |                                                             | 15  | 90003039 | 4   | 7/8 NC x 10 Hex bolt GR5       |

# 180° SINGLE REINFORCED TOOLBAR (TRF)



CD00291013

## 180° FOLD TOOLBAR (TRF) PARTS LIST

| REF | PART     | QTY | DESCRIPTION                                                            | REF | PART      | QTY | DESCRIPTION                                                   |
|-----|----------|-----|------------------------------------------------------------------------|-----|-----------|-----|---------------------------------------------------------------|
| 1   | 20022036 | 1   | Center section 180" (8-36)                                             | 15  | 90519147  | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 111" (184" center)              |
| 1   | 20022037 | 1   | Center section 200" (840)                                              | 15  | 90519121  | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 120" (202" center, 198" center) |
| 1   | 20022038 | 1   | Center section 196" (1228)                                             | 15  | 90519148  | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 142" (242" center)              |
| 1   | 20022034 | 1   | Center section 210" (1230)                                             | 15  | 90519149  | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 152" (264" center)              |
| 1   | 20022039 | 1   | Center section 224" (12-38)                                            | 15  | 90519150  | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 160" (286" center)              |
| 1   | 20022035 | 1   | Center section 198" (1622)                                             | 16  | 90519119  | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 100"                            |
| 1   | 20022044 | 1   | Center section 270" (1630)                                             | 16  | 90519147  | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 111"                            |
| 2   | 20021987 | 1   | Left wing 74" (836)                                                    | 16  | 90519151  | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 134"                            |
| 2   | 20021990 | 1   | Left wing 82" (840)                                                    | 16  | 90519148  | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 142"                            |
| 2   | 20021993 | 1   | Left wing 86" (1228)                                                   | 16  | 90519149  | 2   | 3/8" Hose x 6 FJIC x 6 FJIC x 152"                            |
| 2   | 20021312 | 1   | Left wing 92" (1230)                                                   | 17  | 90503112  | 2   | Tee, 6 MJIC                                                   |
| 2   | 20021996 | 1   | Left wing 98" (1232)                                                   | 18  | 90519146  | 2   | 3/8" Hose x 6 FJIC x 60"                                      |
| 2   | 20021984 | 1   | Left wing 90" (1622)                                                   | 19  | 20020503  | 2   | 5 x 12 Cyl complete w/clevis                                  |
| 2   | 20022002 | 1   | Left wing 122" (1630)                                                  | 19  | 905-21258 | 4   | Tie Rod Bolt, 5x12                                            |
| 2   | 20021999 | 1   | Left wing 92" (1822)                                                   | 19  | 20020500  | 2   | 5 x 12 Cylinder less clevis                                   |
| 2   | 20021388 | 1   | Left wing 134" (2422)                                                  | 19  | 90521263  | 1   | Seal kit, 5 x 12 cylinder                                     |
| 3   | 20021988 | 1   | Right wing 74" (836)                                                   | 19  | 90521382  | 1   | 5 x 12 Cylinder rod                                           |
| 3   | 20021991 | 1   | Right wing 82" (840)                                                   | 19  | 90521383  | 1   | 5 x 12 Cylinder rod cap                                       |
| 3   | 20021994 | 1   | Right wing 86" (1228)                                                  | 19  | 90521384  | 1   | 5 x 12 Cylinder cap                                           |
| 3   | 20021311 | 1   | Right wing 92" (1230)                                                  | 19  | 20021564  | 1   | 6 x 12 Cyl complete w/clevis                                  |
| 3   | 20021997 | 1   | Right wing 98" (1232)                                                  | 19  | 905-21413 | 4   | Tie Rod Bolt, 6x12                                            |
| 3   | 20021985 | 1   | Right wing 90" (1622)                                                  | 19  | 90521410  | 4   | 6 x 12 Cylinder less clevis                                   |
| 3   | 20022003 | 1   | Right wing 122" (1630)                                                 | 19  | 90521411  | 1   | 6 x 12 Cylinder rod piston                                    |
| 3   | 20022000 | 1   | Right wing 92" (1822)                                                  | 19  | 90521387  | 1   | 6 x 12 Cylinder rod cap                                       |
| 3   | 20021387 | 1   | Right wing 134" (2422)                                                 | 19  | 90521412  | 1   | 6 x 12 Cylinder cap                                           |
| 4   | 20030526 | 1   | Pin, 1-1/4 x 9-5/8" long                                               | 19  | 90521368  | 1   | Seal kit, 6 x 12 cylinder                                     |
| 5   | 20033285 | 4   | 1-1/2" Garmax bushing                                                  | 19  | 20021762  | 1   | Clevis assy. (1-1/4 pin)                                      |
| 5   | 20033355 | 4   | 1-1/4" Garmax bushing                                                  | 19  | 90521385  | 1   | 1-1/4" Nut                                                    |
| 6   | 90016897 | 4   | #6 x 3/4 Pan head sheet metal screw                                    | 20  | 20032636  | 4   | Rubber tube caps, 7 x 7                                       |
| 7   | 20020316 | 2   | Cylinder linkage, center                                               | 21  | 90001071  | 6   | 5/16 x 2-1/2 Hex bolt GR5                                     |
| 8   | 20020317 | 2   | Cylinder linkage, wings                                                | 22  | 90025010  | 4   | 1/4 x 1-1/4 Klik pin                                          |
| 9   | 20021611 | 4   | Pin, cylinder linkage                                                  | 24  | 90003024  | 4   | 3/4 NC x 2-1/2 Hex bolt GR5                                   |
| 10  | 20032450 | 4   | Hinge pin, 1-1/4" x 19-3/4" long                                       | 25  | 90006282  | 4   | 3/4 NC Jam nut                                                |
| 11  | 20033324 | 2   | Clevis                                                                 | 26  | 90507085  | 6   | 15" Plastic cable ties                                        |
| 11  | 20021776 | 2   | Clevis assembly, 1-1/2" I.D. with bushings (Ref. Figure 5 & Figure 10) | 27  | 90519126  | 2   | Quick coupler                                                 |
| 12  | 90503163 | 4   | Elbow, 6 MJIC x 6 FJIC 90°                                             |     |           |     |                                                               |
| 13  | 90515024 | 10  | Zerk, 1/4-28 UNF, straight                                             |     |           |     |                                                               |
| 14  | 90503162 | 4   | 6 MJIC x 8 MORB Restrictor                                             |     |           |     |                                                               |

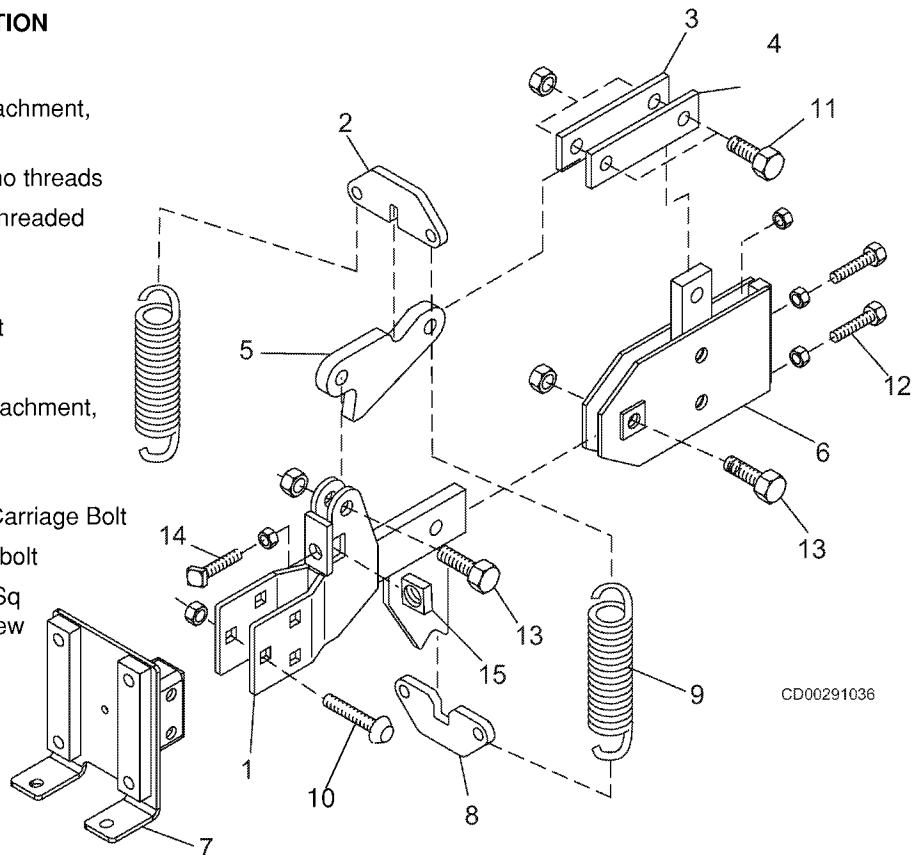
## 180° SINGLE REINFORCED TOOLBAR (TRF) PARTS LIST (CONT'D)

| REF | PART     | QTY | DESCRIPTION                                        | REF | PART     | QTY | DESCRIPTION                 |
|-----|----------|-----|----------------------------------------------------|-----|----------|-----|-----------------------------|
| 28  | 90001071 | 2   | 5/16 NC x 2-1/2 Hex bolt GR5<br>(1-1/4" Hinge pin) | 34  | 90401150 | 1   | Dual tail light, RH         |
| 28  | 90001125 | 2   | 3/8 NC x 3 Hex bolt GR5<br>(1-1/2" Hinge pin)      | NS  | 90401149 | 1   | Dual tail light, LH         |
| 29  | 20033170 | 2   | Hinge pin, 1-1/2" x 19-3/4" long                   | 35  | 90401145 | 2   | Amber tail light            |
| 30  | 20020321 | 2   | Stand                                              | 36  | 90401146 | 2   | Red tail light              |
| 31  | 20030344 | 2   | Wing rest U-bolt                                   | NS  | 90401147 | 2   | Tail light bulb             |
| 32  | 90401152 | 1   | Wire harness,                                      | 37  | 90001009 | 8   | 1/4 NC x 1 Hex bolt GR5     |
| 33  | 20033870 | 1   | Light bracket, RH                                  | 38  | 90001341 | 4   | 5/8 NC x 1-1/2 Hex bolt GR5 |
| NS  | 20033869 | 1   | Light bracket, LH                                  | 41  | 20013730 | 1   | Safety decal set            |

## TOGGLE TRIP

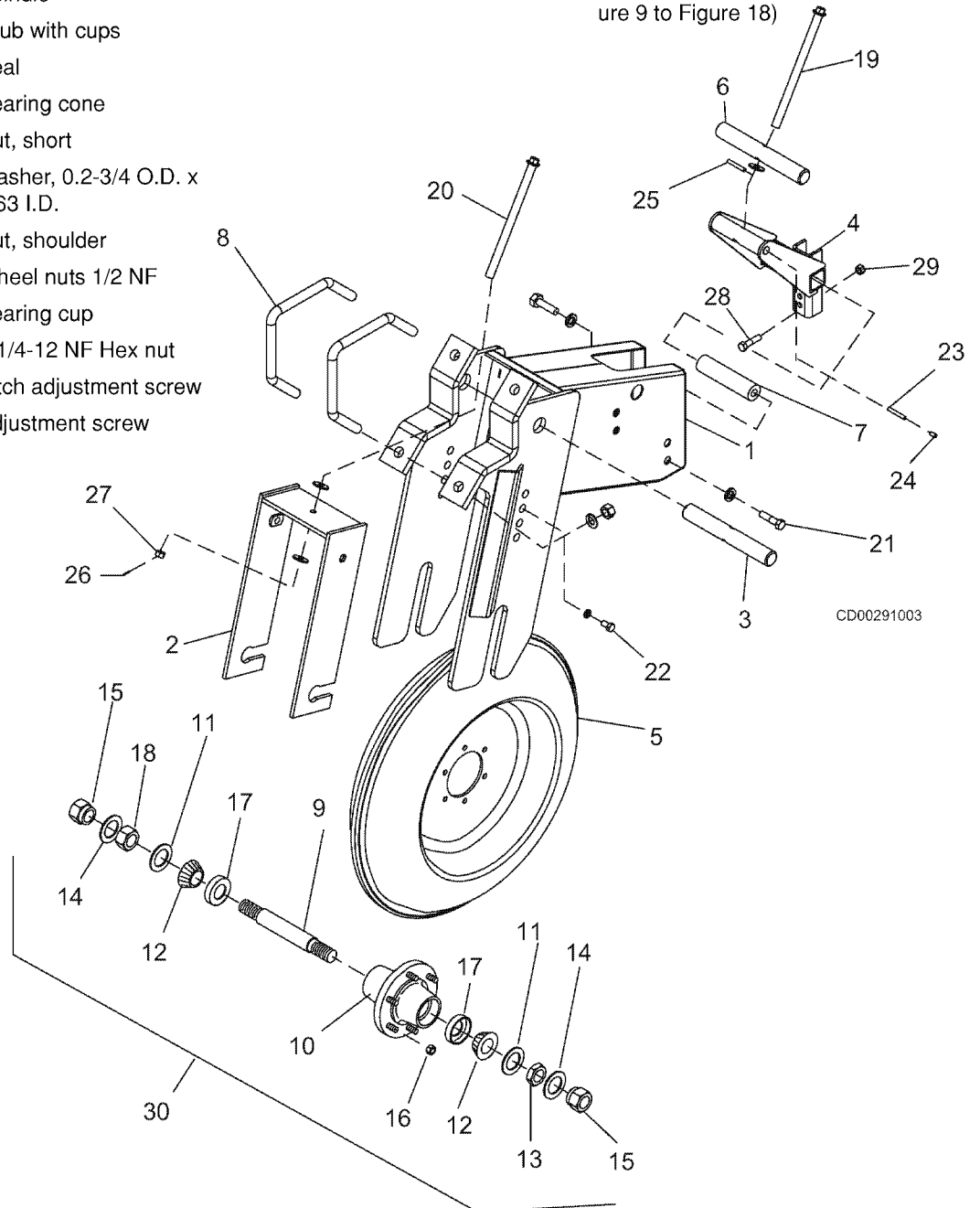
| REF | PART | QTY | DESCRIPTION |
|-----|------|-----|-------------|
|-----|------|-----|-------------|

|    |          |   |                                           |
|----|----------|---|-------------------------------------------|
| 1  | 20020592 | 1 | Toggle trip                               |
| 2  | 20031038 | 1 | Plate, spring attachment,<br>upper        |
| 3  | 20031034 | 1 | Toggle trip bar, no threads               |
| 4  | 20031033 | 1 | Toggle trip bar, threaded<br>holes        |
| 5  | 20031040 | 1 | Ear                                       |
| 6  | 20020591 | 1 | Toggle Trip Pivot                         |
| 7  | 20022099 | 1 | Rear Set Back                             |
| 8  | 20031036 |   | Plate, Spring Attachment,<br>lower        |
| 9  | 20031745 | 2 | Spring Painted                            |
| 10 | 90001792 | 3 | 5/8 NC x 3-1/2 Carriage Bolt              |
| 11 | 90001403 | 2 | 3/4 NC X 2 Hex bolt                       |
| 12 | 90016068 | 2 | 1/2 NC X 2-1/2 Sq<br>head socket screw    |
| 13 | 90001407 | 2 | 3/4 NC X 2-1/2<br>Hex bolt                |
| 14 | 90016118 | 1 | 3/4 NC X 3-1/2<br>Sq head socket<br>screw |
| 15 | 90006619 | 1 | 3/4 NC Sqr Nut                            |

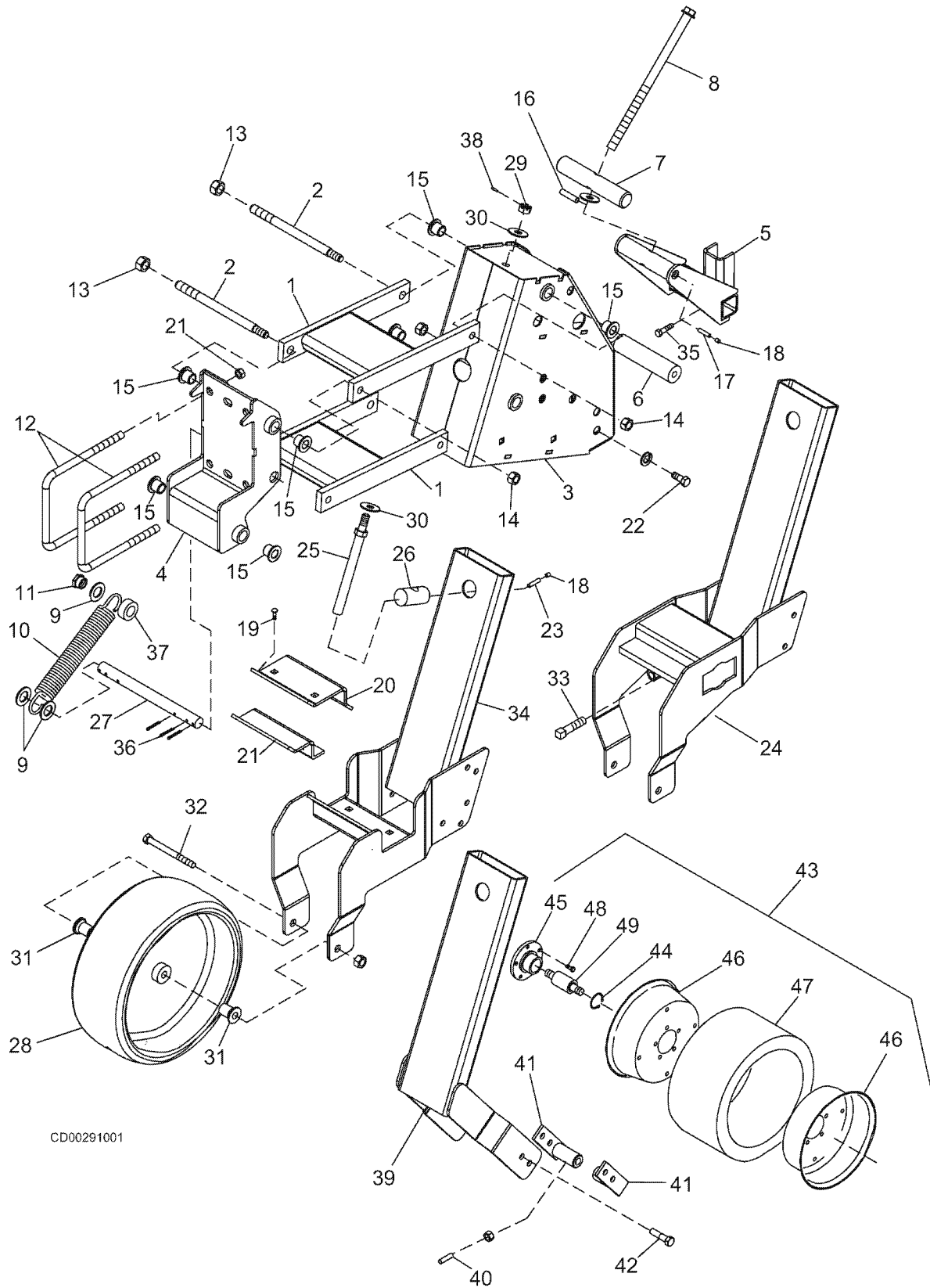


## KING GUIDE STRUT ASSEMBLY

| REF | PART     | QTY | DESCRIPTION                      | REF | PART     | QTY | DESCRIPTION                                         |
|-----|----------|-----|----------------------------------|-----|----------|-----|-----------------------------------------------------|
| 1   | 20021948 | 1   | King guide mast weld             | 21  | 90001399 | 2   | 3/4 NC x 1-1/2" Hex bolt GR5                        |
| 2   | 20021947 | 1   | Inner yoke                       | 22  | 90001341 | 2   | 5/8 NC x 1-1/2 Hex bolt                             |
| 3   | 20033783 | 1   | Threaded trunion                 | 23  | 20033438 | 1   | 1/4 Rnd x 2-3/8 UHMW                                |
| 4   | 20021937 | 1   | Pivot weld                       | 24  | 90016237 | 1   | 5/16 NC X 5/16 Socket head screw                    |
| 5   | 20020988 | 1   | Tire and rim assy.               | 25  | 90029182 | 1   | 1/4 x 2 Roll pin                                    |
| —   | 90509014 | 1   | Rim 16 x 6, 6 bolt               | 26  | 90023025 | 1   | CotterPin                                           |
| —   | 90509019 | 1   | Tire 6.00 x 16 single rib        | 27  | 90006052 | 1   | 1/2 NF Castle nut                                   |
| 6   | 20033523 | 1   | Trunion                          | 28  | 90001225 | 1   | 1/2NC X 1-1/2 Hex bolt GR5                          |
| 7   | 20033743 | 1   | Pivot bar                        | 29  | 90006143 | 1   | 1/2 NC Flange lock nut                              |
| 8   | 20031443 | 2   | “A” Bolt 7/8 x 7 x 7”            | 30  | 20021958 | 1   | Hub with spindle assy. (Ref. Figure 9 to Figure 18) |
| 9   | 20033771 | 1   | Spindle                          |     |          |     |                                                     |
| 10  | 90509082 | 1   | “Hub with cups                   |     |          |     |                                                     |
| 11  | 90109127 | 2   | Seal                             |     |          |     |                                                     |
| 12  | 90101149 | 2   | Bearing cone                     |     |          |     |                                                     |
| 13  | 20032726 | 1   | Nut, short                       |     |          |     |                                                     |
| 14  | 20033791 | 2   | Washer, 0.2-3/4 O.D. x 1.63 I.D. |     |          |     |                                                     |
| 15  | 20033754 | 2   | Nut, shoulder                    |     |          |     |                                                     |
| 16  | 90509011 | 6   | Wheel nuts 1/2 NF                |     |          |     |                                                     |
| 17  | 90101148 | 2   | Bearing cup                      |     |          |     |                                                     |
| 18  | 90006024 | 1   | 1-1/4-12 NF Hex nut              |     |          |     |                                                     |
| 19  | 20022020 | 1   | Pitch adjustment screw           |     |          |     |                                                     |
| 20  | 20033190 | 1   | Adjustment screw                 |     |          |     |                                                     |



# LINKAGE COMPONENTS

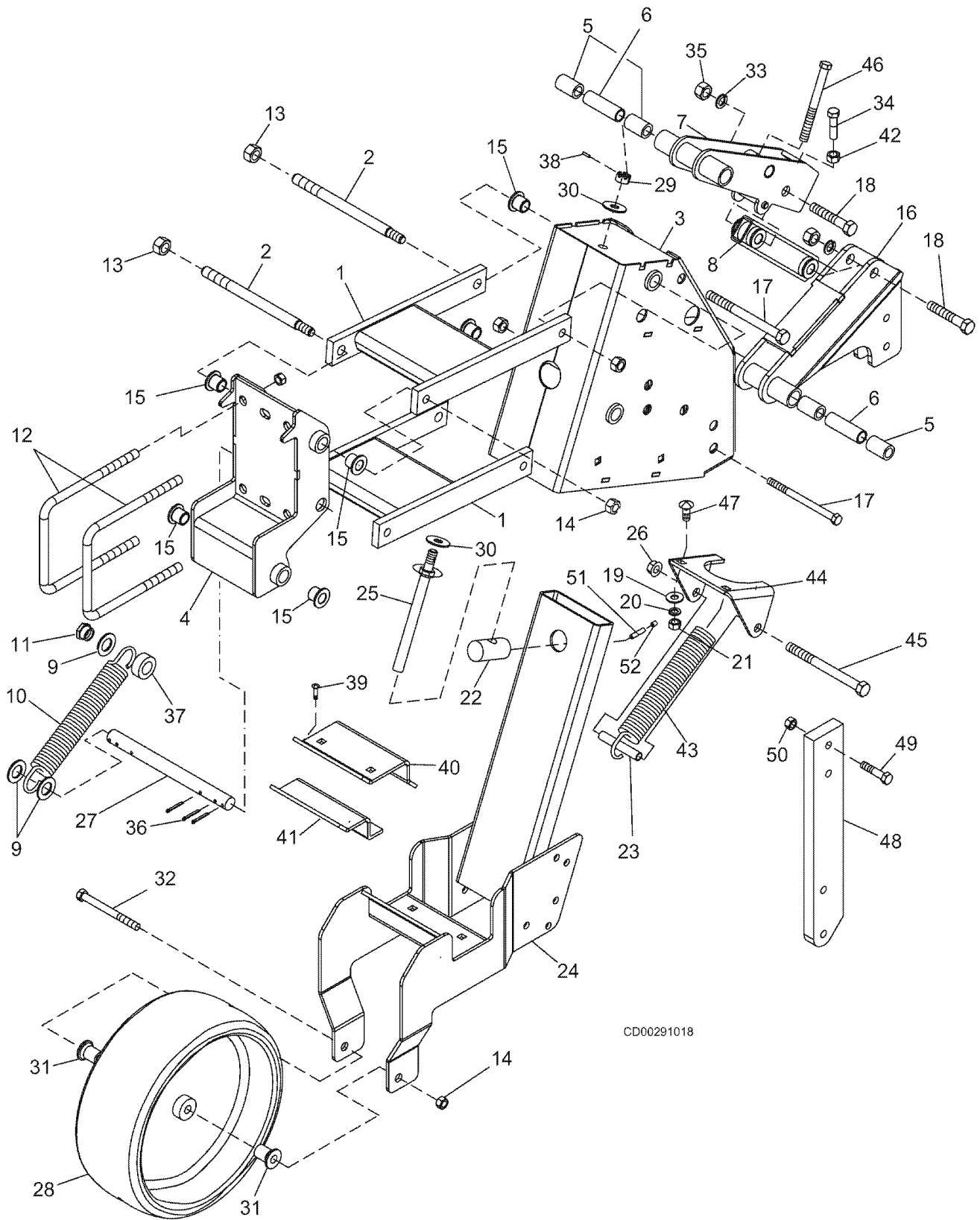


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## LINKAGE COMPONENTS PARTS LIST

| REF | PART     | QTY | DESCRIPTION                          | REF | PART     | QTY | DESCRIPTION                                        |
|-----|----------|-----|--------------------------------------|-----|----------|-----|----------------------------------------------------|
| 1   | 20021933 | 2   | H-Linkage weld                       | 28  | 90501937 | 1   | 6 x 16 Wheel assy.                                 |
| 2   | 20033756 | 4   | Pivot pin 11" long                   | NS  | 90509138 | AR  | Tire for 90501937                                  |
| 3   | 20021936 | 1   | Mast weld w/o bushings               | NS  | 90509139 | AR  | Rim 1/2 for 90501937                               |
| 4   | 20021932 | 1   | Mounting angle w/o bushings          | NS  | 90509140 | AR  | Bearing for 90501937                               |
| 5   | 20021937 | 1   | Pivot weld                           | 29  | 90006705 | 1   | 5/8 NC Slotted hex nut                             |
| 6   | 20033743 | 1   | Pivot bar                            | 30  | 90011037 | 2   | 5/8 Flat washer                                    |
| 7   | 20033523 | 1   | Trunion                              | 31  | 90308424 | 2   | Wheel spacer                                       |
| 8   | 20022020 | 1   | Screw, pitch adj.                    | 32  | 90001369 | 1   | 5/8 NC X 6 Hex bolt GR5                            |
| 9   | 90011073 | 6   | 10 ga machinery bushing              | 33  | 90016097 | 1   | 5/8 NC X 2-1/2 Sqr. head set screw                 |
| 10  | 20032163 | 2   | Down pressure spring                 | 34  | 20022095 | 1   | Gage wheel mast, after SN 24230                    |
| 11  | 20033873 | 1   | 3/4 NC Shoulder nut right            | 35  | 90001225 | 1   | 1/2 NC x 1-1/2 Hex bolt                            |
| NS  | 20033872 | 1   | 5/8 NC Shoulder nut left             | 36  | 90023043 | 6   | 3/16 x 1-1/2 Cotter pin                            |
| 12  | 20030344 | 2   | U-bolt 5/8 NC x 7 x 8.5              | 37  | 50530713 | 2   | Spacer bushing                                     |
| 13  | 90006510 | 4   | 3/4 NC Top lock nut                  | 38  | 90029470 | 1   | 3/16 x 7/8 Roll pin                                |
| 14  | 90006145 | 4   | 5/8 NC Flange lock nut               | 39  | 20022058 | 1   | Wheel arm, guide row                               |
| 15  | 20030877 | 8   | Bushing Flanged                      | 40  | 90016031 | 2   | 3/8 NC X 3/4 Sqr head set screw                    |
| 16  | 90029182 | 1   | 1/4 x 2 roll pin                     | 41  | 20021705 | 2   | Wheel holder                                       |
| 17  | 20033438 | 1   | 1/4 RND X 2-3/8 UHMW                 | 42  | 90001223 | 4   | 1/2 NC x 1-1/4 Hex bolt                            |
| 18  | 90016237 | 2   | 5/16 X 5/16 Socket set screw         | 43  | 20021685 | 1   | 6" Gauge tire with fork hub (includes items 44-49) |
| 19  | 90001726 | 4   | 7/16 x 1-1/2 Carriage bolt           | 44  | 90039022 | 1   | Retaining ring                                     |
| 20  | 20032533 | 1   | Double tube clamp                    | 45  | 20030669 | 1   | Hub                                                |
| 21  | 20030994 | 1   | Single tube clamp                    | 46  | 20033106 | 2   | Rim half, 6 x 12 wheel                             |
| 22  | 90001399 | 2   | 3/4 NC x 1-1/2 Hex bolt GR5          | 47  | 20033107 | 1   | Gauge wheel tire 6 x 12                            |
| 23  | 20033437 | 1   | 1/4 RND X 7/8 UHMW                   | 48  | 90001055 | 5   | 5/16 NC x 3/4 Hex bolt                             |
| 24  | 20021938 | 1   | Gauge wheel mast, prior to S/N 24229 | 49  | 90101264 | 1   | Fork type wheel bearing                            |
| 25  | 20021945 | 1   | Screw, depth adj.                    |     |          |     | NS = Not Shown                                     |
| 26  | 20033201 | 1   | Trunion, threaded                    |     |          |     | AR = As Required                                   |
| 27  | 20033871 | 1   | Down pressure spring rod             |     |          |     |                                                    |

# ROW UNIT (RESET SHANK)



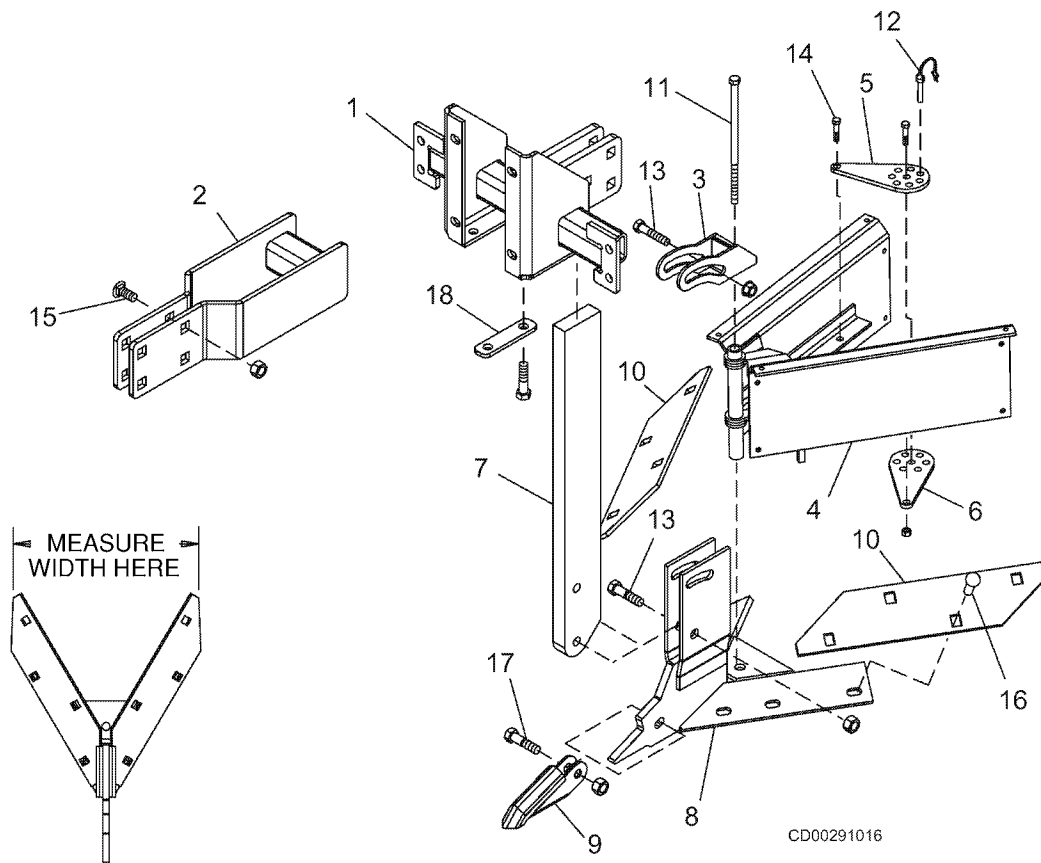
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## ROW UNIT (RESET SHANK) PARTS LIST

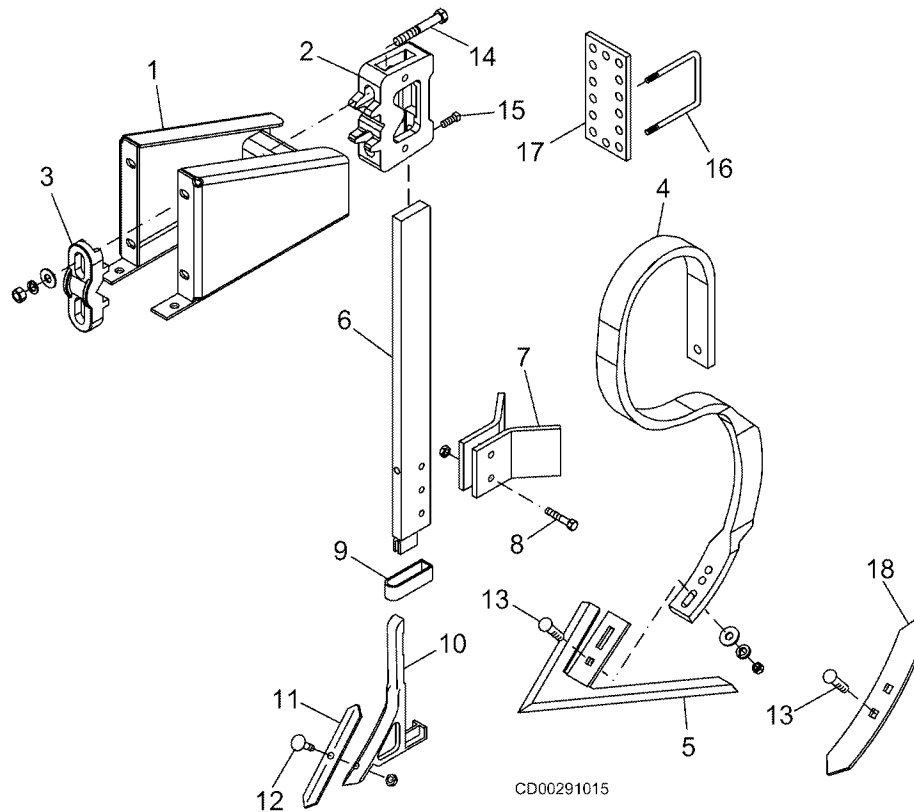
| REF | PART     | QTY | DESCRIPTION                  | REF              | PART     | QTY | DESCRIPTION                  |
|-----|----------|-----|------------------------------|------------------|----------|-----|------------------------------|
| 1   | 20021933 | 2   | H-Linkage weld               | 28               | 90501937 | 1   | 6 x 16 Wheel assy.           |
| 2   | 20033756 | 4   | Pivot pin                    | —                | 90509138 | AR  | Tire for 90501937            |
| 3   | 20021936 | 1   | Mast weld w/o bushings       | —                | 90509139 | AR  | Rim half for 90501937        |
| 4   | 20021932 | 1   | Mounting angle w/o bushings  | —                | 90509140 | AR  | Bearing for 90501937         |
| 5   | 20033910 | 4   | Oilite bushing               | 29               | 90006705 | 1   | 5/8 NC Slotted hex nut       |
| 6   | 20033902 | 2   | Bushing, center spacer       | 30               | 90011037 | 2   | 5/8 Flat washer              |
| 7   | 20021935 | 1   | Upper toggle trip arm        | 31               | 90308424 | 2   | Wheel spacer                 |
| 8   | 20021934 | 1   | Lower pivot arm with bushing | 32               | 90001369 | 1   | 5/8 NC X 6 Hex bolt GR5      |
| 9   | 90011073 | 6   | 10 ga. Machinery bushing     | 33               | 90011017 | 4   | 3/4 Lock washer              |
| 10  | 20032163 | 2   | Down pressure spring         | 34               | 90002526 | 1   | 1/2 NC X 2-3/4 F.T.Tap bolt  |
| 11  | 20033873 | 1   | 3/4 NC Shoulder nut right    | 35               | 90006015 | 4   | 3/4 Hex nut                  |
| NS  | 20033872 | 1   | 5/8 NC Shoulder nut left     | 36               | 90023043 | 6   | 3/16 x 1-1/2 Cotter pin      |
| 12  | 20030344 | 2   | U-bolt 5/8 NC x 7 x 8.5      | 37               | 50530713 | 2   | Spacer bushing               |
| 13  | 90006510 | 4   | 3/4 NC Top lock nut          | 38               | 90029470 | 1   | 3/16 x 7/8 Roll pin          |
| 14  | 90006145 | 4   | 5/8 NC Flange lock nut       | 39               | 90001726 | 4   | 7/16 x 1/2-2 Carriage bolt   |
| 15  | 20030877 | 8   | Bushing, flanged             | 40               | 20032533 | 1   | Double tube clamp            |
| 16  | 20021940 | 1   | Shank mount weld             | 41               | 20030994 | 1   | Single tube clamp            |
| 17  | 90001435 | 2   | 3/4 NC X 8 Hex bolt          | 42               | 90006276 | 1   | 1/2 NC Jam nut               |
| 18  | 90001415 | 2   | 3/4 NC X 3-1/2 Hex bolt      | 43               | 20022048 | 1   | Spring assy.                 |
| 19  | 90011035 | 2   | 1/2 Flat washer              | 44               | 20033905 | 1   | Formed plate                 |
| 20  | 90011013 | 2   | 1/2 Lock washer              | 45               | 90001373 | 1   | 5/8 NC X 7 Hex bolt          |
| 21  | 90006009 | 2   | 1/2 Hex nut                  | 46               | 90001255 | 1   | 1/2 NC X 6-1/2 Hex bolt      |
| 22  | 20033201 | 1   | Trunnion, threaded           | 47               | 90001750 | 2   | 1/2 NC X 1-1/4 Carriage bolt |
| 23  | 20033928 | 1   | Tube, spring holder          | 48               | 20033907 | 1   | Shank                        |
| 24  | 20022095 | 1   | Gauge wheel mast             | 49               | 90001233 | 2   | 1/2 X 2-1/2 Hex bolt         |
| 25  | 20021945 | 1   | Screw, depth adj.            | 50               | 90006143 | 2   | 1/2 NC Flange lock nut       |
| 26  | 90006508 | 1   | 5/8 NC Top lock nut          | 51               | 20033437 | 1   | 1/4 RND X 7/8 UHMW           |
| 27  | 20033871 | 1   | Down pressure spring rod     | 52               | 90016237 | 1   | 5/16 X 5/16 Socket set screw |
|     |          |     |                              | NS = Not Shown   |          |     |                              |
|     |          |     |                              | AR = As Required |          |     |                              |

## HILLER COMPONENTS



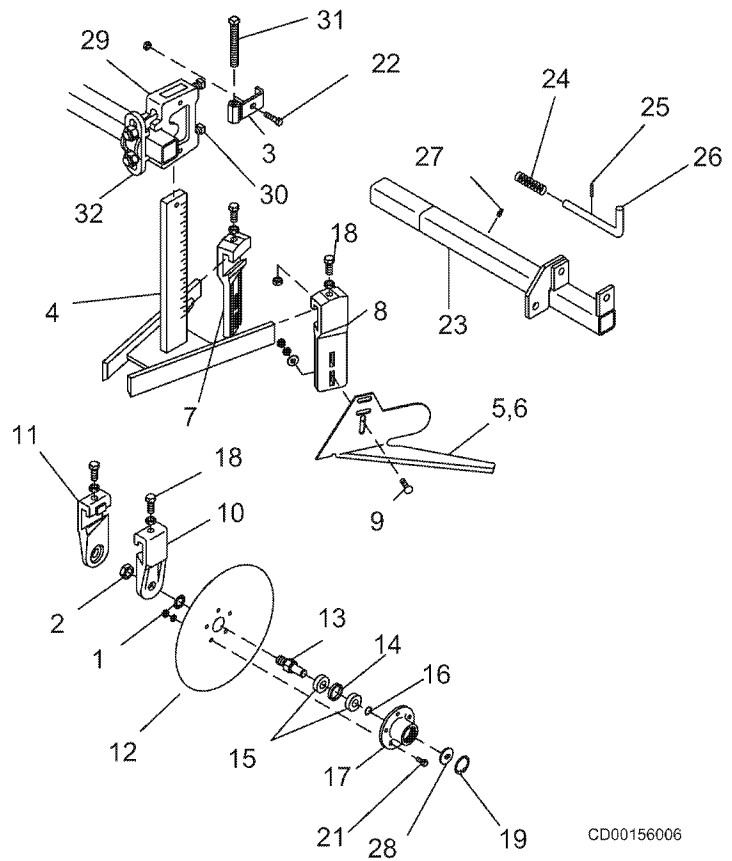
| REF | PARTS    | QTY | DESCRIPTION                     | REF | PARTS    | QTY | DESCRIPTION                 |
|-----|----------|-----|---------------------------------|-----|----------|-----|-----------------------------|
| 1   | 20021950 | 1   | Setback weld, 30" rows          | 10  | 90510130 | 2   | 17" Double edge share       |
| 1   | 20022011 | 1   | Setback weld, 22" rows          | 10  | 90510135 | 2   | 19" Double edge share       |
| 1   | 20022012 | 1   | Setback weld, 40" rows          | 10  | 90510129 | 2   | 21" Double edge share       |
| 2   | 20021977 | 1   | Setback weldment                | 10  | 90510136 | 2   | 25" Double edge share       |
| 3   | 20021982 | 1   | Pivot weldment                  | 11  | 90001265 | 1   | 1/2 NC x 9 Hex bolt GR5     |
| 4   | 20021980 | 1   | Ridger weldment                 | 12  | 90025028 | 1   | Lock pin                    |
| 5   | 20033823 | 1   | Width adjustment plate (7 hole) | 13  | 90001233 | 1   | 1/2 NC x 2-1/2 Hex bolt GR5 |
| 6   | 20033817 | 1   | Width adjustment plate (6 hole) | 14  | 90001111 | 3   | 3/8 NC x 1-1/4 Hex bolt GR5 |
| 7   | 20031061 | 1   | Ridged shank                    | 15  | 90006145 | 4   | 5/8 NC x 2-1/2 Hex bolt GR5 |
| 8   | 20021917 | 1   | Rigid sweep shoe                | 16  | 90001840 | 4   | 3/8 NC x 1-1/4 Plow bolt    |
| 9   | 90510128 | 1   | Sweep point                     | 17  | 90001223 | 1   | 1/2 NC x 1-1/2 Hex bolt GR5 |
|     |          |     |                                 | 18  | 20033803 | 2   | Reinforcement plate         |

## TINE AND ROW GUIDE COMPONENTS



| REF | PART     | QTY | DESCRIPTION                                               | REF | PART      | QTY | DESCRIPTION                    |
|-----|----------|-----|-----------------------------------------------------------|-----|-----------|-----|--------------------------------|
| 1   | 20021946 | 1   | Setback weld                                              | 7   | 20033294  | 2   | Cleanout wing                  |
| 2   | XXXXXX   | 1   | Clamp body,Order Assy                                     | 8   | 90001117  | 2   | 3/8 NC x 2 Hex bolt GR5        |
| 3   | 20031759 | 1   | Clamp back bracket                                        | 9   | 20020607  | 1   | Attachment bracket             |
| 3   | 20021414 | 1   | Clamp assy., 2" square or rectangular, diamond through 2" | 10  | 20031826  | 1   | Row guide point                |
| 4   | 20033524 |     | Tine, heavy duty 20"" adj. (5/8)                          | 11  | 90510088  | 1   | Spike point                    |
| 4   | 20033525 |     | Tine, heavy duty 20" adj. (3/4)                           | 12  | 90001841  | 1   | 3/8 NC x 1-1/2 Plow bolt       |
| 5   | 90510114 |     | 14" Beet sweep                                            | 13  | 90001902  |     | 7/16 NC x 2 Plow bolt          |
| 5   | 90510126 |     | 14" Beet sweep, heavy duty                                | 14  | 90001363  | 2   | 5/8 NC x 4-1/2 Hex bolt GR5    |
| 5   | 90510120 |     | 20" Beet sweep                                            | 15  | 90016095  | 2   | 5/8 NC x 2 Sq. head set screw  |
| 6   | 20020608 |     | Shank, row guide 3/4 x 2-1/2 x 24 long                    | 16  | 20032856  | 2   | U-Bolt, 1/2 NC x 2-1/2 x 4-1/4 |
| 6   | 20021061 |     | Shank, row guide 3/4 x 2-1/2 x 32 long                    | 17  | 20032955  | 2   | Plate                          |
|     |          |     |                                                           | 18  | 905-10018 | 1   | 1 3/4" Spike pt                |
|     |          |     |                                                           |     | 20020987  | 1   | Assembly Items 10, 11, 12      |
|     |          |     |                                                           | NS  | 20020902  |     | Assembly shank 24"             |
|     |          |     |                                                           | NS  | 20020903  |     | Assembly shank 32"             |

## DUAL DISC & DUAL KNIFE ASSEMBLY

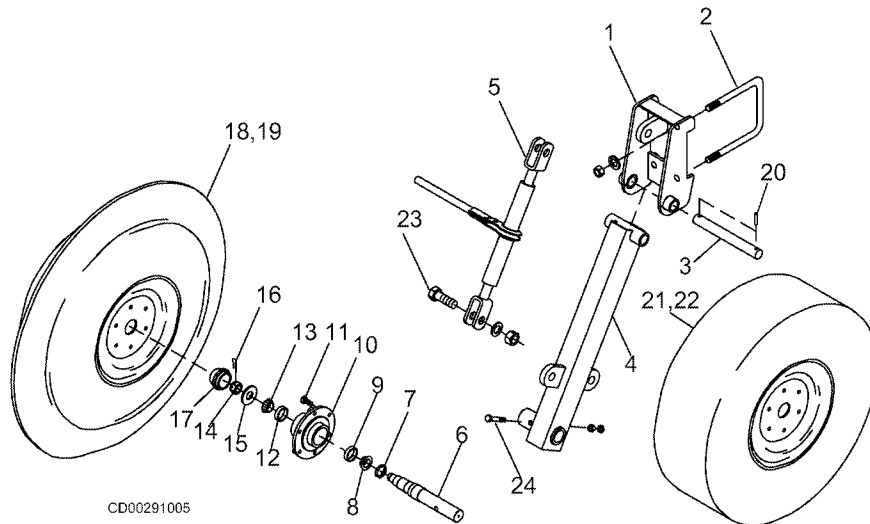


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| REF | PART     | QTY | DESCRIPTION                            |
|-----|----------|-----|----------------------------------------|
| 1   | 90011190 | 1   | 3/4 Internal star washer               |
| 2   | 90006282 | 1   | 3/4 NC Jam nut                         |
| 3   | 20021418 | 1   | Adjustable nut weld, 3/4 x 2-1/2 shank |
| 4   | 20021942 | 1   | Shank weld, heavy duty 3/4 x 2-1/2     |
| 5   | 20033684 | 1   | Weeder knife, left short               |
| 6   | 20033685 | 1   | Weeder knife, right short              |
| 7   | 20031251 | 1   | Weeder knife bracket, right            |
| 8   | 20031253 | 1   | Weeder knife bracket, left             |
| 9   | 90001697 | 2   | 3/8 x 1-1/2 Carriage bolt              |
| 10  | 20033155 |     | Dual disc bracket, 12° left and right  |
| 11  | 20033155 |     | Dual disc bracket, 12° left and right  |
| 12  | 90510110 | 2   | Disc 14"                               |
| 13  | 20031261 | 1   | Axle                                   |
| 14  | 20031264 | 1   | Spacer                                 |
| 15  | 90101143 | 2   | Bearing                                |
| 16  | 90039029 | 1   | Snap ring 5/8 ID , 3/4 OD x 1/32       |
| 17  | 20033279 | 1   | Hub machined                           |
| 18  | 90001225 | 1   | 1/2 NC x 1-1/2 Hex bolt GR 5           |
| 19  | 90039048 | 1   | Snap ring                              |
| 20  | 90016319 | 1   | 5/8NC X 4 Sq. Hex head set screw       |
| 21  | 90001055 | 1   | 5/16 NC x 3/4 Hex bolt GR5             |
| 22  | 90001113 | 1   | 3/8 NC x 1-1/2 Hex bolt GR5            |
| 23  | 20021695 | 1   | Disc tube weldment 22"-24"             |
|     | 20021696 | 1   | Disc tube weldment 26"-30"             |
|     | 20021697 | 1   | Disc tube weldment 36"-40"             |
| 24  | 20032735 | 1   | Spring                                 |
| 25  | 90029132 | 1   | 3/16 x 1-1/4 Roll pin                  |
| 26  | 20033184 | 1   | Pin                                    |
| 27  | 90515013 | 1   | Zerk, 3/16 drive-in                    |

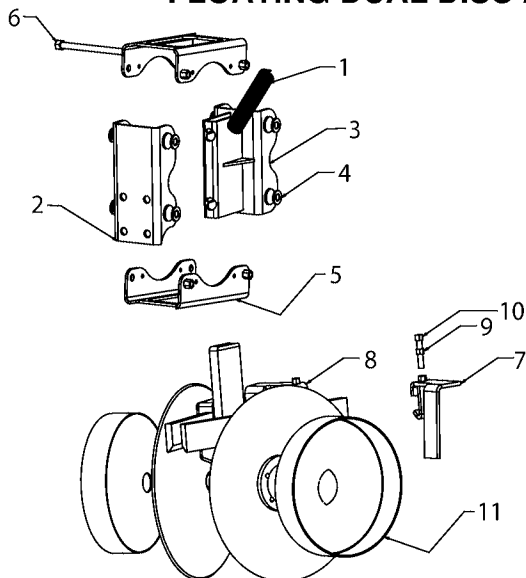
| REF | PART     | QTY | DESCRIPTION                               |
|-----|----------|-----|-------------------------------------------|
| 28  | 20033278 | 1   | Plastic dust cap                          |
| 29  | 20021414 | 1   | Clamp assy. 2" square                     |
| 30  | 90016093 | 2   | 5/8 NC x 1-1/2 Sq Head set screw          |
| 31  | 90016319 | 1   | 3/8 NC x 4-SHSC GR5                       |
| 32  | 20031759 | 1   | Clamp bracket back                        |
|     | 20021414 | 1   | Clamp assy. 2" square (Ref 29-32)         |
|     | 20020694 | 1   | Axle & Bearing assy. (Ref 13-16)          |
|     | 20020695 | 1   | Hub assy. (Ref 13, 17)                    |
|     | 20021636 | 1   | 14" Disc and hub assy.                    |
|     | 20021637 | 1   | 14" Disc and adapter assy., 12°           |
|     | 20021698 |     | Disc mount tube assy. 22"-24" (Ref 23-27) |
|     | 20021699 |     | Disc mount tube assy. 26"-30" (Ref 23-27) |
|     | 20021700 |     | Disc mount tube assy. 36"-40" (Ref 23-27) |
|     | 20021775 |     | Hub assy. ( Ref 17, 28, 19)               |

## ADJUSTABLE GUIDE AND SUPPORT WHEELS



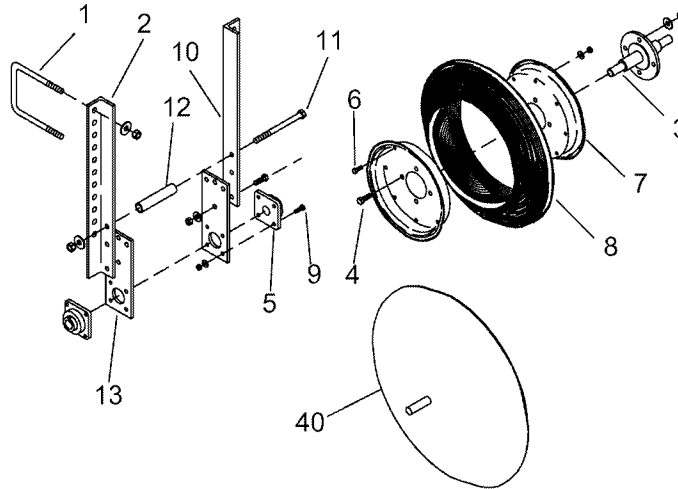
| REF | PART     | QTY | DESCRIPTION                      | REF | PART     | QTY | DESCRIPTION                             |
|-----|----------|-----|----------------------------------|-----|----------|-----|-----------------------------------------|
| 1   | 20020535 | 1   | Mounting bracket                 | 15  | 90509068 | 1   | 1" Washer                               |
| 2   | 20030345 | 2   | 3/4 U-Bolt                       | 16  | 90023045 | 1   | Cotter pin, 3/16 x 2"                   |
| 3   | 20030896 | 1   | Pin, 1-1/4 x 10-1/8              | 17  | 90509009 | 1   | Dust cap                                |
| 4   | 20021971 | 1   | Adjustable strut                 | 18  | 90509019 | 1   | Tire 5.5 x 16 Single rib imp            |
| 5   | 90523009 | 1   | Screw jack                       | 19  | 90509014 | 1   | Rim 16 x 6LB, 6 bolt                    |
| 6   | 20031784 | 1   | Spindle                          | 20  | 90029204 | 1   | Roll pin, 5/16 x 1-5/8"                 |
| 7   | 90109002 | 1   | Seal for 1.750 spindle seal area | 21  | 90509077 | 1   | Rim 15" x 6 x 6 hole                    |
| 8   | 90101025 | 1   | Bearing cone, inner              | 22  | 90509070 | 1   | Tire 9.5L x 15, 8 ply                   |
| 9   | 90101024 | 1   | Bearing cup, inner               | 23  | 90001519 | 2   | 1 NC x 3 Hex bolt                       |
| 10  | 90509004 | 1   | 6 Bolt hub                       | 24  | 90001237 | 1   | 1/2 NC x 3 Hex bolt                     |
| 11  | 90509010 | 6   | Wheel bolt 1/2 NF x 1-1/16       | —   | 20020931 | —   | 6-Bolt hub assy. (Ref 7-13, 17)         |
| 12  | 90101016 | 1   | Bearing cup, outer               | —   | 20020531 | —   | 7-Bolt hub and spindle assy. (Ref 6-17) |
| 13  | 90101015 | 1   | Bearing cone, outer              | —   | 20020988 | —   | Wheel assy., single rib (Ref 18, 19)    |
| 14  | 90006062 | 1   | 1" NF Slotted nut                |     |          |     |                                         |

## FLOATING DUAL DISC ASSY



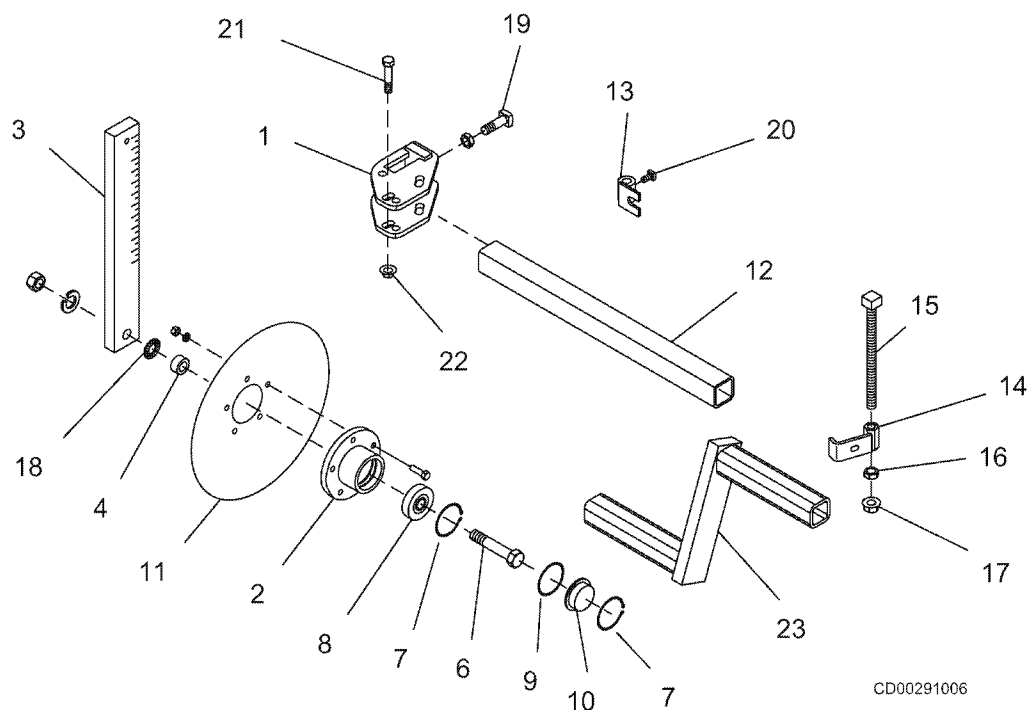
|    |          |   |                                |
|----|----------|---|--------------------------------|
| 1  | 20034136 | 2 | Spring                         |
| 2  | 20022134 | 1 | Weld, pivot plate              |
| 3  | 20022135 | 1 | Weld, back plate               |
| 4  | 20032913 | 8 | Bushing                        |
| 5  | 20022137 | 2 | Weld, link pivot               |
| 6  | 90001201 | 4 | 7/16 NC x 5.5" HHCS, ZP        |
| 7  | 20022138 | 1 | Weld, scraper LH               |
| 8  | 20022139 | 1 | Weld, scraper RH               |
| 9  | 90006270 | 2 | 3/8 NC jam nut                 |
| 10 | 90001111 | 2 | 3/8 x 1 1/4 NC HHCS            |
| 11 | 20022140 | 2 | Depth band                     |
| NS | 90006143 | 4 | 1/2 Spirallock nut             |
| NS | 90016063 | 2 | 1/2 NC x 1-1/4 SQ HD Set screw |
| NS | 90006009 | 2 | 1/2 NC Hex nut ZP              |
| NS | 90030801 | 2 | 1/2 NC Hex nut ZP              |

## SEMI-PNEUMATIC GUIDE WHEEL & STEEL GUIDE WHEEL



| REF | PART     | QTY | DESCRIPTION                        | REF | PARTS    | QTY | DESCRIPTION                          |
|-----|----------|-----|------------------------------------|-----|----------|-----|--------------------------------------|
| 1   | 20030344 | 2   | 5/8 U-Bolt, 7" inside x 8-1/2 long | 9   | 90001113 | 8   | 3/8 NC x 1-1/2 Hex bolt GR5          |
| 2   | 20033858 | 1   | Right angle, 32-1/4 long           | 10  | 20033859 | 1   | Left angle, 32-1/4 long              |
| 3   | 20021315 | 1   | Hub                                | 11  | 90001377 | 1   | 5/8 NC x 8 Hex bolt GR5              |
| 4   | 90001225 | 8   | 1/2 NC x 1-1/2 Hex bolt GR5        | 12  | 20032758 | 1   | Spacer tube                          |
| 5   | 90101004 | 2   | 1" Bearing, 2-3/4 bolt spacing     | 13  | 20032815 | 2   | Bearing plate, 2-3/4 bolt spacing    |
| 6   | 90001109 | 8   | 3/8 NC x 1 Hex bolt GR5            | —   | 20020536 | 1   | Wheel and tire assy. (Ref 6, 7, 8)   |
| 7   | 20030891 | 2   | Rim half, 4 x 20                   | 40  | 20022094 | 1   | Steel Wheel assy., welded (Ref 9-15) |
| 8   | 90509054 | 1   | V-type tire, 4.5 x 20              |     |          |     |                                      |

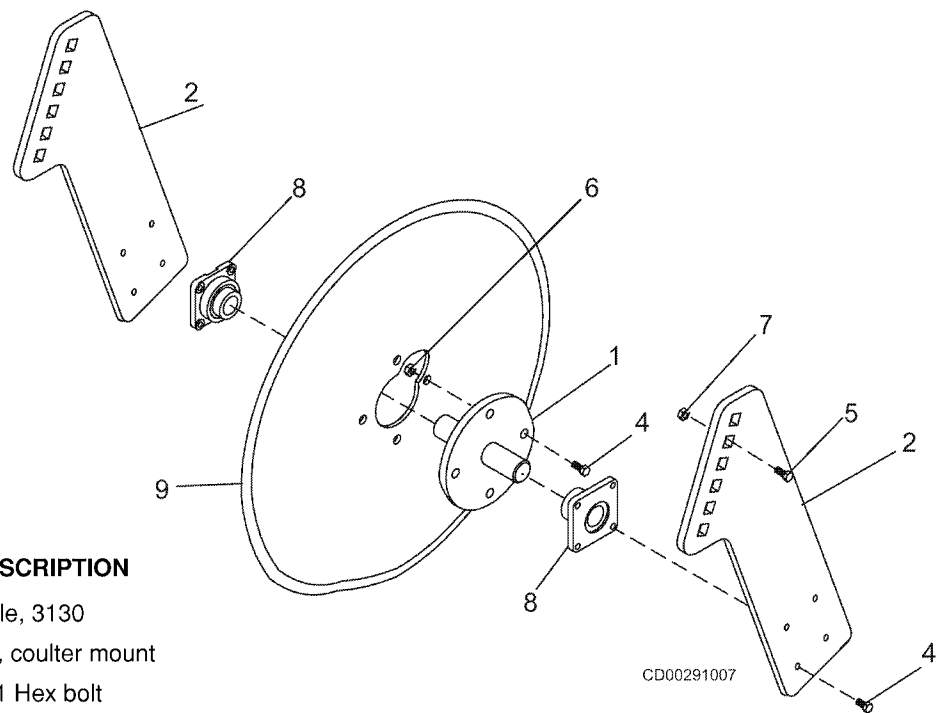
## ROW WEEDER DISCS



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| REF | PART     | QTY | DESCRIPTION                 | REF | PARTS    | QTY | DESCRIPTION                        |
|-----|----------|-----|-----------------------------|-----|----------|-----|------------------------------------|
| 1   | 20021876 | 2   | Clamp weldment              | 13  | 20021877 | 1   | Nozzle bracket                     |
| 2   | 20021466 | 2   | Hub                         | 14  | 20021418 | 1   | Adjustment nut                     |
| 3   | 20032704 | 2   | Shank                       | 15  | 90016319 | 2   | 5/8 NC x 4 Adj. sq. head set screw |
| 4   | 20032705 | 2   | Spacer                      | 16  | 90006280 | 2   | 5/8 NC Jam nut                     |
| 5   | 90001111 | 10  | 3/8 NC x 1-1/4 Hex bolt GR5 | 17  | 90006145 |     | 5/8 NC Whiz nut                    |
| 6   | 90001411 | 2   | 3/4 NC x 3 Hex Bolts GR5    | 18  | 90011190 | 2   | 5/8 Internal star washer           |
| 7   | 90039046 | 2   | Snap ring                   | 19  | 90016095 | 2   | 5/8 NC x 2 Sq. head set screw      |
| 8   | 90101254 | 2   | Bearing                     | 20  | 90016031 | 2   | 5/8 NC x 3/4 Sq. head set screw    |
| 9   | 90109206 | 2   | O-Ring                      | 21  | 90001241 | 3   | 1/2 NC x 3-1/2 Hex bolt GR5        |
| 10  | 90509118 | 2   | Dust cap                    | 22  | 90006143 | 3   | 1/2 NC Flange nut                  |
| 11  | 90510080 | 2   | Disc                        | 23  | 20022090 | 2   | Raised bed mount tubes, 30" rows   |
| 12  | 20033576 | 2   | Tube 40" rows, 24" long     | 23  | 20022104 | 2   | Raised bed mount tubes, 40" rows   |
| 12  | 20030993 | 2   | Tube 30" rows, 20" long     |     |          |     |                                    |
| 12  | 20033790 | 2   | Tube, dummy, 9" long        |     |          |     |                                    |

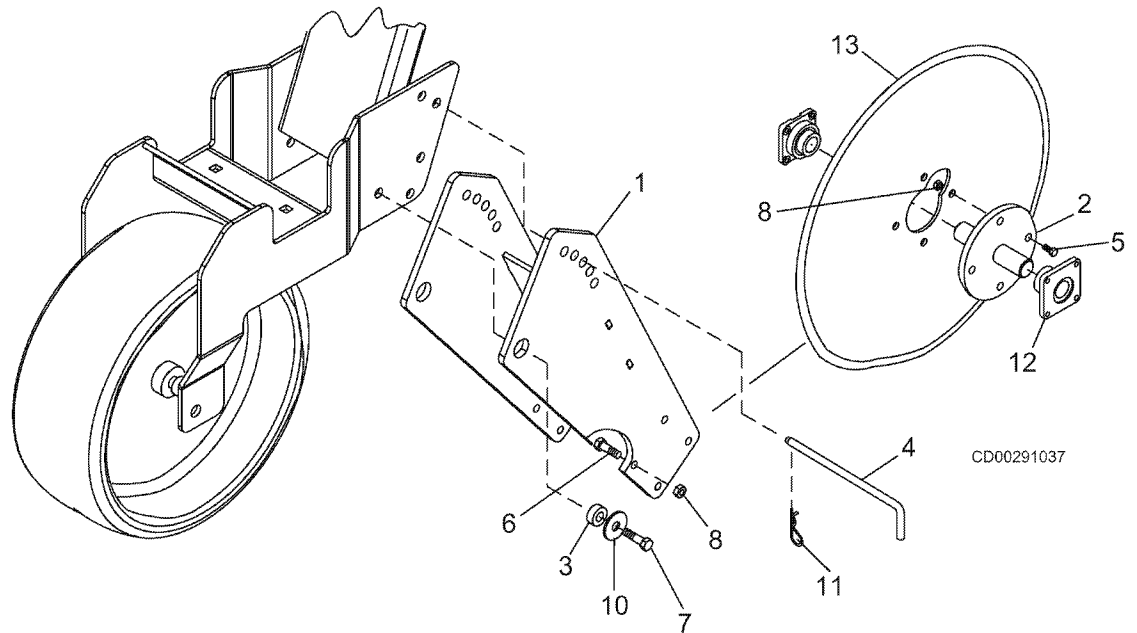
## COULTER (STRAIGHT EDGE TINE)



| REF | PART     | QTY | DESCRIPTION                  |
|-----|----------|-----|------------------------------|
| 1   | 20022097 | 1   | Coulter axle, 3130           |
| 2   | 20033935 | 2   | Side plate, coulter mount    |
| 3   | 90001109 | 4   | 3/8 NC X 1 Hex bolt          |
| 4   | 90001113 | 8   | 3/8 NC X 1-1/2 Hex bolt      |
| 5   | 90001750 | 4   | 1/2 NC X 1-1/4 Carriage bolt |
| 6   | 90006139 | 12  | 3/8 NC Flange whiz lock      |
| 7   | 90006143 | 4   | 1/2 NC Spiral lock flange    |
| 8   | 90101004 | 2   | 1" 4 Bolt bearing NANF       |
| 8   | 90101003 |     | 1" Bearing insert            |
| 9   | 90510079 | 1   | Coulter guide disc           |

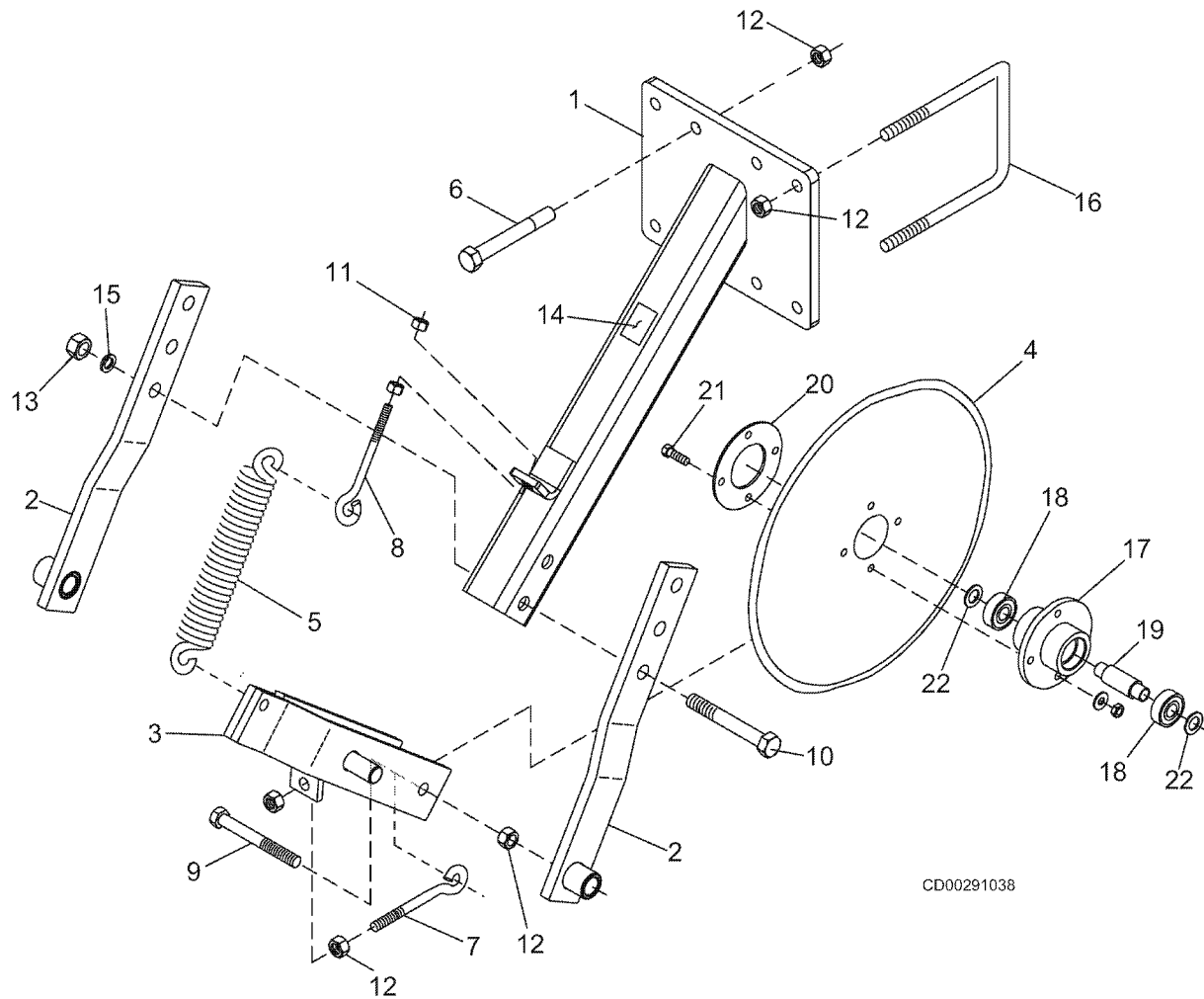


## COULTER (RIGID SHANK)



| REF | PART     | QTY | DESCRIPTION                 |
|-----|----------|-----|-----------------------------|
| 1   | 20022096 | 1   | Coulter disc mast           |
| 2   | 20022097 | 1   | Coulter axle                |
| 3   | 20033969 | 2   | Coulter pivot bushing       |
| 4   | 20033970 | 1   | Coulter adjust pin          |
| 5   | 90001109 | 4   | 3/8 NC x 1 Hex bolt GR5     |
| 6   | 90001113 | 8   | 3/8 NC x 1-1/2 Hex bolt     |
| 7   | 90001225 | 2   | 1/2 NC x 1-1/2 Hex bolt     |
| 8   | 90006139 | 12  | 3/8 NC Flange whiz lock nut |
| 9   | 90006143 | 2   | 1/2 NC Spirallock flange    |
| 10  | 90011035 | 2   | 1/2 Flat washer ZP          |
| 11  | 90025005 | 1   | 5/32 Hair pin cotter        |
| 12  | 90101004 | 2   | 1" 4-Bolt bearing NANF      |
| NS  | 90101003 | 2   | 1" Bearing insert           |
| 13  | 90510079 | 1   | Disc, guide coulter         |

## COULTER (STABILIZING)

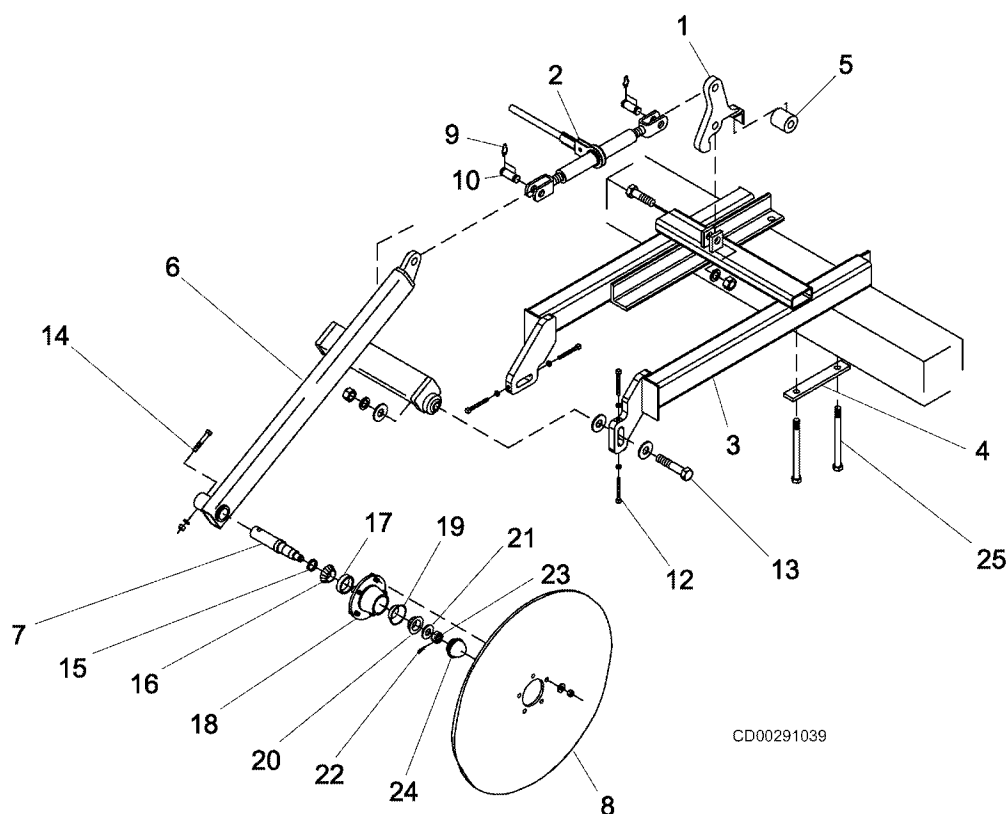


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| REF | PART     | QTY | DESCRIPTION             |
|-----|----------|-----|-------------------------|
| 1   | 20022093 | 1   | Stab coulter mast, 3130 |
| 2   | 20020425 | 2   | Side arm                |
| 3   | 20020426 | 1   | Clevis                  |
| 4   | 90510079 | 1   | Disc Blade              |
| 5   | 20033010 | 1   | Spring                  |
| 6   | 90001381 | 4   | 5/8 NC x 9 Hex bolt     |
| 7   | 20031285 | 1   | 5/8 Eye bolt            |
| 8   | 10030148 | 1   | 1/2 NC Eye bolt         |
| 9   | 90001369 | 1   | 5/8 NC x 6 Hex bolt     |
| 10  | 90001425 | 2   | 3/4 NC x 5-1/2 Hex bolt |
| 11  | 90006009 | 2   | 1/2 NC Hex nut ZP       |

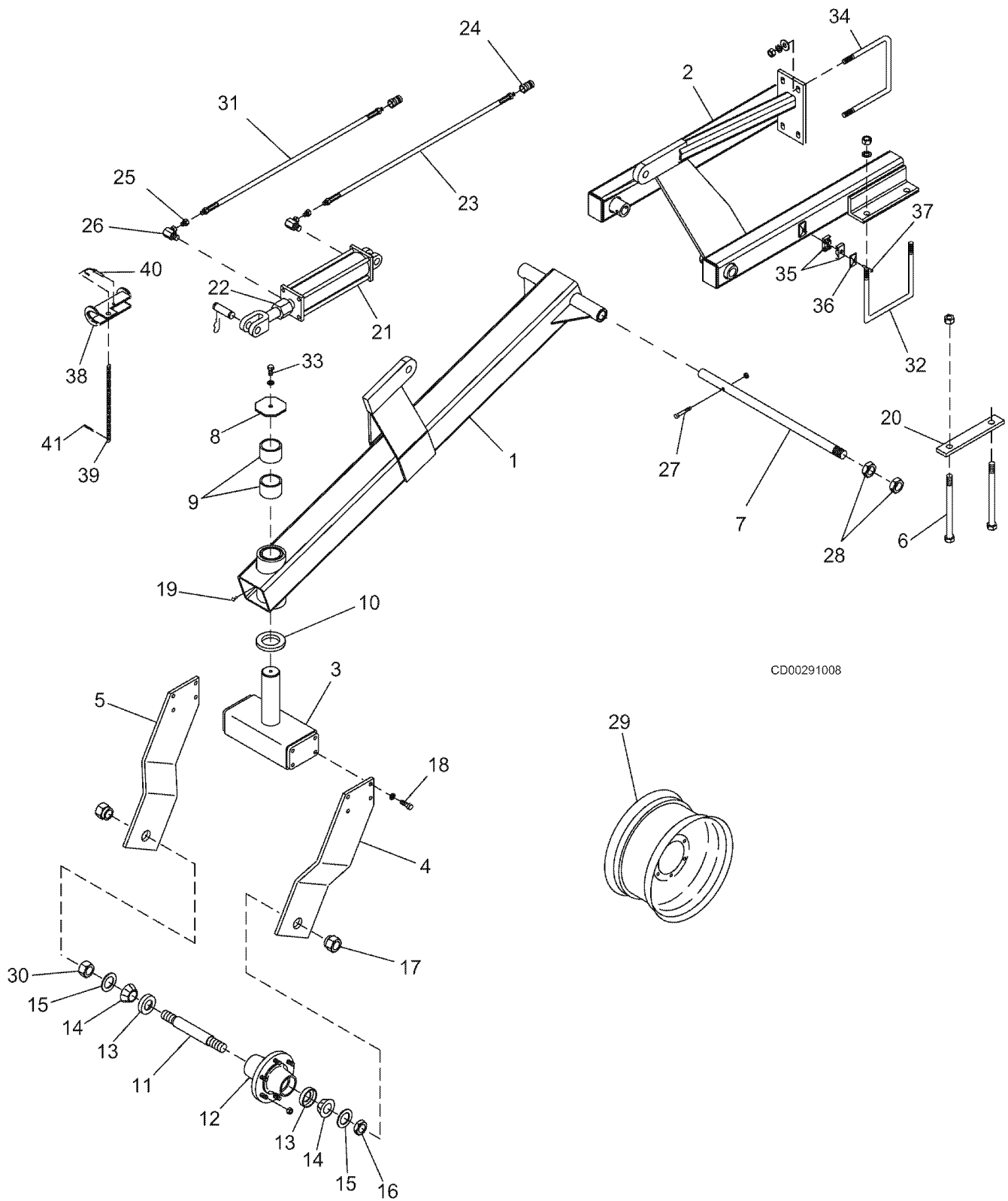
| REF | PART     | QTY | DESCRIPTION                         |
|-----|----------|-----|-------------------------------------|
| 12  | 90006145 | 7   | 5/8 NC Hex nut spiral lock          |
| 13  | 90006015 | 2   | 3/4 NC Hex nut                      |
| 14  | 20030193 | 1   | Decal, coulter adjust               |
| 15  | 90011017 | 2   | 3/4 Lock washer                     |
| 16  | 20030344 | 2   | 5/8 NC x 7" U-Bolt                  |
| 17  | 20021772 | 1   | Hub                                 |
| 18  | 90101278 | 2   | Bearing                             |
| 19  | 20033351 | 1   | Bearing spacer                      |
| 20  | 20030685 | 1   | Back plate                          |
| 21  | 90001111 | 4   | 3/8 NC x 1-1/4 Hex bolt             |
| 22  | 90011060 | 2   | 3/4 X 14 GA NAR rim machine bushing |

## COULTER (REAR STABILIZER)



| REF | PART     | QTY | DESCRIPTION                          | REF | PART     | QTY | DESCRIPTION                           |
|-----|----------|-----|--------------------------------------|-----|----------|-----|---------------------------------------|
| 1   | 20020709 | 1   | Arm weldment                         | 16  | 90101023 | 1   | Bearing cone                          |
| 2   | 20020705 | 1   | Ratchet jack                         | 17  | 90101022 | 1   | Bearing cup, inner                    |
| 3   | 20022024 | 1   | Mounting frame, 3130                 | 18  | 90509003 | 1   | 5-Bolt hub with cups                  |
| 4   | 20030970 | 1   | Backing strap                        | 19  | 90101016 | 1   | Bearing cup, outer                    |
| 5   | 20031313 | 1   | Rubber bushing                       | 20  | 90101015 | 1   | Bearing cone                          |
| 6   | 20022025 | 1   | Strut, 3130                          | 21  | 90509067 | 1   | Washer 7/8 x 2                        |
| 7   | 20031314 | 1   | Spindle                              | 22  | 90023043 | 1   | Cotter pin 3/16 x 1-1/2               |
| 8   | 20020707 | 1   | Disc coulter                         | 23  | 90006060 | 1   | 7/8 NF Slotted hex nut                |
| 9   | 90025018 | 1   | 3/4 Ext Hair pin clip                | 24  | 90509009 | 1   | Dust cap                              |
| 10  | 90042048 | 2   | 1 x 2-3/4 Clevis pin                 | 25  | 90006017 | 4   | 7/8 NC x 10 Hex bolt GR5              |
| 11  | 90002914 | 1   | 1 NC x 3-1/2 Hex bolt GR5            | —   | 20020710 | —   | Hub and spindle assy. (Ref. 7, 15-24) |
| 12  | 90016042 | 4   | 3/8 x 3-1/2 Sq head set screw        | —   | 10021051 | —   | Hub assy. (Ref. 15-24)                |
| 13  | 90001531 | 2   | 1 NC x 5 Hex bolt GR5                |     |          |     |                                       |
| 14  | 90001237 | 1   | 1/2 NC x 3 Hex bolt GR5              |     |          |     |                                       |
| 15  | 90109002 | 1   | Seal for 1.75 spindle seal area, std |     |          |     |                                       |
| 15  | 90109209 | 1   | Seal for undersized 1.70 seal area   |     |          |     |                                       |

# LIFT ASSIST



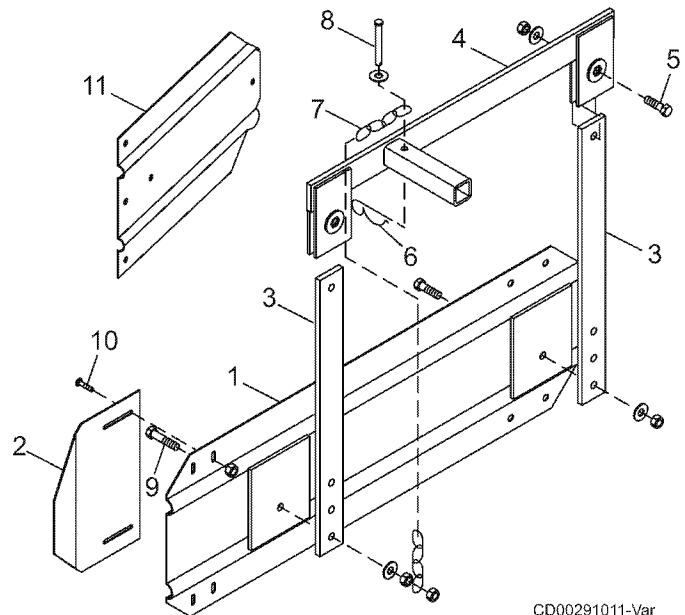
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## LIFT ASSIST PARTS LIST

| REF | PART     | QTY | DESCRIPTION                             | REF | PART     | QTY | DESCRIPTION                                      |
|-----|----------|-----|-----------------------------------------|-----|----------|-----|--------------------------------------------------|
| 1   | 20021957 | 1   | Tube weldment                           | 20  | 20033964 | 2   | Strap, Ft reinforced tool bar, 24 row, 3 holes   |
| 2   | 20021955 | 1   | Mount weld, TRF folding toolbars        | 21  | 90521391 | 1   | Hydraulic cylinder 3 x 10 stroke                 |
| 2   | 20022091 | 1   | Mount weld, flat fold/rigid toolbars    | 22  | 90521305 | 1   | Depth stop nut                                   |
| 2   | 20022101 | 1   | Mount weld, FR folding toolbars, 24 row | 23  | 90519154 | 1   | Hose 6 FJIC x 6 MORB x 115"                      |
| 3   | 20020689 |     | Caster pivot weldment                   | 24  | 90519126 | 2   | Quick coupler, male tip                          |
| 4   | 20032622 | 1   | Side plate RH                           | 25  | 90503162 | 2   | Restrictor 6 MJIC x 8 MORB                       |
| 5   | 20032621 |     | Side plate LH                           | 26  | 90503137 | 2   | Elbow 6 MJIC x 6 FJIC                            |
| 6   | 90003039 | 4   | 7/8 x 10 Hex bolt                       | 27  | 90001121 | 1   | 3/8 NC x 2-1/2 Hex bolt GR5                      |
| 7   | 20032799 | 1   | Pin                                     | 28  | 90006291 | 2   | 1-1/4 NF Jam nut                                 |
| 8   | 20031219 | 1   | Retainer plate                          | 29  | 90509077 | 1   | 6-Hole rim 15" x 6"                              |
| 9   | 20031766 | 2   | Bushing                                 | 30  | 90006024 | 1   | 1-1/4 NF Hex nut                                 |
| 10  | 20031233 | 1   | Thrust bearing                          | 31  | 90519130 | 1   | Hose, 6 FJIC x 6 MORB x 100"                     |
| 11  | 20031240 | 1   | Spindle                                 | 32  | 20030345 | 2   | U-Bolt, 3/4 NC x 7" inside x 9-1/8" Ln, Pre '99" |
| 12  | 90509082 | 1   | Hub with cups                           | 33  | 90001221 | 1   | 1/2 NC x 1 Hex bolt GR5                          |
| 13  | 90101148 | 2   | Bearing cup                             | 34  | 20030344 |     | U-Bolt, 5/8 NC x 7" inside x 8-1/2" long         |
| 14  | 90101149 | 2   | Bearing cone                            | 35  | 90031069 | 3   | Clamp body                                       |
| 15  | 90109127 | 2   | Seal                                    | 36  | 90030168 | 3   | Cover plate                                      |
| 16  | 20032726 | 1   | Nut, short 1-1/4 NF                     | 37  | 90003459 | 3   | 5/16 NC x 1-3/8 Hex bolt GR5                     |
| 17  | 20031847 | 2   | 1-1/4 NF Shoulder nut                   | 38  | 20022059 | 1   | Cylinder. stop weld                              |
| 18  | 90001225 | 8   | 1/2 NC x 1-1/2 Hex bolt GR5             | 39  | 12030472 | 1   | Chain                                            |
| 20  | 20030970 | 2   | Strap                                   | 40  | 90042055 | 1   | Lock pin                                         |
| 19  | 90515024 | 1   | 1/4-28 UNF Straight zer k               | 41  | 90023043 | 4   | Cotter pin                                       |

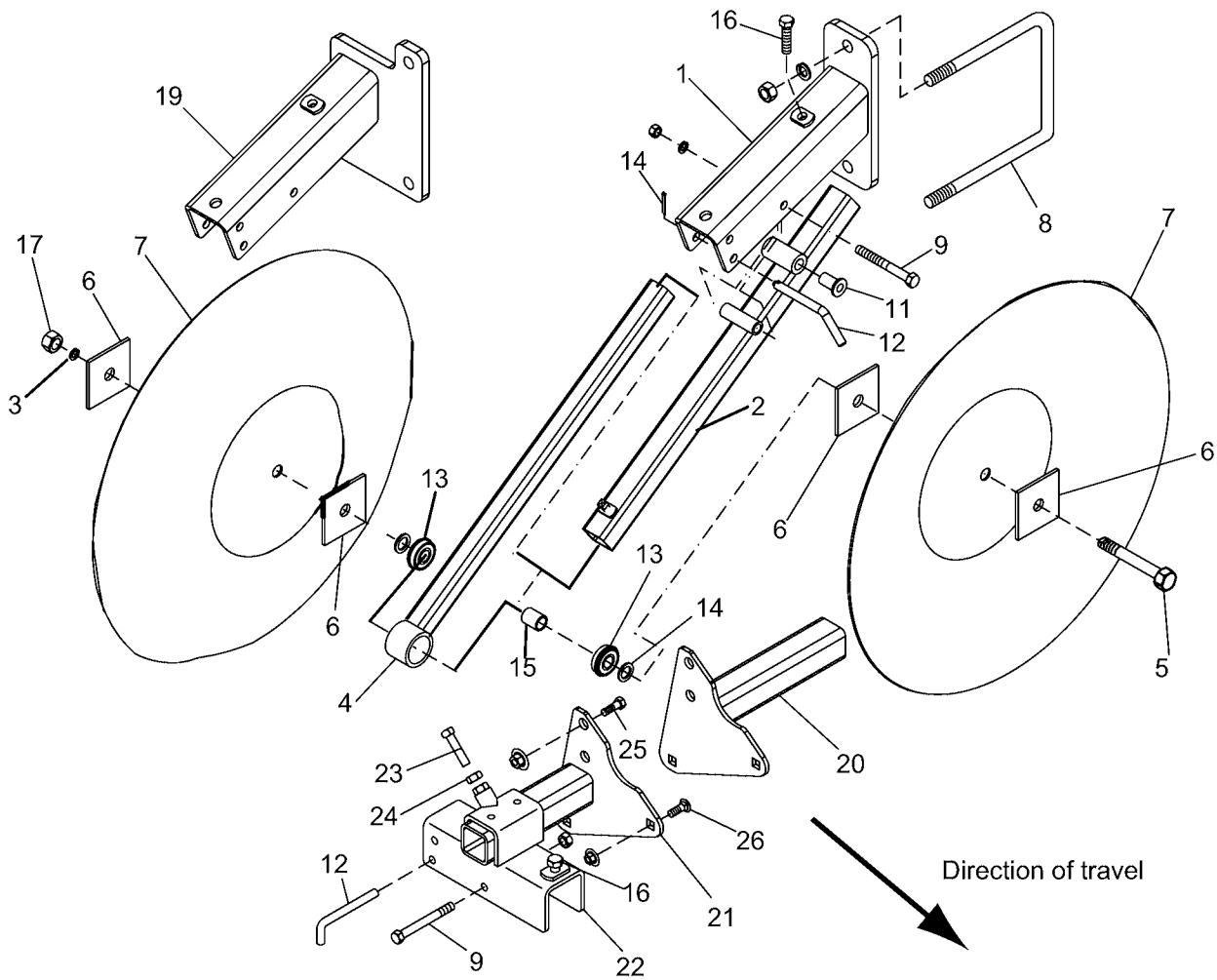
## OPEN TOP SHIELDS

| REF | PART     | QTY | DESCRIPTION                |
|-----|----------|-----|----------------------------|
| 1   | 20021930 | 1   | Shield weldment (LH)       |
| NS  | 20021929 | 1   | Shield weldment (RH)       |
| 2   | 20033688 | 1   | Guide shield               |
| 3   | 20033519 | 2   | Parallel arm 20-1/2        |
| 4   | 20022013 | 1   | Bracket, 22" rows (RH)     |
| 4   | 20022110 | 1   | Bracket, 30" rows (RH)     |
| 4   | 20022115 | 1   | Bracket, 40" rows (RH)     |
| NS  | 20022014 | 1   | Bracket Weld, 22 rows (LH) |
| NS  | 20022009 | 1   | Bracket, 30" rows (LH)     |
| NS  | 20022016 | 1   | Bracket, 40" rows (LH)     |
| 5   | 90001173 | 6   | 7/16 NC x 1-1/4 Hex bolt   |
| 6   | 90025004 | 2   | 1/8 Hair pin cotter        |
| 7   | 20032964 | 2   | Chain                      |
| 8   | 90032026 | 2   | 3/8 x 2-3/4 Clevis pin     |
| 9   | 90001179 | 2   | 7/16 NC x 2 Hex bolt       |
| 10  | 90001647 | 4   | 1/4 NC x 3/4 Carriage bolt |
| 11  | 20033238 | 2   | Shield extension           |



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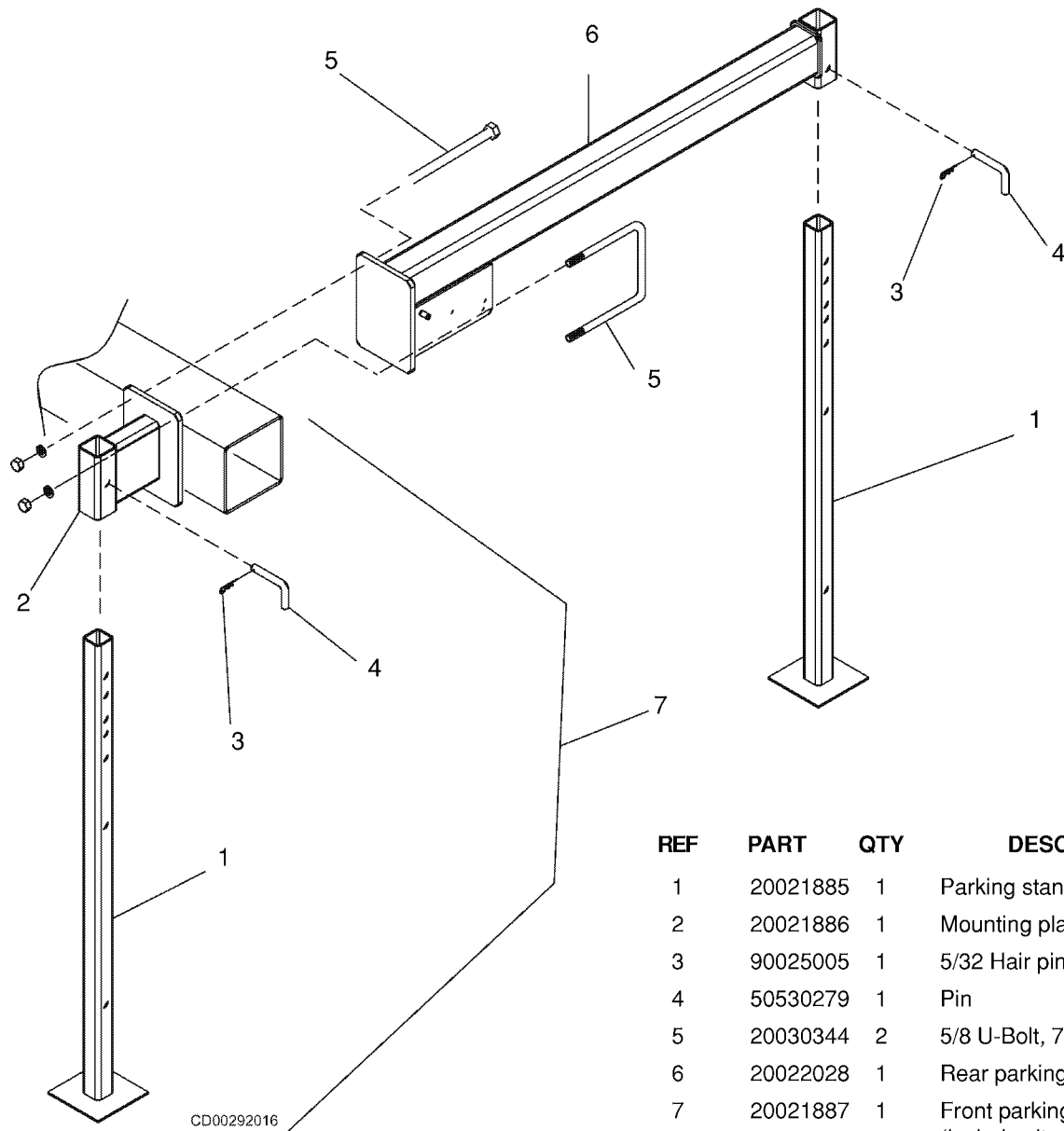
## ROLLING SHIELDS



| REF | PART     | QTY | DESCRIPTION                       | REF | PART     | QTY | DESCRIPTION                       |
|-----|----------|-----|-----------------------------------|-----|----------|-----|-----------------------------------|
| 1   | 20021949 | 1   | Rolling shield mount weld         | 17  | 90006013 | 1   | 5/8 NC Hex nut                    |
| 2   | 20021816 | 1   | Rolling shield tube               | 18  |          |     |                                   |
| 3   | 90011015 | 1   | 5/8" lock washer                  | 19  | 20021975 | 1   | Mount offset LH                   |
| 4   | 20021714 | 1   | Axle weldment                     | NS  | 20021976 | 1   | Mount offset RH                   |
| 5   | 90006013 | 1   | Axle (double rolling shield) bolt | 20  | 20022123 | 1   | Mount shield, 3130 LH 22" rows    |
| NS  | 90001349 | 1   | Axle (single rolling shield) bolt | 20  | 20022026 | 2   | Mount shield, 3130 LH 30" rows    |
| 6   | 20033326 | 4   | Spacer plate                      | 20  | 20022057 | 2   | Mount shield, 3130 LH 40" rows    |
| 7   | 20033305 | 2   | Disc, 24"                         | 21  | 20022122 | 1   | Mount shield, 3130 RH 22" rows    |
| 8   | 20030344 | 1   | U-Bolt, 5/8 NC x 7 x 8-1/2" long  | 21  | 20022027 | 1   | Mount shield, 3130 RH 30" rows    |
| 9   | 90001195 | 1   | 7/16 NC x 4 Hex bolt GR5          | 21  | 20022056 | 1   | Mount shield, 3130 RH 40" rows    |
| 10  |          |     |                                   | 22  | 20021815 | 1   | Rolling shield bracket            |
| 11  | 20032913 | 2   | Bushing                           | 23  | 90016064 | 1   | 1/2 NC x 1-1/2 Sq. head set screw |
| 12  | 20033705 | 1   | 7/16 x 3 Bent pin                 | 24  | 90006276 | 1   | 1/2 NC Jam nut                    |
| 13  | 90101334 | 2   | Bearing                           | 25  | 90001339 | 1   | 5/8 NC x 1-1/4 Hex bolt           |
| 14  | 20033508 | 2   | Washer                            | 26  | 90001749 | 2   | 1/2 NC x 1 Carriage bolt          |
| 15  | 20034138 | 1   | Spacer                            |     |          |     |                                   |
| 16  | 90003454 | 1   | 1/2 NC x 3 Full thread bolt GR5   |     |          |     |                                   |

NS = Not Shown

## PARKING STANDS



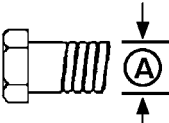
| REF | PART     | QTY | DESCRIPTION                                                 |
|-----|----------|-----|-------------------------------------------------------------|
| 1   | 20021885 | 1   | Parking stand                                               |
| 2   | 20021886 | 1   | Mounting plate                                              |
| 3   | 90025005 | 1   | 5/32 Hair pin cotter                                        |
| 4   | 50530279 | 1   | Pin                                                         |
| 5   | 20030344 | 2   | 5/8 U-Bolt, 7" inside, 8-1/2" long                          |
| 6   | 20022028 | 1   | Rear parking stand extension                                |
| 7   | 20021887 | 1   | Front parking stand assembly<br>(includes items 1, 2, 3, 4) |

# BOLT TORQUE CHART

## SAE Series Torque Chart

Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application. Fasteners must always be replaced with the same grade as specified in the manual parts list.

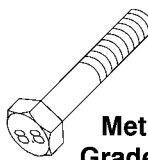
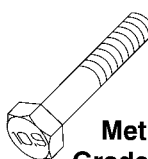
Make sure fastener threads are clean and you properly start thread engagement.

| SAE Bolt Head Identification |                |  SAE Grade 2<br>(No Dashes) |        |  SAE Grade 5<br>(3 Radial Dashes) |        |  SAE Grade 8<br>(6 Radial Dashes) |        |
|------------------------------|----------------|--------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------|--------|
| Ⓐ<br>Diameter<br>(Inches)    | Wrench<br>Size | MARKING ON HEAD                                                                                              |        |                                                                                                                    |        |                                                                                                                      |        |
|                              |                | SAE 2                                                                                                        |        | SAE 5                                                                                                              |        | SAE 8                                                                                                                |        |
|                              |                | ft./lb.                                                                                                      | (Nm)   | ft./lb.                                                                                                            | (Nm)   | ft./lb.                                                                                                              | (Nm)   |
| 1/4"                         | 7/16'          | 6                                                                                                            | (8)    | 10                                                                                                                 | (13)   | 14                                                                                                                   | (18)   |
| 5/16'                        | 1/2"           | 12                                                                                                           | (17)   | 19                                                                                                                 | (26)   | 27                                                                                                                   | (37)   |
| 3/8"                         | 9/16"          | 23                                                                                                           | (31)   | 35                                                                                                                 | (47)   | 49                                                                                                                   | (67)   |
| 7/16"                        | 5/8"           | 36                                                                                                           | (48)   | 55                                                                                                                 | (75)   | 78                                                                                                                   | (106)  |
| 1/2"                         | 3/4"           | 55                                                                                                           | (75)   | 85                                                                                                                 | (115)  | 120                                                                                                                  | (163)  |
| 9/16"                        | 13/16"         | 78                                                                                                           | (106)  | 121                                                                                                                | (164)  | 171                                                                                                                  | (232)  |
| 5/8"                         | 15/16"         | 110                                                                                                          | (149)  | 170                                                                                                                | (230)  | 240                                                                                                                  | (325)  |
| 3/4"                         | 1-1/8"         | 192                                                                                                          | (261)  | 297                                                                                                                | (403)  | 420                                                                                                                  | (569)  |
| 7/8"                         | 1-5/16"        | 306                                                                                                          | (416)  | 474                                                                                                                | (642)  | 669                                                                                                                  | (907)  |
| 1"                           | 1-1/2"         | 350                                                                                                          | (475)  | 680                                                                                                                | (925)  | 1020                                                                                                                 | (1383) |
| 1-1/8"                       | 1-11/16"       | 450                                                                                                          | (610)  | 885                                                                                                                | (1200) | <div>Bolt Diameter</div>         |        |
| 1-1/4"                       | 1-7/8"         | 600                                                                                                          | (815)  | 1255                                                                                                               | (1700) |                                                                                                                      |        |
| 1-3/8"                       | 2-1/16"        | 675                                                                                                          | (915)  | 1620                                                                                                               | (2200) |                                                                                                                      |        |
| 1-1/2"                       | 2-1/4'         | 920                                                                                                          | (1250) | 2200                                                                                                               | (2900) |                                                                                                                      |        |

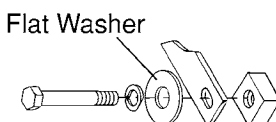
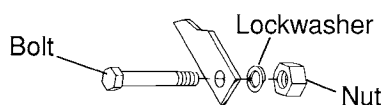
## Metric Series Torque Chart

Use only metric tools on metric hardware. Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application. Fasteners must always be replaced with the same grade.

Make sure fastener threads are clean and you properly start thread engagement.

| Ⓐ<br>Diameter<br>& Thread<br>Pitch<br>(Millimeters) | Wrench<br>Size | COARSE THREAD   |         |             |         | FINE THREAD     |         |             |         | Ⓐ<br>Diameter<br>& Thread<br>Pitch<br>(Millimeters) | Metric<br>Bolt Head<br>Identification                                                                                 |
|-----------------------------------------------------|----------------|-----------------|---------|-------------|---------|-----------------|---------|-------------|---------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                                                     |                | MARKING ON HEAD |         |             |         | MARKING ON HEAD |         |             |         |                                                     |                                                                                                                       |
|                                                     |                | Metric 8.8      |         | Metric 10.9 |         | Metric 8.8      |         | Metric 10.9 |         |                                                     |                                                                                                                       |
|                                                     |                | Nm              | ft./lb. | Nm          | ft./lb. | Nm              | ft./lb. | Nm          | ft./lb. |                                                     |                                                                                                                       |
| 6x1.0                                               | 10 mm          | 8               | 6       | 11          | 8       | 8               | 6       | 11          | 8       | 6x1.0                                               | <br><b>Metric<br/>Grade 8.8</b>  |
| 8x1.25                                              | 13 mm          | 20              | 15      | 27          | 20      | 21              | 16      | 29          | 22      | 8x1.0                                               |                                                                                                                       |
| 10x1.5                                              | 16 mm          | 39              | 29      | 54          | 40      | 41              | 30      | 57          | 42      | 10x1.25                                             |                                                                                                                       |
| 12x1.75                                             | 18 mm          | 68              | 50      | 94          | 70      | 75              | 55      | 103         | 76      | 12x1.25                                             |                                                                                                                       |
| 14x2.0                                              | 21 mm          | 109             | 80      | 151         | 111     | 118             | 87      | 163         | 120     | 14x1.5                                              | <br><b>Metric<br/>Grade 10.9</b> |
| 16x2.0                                              | 24 mm          | 169             | 125     | 234         | 173     | 181             | 133     | 250         | 184     | 16x1.5                                              |                                                                                                                       |
| 18x2.5                                              | 27 mm          | 234             | 172     | 323         | 239     | 263             | 194     | 363         | 268     | 18x1.5                                              |                                                                                                                       |
| 20 x 2.5                                            | 30 mm          | 330             | 244     | 457         | 337     | 367             | 270     | 507         | 374     | 20x1.5                                              |                                                                                                                       |
| 22 x 2.5                                            | 34 mm          | 451             | 332     | 623         | 460     | 495             | 365     | 684         | 505     | 22 x 1.5                                            |                                                                                                                       |
| 24 x 3.0                                            | 36 mm          | 571             | 421     | 790         | 583     | 623             | 459     | 861         | 635     | 24 x 2.0                                            |                                                                                                                       |
| 30 x 3.0                                            | 46 mm          | 1175            | 867     | 1626        | 1199    | 1258            | 928     | 1740        | 1283    | 30 x 2.0                                            |                                                                                                                       |

## Typical Washer Installations



8/9/00



# ABBREVIATIONS

|                    |                                            |               |                                               |
|--------------------|--------------------------------------------|---------------|-----------------------------------------------|
| AG .....           | Agriculture                                | NC .....      | National Course                               |
| ASAE .....         | American Society of Agricultural Engineers | NF .....      | National Fine                                 |
| ATF .....          | Automatic Transmission Fluid               | NPSM .....    | National Pipe Straight Mechanical             |
| BSPP .....         | British Standard Pipe Parallel             | NPT .....     | National Pipe Tapered                         |
| BSPTM .....        | British Standard Pipe Tapered Male         | NPT SWF ..... | National Pipe Tapered Swivel Female           |
| CV .....           | Constant Velocity                          | Nm .....      | Newton Meter                                  |
| CCW .....          | Counter-Clockwise                          | OSHA .....    | Occupational Safety and Health Administration |
| CW .....           | Clockwise                                  | P .....       | Pitch                                         |
| DIA .....          | Diameter                                   | PBY .....     | Power Beyond                                  |
| EP .....           | Extreme Pressure                           | psi .....     | Pounds per Square Inch                        |
| F .....            | Female                                     | PTO .....     | Power Take Off                                |
| FB .....           | Female O-Ring Boss                         | QD .....      | Quick Disconnect                              |
| FJ .....           | Female Boss                                | RH .....      | Right Hand                                    |
| FJX .....          | Female Swivel JIC                          | ROPS .....    | Roll Over Protection Structure                |
| FP .....           | Female Pipe                                | RPM .....     | Revolutions Per Minute                        |
| ft./lb .....       | Foot Pound                                 | RT .....      | Right                                         |
| GA .....           | Gauge                                      | SAE .....     | Society of Automotive Engineers               |
| GR (5, etc.) ..... | Grade (5, etc.)                            | SMV .....     | Slow Moving Vehicle                           |
| HHCS .....         | Hex Head Cap Screw                         | UNC .....     | Unified Coarse                                |
| HT .....           | Heat Treated                               | UNF .....     | Unified Fine                                  |
| in .....           | Inch                                       | UNS .....     | Unified Special                               |
| JIC .....          | Joint Industry Council 37° Flare           | ZP .....      | Zinc Plate                                    |
| kg .....           | Kilogram                                   |               |                                               |
| km/h .....         | Kilometers Per Hour                        |               |                                               |
| lb .....           | Pound                                      |               |                                               |
| LH .....           | Left Hand                                  |               |                                               |
| LT .....           | Left                                       |               |                                               |
| in .....           | Inches                                     |               |                                               |
| m .....            | Meter                                      |               |                                               |
| mm .....           | Millimeter                                 |               |                                               |
| M .....            | Male                                       |               |                                               |
| MB .....           | Male O-Ring Boss                           |               |                                               |
| MJ .....           | Male JIC                                   |               |                                               |
| MJX .....          | Male Swivel JIC                            |               |                                               |
| MP .....           | Male Pipe                                  |               |                                               |
| MPa .....          | Mega Pascal                                |               |                                               |
| MPH .....          | Miles Per Hour                             |               |                                               |
| N .....            | Newton                                     |               |                                               |

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# NOTES

## WARRANTY

Please Enter Information Below and Save For Future Reference.

Date Purchased: \_\_\_\_\_ From (Dealer): \_\_\_\_\_

Model Number: \_\_\_\_\_ Serial Number: \_\_\_\_\_

ALLOWAY STANDARD, d/b/a ALLOWAY, warrants this product to be free from defect in material and workmanship for TWELVE (12) MONTHS COMMENCING ON THE DATE OF DELIVERY OF THE PRODUCT TO THE ORIGINAL PURCHASER.

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of ALLOWAY, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not apply in the event that the product has been materially modified or repaired by someone other than ALLOWAY, a ALLOWAY authorized dealer or distributor, and/or a ALLOWAY authorized service center; This Warranty does not cover normal wear or tear, or normal maintenance items. This Warranty also does not cover repairs made with parts other than those obtainable through ALLOWAY.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

ALLOWAY makes no warranty, express or implied, with respect to tires or other parts or accessories not manufactured by ALLOWAY. Their respective manufacturers, if any, provide warranties for these items, separately. ALLOWAY'S obligation under this Warranty is limited to, at ALLOWAYS' option, the repair or replacement, free of charge, of the product if ALLOWAY, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. The product must be returned to ALLOWAY with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid. ALLOWAY shall complete such repair or replacement within a reasonable time after ALLOWAY receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

THERE ARE NO WARRANTIES, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. ALLOWAY MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALLOWAY SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

ALLOWAY shall not be liable for any incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory. Without limiting the generality of the foregoing, Alloway specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss Incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

This Warranty is subject to any existing conditions of supply, which may directly affect ALLOWAYS' ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, serviceperson, salesperson, or employee of any company; including without limitation, ALLOWAY, its authorized dealers, distributors, and service centers, is authorized to alter, modify, or enlarge this Warranty.

This Warranty is effective only if the warranty registration card is returned within ten (10) days.

Answers to any questions regarding warranty service and locations may be obtained by contacting:

Alloway  
4230 14<sup>th</sup> Ave.NW  
Fargo, North Dakota 58102  
701-356-4983



## WARRANTY

ALLOWAY STANDARD, d/b/a ALLOWAY, warrants this product to be free from defect in material and workmanship for a period of One (1) year, ninety (90) days for Service Parts, from the date of delivery of the product to the original purchaser.

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of ALLOWAY, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not cover normal wear or tear, or normal maintenance items.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

ALLOWAY'S' obligation under this Warranty is limited to, at ALLOWAY'S' option, the repair or replacement, free of charge, of the product If ALLOWAY, in its sole discretion, deems it, to be defective or in noncompliance with this Warranty. The product must be returned to ALLOWAY with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid. ALLOWAY shall complete such repair or replacement within a reasonable time after ALLOWAY receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. ALLOWAY MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALLOWAY SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

ALLOWAY shall not be liable for any incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach, of warranty, negligence, strict liability in tort or any other legal theory. Without limiting the generality of the foregoing, Alloway specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

This Warranty is subject to any existing conditions of supply, which may directly affect ALLOWAYS' ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, service person, salesperson, or employee of any company, including without limitation, ALLOWAY, Its authorized dealers, distributors, and service centers, IS authorized to alter, modify, or enlarge this Warranty.

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701-356-4983



**PART NUMBER**  
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