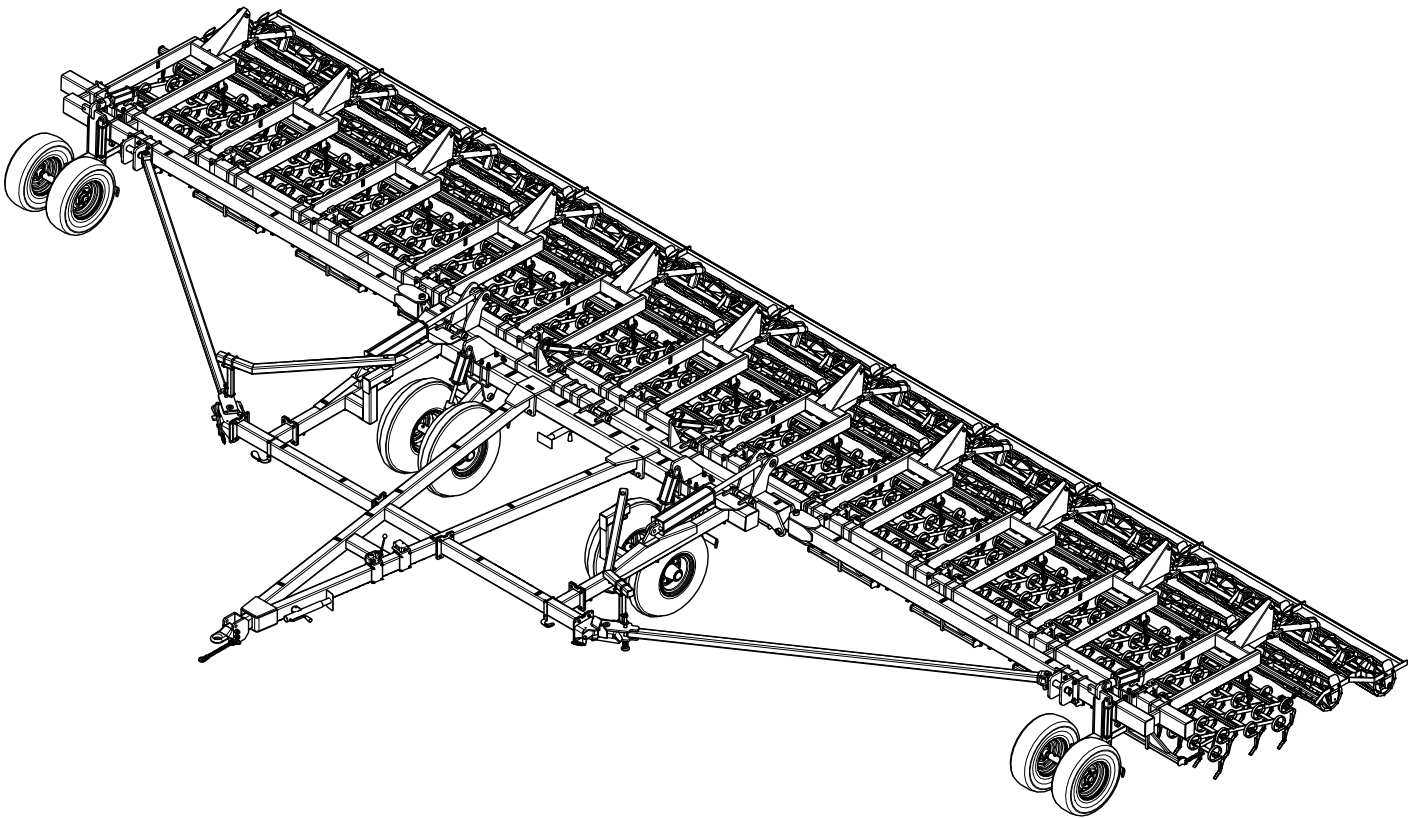


# SEEDBEDDER



# 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.

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.



**WARNING**

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed



**CAUTION**

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

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## GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your Alloway Seedbedder. 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

## Maximum Operating Width:

|     |                  |
|-----|------------------|
| 45' | 550 in. (14.0 m) |
| 52' | 622 in. (15.8 m) |
| 62' | 754 in. (19.2 m) |

## Maximum Transport Width:

|     |                 |
|-----|-----------------|
| 45' | 225 in. (5.8 m) |
| 52' | 225 in. (5.8 m) |
| 62' | 225 in. (5.8 m) |

## Maximum Operating Length:

|     |                 |
|-----|-----------------|
| 45' | 333 in. (8.5 m) |
| 52' | 333 in. (8.5 m) |
| 62' | 333 in. (8.5 m) |

## Maximum Transport Length:

|     |                  |
|-----|------------------|
| 45' | 384 in. (9.8 m)  |
| 52' | 426 in. (10.8 m) |
| 62' | 486 in. (12.4 m) |

## Maximum Transport Height:

|     |                 |
|-----|-----------------|
| 45' | 164 in. (4.2 m) |
| 52' | 164 in. (4.2 m) |
| 62' | 164 in. (4.2 m) |

Recommended Tire Size: .....Multi-Rib (11.0 x 16) or Implement (9.50 x 15)

## Recommended Tire Inflation Pressure:

|           |         |
|-----------|---------|
| 9.50 x 15 | 35 psi. |
| 11.0 x 16 | 35 psi. |

Tractor Horse Power ..... 250 Horsepower Minimum

## Weight of Seedbedder (approximate):

|     |                      |
|-----|----------------------|
| 45' | 15000 lbs. (6800 kg) |
| 52' | 16000 lbs. (7300 kg) |
| 62' | 17300 lbs. (7900 kg) |



# 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 a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence 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 an operator.

The designed and tested safety of this equipment depends on it being operated within the limitations as explained in this manual.

### 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). 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 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 in the event 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 tight and 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. Before operating or allowing anyone to approach the equipment, purge any air in the system by operating all hydraulic functions several times after connecting equipment, connecting hoses, or doing any hydraulic maintenance.**
- **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; and respirator or filter mask where appropriate.**
- **Ensure implement is properly attached, 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.**
- **Remove accumulated debris from this equipment, tractor and engine to avoid fire hazard.**

*(Safety Rules continued on next page)*



# SAFETY RULES

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



*(Safety Rules continued from previous page)*

■ A minimum 20% of tractor and equipment weight must be on 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. When attaining the minimum 20% weight on the front wheels, you must not exceed the Roll Over Protection Structure (ROPS) weight certification. Weigh the tractor and equipment. Do not estimate.

■ Make sure hydraulic hoses and cylinders are fully purged of air before operating. Keep all person away and fill the system by raising and lowering all functions several times. Air in the system can allow components to fall unexpectedly.

---

## TRANSPORTING

■ 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 power unit seat when operating controls or starting engine. Securely fasten seatbelt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.

■ 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.

■ Always attach safety chain to tractor drawbar when transporting unit.

■ Never exceed 20 MPH during transport. See the Speed vs. Weight Ratio Table in "Field Operation, Transporting the Unit" for proper tow vehicle to machine weight ratios.

■ Watch for hidden hazards on the terrain.

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

■ Never allow riders on power unit or attachment.

■ Look down and to the rear to make sure area is clear before operating in reverse.

■ Do not operate or transport on steep slopes.

■ Use extreme care and reduced ground speed on slopes and rough terrain.

■ Do not operate or transport equipment while under the influence of alcohol or drugs.

---

## OPERATION

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

■ Do not allow anyone to stand between tractor and unit when backing up to unit.

■ Never go under equipment (lowered to the ground or raised) unless it is properly blocked and secured. Never place any part of the body underneath equipment or between movable 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. Follow Operator's Manual instructions for working underneath and blocking requirements or have work done 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)*

- Keep bystanders away from equipment
- Do not operate or transport equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.
- Avoid contact with electrical wires.
- Always comply with all state and local lighting and marking requirements.
- 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 set in power unit 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 power unit engine.
- Look down and to the rear and make sure area is clear before operating in reverse. Do not operate or transport on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduced ground speed on slopes and rough terrain.
- Watch for hidden hazards on the terrain during operation.
- Always connect safety chain from equipment to towing vehicle when transporting.
- **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.

- Before servicing, adjusting, repairing or unplugging, stop tractor engine, place all controls in neutral, set park brake, remove ignition key, and wait for all moving parts to stop.
- Before working underneath a raised implement, read and follow all Operator's Manual instructions and safety rules. Implement must be attached to tractor. Hydraulic system lead down, hydraulic system failures, or movement of controls levers can cause equipment to drop unexpectedly and cause severe injury or death.

---

## MAINTENANCE

- Before servicing, adjusting, repairing, or unplugging, stop tractor engine, place all controls in neutral, set park brake, remove ignition key, and wait for all moving parts to stop.
- Before working underneath a raised implement, read and follow all Operator's Manual instructions and safety rules. Implement must be attached to tractor. Hydraulic system leak down, hydraulic system failures, or movement of control levers can cause equipment to drop unexpectedly and cause severe injury or death.
- Service and maintenance work not covered in OWNER SERVICE must be done by a qualified dealership. Special skills, tools, and safety procedures may be required. Failure to follow these instructions can result in serious injury or death.
- 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.

*(Safety Rules continued on next page)*



# SAFETY RULES

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



*(Safety Rules continued from previous page)*

- Always wear relatively tight and belted clothing. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing and head; and respirator or filter mask where appropriate.
- Do not allow other people in the area when operating, attaching, removing, assembling or servicing equipment.
- Never go under equipment lowered to the ground or raised, unless it is properly blocked and secured. 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. Follow Operator's Manual instructions for working underneath and blocking requirements, or have work done by a qualified dealer.
- Ensure implement is properly attached, adjusted and in good operating condition.
- Make sure hydraulic hoses and cylinders are fully purged of air before operating. Keep all persons away and fill the system by raising and lowering all functions several times. Air in the system can allow components to fall unexpectedly.
- Keep all person away from operator control area while performing adjustments, service, or maintenance.
- Ensure all safety decals are installed. Replaced 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 all valve control levers.

---

## STORAGE

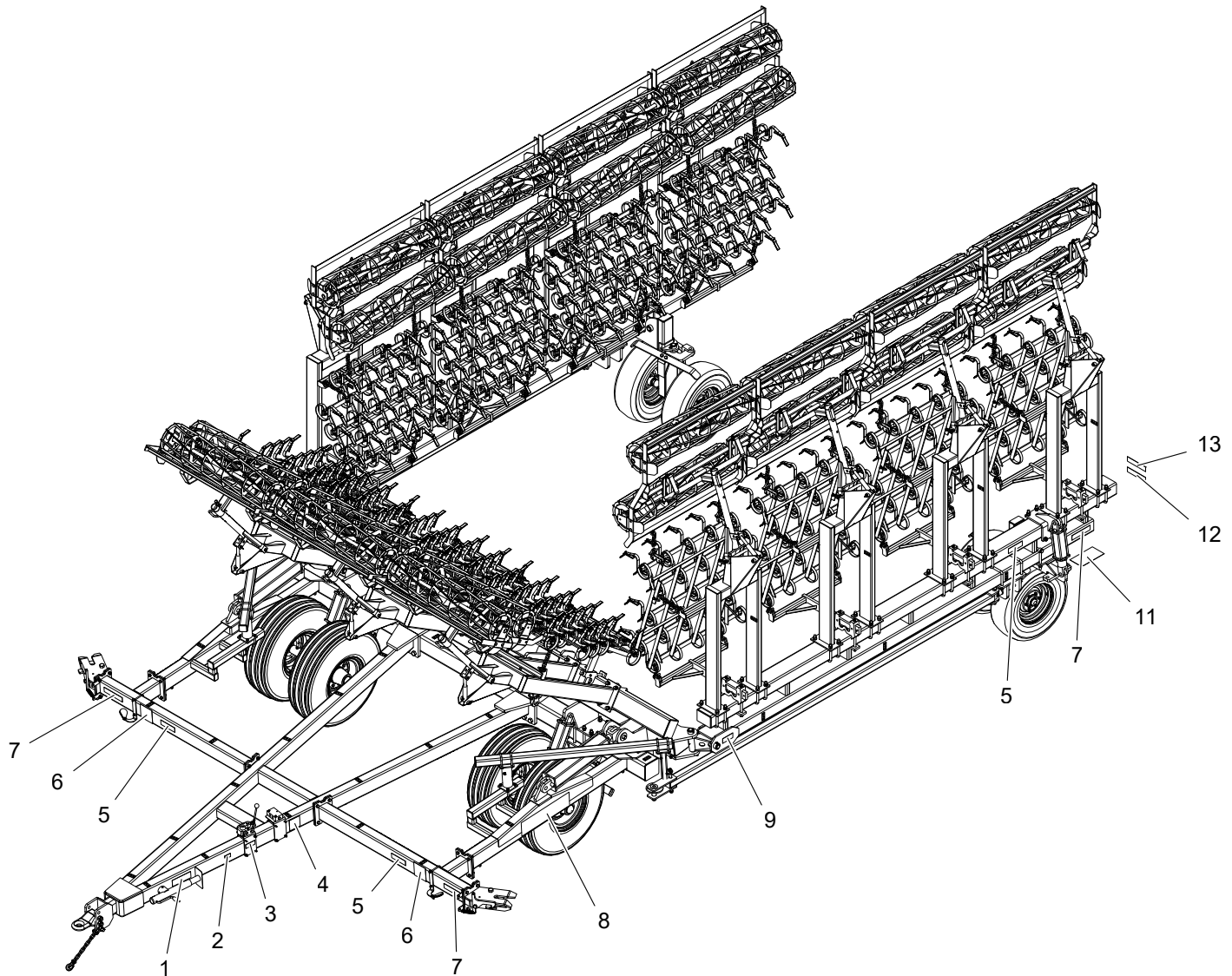
- Follow manual instructions for storage.
- Keep children and bystanders away from storage area.





# SAFETY & INSTRUCTIONAL DECALS

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



1. 200-3-4028 Cultivator Hitch Warning



2. 200-3-1366 Serial Number Tag

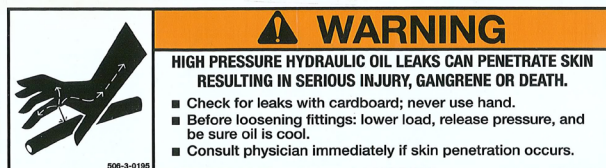


# SAFETY & INSTRUCTIONAL DECALS

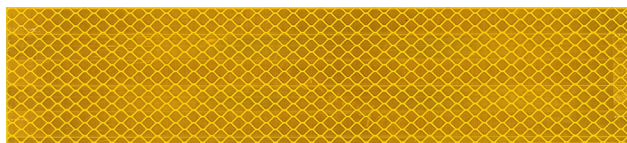
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!  
Replace Immediately If Damaged!



3. 210-3-5013 Turn / Lift Valve



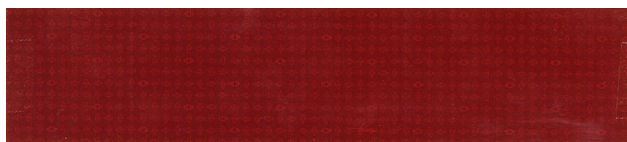
5. 506-3-0195 Hydraulic Pressure Warning



7. 200-3-4004 Amber Reflector 9 x 2



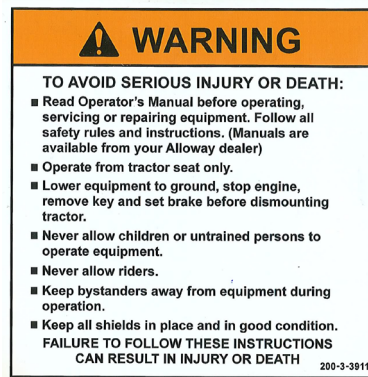
12. 200-3-4034 Orange Fluorescent Reflector 9 x 2



13. 200-3-4005 Red Reflector 9 x 2



9. 200-3-3888 Cultivator Wing Fall Warning



4. 200-3-3911 Read Manual Warning



6. 200-3-3887 Cultivator Fall / Crush Warning

# ALLOWAY

## SEEDBETTER-5200

8. 210-3-5012 Seedbedder 5200



11. 902-15101 Alloway Standard Logo

# CHECK LISTS

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

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

The following check lists are reminders 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 tight.
- \_\_\_ 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 "Service, lubrication information."
- \_\_\_ Check the level of gearbox fluids before delivery. Service, if required, as specified in the "Service, lubrication information."
- \_\_\_ Check that tractor hydraulic reservoir has been serviced and that hydraulic system and all functions have been operated through full cylinder stroke to purge air from system.
- \_\_\_ After pressurizing and operating all Seedbedder functions, stop tractor and make sure there are no leaks in the hydraulic system. Follow all safety rules when checking for leaks.

## DELIVERY CHECK LIST (DEALER'S RESPONSIBILITY)

- \_\_\_ Show customer how to make adjustments.
- \_\_\_ Instruct customer how to lubricate and explain 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.
- \_\_\_ Extended & Retracted Length.
- \_\_\_ Show customer the safe, proper procedures to be used when mounting, dismounting, and storing equipment.
- \_\_\_ Explain to customer that when equipment is transported on a road or highway, safety devices should be used to give adequate warning to operators of other vehicles.
- \_\_\_ 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.
- \_\_\_ Explain to customer that when towing on a public road to comply with all state and local lighting/marketing laws and to use a safety tow chain.
- \_\_\_ Make customer aware of optional equipment available so that customer can make proper choices as required.

## OPERATOR SIGN-OFF RECORD

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.

American Society of Agricultural & Biological Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA).

Anyone who will be operating and/or maintaining the Seedbedder must read and clearly understand all Safety, Operating, and Service & Maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until this information has been reviewed. Review this information annually, before the season start-up. Make periodic reviews of the Safety and Operation sections a standard practice for those using any of your equipment.

Use the following Operator Sign-off Record to verify that each operator has read and understood the information in this manual and has been instructed in the safe operation of the Seedbedder.

[illegible]



# 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, judgment, 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.

- Be familiar with the Seedbedder before starting.
- The owner is responsible for training operators in the safe operation of the Seedbedder.



## 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 your Alloway dealer.) Failure to follow instructions or safety rules can result in serious injury or death.**
- **Never allow children or untrained persons to operate equipment.**
- **Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.**
- **Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, 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 allow riders on power unit or attachment.**
- **Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.**
- **Keep hands, feet, hair and clothing away from equipment while engine is running. Stay clear of all moving parts.**



## CAUTION

- **Always sit in power unit 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 power unit engine.**
- **Never allow riders on power unit or attachment**
- **Keep bystanders away from equipment.**
- **Always comply with all state and local lighting and marking requirements.**
- **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; and respirator or filter mask where appropriate.**

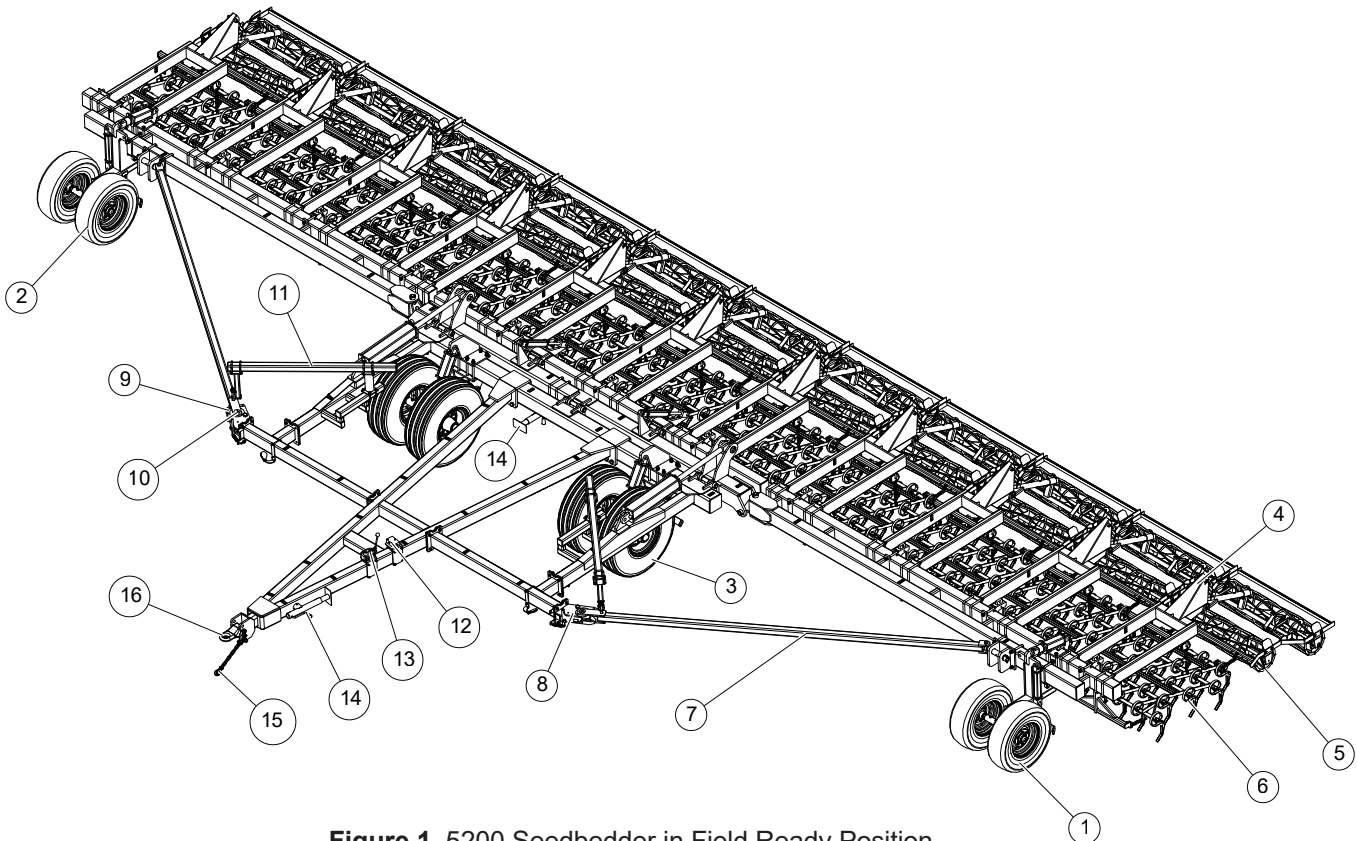
## Operation Continued

### PRINCIPAL COMPONENTS

The Alloway Seedbedder consists of rear folding harrow frames, individual tine assemblies, and rolling baskets. The Seedbedder combines the right tine with the perfect crumbler basket to do a complete job every time you work your field. The finishing harrows are for medium to shallow penetration. A uniquely styled spring tine with vibrating action clears debris in trashy

conditions. The steep breasted tines have a superior mixing action and do not create lumps. Pressurized crumbler sections level, mix, crumble, form a seed horizon and minimize wind erosion.

The Seedbedder is designed to be used as a pull-type mounted machine.



**Figure 1. 5200 Seedbedder in Field Ready Position**

- |                          |                      |
|--------------------------|----------------------|
| 1. Wing Wheel Strut - LH | 9. Wing Latch - RH   |
| 2. Wing Wheel Strut - RH | 10. Wing Support Pin |
| 3. Main Strut            | 11. Wing Support Arm |
| 4. H-Frame               | 12. Selector Valve   |
| 5. Crumbler Basket       | 13. Selector Valve   |
| 6. Harrow                | 14. Jack             |
| 7. Wing Support Tube     | 15. Safety Tow Chain |
| 8. Wing Latch - LH       | 16. Hitch            |

## Operation Continued

### 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 Seedbedder.

- \_\_\_ Check all lubrication points and grease as instructed in Lubrication Schedule.
- \_\_\_ Use only a tractor of adequate power and weight to pull the unit.

- \_\_\_ Check that the unit is properly attached to the tractor. On pull-type unit, be sure there is a mechanical retainer through the drawbar pin and the safety chain is installed.
- \_\_\_ Check tire pressure. Bring to specified level.
- \_\_\_ Inspect all hydraulic lines, hoses, couplers, and fittings. Tighten, repair, or replace any leaking or damaged components.

## Choosing the Correct Equipment

To ensure safe and reliable operation of the Seedbedder, use a tractor with the correct specifications. Use the following guidelines to select the correct tractor.

### 1. Horsepower

Use Table 1 for selecting the tractor horsepower class appropriate for your unit's width.

Increase the horsepower level by 25 percent when operating in hilly, soft, or wet conditions.

### 2. Tractor Weight

By following recommendations for tractor horsepower, the tractor will have sufficient weight to provide stability for unit during field operation or when transporting.

It is recommended that each tractor be equipped with a full complement of suitcase weights on the tractor front (see Figure 2 for example). This will provide the required front weight for turning and extra traction if equipped with front wheel assist.

| Width | Minimum Horsepower |
|-------|--------------------|
| 42'   | 225                |
| 52'   | 250                |
| 68'   | 275                |

Table 1: Tractor Horsepower vs. Unit Width



Figure 2. Front Suitcase Weights

## Operation *Continued*

### Attaching the Seedbedder to the Tractor

- **Do not allow anyone to stand between tractor and unit when backing up to the unit.**



#### **WARNING**

- **Keep bystanders away from equipment**

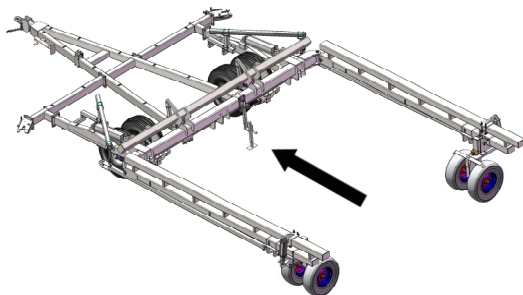
1. Place unit on a level, dry area free of debris and other foreign objects.
2. Use clevis style hitch on the tractor. Lock the tractor drawbar in the center position.



#### **CAUTION**

- **Do not allow anyone to stand between tractor and unit when backing up to the unit.**

3. Provide enough clearance to back the tractor safely into the unit.
4. Use the implement jacks, found on the front hitch and back of center section of the toolbar, to align hitch height with tractor drawbar.
5. Back slowly and align the drawbar with the hitch.
6. Shut off the tractor, place all controls in neutral, set the parking brake, remove the key, and wait for all moving parts to stop.
7. Use ratchet on back of toolbar to set hitch height.

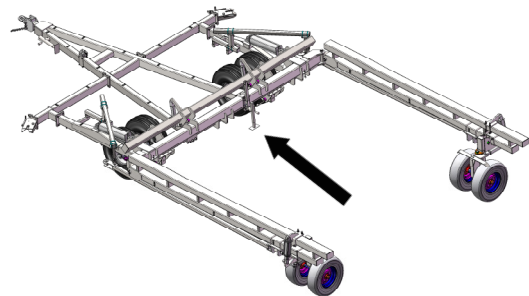


**Figure 3.** Jack in adjustment position (DOWN)

8. Use the hardened drawbar pin with provisions for a mechanical retainer. Install a retainer, such as a locking pin.

9. Attach the safety chain around the drawbar or cage to prevent unexpected separation. Provide sufficient slack for turning.

10. Secure ratchets on back of toolbar in transport positions.



**Figure 4.** Jack in field / transport position (UP)

---

### Connecting the Hydraulics

1. Use a clean cloth or paper towel to clean the couplers on the end of the hoses and the area around the couplers on the tractor.
2. Insert the male ends into the couplers on the tractor. Be sure they are locked in place.

## Operation *Continued*

### Unfolding Machine into Field Position



**WARNING**



**CAUTION**

- Stay Clear of Seedbedder when wings are being raised or lowered. Hydraulic or Mechanical failure can result in a rapid, uncontrolled falling of wings, hitch jump or spring back. Failure to follow these instructions may result in serious injury or death.

#### Step: 1

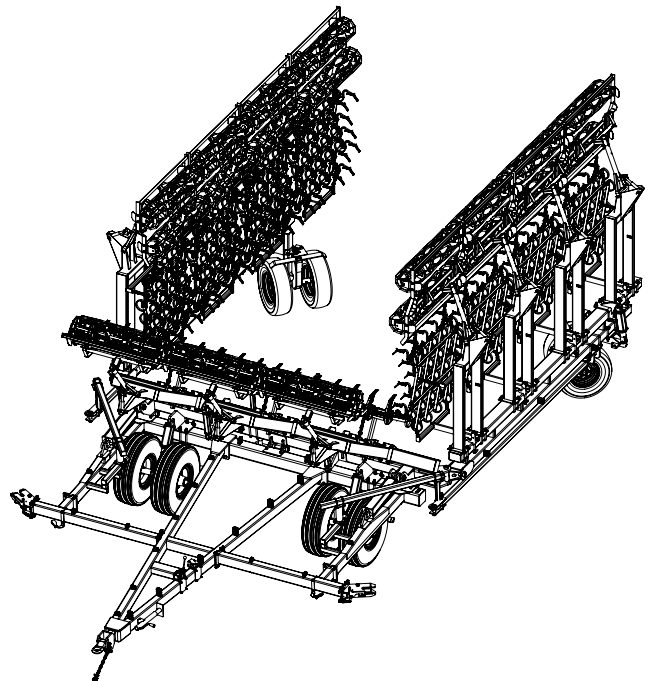
Check valve on unit to ensure it is in Transport Position.



**Figure 6.** Valve in Transport Position

#### Step: 2

Turn wing wheels approximately 45° angle from Transport Position. Start backing machine up; this will start folding the wings forward. While backing up turn the wheels to the full 90° position. This will help push wing completely forward.



**Figure 7.** Wheels turned 45° for unfolding

## Operation *Continued*

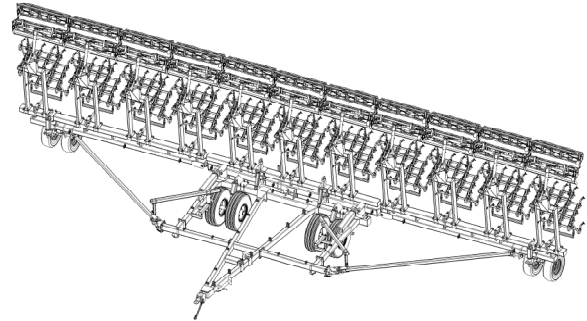
### Unfolding Machine into Field Position

#### Step: 3

When toolbar is straight, start folding the unit to the ground. When it is approximately at a 20° angle from the ground. Back the tractor up slightly, making sure the wing locks are snapped over the pin lock securely.

#### **NOTE:**

**Center Section Drop Speed can be adjusted with needle valve to control rate of drop to reduced chance of machine damage.**



**Figure 8.** Toolbar Straight w/ Wheels in Field Position

#### Step: 4

Continue to lower machine to the ground.



**Figure 9.** Pin in Locked Position

#### Step: 5

Turn off tractor. Change valve position to field ready. This will allow raising or lowering of wing wheels.



**Figure 10.** Valve in Field Ready Position

## Operation *Continued*

### Folding Machine into Transport Position



**WARNING**



**CAUTION**

- **Stay Clear of Seedbedder when wings are being raised or lowered. Hydraulic or Mechanical failure can result in a rapid, uncontrolled falling of wings, hitch jump or spring back. Failure to follow these instructions may result in serious injury or death.**

#### Step: 1

Stop the tractor before attempting to fold unit into Transport Position.

#### Step: 2

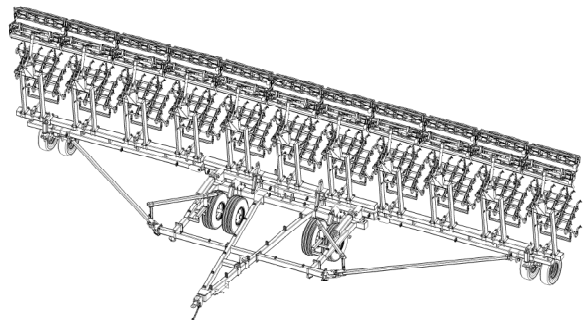
Move selector valve to Transport Position.



**Figure 11.** Valve in Transport Position

#### Step: 3

Raise the unit 90° from the ground, while doing so this will release wing latches.



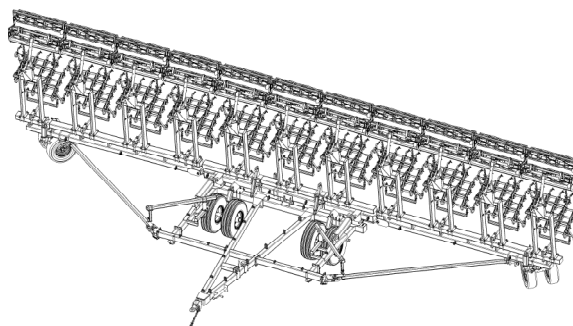
**Figure 12.** Toolbar Straight w/ Wheels in Field Position

## Operation *Continued*

### Folding Machine into Transport Position

#### Step: 4

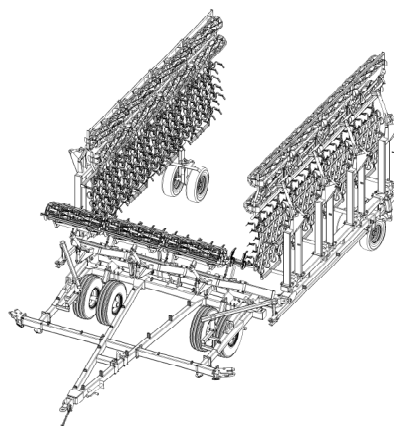
Turn wheels approximately 45° from Field Position. Start moving forward, this will start unfolding the wings backward. While moving forward turn the wheels to the full 90° position. This will help push wings completely backward.



**Figure 13.** Toolbar Straight w/ Wheels turned 45°

#### Step: 5

Make sure all components look transport ready. Check all lights and slow moving vehicle sign.



**Figure 14.** Toolbar folded back w/ wheels in Transport Position

# FIELD OPERATION

The Alloway Seedbedder is designed with the flexibility to operate well in almost any kind of crop and terrain condition. However, the operator is responsible for being familiar with all operating and safety procedures and following them.

Each operator should review this Field Operation section at the start of the season and as often as required to be familiar with the unit.

Operators should also review the PRE-OPERATION CHECK LIST. Attaching the Seedbedder to the tractor and transporting the unit.



## 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 your Alloway dealer.) Failure to follow instructions or safety rules can result in serious injury or death.
- Never allow children or untrained persons to operate equipment.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Before dismounting the power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower 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 allow riders on power unit or attachment.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- 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.



## CAUTION

- Always sit in power unit 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 power unit engine.
- Keep bystanders away from equipment.
- Always comply with all state and local lighting and marking requirements.
- 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; and respirator or filter masks where appropriate.

# Field Operation *Continued*

## Transporting the Unit



### WARNING

- Never allow riders on power unit or attachment.



### CAUTION

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

| Road Speed             | Fully equipped or loaded implement(s) weight relative to towing machine weight |
|------------------------|--------------------------------------------------------------------------------|
| Up to 20 mph (32 km/h) | 1 to 1 or less                                                                 |
| Up to 10 mph (16 km/h) | 2 to 1 or less                                                                 |
| Do not tow             | more than 2 to 1                                                               |

Table 2: Speed vs Weight Ratio

1. Be sure all bystanders are clear of the unit.
2. Be sure the unit is securely attached to the tractor and all retainer pins are installed.
3. Be sure safety chain is installed.
4. Clean the SMV emblem, lights, and reflectors and be sure they are working.
5. Be sure you are in compliance with all applicable lighting and marking regulations when transporting. Check with your local authorities.
6. Never transport the unit faster than 20 mph (32 km/h). The ratio of the tractor weight to the seedbedder weight plays an important role in defining acceptable travel speed. Table 2 summarizes the recommended travel to speed-to-weight ratio.
7. Be sure all jack stands are in transport position.
8. If wing wheels want to ride out too far, use hydraulics to turn and run them in narrower.

---

## Ground Speed

Travel speed can vary between 6 and 10 mph depending on the soil and the terrain conditions. The operator is responsible for noting the condition of the work, setting speed to obtain a quality tilling job, and maintaining control of the unit.

## Down Pressure

Max down pressure on baskets not to exceed 1,500 lbs. It is recommended to lift machine on turns to prevent damage to equipment.

## Field Operation *Continued*

### Storage



#### **WARNING**

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

At the end of the season, the Seedbedder 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. Thoroughly wash the unit, using a pressure washer to remove all dirt, mud, debris, and residue.
3. Inspect for damage or entangled material. Remove entangled material. Repair or replace damaged parts.
4. Inspect all hydraulic hoses, lines, couplers, and fittings. Tighten all loose fittings. Replace any hose that is cut, nicked, abraded, or separating from the crimped end of a fitting.

5. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from from pressure washing.

6. Touch up all paint nicks and scratches to prevent rust.

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

8. Unhook from tractor.

**NOTE:** Do not deflate tires.

9. If the unit cannot be placed indoors, cover with a waterproof tarpaulin and tie securely. Store away from human activity

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



# SERVICE & MAINTENANCE



## WARNING

■ Before dismounting power unit or performing any service or maintenance, follow these steps:

- Disengage power to equipment.
- Lower all raised components to the ground.
- Operate valve levers to release any hydraulic pressure.
- Set parking brake.
- Stop engine.
- Remove key.
- Unfasten seat belt.

■ Before working underneath, read manual instructions, securely block up, and check stability. Secure blocking prevents equipment from dropping due to hydraulic leak down, hydraulic system failure, or mechanical component failure.

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



## 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; and respirator or filter mask where appropriate.

■ Make certain all movement of equipment components has stopped before approaching for service.

## LUBRICANTS

Use the Lubrication Service Record (Page 36), to keep a record of all scheduled maintenance.

### 1. Grease

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

### 2. 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.

## GREASING

Use the Lubrication Service Record (Page 36), to keep a record of all scheduled maintenance.

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.

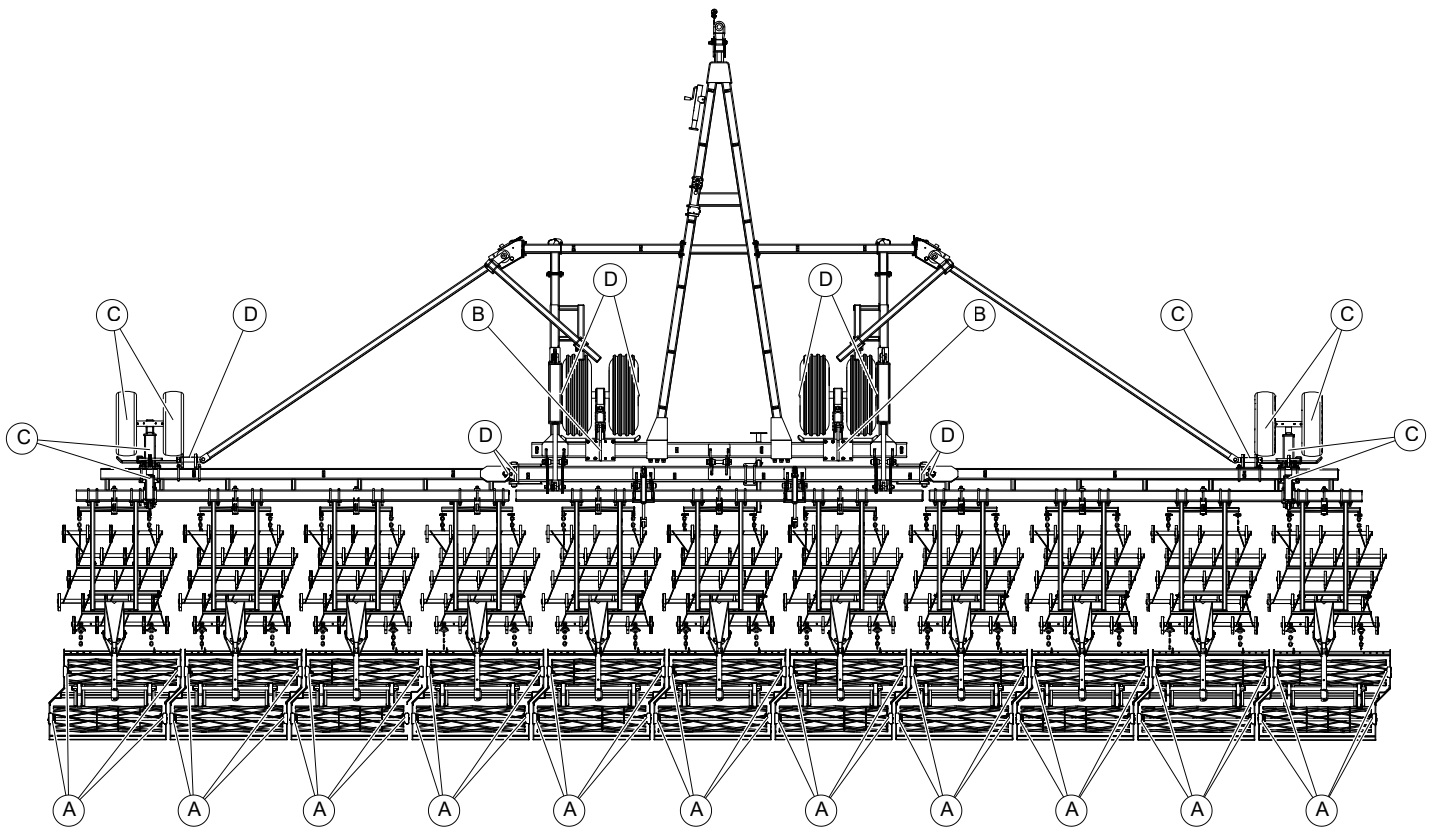
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

## Service & Maintenance *Continued*

### Lubrication Schedule

**NOTE:** Recommendations are based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication or oil changes. Refer to Figure 30.

- A. Daily or 12 hours
- B. 25 hours
- C. 40 hours
- D. Annually



**Figure 30.** Lubrication Points

#### Daily or every 12 hrs of operation

1. Use a hand-held grease gun for all greasing.



**Figure 31.** Crumbler Basket Grease Location

## Service & Maintenance *Continued*

### Lubrication Schedule *Continued*

#### Every 25 hrs of operation

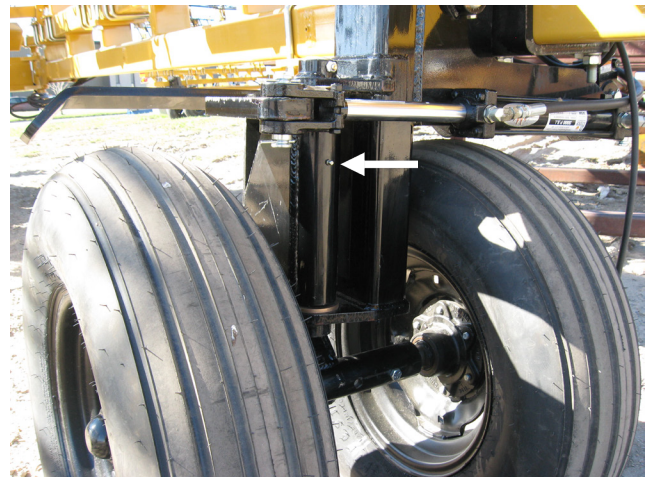
1. Use a hand-held grease gun for all greasing.



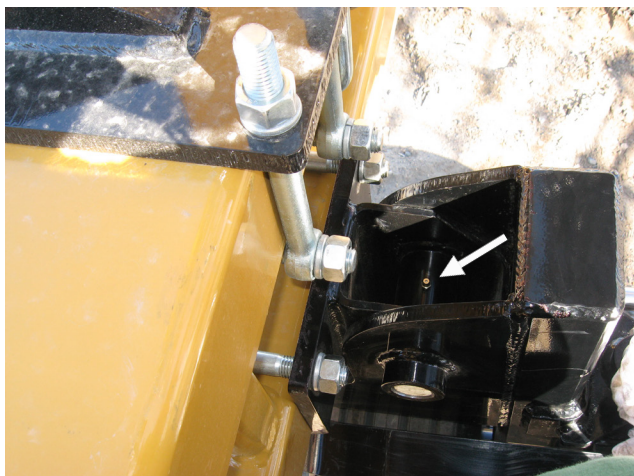
**Figure 32.** Main Strut Pivot Grease Location

#### Every 40 hrs of operation

1. Use a hand-held grease gun for all greasing.



**Figure 33.** Wing Strut Pivot Grease Location



**Figure 34.** Wing Strut Hinge Grease Location



**Figure 35.** 5-Bolt Hub Grease Location

## Service & Maintenance *Continued*

### Lubrication Schedule *Continued*

#### Annually

1. Use a hand-held grease gun for all greasing.



**Figure 36.** Wing Support Pivot Grease Location



**Figure 37.** Main Strut Bearing Grease Location



**Figure 38.** Wing Pivot Grease Locations

## Service & Maintenance *Continued*

## Lubrication Service Record

**NOTE:** See prior pages for details.  
Copy this page to continue service record.

✓ = CHECK  
L = LUBRICATE

**C** = CHANGE  
**R** = REPACK

[illegible]

# TROUBLE SHOOTING

The following table lists problems, causes, and solutions that you may encounter. If you encounter a problem that is difficult to solve even after reading

through this table, please call your local Alloway dealer. When calling, please have this manual and your unit's serial number ready.

| PROBLEM              | CAUSE                    | SOLUTION                                       |
|----------------------|--------------------------|------------------------------------------------|
| Baskets skidding     | Mud buildup              | Remove mud<br>Change speeds                    |
| Plugging             | Too wet                  | Wait until dry                                 |
| Leaving wheel tracks | Not enough down pressure | Add down pressure to small hydraulic cylinders |
| End basket flips     | Tight turns              | Flip U-pin to mount from botom                 |
| Hard to pull         | Adjustment               | Raise front tine rack (Reduce digging depth)   |

# ASSEMBLY



## WARNING

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



## 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; and respirator or filter mask where appropriate.



## 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.**

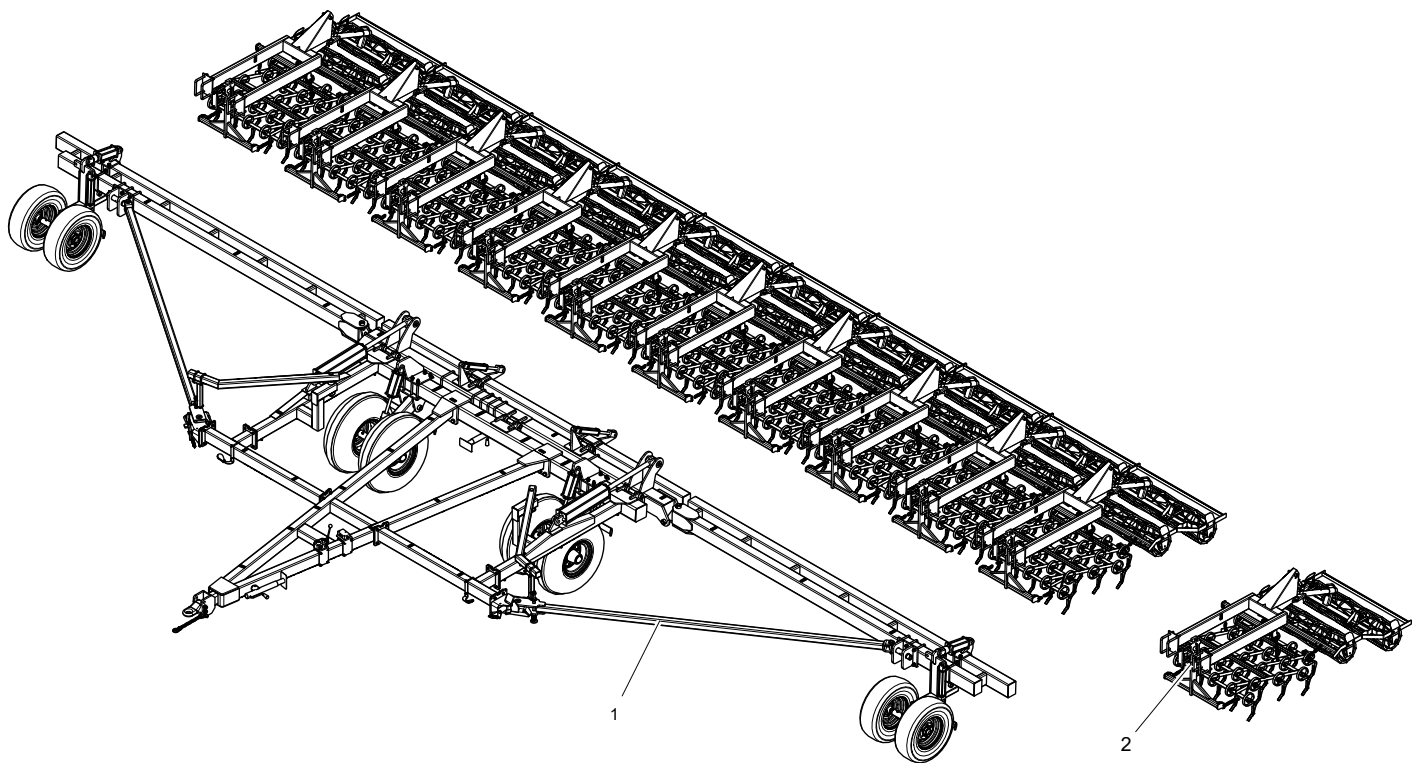
■ Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.



**SEEDBETTER**

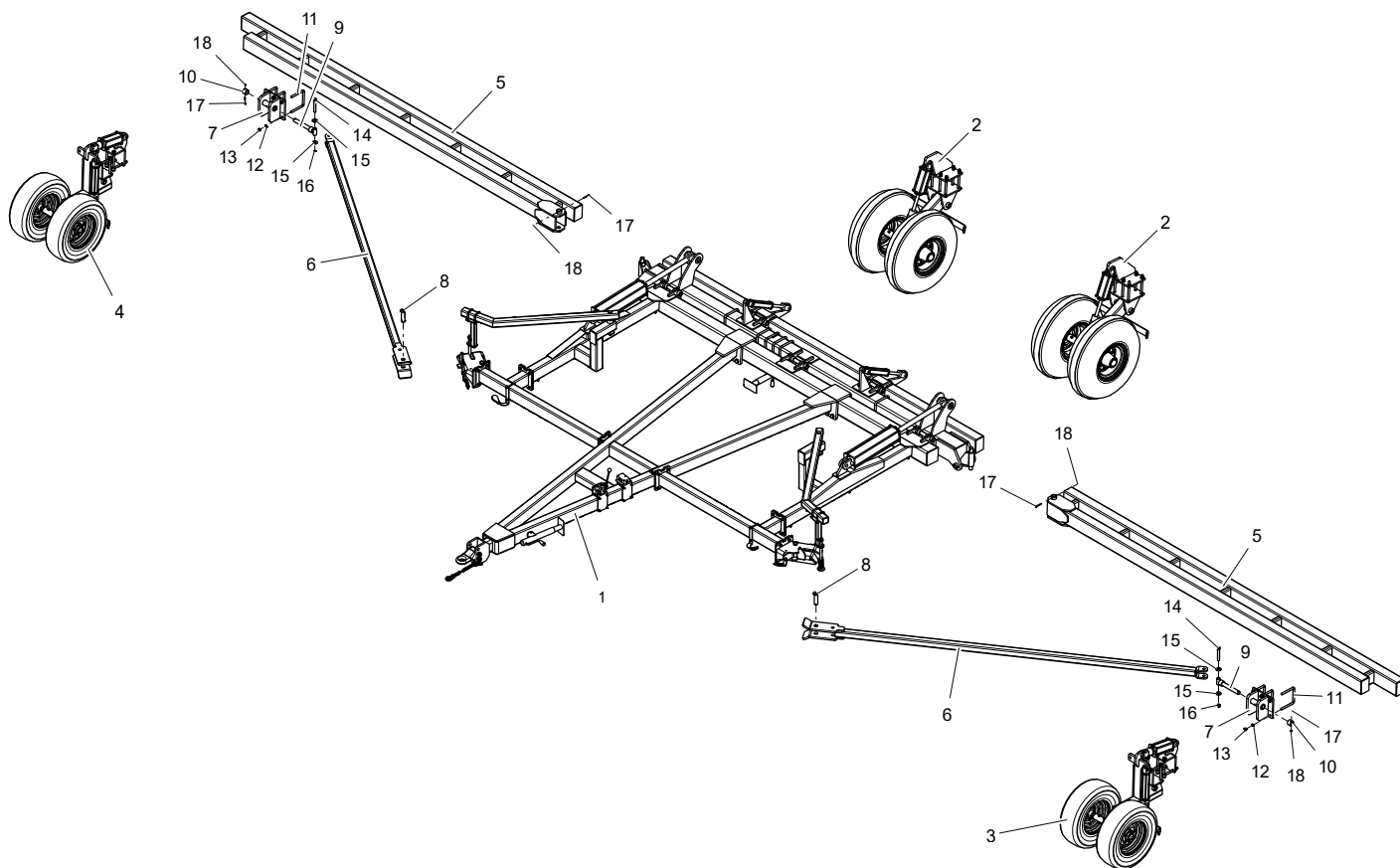
|                                              |       |
|----------------------------------------------|-------|
| SEEDBETTER COMPONENTS.....                   | 34    |
| TOOLBAR COMPONENTS.....                      | 35    |
| CENTER FRAME COMPONENTS.....                 | 36-37 |
| REAR JACK & WING SUPPORT ASM COMPONENTS..... | 38    |
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| LIGHT KIT COMPONENTS .....                   | 54    |

# SEEDBETTER COMPONENTS



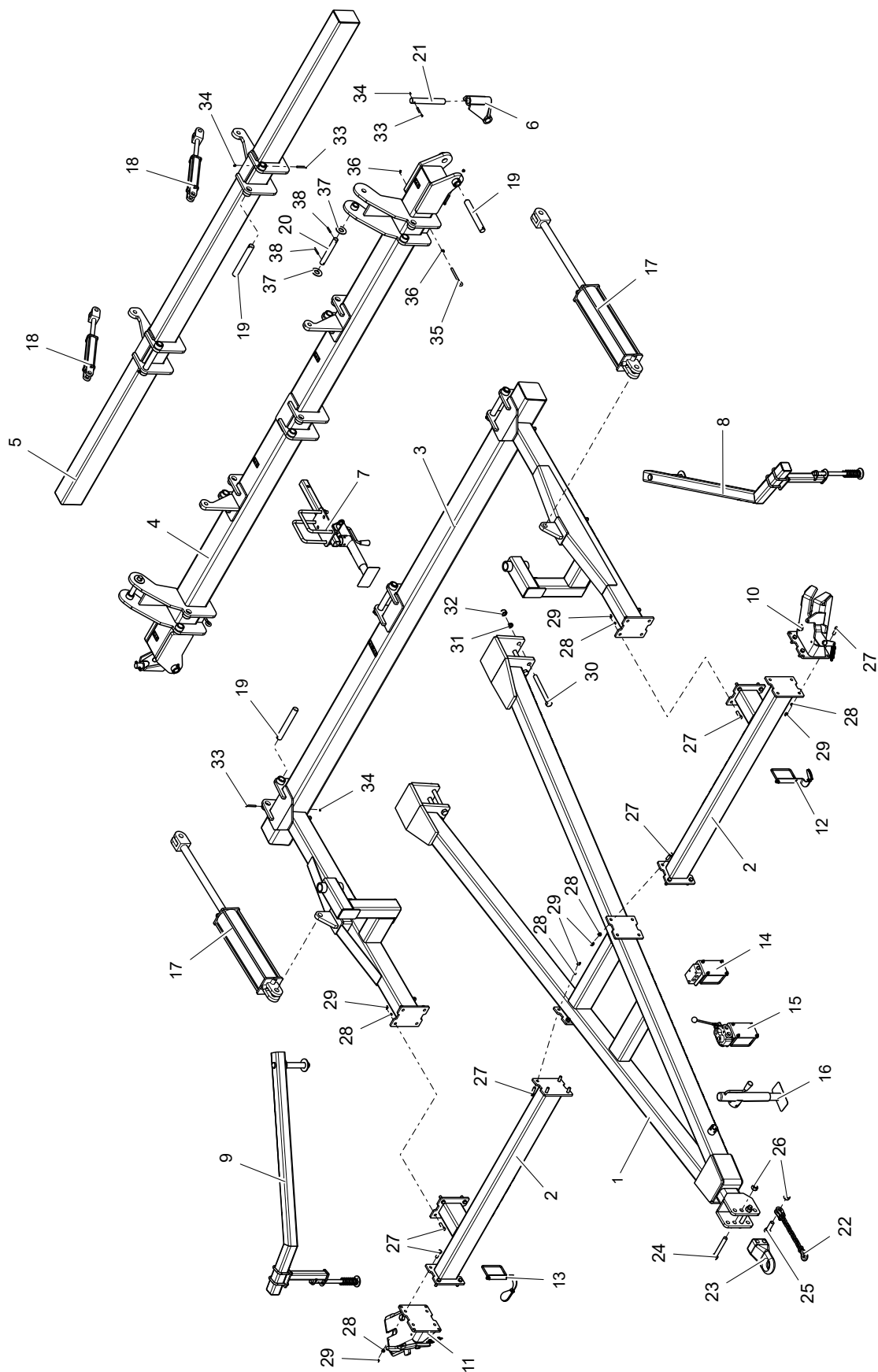
| ITEM NO. | PART NUMBER | PAGE NUMBER | DESCRIPTION                         |
|----------|-------------|-------------|-------------------------------------|
| 1        | 200-1-3836  | 34          | 45' TOOLBAR ASSEMBLY                |
|          | 200-1-3837  |             | 52' TOOLBAR ASSEMBLY                |
|          | 200-1-3838  |             | 62' TOOLBAR ASSEMBLY                |
| 2        | 200-2-2275  | 42          | SEEDBETTER CRUMBLER ASSEMBLY        |
|          | 200-2-2358  |             | SEEDBETTER CRUMBLER ASSEMBLY (WIDE) |

## TOOLBAR COMPONENTS



| ITEM NO. | PART NUMBER  | DESCRIPTION                       | QTY. |
|----------|--------------|-----------------------------------|------|
| 1        | SEE PAGE: 36 | ASSEMBLY, CENTER FRAME            | 1    |
| 2        | SEE PAGE: 46 | ASSEMBLY, MAIN STRUT              | 1    |
| 3        | SEE PAGE: 47 | ASSEMBLY, WING WHEEL ADJ LH       | 1    |
| 4        | SEE PAGE: 47 | ASSEMBLY, WING WHEEL ADJ RH       | 1    |
| 5        | 200-2-2345   | WELDMENT, 45' WING                | 2    |
|          | 200-2-2272   | WELDMENT, 52' WING                |      |
|          | 200-2-2359   | WELDMENT, 62' WING                |      |
| 6        | 200-2-2389   | WELDMENT, WING SUPPORT TUBE       | 2    |
| 7        | 200-2-2246   | ASSEMBLY, WING SUPPORT PIVOT      | 2    |
| 8        | 200-2-2280   | WELDMENT, WING SUPPORT PIN        | 2    |
| 9        | 200-2-2249   | WELDMENT, WING SUPPORT LINKAGE    | 2    |
| 10       | 505-3-0555   | BUSHING, 1-1/2 W/ HOLE            | 2    |
| 11       | 200-3-0477   | U-BOLT, 3/4 NC X 7 X 7            | 6    |
| 12       | 900-11017    | WASHER, LOCK 3/4                  | 12   |
| 13       | 900-06015    | NUT, HEX HEAD 3/4 NC              | 12   |
| 14       | 900-01481    | BOLT, HEX HEAD 7/8 NC X 6, GR5 ZP | 2    |
| 15       | 900-11039    | WASHER, FLAT 7/8                  | 2    |
| 16       | 900-06017    | NUT, TOP LOCK 7/8 NC              |      |
| 17       | 900-01125    | BOLT, HEX HEAD 3/8 NC X 3, GR5 ZP | 4    |
| 18       | 900-06500    | NUT, TOP LOCK 3/8 NC              | 4    |

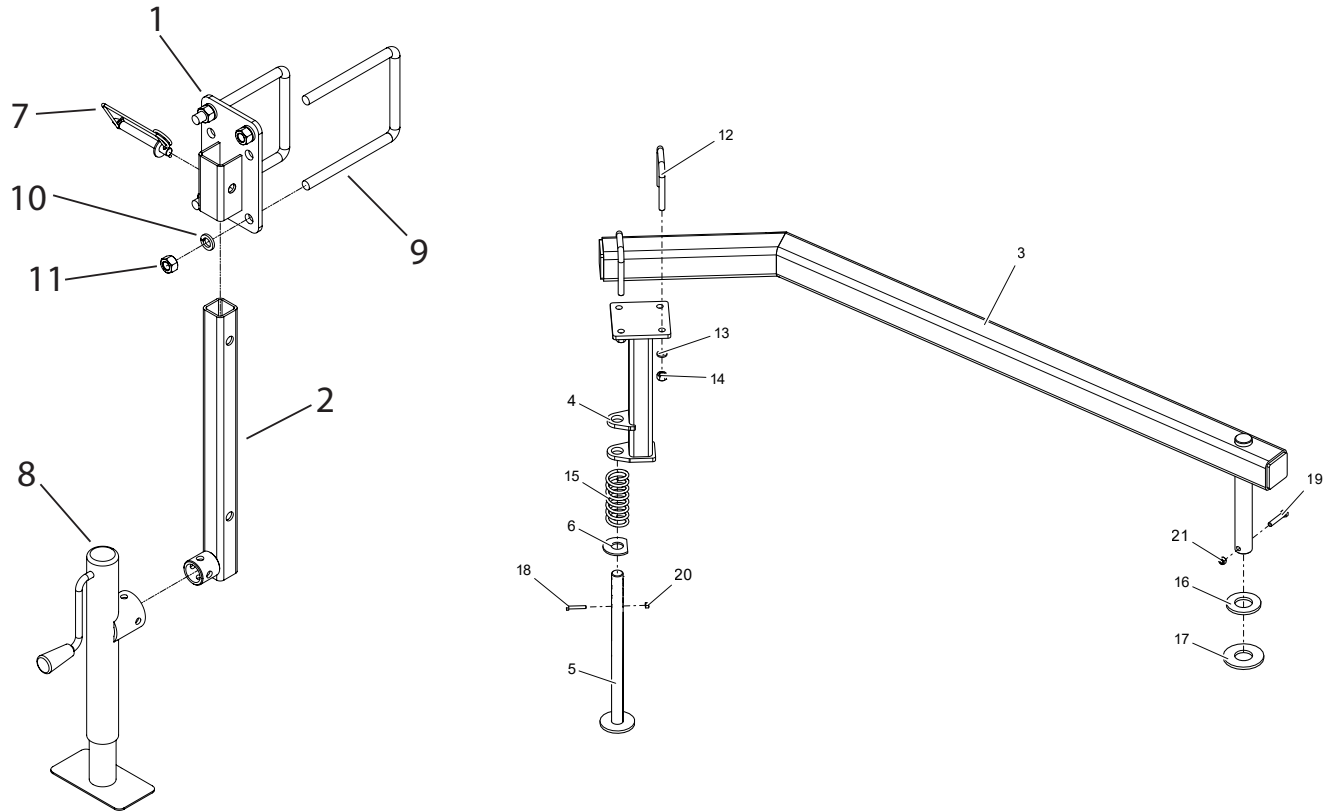
# CENTER FRAME COMPONENTS



## CENTER FRAME COMPONENTS

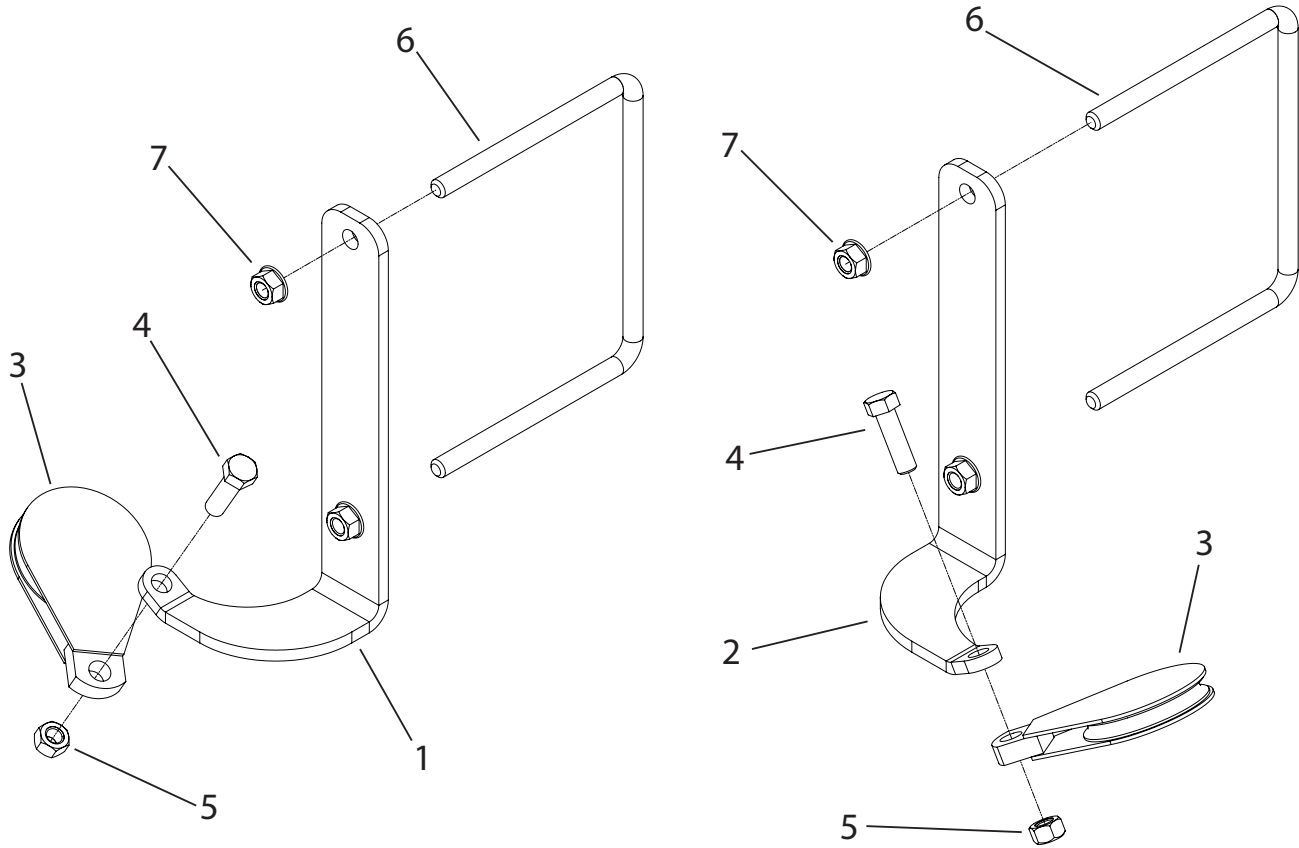
| ITEM NO. | PART NUMBER  | DESCRIPTION                               | QTY. |
|----------|--------------|-------------------------------------------|------|
| 1        | 200-2-2241   | WELDMENT, HITCH FRAME                     | 1    |
| 2        | 200-2-2285   | WELDMENT, SIDE HITCH TUBE                 | 2    |
| 3        | 200-2-2239   | WELDMENT, CENTER FRONT BAR                | 1    |
| 4        | 200-2-2238   | WELDMENT, CENTER MID BAR                  | 1    |
| 5        | 200-2-2253   | WELDMENT, CENTER REAR BAR                 | 1    |
| 6        | 200-2-2236   | WELDMENT, WING PIVOT LINKAGE              | 2    |
| 7        | SEE PAGE: 38 | ASSEMBLY, REAR JACK MOUNT                 | 1    |
| 8        | SEE PAGE: 38 | ASSEMBLY, WING SUPPORT ARM (LH)           | 2    |
| 9        | SEE PAGE: 38 | ASSEMBLY, WING SUPPORT ARM (RH)           |      |
| 10       | SEE PAGE: 41 | ASSEMBLY, WING LATCH (LH)                 | 1    |
| 11       | SEE PAGE: 41 | ASSEMBLY, WING LATCH (RH)                 | 1    |
| 12       | SEE PAGE: 39 | ASSEMBLY, CABLE SHEAVE MOUNT (LH)         | 1    |
| 13       | SEE PAGE: 39 | ASSEMBLY, CABLE SHEAVE MOUNT (RH)         | 1    |
| 14       | SEE PAGE: 40 | ASSEMBLY, LOCK VALVE MOUNT                | 1    |
| 15       | SEE PAGE: 40 | ASSEMBLY, SELECTOR VALVE MOUNT            | 1    |
| 16       | 905-23018    | JACK, 5000 LB                             | 1    |
| 17       | 905-21442    | CYLINDER, 5 X 24 BLACK                    | 2    |
| 18       | 905-21390    | CYLINDER, 2 X 10 BLACK                    | 2    |
| 19       | 200-3-3431   | PIN, PIVOT                                | 8    |
| 20       | 200-3-4426   | PIN, MAIN LIFT                            | 2    |
| 21       | 200-3-4396   | PIN, WING HINGE                           | 2    |
| 22       | 905-07123    | CHAIN, SAFETY TOW (21,000 LB)             | 1    |
| 23       | 505-3-0831   | HITCH, CAT-3                              | 1    |
| 24       | 900-02930    | BOLT, HEX HEAD, 1 NC X 7, GR5 ZP          | 2    |
| 25       | 900-01519    | BOLT, HEX HEAD, 1 NC X 3, GR5 ZP          | 1    |
| 26       | 900-06514    | NUT, TOP LOCK, 1 NC                       | 3    |
| 27       | 900-01345    | BOLT, HEX HEAD, 5/8 NC X 2, GR5 ZP        | 24   |
| 28       | 900-11015    | WASHER, LOCK, 5/8                         | 24   |
| 29       | 900-06013    | NUT, HEX HEAD, 5/8 NC                     | 24   |
| 30       | 900-01553    | BOLT, HEX HEAD, 1 NC X 10-1/2, GR5 ZP     | 6    |
| 31       | 900-11021    | WASHER, LOCK, 1                           | 6    |
| 32       | 900-06019    | NUT, HEX HEAD, 1 NC                       | 6    |
| 33       | 900-01125    | BOLT, HEX HEAD, 3/8 NC X 3, GR5 ZP        | 7    |
| 34       | 900-06500    | NUT, TOP LOCK, 3/8 NC                     | 7    |
| 35       | 100-3-0148   | BOLT, EYE, 1/2 NC                         | 2    |
| 36       | 900-06143    | NUT, SPIRALOCK FLANGE, 1/2 NC             | 4    |
| 37       | 900-11042    | WASHER, FLAT, 1-1/4                       | 4    |
| 38       | 900-29208    | PIN, ROLL, 5/16 X 2-1/4                   | 4    |
| 39       | 200-3-4428   | WING LOCK CABLE, 3/16" x 12FT (NOT SHOWN) | 2    |

## REAR JACK & WING SUPPORT ARM COMPONENTS



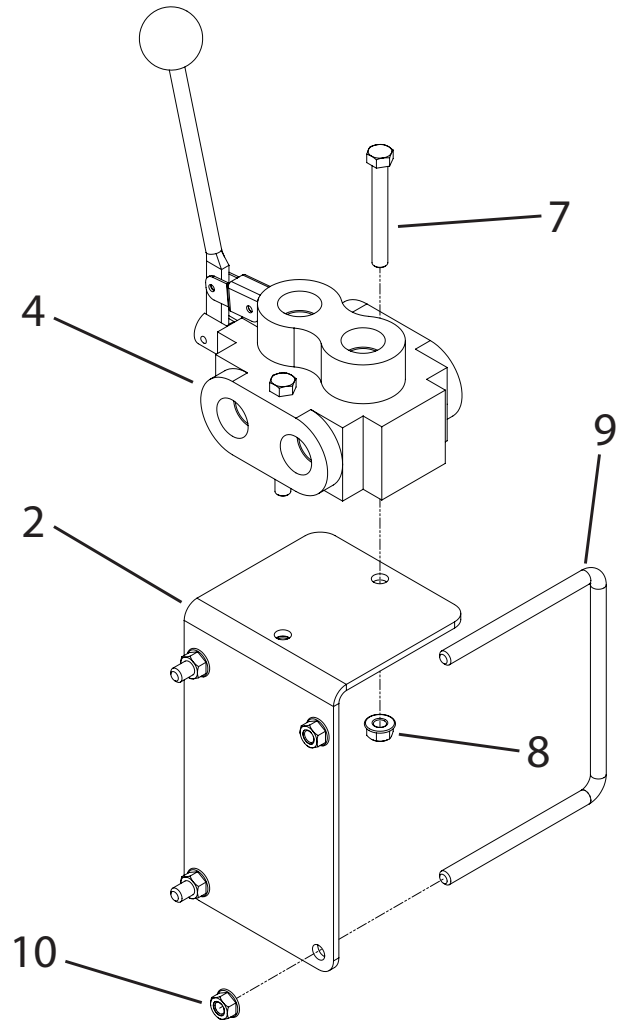
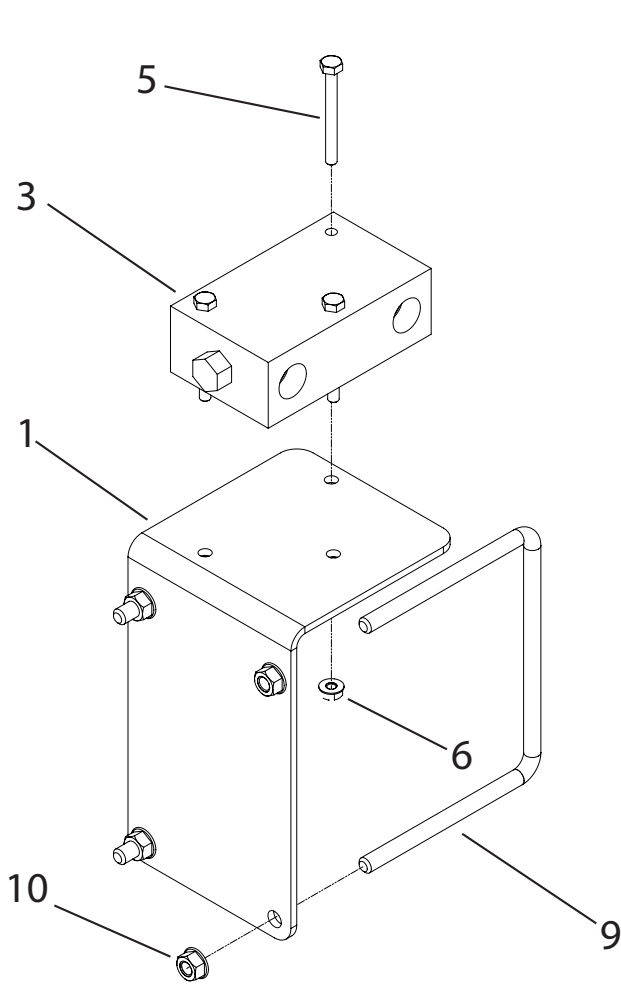
| ITEM NO. | PART NUMBER | DESCRIPTION                      | QTY. |
|----------|-------------|----------------------------------|------|
| 1        | 200-2-2307  | WELDMENT, JACK MOUNTING PLATE    | 1    |
| 2        | 200-2-2306  | WELDMENT, ADJUSTMENT TUBE        | 1    |
| 3        | 200-2-2378  | WELDMENT, WING SUPPORT ARM (LH)  | 1    |
|          | 200-2-2375  | WELDMENT, WING SUPPORT ARM (RH)  |      |
| 4        | 200-2-2379  | WELDMENT, PIVOT BRACKET          | 1    |
| 5        | 200-2-2380  | WELDMENT, SUPPORT ARM SPRING PIN | 1    |
| 6        | 200-3-4619  | WASHER                           | 1    |
| 7        | 900-42054   | PIN, SNAP LOCK CLEVIS, 5/8 X 4   | 1    |
| 8        | 905-23018   | JACK, 5000 LB                    | 1    |
| 9        | 200-3-0345  | U-BOLT, 3/4 NC X 7 X 9.13        | 2    |
| 10       | 900-11017   | WASHER, LOCK, 3/4                | 4    |
| 11       | 900-06015   | NUT, HEX HEAD, 3/4 NC            | 6    |
| 12       | 500-3-1578  | U-BOLT, 1/2 NC X 3 X 4           | 6    |
| 13       | 900-11013   | WASHER, LOCK, 1/2                | 12   |
| 14       | 900-06009   | NUT, HEX HEAD, 1/2 NC            | 12   |
| 15       | 905-14005   | SPRING                           | 1    |
| 16       | 901-01240   | OILITE BUSHING                   | 1    |
| 17       | 900-11044   | WASHER, FLAT 1-1/2               | 1    |
| 18       | 900-01013   | BOLT, 1/4 NC x 1-1/2             | 1    |
| 19       | 900-01117   | BOLT, 3/8 NC x 2                 | 1    |
| 20       | 900-06496   | NUT, TOP LOCK, 1/4 NC            | 1    |
| 21       | 900-06500   | NUT, TOP LOCK, 3/8 NC            | 1    |

## CABLE SHEAVE MOUNT COMPONENTS



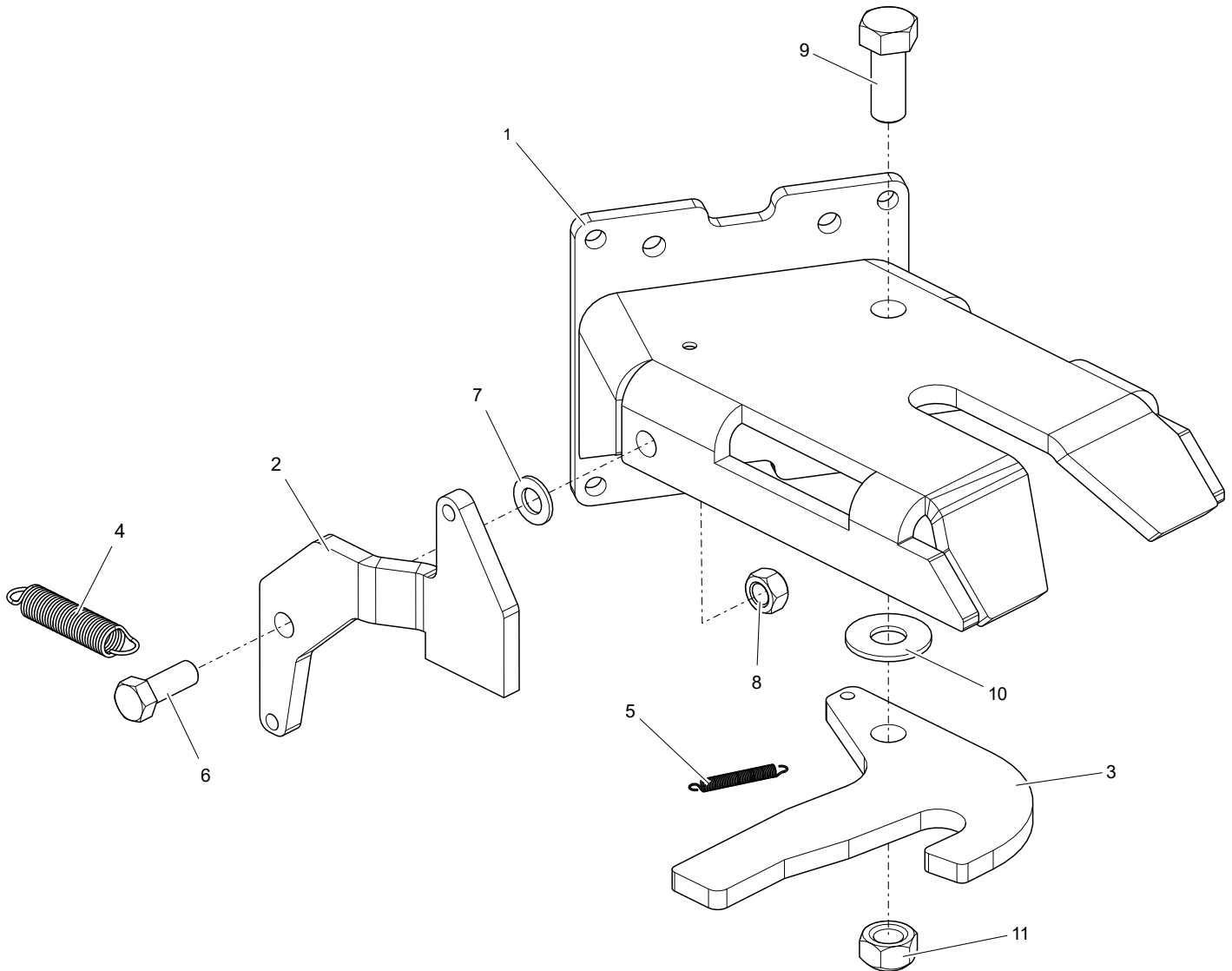
| ITEM NO. | PART NUMBER | DESCRIPTION                            | QTY. |
|----------|-------------|----------------------------------------|------|
| 1        | 200-3-4459  | CABLE SHEAVE MOUNT (RH)                | 1    |
| 2        | 200-3-4546  | CABLE SHEAVE MOUNT (LH)                | 1    |
| 3        | 905-07129   | FIXED EYE BLOCK                        | 2    |
| 4        | 900-01111   | BOLT, HEX HEAD, 3/8 NC X 1-1/4, GR5 ZP | 2    |
| 5        | 900-06500   | NUT, TOP LOCK, 3/8 NC                  | 2    |
| 6        | 900-35000   | U-BOLT, 3/8 NC X 6 X 5                 | 2    |
| 7        | 900-06139   | NUT, SERRATED FLANGE, 3/8 NC           | 2    |

## LOCK & SELECTOR VALVE COMPONENTS



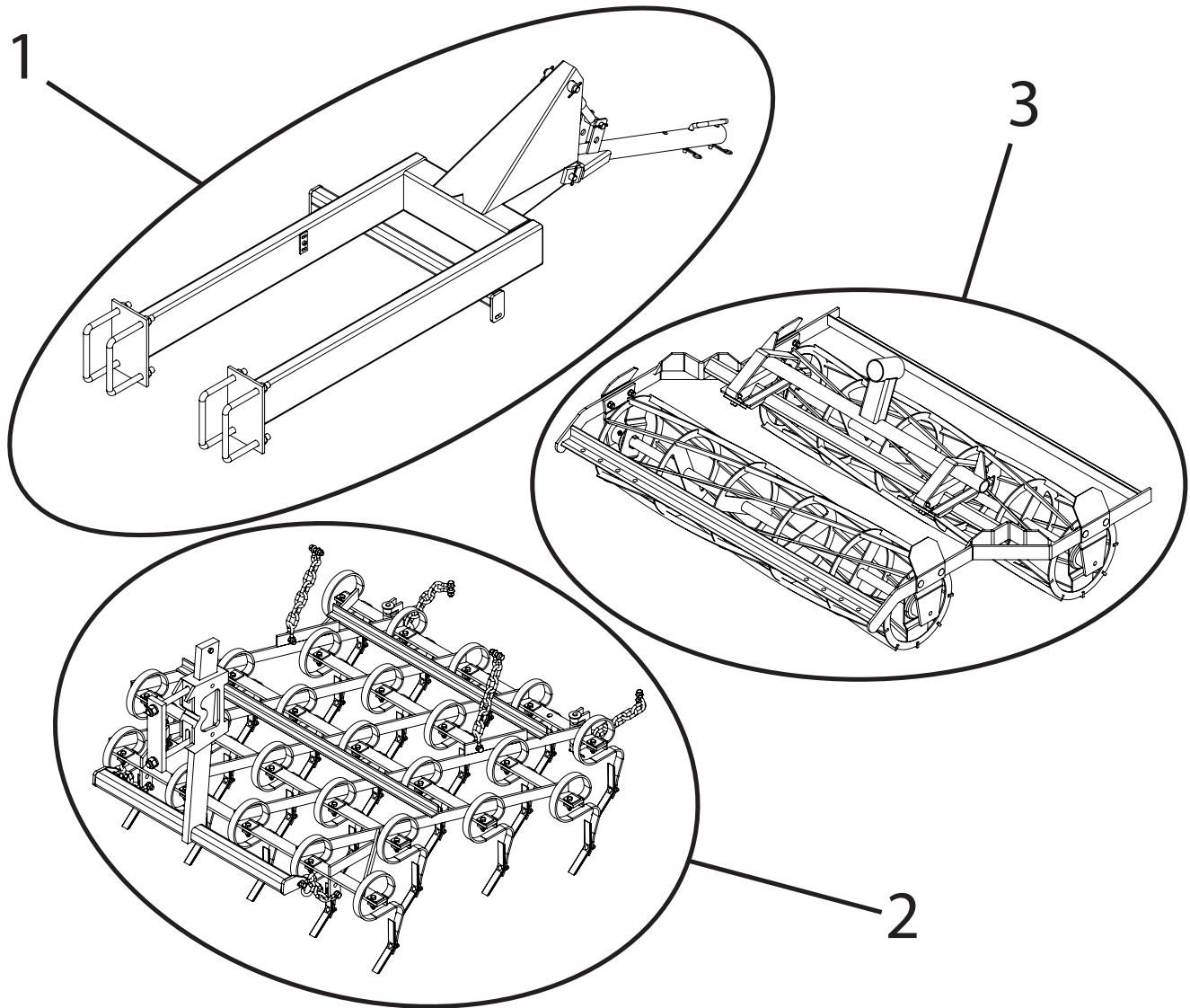
| ITEM NO. | PART NUMBER | DESCRIPTION                    | QTY. |
|----------|-------------|--------------------------------|------|
| 1        | 200-3-4562  | LOCK VALVE PLATE               | 1    |
| 2        | 200-3-4549  | SELECTOR VALVE PLATE           | 1    |
| 3        | 905-03260   | LOCK VALVE, 1/2 MP             | 1    |
| 4        | 905-03252   | DOUBLE SELECTOR VALVE, 1/2 MP  | 1    |
| 5        | 900-01021   | BOLT, HEX HEAD, 1/2 NC X 2-1/2 | 3    |
| 6        | 900-06135   | NUT, SERRATED FLANGE, 1/2 NC   | 3    |
| 7        | 900-01125   | BOLT, HEX HEAD, 3/8 NC X 3     | 2    |
| 8        | 900-06139   | NUT, SERRATED FLANGE, 3/8 NC   | 2    |
| 9        | 900-35000   | U-BOLT, 3/8 NC X 6 X 5         | 4    |
| 10       | 900-06139   | NUT, SERRATED FLANGE, 3/8 NC   | 8    |

## WING LATCH COMPONENTS



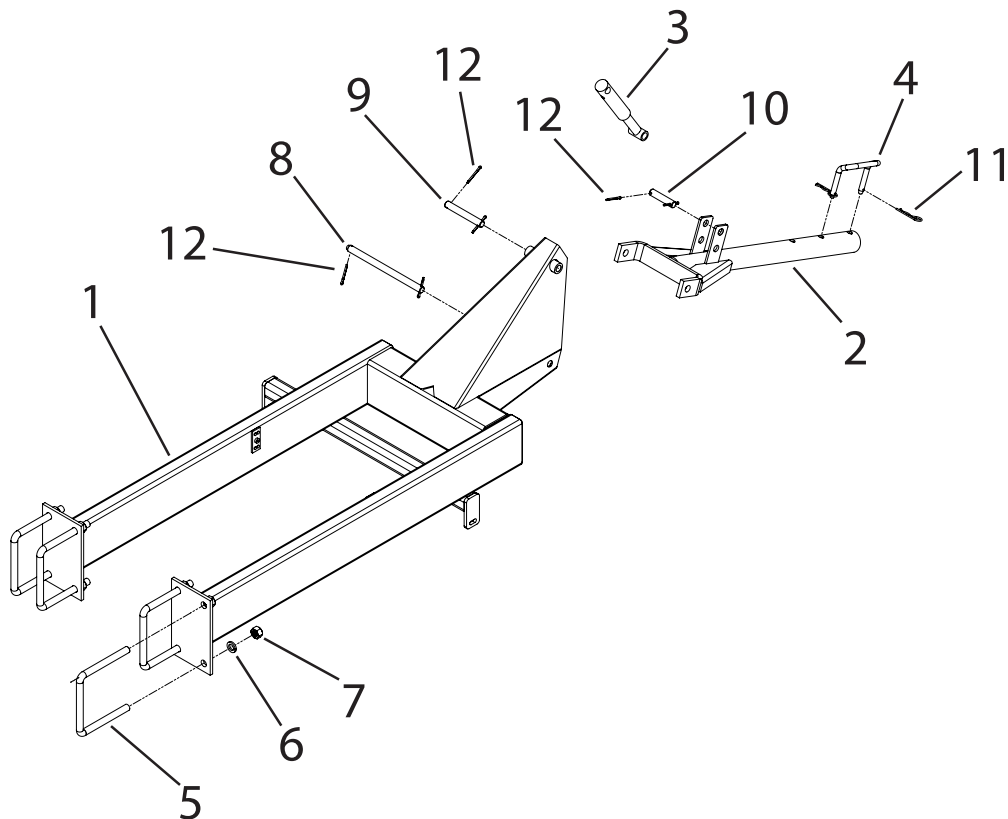
| ITEM NO. | PART NUMBER | DESCRIPTION                                             | QTY. |
|----------|-------------|---------------------------------------------------------|------|
| 1        | 200-2-2362  | WELDMENT, WING LATCH (LH)                               | 1    |
|          | 200-2-2373  | WELDMENT, WING LATCH (RH)                               |      |
| 2        | 200-3-4600  | LOCK BAR (LH)                                           | 1    |
|          | 200-3-4604  | LOCK BAR (RH)                                           |      |
| 3        | 200-2-2363  | WELDMENT, INNER LOCK (LH)                               | 1    |
|          | 200-2-2388  | WELDMENT, INNER LOCK (RH)                               |      |
| 4        | 200-3-4136  | SPRING, EXTENSION (1.0 OD, 5.00 LENGTH, 0.105 WIRE DIA) | 1    |
| 5        | 200-3-4427  | SPRING, EXTENSION (0.5 OD, 3.44 LENGTH, 0.054 WIRE DIA) | 1    |
| 6        | 900-01403   | BOLT, HEX HEAD 3/4 NC X 2, GR5 ZP                       | 2    |
| 7        | 900-11038   | WASHER, FLAT 3/4                                        | 1    |
| 8        | 900-06510   | NUT, LOCK 3/4 NC                                        | 1    |
| 9        | 900-01515   | BOLT, HEX HEAD 1 NC X 2-1/2, GR5 ZP                     | 1    |
| 10       | 900-11040   | WASHER, FLAT 1                                          | 1    |
| 11       | 900-06514   | NUT, LOCK 1 NC                                          | 1    |

## SEEDBETTER CRUMBLER ASSEMBLY - WIDE



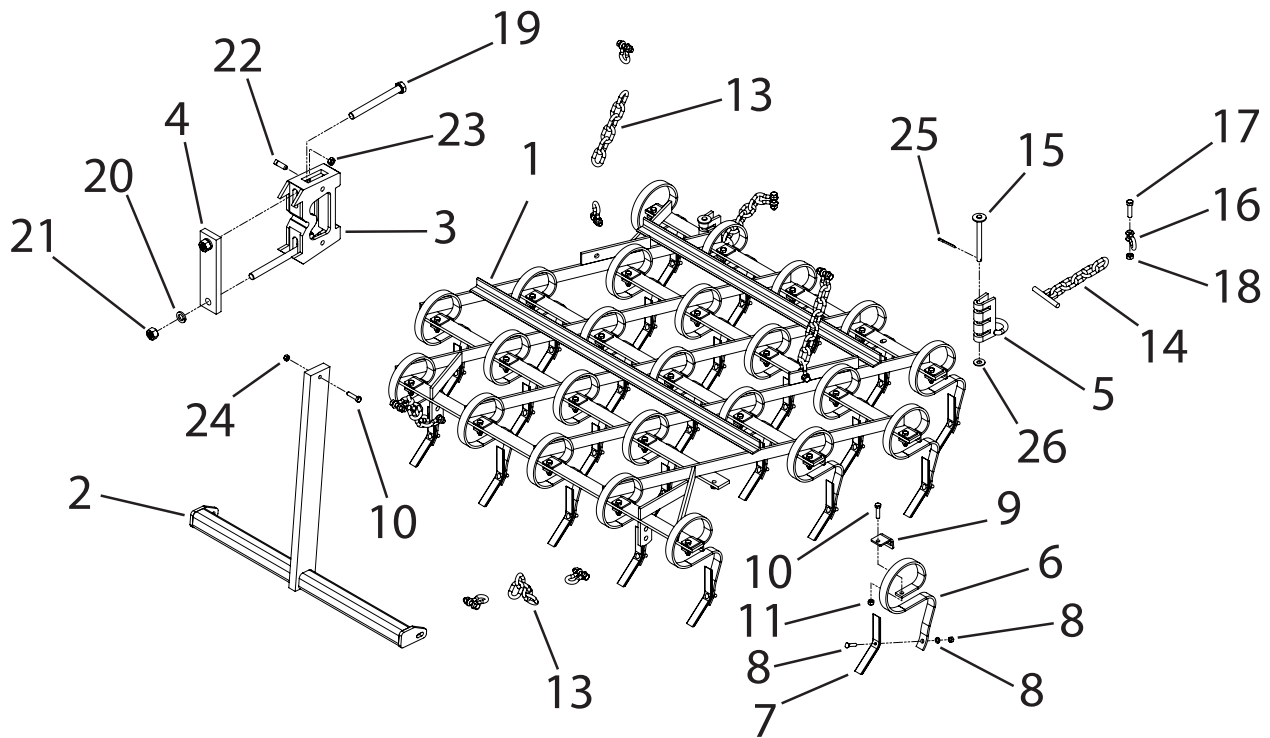
| ITEM NO. | PAGE NUMBER | DESCRIPTION              |
|----------|-------------|--------------------------|
| 1        | 43          | H - FRAME ASSEMBLY       |
| 2        | 44          | HARROW - 16-4 ASSEMBLY   |
| 3        | 45          | CRUMBLER BASKET ASSEMBLY |

## H-FRAME COMPONENTS



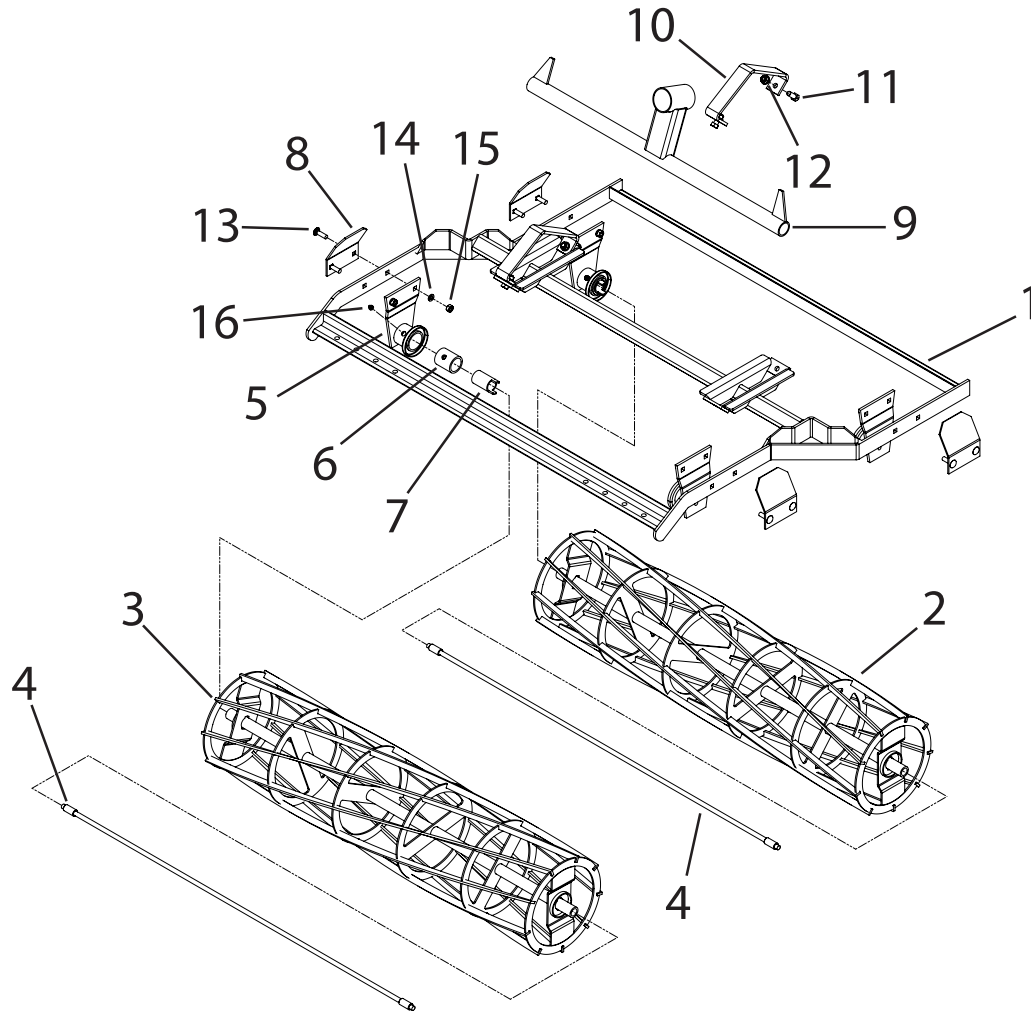
| ITEM NO. | PART NUMBER | DESCRIPTION               | QTY. |
|----------|-------------|---------------------------|------|
| 1        | 200-2-2274  | WELDMENT, H-FRAME         | 1    |
| 2        | 210-2-0135  | WELDMENT, DOWN PRESS ARM  | 1    |
| 3        | 210-3-0577  | CYLINDER, CRUMBLER        | 1    |
| 4        | 210-3-0264  | U-PIN, CRUMBLER           | 1    |
| 5        | 200-3-0477  | U-BOLT, 3/4 NC X 7 X 7 LG | 4    |
| 6        | 900-11017   | WASHER, LOCK 3/4 ZP       | 8    |
| 7        | 900-06015   | NUT, HEX HEAD, 3/4 NC, ZP | 8    |
| 8        | 210-3-0261  | PIN, DOWN PRESSURE ARM    | 1    |
| 9        | 210-3-0341  | PIN, CRUMBLER CYLINDER    | 1    |
| 10       | 210-3-0262  | PIN, CYLINDER             | 1    |
| 11       | 900-25005   | PIN, HAIR CLIP, 5/32 (#9) | 2    |
| 12       | 900-23043   | PIN, COTTER, 3/16 X 1-1/2 | 6    |

## HARROW (16 - 4) COMPONENTS



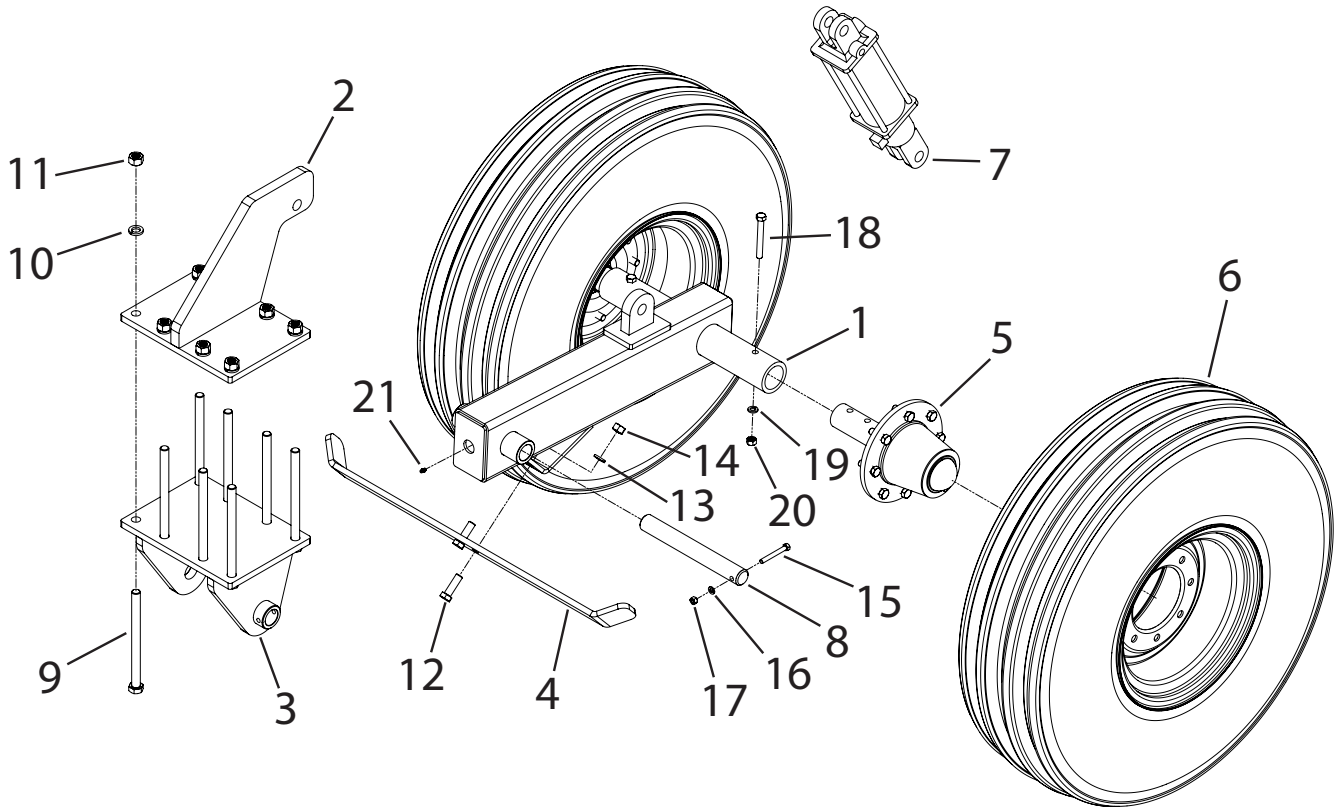
| ITEM NO. | PART NUMBER | DESCRIPTION                                         | QTY. |
|----------|-------------|-----------------------------------------------------|------|
| 1        | 210-2-0314  | WELDMENT, HARROW FRAME                              | 1    |
|          | 210-2-5036  | WELDMENT, HARROW FRAME (WIDE)                       |      |
| 2        | 200-2-2270  | PULL T-BAR                                          | 1    |
| 3        | 200-3-1022  | CAST CLAMP, LARGE, 7" CUT                           | 1    |
| 4        | 200-3-1024  | STRAP, 7 X 7 BOLTING                                | 1    |
| 5        | 210-3-0442  | PULL BRACKET                                        | 2    |
| 6        | 905-10100   | S-TINE ASSEMBLY, 25 X 8 W/ POINT (INCLUDES #7 & #8) | 25   |
| 7        | 905-10102   | - REVERSIBLE POINT                                  | 25   |
| 8        | 200-1-2859  | - BOLT KIT, POINT                                   | 25   |
| 9        | 205-3-0110  | HARROW TINE CLAMP                                   | 25   |
| 10       | 900-01113   | BOLT, HEX HEAD, 3/8 NC X 1-1/2, GR 5 ZP             | 26   |
| 11       | 900-06005   | NUT, HEX HEAD 3/8 NC                                | 25   |
| 13       | 200-3-4432  | CRUMBLER PULL CHAIN (9 LINKS)                       | 4    |
| 14       | 205-2-0031  | PULL CHAIN                                          | 2    |
| 15       | 200-2-2264  | PIN WELD - HARROW                                   | 2    |
| 16       | 210-3-0327  | CLEVIS                                              | 10   |
| 17       | 900-01177   | BOLT, HEX HEAD 7/16 NC X 1-3/4, GR 5 ZP             | 10   |
| 18       | 900-06502   | NUT, TOP LOCK 7/16 NC                               | 10   |
| 19       | 900-01433   | BOLT, HEX HEAD 3/4 NC X 7-1/2, GR 5 ZP              | 2    |
| 20       | 900-11017   | WASHER, LOCK 3/4                                    | 2    |
| 21       | 900-06015   | NUT, HEX HEAD 3/4 NC                                | 2    |
| 22       | 900-16063   | SCREW, SET, SQUARE HEAD 1/2 NC X 1-1/4              | 2    |
| 23       | 900-06276   | NUT, JAM 1/2 NC                                     | 2    |
| 24       | 900-06500   | NUT, TOP LOCK 3/8 NC                                | 1    |
| 25       | 900-23043   | PIN, COTTER 3/16 X 1-1/2                            | 2    |
| 26       | 900-11035   | WASHER, FLAT 1/2                                    |      |

## CRUMBLER BASKET COMPONENTS



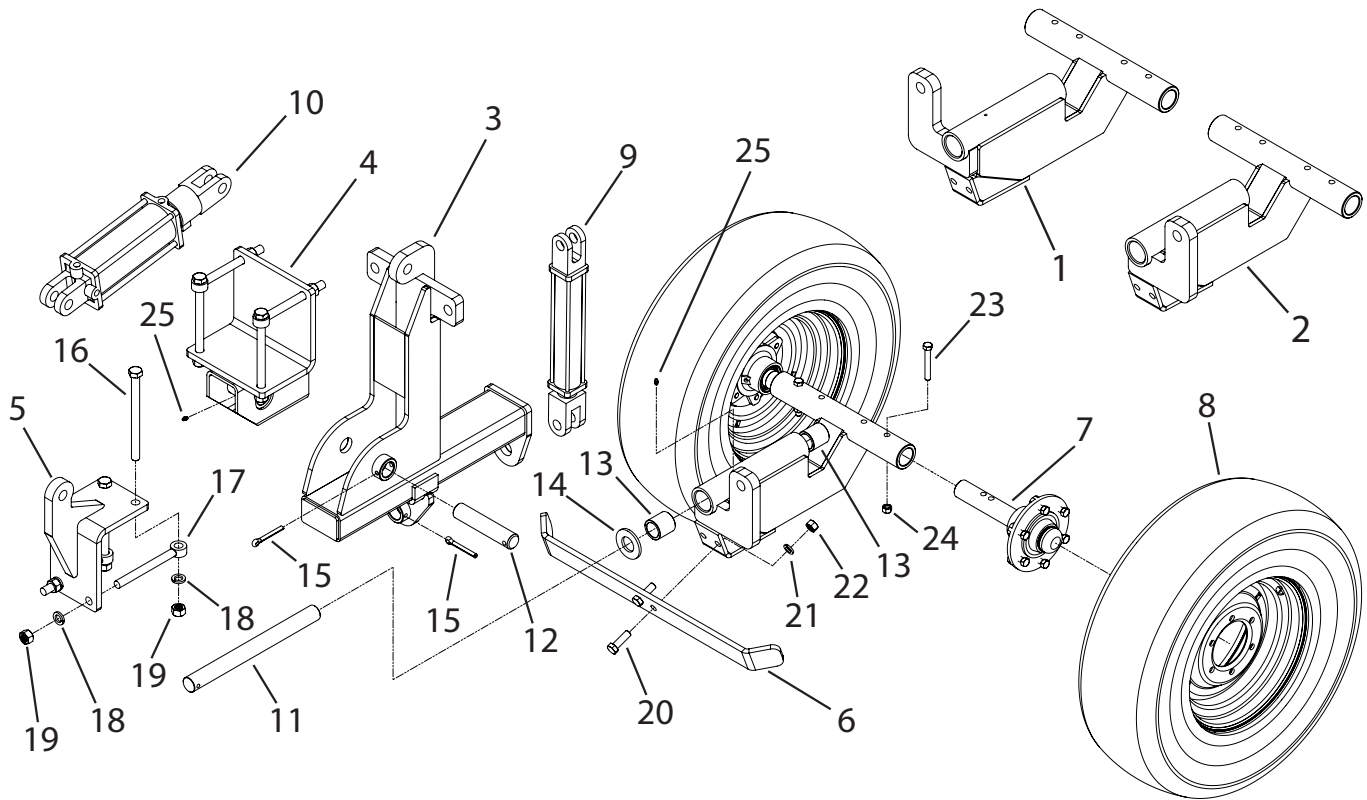
| ITEM NO. | PART NUMBER | DESCRIPTION                             | QTY. |
|----------|-------------|-----------------------------------------|------|
| 1        | 210-2-0018  | WELDMENT, FRAME                         | 1    |
|          | 210-2-0023  | WELDMENT, FRAME (WIDE)                  |      |
| 2        | 210-2-0111  | WELDMENT, BASKET, RH                    | 1    |
|          | 210-2-0113  | WELDMENT, BASKET, RH (WIDE)             |      |
| 3        | 210-2-0112  | WELDMENT, BASKET, LH                    | 1    |
|          | 210-2-0114  | WELDMENT, BASKET, LH (WIDE)             |      |
| 4        | 210-2-0133  | WELDMENT, REINFORCING ROD               | 2    |
|          | 210-2-0134  | WELDMENT, REINFORCING ROD (WIDE)        |      |
| 5        | 210-2-0026  | WELDMENT, BEARING BRACKET               | 4    |
| 6        | 210-3-0617  | BUSHING, RYERTEX                        | 4    |
| 7        | 210-3-0223  | BUSHING, STEEL                          | 4    |
| 8        | 210-3-0328  | DEFLECTOR                               | 4    |
| 9        | 200-2-2276  | WELDMENT, DOWN PRESS TEE                | 1    |
| 10       | 210-3-0263  | LIFT STRAP                              | 2    |
| 11       | 900-01223   | BOLT, HEX HEAD, 1/2 NC X 1-1/4, GR 5 ZP | 4    |
| 12       | 900-06143   | NUT, SPIRALOCK FLANGE, 1/2 NC           | 4    |
| 13       | 900-01726   | BOLT, CARRIAGE 7/16 NC X 1-1/2, GR 5 ZP | 8    |
| 14       | 900-11012   | WASHER, LOCK 7/16                       | 8    |
| 15       | 900-06007   | NUT, 7/16 NC                            | 8    |
| 16       | 210-3-0015  | ZERK, GREASE                            | 4    |

## MAIN STRUT COMPONENTS



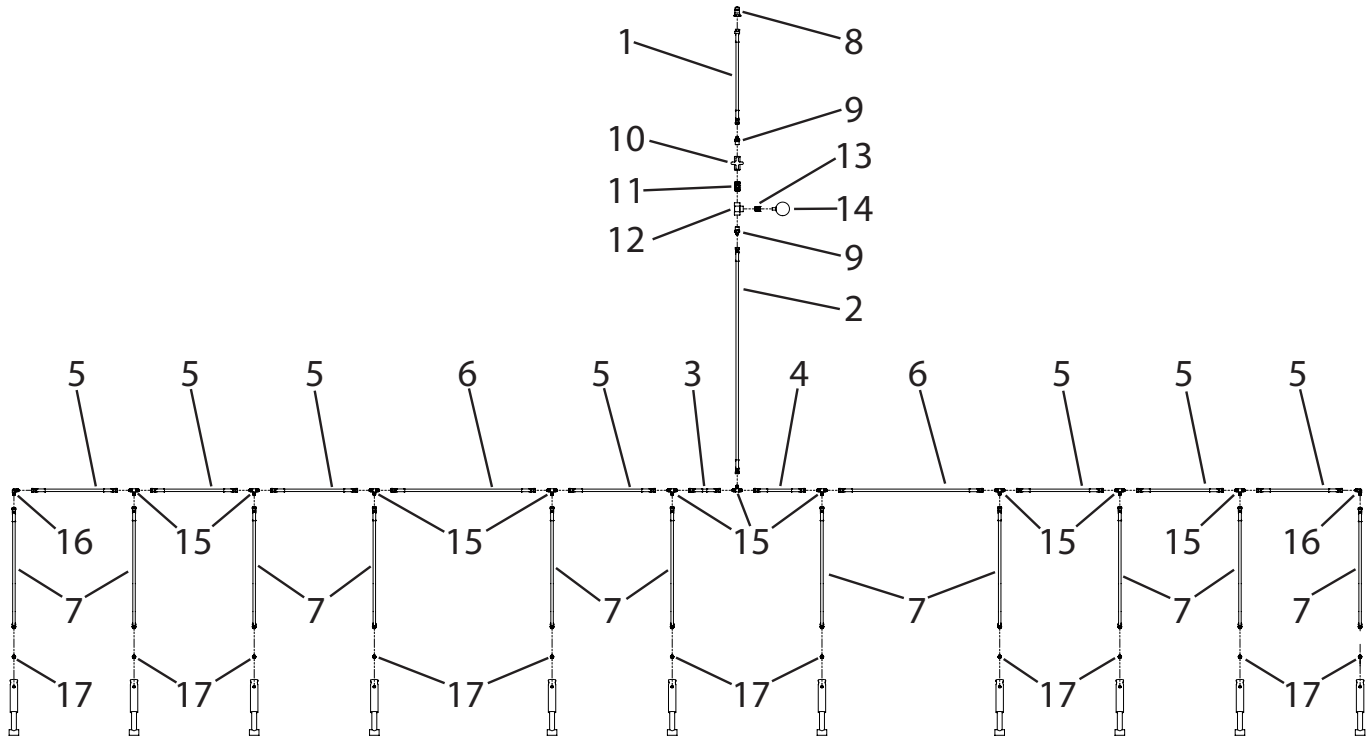
| ITEM NO. | PART NUMBER | DESCRIPTION                                     | QTY. |
|----------|-------------|-------------------------------------------------|------|
| 1        | 200-2-2261  | WELDMENT, MAIN STRUT TUBE                       | 1    |
| 2        | 200-2-2260  | WELDMENT, MAIN STRUT TOP                        | 1    |
| 3        | 200-2-2258  | WELDMENT, MAIN STRUT                            | 1    |
| 4        | 200-3-4437  | WHEEL SCRAPER, CENTER                           | 1    |
| 5        | 700-2-0165  | HUB & SPINDLE ASSEMBLY, 8-BOLT - (SEE PAGE: 53) | 2    |
| 6        | 905-09173   | TIRE & RIM ASSEMBLY                             | 2    |
|          | 905-09146   | - RIM, 16 X 10 X 8BOLT                          |      |
|          | 905-09175   | - TIRE, 11.00 X 16.00 MULTI-RIB, 8 PLY          |      |
| 7        | 905-21400   | CYLINDER, 3-1/2 X 8 BLACK                       | 1    |
|          | 700-2-0159  | CYLINDER TRANSPORT LOCK                         | -    |
| 8        | 200-3-4397  | PIN, HINGE STRUT                                | 2    |
| 9        | 900-01443   | BOLT, HEX HEAD 3/4 NC X 10, GR5 ZP              | 8    |
| 10       | 900-11017   | WASHER, LOCK 3/4                                | 8    |
| 11       | 900-06015   | NUT, HEX HEAD 3/4 NC                            | 8    |
| 12       | 900-01345   | BOLT, HEX HEAD 5/8 NC X 2, GR5 ZP               | 2    |
| 13       | 900-11015   | WASHER, LOCK 5/8                                | 2    |
| 14       | 900-06013   | NUT, HEX HEAD 5/8 NC                            | 2    |
| 15       | 900-01125   | BOLT, HEX HEAD 3/8 NC X 3, GR5 ZP               | 1    |
| 16       | 900-11011   | WASHER, LOCK 3/8                                | 1    |
| 17       | 900-06005   | NUT, HEX HEAD 3/8 NC                            | 1    |
| 18       | 900-01245   | BOLT, HEX HEAD 1/2 NC X 4, GR5 ZP               | 2    |
| 19       | 900-11013   | WASHER, LOCK 1/2                                | 2    |
| 20       | 900-06009   | NUT, HEX HEAD 1/2 NC                            | 2    |
| 21       | 905-15024   | ZERK, STRAIGHT 1/4" - 28                        | 1    |

## WING STRUT COMPONENTS



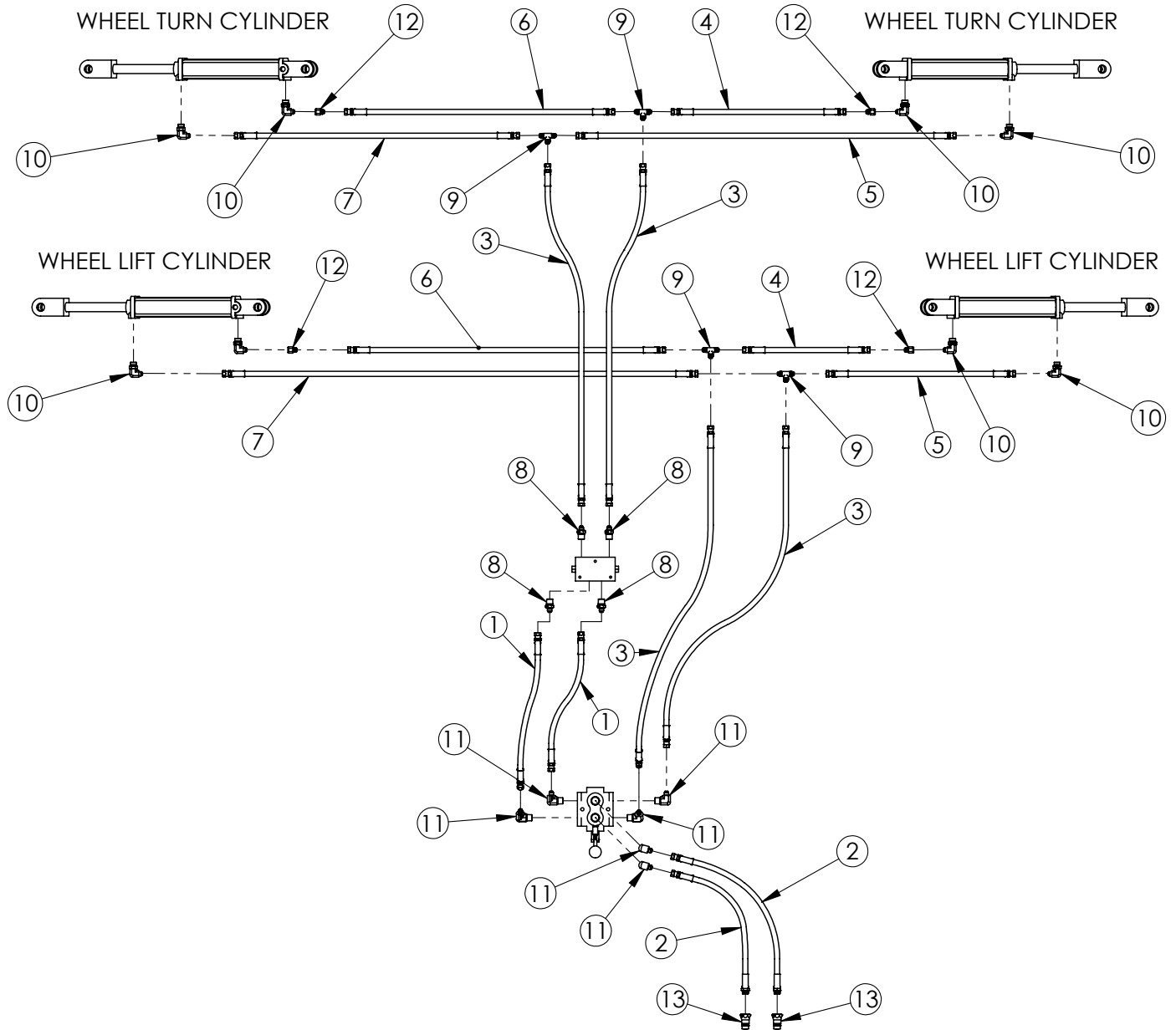
| ITEM NO. | PART NUMBER | DESCRIPTION                                     | QTY. |
|----------|-------------|-------------------------------------------------|------|
| 1        | 200-2-2288  | WELDMENT, WING STRUT PIVOT RH                   | 1    |
| 2        | 200-2-2289  | WELDMENT, WING STRUT PIVOT LH                   | 1    |
| 3        | 200-2-2317  | WELDMENT, WING WHEEL LOWER PIVOT                | 1    |
| 4        | 200-2-2316  | WELDMENT, WING WHEEL MOUNTING PLATE             | 1    |
| 5        | 200-2-2318  | WELDMENT, WING WHEEL CYLINDER EAR               | 1    |
| 6        | 200-3-4436  | WING WHEEL SCRAPER                              | 1    |
| 7        | 200-2-2344  | HUB & SPINDLE ASSEMBLY, 6-BOLT - (SEE PAGE: 53) | 2    |
| 8        | 905-09177   | TIRE & RIM ASSEMBLY                             | 2    |
|          | 905-09077   | - RIM, 15 X 6 X 6 BOLT                          |      |
|          | 905-09070   | - TIRE, 9.50 X 15.00 IMPLEMENT                  |      |
| 9        | 905-21390   | CYLINDER, 2 X 10 BLACK                          | 1    |
| 10       | 905-21400   | CYLINDER, 3-1/2 X 8 BLACK                       | 1    |
| 11       | 500-3-1328  | PIN, PIVOT                                      | 1    |
| 12       | 200-3-4477  | PIN, WING STRUT HINGE                           | 1    |
| 13       | 901-01146   | BUSHING, BRONZE                                 | 2    |
| 14       | 500-3-0538  | SPACER, BUSHING                                 | 1    |
| 15       | 900-23084   | PIN, COTTER 3/8 X 3-1/2                         | 2    |
| 16       | 900-01441   | BOLT, HEX HEAD 3/4 NC X 9-1/2, GR5 ZP           | 4    |
| 17       | 900-03462   | BOLT, EYE 3/4 NC X 8                            | 4    |
| 18       | 900-11017   | WASHER, LOCK 3/4                                | 8    |
| 19       | 900-06015   | NUT, HEX HEAD 3/4 NC                            | 8    |
| 20       | 900-01345   | BOLT, HEX HEAD 5/8 NC X 2, GR5 ZP               | 2    |
| 21       | 900-11015   | WASHER, LOCK 5/8                                | 2    |
| 22       | 900-06013   | NUT, HEX HEAD 5/8 NC                            | 2    |
| 23       | 900-01241   | BOLT, HEX HEAD 1/2 NC X 3-1/2, GR5 ZP           | 2    |
| 24       | 900-06504   | NUT, TOP LOCK 1/2 NC                            | 2    |
| 25       | 905-15024   | ZERK, STRAIGHT 1/4" - 28                        | 2    |

## CRUMBLER BASKET PLUMBING COMPONENTS



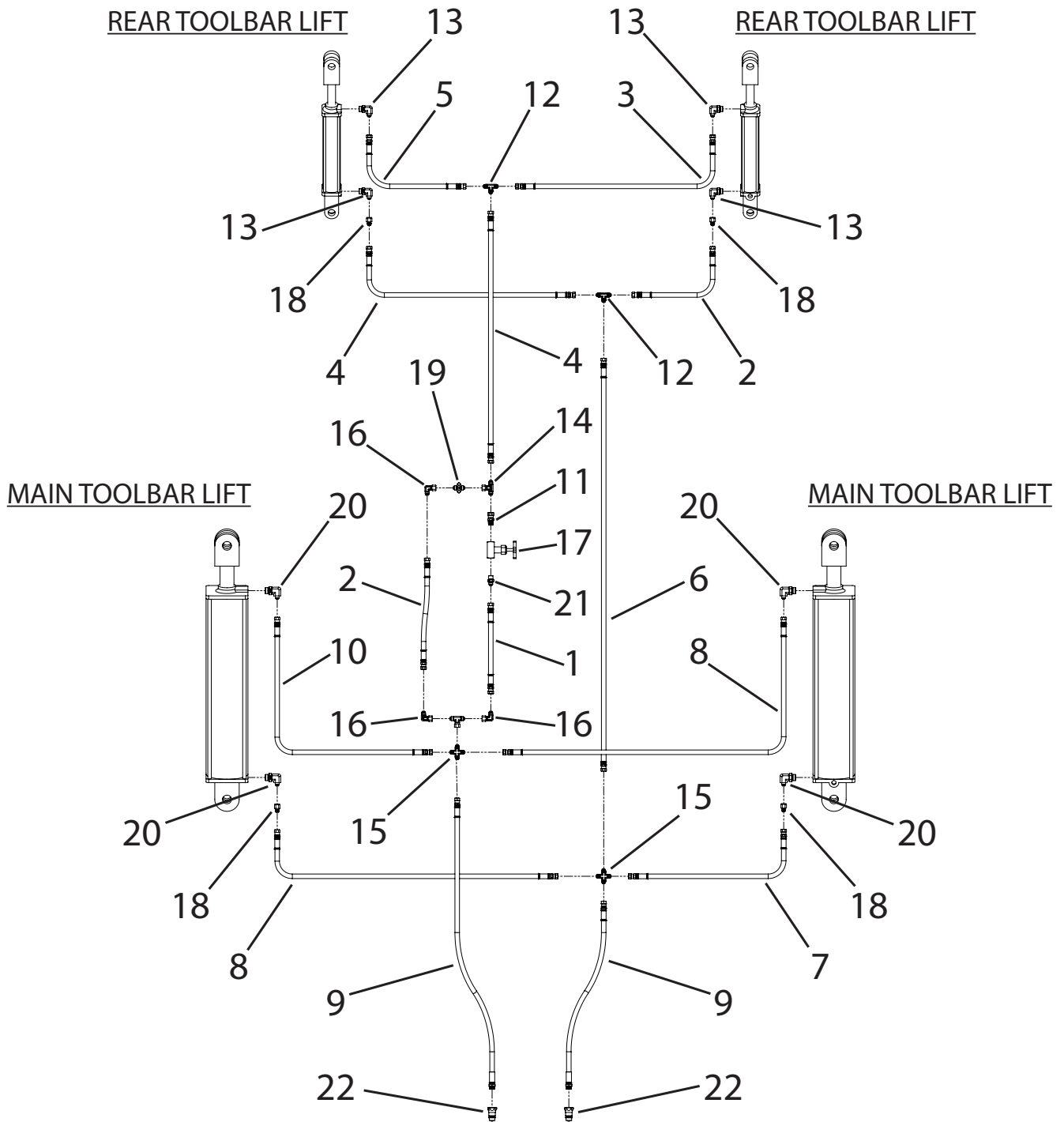
| ITEM NO. | PART NUMBER | DESCRIPTION                   | QTY.          |
|----------|-------------|-------------------------------|---------------|
| 1        | 905-19243   | 1/4 HOSE, 8MB x 6FJX          | 90" LENGTH 1  |
| 2        | 905-19244   | 1/4 HOSE, 6FJX x 6FJX         | 167" LENGTH 1 |
| 3        | 905-19245   | 1/4 HOSE, 6FJX x 6FJX         | 20" LENGTH 1  |
| 4        | 905-19246   | 1/4 HOSE, 6FJX x 6FJX         | 35" LENGTH 1  |
| 5        | 905-19247   | 1/4 HOSE, 6FJX x 6FJX         | 55" LENGTH 7  |
| 6        | 905-19254   | 1/4 HOSE, 6FJX x 6FJX         | 90" LENGTH 2  |
| 7        | 905-19248   | 1/4 HOSE, 6FJX x 6FJX         | 74" LENGTH 11 |
| 8        | 905-19126   | QUICK COUPLER, MALE 8FB       | 1             |
| 9        | 905-03110   | ADAPTER, STRAIGHT, 8MP X 6MJ  | 2             |
| 10       | 905-03066   | NEEDLE VALVE, 8FP (5000 PSI)  | 1             |
| 11       | 905-01228   | ADAPTER, NIPPLE, 8MP          | 1             |
| 12       | 905-03166   | ADAPTER, TEE, 8FP             | 1             |
| 13       | 905-03255   | ADAPTER, REDUCER, 8MP X 4FP   | 1             |
| 14       | 905-03072   | PRESSURE GUAGE (5000 PSI)     | 1             |
| 15       | 905-03112   | ADAPTER, TEE, 6MJ             | 2             |
| 16       | 905-03113   | ADAPTER, ELBOW 90°, 6MJ X 6MJ | 2             |
| 17       | 905-03250   | ADAPTER, STRAIGHT, 6MJ X 4MP  | 11            |

## OUTSIDE WHEEL PLUMBING COMPONENTS



| ITEM NO. | PART NUMBER | DESCRIPTION                               | QTY. |
|----------|-------------|-------------------------------------------|------|
| 1        | 905-19217   | 3/8 HOSE, 6FJX x 6FJX 10.5" LENGTH        | 2    |
| 2        | 905-19210   | 3/8 HOSE, 8MB x 6FJX 120" LENGTH          | 2    |
| 3        | 905-19151   | 3/8 HOSE, 6FJX x 6FJX 134" LENGTH         | 4    |
| 4        | 905-19238   | 3/8 HOSE, 6FJX x 6FJX 270" LENGTH         | 2    |
| 5        | 905-19239   | 3/8 HOSE, 6FJX x 6FJX 284" LENGTH         | 2    |
| 6        | 905-19240   | 3/8 HOSE, 6FJX x 6FJX 320" LENGTH         | 2    |
| 7        | 905-19241   | 3/8 HOSE, 6FJX x 6FJX 334" LENGTH         | 2    |
| 8        | 905-03110   | ADAPTER, STRAIGHT, 6MJ x 8MP              | 4    |
| 9        | 905-03112   | ADAPTER, TEE, 6MJ                         | 4    |
| 10       | 905-03114   | ADAPTER, ELBOW 90°, 6MJ x 8MB             | 8    |
| 11       | 905-03117   | ADAPTER, ELBOW 90°, 6MJ x 8MP             | 6    |
| 12       | 905-03220   | ADAPTER, RESTRICTOR, 6FJ x 6MJ, 1/16 HOLE | 4    |
| 13       | 905-19126   | QUICK COUPLER, MALE 8FB                   | 2    |

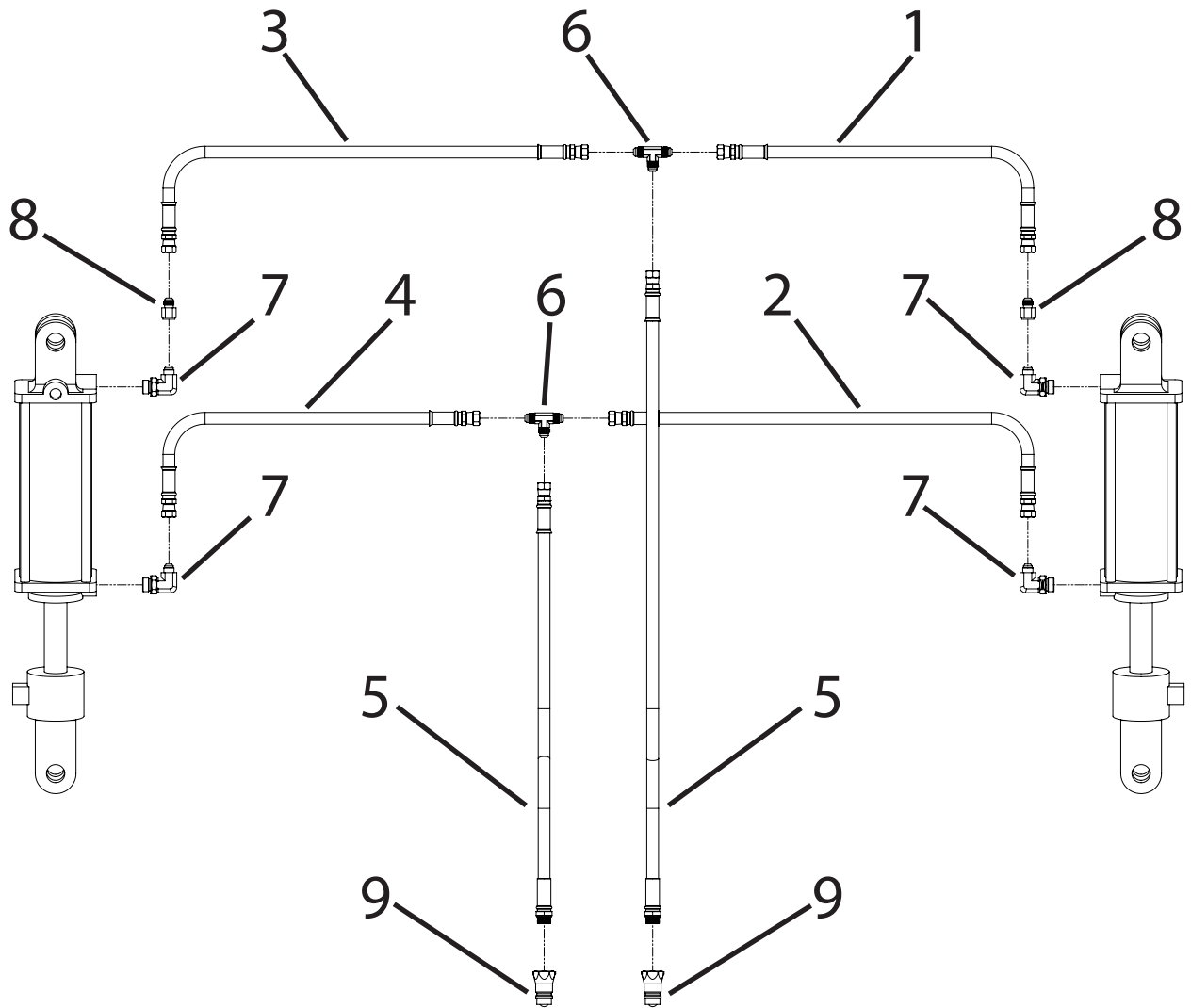
## TOOLBAR LIFT PLUMBING COMPONENTS



## TOOLBAR LIFT PLUMBING COMPONENTS

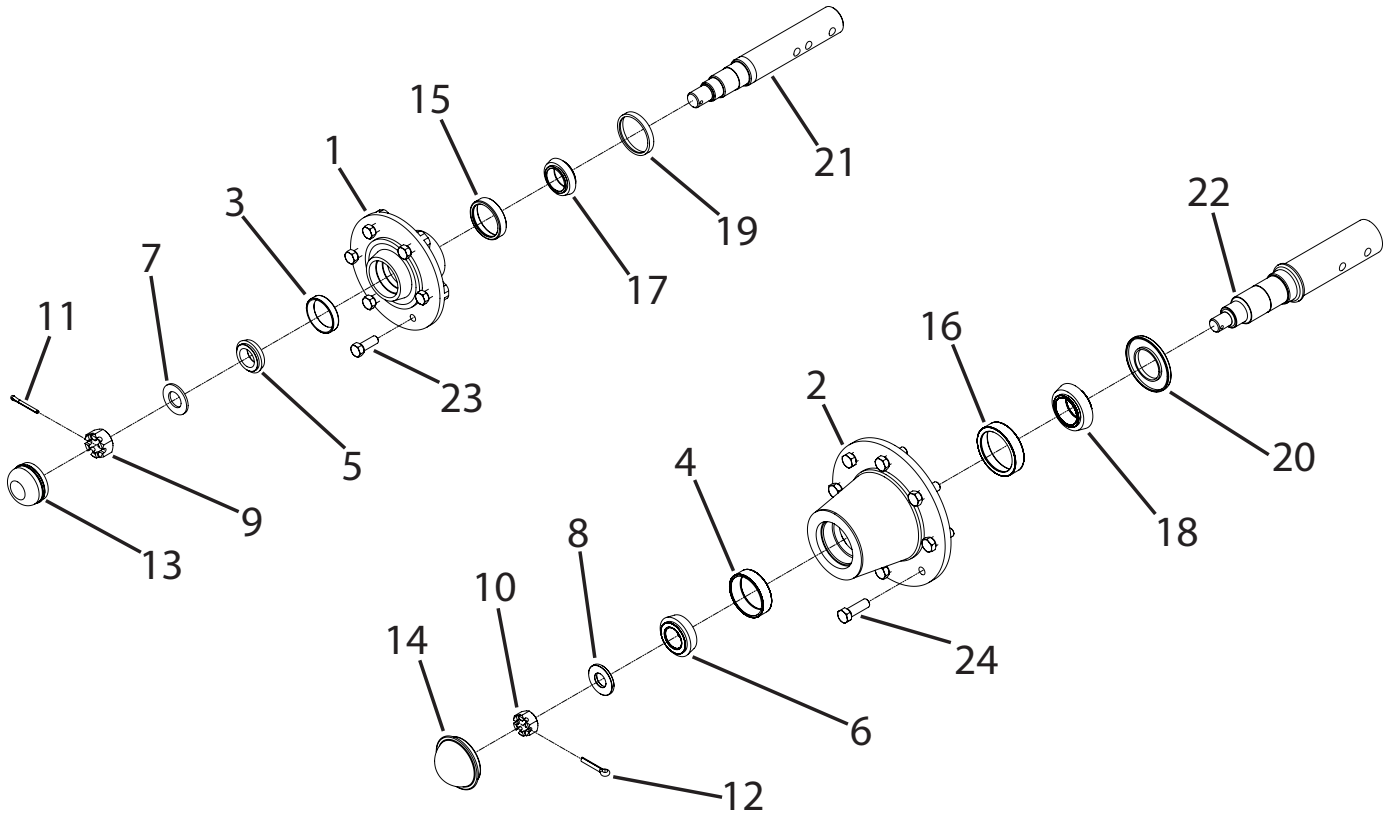
| ITEM NO. | PART NUMBER | DESCRIPTION                      | QTY.          |
|----------|-------------|----------------------------------|---------------|
| 1        | 905-19192   | 3/8 HOSE, 6FJX x 6FJX            | 18" LENGTH 1  |
| 2        | 905-19191   | 3/8 HOSE, 6FJX x 6FJX            | 24" LENGTH 2  |
| 3        | 905-19237   | 3/8 HOSE, 6FJX x 6FJX            | 38" LENGTH 1  |
| 4        | 905-19196   | 3/8 HOSE, 6FJX x 6FJX            | 72" LENGTH 2  |
| 5        | 905-19152   | 3/8 HOSE, 6FJX x 6FJX            | 84" LENGTH 1  |
| 6        | 905-19153   | 3/8 HOSE, 6FJX x 6FJX            | 96" LENGTH 1  |
| 7        | 905-19193   | 3/8 HOSE, 6FJX x 6FJX            | 106" LENGTH 1 |
| 8        | 905-19202   | 3/8 HOSE, 6FJX x 6FJX            | 136" LENGTH 2 |
| 9        | 905-19236   | 3/8 HOSE, 6FJX x 8MB             | 155" LENGTH 2 |
| 10       | 905-19235   | 3/8 HOSE, 6FJX x 6FJX            | 165" LENGTH 1 |
| 11       | 905-01321   | ADAPTER, STRAIGHT, 6MP x 6FJX    | 1             |
| 12       | 905-03112   | ADAPTER, TEE, 6MJ                | 2             |
| 13       | 905-03114   | ADAPTER, ELBOW 90°, 6MJ x 8MB    | 4             |
| 14       | 905-03127   | ADAPTER, TEE, 6MJ x 6MJ x 6FJX   | 2             |
| 15       | 905-03141   | ADAPTER, CROSS, 6MJ              | 2             |
| 16       | 905-03163   | ADAPTER, ELBOW 90°, 6FJX x 6MJ   | 3             |
| 17       | 905-03209   | NEEDLE VALVE, 6FP                | 1             |
| 18       | 905-03220   | RESTRICTOR, 6FJ x 6MJ, 1/16 HOLE | 4             |
| 19       | 905-03244   | CHECK VALVE, 6MJ X 6MJ           | 1             |
| 20       | 905-03257   | ADAPTER, ELBOW 90°, 6MJ X 10MB   | 4             |
| 21       | 905-03259   | ADAPTER, STRAIGHT, 6MP X 6MJ     | 1             |
| 22       | 905-19126   | QUICK COUPLER, MALE, 8FB         | 2             |

## CENTER WHEEL PLUMBING COMPONENTS



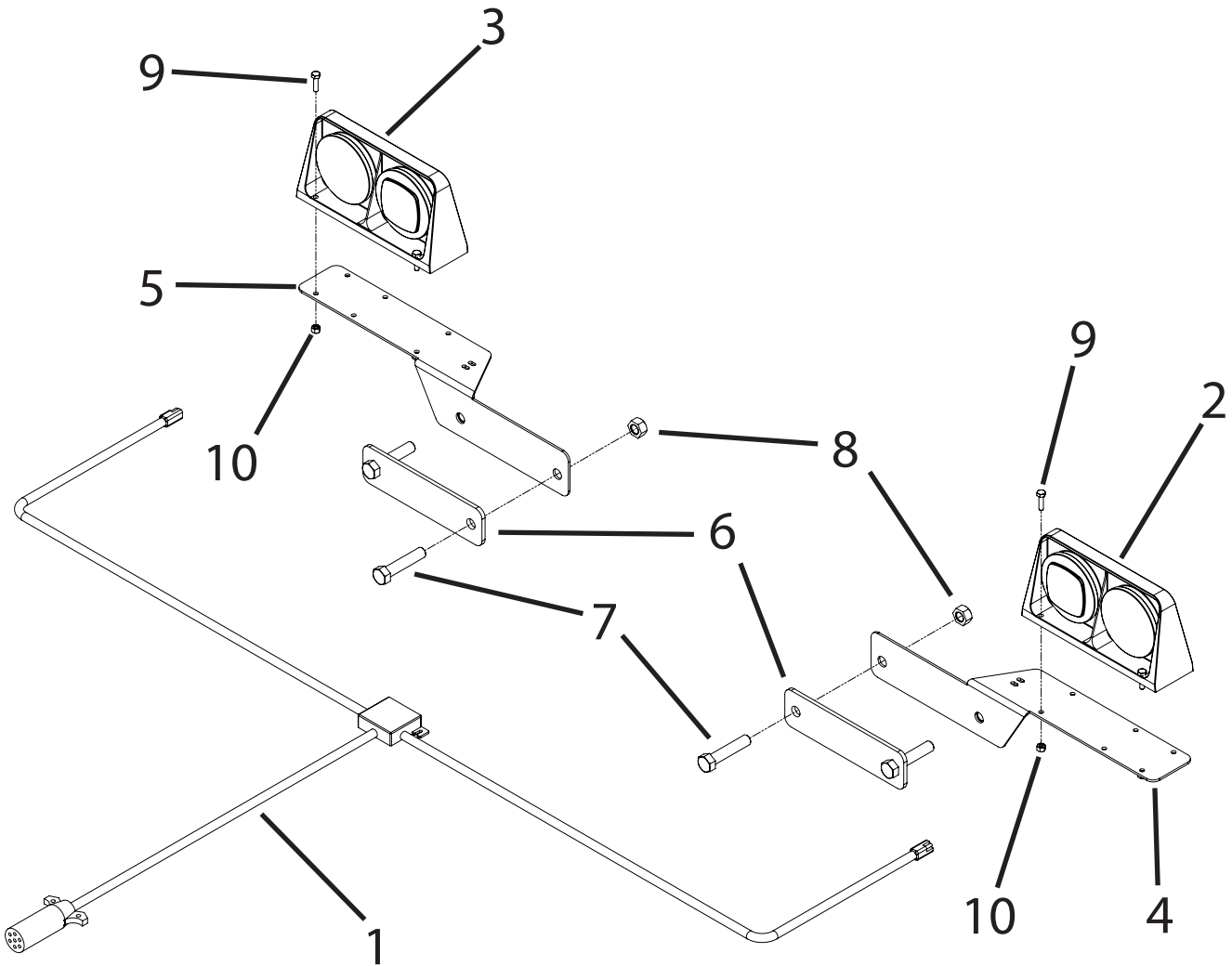
| ITEM NO. | PART NUMBER | DESCRIPTION                      | QTY.          |
|----------|-------------|----------------------------------|---------------|
| 1        | 905-19237   | 3/8 HOSE, 6FJX x 6FJX            | 90" LENGTH 1  |
| 2        | 905-19141   | 3/8 HOSE, 6FJX x 6FJX            | 50" LENGTH 1  |
| 3        | 905-19245   | 3/8 HOSE, 6FJX x 6FJX            | 90" LENGTH 1  |
| 4        | 905-19193   | 3/8 HOSE, 6FJX x 6FJX            | 106" LENGTH 1 |
| 5        | 905-19133   | 3/8 HOSE, 8MB x 6FJX             | 252" LENGTH 2 |
| 6        | 905-03112   | ADAPTER, TEE, 6MJ                | 2             |
| 7        | 905-03114   | ADAPTER, ELBOW 90°, 6MJ x 8MB    | 4             |
| 8        | 905-03220   | RESTRICTOR, 6FJ x 6MJ, 1/16 HOLE | 2             |
| 9        | 905-19126   | QUICK COUPLER, MALE, 8FB         | 2             |

## HUB & SPINDLE COMPONENTS



| ITEM NO. | PART NUMBER | DESCRIPTION           | QTY. |
|----------|-------------|-----------------------|------|
| 1        | 905-09004   | HUB W/ CUPS (6-BOLT)  | 1    |
| 2        | 905-09136   | HUB W/ CUPS (8-BOLT)  | 1    |
| 3        | 901-01016   | BEARING CUP           | 1    |
| 4        | 901-01324   | BEARING CUP           | 1    |
| 5        | 901-01015   | BEARING CONE          | 1    |
| 6        | 901-01326   | BEARING CONE          | 1    |
| 7        | 905-09068   | WASHER, SAE, 1        | 1    |
| 8        | 905-09067   | WASHER, SAE, 7/8      | 1    |
| 9        | 900-06062   | NUT, SLOTTED, 1 NF    | 1    |
| 10       | 900-06060   | NUT, SLOTTED, 7/8 NF  | 1    |
| 11       | 900-23045   | PIN, COTTER, 3/16 x 2 | 1    |
| 12       | 900-23064   | PIN, COTTER, 1/4 x 2  | 1    |
| 13       | 905-09009   | CAP, DUST             | 1    |
| 14       | 905-09135   | CAP, HUB              | 1    |
| 15       | 901-01024   | BEARING CUP           | 1    |
| 16       | 901-01152   | BEARING CUP           | 1    |
| 17       | 901-01025   | BEARING CONE          | 1    |
| 18       | 901-01325   | BEARING CONE          | 1    |
| 19       | 901-09002   | SEAL, OIL             | 1    |
| 20       | 901-09215   | SEAL, GREASE          | 1    |
| 21       | 200-3-4440  | SPINDLE (6-BOLT)      | 1    |
| 22       | 700-3-0143  | SPINDLE (8-BOLT)      | 1    |
| 23       | 905-09039   | BOLT, WHEEL, 1/2      | 8    |
| 24       | 905-09039   | BOLT, WHEEL, 9/16     | 8    |

## LIGHT KIT COMPONENTS



| ITEM NO. | PART NUMBER | DESCRIPTION                        | QTY. |
|----------|-------------|------------------------------------|------|
| 1        | 200-3-4429  | WIRE HARNESS                       | 1    |
| 2        | 904-01149   | DUAL LAMP, LH                      | 1    |
| 3        | 904-01150   | DUAL LAMP, RH                      | 1    |
| 4        | 200-3-3870  | BRACKET, LIGHT, RH                 | 1    |
| 5        | 200-3-3869  | BRACKET, LIGHT, LH                 | 1    |
| 6        | 200-3-4439  | BRACKET, LIGHT, BACK PLATE         | 2    |
| 7        | 900-01353   | BOLT, HEX HEAD, 5/8 NC x 3, GR5 ZP | 4    |
| 8        | 900-06508   | NUT, TOP LOCK, 5/8 NC              | 4    |
| 9        | 900-01009   | BOLT, HEX HEAD, 1/4 NC x 1, GR5 ZP | 8    |
| 10       | 900-06496   | NUT, TOP LOCK, 1/4 NC              | 8    |

# 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.

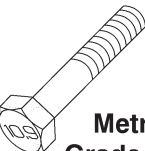
Make sure fastener threads are clean and you properly start thread engagement.

| 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) |                                                                                                                      |        |

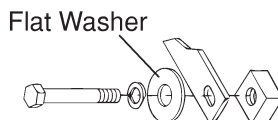
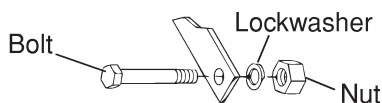
## Metric Series Torque Chart

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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# 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.

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

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

## WARRANTY

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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.

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

Alloway  
5650 13th Ave N, Ste A Fargo,  
North Dakota 58102 Phone  
Number: 701-356-4983



**PART NUMBER**

**205-5-0016**

**ALLOWAY** 

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