

O P E R A T O R ' S M A N U A L

# TANDEM AGRICULTURAL DISKS

**TM5129-TM5132**



## Introduction

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage. This manual and safety signs on your machine may be ordered from your John Deere dealer.

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

MEASUREMENTS in this manual are given in customary U.S. units. Only use the correct replacement parts and fasteners.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction the implement will travel when going forward.

WRITE DOWN PRODUCT IDENTIFICATION NUMBERS. Accurately record all the numbers to help in tracing the machine should it be stolen. Your John Deere dealer also needs these numbers when you order parts. File the identification numbers in a secure place away from the machine.

WARRANTY coverage is provided by John Deere according to the terms of the Construction, Utility, and Forestry Products Standard Warranty Statement. Carefully read the warranty statement on the back of your original purchase order for details on coverage and limitations of this warranty.

This warranty provides you the assurance that Frontier will back its products where defects appear within the warranty period. In some circumstances, Frontier also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused or modified to change its performance beyond the original factory specifications, or if the equipment is used for a purpose other than that which it was designed for, the warranty will become void and field improvements may be denied.

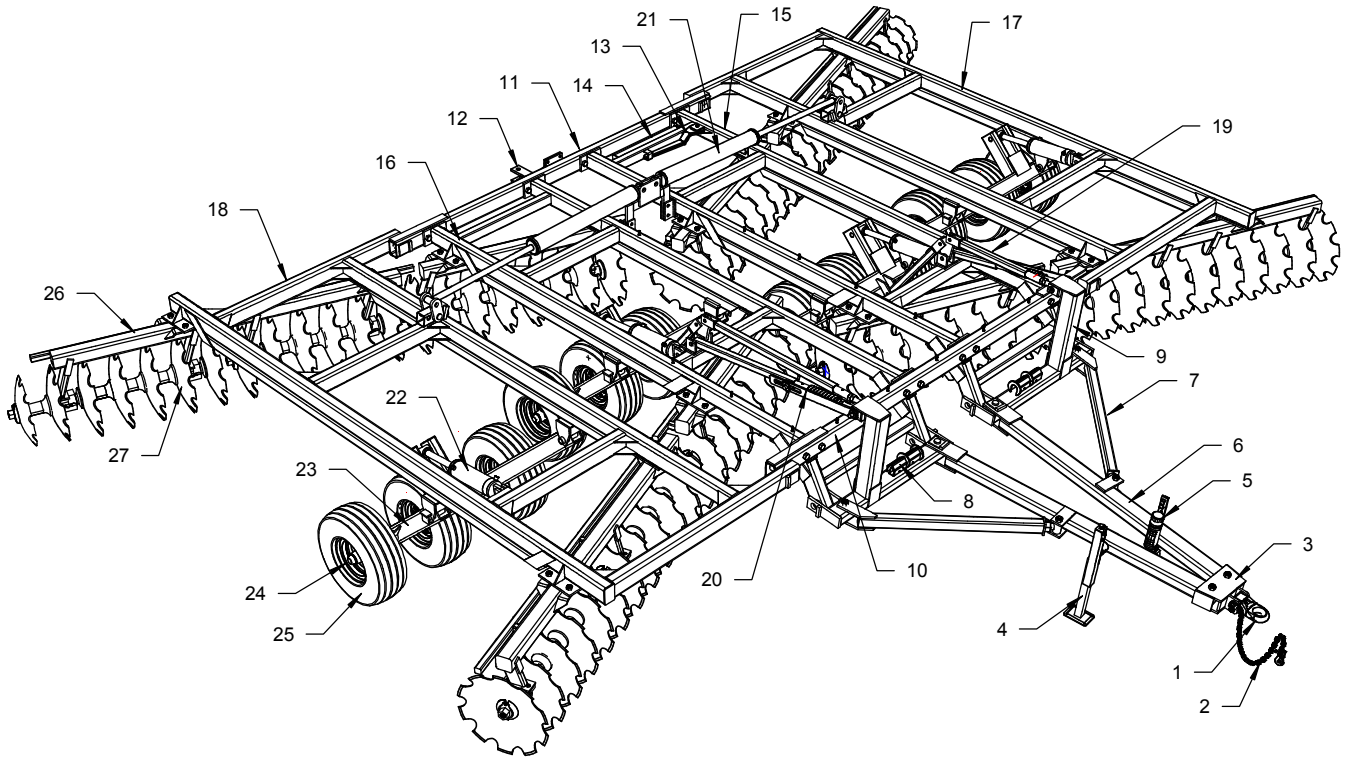
THE TIRE MANUFACTURERS warranty is separate and apart from the equipment warranty and may not apply outside the U.S.

# Contents

Introduction	1
General Arrangement	4
General Information	5
Pre-Delivery Checklist	6
Delivery Checklist	6
After Sale Checklist	7
Daily Checklist	7
Seasonal Checklist	7
Decal Identification and Placement	8
Safety First	9
Attaching the Disc to the Tractor	10
Transporting the Disc	10
Adjusting the Transport Leveling Control Arm	11
Transport and Operating Safety	12
Operating the Disk	
General Operating Guidelines	13
Adjust the Leveling Control Arm	13
Service and Maintenance Safety	14
Lubricate the Disk	15
Check the Oil-Bath Bearings	16
Adjusting the Scrapers	16
Repack and Pre-Load Wheel Hub Bearings	17
Fluid and Fastener Specifications	
Disc Gang Assembly Axles	18
Fastener Torque Values	18
Oil-Bath Bearing Oil	18
Tire and Wheel Service	18
Keep Gang Assemblies Tight	19
Assembly Safety	20
Assemble the Disk	21
Hydraulic Lift Cylinder Schematic	27
Hydraulic Fold Cylinder Schematic	28
Hydraulic Fold Cylinder Schematic c/w Wing Control	29
Mount Wing Control and Shut-Off Valves	30
Using Disc with Optional Wing Control	31
Light Kit Component Installation	32
Light Kit Schematic	33
Detailed Parts Diagrams	34
Hitch Bridle Assembly	35
Center Frame and Transport Assembly	36
Right Hand Wing Frame and Transport Assembly	37
Left Hand Wing Frame and Transport Assembly	38

Control Arm Assemblies	39
Gang Bars and Scrapers	40
Gang Assembly (1-5/8" Axle)	41
Gang Assembly (2-1/8" Axle)	42
Oil-Bath Bearing Assembly (1-5/8" Axle)	43
Oil-Bath Bearing Assembly (2-1/8" Axle)	44
12" Hydraulic Cylinder	45
42" Hydraulic Cylinder	46
8-Bolt Hub	47
Tire and Wheel Assembly	48
Hydraulic Lift Cylinders and Hose Assembly	49
Hydraulic Fold Cylinders and Hose Assembly	50
Hydraulic Fold Cylinders and Hose Assembly c/w Wing Control	51
Light Kit Components	52
Light Kit Cables	53
Decals, Reflectors and Logos	54
Specifications	55
Storage	56

# Product General Arrangement and Identification Models TM5129 / TM5132



- |                                  |                                 |
|----------------------------------|---------------------------------|
| 1 Hitch Tongue                   | 14 Depth Control Segments       |
| 2 Safety Chain                   | 15 RH Center Frame              |
| 3 Hitch Tie                      | 16 LH Center Frame              |
| 4 Hitch Jack                     | 17 RH Wing Frame                |
| 5 Hose Holder / Manual Cannister | 18 LH Wing Frame                |
| 6 Hitch Pole (2)                 | 19 Transport Control Arm (2)    |
| 7 Side Arm and Eyebolt (2)       | 20 Leveling Control Arm (2)     |
| 8 Transport Stay Storage (2)     | 21 Wing Fold Cylinders (2)      |
| 9 Bridle Assembly (2)            | 22 Transport Lift Cylinders (4) |
| 10 Front Crossmember             | 23 Transport Assembly (4)       |
| 11 Rear Crossmember              | 24 Hub Assembly (12)            |
| 12 Rear Hitch (Optional)         | 25 Tire and Wheel Assembly (12) |
| 13 Gang Wrenches                 | 26 Gang Bar c/w Scraper Bar (8) |
|                                  | 27 Disc Gang Assembly (12)      |

# General Information

## TO THE DEALER

Assembly and delivery of this product is the responsibility of the John Deere dealer. Read manual instructions and safety rules. Make sure all items on the Dealers Pre-Delivery and Delivery Checklists in the Operators Manual are completed before releasing the equipment to the owner.

## TO THE OWNER

Read this manual before operating your Frontier equipment. The information presented will prepare you to do a better job. Keep this manual handy for ready reference. Require all operators read this manual carefully and become acquainted with all the adjustment and operating procedures before using the equipment. Replacement manuals can be obtained from your selling dealer.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it requires cleaning and upkeep. Lubricate the unit as specified. Many of the features of this equipment necessary for it to perform its intended task are inherently dangerous, so please observe all safety information in this manual and safety decals on the equipment.

For service, your authorized John Deere dealer has trained mechanics, genuine original manufacturer service parts and the necessary tools and equipment to handle your needs.

Use only genuine original manufacturer 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.

**Date of Purchase** \_\_\_\_\_

**Model** \_\_\_\_\_

**Serial Number (13 or 17 Characters)** \_\_\_\_\_

Provide this information to your dealer to make a warranty claim or obtain correct repair parts.

## Checklists

**PREDELIVERY CHECKLIST:** After the disk has been completely assembled and lubricated, inspect it before delivery to the customer to ensure proper operation. Check off each item of inspection in the list as it is found satisfactory.

- The disk has been assembled according to instructions and all nuts and bolts are present and tight.
- All grease fittings are installed and the disk has been lubricated.
- Tires are properly inflated and wheel lug nuts are present and properly torqued.
- Disk gangs rotate freely without dragging on scrapers.
- Check all pins to make sure retaining hardware is in place.
- Touch-up paint damage due to shipping and assembly.
- Connect disk to tractor drawbar, connect hydraulic hoses and check the hydraulic system for leaks and proper operation of the hydraulic cylinder.
- Safety chain is attached. SMV sign is installed and visible from the rear of disk.
- Light Kit is installed and operating correctly. All safety decals are present and legible.
- This disk has been checked and to the best of my knowledge, is ready for delivery to the customer.

**Set-Up Date** \_\_\_\_\_ **Signature of Assembly Person** \_\_\_\_\_

**DELIVERY CHECKLIST:** The following list is a reminder of important information that should be conveyed directly to the customer upon delivery of the disk. Check off each item as it is fully explained.

- Advise customer the life expectancy and performance of this, like any other machine, is dependent on regular lubrication and maintenance as described in this manual.
- Explain the importance of safe and proper operation of the machine. Point out decals warning the operator of the dangers of unsafe operation procedures and conditions.
- The customer has been told to keep all bolts tight.
- When the disk is transported on road or highway at night or during the day, accessory lights and devices should be used for adequate warning to operators of other vehicles. Replacement safety lights and safety devices are available from your John Deere dealer. In this regard, suggest customers check their local governmental regulations.
- Insure completion of the Delivery and Warranty Registration forms, listing the Serial Number of the machine.
- Explain the Warranty
- Show the customer how to hitch the machine and operate the controls relating to the machine.
- Explain the adjustments for proper operation of the disk.
- Advise use of the safety chain.
- Give the Operators Manual to the customer and explain all operating adjustments and lubrication fully.
- To the best of my knowledge, this machine has been delivered ready for use and the customer has been fully informed as to its proper care and operation.

**Set-Up Date** \_\_\_\_\_ **Signature of Delivery Person** \_\_\_\_\_

## Checklists

**AFTER-SALE CHECKLIST:** It is suggested the following items be checked sometime during the first six months operation of the disk.

- Check the entire disk for loose or missing hardware.
- Check for broken or damaged parts. Make necessary repairs.
- Re-torque the hardware with special attention to the gang axle nuts and locks.
- Safety chain is properly installed and undamaged.
- If possible, run the disk to insure it is functioning properly.
- Check the bearing wear plates are present and not excessively worn.
- Visually check the oil-bath bearing for leaks. If parked unused for a long period in extreme weather conditions, there may be seepage due to expansion and contraction of the metal duo-cone seals. This condition will correct itself when the disk is operated. Lost oil should be replaced before operation.
- Review the entire Operators Manual with the customer and stress the importance of proper and regular lubrication and safety precautions.
- Advise the customer of optional attachments that are available.

**Date Checked** \_\_\_\_\_ **Signature** \_\_\_\_\_

### EACH DAY OF OPERATION CHECKLIST

- Lubricate items required daily and those whose lubrication time is due.
- Look for loose or missing bolts and parts.
- Check hydraulic system for leaks and abraded hoses.
- Check tire pressures and wheel lug nuts.
- Check all pins have retaining hardware in place.
- Check all oil-bath bearing assemblies for leaks. Check bearing wear plates are present.
- Be sure all gang components are tight on the axles and axle nuts are tight and axle locks are present.

### BEFORE EACH SEASON CHECKLIST

- Be sure recommended lubrication is performed.
- Inspect all oil-bath bearing assemblies are tight and dry and if wear plates need replacement.
- Check hydraulic system for proper operation and leakage.
- Check tire pressures and wheel lug nuts. Check for end play in wheel bearings and repack if necessary.
- Be sure proper operating adjustments have been made for your conditions.

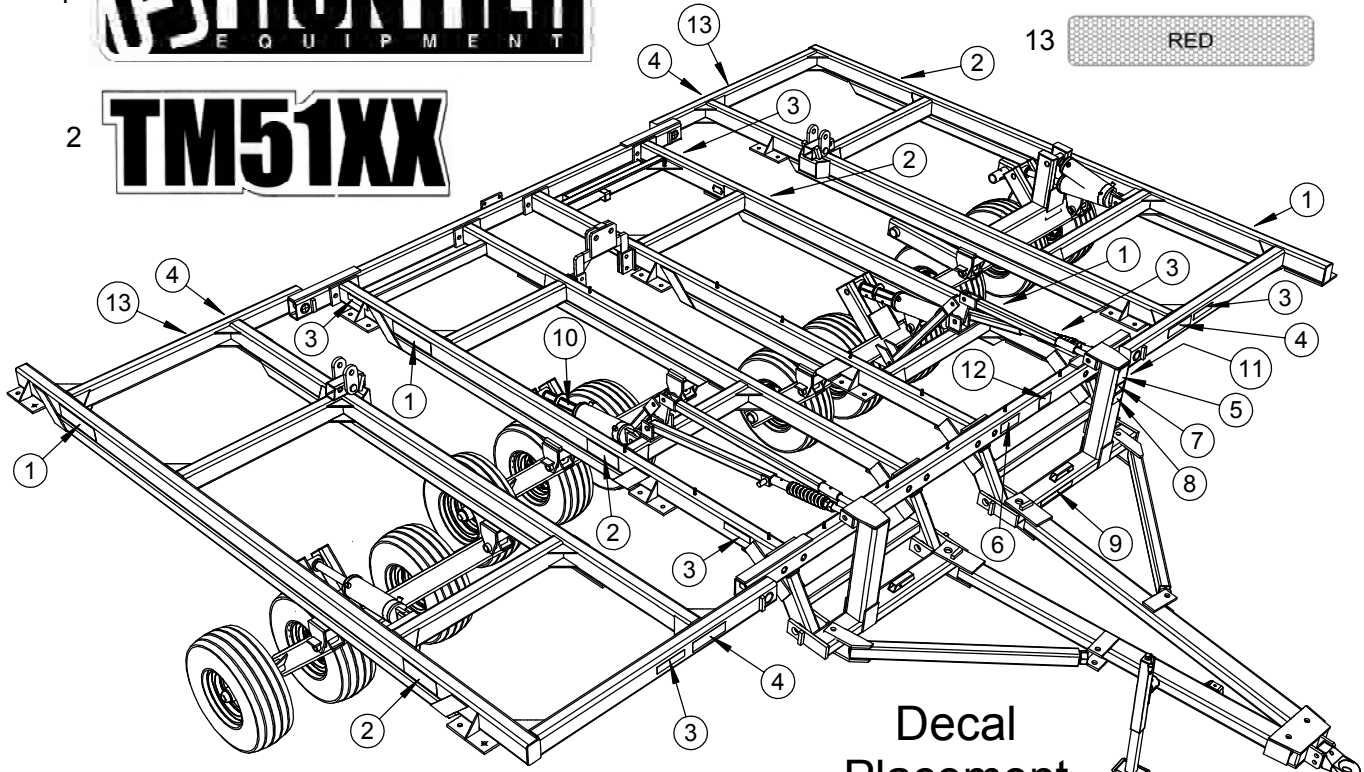




2 **TM51XX**

3 YELLOW

13 RED



**Decal Placement**

8 **WARNING**  
 Be sure cylinder and attaching hoses are fully charged with oil before operating system. Failure to do so will allow wings to fall rapidly when attempting to lower from transport position.

4 **DANGER**  
 To avoid injury or death stand clear of machine when wings are being folded or unfolded. Mechanical or hydraulic failure can allow wings to fall rapidly.

5 **CAUTION**  
**To Avoid Serious Injury!**  
 ■ Read Operator Manual before operating, assembling or repairing equipment. Follow all safety rules and instructions. Warnings are available from your local dealer.  
 ■ Never allow riders.  
 ■ Keep bystanders away from implement during operation.  
 ■ Operate from tractor seat only.  
 ■ Keep all shields in place and in good condition.  
 ■ Lock equipment to ground, stop engine, remove key and set on brake before dismounting tractor.  
 ■ Never allow children or untrained persons to operate equipment.

7 **DANGER**  
**TO AVOID INJURY OR DEATH, DO NOT ADJUST WHILE MACHINE IS IN MOTION**

6 **WARNING**  
 Avoid serious injury from exposure to pressurized hydraulic fluid.  
 Always release pressure before performing maintenance on hydraulic system and components. Wipe (in tractor and implement) hydraulic reservoirs.  
 Do not use hand to search for leaks. Use cardboard or similar material.

12 **IMPORTANT**  
 Wings may unfold due to thermal expansion of hydraulic oil causing machine damage. PLACE SCV IN FLOAT and CLOSE LOCKUP VALVE before unhitching from tractor or when parking with tractor. ROTATE FULLY TO LOCK.

10 **WARNING**  
 Avoid serious injury from crushing or pinning. Install cylinder lockups before transporting, servicing, or storing machine.

**HYDRAULIC WING CONTROL**

**IMPORTANT**  
 Misuse will result in machine damage:  
 - Do not use to level machines.  
 - Do not use in rolling terrain.  
 - Do not use with tractor lever in neutral during field operation.

**IMPORTANT**  
 1) Use with closed center hydraulic system only.  
 2) Perform all field operations with tractor lever in forward detent or float position.  
 3) Secure wings in folded position by placing tractor lever in neutral and closing lockup valve.  
 4) Relieve hydraulic pressure before unhitching or parking tractor.

**OPERATING INSTRUCTIONS**  
 1) To ENGAGE hydraulic wing control, tractor lever must be locked in FORWARD DETENT position.  
 2) To DISENGAGE hydraulic wing control, tractor lever must be locked in FLOAT position.

INCREASE WING PENETRATION (→)

DECREASE WING PENETRATION (←)

9 **WARNING**  
 Do not exceed this implement's maximum transport speed of 32km/h (20mph). Exceeding this speed may result in loss of control during transport or braking and serious injury or death.  
 Transport only with a properly ballasted tractor and a properly attached safety tow chain. Do not transport with a motor vehicle. Reduce speed and use additional caution when on inclines, towing under adverse surface conditions, and turning.

## Safety First Guidelines

When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.



Indicates death or serious injury will result if proper precautions are not taken.



Indicates death, serious injury or property damage can result if proper precautions are not taken.



Indicates some injury or property damage may result if proper precautions are not taken.



Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

Learn how to operate the machine and how to use the controls properly. Do not let anyone operate the machine without instruction. Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your John Deere dealer.

**Prepare for Emergencies:** Keep a first aid kit and a fire extinguisher handy. Keep emergency numbers for doctors, ambulance service, hospital and fire department nearby.

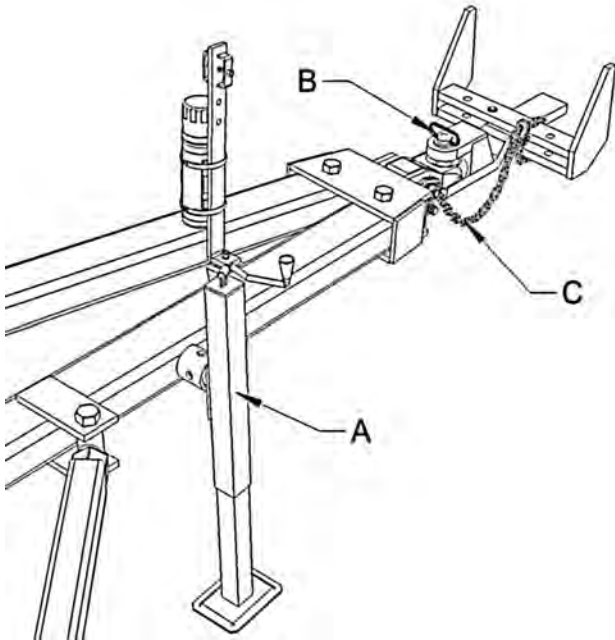
**Wear Protective Clothing:** Wear close fitting clothing and safety equipment appropriate to the job. Operating equipment safely requires the full attention of the operator. Do not wear headphones or use a cell phone while operating the machine.

**Protect Against Noise:** Prolonged exposure to loud noise can cause hearing impairment or loss. Wear suitable hearing protection to prevent damage to your hearing.

**Store Equipment Safely:** Securely store equipment by either lowering to ground or chocking wheels to prevent movement. Do not allow children or others to play on or around equipment.

**Dispose of Waste Properly:** Improperly disposing of waste can threaten the environment and the ecology. Potentially harmful waste used in this equipment includes gear oil in the oil-bath bearings and fluid in the hydraulic system. Use leak proof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them. Do not pour waste onto the ground, down a drain or into any water source. Obtain information about the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.

## Attaching the Disk to the Tractor



The disk is equipped with a fixed tongue attached to the disk hitch with two 1" grade 8 bolts. The tongue is designed to be attached to a clevis type tractor drawbar.

Though not essential, for best results, the tractor used to pull this unit should be equipped with a swinging drawbar.

The following procedure is recommended to attach the tractor to the disk. This procedure is best carried out with the disk in the raised position and the transport lock installed over the hydraulic cylinder. Use the hitch jack (A) to raise or lower the tongue to the level where it will fit into the tractor drawbar clevis. Back the tractor to the drawbar tongue and install the drawbar pin (B) and its retaining hardware. This procedure may take more than one attempt – *safety takes time*.

Install the safety chain (C).



**CAUTION:**  
Do not allow others to stand between the tractor and disk when moving the tractor.  
Do not allow others to position themselves to install the drawbar pin while operating the tractor.

Prevent serious injury or death to you or others caused by unexpected movement of the machine. Engage the parking brake and/or place transmission in PARK, shut off engine and remove key before working around hitch.

## Transporting the Disk

Clean the quick disconnects and tractor couplers before connecting. Shut off the tractor and move the hydraulic levers back and forth to relieve pressure in open-center hydraulic systems. Connect the hydraulic hoses to the tractor couplers. For ease of use, attach hoses in the corresponding couplers which lower the disk when the hydraulic lever is moved forward and raises it when the lever is moved backwards.



**CAUTION:**  
Escaping fluid under pressure can penetrate skin causing serious injury. Avoid this hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect your hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

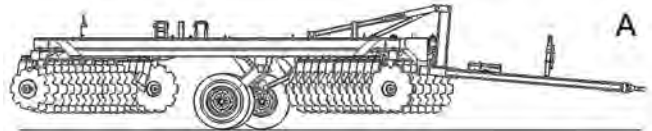
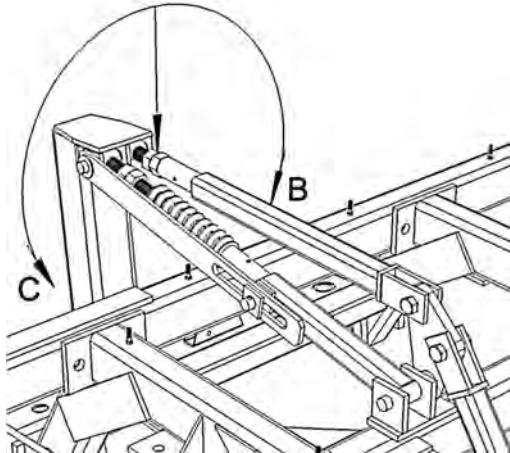
Turn the jack handle to take weight off hitch jack. Unpin jack, remove pin, swing jack up into transport (horizontal) position and re-pin.

If the tractor is equipped with a swinging drawbar, make sure the drawbar is locked in the center position.

Connect warning lights to the tractor outlet and test they are operating properly. Make sure the SMV sign is installed and visible from the rear of the disk.

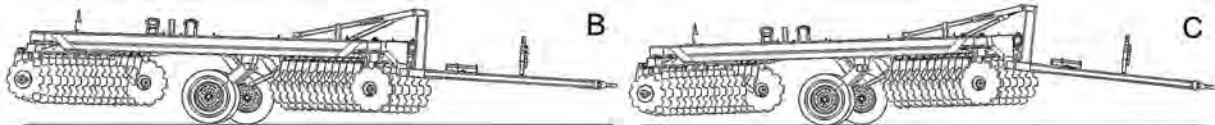
Check tire pressure and wheel bolts – adjust and tighten if necessary.

## Adjusting the Transport Levelling Control Arm



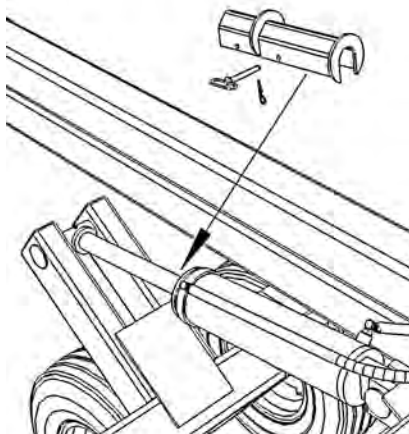
With the disk attached to the tractor, the hydraulics connected and with the transport stay removed from the hydraulic cylinder; the disk can be adjusted to transport level as in illustration A. The adjustment is carried out by turning the nuts indicated in the illustration. When the disk is raised out of the ground in the transport position, there is pressure against these nuts. Therefore, to make adjustment easier, lower the disk to the ground to take pressure off the nut. The nut can then be turned easily by hand or wrench. To lower the front of the disk as in illustration B, turn the nuts in the direction indicated as B.

To raise the front of the disk as in illustration C, turn the nuts in the direction indicated as C. It may be necessary to raise and lower the disk a number of times to attain the desired result. Once the disk is level, lock the nuts together on the eyebolt shaft. This adjustment remains unchanged as long as there is no change in the tractor hitch height.



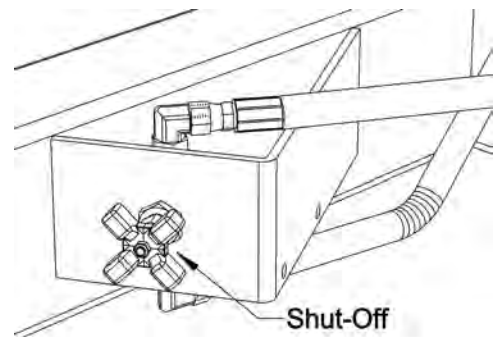
**WARNING:** To avoid serious injury to self or others, do not allow anybody on or near the disk when it is being raised or lowered. In particular, if someone other than the tractor operator is making adjustments to the disk, the tractor should be switched off while adjustments are being made and only restarted when that person is well clear of the disk.

## Transporting the Disk



Raise the disk to its maximum height by completely extending the hydraulic cylinder. Install the transport stay over the hydraulic cylinder rod with the plated end against the head gland of the cylinder. Install the retaining pin. On tractors with open centered hydraulics, switch the tractor off and relieve the hydraulic pressure by moving the hydraulic spool lever back and forth. With closed center systems, carefully use the hydraulics to take the pressure off the hydraulics and allow the weight of the disk to be taken up by the transport stay.

To prevent the wing sections from accidentally unfolding during transport, turn the shut-off handle fully clockwise after folding the wings.



## **Transport Safety**

- Never allow riders on the tractor or disk. Serious injury or death can result from falling in the path of the disk while in operation or transport.
- Observe laws and regulations while transporting disk. Never transport disk at speeds greater than 20 mph (32 km/h). Reduce speed and exercise caution on turns, bridges, rough roads, steep grades and other adverse conditions.
- Install all locking devices before transporting disk. Without these devices installed, the disk could fall during transport and cause injury or death to the operator or bystanders and/or damage to the disk, tractor and property.
- Always used safety chains to secure the disk to the tractor during transport. Provide only enough slack in chain to permit turning. A safety chain will help control drawn equipment should it accidentally separate from the drawbar.
- Ensure the load does not exceed the recommended specifications of the tractor. The tractor must be heavy and powerful enough with adequate braking power for the towed load.
- Keep the SMV emblem and side and rear reflectors clean and visible.
- Use headlights, flashing warning lights and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible and in good working order. Replace or repair lighting or marking that has been damaged or lost.
- Use the proper size and grade of pin to attach the disk to the tractor.
- If the tractor is equipped with a swinging drawbar, be sure to pin it in the center position before transporting the disk.
- Check wheel lug nuts for tightness and ensure tires are properly inflated and free of damaging cuts and abrasions. The failure of either of these components can cause the disk to swing uncontrollably and make it difficult to control the tractor.
- Remove debris and loose soil from the disk before traveling on public roads. Falling debris and soil can be a hazard to following and approaching traffic.
- Do not tow another implement behind the disk unless proper modifications have been made and it is permitted by local ordinances.

## **Operating Safety**

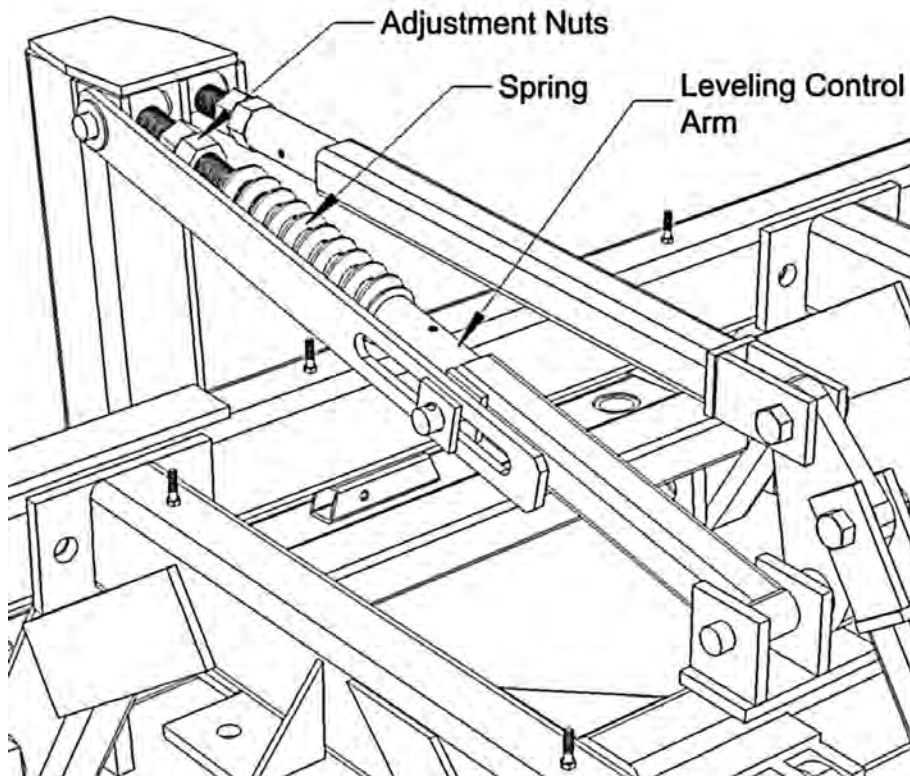
- Become familiar with the disk and its operation before using the unit. Read this manual carefully and contact your dealer if you have any questions.
- Never allow riders on the tractor or disk. Serious injury or death could result from falling in the path of the disk while in operation or transport.
- Be sure bystanders are clear of the disk before raising or lowering the disk. Accidental movement of the controls or hydraulic failure could cause the disk to suddenly fall.
- Be sure bystanders are clear of the disk before operating the disk. Before entering the tractor, walk around the disk making sure no one is on, under or in front of the disk. Moving the disk while someone is between or in front of the gang assemblies could result in serious injuries or death.
- Never work under a raised disk. Always lower the disk to the ground before inspecting or servicing. Never rely on the hydraulic system to hold up the disk.
- Use extreme caution when working around disk blades. The blades are sharp and could cut hands, legs, etc. Wear gloves to handle disk blades or gang assemblies.
- Do not operate close to ditches, deep bodies of water or on excessively steep slopes.
- Before dismounting from the tractor to service or make adjustments, always
  1. Lower the disk to the ground.
  2. Shut the tractor off.
  3. Engage the tractor's parking brake or place transmission in park.
  4. Relieve the hydraulics by moving the control back and forth.
  5. Remove the key.
- Unanticipated movement of the disk while working around the disk gangs could result in serious personal injury or death.

# Operating the Disk

## GENERAL OPERATING GUIDELINES

- Use the recommended size tractor.
- Always raise the disk out of the ground before turning. If pulling a harrow, roller or other toolbar behind the disk, raise the disk just clear of the ground before turning.
- In the field do not back-up with the disk in the fully raised position. Raise the disk just clear of the ground to prevent the disk from overbalancing to the rear which may damage the control arms.
- Speed, depth and soil type and condition all determine how level the ground left behind the disk. To minimize ridging or gouging, limit the disking speed to 4-6 mph.
- On tractors equipped with a swinging drawbar, allow the drawbar some movement when working in level or gently rolling fields. In severely rocky conditions, heavy clay or tree stumps allow more swing in the drawbar. In all other conditions, lock the drawbar in the center position.
- Pulling a drag or heavy harrow behind the disk can reduce side draft and aid in levelling the soil.

## ADJUST THE LEVELING CONTROL ARM



The leveling control arm is used to transfer pressure to the rear of the disk in order to increase penetration of the rear disk blades. Pressure is increased by tightening the adjustment nut against the spring. This adjustment is easiest to make when the disk is in the raised transport position and there is no pressure on the nut. Once the desired setting is made, lock the first nut with the second nut on the eyebolt. When the disk is lowered to the operating position, take care the spring is never fully compressed. Increasing pressure against the spring will put more down pressure on the rear blades. Carrying the disk slightly with the wheels while operating will allow the disk to pivot on the wheels and result in more even blade penetration front to rear. If the disk is operated with the wheels fully raised, little or no pressure should be placed on the spring. If disking through a sharp depression or ditch, raise the disk slightly to prevent excessive pressure on the spring and levelling arm.



## Service and Maintenance Safety

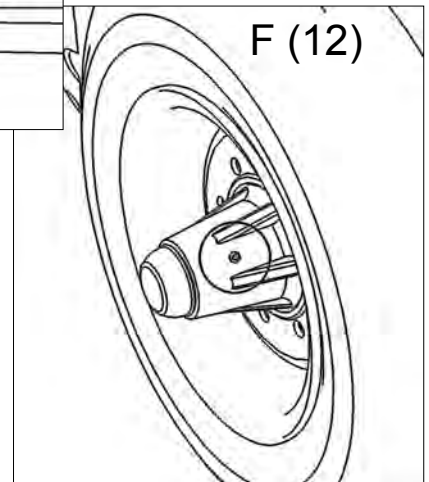
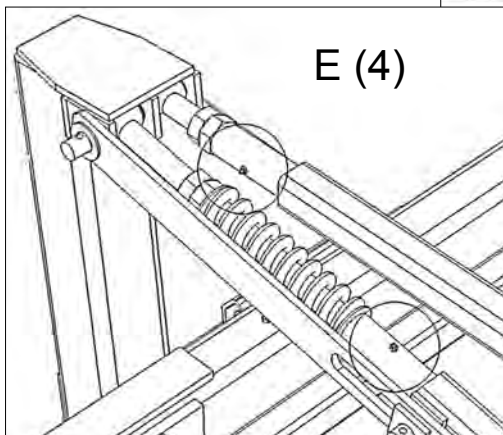
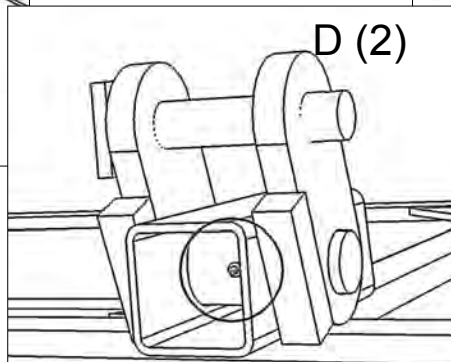
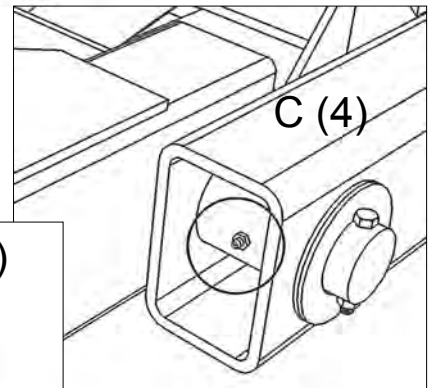
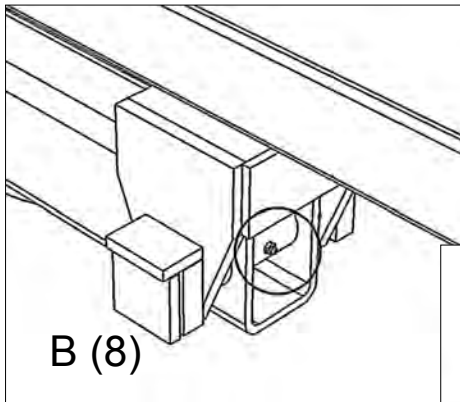
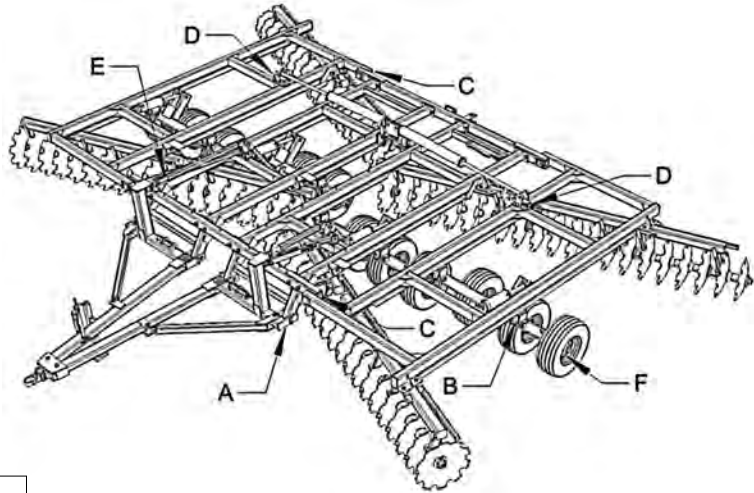
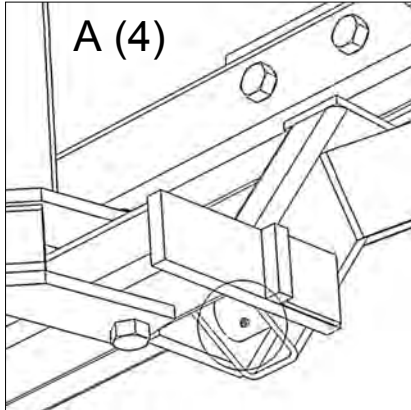


- Before servicing the disk, always:
  1. Lower the disk to the ground.
  2. Shut the tractor engine off.
  3. Engage the tractors parking brake and/or place transmission in park.
  4. Relieve the hydraulics by moving the control lever back and forth.
  5. Remove the ignition key.
- Never work under a raised disk. The disk could fall suddenly causing serious personal injury. Never rely on the hydraulic system to hold the disk up.
- Periodically visually inspect the entire disk. Hydraulic fluid leaks and broken, missing or faulty parts can create a hazard. Make necessary repairs.
- Use caution when inflating tires. Use a clip-on air chuck, extension hose with gauge, and stand to one side away from the tire when inflating to avoid the possibility of personal injury due to blow-offs, etc. Maintain proper air pressure in the tires. Never exceed the manufacturer's maximum pressure displayed on the sidewall of the tire.
- Before disconnecting any hydraulic line relieve the pressure. Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin causing serious personal injury. If injured by escaping hydraulic fluid, obtain medical treatment immediately.
- Handle the gang assemblies with care. The disk blades are sharp and can cut or slice skin. Use chock blocks to prevent the gang assemblies from rolling during servicing. Wear gloves when handling the disk blades or gang assemblies.
- After working on the hydraulic cylinder or any other components of the hydraulic system, carefully cycle the hydraulic cylinder several times to purge air from the system and check all components for leaks. Always be sure the hydraulic lines are free of air and do not leak. ORB fittings may not leak even though they are only finger tight – tighten with a wrench. Check hydraulic hoses for cuts or abrasions and replace if necessary.
- Securely support any machine elements that must be raised for service work. Use suitable lifting devices and support stands where required. If using chains or straps make sure they are of sufficient strength for the load and are in good repair.
- To avoid injury wear gloves, steel-toe boots, safety glasses, hearing protection, safety helmet and other safety equipment where warranted.
- Understand the service procedure before doing the required work. Keep the work area clean and dry.



## Lubricate the Disk

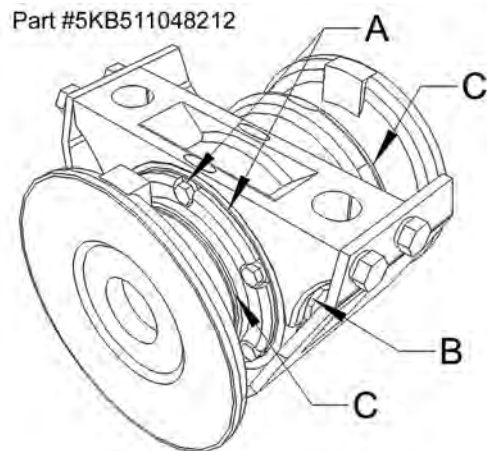
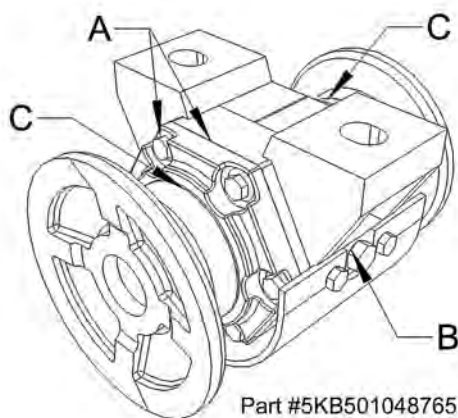
- The following illustrations highlight those areas of the disk subject to stress and wear. Unless indicated otherwise, these fittings should be greased daily or after every 10 hours of operation.
- Use a pressure lubrication gun and apply a sufficient amount of No. 2 multi-purpose lithium grease or equivalent to flush out the old grease. Wipe the grease fitting clean before greasing.
- Grease all fittings before first use of the season and before storage at the end of the season.
- Grease wheel bearings (F) sparingly – 6 'shots' every 100 hrs.



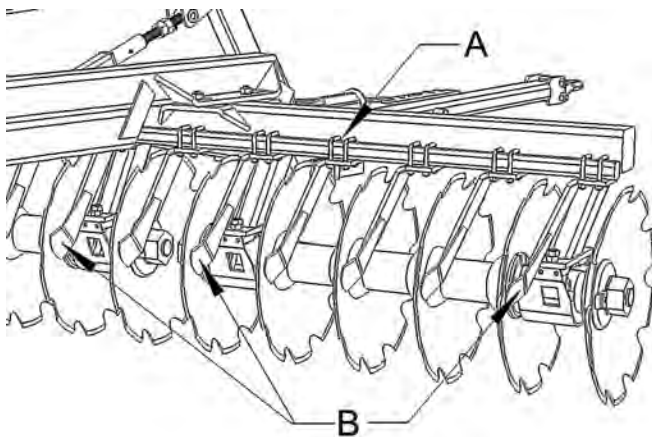


## Check the Oil-Bath Bearings

Visually check the oil-bath bearings daily. Oil-bath bearing assemblies can leak oil from three locations and attention should be paid to these areas. **A** - Oil can seep from between the bearing housing and the end cap or from around the bolts that hold the end cap to the housing. This condition is caused by loose bolts or damaged gaskets. Gaskets are placed between the end cap and the housing to preload the taper bearings in the housing. The solution is to tighten the bolts (30 ft/lbs) or replace the gaskets. **B** - Oil can seep past the check plugs. Plugs may use a pipe thread. Remove, clean the threads, apply "pipe dope" or Teflon tape and reinstall. **C** - Oil may seep by the metallic duo-cone seals. This may be caused by worn seals, loose gang axles or extreme temperature fluctuations. Worn seals should be replaced immediately to prevent catastrophic bearing failure. Such a failure will ruin all the other components of the bearing. Loose gang axles can allow the bearing flanges to move outwards and thereby allow the seals to separate. Be sure to keep gang axles tight. Because the seals are made of metal, they can expand and contract with extreme temperature fluctuations. When they contract the sealing surfaces separate and small amounts of oil can escape. This will normally occur when the disk is in storage. Putting the disk to use will normally allow the seals to re-seat themselves. Check the oil and add 90W gear oil if necessary.



## Adjusting the Scrapers



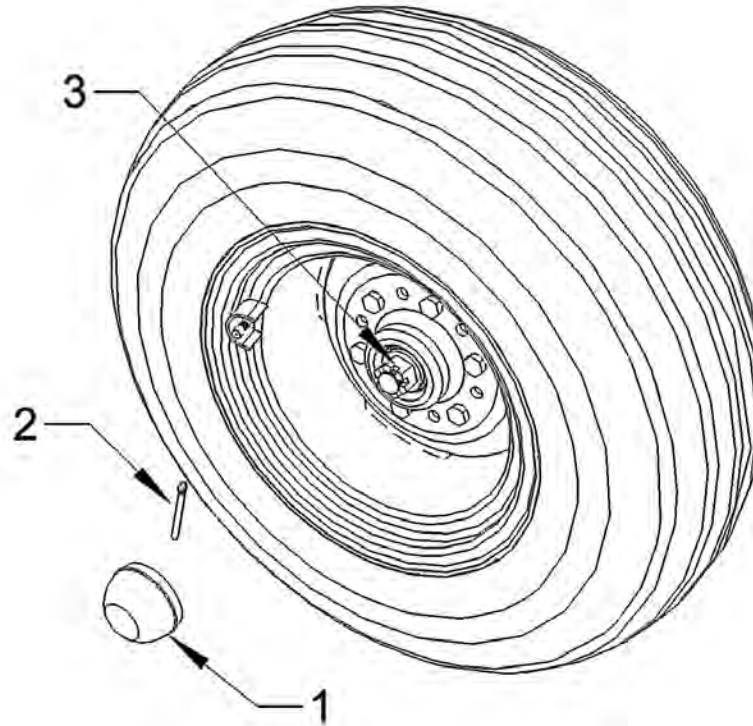
Adjust the scrapers as close to the disk blades as possible without touching the blades. To move a scraper, first loosen the u-bolts (A) holding it to the scraper bar. Use a hammer to alternatively tap the top side of the u-bolts and the scraper itself in the required direction. Once in position tighten the u-bolts equally. Turn the blades occasionally while tightening the u-bolts to ensure the scraper is not contacting the disk blade.

In some conditions (e.g. heavy trash or virgin ground) plugging can occur at the bearings. Removing the scrapers (B) at these locations can alleviate the problem.

## Repack and Pre-Load Wheel Hub Bearings

The wheel bearing pre-load should be set periodically or more often if transported frequently. Raise the tire so it can rotate and:

1. Remove the dust cap from hub.
2. Remove cotter pin from nut and spindle.
3. While turning the tire, tighten the castellated nut until there is a slight but noticeable drag on the bearing. Do not back the nut off. Place the cotter pin in the nearest hole to secure the nut. Replace the dust cap and gasket.



Repack the wheel hub bearings yearly by:

1. Remove the tire from the hub.
2. Remove the dust cap and gasket.
3. Remove the cotter pin and remove the castellated nut from the end of the spindle.
4. Slide the hub off the spindle taking care not to damage the seal..
5. Clean bearing cones, dust cap and nut with kerosene or other appropriate solvent.
6. Clean the inside of the hub and inspect the bearing cups and the seal. If they show excessive wear or are damaged, replace both the cups and cones and seal. Though it is not always necessary, it is advisable to replace the seal whenever repacking the hubs.
7. Pack the bearing cones and inside cavity of the hub with No. 2 multi-purpose lithium grease or equivalent. Make sure no foreign material contaminates the lubricant.
8. Place the rear bearing cone into the back of the hub and press the seal into the hub. Place a light film of grease on the seal surface and carefully slide the hub onto the spindle taking care not to damage the seal.
9. Place the outside bearing cone over the spindle and into the hub.
10. Install the castellated nut and follow the procedure for setting the pre-load.
11. Reinstall the dust cap and tire.

Check the wheel lug nuts and wheel bearing pre-load after the next week of operation.

## Fluid and Fastener Specifications

- **DISK GANG ASSEMBLY AXLES:** The disk gang assembly axles are 1-5/8" in diameter (optional 2 -1/8") and are threaded at either end. A heavy cast nut is installed at either end and tightened to complete the rigid gang assembly. To insure proper functioning and maximum durability, the axle nuts should be checked and tightened daily during the first (7) seven days of operation when the disk is new or after replacing any of the gang assembly components. When installing the nut, apply an anti-seize compound to the threads. Over tightening the gang axles can damage components of the gang assembly.

**Recommended Torque (Ø1-5/8") – 800-1000 ft/lbs**  
**Recommended Torque (Ø2-1/8") – 1000-1200 ft/lbs**

- **FASTENERS:** Tighten all fasteners after the first day of operation and seasonally thereafter to the following settings.

Bolt Diameter	Torque (ft/lbs)	
	Grade 5	Grade 8
3/8"	23	33
1/2"	57	80
5/8"	112	159
3/4"	200	282
7/8"	322	454
1"	483	682
1-1/4"	840	1363
1-1/2"	1462	2371

The torque values in table are for plated unlubricated bolts and nuts.



- **OIL-BATH BEARING OIL:** The oil-bath bearing contains back-to-back tapered roller bearings operating in gear oil. The bearing has a check plug on the side of the housing. Oil is filled to the bottom of the check plug hole. Fill oil until it begins to run out the hole.

### Recommended Gear Oil – SAE 90W (API GL-4)

A heavier weight of gear oil may be used in hot climates where there may be constant temperatures in excess of 90°F.

- **TIRE AND WHEEL SERVICE**

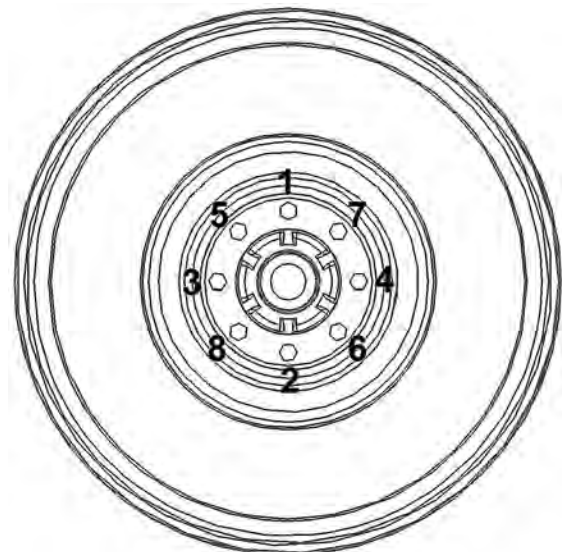
When checking wheel nut for tightness or remounting the wheel, tighten the wheel bolts in the sequence illustrated.

**Torque wheel nuts to 100-125 ft/lbs.**

Check the tires regularly for cuts or other damage.

Check and adjust tire pressure when tire is cold.

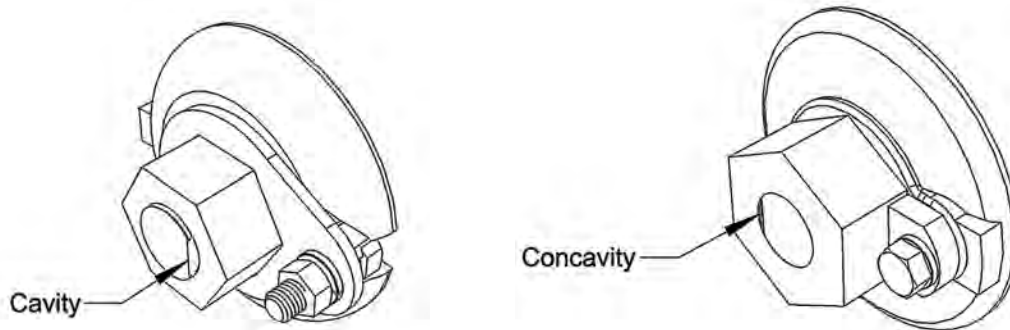
**Maintain tire pressure at 60 psi.**



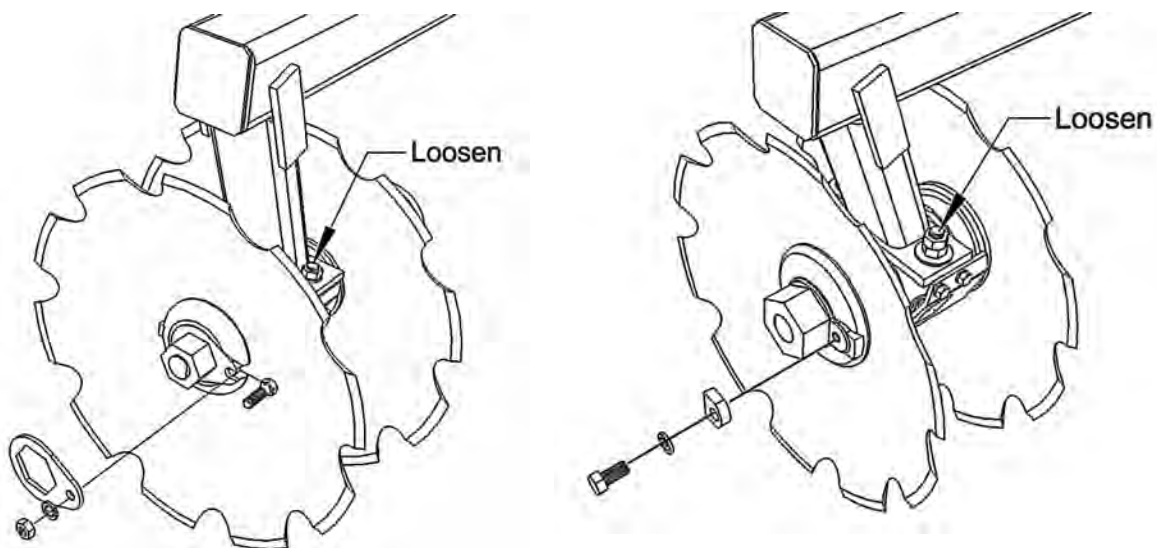
## Keep Gang Assemblies Tight

- To ensure proper function and maximum durability, the axle nuts should be checked and tightened daily during the first (7) days of operation when the disk is new or after replacing any of the gang components.
- Loose axles may bend or break or cause damage to other components of the gang assembly. Maintaining tight gangs is necessary to ensure maximum bearing life.
- A loose gang assembly is evident when some disk blades stop turning when diking or turn at a different speed than other disks on the same assembly.
- To tighten the axle without removing the gang assembly from the disk:

To minimize the possibility of thread damage, clean out the cavity between the inside of the nut and the flat milled surface at the end of the axle. After using compressed air or a pressure washer to remove as much material as possible, pour or spray a light oil or penetrating fluid into the cavity.



Unbolt and remove the nut locks from the end washers on both ends of the axle. Loosen but do not remove the bolts holding the bearings to the bearing standards. Place one wrench on an axle nut to prevent the axle from turning. Use the other wrench and an extension or a sledge hammer to tighten the axle nut on the opposite end of the axle. Tighten the nut on 1-5/8" axle to 800-1000 ft/lbs and on a 2-1/8" axle to 1000-2000 ft/lbs. Retighten the bearing bolts.



If the gang is excessively loose it may be necessary to completely disassemble the entire assembly and clean the mating surfaces between the spools, bearings, end washers and disk blades.

- If it is necessary to remove and disassemble the gang assembly, use suitable lifting devices and supports to prevent injury.

With the disk lowered to the ground, first remove the scrapers and then unbolt the bearings from the bearing standards. There are four bolts holding each gang assembly to the gang bar. Once the bolts are removed, raise the disk high enough to either roll or pull the assembly from under the disk. Block the gang to prevent it from rolling. Remove the nut locks from both ends of the assembly. Use one wrench to keep the gang from turning while using the other wrench to tighten the nut at the opposite end of the assembly.

It may not be possible to properly tighten the gang if dirt, grit or debris has built-up between the components. In this case remove a nut from one end of the axle, slide off the end washers, bearings, spools and disk blades. Thoroughly clean the mating surfaces between the components and reassemble on the disk gang (see assembly section). Clean the threads on the axle and in the axle nut. Apply an anti-seize compound to the axle threads and reinstall the nut. Tighten the nut and reinstall the nut locks. Place the assembly under the disk and bolt to the gang bar bearing standards. Occasionally turn the gang while tightening the bolts to check the gang turns freely. Retighten the bearing bolts after the first 10-12 hours of operation.

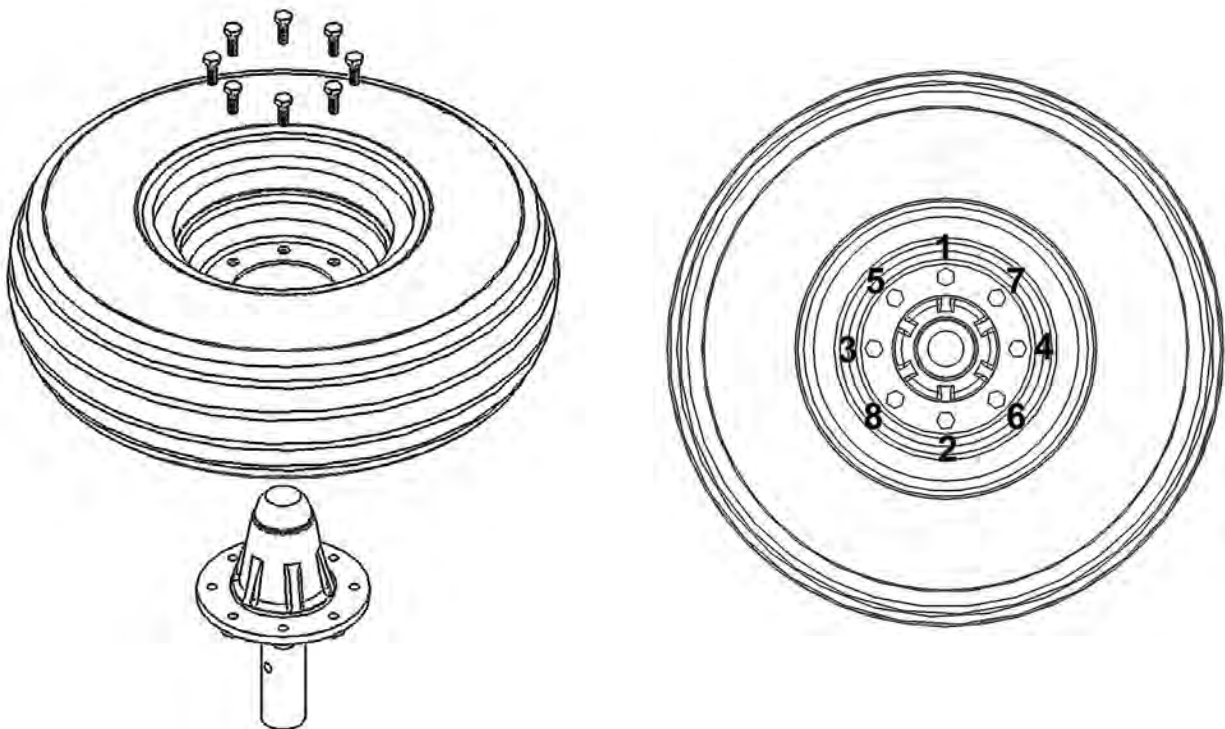
## **Assembly Safety**

- Wear proper attire when assembling disk. Always wear relatively tight and belted clothing to avoid entanglement in equipment. Wear sturdy, grip work shoes and protective equipment for eyes, hands, hearing and head.
- Handle the disk gang components with care during assembly. The disk blades are sharp and can cut hands, feet, etc.
- Disk blade assemblies and disk weldments and components are heavy and awkward. Two-person assembly is recommended. When working with others, try to maintain visual contact and communicate actions and procedures which may present a danger to them.
- Read assembly instructions thoroughly before beginning.
- Use the proper tools and equipment for assembly. Make sure you understand the safe procedures for the motorized equipment and lifting devices you will be using. Make sure tools and equipment are in good repair.
- Use proper supports for the job and chock tires or any other components that could roll inadvertently.
- Purge air from hydraulic systems before operation. After connecting the hydraulic lines, carefully cycle the hydraulic cylinder several times to purge air from the system. Visually check all connections for leaks.
- Never use your hands to check for hydraulic leaks.

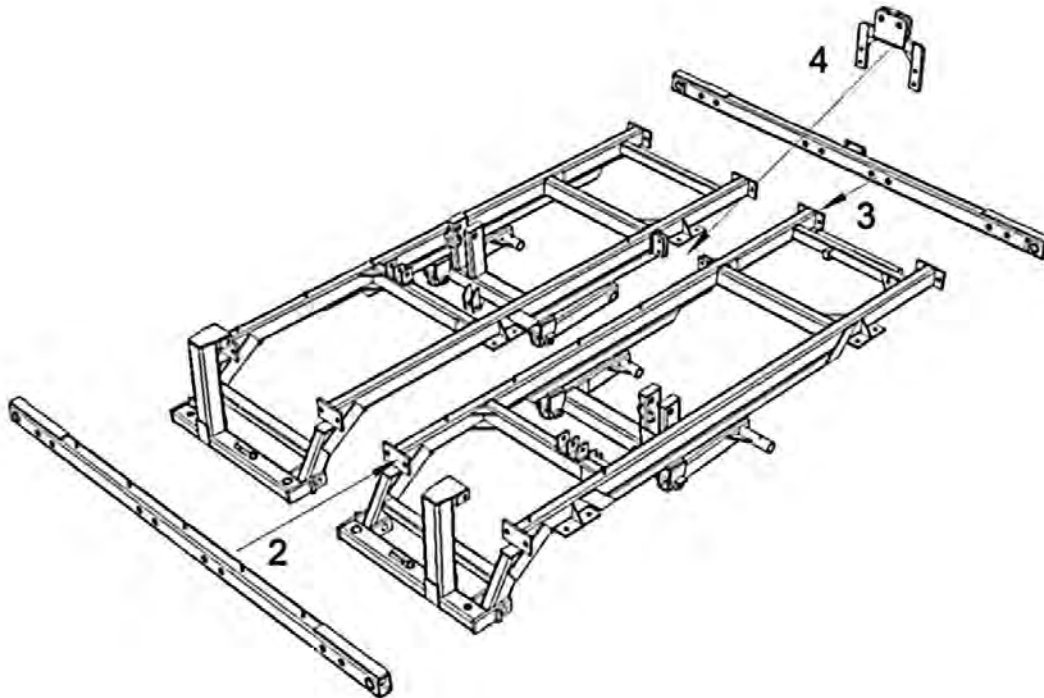
## Assemble the Disk

- The disk is normally shipped with the bridle and transport assemblies attached to the frame. The gang assemblies are bolted to the gang bars and the scrapers are bolted to the scraper bars. The hitch, side arm, levelling control assemblies, transports control assemblies, jack and hose holder are bundled together. Tires are shipped loose and the remaining components (hydraulics, lighting, hubs, etc) are crated.
- The parts diagrams in this manual may facilitate assembly of the disk.
- These instructions require a forklift, boomlift or similar type of equipment which is capable of lifting the disk weldments. A minimum 8000 lb outdoor application forklift with fork extensions is a good choice. A tractor to move the disk and charge and operate the hydraulic cylinder will also be required.
- The following tools will also be required:
  1. A selection of chains and straps.
  2. Box end wrench set to 1-1/4" plus 1-5/16", 1-1/2" and 1-7/8".
  3. Socket and ratchet sets to 1-1/4" plus 1-5/16", 1-1/2" and 1-7/8".
  4. Hammers and sledge hammer.
  5. Pinch bar.
  6. 12" adjustable wrench.
  7. Pliers and vise grips.
  8. 1/2" and 3/4" drive air wrench and sockets.

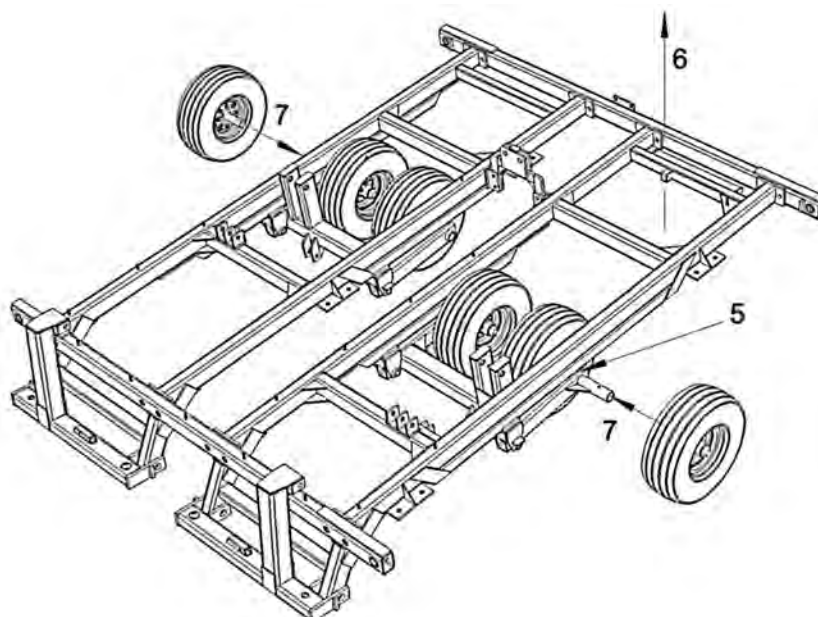
1. Stand the hubs on end (remove from transport assembly if installed for shipment) and place wheels on top and install and tighten wheel bolts.



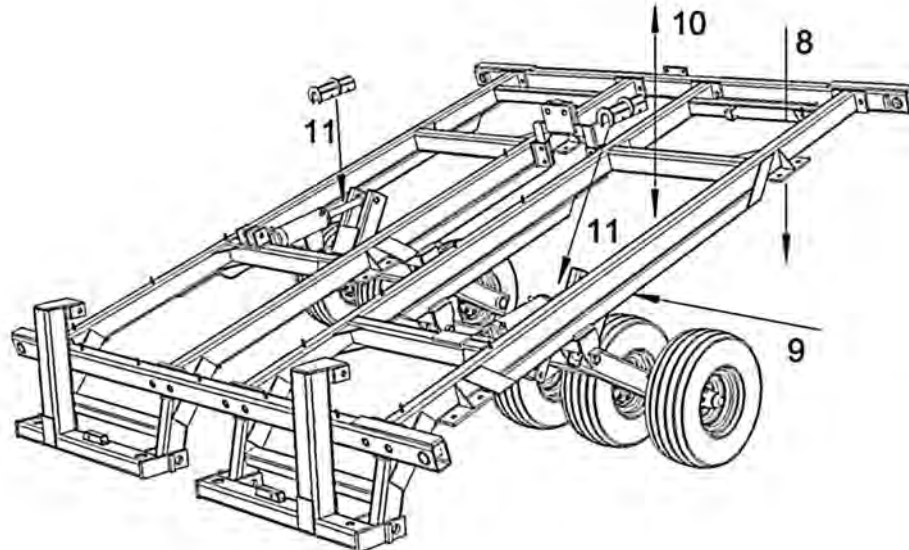
2. Attach the front crossbar to the right hand and left hand center frames.
  3. Attach the rear crossmember to the right hand and left hand center frames.
  4. Install the hydraulic wing fold cylinder mount.
- NOTE: Leave bolts loose until all five weldments are together, then tightened.



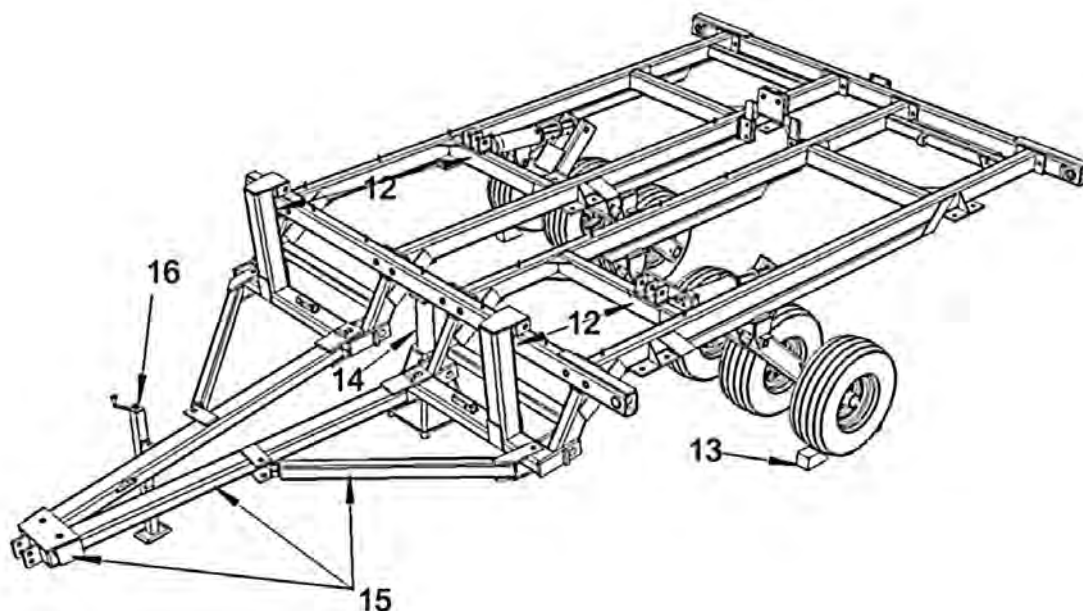
5. Chain the transport assemblies to the frames so the assemblies will not drop.
6. With the front of the frames resting on the ground, lift the rear of the frame high enough to slip the wheel assembly spindles into the transport assemblies.
7. Install wheel assemblies on transport assemblies.



8. Lower the center frame assembly to the ground.
9. Remove the chains holding the transport assemblies to the center frames.
10. By lifting and lowering the rear of the frame assembly, the hydraulic cylinders can be installed. Remove the plugs from the hydraulic cylinders to allow air to be vented.
11. Install the transport stays over the hydraulic cylinder rods.



12. Chain bridle masts to the first crossmember of the respective frame to prevent the bridles from falling forward when the front of the frame is lifted. Adjust the chains so the masts are as close to vertical as possible.
13. Chock wheels front and rear on both sides.
14. Lift the front of the frame until level and place support under the front crossmember.
15. Install the hitches, side arms and hitch tie.
16. Install the hitch jack. With the jack installed, the chains installed in step 12 can be removed.





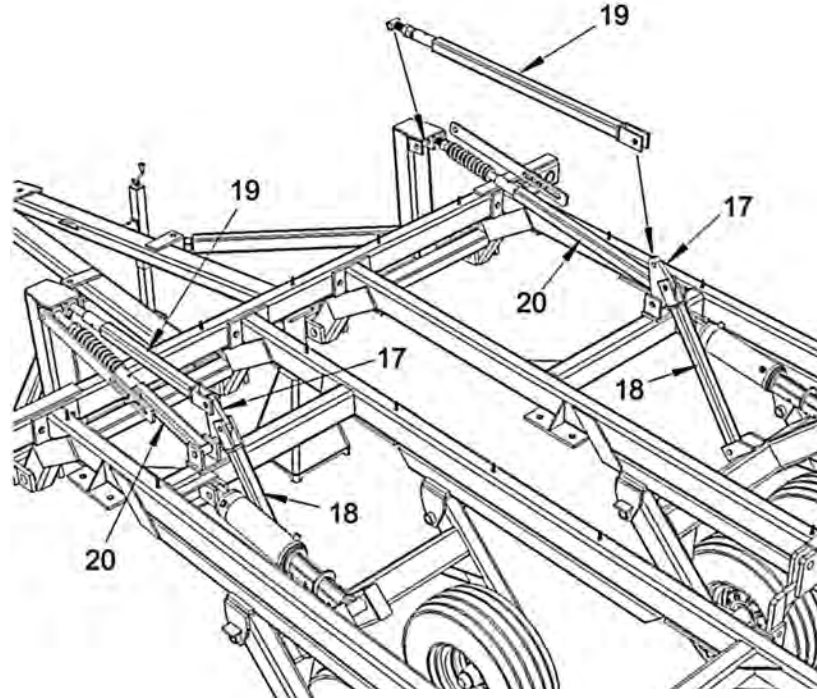
17. Install swivel plates.

18. Install bottom transport control arms.

19. Install top transport control arm assemblies – the left hand assembly is shorter than the right hand assembly.

20. Install levelling control arm assemblies c/w springs – the left hand assembly is shorter than the right hand assembly.

NOTE: Once the control arm assemblies are installed the frame support can be removed.



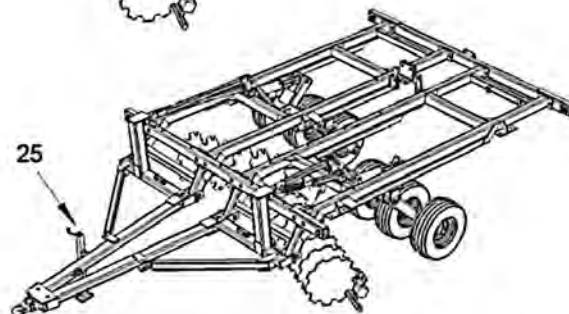
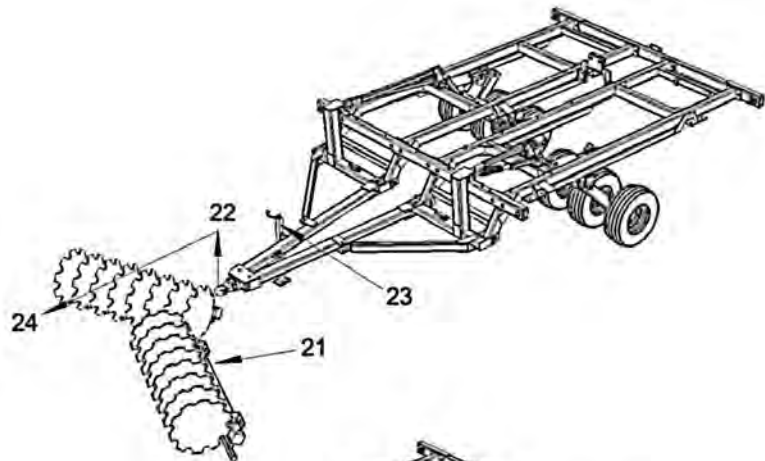
21. Place the front center frame gang assemblies in front of hitch as illustrated.

22. Using a chain and forklift, lift the hitch high enough to clear the gang assemblies.

23. Swing the hitch jack up into storage position.

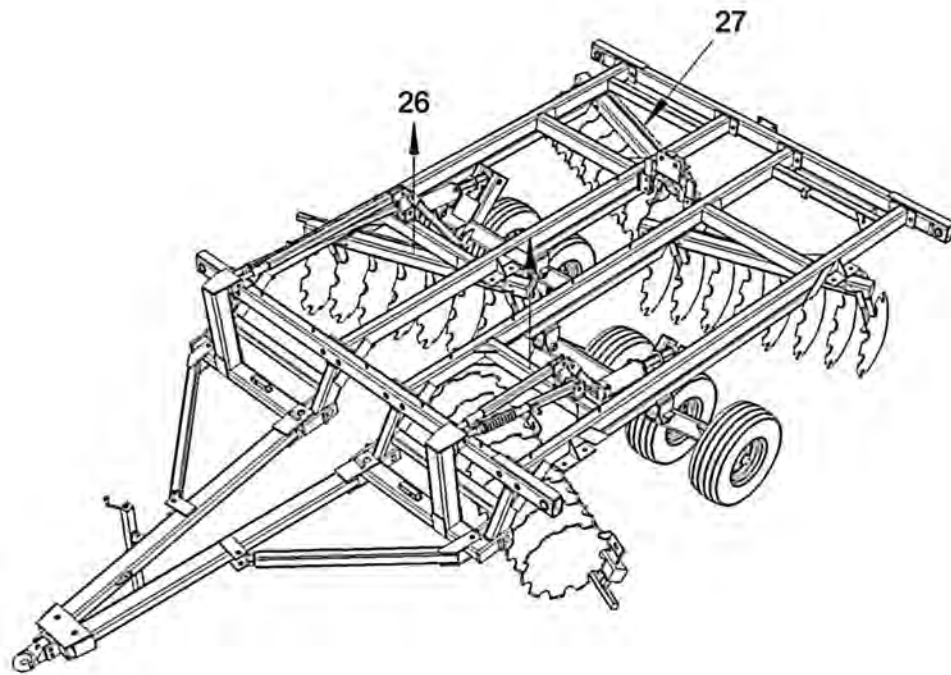
24. Pull the center section frame assembly over top of the gang assemblies.

25. Put the hitch jack back into storage position.



**26.** Using a single chain attached to the center of the gang bar, lift the gang bar assembly up to the frame and bolt into place.

**27.** Place the rear gang assemblies under the rear of the center frame assembly and install using the same procedure as in step 26.

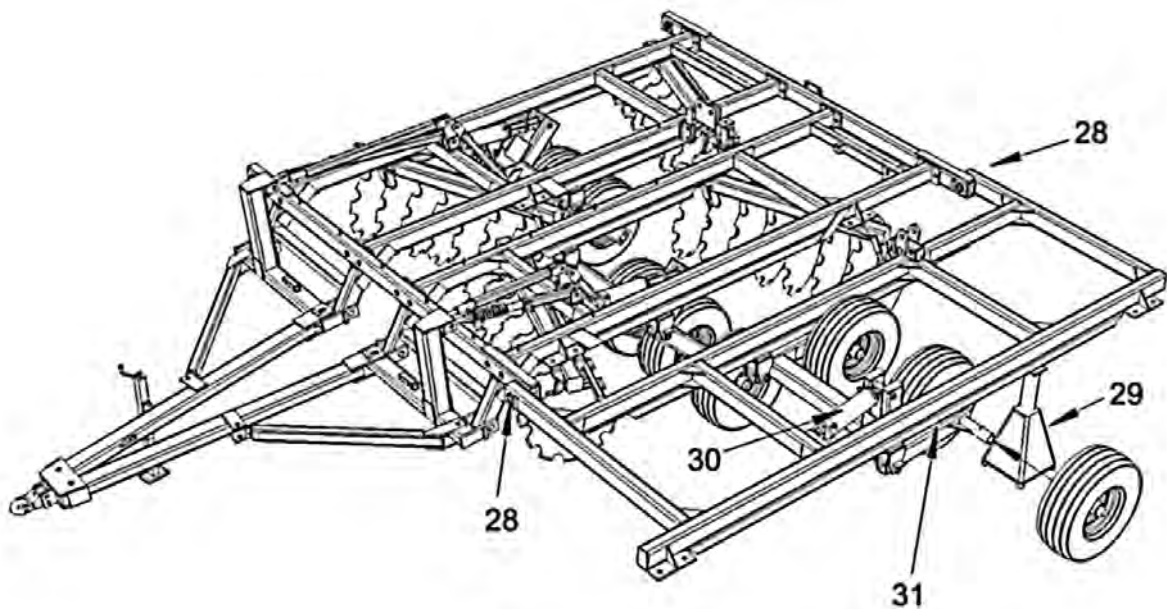


**28.** Attach wing frame to center section with pins provided.

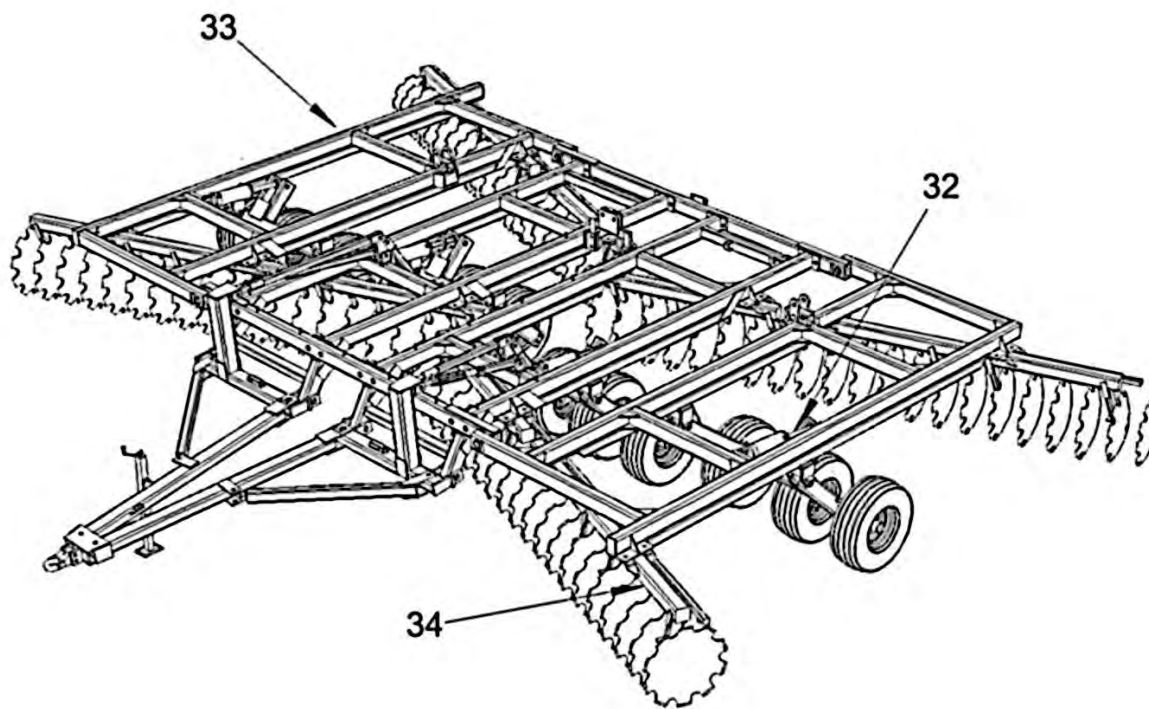
**29.** Place a support under the wing frame.

**30.** Install the hydraulic lift cylinder by attaching the clevis end of the cylinder to the frame and then by moving the transport assembly either up or down, attach the rod end to the transport assembly. Be sure to remove the plugs from the cylinder port to allow air to escape.

**31.** Chain the transport assembly up to the frame and install the hub and tire assemblies.



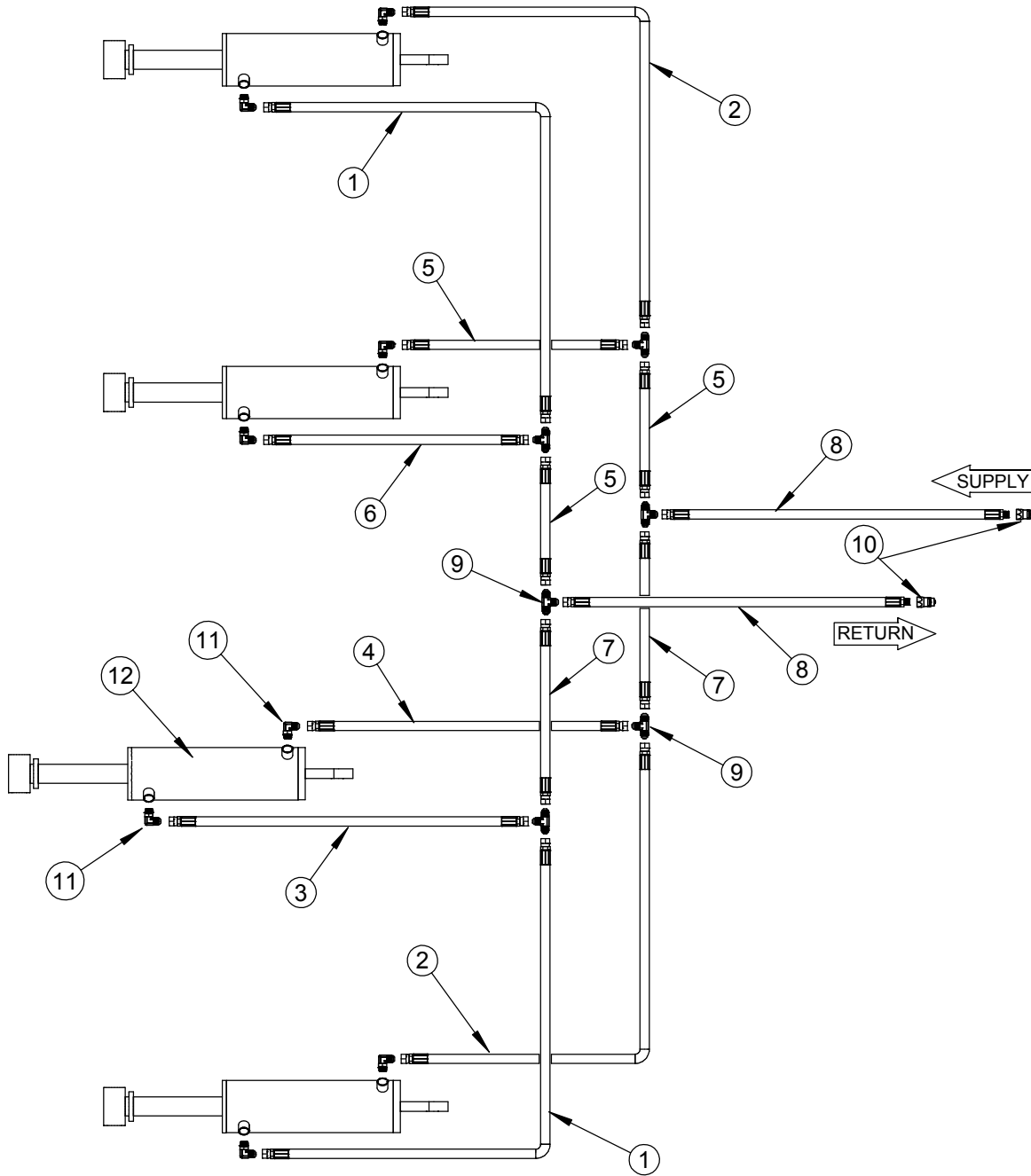
32. Temporarily place depth control segments over cylinder rod to hold the wing frame in the raised position.
33. Attach the second wing frame to the center section.
34. Attach the gang assemblies to the wing frames – front gang assemblies first.



Install the lift cylinder hose assemblies as per schematic on following pages.

Install the wing fold hydraulic cylinders and hose assemblies as per schematic in following pages. Cycle the cylinders by fully extending and collapsing them once or twice before attaching the rod ends to the wing frame mounts.

Install the optional light kit as per schematic in following pages.

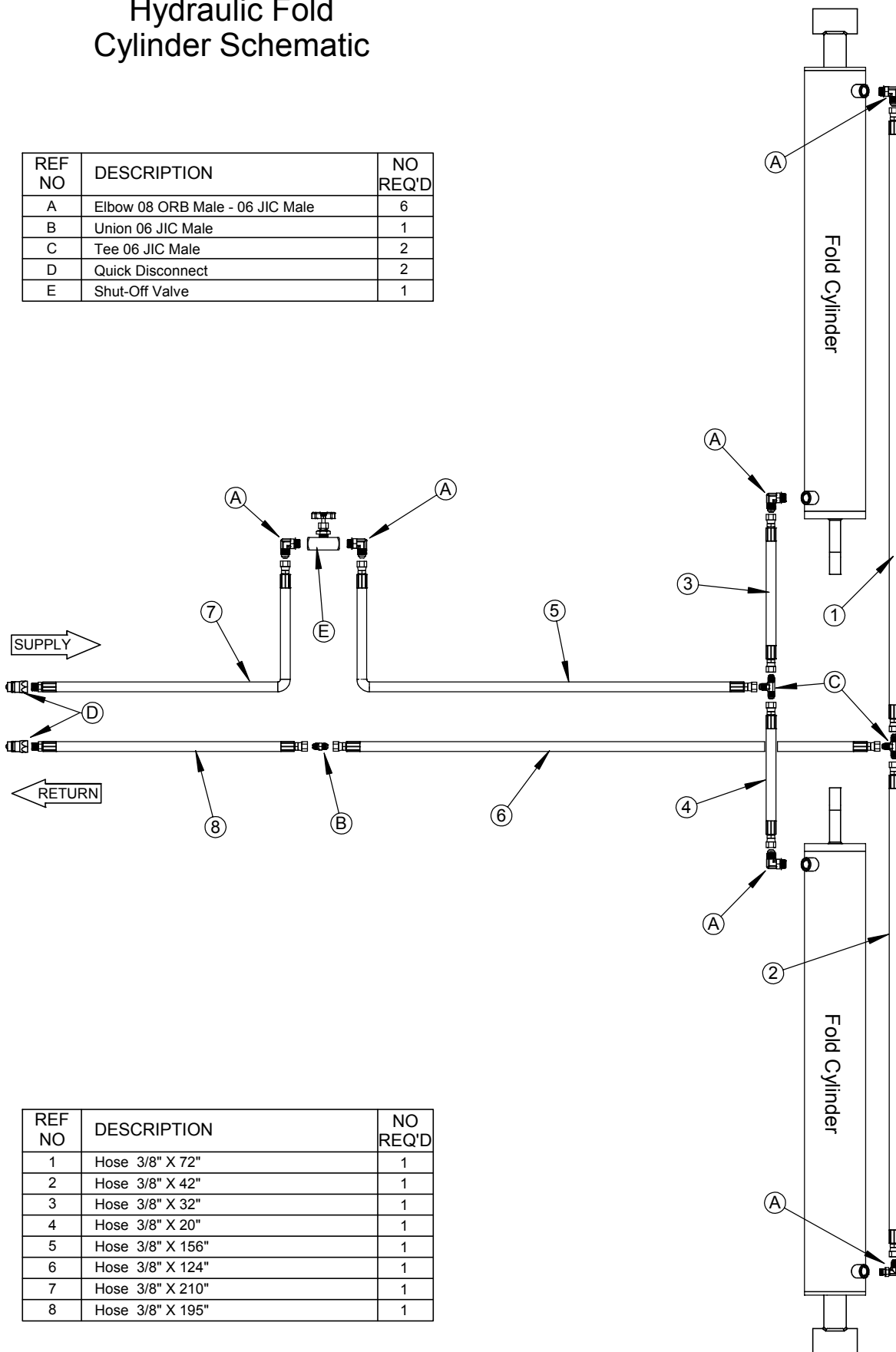


## Hydraulic Lift Cylinder Schematic

REF NO	DESCRIPTION	NO REQ'D
1	Hose 1/2" X 170"	2
2	Hose 1/2" X 154"	2
3	Hose 1/2" X 83"	1
4	Hose 1/2" X 72"	1
5	Hose 1/2" X 48"	3
6	Hose 1/2" X 60"	1
7	Hose 1/2" X 68"	2
8	Hose 1/2" X 194"	2
9	Union Tee 08 JIC Male	6
10	Quick Disconnect	4
11	Elbow 08 ORB Male - 08 JIC Male	8
12	12" Stroke Hydraulic Cylinder	4

# Hydraulic Fold Cylinder Schematic

REF NO	DESCRIPTION	NO REQ'D
A	Elbow 08 ORB Male - 06 JIC Male	6
B	Union 06 JIC Male	1
C	Tee 06 JIC Male	2
D	Quick Disconnect	2
E	Shut-Off Valve	1

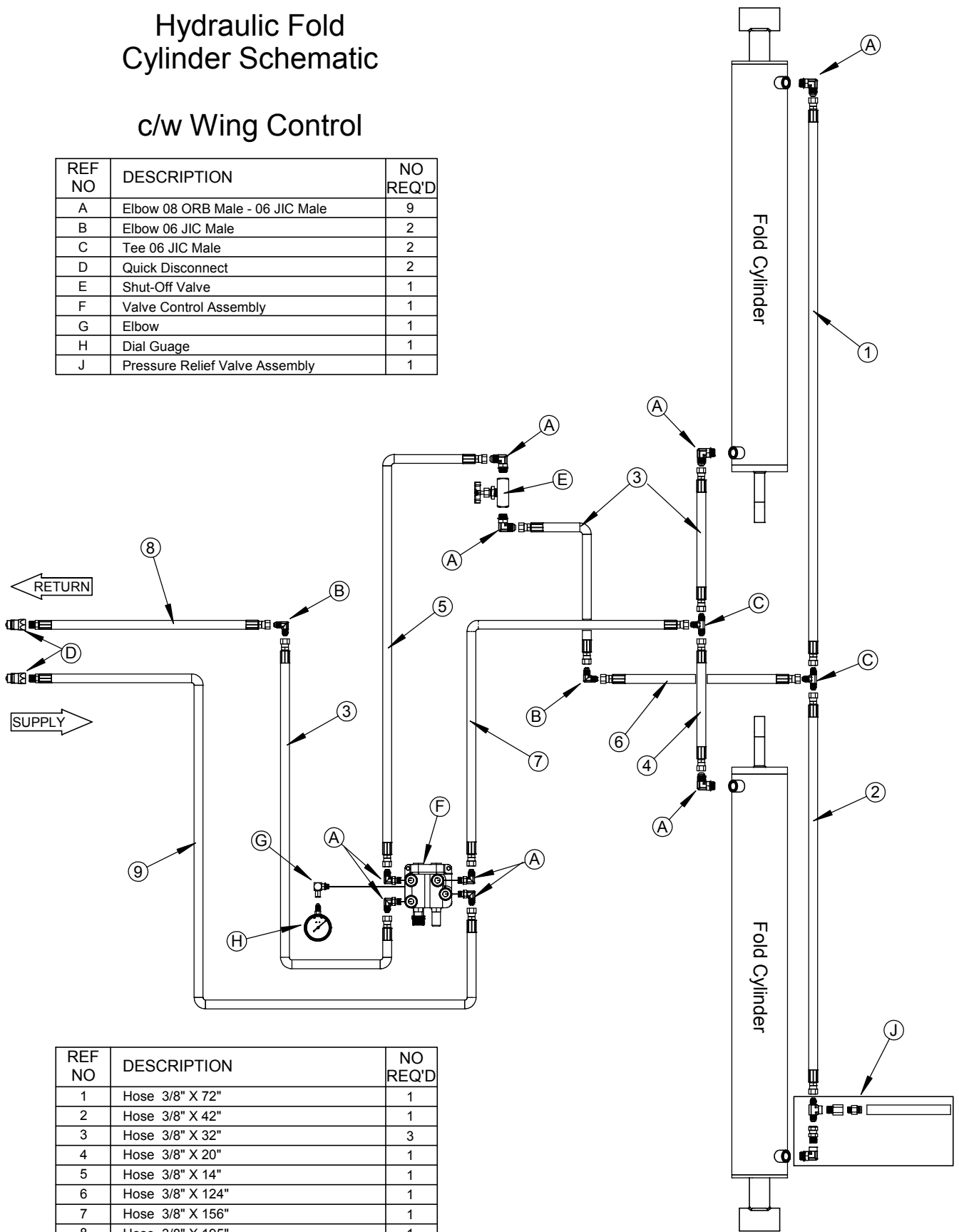


REF NO	DESCRIPTION	NO REQ'D
1	Hose 3/8" X 72"	1
2	Hose 3/8" X 42"	1
3	Hose 3/8" X 32"	1
4	Hose 3/8" X 20"	1
5	Hose 3/8" X 156"	1
6	Hose 3/8" X 124"	1
7	Hose 3/8" X 210"	1
8	Hose 3/8" X 195"	1

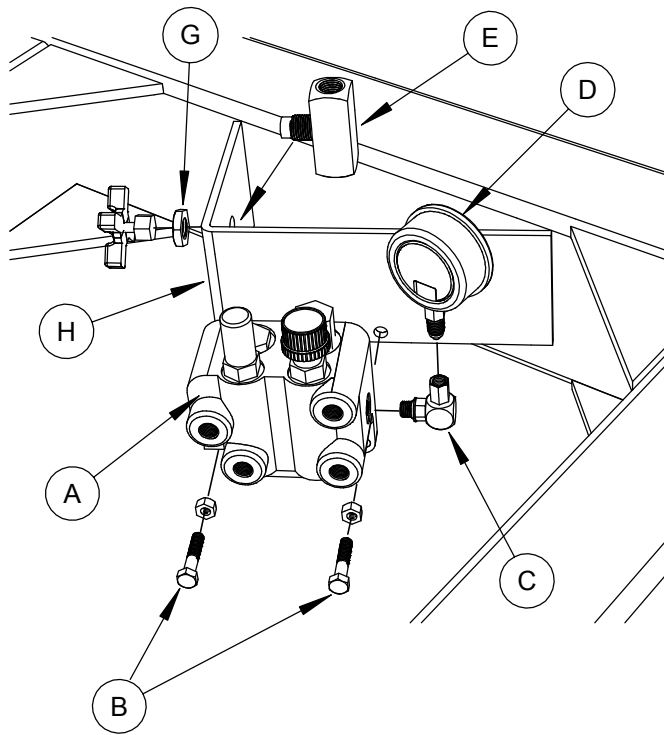
# Hydraulic Fold Cylinder Schematic

c/w Wing Control

REF NO	DESCRIPTION	NO REQ'D
A	Elbow 08 ORB Male - 06 JIC Male	9
B	Elbow 06 JIC Male	2
C	Tee 06 JIC Male	2
D	Quick Disconnect	2
E	Shut-Off Valve	1
F	Valve Control Assembly	1
G	Elbow	1
H	Dial Guage	1
J	Pressure Relief Valve Assembly	1



REF NO	DESCRIPTION	NO REQ'D
1	Hose 3/8" X 72"	1
2	Hose 3/8" X 42"	1
3	Hose 3/8" X 32"	3
4	Hose 3/8" X 20"	1
5	Hose 3/8" X 14"	1
6	Hose 3/8" X 124"	1
7	Hose 3/8" X 156"	1
8	Hose 3/8" X 195"	1
9	Hose 3/8" X 210"	1



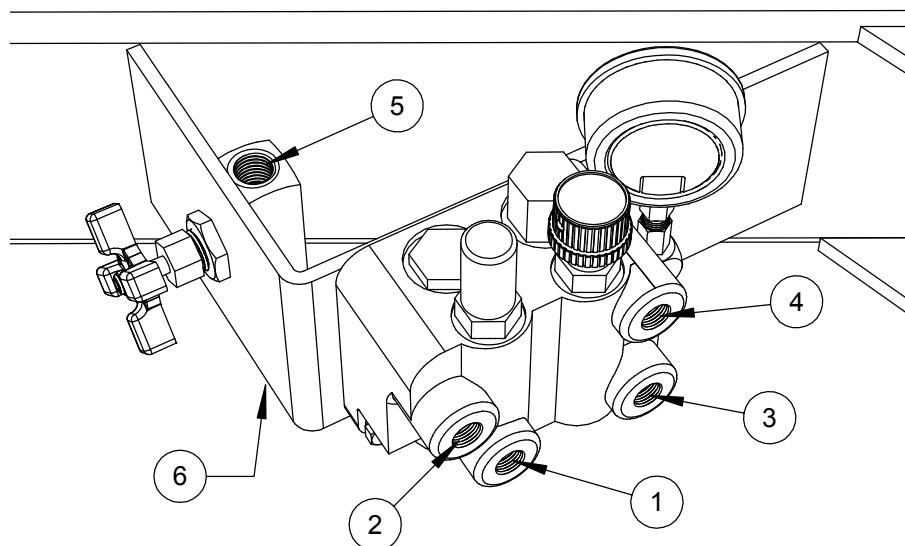
## Mount Wing Control and Shut-Off Valves

Bolt the Valve Control Assembly (A) to the mounting plate (H) using 5/16" X 1 1/2" bolts and nuts provided. Thread elbow (C) into the side of the valve control assembly and positioned as illustrated. Mount the dial gauge (D) into the elbow facing forward so as to be visible from the front of the disk. Remove the handle from the shut-off valve (E), insert the threaded portion of the valve body through the hole in the mounting plate and secure with jam nut (G). Re-attach the handle to the shut-off valve body.

## Attaching Hydraulic Hoses to the Wing Control and Shut-Off Valves

Refer to **Hydraulic Fold Cylinder Schematic** on previous page to identify the hoses used in the following procedure:

- Port 1 - Thread elbow 06 ORB male - 06 JIC male into port and then install hose 7.
- Port 2 - Thread elbow 06 ORB male - 06 JIC male into port and then install hose 9.
- Port 3 - Thread elbow 06 ORB male - 06 JIC male into port and then install hose 5 to Port 6.
- Port 4 - Thread elbow 06 ORB male - 06 JIC male into port and then install hose 3 to 8.
- Port 5 - Thread elbow 08 ORB male - 06 JIC male into port and then install hose 3 to 6.
- Port 6 - Thread elbow 08 ORB male - 06 JIC male into port and then install hose 5 from Port 3.



## Using Disc with Optional Wing Control

The optional hydraulic wing control valve (A) uses tractor hydraulic pressure and the wing fold cylinders to adjust the cutting pressure of the wing sections of the folding tandem disk.

**IMPORTANT:** The hydraulic wing control is compatible only with tractors equipped with closed center hydraulic systems. The pump in a closed center system runs on-demand when hydraulic pressure is required to operate a device. In an open center system the pump runs continuously and damage can occur due to heat build-up if used to operate the wing control.

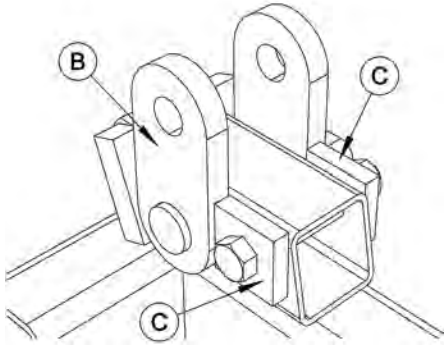
The hydraulic control in the tractor is either a lever or switch which operates a hydraulic spool valve controlling the flow of oil used to operate a device such as a hydraulic cylinder. There should be three positions or settings for the hydraulic control lever or switch.

In the **NEUTRAL** position the pump is not running, the spool valve is closed and the oil cannot flow through the tractor couplers.

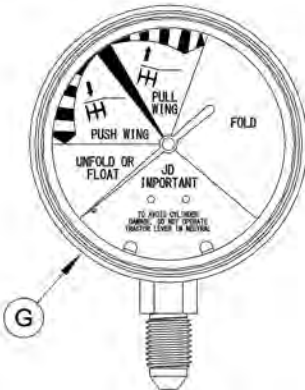
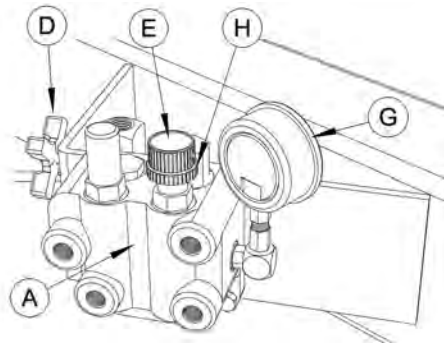
In the **DETENT** position the pump is running and the spool is open and remains open. Hydraulic oil is available and provides pressure through the tractor couplers. In most tractors the oil flow can be regulated and should be set to continuous maximum flow when using the wing control.

In the **FLOAT** position the pump is not running and the spool valve remains open. The hydraulic oil is not under pressure and can move through the tractor couplers.

On disks equipped with the optional wing control, restrictor blocks (C) must be bolted to either side of the hydraulic pivot assembly (B) on the wing sections.

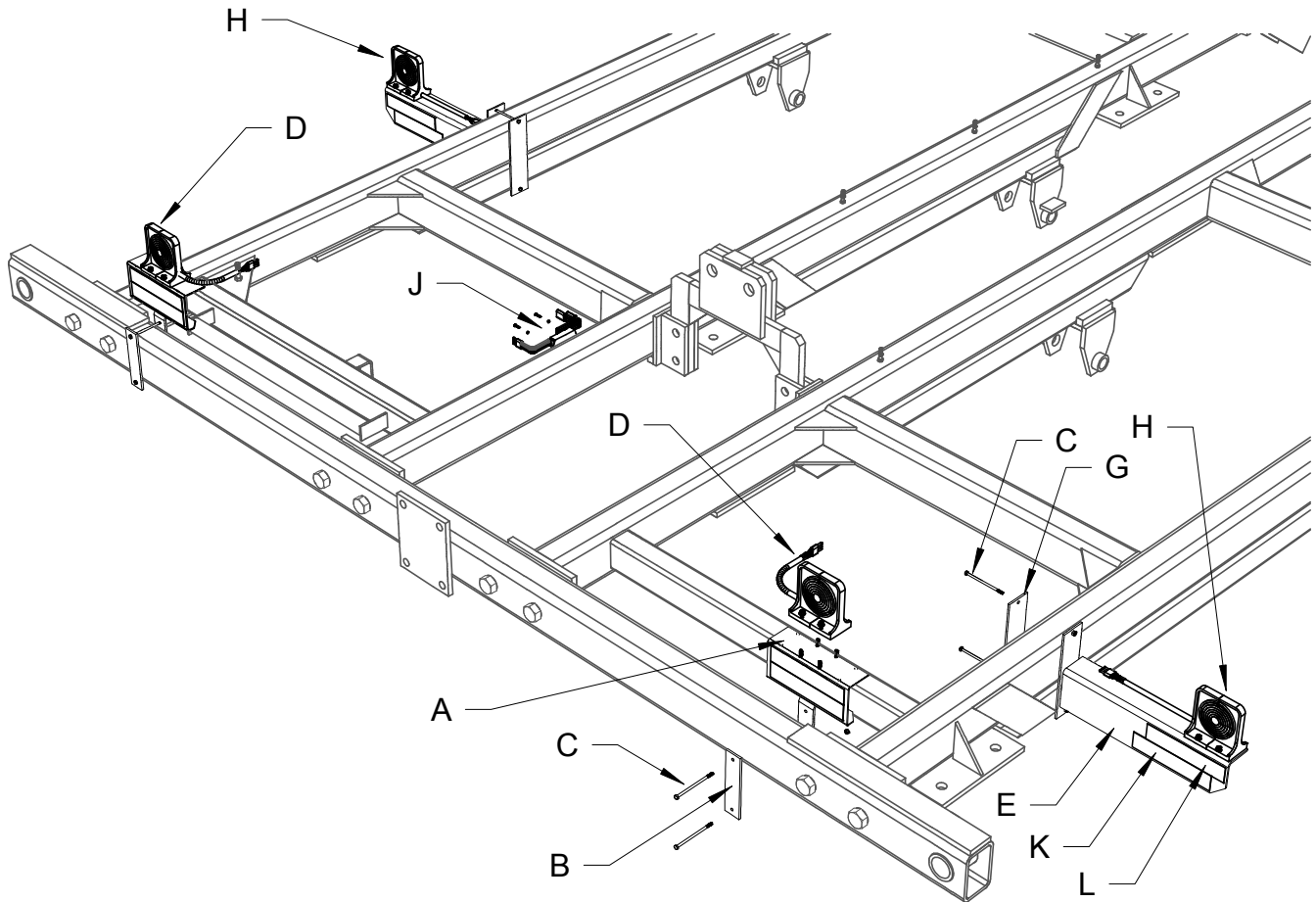


Set-up and adjustment of the wing control should be done in the field.



- Open the wing fold shut-off valve.
- Unfold the wings taking care to follow safe operating procedures.
- With the tractor hydraulic control for the wing fold cylinders in the **FLOAT** position, begin disking and make any adjustment of fore/aft levelling and depth deemed necessary.
- If the disk performs satisfactorily, leave the hydraulic control in **FLOAT** and continue disking.
- If the wing sections do not penetrate evenly with the center section, use the wing control as follows to improve performance.
- Make sure the hydraulic hoses are attached to the correct **SUPPLY** and **RETURN** couplers as per the Hydraulic Fold Cylinder Schematic on page 31.
- To engage the wing control, place the hydraulic control in the forward **DETENT** position. Hydraulic flow for the wing fold cylinders is now controlled by the hydraulic wing control valve (A).
- Turn the control valve knob (E) in one-half turn increments when making adjustments.
- Turn knob (E) **counter clockwise** to extend the cylinders and increase wing pressure. The dial gauge (G) will indicate **PUSH WING**.
- Turn knob (E) **clockwise** to collapse the cylinders and decrease wing pressure. The dial gauge (G) will indicate **PULL WING**.
- The valve control knob can be secured with lock ring (H).
- Periodically, as soil conditions change, monitor the disking performance and adjust the valve control knob as required.
- The wing control can be disengaged at any time by placing the hydraulic control in the **FLOAT** position. This should be done when disking in uneven or severe rock conditions. The dial gauge will indicate **UNFOLD** or **FLOAT**.





## Light Kit Component Installation

Clamp light mounts (A) to the rear crossmember using straps (B) and supplied fasteners (C).

Mount red flashers (D) to mounts (A) using bolts and nuts supplied.

Lights should be installed as far outwards from the center as possible.

Clamp light mounts (E) to the center frame sidemembers using straps (G) and the supplied fasteners (C).

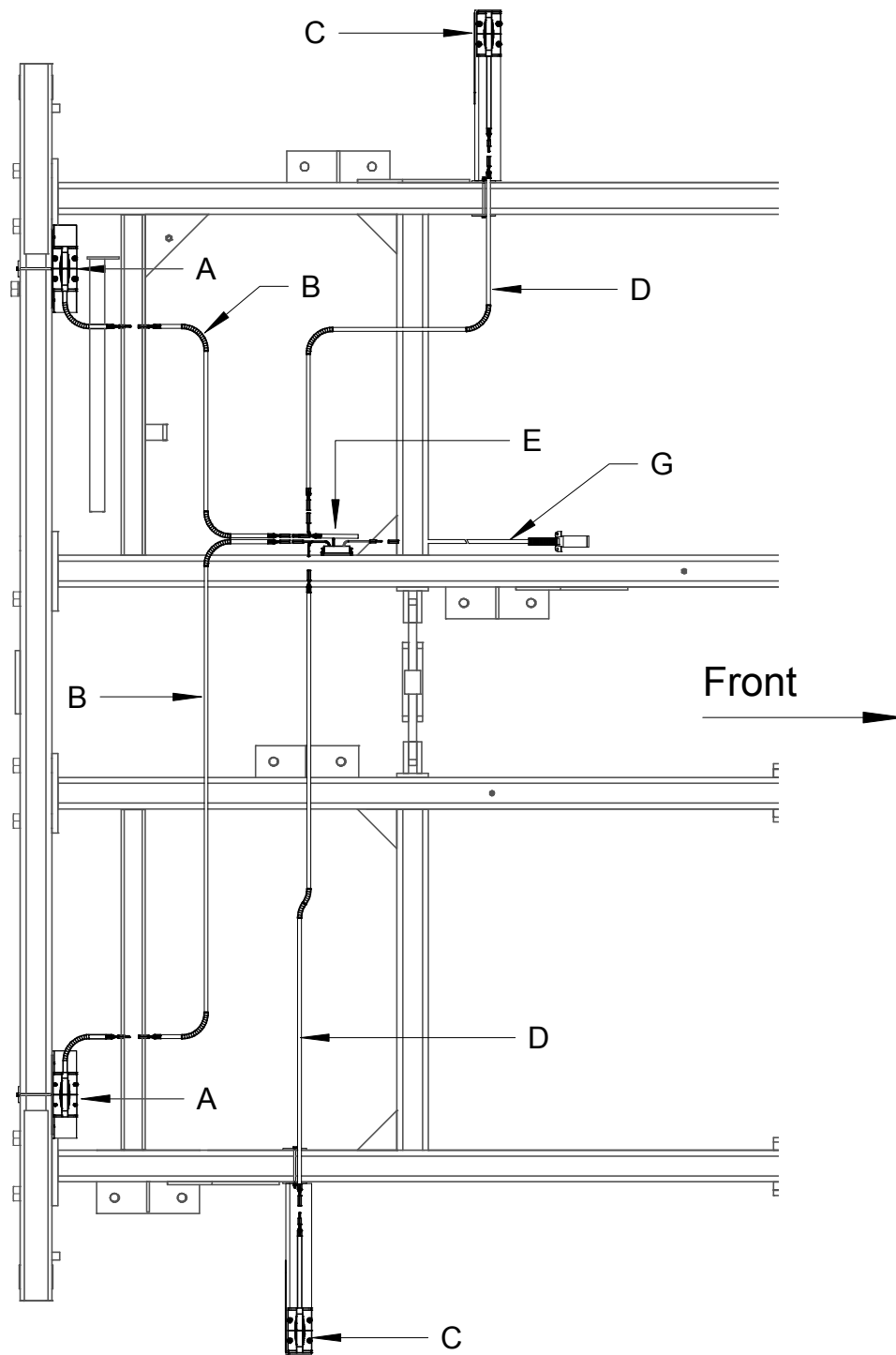
Mount orange flashers (H) to mounts (E) using bolts and nuts supplied.

Lights should be installed as close as possible to the back side of the crossmember illustrated.

Bolt module (J) to the mounting plate using the machine bolts and nuts supplied.

Apply the orange reflector strips (L) above the red reflector strips (K) on all 4 mounts.

To complete installation of cables, refer to the Light Kit Schematic on page 35.

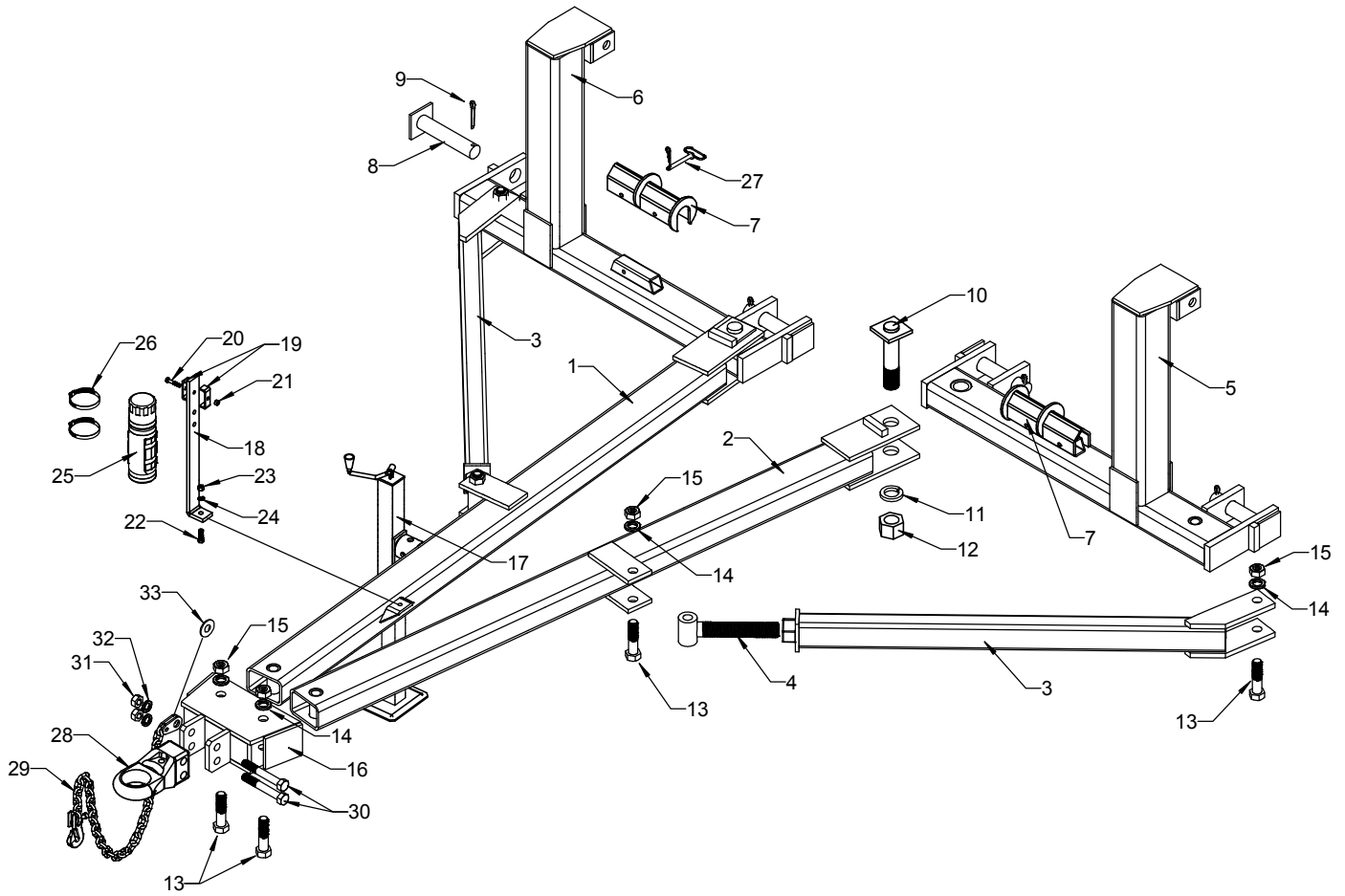


Light Kit Schematic

REF NO	DESCRIPTION	NO REQ'D
A	Red Flasher	2
B	Intermediate Cable - 3 prong	2
C	Orange Flasher	2
D	Intermediate Cable - 2 prong	2
E	Module	1
G	Primary Cable	1

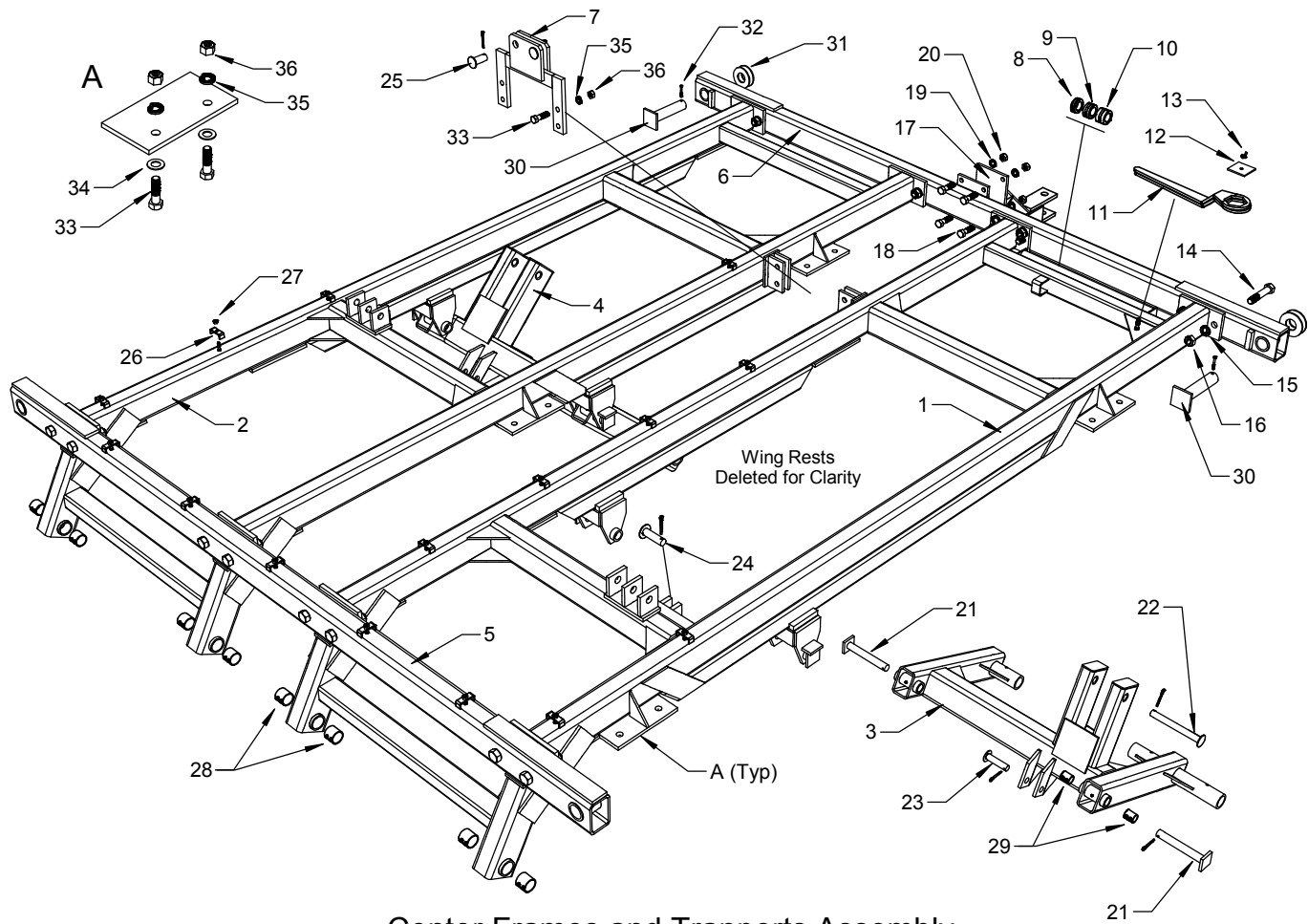
## Detailed Parts Diagrams

- The illustrated parts diagrams will assist in procuring replacement parts from your Frontier Dealer. However, to be sure of receiving the correct parts, please have the Model Number and Serial Number of your disk available when ordering parts.
  
- In the event the serial number plate is missing the following information can help to identify your disk:
  - the total number of disk blades on the unit.
  - the spacing in inches between the disc blades.
  
- The parts diagrams can also aid in the assembly and maintenance of your disk.



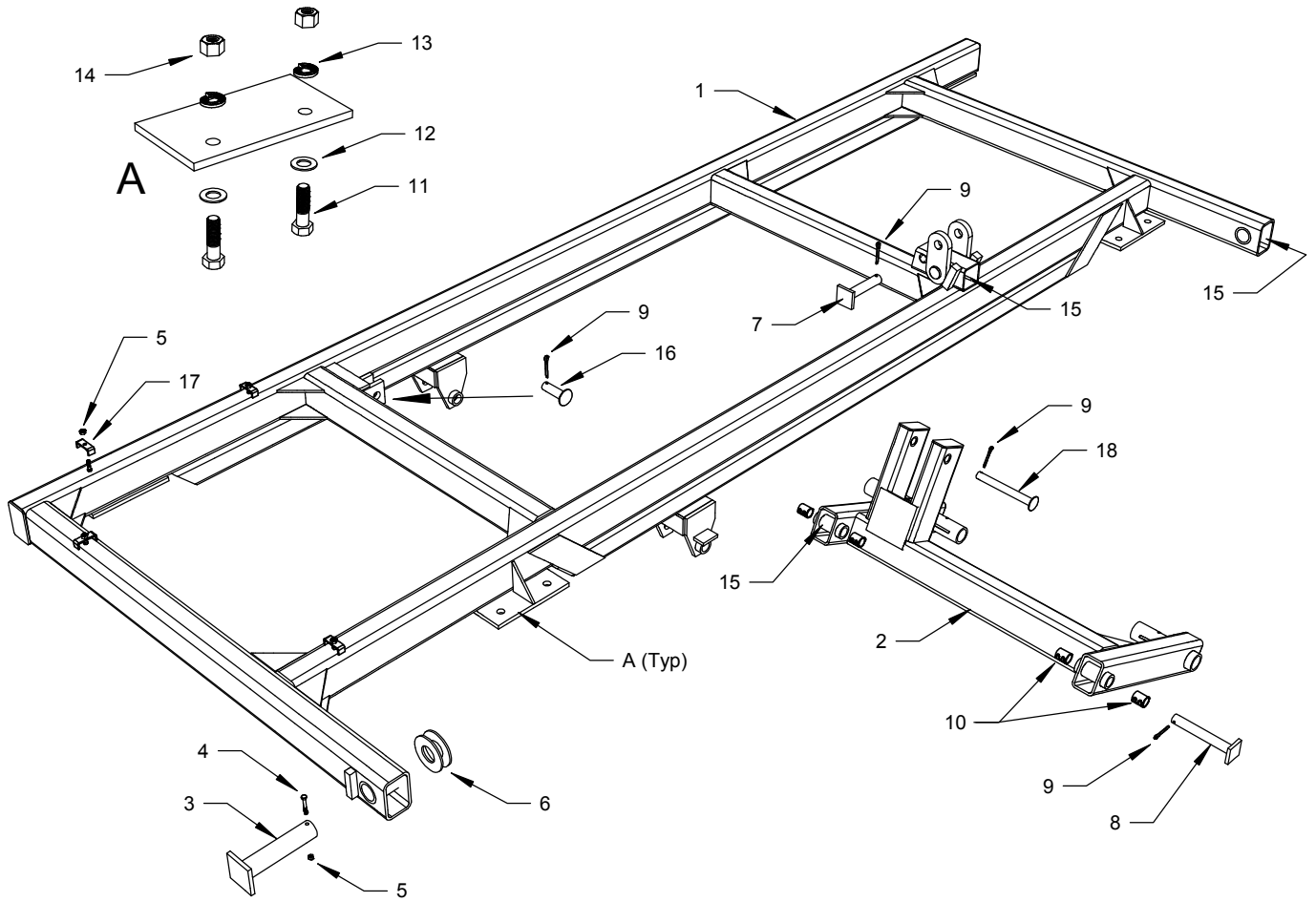
### Hitch and Bridle Assembly

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KBK225310	RH Hitch Pole	1
2	5KBK225313	LH Hitch Pole	1
3	5KBK10400	Side Arm	2
4	5KBK10410	Eyebolt	2
5	5KBK225309	LH Bride	1
6	5KBK225308	RH Bride	1
7	5KBCTS120	Transport Stay	2
8	5KBK50620	Pin	4
9	5KB375300CP	Cotter Pin	4
10	5KBK50420	Fabricated Bolt	2
11	5KBLW200	2" Lock Washer	2
12	5KBNC200	2" UNC Hex Nut	2
13	5KB125750B8	1-1/4" X 7-1/2" UNC Hex Bolt	6
14	5KBLW125	1-1/4" Lock Washer	6
15	5KBNC125	1-1/4" UNC Hex Nut	6
16	5KBK225312	Hitch Tie	1
17	5KBTBX8H	Hitch Jack	1
18	5KB501064054	Hose Holder	1
19	5KBTBX50	Hose Clamp	2
20	5KB038300B	3/8" X 3" UNC Hex Bolt	1
21	5KBNC038L	3/8" UNC Hex Lock Nut	1
22	5KB050150B	1/2" X 1-1/2" UNC Hex Bolt	1
23	5KBLW050	1/2" Lock Washer	1
24	5KBNC050	1/2" UNC Hex Nut	1
25	5KBDOCH914	Operator's Manual Canister	1
26	5KBHAS64	Screw Band (Worm Gear) Clamp	2
27	5KB442160	Pin c/w Hair Pin	2
28	5KBPP1401VH	Removable Hitch Tongue	1
29	5KBPPSC21A	Safety Chain (CAT II)	1
30	5KB100800B8	1" X 8" UNC Hex Bolt	2
31	5KBNC100	1" UNC Hex Nut	2
32	5KBLW100	1" Lockwasher	2
33	5KBFW100	1" Flat Washer	2



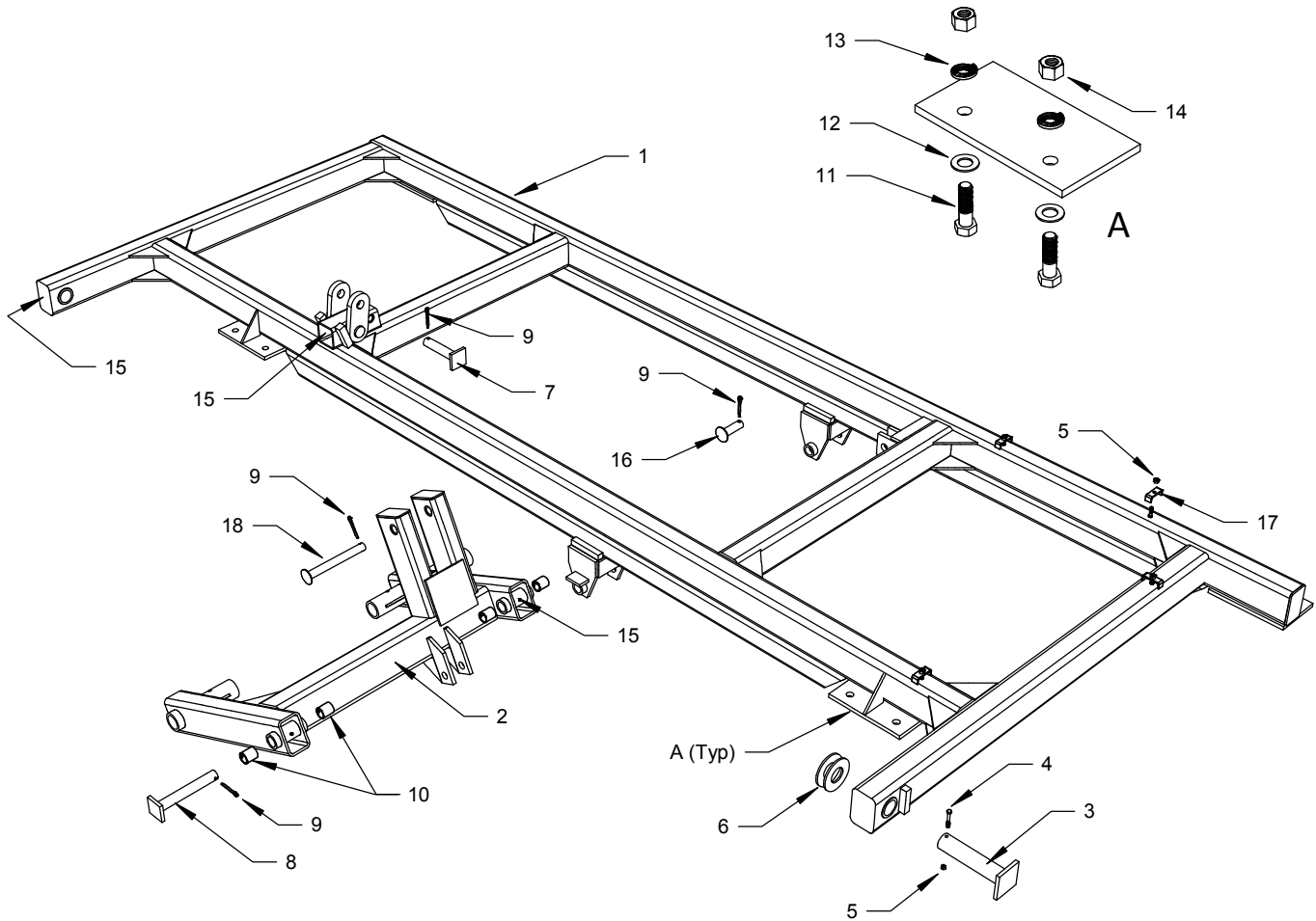
### Center Frames and Tranzports Assembly

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KBK225301	Left Hand Center Frame	1
2	5KBK225300	Right Hand Center Frame	1
3	5KBK225305	Left Hand Center Transport	1
4	5KBK225304	Right Hand Center Transport	1
5	5KB3081014	Front Crossmember	1
6	5KB3081047	Rear Crossmember	1
7	5KB3081180	Fold Cylinder Center Mount	1
8	5KB501043620	1" Rod Stop (Segment)	0
9	5KB501043688	1-1/2" Rod Stop (Segment)	0
10	5KB501045100	2" Rod Stop (Segment)	0
11	-see pages 41 and 42	Axle Nut Wrench	2
12	5KB3043010	Hold Down Plate	1
13	5KBNC050W	1/2" Wing Nut	1
14	5KB125700B8	1-1/4" X 7-1/2" UNC Hex Bolt	16
15	5KBLW125	1-1/4" Lock Washer	16
16	5KBNC125	1-1/4" UNC Hex Nut	16
17	5KB3081190	Bolt-On Rear Hitch	1
18	5KB088350B8	7/8" X 3-1/2" UNC Hex Bolt	0
19	5KBLW088	7/8" Lock Washer	0
20	5KBNC088	7/8" UNC Hex Nut	0
21	5KBK50470	Transport Pin	4
22	5KBK50480	Lift Cylinder Pin	2
23	5KBK50490	Pin	2
24	5KBK50500	Lift Cylinder Pin	2
25	5KBK50520	Fold Cylinder Pin	2
26	5KBTBX50	Hose Clamp	16
27	5KBNC038L	3/8" UNC Hex Lock Nut	14
28	5KB225200200	2-1/4" X 2" X 2" Split Bushing	8
29	5KB175150200	1-3/4" X 1-1/2" X 2" Split Bushing	8
30	5KBK50530	Hinge Pin	2
31	5KBFW225	2-1/4" Spacer Washers	6
32	5KB038250CW	3/8" X 2-1/2" Bolt c/w Lock Nut	2
33	5KB100350B8	1" X 3-1/2" UNC Hex Bolt	20
34	5KBFW100	1" Flat Washer	16
35	5KBLW100	1" Lock Washer	20
36	5KBNC100	1" UNC Hex Nut	20



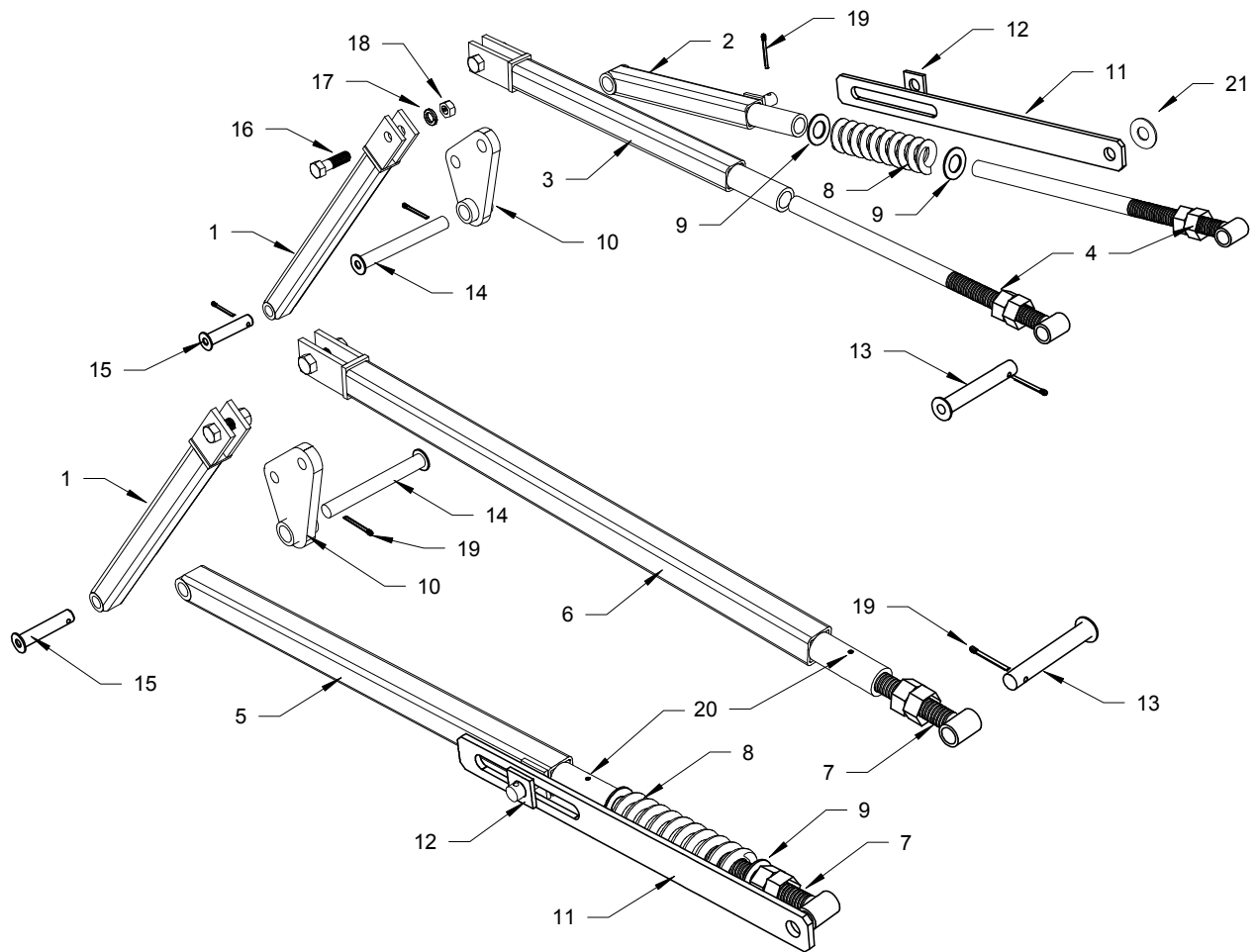
## Right Hand Wing Frame and Transport Assembly

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KB225303	Right Hand Wing Frame	1
2	5KB225306	Right Hand Wing Transport	1
3	5KBK50530	Hinge Pin	1
4	5KB038250B5	3/8" X 2-1/2" UNC Hex Bolt	1
5	5KBNC0385L	3/8" UNC Lock Nut	5
6	5KBFW225	2-1/4" Flat Washer	3
7	5KBK50520	Hydraulic Cylinder Rod End Pin	1
8	5KBK50470	Transport Pin	2
9	5KB375300CP	Cotter Pin	3
10	5KB175150200	1-3/4" X 1-1/2" X 2" Split Bushing	4
11	5KB100350B8	1" X 3-1/2" UNC Hex Bolt	8
12	5KBFW100	1" Flat Washer	8
13	5KBLW100	1" Lock Washer	8
14	5KBNC100	1" UNC Hex Nut	8
15	5KB11100	Grease Zerk	4
16	5KBK50500	Lift Cylinder Pin	1
17	5KBKTBX50	Hose Clamp	4
18	5KBK50480	Lift Cylinder Pin	1



### Left Hand Wing Frame and Transport Assembly

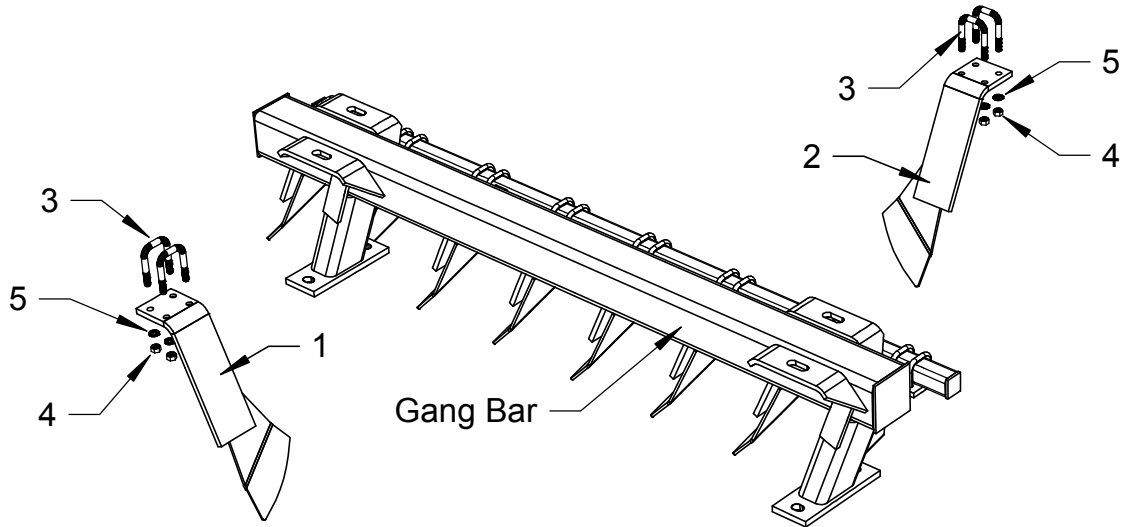
REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KB225302	Right Hand Wing Frame	1
2	5KB225307	Right Hand Wing Transport	1
3	5KBK50530	Hinge Pin	1
4	5KB038250B5	3/8" X 2-1/2" UNC Hex Bolt	1
5	5KBNC0385L	3/8" UNC Lock Nut	5
6	5KBFW225	2-1/4" Flat Washer	3
7	5KBK50520	Hydraulic Cylinder Rod End Pin	1
8	5KBK50470	Transport Pin	2
9	5KB375300CP	Cotter Pin	3
10	5KB175150200	1-3/4" X 1-1/2" X 2" Split Bushing	4
11	5KB100350B8	1" X 3-1/2" UNC Hex Bolt	8
12	5KBFW100	1" Flat Washer	8
13	5KBLW100	1" Lock Washer	8
14	5KBNC100	1" UNC Hex Nut	8
15	5KB11100	Grease Zerk	4
16	5KBK50500	Lift Cylinder Pin	1
17	5KBKTBX50	Hose Clamp	4
18	5KBK50480	Lift Cylinder Pin	1



### Control Arm Assemblies

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KB3081037	Bottom Transport Control Arm	1
2	5KB3081045	Left Hand Leveling Control Arm	1
3	5KB3081043	Left Hand Top Transport Control Arm	1
4	5KB3081073	Left Hand Control Arm Eyebolt	2
5	5KB3081041	Right Hand Leveling Control Arm	1
6	5KB3081039	Right Hand Top Transport Control Arm	1
7	5KBK13320	Right Hand Control Arm Eyebolt	2
8	5KB5004979	Compression Spring	2
9	5KBFW150	1-1/2" Flat Washer	4
10	5KB3081077	Lever Plate	2
11	5KB3050003	Slider	2
12	5KBSW125	1-1/4" Square Washer	2
13	5KBK50550	Pin	2
14	5KB3081130	Pin	2
15	5KBK50490	Pin	2
16	5KB100350B8	1" X 3-1/2" UNC Hex Bolt	4
17	5KBLW100	1" Lock Washer	4
18	5KBNC100	1" UNC Hex Nut	4
19	5KB375300CP	Cotter Pin	8
20	5KB11100	Grease Zerk	4
21	5KBFW125	1-1/4" Flat Washer	2



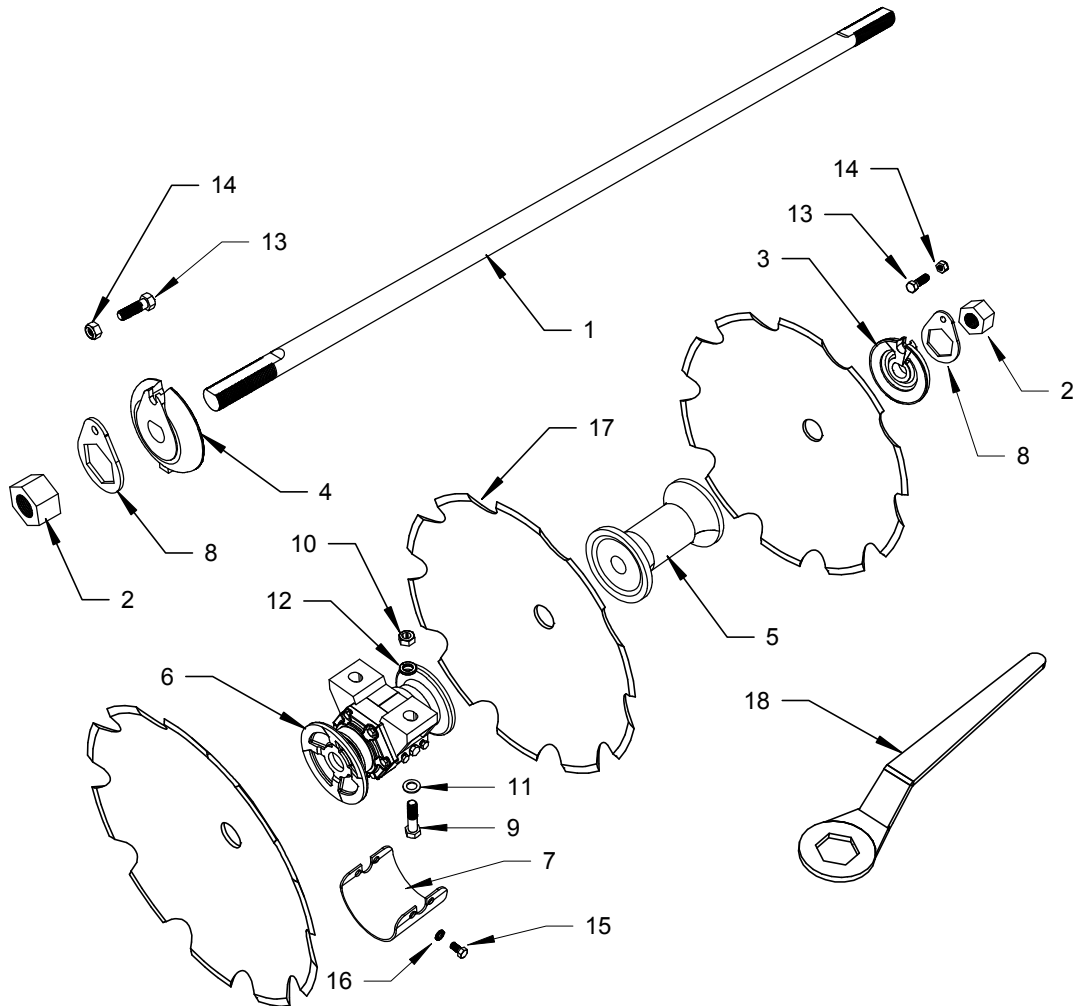


### Scrapers

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D (per scraper)
1	5KB3043116	Right Hand Scraper	1
2	5KB3043097	Left Hand Scraper	1
3	5KB3027043	1/2" UNC U-Bolt	2
4	5KBNC050	1/2" UNC Hex Nut	4
5	5KBLW050	1/2" Lock Washer	4

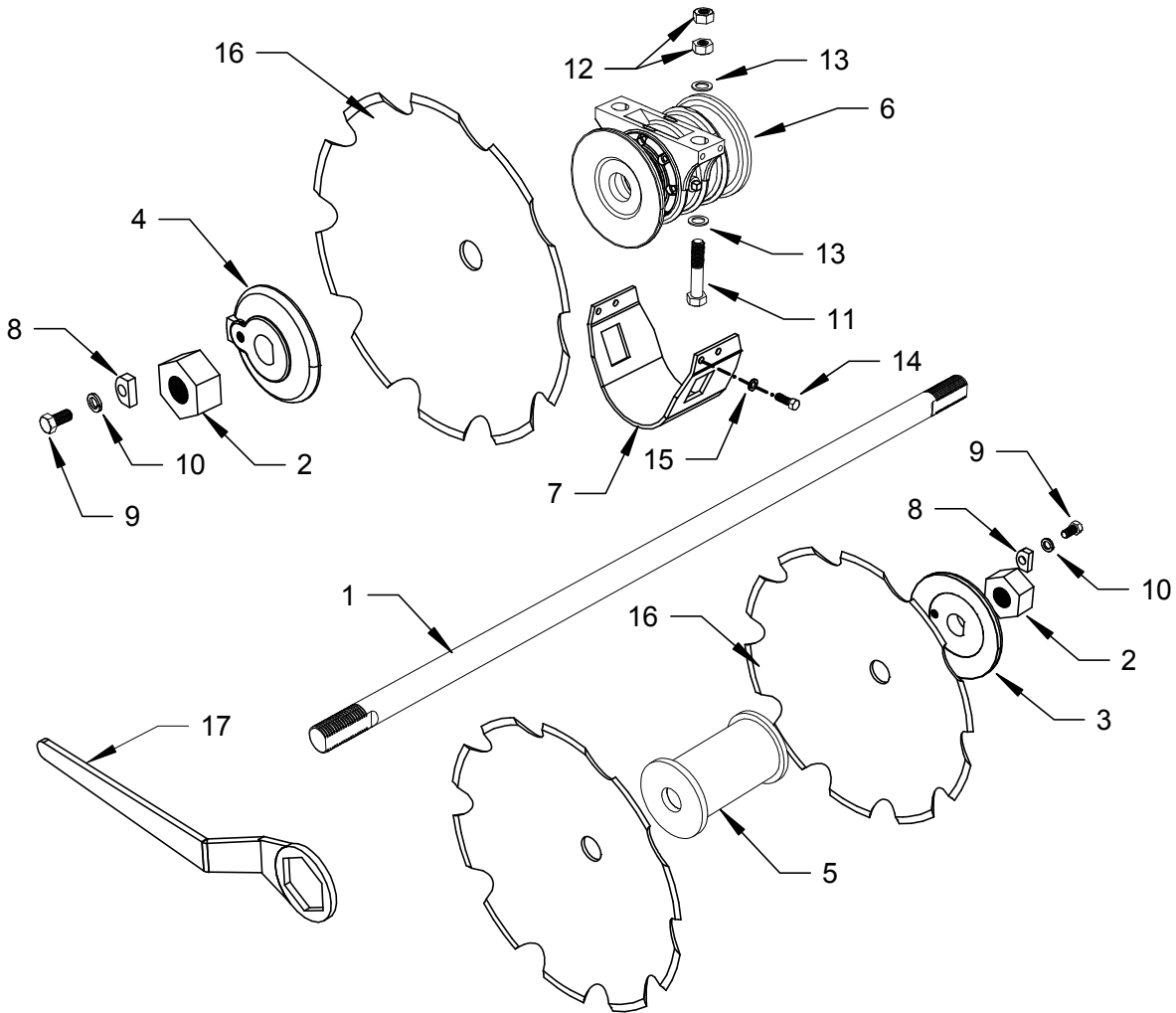
### Gang Bars

MODEL	PART NUMBER		POSITION	SCRAPERS REQ'D	
	1-5/8" Axle	2-1/8" Axle		5KB3043116	5KB3043097
ALL	5KB3081060T1	5KB3081060T2	Center - Right Front	8	
ALL	5KB3081061T1	5KB3081061T2	Center - Left Front		8
ALL	5KB3081062T1	5KB3081062T2	Center - Right Rear		7
ALL	5KB3081063T1	5KB3081063T2	Center - Left Rear	7	
TM5129	5KB3081210T1	5KB3081210T2	Right Wing - Front	10	
TM5129	5KB3081211T1	5KB3081211T2	Left Wing - Front		10
TM5129	5KB3081212T1	5KB3081212T2	Right Wing - Rear		12
TM5129	5KB3081213T1	5KB3081213T2	Left Wing - Rear	12	
TM5132	5KB3081064T1	5KB3081064T2	Right Wing - Front	11	
TM5132	5KB3081065T1	5KB3081065T2	Left Wing - Front		11
TM5132	5KB3081066T1	5KB3081066T2	Right Wing - Rear		13
TM5132	5KB3081067T1	5KB3081067T2	Left Wing - Rear	13	



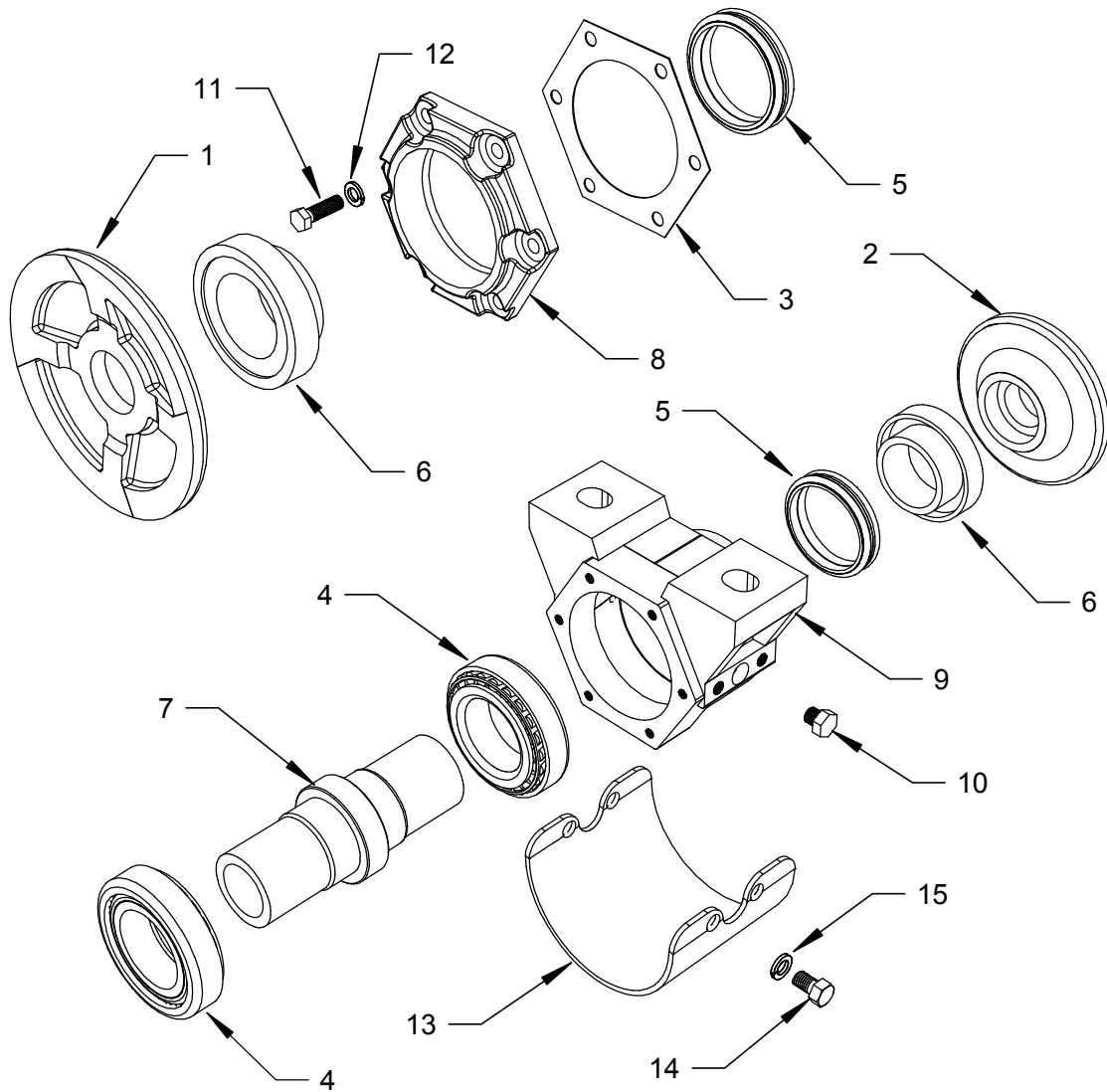
### Gang Assembly - 1-5/8" Axle

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D (per assembly)
1	5KB501015028	Axle - 38.3" (4 Blades)	1
1	5KB501019016	Axle - 48.8" (5 Blades)	1
1	5KB501019012	Axle - 59.5" (6 Blades)	1
1	5KB501015631	Axle - 70.0" (7 Blades)	1
1	5KB501019015	Axle - 80.5" (8 Blades)	1
2	5KB502040640	Axle Nut	2
3	5KB502011048	Concave Axle Washer	1
4	5KB502011047	Convex Axle Washer	1
5	5KB502010703	Spacer Spool	Blades less 3
6	5KB501048765	Oil-Bath Bearing Assembly	2
7	5KB511010829	Bearing Wear Plate	2
8	5KB501018592	Axle Nut Lock	2
9	5KB075275B8	3/4" X 2-3/4" UNC Hex Bolt	4
10	5KBNC075	3/4" UNC Hex Nut	4
11	5KBFW075	3/4" Flat Washer	4
12	5KBLW075	3/4" Lock Washer	4
13	5KB063200B5	5/8" X 2" UNC Hex Bolt	2
14	5KBNC0635L	5/8" Lock Nut	2
15	5KB050075B8	1/2" X 3/4" UNC Hex Bolt	8
16	5KBLW050	1/2" Lock Washer	8
17	5KB602037152	5/16" X 28" Notched Blade	
17	5KB602033060	5/16" X 26" Taper Blade	
17	5KB602030378	5/16" X 24" Taper Blade	
17	5KB3043186	1/4" X 22" Taper Blade	
18	5KB2R81S	Axle Wrench	2



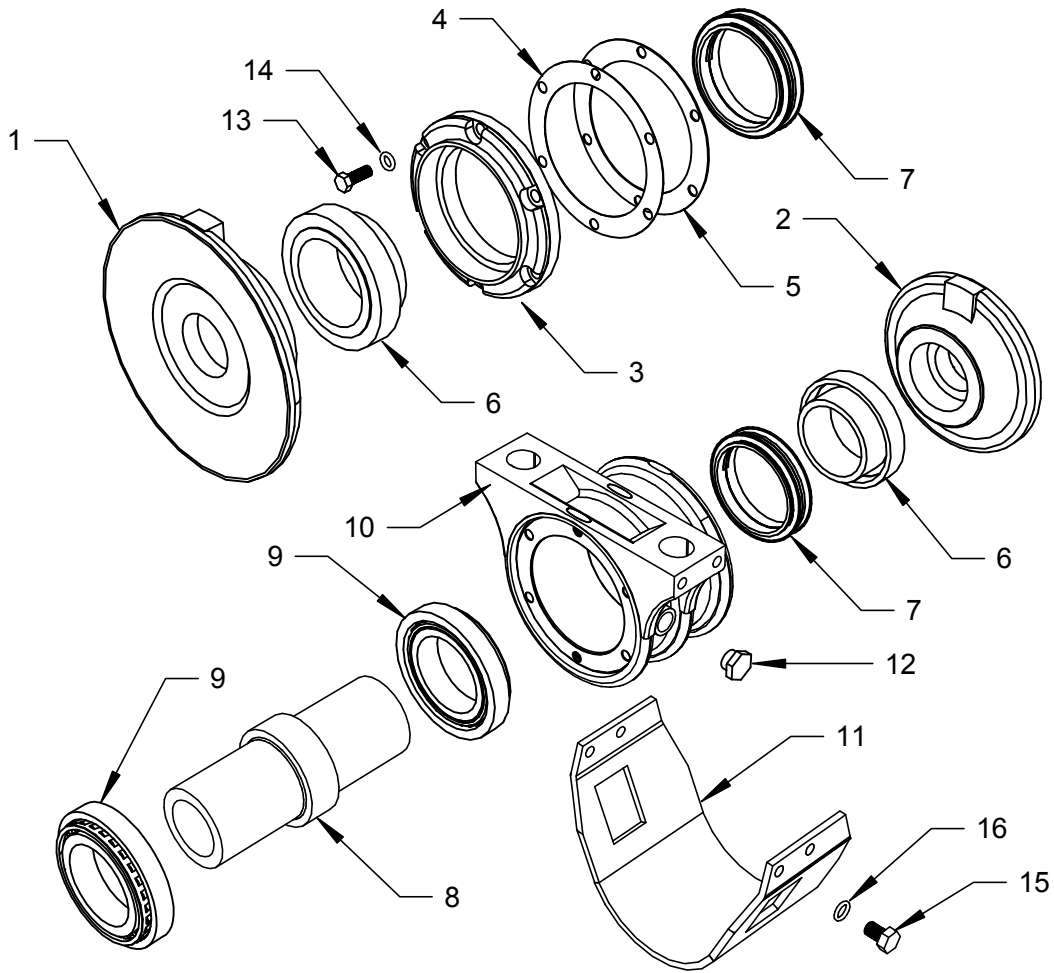
### Gang Assembly - 2-1/8" Axle

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D (per assembly)
1	5KBKAH1AX	Axle - 39.5" (4 Blades)	1
1	5KBKAH2AX	Axle - 50.0" (5 Blades)	1
1	5KBKAH3AX	Axle - 60.5" (6 Blades)	1
1	5KBKAH4AX	Axle - 71.0" (7 Blades)	1
1	5KBKAH5AX	Axle - 81.5" (8 Blades)	1
2	5KB4N200	Axle Nut	2
3	5KB4A64B	Concave Axle Washer	1
4	5KB4A60C	Convex Axle Washer	1
5	5KBK27880	Spacer Spool	Blades less 3
6	5KB511048212	Oil-Bath Bearing Assembly	2
7	5KB511016371	Bearing Wear Plate	2
8	5KBNL225	Axle Nut Lock	2
9	5KB075175B8	3/4" X 1-3/4" UNC Hex Bolt	2
10	5KBLW075	3/4" Lock Washer	2
11	5KB088450B8	7/8" X 4-1/2" UNC Hex Bolt	4
12	5KBNC088	7/8" UNC Hex Nut	8
13	5KBFW088	7/8" Flat Washer	8
14	5KB050050B8	1/2" X 1/2" UNC Hex Bolt	8
15	5KBLW050	1/2" Lock Washer	8
16	5KB3027148	5/16" X 28" Notched Blade	
16	5KB3043184	5/16" X 26" Notched Blade	
16	5KB3043185	5/16" X 24" Taper Blade	
16	5KB3043186	1/4" X 22" Taper Blade	
17	5KB2R81	Axle Wrench	2



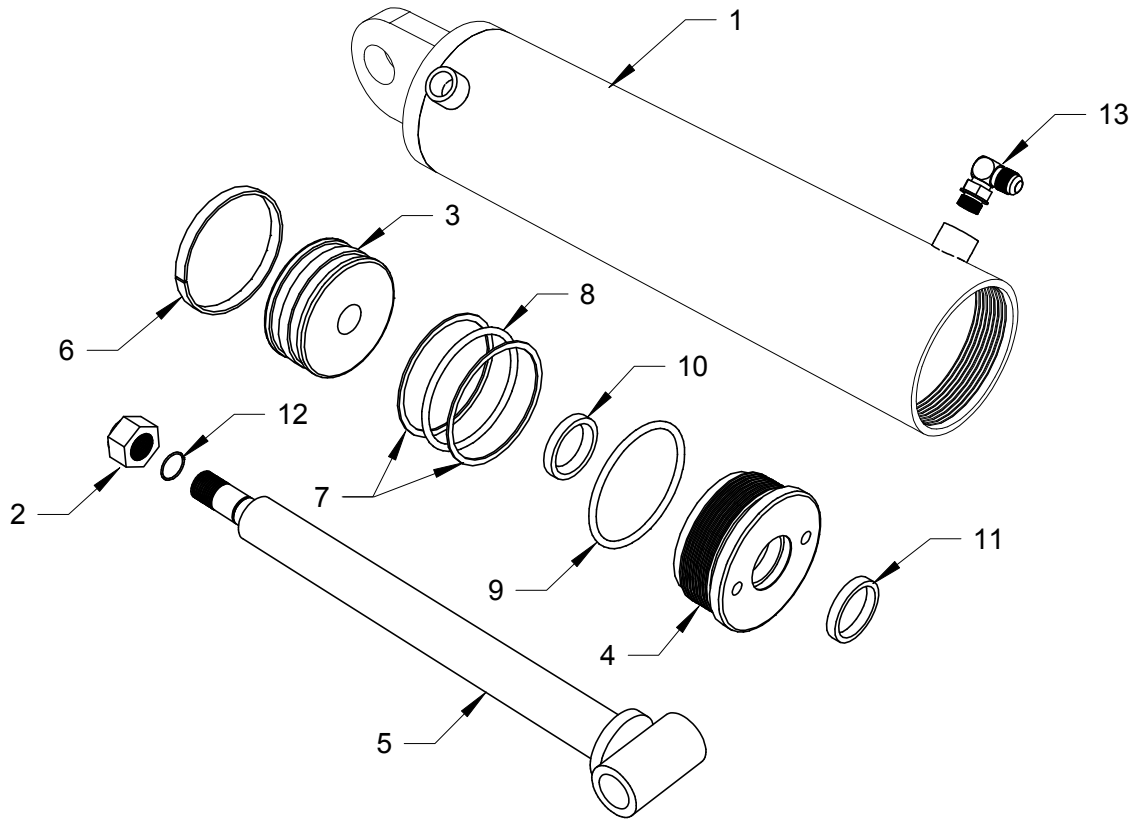
Oil-Bath Bearing Assembly - 5KB501048765 (1-5/8" Axle)

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KB5024010480	Concave Flange	1
2	5KB5024010479	Convex Flange	1
3	5KB5333010042	Gasket / Shim	
4	5KB6020350074	Bearing - Cup and Cone	2
5	5KB6020010297	Duo-Cone Seal	2
6	5KB5080010751	Seal Retainer	2
7	5KB5080010680	Bearing Axial	1
8	5KB5538014642	End Cap	1
9	5KB5368010584	Bearing Housing	1
10	5KB5081010007	Check Plug	2
11	5KB038125B	3/8" X 1-1/4" UNC Hex Bolt	6
12	5KBLW038	3/8" Lock Washer	6
13	5KB511010829	Bearing Wear Plate	2
14	5KB050075B	1/2" X 3/4" UNC Hex Bolt	4
15	5KBLW050	1/2" Lock Washer	4



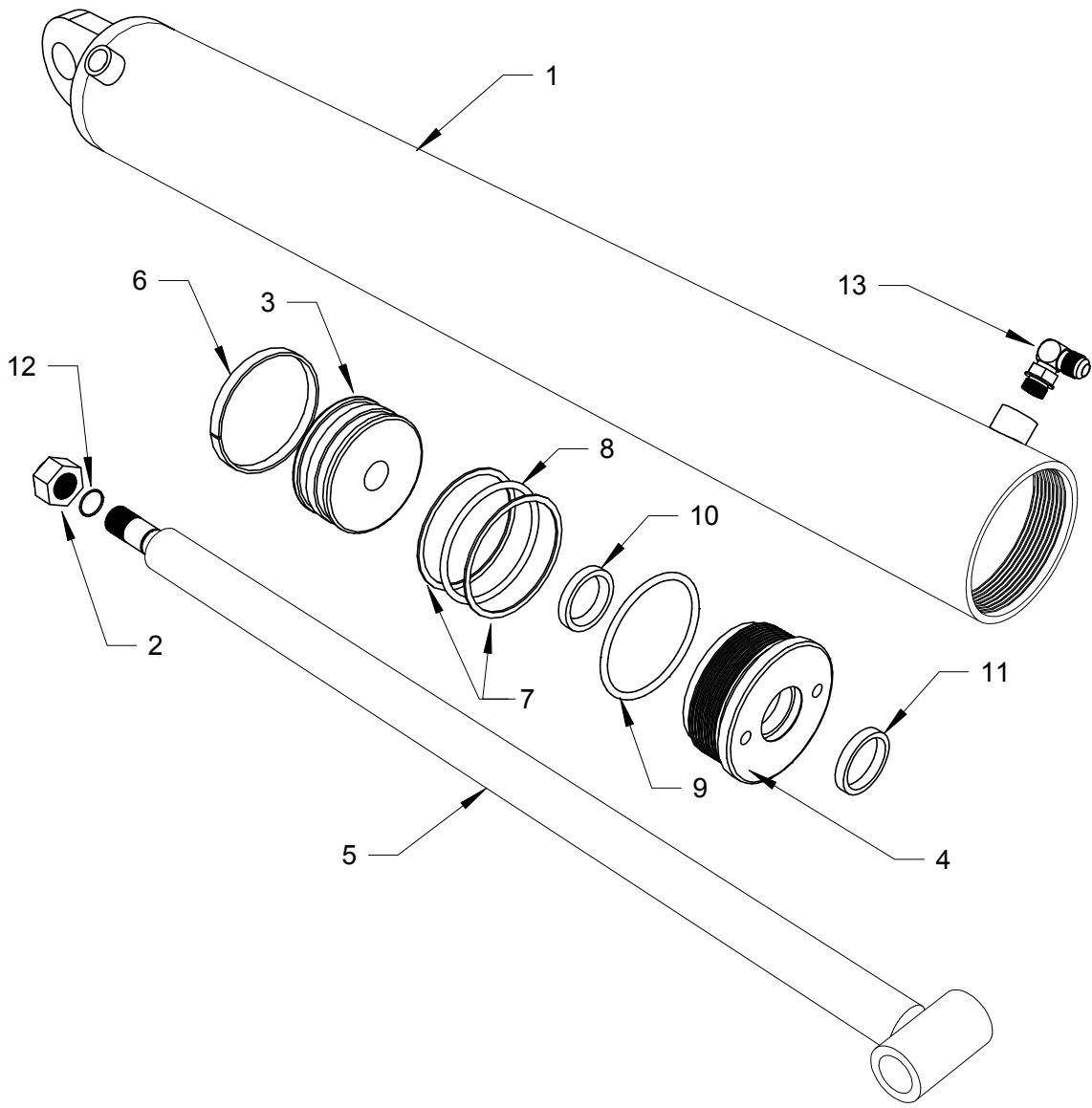
Oil-Bath Bearing Assembly - 5KB511048212 (2-1/8" Axle)

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KB502040195	Inner Flange - Concave	1
2	5KB502040196	Outer Flange - Convex	1
3	5KB502010645	End Cap	1
4	5KB503030536	Gasket - 0.4mm (Preload Shim)	
5	5KB503030686	Gasket - 0.1mm (Preload Gasket)	
6	5KB561014959	Seal Retainer	2
7	5KB503030028	Duo-Cone Seal	2
8	5KB561014958	Bearing Axial	1
9	5KB503010107	Bearing Cup and Cone	2
10	5KB502012618	Bearing Housing	1
11	5KB511016371	Wear Plate	1
12	5KB503010856	Check Plug	2
13	5KB038125B5	3/8" X 1-1/4" UNC Hex Bolt	6
14	5KBLW038	3/8" Lock Washer	6
15	5KB050075B8	1/2" X 3/4" UNC Hex Bolt	4
16	5KBLW050	1/2" Lock Washer	4



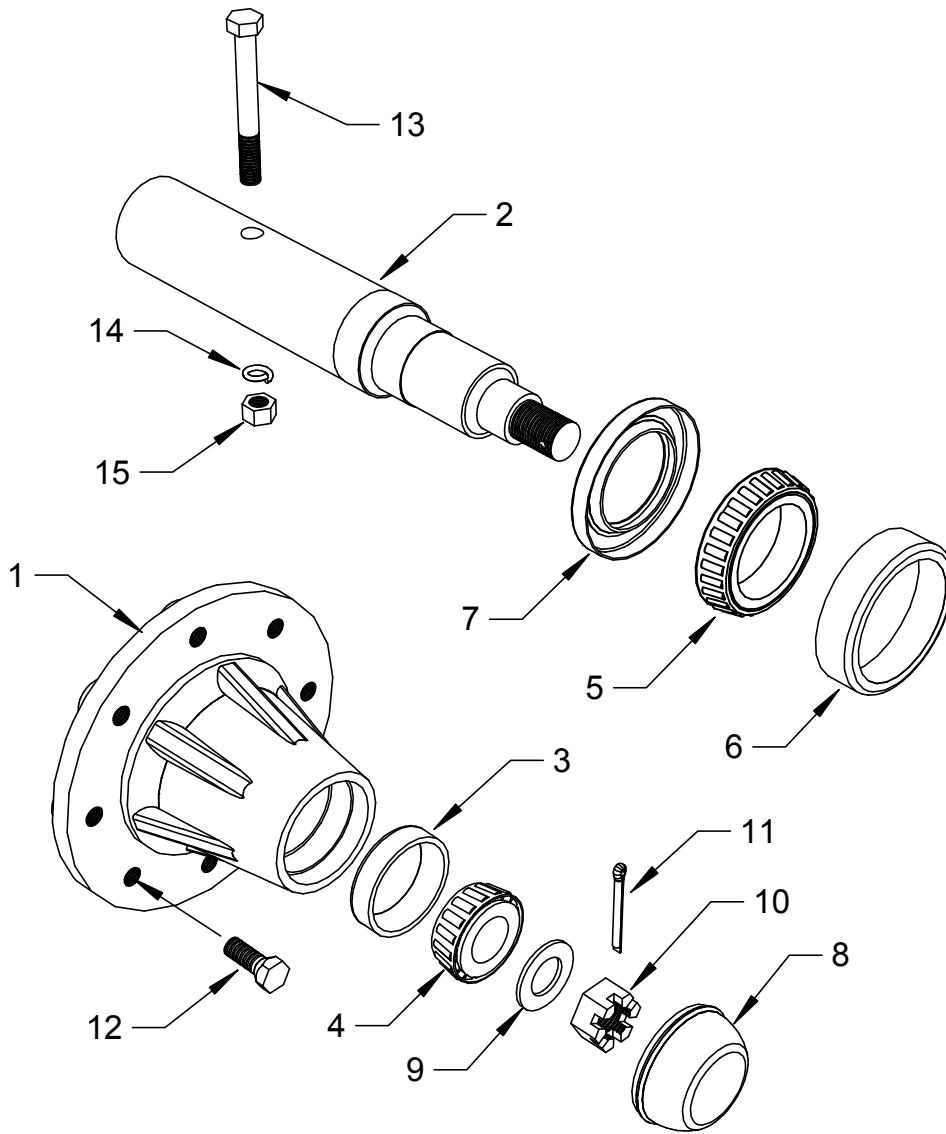
### 12" Hydraulic Cylinder - 5KB5004972

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D (per assembly)
1	5KB5005028	Barrel	1
2	5KB5005014	Lock Nut	1
3	5KB5005032	Piston	1
4	5KB5005022	Gland	1
5	5KB5005025	Rod	1
6	5KB5005011	Wear Ring	1
7	5KB5005010	Back-up Ring	2
8	5KB5005009	O-Ring	1
9	5KB5005005	O-Ring	1
10	5KB5005023	Rod Seal	1
11	5KB5005030	Rod Wiper	1
12	5KB5005013	O-Ring	1
13	5KB5000611	90 deg Elbow Fitting	2
	5KBSKC5086A	Seal Kit (Nos. 6,7,8,9,10,11,12)	



### 42" Modified Hydraulic Cylinder - 5KB5004973M

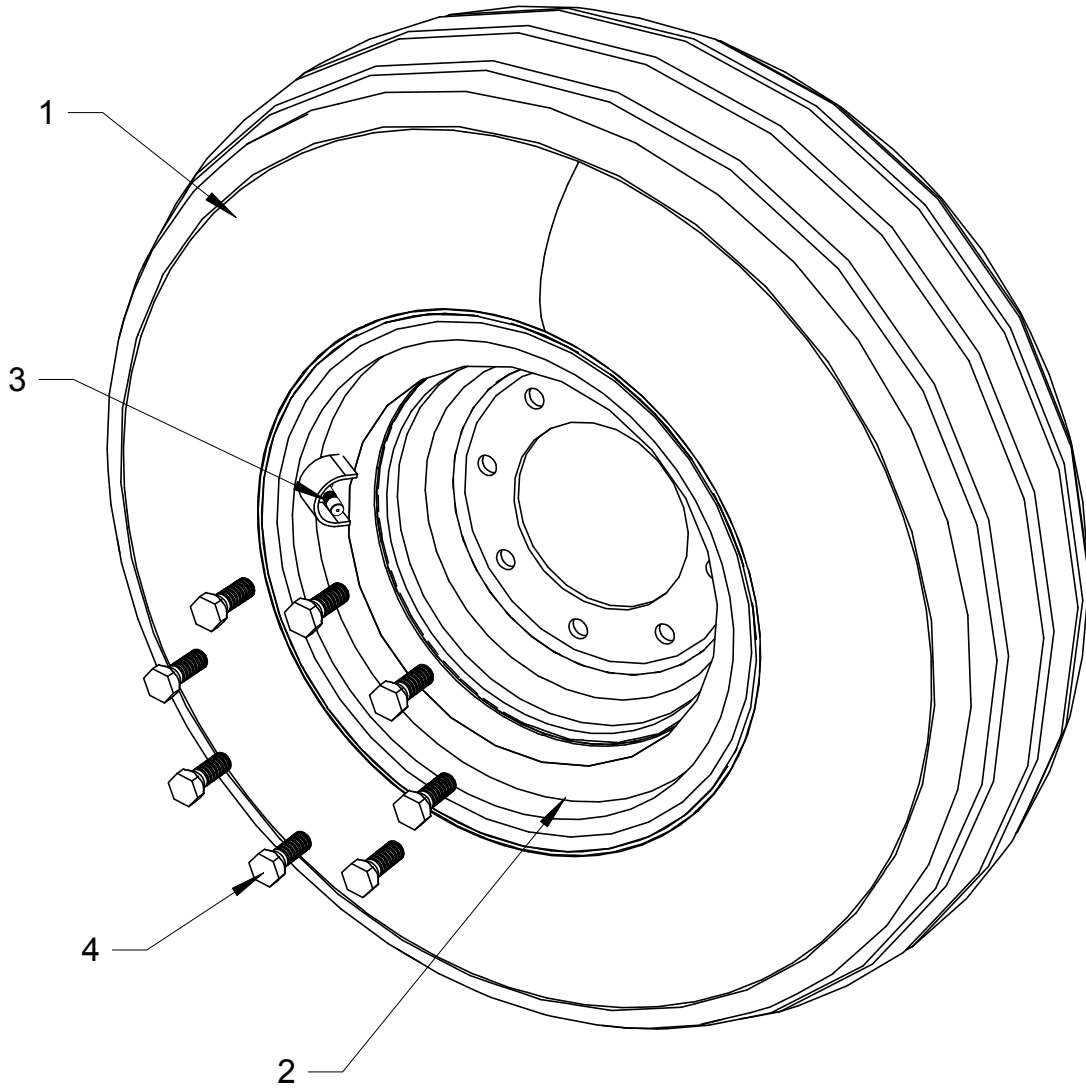
REF NO	PART NUMBER	DESCRIPTION	NO REQ'D (per assembly)
1	5KB5005040	Barrel	1
2	5KB5005014	Lock Nut	1
3	5KB5005032	Piston	1
4	5KB5005022	Gland	1
5	5KB5005041M	Rod	1
6	5KB5005011	Wear Ring	1
7	5KB5005010	Back-up Ring	2
8	5KB5005009	O-Ring	1
9	5KB5005005	O-Ring	1
10	5KB5005023	Rod Seal	1
11	5KB5005030	Rod Wiper	1
12	5KB5005013	O-Ring	1
13	5KB5000611	90 deg Elbow Fitting	2
	5KBSKC5086A	Seal Kit (Nos. 6,7,8,9,10,11,12)	



### 8-Bolt Hub - 5KB3027033

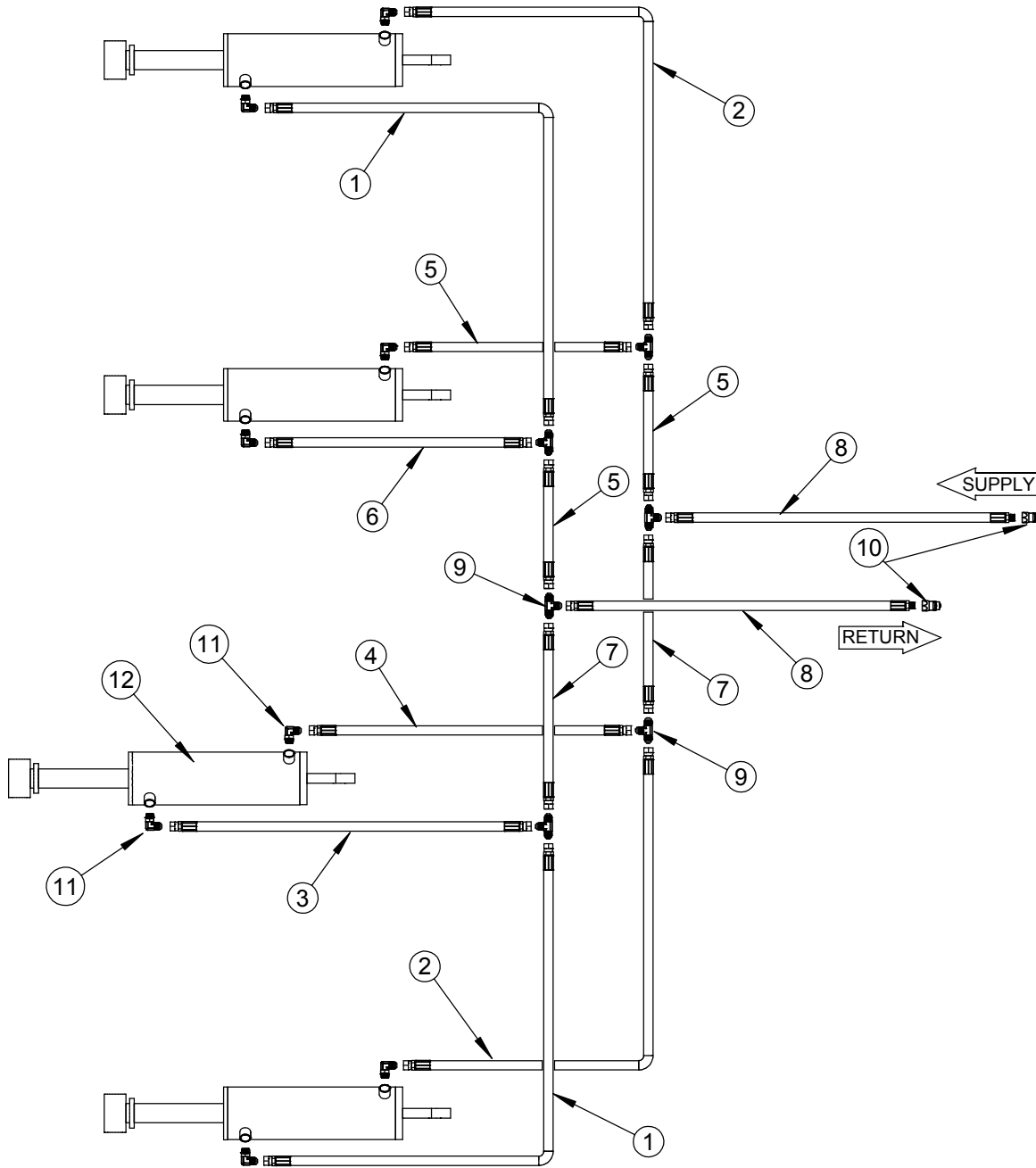
REF NO	PART NUMBER	DESCRIPTION	NO REQ'D (per assembly)
1	5KB5004997	Hub	1
2	5KB3027006	Spindle	1
3	5KB5004998	Outer Cup	1
4	5KB5004999	Outer Cone	1
5	5KB5005002	Inner Cone	1
6	5KB5005003	Inner Cup	1
7	5KB5005001	Seal	1
8	5KB5005000	Dust Cap	1
9	5KFW100	1" Hardened Flat Washer	1
10	5KBNF100S	1" UNF Slotted Hex Nut	1
11	5KBCK019150	Cotter Key	1
12	5KBWB12	Wheel Bolt	8
13	5KB050400B5	1/2" X 4" UNC Hex Bolt	1
14	5KBLW050	1/2" Lock Washer	1
15	5KBNC050	1/2" UNC Hex Nut	1





### Tire and Wheel Assembly

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KB5005077	11L-15 Implement Tire - Load Range F	1
2	5KB5004970	8 Bolt Steel Wheel	1
3	5KB5002632VS	Valve Stem	1
4	5KBWB12	Wheel Bolt	8

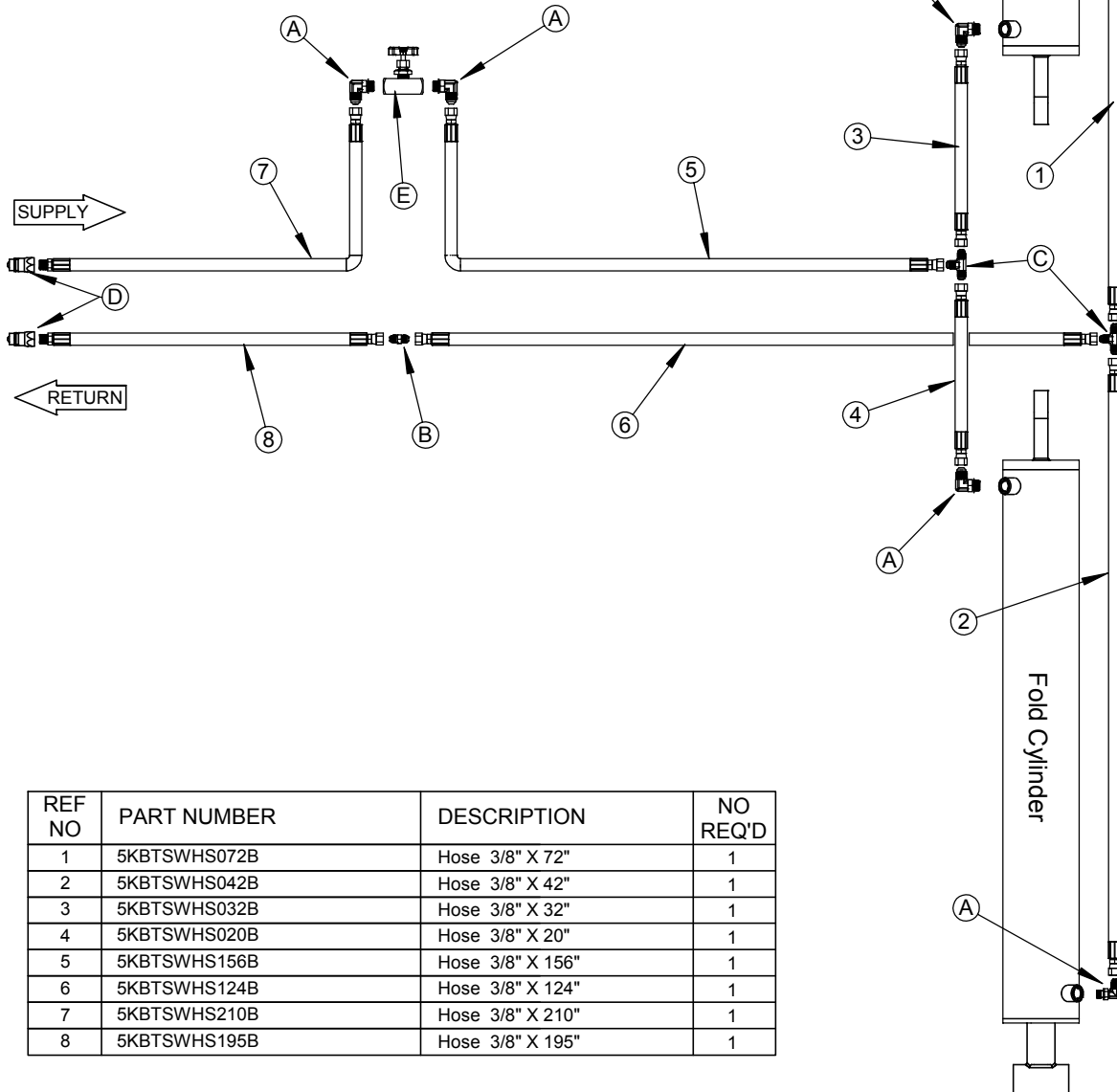


### Hydraulic Lift Cylinders and Hose Assembly

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KBTSWHS170	Hose 1/2" X 170"	2
2	5KBTSWHS154	Hose 1/2" X 154"	2
3	5KBTSWHS083	Hose 1/2" X 83"	1
4	5KBTSWHS072	Hose 1/2" X 72"	1
5	5KBTSWHS048	Hose 1/2" X 48"	3
6	5KBTSWHS060	Hose 1/2" X 60"	1
7	5KBTSWHS068	Hose 1/2" X 68"	2
8	5KBTSWHS194	Hose 1/2" X 194"	2
9	5KB5000554	Union Tee 08 JIC Male	6
10	5KB5004267	Quick Disconnect	4
11	5KB5000611	Elbow 08 ORB Male - 08 JIC Male	8
12	5KB5004972	12" Stroke Hydraulic Cylinder	4

## Hydraulic Fold Cylinders and Hose Assembly

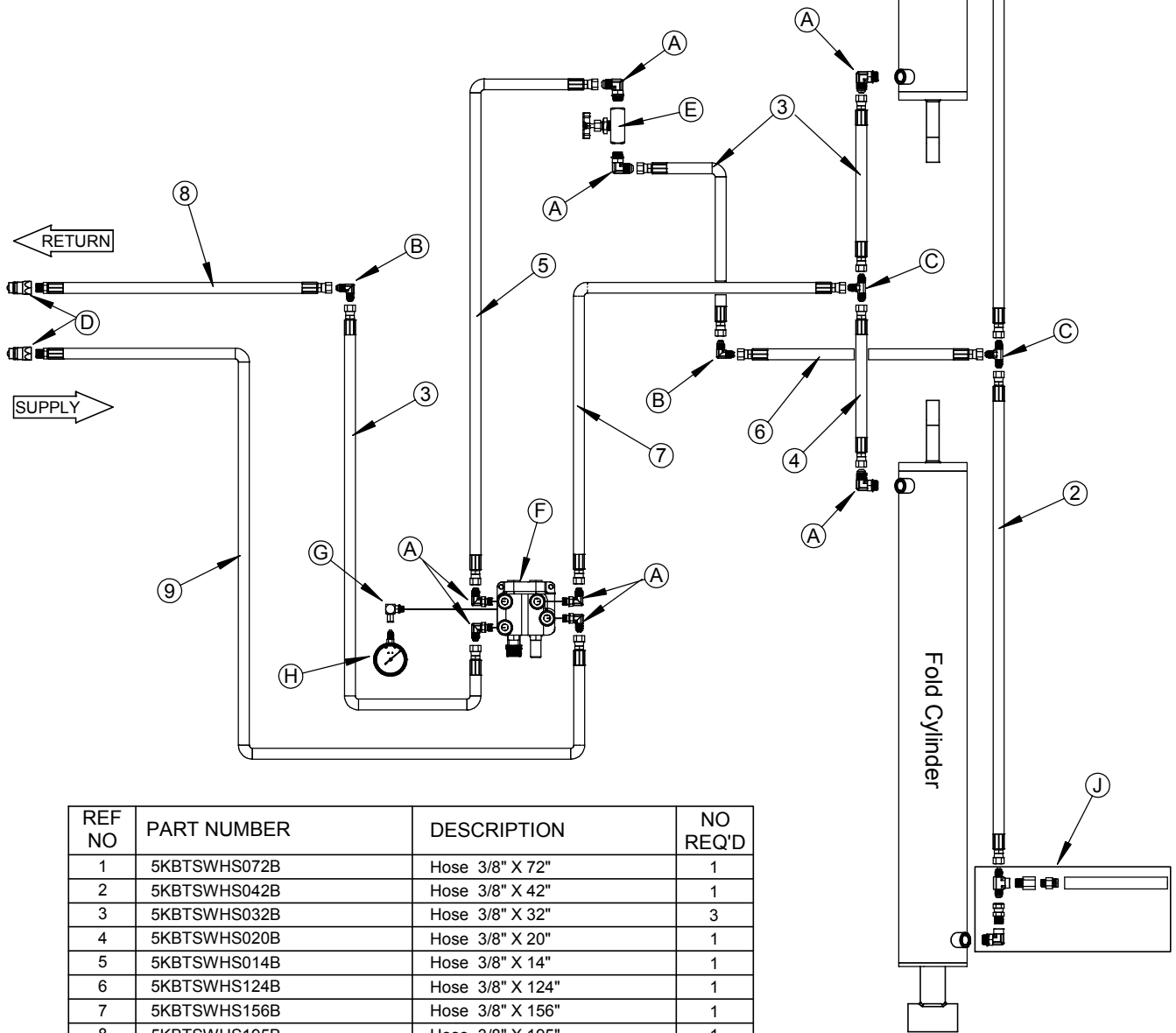
REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
A	5KB5000610	Elbow 08 ORB Male - 06 JIC Male	6
B	5KB5000670	Union 06 JIC Male	1
C	5KB5000620	Tee 06 JIC Male	2
D	5KB5004267	Quick Disconnect	2
E	5KBAN230906	Shut-Off Valve	1



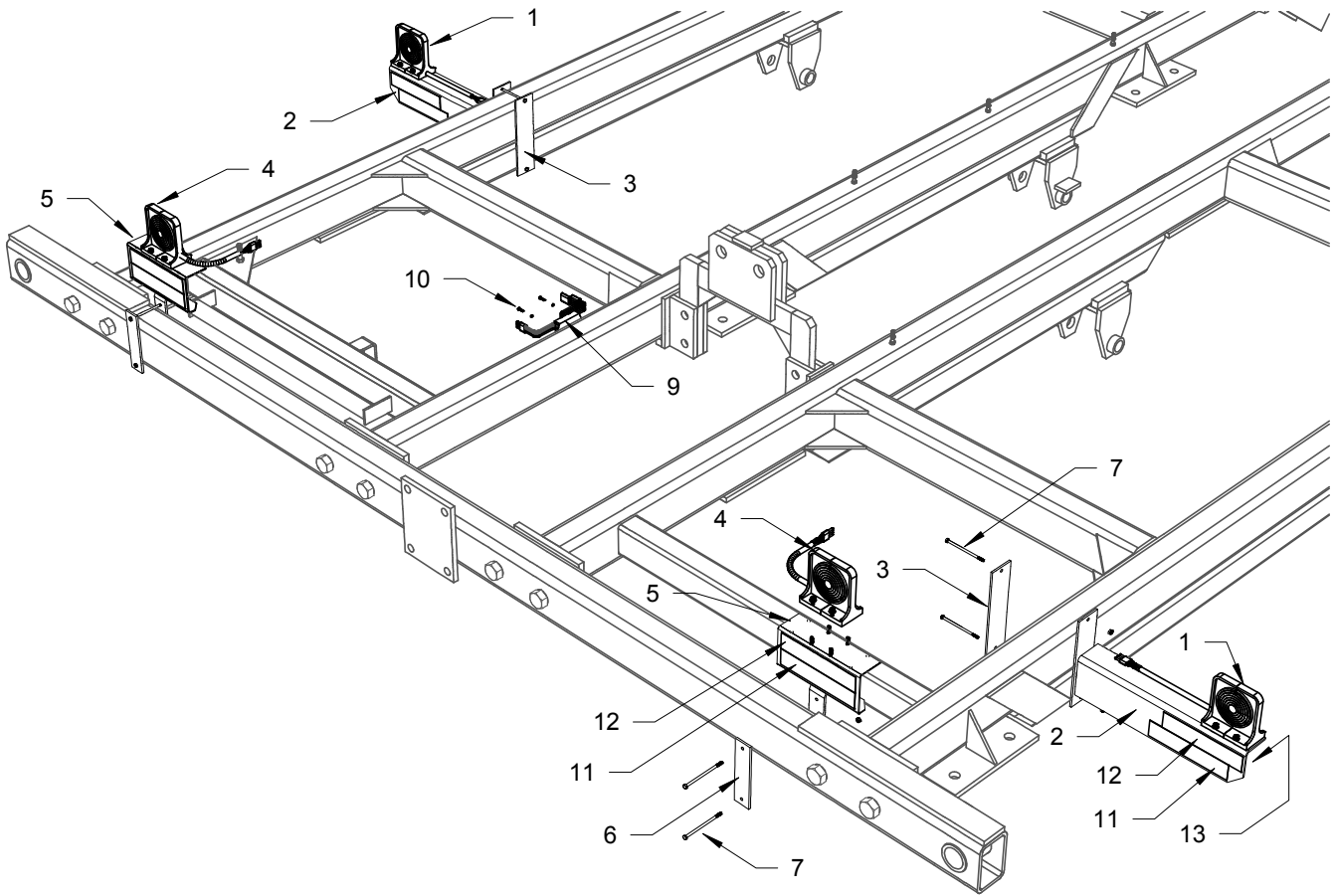
REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KBTSWHS072B	Hose 3/8" X 72"	1
2	5KBTSWHS042B	Hose 3/8" X 42"	1
3	5KBTSWHS032B	Hose 3/8" X 32"	1
4	5KBTSWHS020B	Hose 3/8" X 20"	1
5	5KBTSWHS156B	Hose 3/8" X 156"	1
6	5KBTSWHS124B	Hose 3/8" X 124"	1
7	5KBTSWHS210B	Hose 3/8" X 210"	1
8	5KBTSWHS195B	Hose 3/8" X 195"	1

# Hydraulic Fold Cylinders and Hose Assembly c/w Wing Control

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
A	5KB5000610	Elbow 08 ORB Male - 06 JIC Male	9
B	5KB5000720	Elbow 06 JIC Male	2
C	5KB5000620	Tee 06 JIC Male	2
D	5KB5004267	Quick Disconnect	2
E	5KBAN230906	Shut-Off Valve	1
F	5KBAN240819	Valve Control Assembly	1
G	5KBAN240698	Elbow	1
H	5KBAN240710	Dial Guage	1
J	5KBWCPRK	Pressure Relief Valve Assembly	1

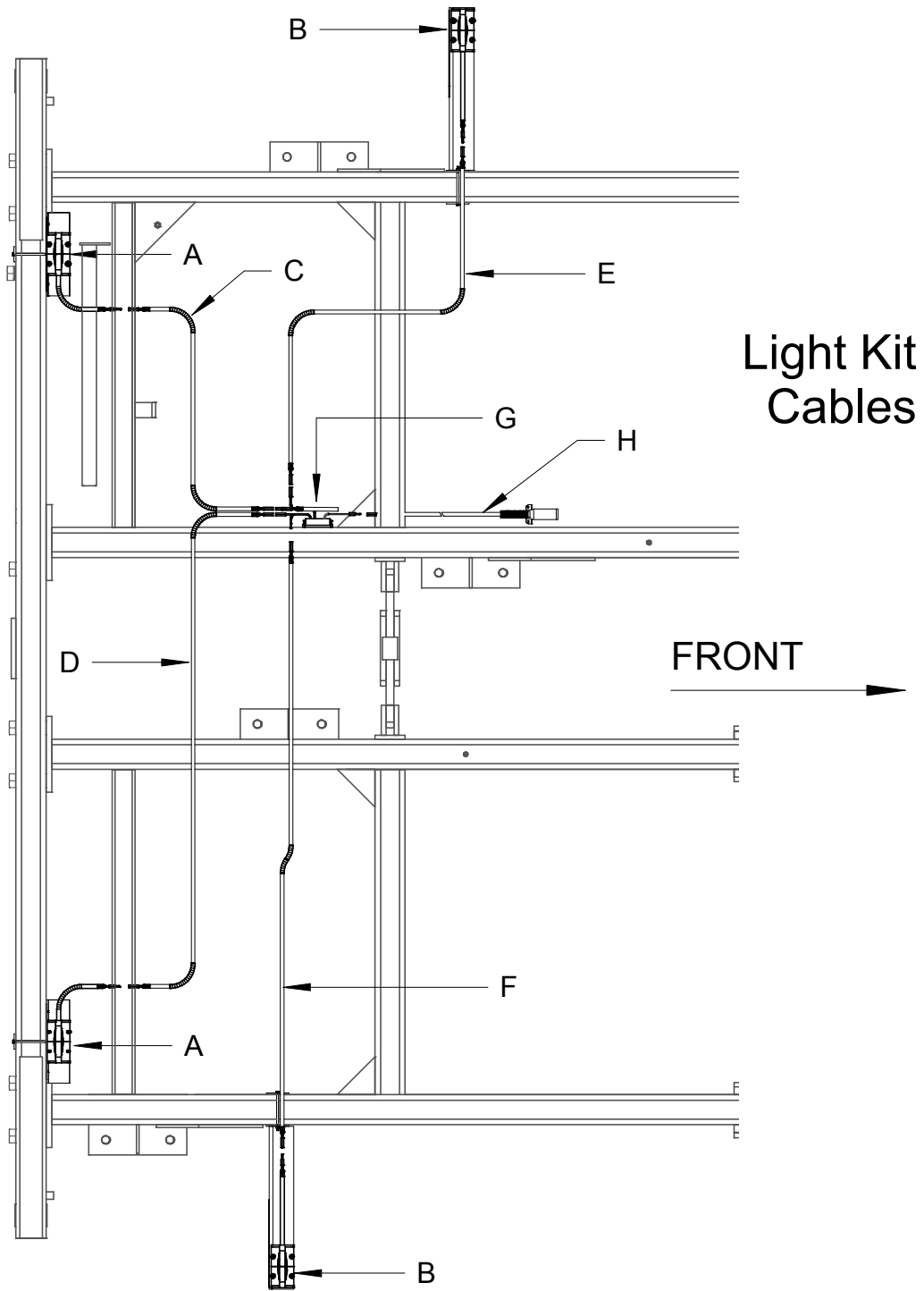


REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KBTSWHS072B	Hose 3/8" X 72"	1
2	5KBTSWHS042B	Hose 3/8" X 42"	1
3	5KBTSWHS032B	Hose 3/8" X 32"	3
4	5KBTSWHS020B	Hose 3/8" X 20"	1
5	5KBTSWHS014B	Hose 3/8" X 14"	1
6	5KBTSWHS124B	Hose 3/8" X 124"	1
7	5KBTSWHS156B	Hose 3/8" X 156"	1
8	5KBTSWHS195B	Hose 3/8" X 195"	1
9	5KBTSWHS210B	Hose 3/8" X 210"	1

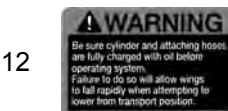
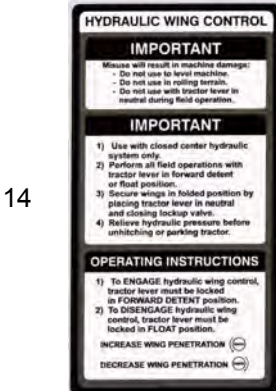
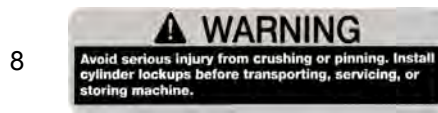
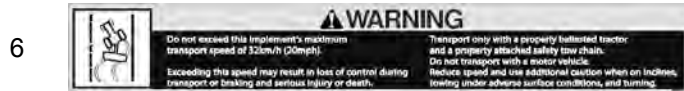


### Light Kit Components

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KBLIG009221	Orange Flasher	2
2	5KB2250060	Light Mount	2
3	5KB2250065	Clamp Strap	2
4	5KBLIG009211	Red Flasher	2
5	5KB2250070	Light Mount	2
6	5KB2250075	Clamp Strap	2
7	5KB025500BN	1/4" X 5" Bolt c/w Nut	8
8	5KB025100BN	1/4" X 1" Bolt c/w Nut	16
9	5KBML248W4	Module	1
10	5KBMN1024BN	No 10-24 Machine Screw c/w Nut	2
11	5KB456DRR	Red Reflector Strip	4
12	5KB456DOR	Orange Reflector Strip	4
13	5KB456DYR	Yellow Reflector Strip ( front side of item 2)	2



REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
A	5KBLIG009211	Red Flasher	2
B	5KBLIG009221	Orange Flasher	2
C	5KBT SW0843C	Intermediate Cable - 3 prong	1
D	5KBT SW1313C	Intermediate Cable - 3 prong	1
E	5KBT SW0842C	Intermediate Cable - 2 prong	1
F	5KBT SW1312C	Intermediate Cable - 2 prong	1
G	5KBML248W4	Module	1
H	5KBT SWCBLW	Primary Cable	1



## Decals, Reflectors and Logos

REF NO	PART NUMBER	DESCRIPTION	NO REQ'D
1	5KBSM2FT	Frontier Logo	4
2	5KBTM5129	Model Logo for TM5129	4
	5KBTM5132	Model Logo for TM5132	4
3	5KBRFLYW	Yellow Reflector	4
4	5KBRFLRD	Red Reflector	4
5	5KBRFLOR	Orange Reflector	4
6	5KBDWMTS	WARNING – Do not exceed implements maximum transport...	1
7	5KBDWPHF	WARNING – Avoid serious injury from injection of pressurized....	1
8	5KBDWICL	WARNING – Avoid serious injury from crushing or .....	1
9	5KBDCASI	CAUTION – To Avoid Serious Injury: .....	1
10	5KBDDDNA	DANGER – To avoid injury or death, do not adjust.....	1
11	5KBDWSCM	DANGER – Stand clear of machine when wings are.....	4
12	5KBDWCCO	WARNING – Be sure cylinder and attaching hoses.....	1
13	5KBDICLV	IMPORTANT – Wings may unfold due to thermal.....	1
14	5KBDIHWC	IMPORTANT – Hydraulic Wing Control	1

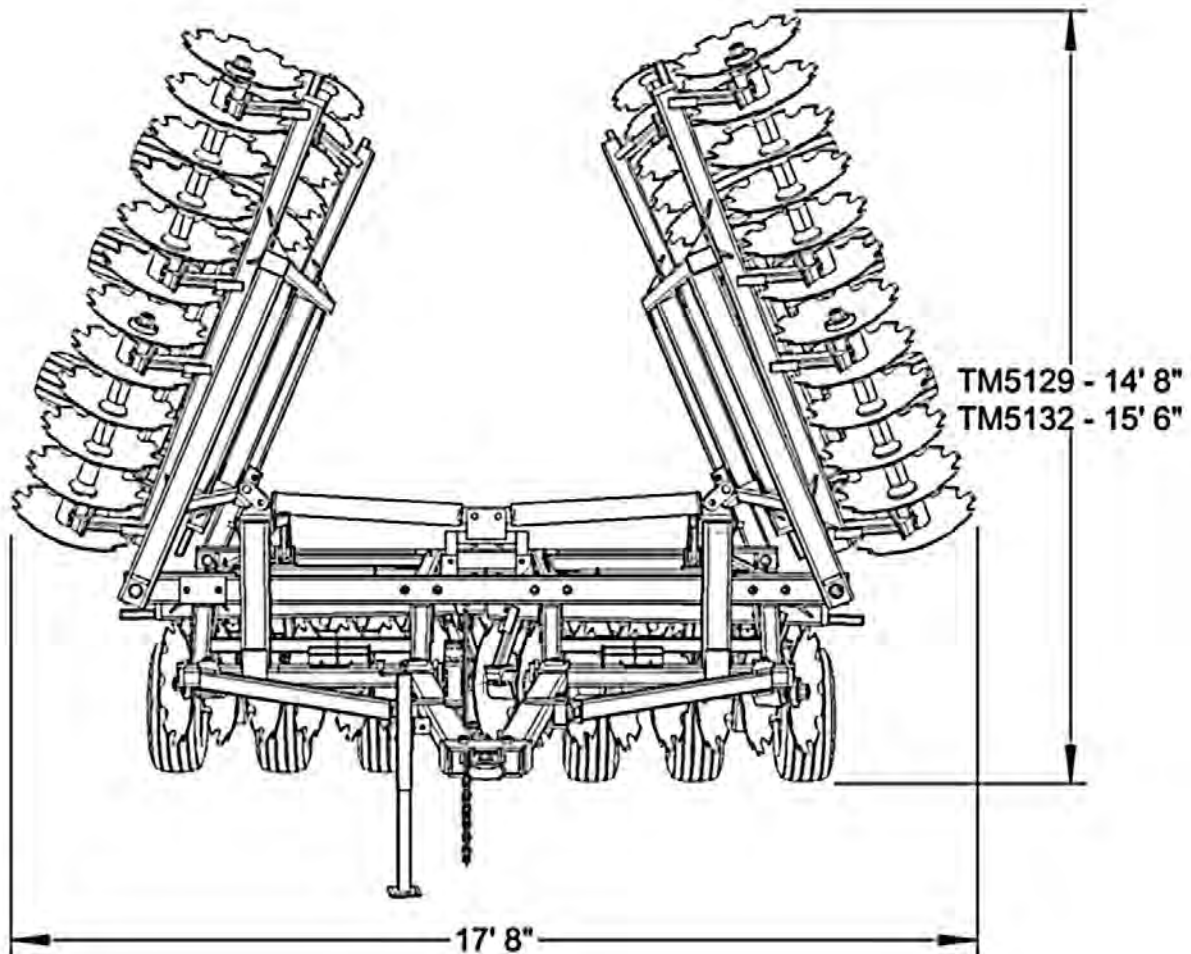
## Standard Equipment and Features

- Oil-Bath Bearings with back-to-back tapered roller bearings in a ductile cast housing sealed with metal industrial cone seals. Two bearings per disk gang assembly.
- Replaceable bearing wear plates.
- Adjustable disk blade scrapers.
- 1-5/8" diameter alloy gang axles threaded at each end (optional 2-1/8" axle).
- 1-5/8" gang axles – ductile cast spools / 2-1/8" gang axles - fabricated steel spacer spools.
- Separate transport levelling and field levelling mechanisms simplify adjustment.
- Hydraulic control group includes lift and fold welded 5" diameter hydraulic cylinders with 2" rods, hose holder, hoses with fittings and quick disconnects to reach tractor couplers.
- 11L-15 Highway Service implement tires on 8-bolt wheels and hubs.
- Major fasteners minimum Grade 8 plated.
- Two fabricated steel gang axle wrenches.
- Hitch jack, safety chain and transport stay.
- Safety decals, mounted SMV sign and Light Kit

MODEL	Cut Width	Trans Height	Blade Size	No of Blades	Blade Spacing	Weight - lbs	D.B.H.P.*
TM5129	29'	14' 8"	5/16" X 26/28"	82	10.5"	22000	260+
TM5132	32'	15' 6"	5/16" X 26/28"	74	10.5"	24100	280+

\* Drawbar Horsepower requirements vary with soil conditions, topography, weight added to the disk and tractor type (e.g. rubber track, rubber wheel, straight frame, articulated).

**Note:** The manufacturer reserves the right to make improvements and modifications which may, without notice, change these specifications.





## Storage

At the end of the season and when putting the disc into storage:

- Clean dirt and debris from around moving parts and from the top of the frame, gang bars, hitch and bridle.
- Pay special attention to cleaning the area around the bearings. Spray a light coating of oil or rust preventative around the seal area of the bearings.
- Lubricate all grease fittings to prevent moisture infiltration.
- It is recommended to park with the disk in the raised position, coat the exposed hydraulic cylinder rod with grease, install the transport stay and relieve the hydraulic pressure. Place a block under the hitch jack to prevent it from sinking into the ground and be sure the tires are properly inflated. Chock the tires front and rear.
- Clean disk blades to minimize rust.
- Coat the quick disconnects in grease and wrap in plastic to prevent rust.
- Make a final inspection for worn, damaged or missing parts and make necessary repairs before the next season.
- If possible, do not store wing disks in the folded position. Inverted disk blades on the front gang assemblies can accumulate water and snow next to the bearing seal area and result in potential bearing damage.

