

Farm King

OPERATOR AND PARTS MANUAL

Trailing V-Rake

Model TVR12, TVR14, TVR16

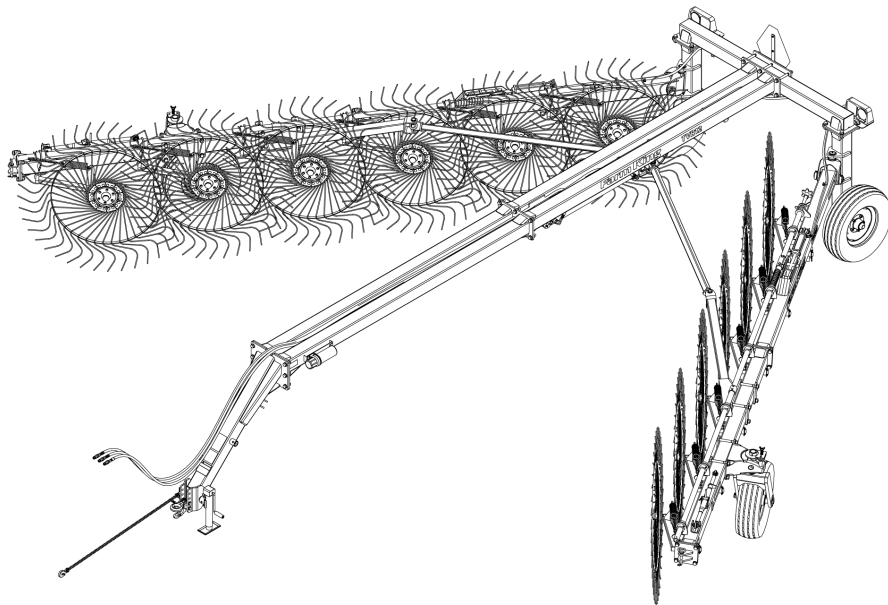


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Manufacturer's Statement: For technical reasons, Buhler Industries Inc. reserves the right to modify machinery design and specifications provided herein without any preliminary notice. Information provided herein is of descriptive nature. Performance quality may depend on soil fertility, applied agricultural techniques, weather conditions, and other factors.

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Warranty Registration Form

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery.

Customer Name:		Dealer Name:	
Customer Address:		Dealer Address:	
City:	Prov / State:	City:	Prov / State:
Postal / Zip Code:	Phone:	Postal / Zip Code:	Phone:

Equipment Model:	Serial Number:	Delivery Date:
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I have thoroughly instructed the buyer on the above described equipment which review included the Operator and Parts Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Dealer Inspection Report

☐	Rake wheels raise and lower
☐	Adjust windrow width
☐	Fasteners tightened
☐	Grease points lubricated
☐	Check wheel bolt torque and tire pressure
☐	Rake tines properly oriented
☐	Check hydraulic hoses

Safety

☐	Safety chain on hitch
☐	Decals installed
☐	Guards and shields installed
☐	Lights and reflectors installed
☐	Review operating and safety instructions

Date:	Dealer Rep. Signature:
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The above equipment and Operator And Parts Manual have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Date:	Customer / Owner Signature:
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Remove this Warranty Registration Form from the Operator And Parts Manual. Make two copies of the form. Send original Warranty Registration Form to Farm King. Give one copy to the customer and the dealer will keep one copy.

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Introduction

This Operator And Parts Manual was written to give the owner / operator instructions on the safe operation, maintenance and part identification of the Farm King equipment. READ AND UNDERSTAND THIS OPERATOR AND PARTS MANUAL BEFORE OPERATING YOUR FARM KING EQUIPMENT. If you have any questions, see your Farm King dealer. This manual may illustrate options and accessories not installed on your Farm King equipment.

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Owner's Information

Thank you for your decision to purchase a Farm King Trailing V-Rake. To ensure maximum performance of your equipment, it is mandatory that you thoroughly study the Operator And Parts Manual and follow the recommendations. Proper operation and maintenance are essential to maximize equipment life and prevent personal injury.

Operate and maintain this equipment in a safe manner and in accordance with all applicable local, state, and federal codes, regulations and / or laws. Follow all on-product labeling and instructions.

Make sure that all personnel have read this Operator And Parts Manual and thoroughly understand safe and correct operating, installation and maintenance procedures.

Farm King is continually working to improve its products. Farm King reserves the right to make any improvements or changes as deemed practical and possible without incurring any responsibility or obligation to make any changes or additions to equipment sold previously.

Although great care has been taken to ensure the accuracy of this publication, Farm King makes no warranty or guarantee of any kind, written or expressed, implied or otherwise with regard to the information contained within this manual. Farm King assumes no responsibility for any errors that may appear in this manual and shall not be liable under any circumstances for incidental, consequential or punitive damages in connection with, or arising from the use of this manual.

Keep this manual available for frequent reference. All new operators or owners must review the manual before using the equipment and annually thereafter. Contact your Farm King Dealer if you need assistance, information, or additional copies of the manual.

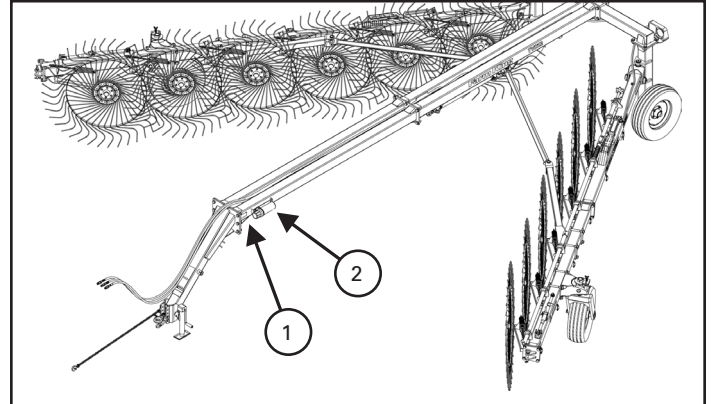
Visit our website at www.farm-king.com for a complete list of dealers in your area.

The directions left, right, front and rear, as mentioned throughout this manual, are as viewed by the operator sitting in the tractor seat while towing the implement.

Serial Number Location

Please enter the model and serial number in the space provided for easy reference.

Figure 1



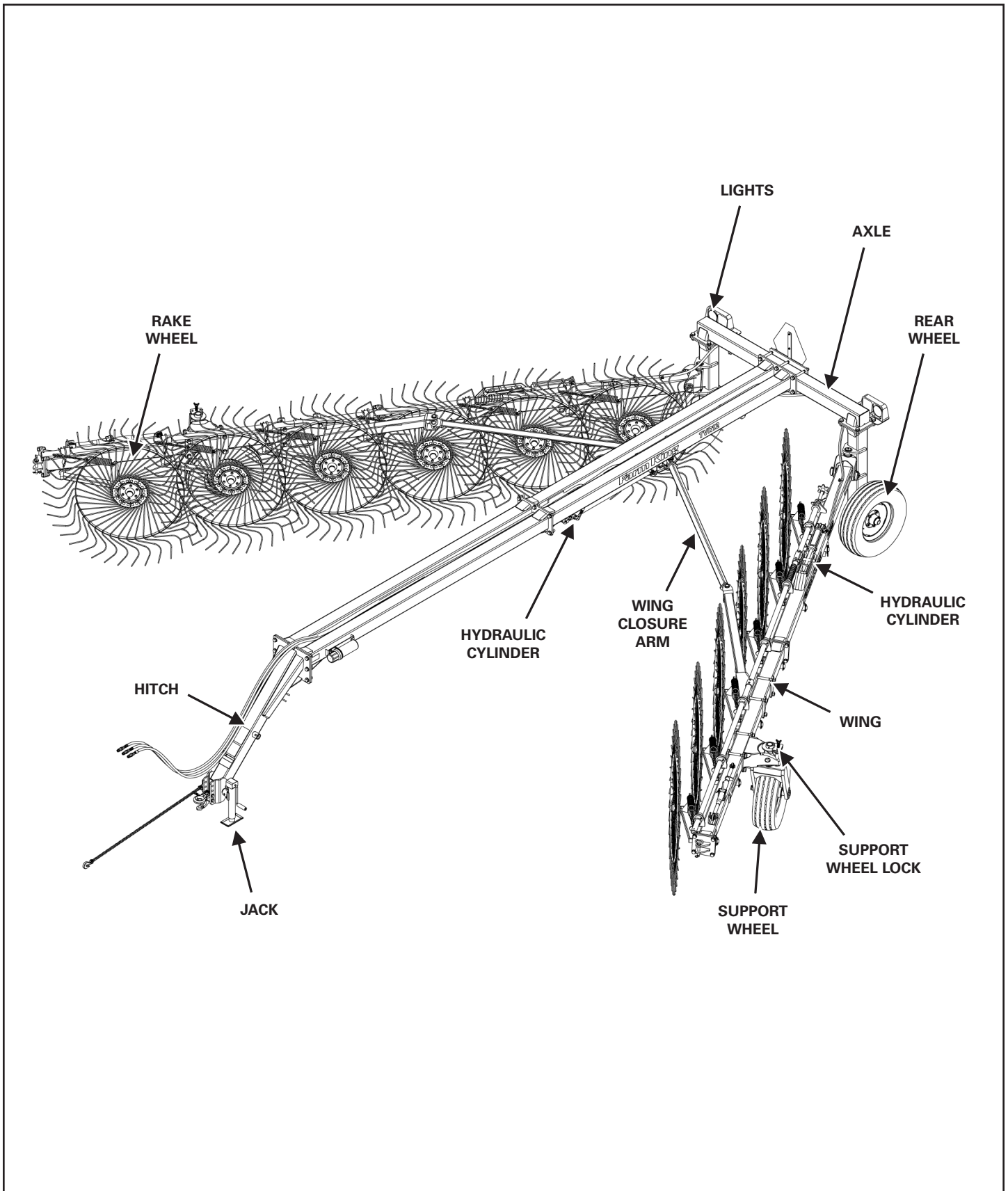
Model Number: _____

Serial Number: _____

The serial number plate (Item 1) and manual canister (Item 2) is located on the front of the center frame [Figure 1].

Always use your serial number when requesting information or when ordering parts.

Equipment Identification



Safety

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Safety Instructions

Guidelines



Safety Alert Symbol

This symbol with a warning statement means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



CAUTION

The signal word CAUTION on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



DANGER

The signal word DANGER on the machine and in the manuals indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

The signal word WARNING on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



IMPORTANT

This notice identifies procedures which must be followed to avoid damage to the machine.



WARNING

Operators must have instructions before operating the machine. Untrained operators can cause injury or death.

For an operator to be qualified, he or she must not use drugs or alcohol which impair alertness or coordination while working. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine and the equipment.

Understand the written instructions, rules and regulations:

- The written instructions from Farm King include the Warranty Registration, Dealer Inspection Report, Operator And Parts Manual and machine signs (decals).
- Check the rules and regulations at your location. The rules may include an employer's work safety requirements. Regulations may apply to local driving requirements or use of a Slow Moving Vehicle (SMV) emblem. Regulations may identify a hazard such as a utility line.

Have Training with Actual Operation:

- Operator training must consist of a demonstration and verbal instruction. This training is given by the machine owner prior to operation.
- The new operator must start in an area without bystanders and use all the controls until he or she can operate the machine safely under all conditions of the work area. Always fasten seat belt before operating.

Know the Work Conditions:

- Clear working area of all bystanders, especially small children and all obstacles that might be hooked or snagged, causing injury or damage.
- Know the location of any overhead or underground power lines. Call local utilities and have all underground power lines marked prior to operation.
- Wear tight fitting clothing. Always wear safety glasses when doing maintenance or service.

Use Safety Rules

- Read and follow instructions in this manual and the tractor's Operators Manual before operating.
- Under no circumstances should young children be allowed to work with this equipment.
- This equipment is dangerous to children and persons unfamiliar with its operation.
- Check for overhead and / or underground lines before operating equipment (if applicable).
- 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.
- Check that the equipment is securely fastened to the tractor / towing vehicle.
- Make sure all the machine controls are in the NEUTRAL position before starting the machine.
- Operate the equipment only from the operator's position.
- Operate the equipment according to the Operator And Parts Manual.
- When learning to operate the equipment, do it at a slow rate in an area clear of bystanders, especially small children.
- DO NOT permit personnel to be in the work area when operating the equipment.
- The equipment must be used ONLY on approved tractors / transport vehicles.
- DO NOT modify the equipment in any way. Unauthorized modification may impair the function and / or safety and could affect the life of the equipment.
- Stop tractor engine, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing, unplugging or filling.
- DO NOT make any adjustments or repairs on the equipment while the machine is running.
- Keep shields and guards in place. Replace if damaged.
- Keep hands, feet, hair and clothing away from all moving parts.

Machine Requirements And Capabilities

- Fasten seat belt securely. If equipped with a folding Roll-Over Protective Structure (ROPS), only fasten seat belt when ROPS is up and locked. DO NOT wear seat belt if ROPS is down.
- Stop the machine and engage the parking brake. Install blocks in front of and behind the rear tires of the machine. Install blocks underneath and support the equipment securely before working under raised equipment.
- Keep bystanders clear of moving parts and the work area. Keep children away.
- Use increased caution on slopes and near banks and ditches to prevent overturn.
- Make certain that the Slow Moving Vehicle (SMV) emblem is installed so that it is visible and legible. When transporting the equipment, use the flashing warning lights (if equipped) and follow all local regulations.
- Before leaving the operator's position:
 1. Always park on a flat level surface
 2. Place all controls in neutral
 3. Engage the parking brake
 4. Stop engine
 5. Wait for all moving parts to stop
- Carry passengers only in designated seating areas. Never allow riders on the machine or equipment. Falling off can result in serious injury or death.
- Start the equipment only when properly seated in the operator's seat. Starting a machine in gear can result in serious injury or death.
- Operate the machine and equipment from the operator's position only.
- The parking brake must be engaged before leaving the operator's seat. Roll away can occur because the transmission may not prevent machine movement.

Transport Safety

- Do not exceed 20 mph (32 kph). Reduce speed on rough roads and surfaces.
- Comply with state and local laws governing highway safety and movement of machinery on public roads.
- The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use.
- Local laws should be checked for all highway lighting and marking requirements.
- Always yield to oncoming traffic in all situations and move to the side of the road so any following traffic may pass.
- Always enter curves or drive up or down hills at a low speed and at a gradual steering angle.
- Never allow riders on either tractor or equipment.
- Keep tractor / towing vehicle in a lower gear at all times when traveling down steep grades.
- Maintain proper brake settings at all times (if equipped).

Fire Prevention



Maintenance

- The machine and some equipment have components that are at high temperatures under normal operating conditions. The primary source of high temperatures is the engine and exhaust system. The electrical system, if damaged or incorrectly maintained, can be a source of arcs or sparks.
- Flammable debris (leaves, straw, etc.) must be removed regularly. If flammable debris is allowed to accumulate, it can cause a fire hazard. Clean often to avoid this accumulation. Flammable debris in the engine compartment is a potential fire hazard. The operator's area, engine compartment and engine cooling system must be inspected every day and cleaned if necessary to prevent fire hazards and overheating.
- All fuels, most lubricants and some coolant mixtures are flammable. Flammable fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire.

Operation

- The Farm King machine must be in good operating condition before use.
- Check all of the items listed on the service schedule under the 8 hour column before operation (see Maintenance section).
- Do not use the machine where exhaust, arcs, sparks or hot components can contact flammable material, explosive dust or gases.

Starting

- Do not use ether or starting fluids on any engine that has glow plugs. These starting aids can cause explosion and injure you or bystanders.
- Use the procedure in the tractor's operator's manual for connecting the battery and for jump starting.

Electrical



- Check all electrical wiring and connections for damage. Keep the battery terminals clean and tight. Repair or replace any damaged part or wires that are loose or frayed.
- Battery gas can explode and cause serious injury. Do not jump start or charge a frozen or damaged battery. Keep any open flames or sparks away from batteries. Do not smoke in battery charging area.

Hydraulic System

- Check hydraulic tubes, hoses and fittings for damage and leakage. Never use open flame or bare skin to check for leaks. Hydraulic tubes and hoses must be properly routed and have adequate support and secure clamps. Tighten or replace any parts that show leakage.
- Always clean fluid spills. Do not use gasoline or diesel fuel for cleaning parts. Use commercial nonflammable solvents.

Fueling



- Stop the engine and let it cool before adding fuel. No smoking! Do not refuel a machine near open flames or sparks. Fill the fuel tank outdoors.

Welding And Grinding

- Always clean the machine and equipment, disconnect the battery, and disconnect the wiring from the machine controls before welding. Cover rubber hoses, battery and all other flammable parts. Keep a fire extinguisher near the machine when welding.
- Have good ventilation when grinding or welding painted parts. Wear dust mask when grinding painted parts. Toxic dust or gas can be produced.
- Dust generated from repairing nonmetallic parts such as hoods, fenders or covers can be flammable or explosive. Repair such components in a well ventilated area away from open flames or sparks.

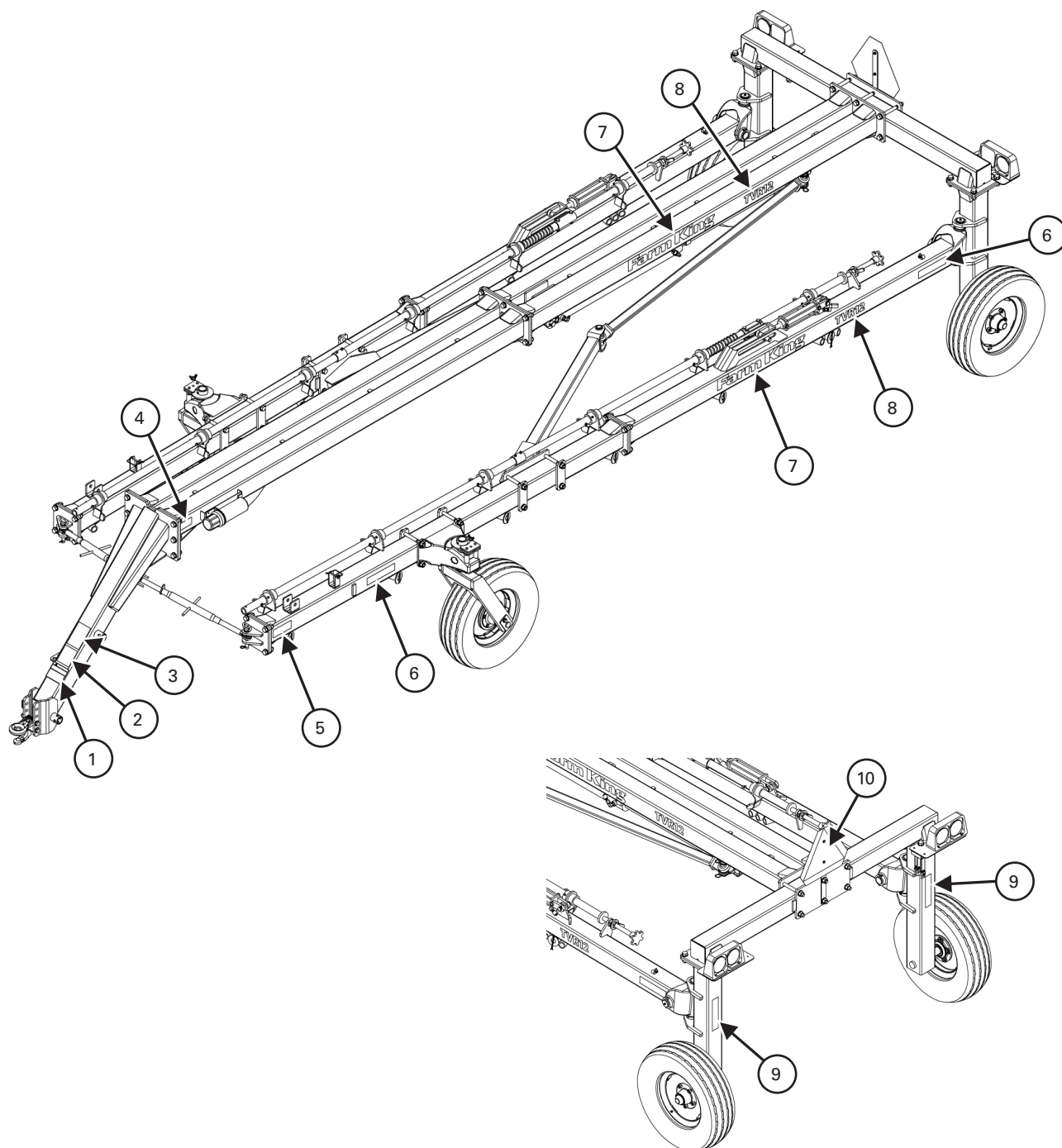
Fire Extinguishers



- Know where fire extinguishers and first aid kits are located and how to use them. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instructions plate.

Equipment and Safety Decals

Figure 2



Decal Identification [Figure 2]

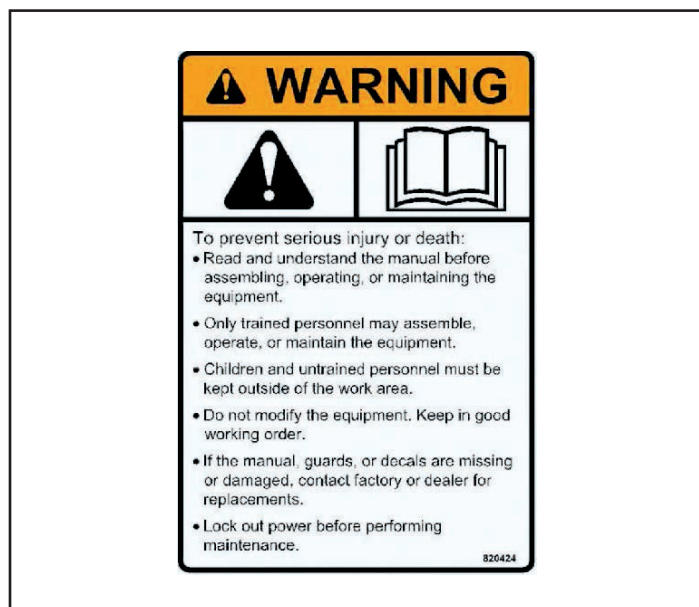
918280 DECAL-WARNING HIGH PRESSURE FLUID (Item 1)



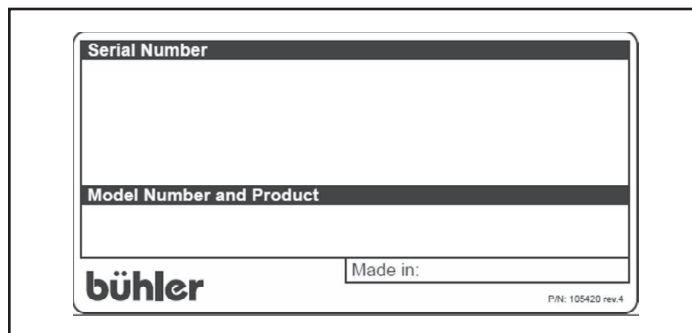
820426 DECAL-WARNING TRANSPORT (Item 2)



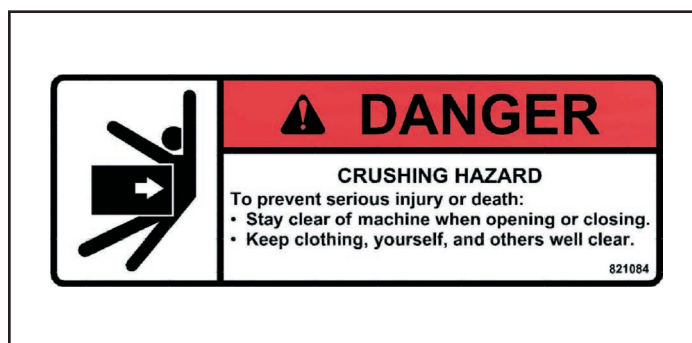
820424 DECAL-WARNING READ MANUAL (Item 3)



105420 DECAL-REFERENCE PLATE BUHLER S/N (Item 4)



821084 DECAL-SIDE CRUSH HAZARD (Item 5)



967055 DECAL-REFLECTIVE 2 X 9 AMBER (Item 6)



821279 DECAL-FARMKING 4.21 X 28.76 WHITE (Item 7)



821280 DECAL-TVR12 WHITE (Item 8)



821281 DECAL-TVR14 WHITE (Item 8)



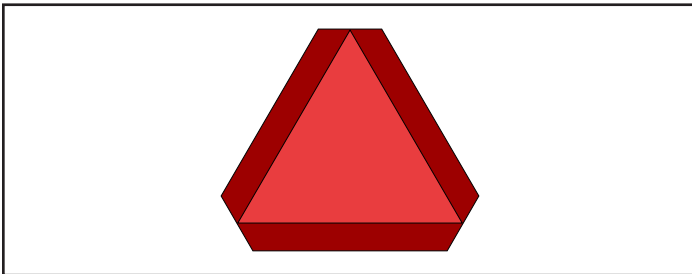
821282 DECAL-TVR16 WHITE (Item 8)



967053 DECAL-REFLECTIVE 2 X 9 RED (Item 9)



967066 SLOW MOVING VEHICLE SIGN (Item 10)



Safety Sign-Off Form



WARNING

Instructions are necessary before operating or servicing equipment. Read and understand the Operator And Parts Manual and safety signs (decals) on equipment. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

Farm King follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and / or maintaining the equipment must read and clearly understand ALL Safety, Operating and Maintenance information presented in this manual.

Annually review this information before the season start-up and make these periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment. An untrained operator is unqualified to operate this machine.

The following sign-off sheet is provided for your record and to show that all personnel who will be working with the equipment have read and understand the information in this Operator And Parts Manual and have been instructed in the operation of the equipment.

SIGN-OFF SHEET		
Date	Employee's Signature	Employer's Signature

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Component Unloading And Identification



WARNING



AVOID INJURY OR DEATH

Keep fingers and hands out of pinch points when assembling the equipment.



WARNING



DO NOT permit bystanders to be in the work area when unloading and assembling components.

DO NOT work under suspended parts.

Keep away from moving parts.

Always use lifting devices / vehicles, chains or straps of adequate size and strength when unloading and assembling components.

Unload the crate(s) and components on a flat level area of adequate size to assemble the equipment.



IMPORTANT

Unload crate(s) and other components carefully to prevent damage to any of the components.

NOTE: If any components are damaged, missing or replacement parts are required, contact your Farm King Dealer.

Assemble the equipment in the following order on a flat and level surface:

1. Frame
2. Wings
3. Rakes

Using the packing list, locate and place all components and hardware in one area. Count the individual components and verify that you have received the correct number of components to fully assemble the equipment.



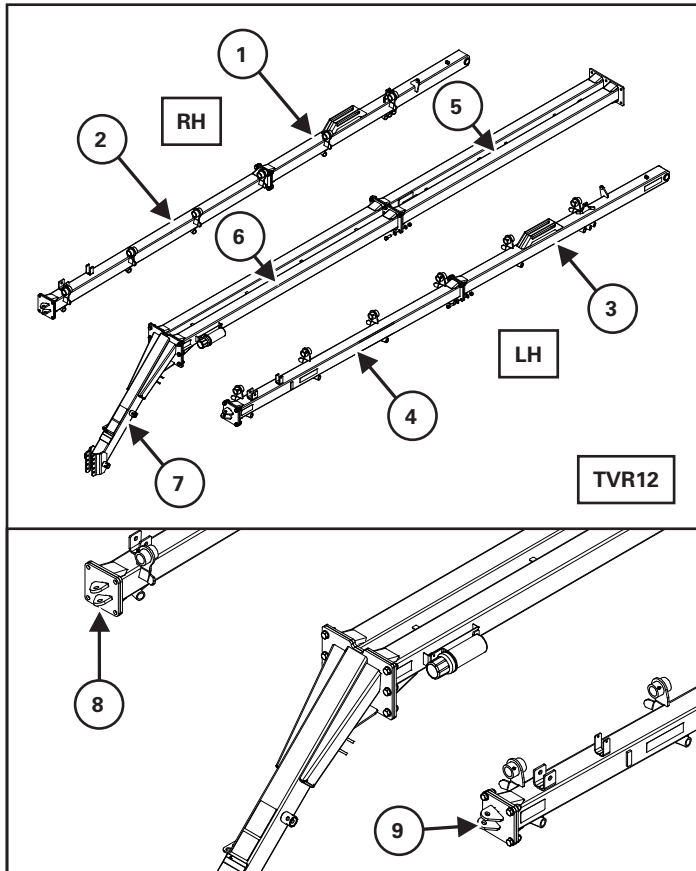
IMPORTANT

The directions front, left, right, and rear are viewed as the operator sitting in the operator's seat with the equipment hitched to the tractor.

Main Frame

TVR12 Models

Figure 3



Assemble the wing frame components. Attach each connection using four 3/4" x 2-1/4" hex bolts, eight 3/4" flat washers (both sides), and four 3/4" lock nuts [Figure 3]:

- RH rear wing (Item 1), RH forward wing (Item 2), RH clevis plate (Item 8)
- LH rear wing (Item 3), LH forward wing (Item 4), LH clevis plate (Item 9)

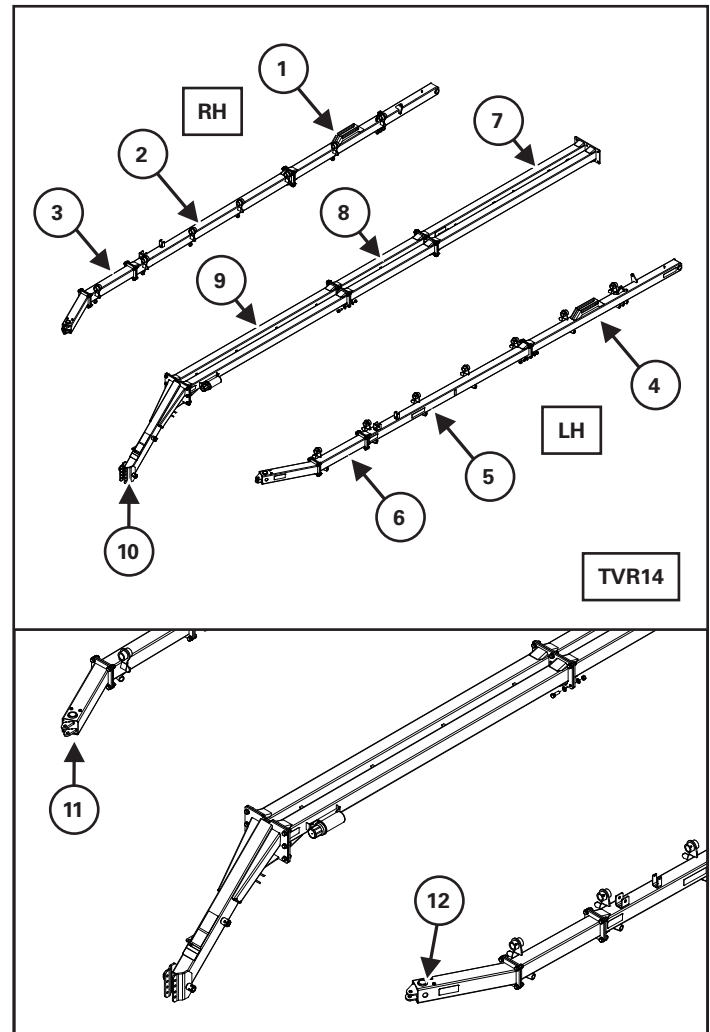
NOTE: The clevis plates (Item 8, 9) must angle UP towards the hitch.

Assemble the center frame components. Attach each connection using six 3/4" x 2-1/4" hex bolts, twelve 3/4" flat washers (both sides), and six 3/4" lock nuts [Figure 3]:

- Rear center frame (Item 5), forward center frame (Item 6), and hitch frame (Item 7)

TVR14 Models

Figure 4



Assemble the wing frame components. Attach each connection using four 3/4" x 2-1/4" hex bolts, eight 3/4" flat washers (both sides), and four 3/4" lock nuts [Figure 4]:

- RH rear wing (Item 1), RH forward wing (Item 2), RH wing extension (Item 3), RH clevis plate (Item 11)
- LH rear wing (Item 4), LH forward wing (Item 5), LH wing extension (Item 6), LH clevis plate (Item 12)

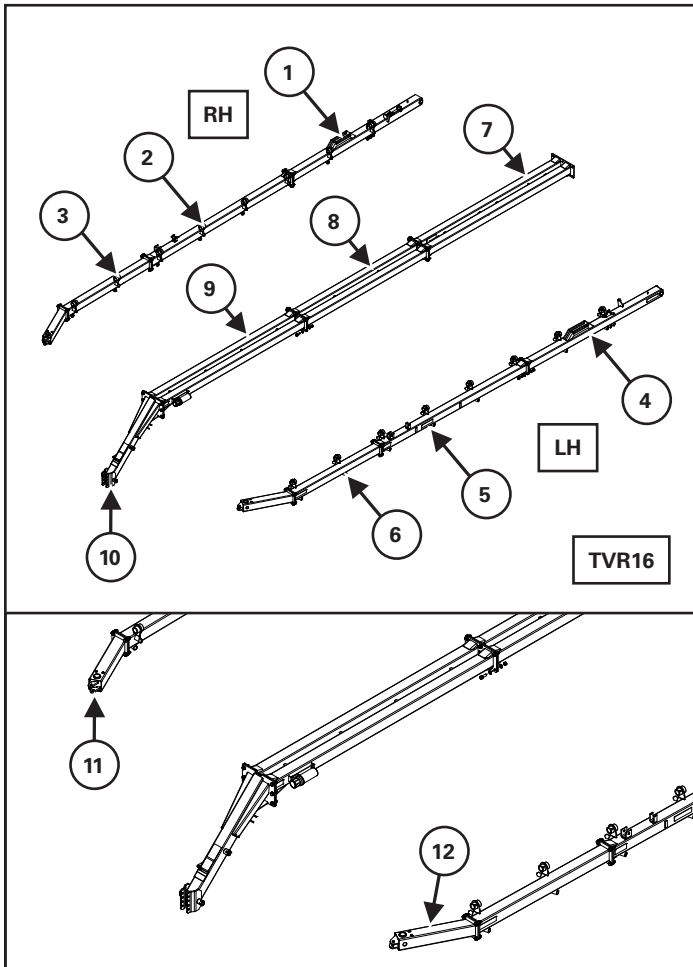
NOTE: The clevis plates (Item 11, 12) must angle UP towards the hitch.

Assemble the center frame components. Attach each connection using six 3/4" x 2-1/4" hex bolts, twelve 3/4" flat washers (both sides), and six 3/4" lock nuts [Figure 4]:

- Rear center frame (Item 7), center frame extension (Item 8), forward center frame (Item 9), and hitch frame (Item 10)

TVR16 Models

Figure 5



Assemble the wing frame components. Attach each connection using four 3/4" x 2-1/4" hex bolts, eight 3/4" flat washers (both sides), and four 3/4" lock nuts [Figure 5]:

- RH rear wing (Item 1), RH forward wing (Item 2), RH wing extension (Item 3), RH clevis plate (Item 11)
- LH rear wing (Item 4), LH forward wing (Item 5), LH wing extension (Item 6), LH clevis plate (Item 12)

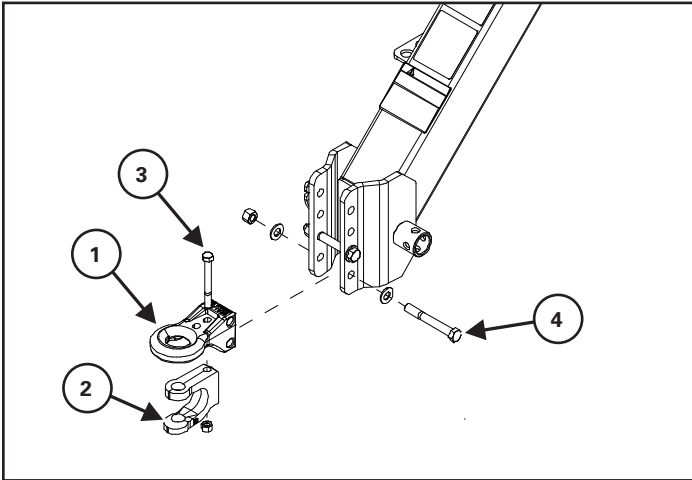
NOTE: The clevis plates (Item 11, 12) must angle UP towards the hitch.

Assemble the center frame components. Attach each connection using six 3/4" x 2-1/4" hex bolts, twelve 3/4" flat washers (both sides), and six 3/4" lock nuts [Figure 5]:

- Rear center frame (Item 7), center frame extension (Item 8), forward center frame (Item 9), and hitch frame (Item 10)

Hitch

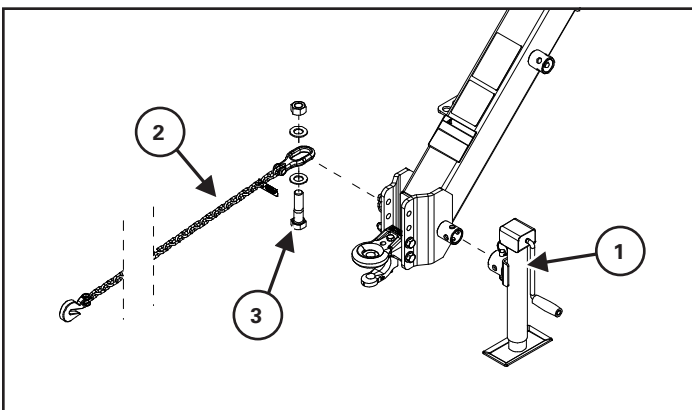
Figure 6



Attach the hitch base (Item 1) to the hitch clevis (Item 2) using one 1/2" x 4-1/2" hex bolt (Item 3) and 1/2" lock nut [Figure 6].

Attach the hitch assembly to the frame using two 5/8" x 5" hex bolts (Item 4), four 5/8" flat washers, and two 5/8" lock nuts [Figure 6].

Figure 7

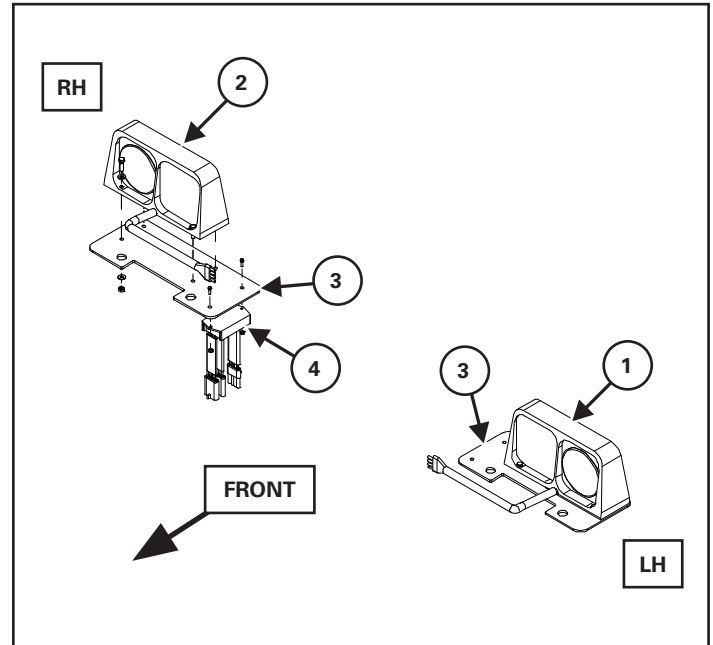


Attach the jack (Item 1) to the hitch mount using a retaining pin [Figure 7].

Attach the safety chain (Item 2) to the hitch mount using one 1" x 4" hex bolt (Item 3), two 1" flat washers, and one 1" lock nut [Figure 7].

Rear Frame

Figure 8



Position the LH (Item 1) and RH (Item 2) lights on top of the mounting plates (Item 3) [Figure 8].

Position the indented portion of the mounting plates facing forward.

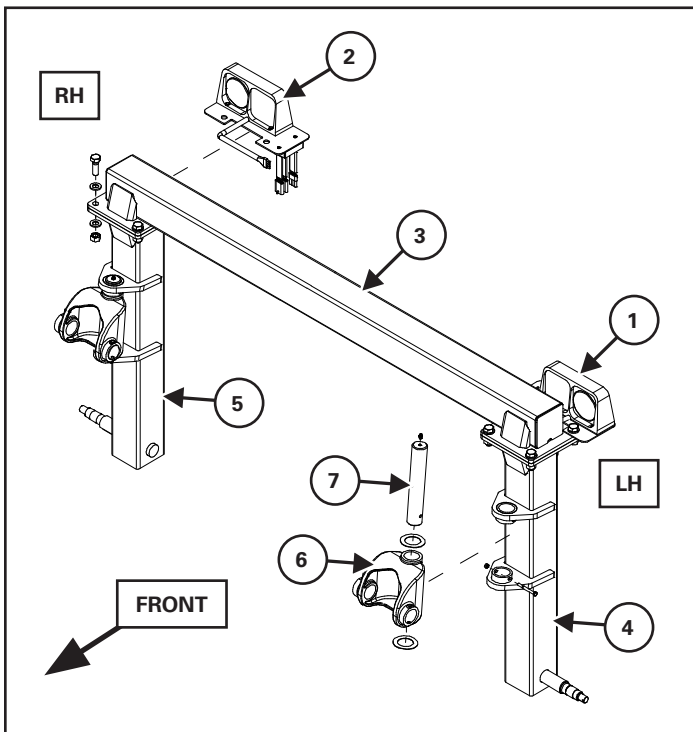
Position the harness of each light facing forward.

Position the red lens of each light on the outside of the mounting plates.

Attach each light using four 1/4" x 1" hex bolts, eight 1/4" flat washers, and four 1/4" lock nuts.

Attach the light module (Item 4) to the underside of the RH mounting plate using two #8-32 x 0.75" flat head machine screws and two 0.136" nylon lock nuts [Figure 8].

Figure 9



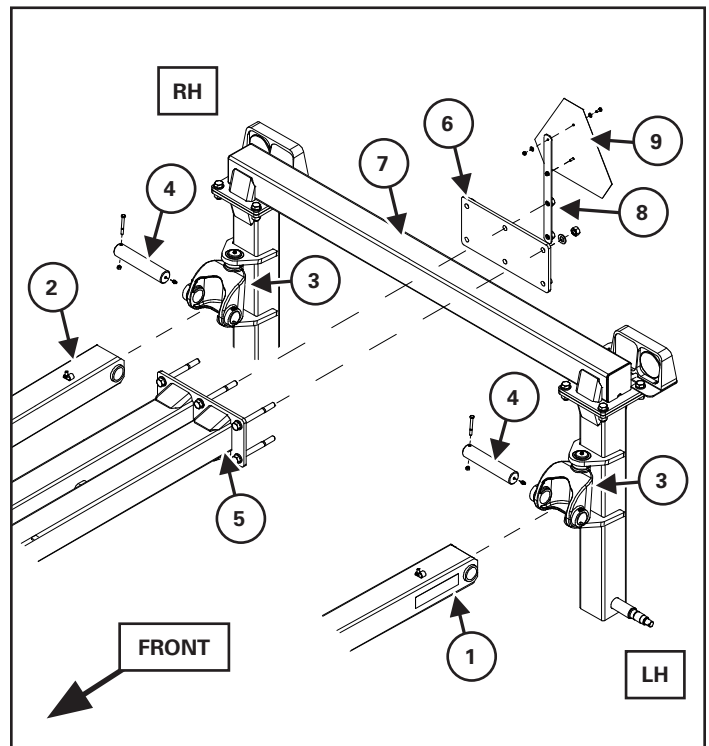
Position the mounting plates of the LH (Item 1) and RH (Item 2) light assemblies on top of the brackets of the rear axle (Item 3) **[Figure 9]**.

Position the brackets of the LH (Item 4) and RH (Item 5) axle supports beneath the brackets of the rear axle (Item 3) **[Figure 9]**.

Attach each axle support and light bracket to the rear axle using four 3/4" x 2-1/4" hex bolts, eight 3/4" flat washers (both sides), and four 3/4" lock nuts.

Position the wing pivots (Item 6) to the LH and RH axle support mounts. Slide one joint pin (Item 7) and shims through the mounts and pivot. Attach the pin to the mount using one 5/16" x 3" hex bolt and 5/16" lock nut **[Figure 9]**.

Figure 10



Position the LH (Item 1) and RH (Item 2) wing frames within the pivots (Item 3). Slide one joint pin (Item 4) through each pivot and wing frame. Attach the pin to the pivot using one 5/16" x 3" hex bolt and 5/16" lock nut **[Figure 10]**.

Position the end bracket (Item 5) of the center frame and end plate (Item 6) on either side of the rear axle (Item 7) **[Figure 10]**.

Align the six holes of the bracket and plate. Place six 3/4" x 7-1/2" hex bolts through the holes.

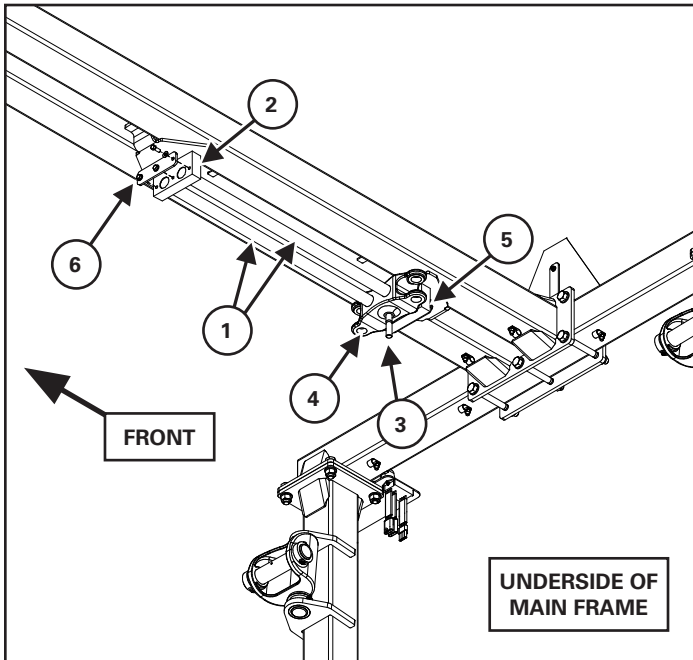
Align the holes of one 16" link (Item 8) to the two center bolts **[Figure 10]**.

Check that the center frame is centered on the axle. Attach the six 3/4" x 7-1/2" hex bolts using twelve 3/4" flat washers (both sides), and six 3/4" lock nuts.

Attach one SMV sign (Item 9) to the 16" link using two 1/4" x 3/4" hex bolts, four 1/4" flat washers, and two 1/4" lock nuts **[Figure 10]**.

Wing Closure Arms & Hydraulic Cylinder

Figure 11



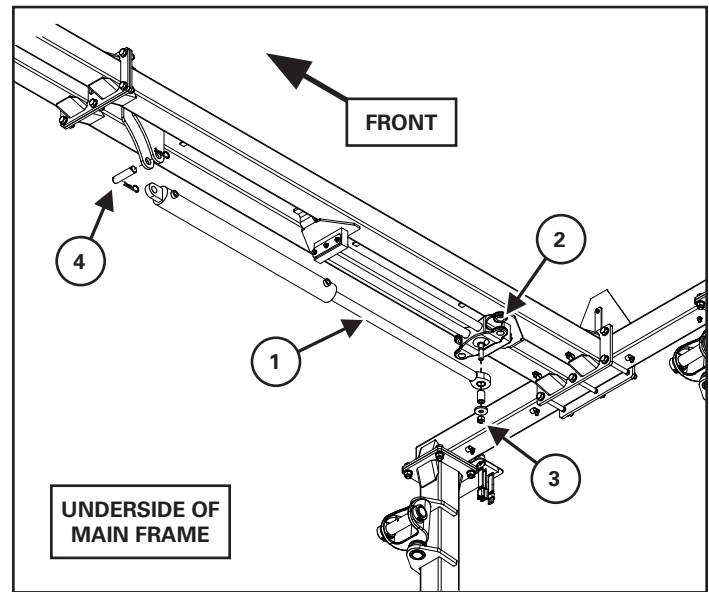
Pass two tubes (Item 1) through the forward mount (Item 2) on the underside of the main frame **[Figure 11]**.

Thread one 3/4" x 7" hex bolt (Item 3) through the slide link (Item 4). Align the slide link with the two tubes **[Figure 11]**.

Pass the tubes through the slide link and into the rear mount (Item 5) **[Figure 11]**.

Position two cover plates (Item 6) over both the underside mounts to secure the tubes. Attach each plate using three 3/8" x 1" hex bolts and three 3/8" flat washers **[Figure 11]**.

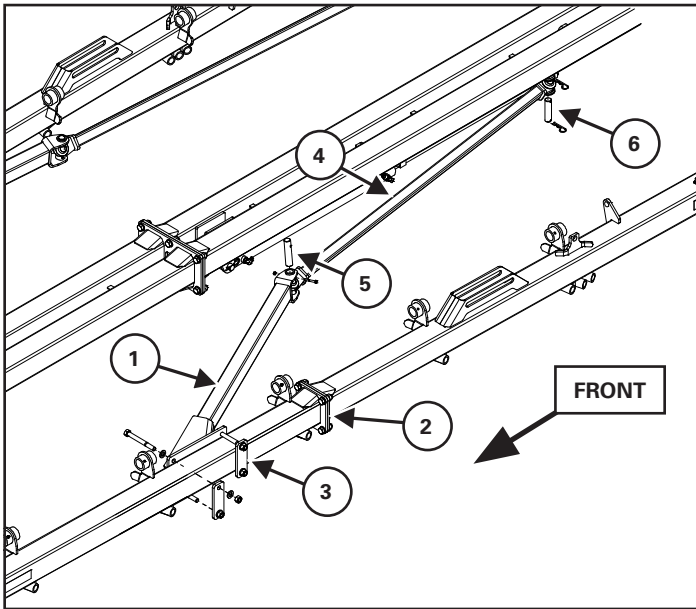
Figure 12



Attach the rod end of the 3" x 36-1/2" cylinder (Item 1) to the 7" bolt of the slide link (Item 2) using one 1-1/4" OD x 2" bushing, one 3/4" flat washer, and one 3/4" lock nut (Item 3) **[Figure 12]**.

Attach the barrel end of the cylinder to the forward mount using one 1-1/4" x 4-3/4" pin (Item 4) and two clips **[Figure 12]**.

Figure 13



Position the LH closure arm (Item 1) on the LH wing, forward of the brackets (Item 2) **[Figure 13]**.

Attach the LH closure arm (Item 1) to the LH wing using two plates (Item 3), four 3/4" x 7-1/2" hex bolts, eight 3/4" flat washers, and four 3/4" lock nuts **[Figure 13]**.

Do not tighten hardware.

Attach one wing link (Item 4) to the LH closure arm using one 1-1/4" x 5-1/2" pin (Item 5), one 5/16" x 2-1/4" hex bolt, and one 5/16" lock nut **[Figure 13]**.

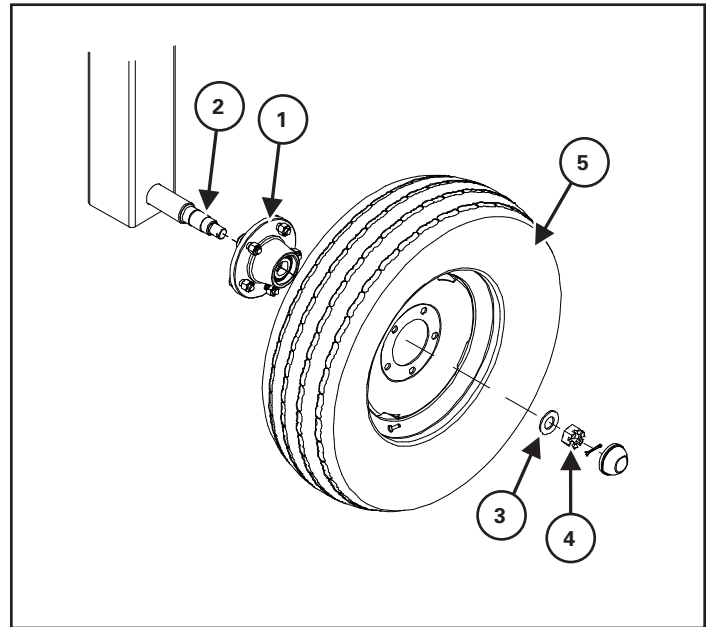
Attach the wing link to the slide link using one 1-1/4" x 4-3/4" pin (Item 6) and two clips **[Figure 13]**.

Tighten hardware.

Repeat to install RH closure arm and wing link.

Rear Axle Wheels

Figure 14



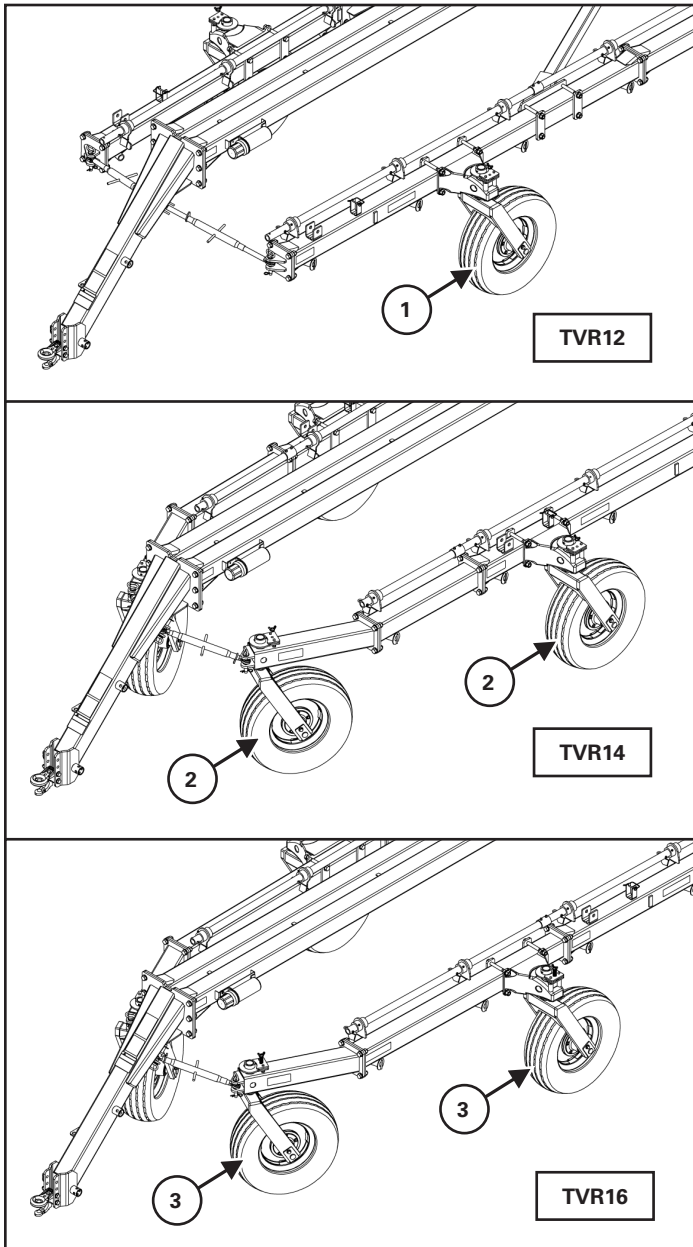
Position the wheel hub (Item 1) on the rear spindle (Item 2). Place one 7/8" flat washer (Item 3) on the spindle. Thread one 7/8" slotted nut (Item 4) onto the spindle and secure the nut with one 1/8" x 1-1/2" cotter pin. Install the dust cap to the spindle **[Figure 14]**.

Place the wheel (Item 5) on the hub and align the holes with the studs. Attach wheel using five wheel nuts **[Figure 14]**.

Repeat to install both LH and RH wheels.

Support Wheels

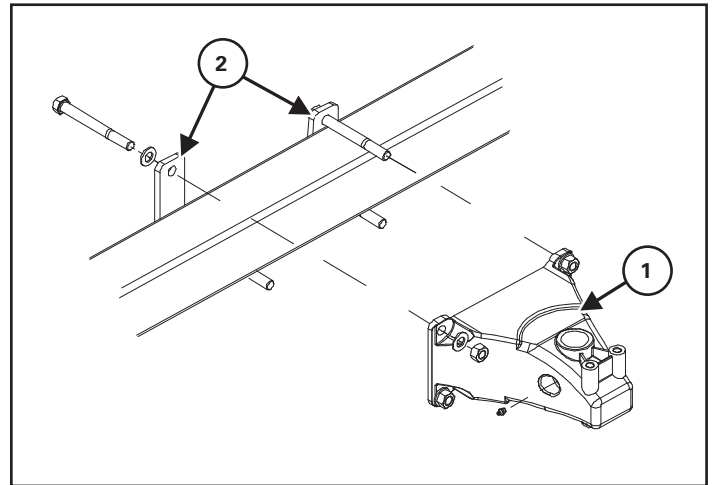
Figure 15



Support wheels are installed to the wing frames depending on model **[Figure 15]**:

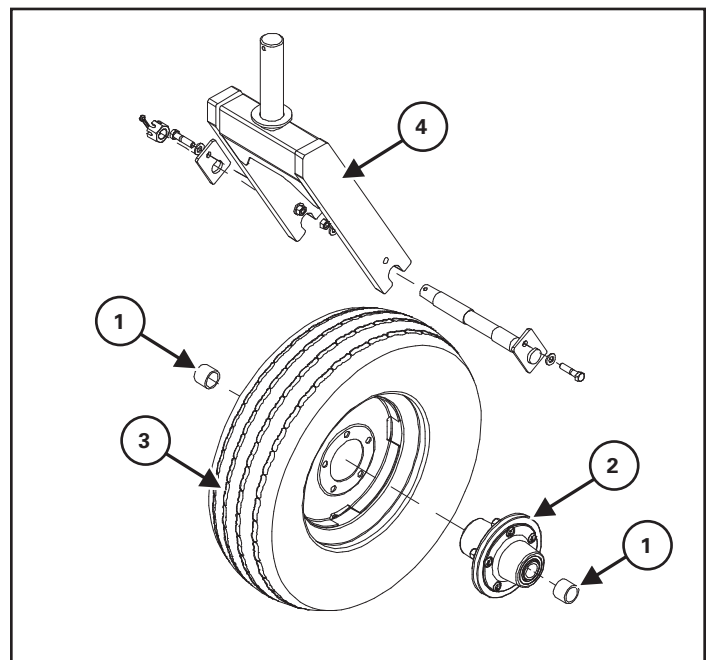
- TVR12, two support wheels (Item 1)
- TVR14 , four support wheels (Item 2)
- TVR16, four support wheels (Item 3)

Figure 16



Position the wheel mount (Item 1) on the wing frame. Attach the mount with two plates (Item 2), four 3/4" x 7-1/2" hex bolts, eight 3/4" flat washers, and four 3/4" lock nuts **[Figure 16]**.

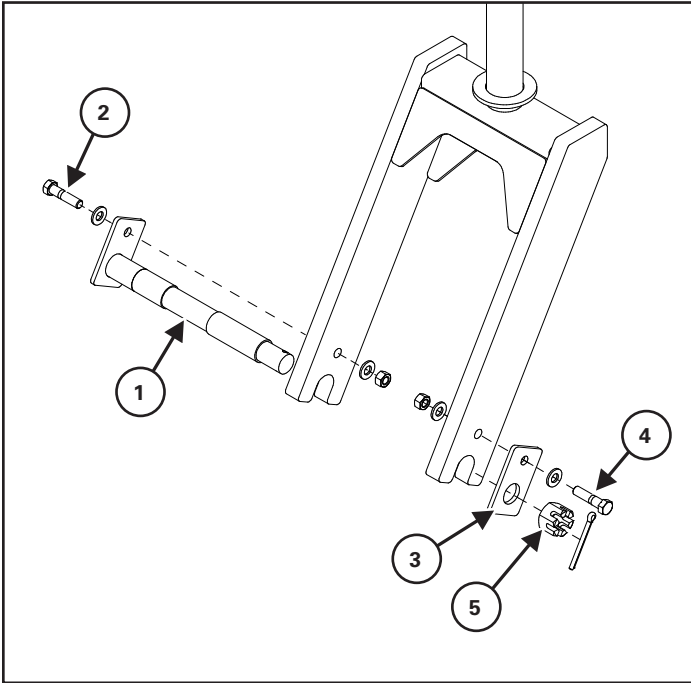
Figure 17



Place two bushings (Item 1) on either end of the wheel HAC520-6 hub (Item 2). Place the hub within the wheel assembly (Item 3). Attach the hub using five wheel nuts **[Figure 17]**.

Position the wheel yoke (Item 4) over the wheel and hub assembly **[Figure 17]**.

Figure 18

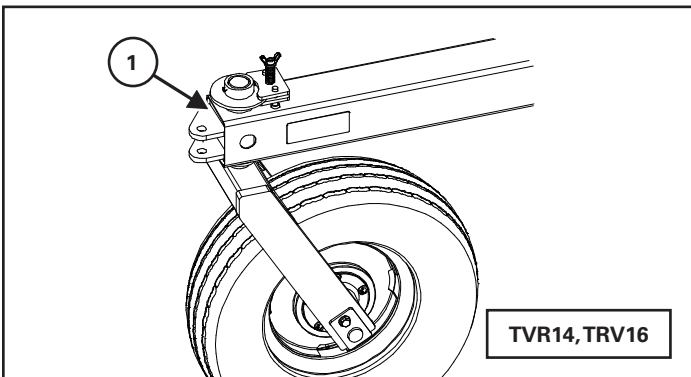


Pass the support wheel axle (Item 1) through the hub, bushings, and yoke. Attach the axle to the yoke using one 1/2"-13NC x 2.125" hex bolt (Item 2), two 1/2" flat washers, and one 1/2" lock nut [Figure 18].

Attach one retaining plate (Item 3) to the opposite side of the yoke using one 1/2"-13NC x 2.125" hex bolt (Item 4), two 1/2" flat washers, and one 1/2" lock nut [Figure 18].

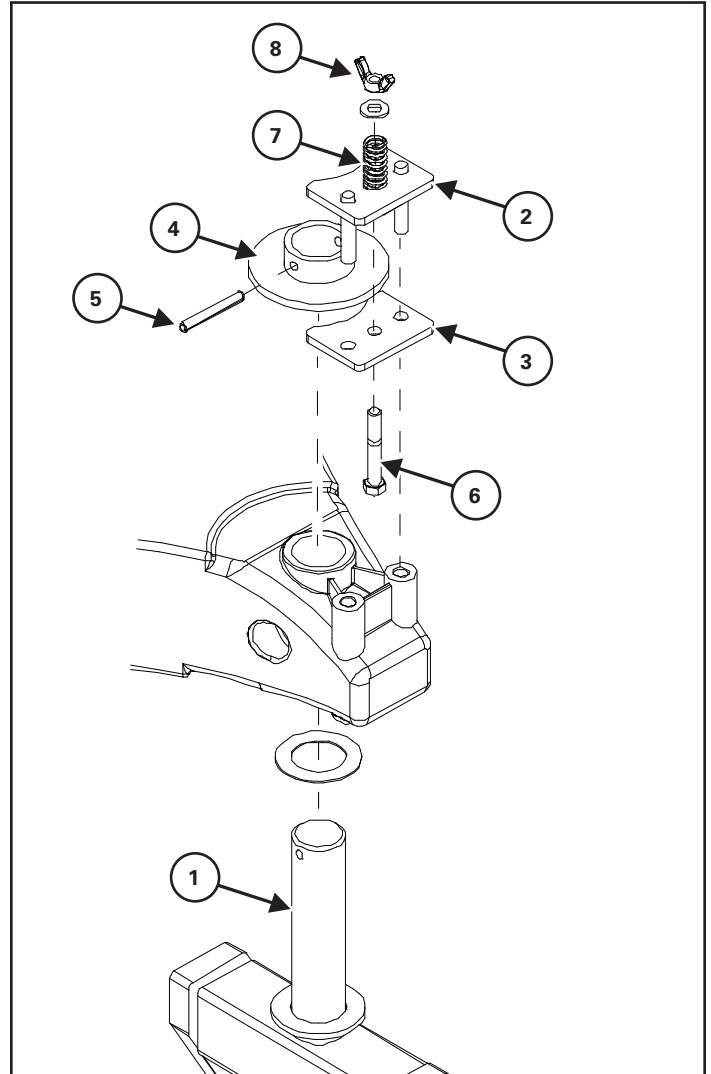
Attach one 1" slotted nut (Item 5) to the axle. Secure the nut with a cotter pin [Figure 18].

Figure 19



The support wheels at the ends of wing frames are attached directly through the frame (Item 1) [Figure 19].

Figure 20



Place one shim on the yoke stem (Item 1) of the wheel assembly [Figure 20].

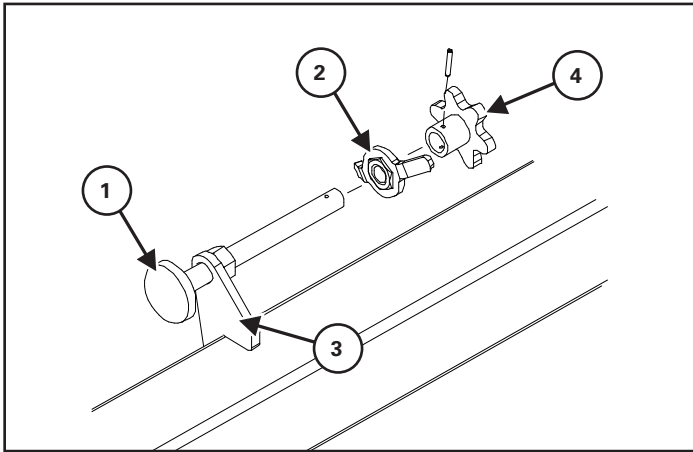
Position the yoke stem through the mount. Assemble the upper brake pad (Item 2), lower brake pad (Item 3), and disc (Item 4) on the yoke stem and mount [Figure 20].

Attach the break disc with one spring pin (Item 5) through the yoke stem [Figure 20].

Attach the break pads with one 1/2" x 3-1/4" hex bolt (Item 6), one compression spring (Item 7), one 1/2" flat washer, and one 1/2" wing nut (Item 8) [Figure 20].

Lift Tubes

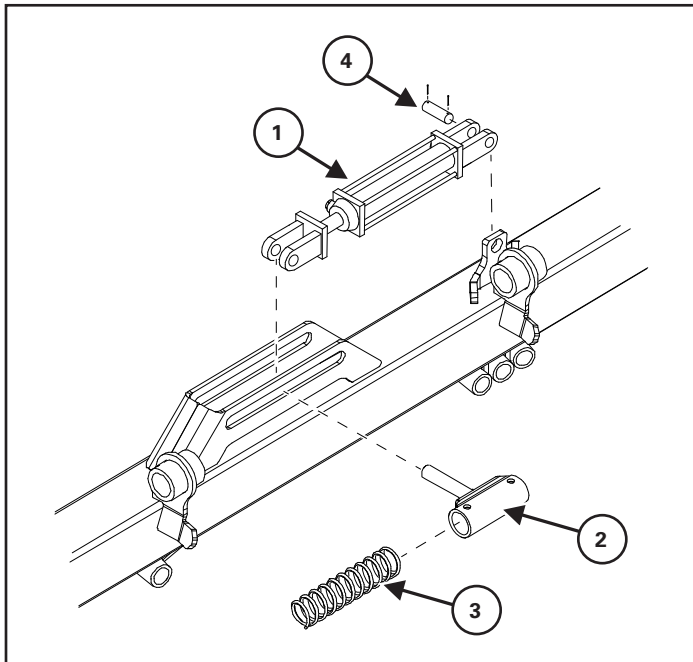
Figure 21



Install the tube stop (Item 1) and wing nut (Item 2) to wing mount (Item 3) **[Figure 21]**.

Install one handle (Item 4) and pin to the stop **[Figure 21]**.

Figure 22



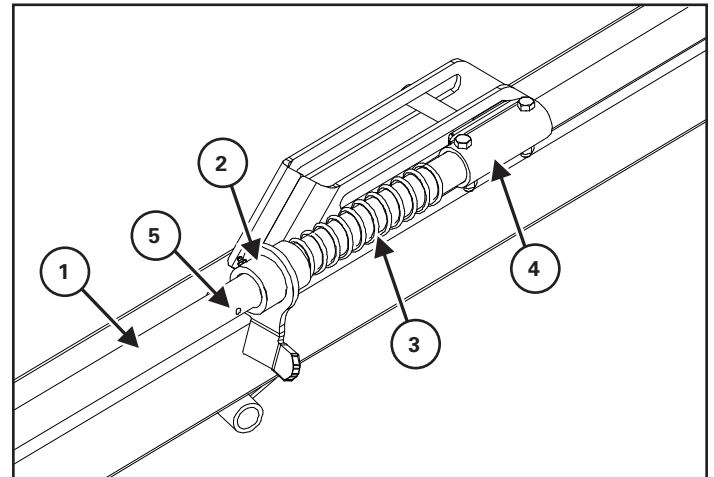
Before sliding the lift tubes through the mounts, position the hydraulic cylinder (Item 1), pin connector (Item 2), and compression spring (Item 3) to the wing mount **[Figure 22]**.

Attach the barrel end of the cylinder to wing mount using one clevis pin (Item 4) and two clips **[Figure 22]**.

Attach the pin connector (Item 4) to the lift tube using two 1/2" x 3" hex bolts and two 1/2" lock nuts **[Figure 23]**.

The pin hole (Item 5) of the lift tube should be just ahead of the wing mount (Item 2) **[Figure 23]**.

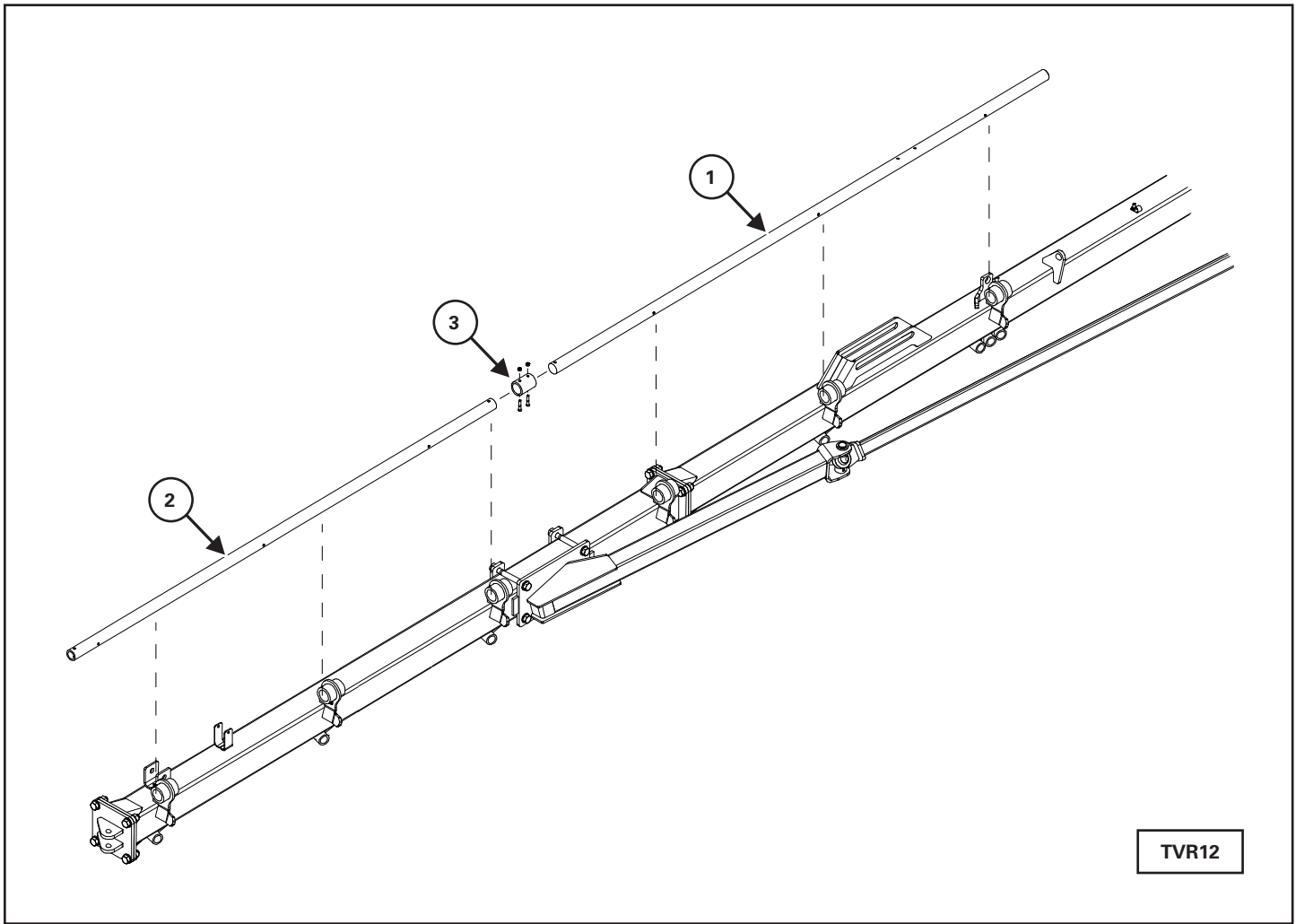
Figure 23



When lift tubes are installed, pass the tube (Item 1) through the wing mount (Item 2), compression spring (Item 3), and pin connector (Item 4) **[Figure 23]**.

TVR12 Models

Figure 24

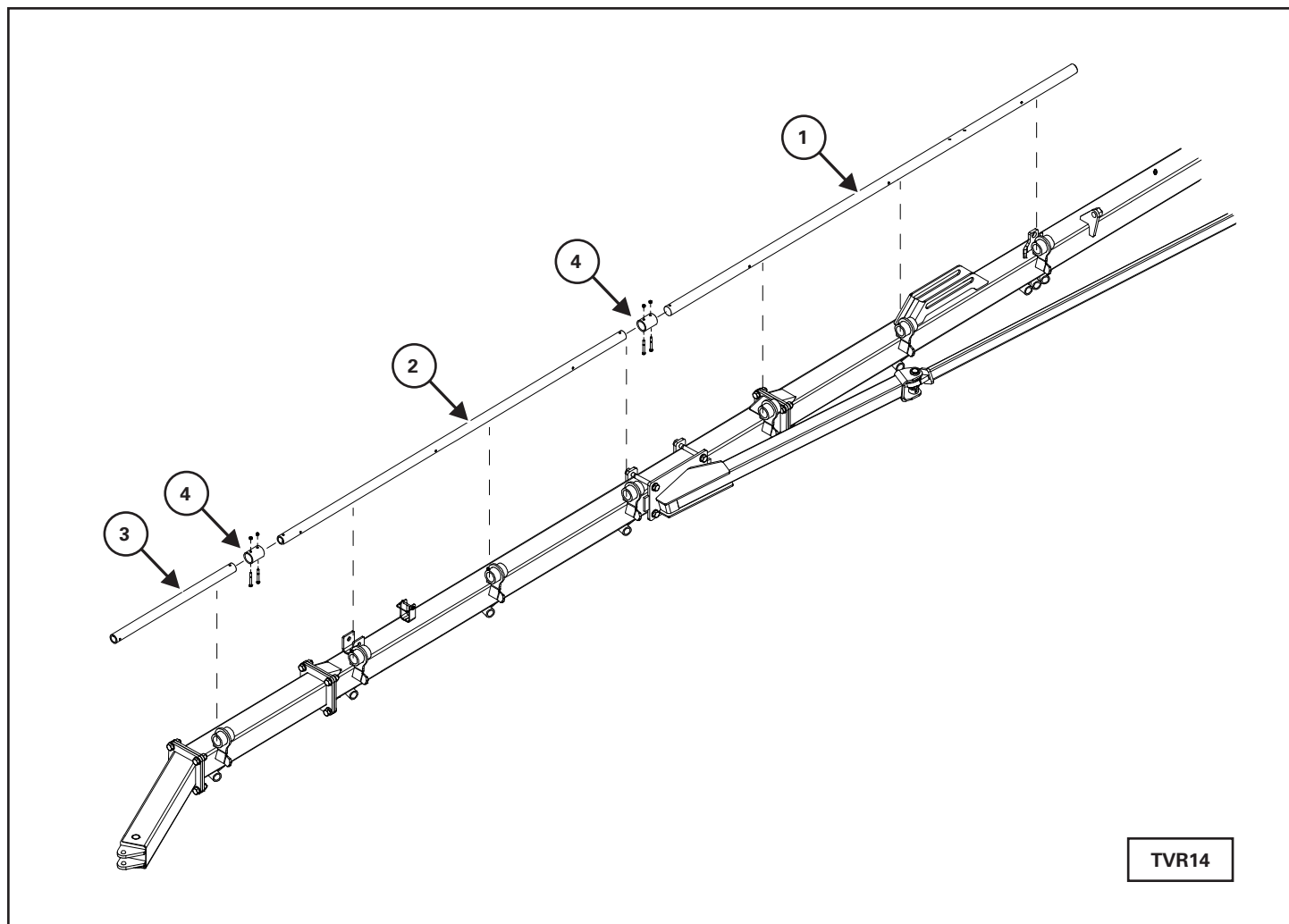


Slide the lift tubes through the mounts on the wings **[Figure 24]**:

- Rear lift tube (Item 1)
- Forward lift tube (Item 2)

Attach the lift tubes using one connector (Item 3), two 5/16" x 2-3/4" hex bolts, and two 5/16" lock nuts **[Figure 24]**.

NOTE: Install bolts up from the bottom.

TVR14 Models**Figure 25**

Slide the lift tubes through the mounts on the wings **[Figure 25]**:

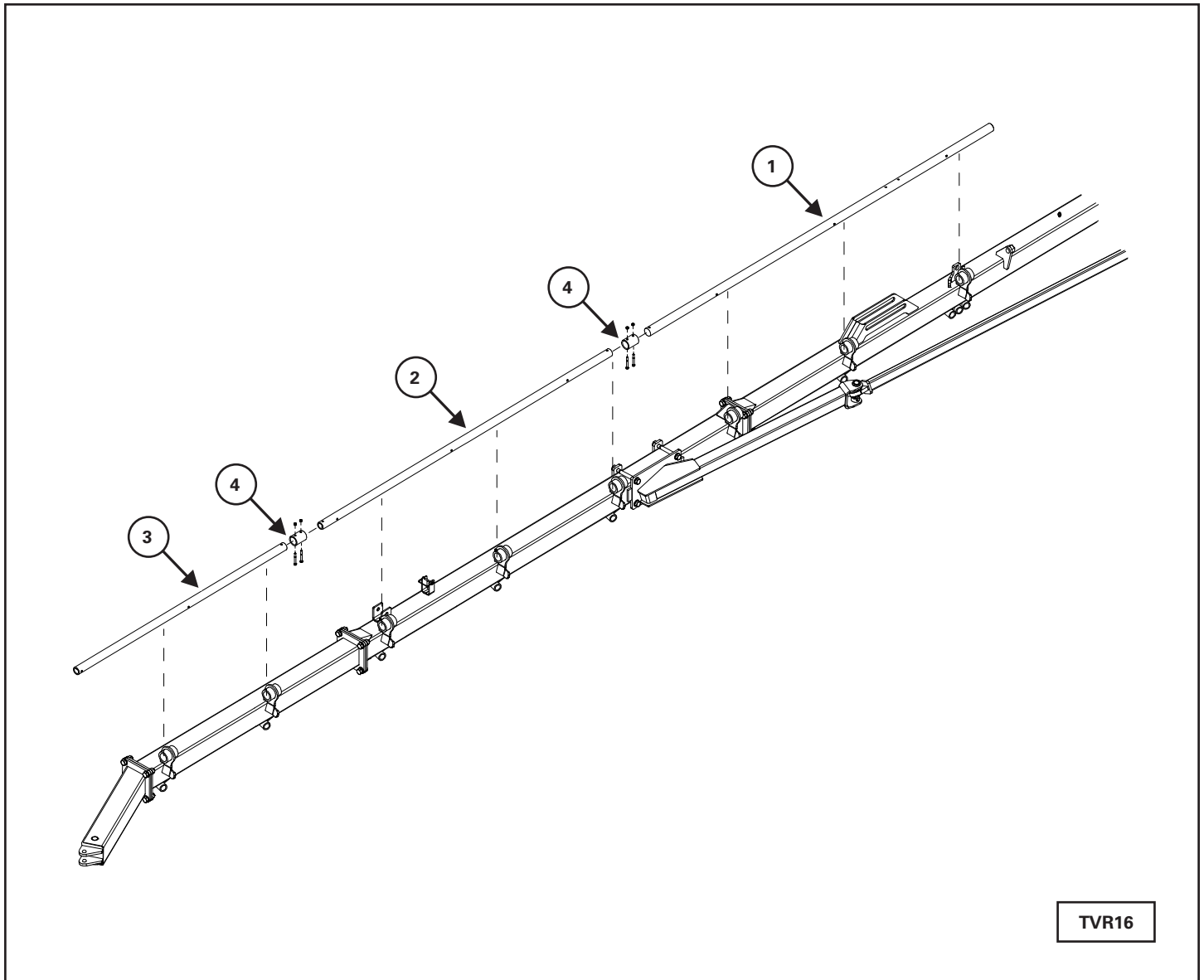
- Rear lift tube (Item 1)
- Forward lift tube (Item 2)
- Lift tube extension (Item 3)

Attach the lift tubes using one connector (Item 4), two 5/16" x 2-3/4" hex bolts, and two 5/16" lock nuts **[Figure 25]**.

NOTE: Install bolts up from the bottom.

TVR16 Models

Figure 26



Slide the lift tubes through the mounts on the wings **[Figure 26]**:

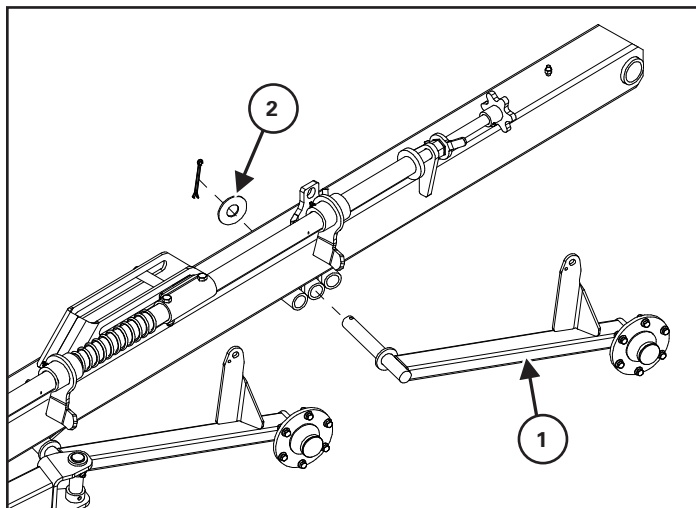
- Rear lift tube (Item 1)
- Forward lift tube (Item 2)
- Lift tube extension (Item 3)

Attach the lift tubes using one connector (Item 4), two 5/16" x 2-3/4" hex bolts, and two 5/16" lock nuts **[Figure 26]**.

NOTE: Install bolts up from the bottom.

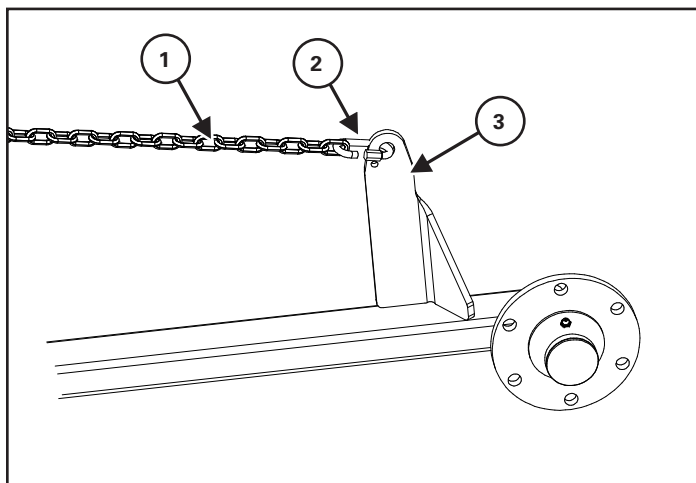
Rake Arms & Wheels

Figure 27



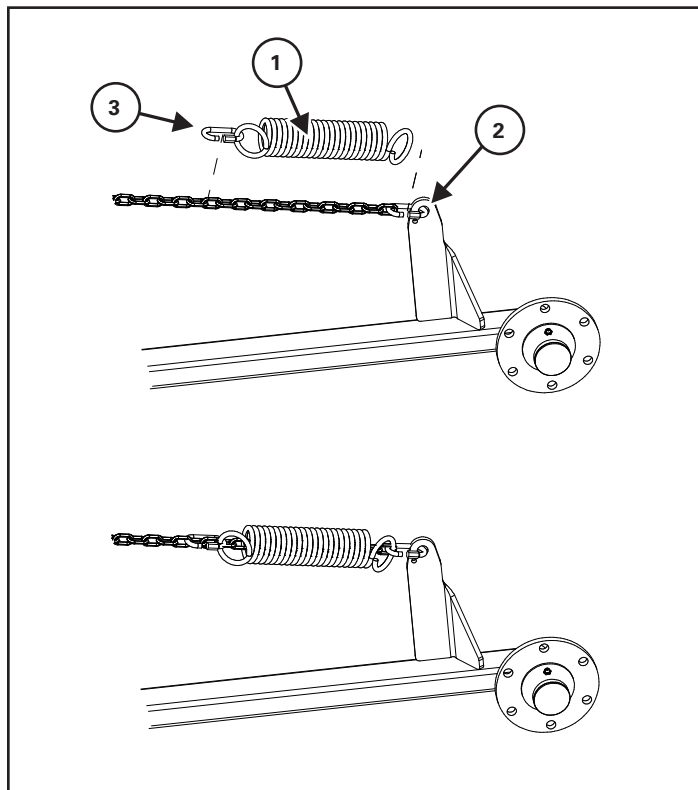
Install one rake arm (Item 1) to the wing mount using one 1-1/4" ID x 18 GA narrow rim washer (Item 2) and cotter pin [Figure 27].

Figure 28



Attach chain (Item 1) and quick link (Item 2) to the top hole of the rake arm bracket (Item 3) [Figure 28].

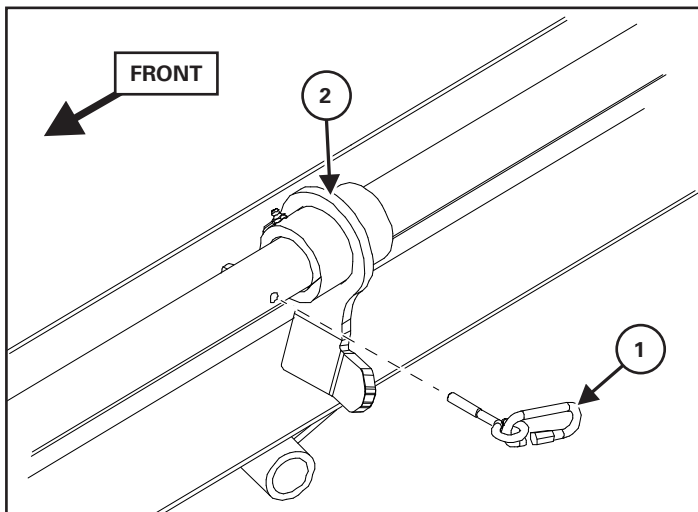
Figure 29



Attach spring (Item 1) to the quick link (Item 2) attached to the bracket [Figure 29].

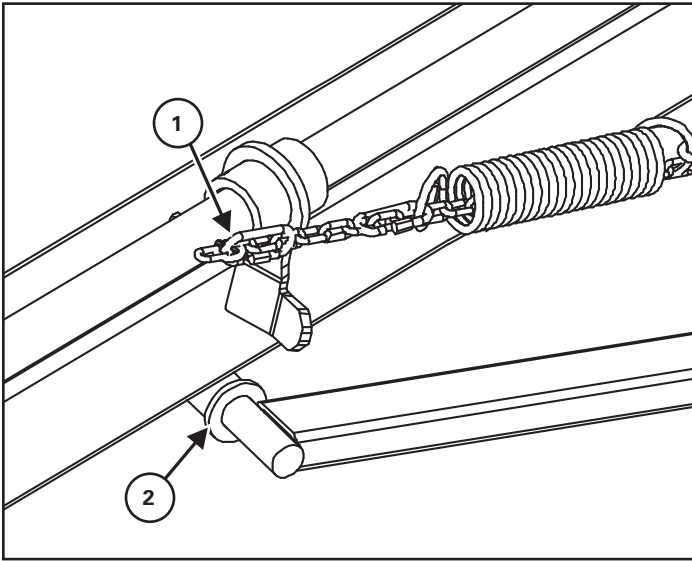
Attach the opposite end of the spring to the chain using one quick link (Item 3) [Figure 29].

Figure 30



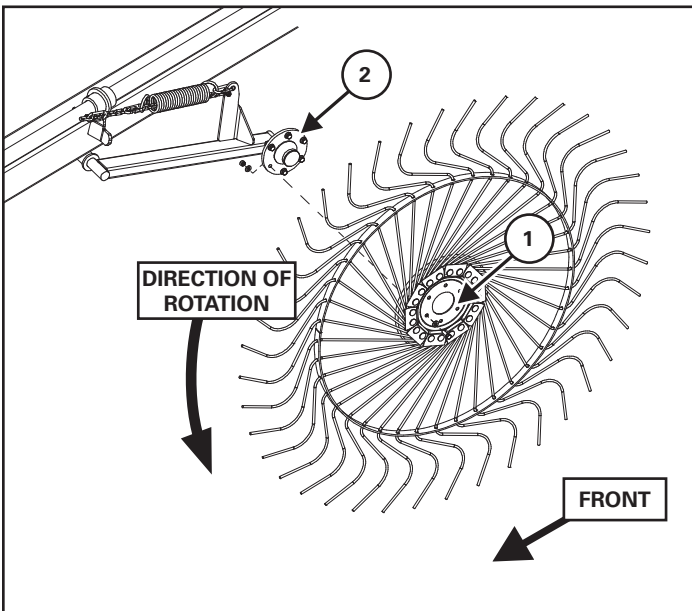
Install one 0.313" x 2" eye bolt and quick link (Item 1) to the pre-drilled hole before the tube mount (Item 2) [Figure 30].

Figure 31



Install the chain to the quick link (Item 1). Install the rake arm to the mount (Item 2) [Figure 31].

Figure 32



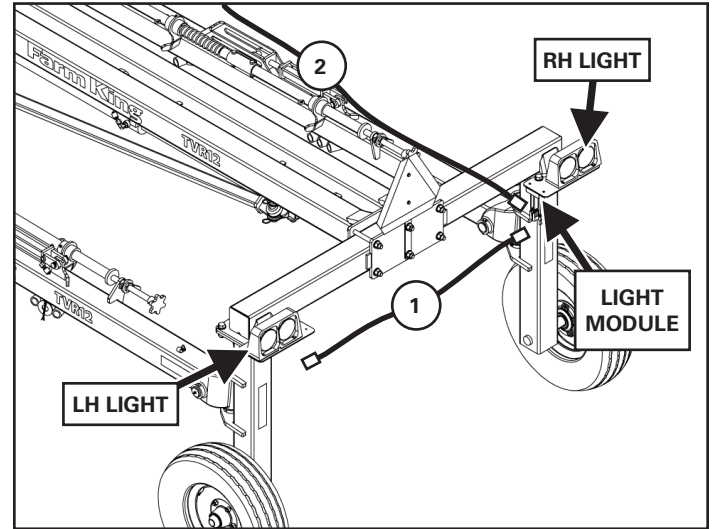
Attach one rake wheel (Item 1) to the hub (Item 2) using six 3/8" x 1-1/4" hex bolts, twelve 3/8" flat washers, and six 3/8" lock nuts [Figure 32].

The rake tines must angle away from the direction of travel.

Repeat assembly to install all rake arms and wheels.

Wire Routing

Figure 33

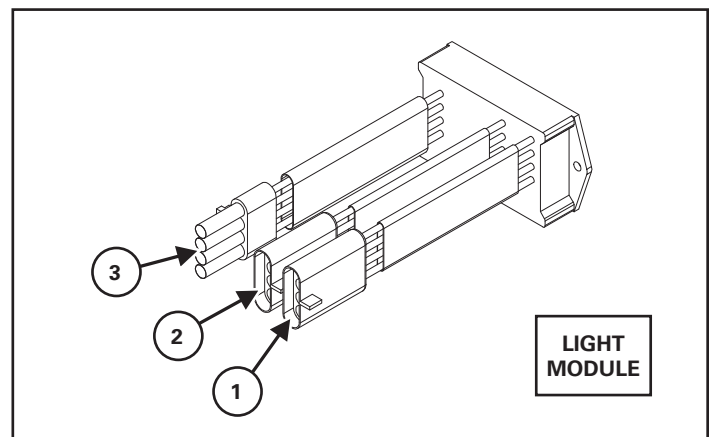


Route the 62" wire harness (Item 1) between the LH and RH rear lights [Figure 33].

Attach the 62" wire harness to the LH light connector.

Route the 52' wire harness (Item 2) from the hitch to the light module [Figure 33].

Figure 34

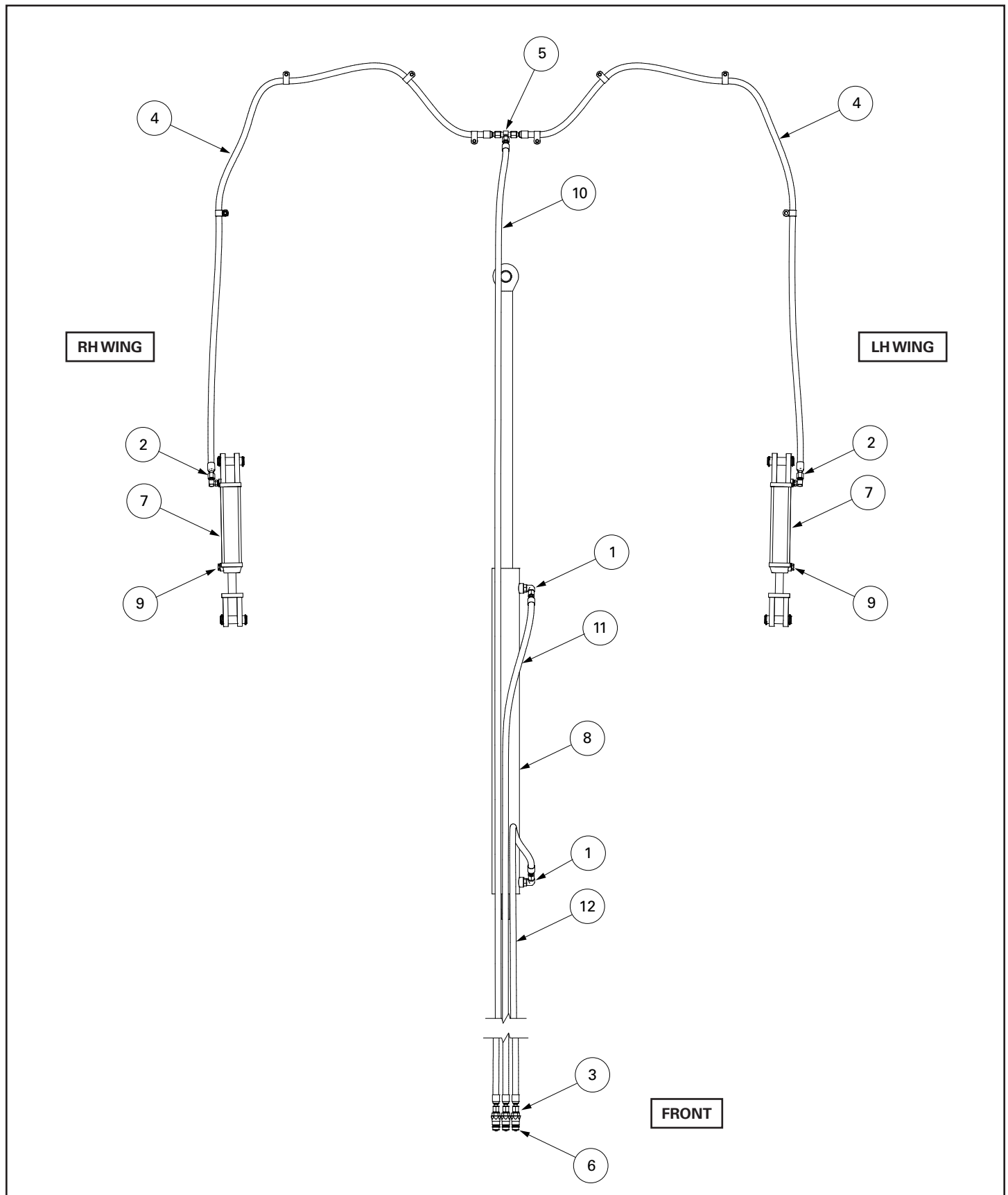


Attach the 62" wire harness (from the LH light) to the light module male connector (Item 1) [Figure 34].

Attach the RH light connector to the light module male connector (Item 2) [Figure 34].

Attach the 52' wire harness to the female connector (Item 3) [Figure 34].

Hydraulic Hose Routing & Components



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	811916	ELBOW-8MORB X -6MJIC 90DEG	2
2	811944	ELBOW 90 3/8MNPT X 9/16 MJIC	2
3	812107	ADAPTOR STR 3/4MORB X 9/16MJI	3
4	812176	HOSE 3/8 X 96 9/16 SWFJIC X 3	2
5	812313	TEE RUN 9/16 MJIC X 9/16 MJIC	1
6	812841	MALE TIP 0.50 BODY 0.75 ORB	3
7	914022	CYLINDER-2" BORE X 8" STROKE	2
8	820855	CYLINDER - 3.0 X 36.50 BALL END	8
9	821151	BREATHER - 3/8 NPT MALE STEEL	2
10	821298	HOSE - 0.375 X 335L -06 SWFJIC X -06 SWFJIC - TVR12	1
	821295	HOSE - 0.375 X 410L -06 SWFJIC X -06 SWFJIC - TVR14	1
	821294	HOSE - 0.375 X 440L -06 SWFJIC X -06 SWFJIC - TVR16	1
11	821299	HOSE - 0.375 X 310L -06 SWFJIC X -06 SWFJIC - TVR12	1
	821296	HOSE - 0.375 X 375L -06 SWFJIC X -06 SWFJIC - TVR14	1
	821295	HOSE - 0.375 X 410L -06 SWFJIC X -06 SWFJIC - TVR16	1
12	821300	HOSE - 0.375 X 270L -06 SWFJIC X -06 SWFJIC - TVR12	1
	821298	HOSE - 0.375 X 335L -06 SWFJIC X -06 SWFJIC - TVR14	1
	821296	HOSE - 0.375 X 375L -06 SWFJIC X -06 SWFJIC - TVR16	1

Farm King



Operation

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Farm King



Pre - Operation Checklist

Before operating the V-Rake for the first time and each time thereafter, check the following items:

1. Lubricate the equipment per the schedule outline in the Maintenance Section.
2. Check the hitch for damaged, loose or missing parts. Repair as needed before operation.
3. Make sure that all guards and shields are in place, secured and functioning as designed.
4. Check condition of all hydraulic components for leaks. Repair as required.



WARNING



HIGH PRESSURE FLUID HAZARD

Leaking fluids under pressure can enter the skin and cause serious injury or death. Immediate medical attention is required. Wear goggles. Use cardboard to check for leaks.

Note: Do not operate with hydraulic leaks.

6. Check that all electrical connections are tight.
7. Check the tines. Remove any twine, wire or other material that has become entangled.

Entering The Operator's Position

Enter the operator's position, start the engine, and release the parking brake.



IMPORTANT

Follow the instructions in your tractor's operation manual for the correct procedure.

Leaving The Operator's Position

Always perform the following steps when leaving the operator's position:



WARNING

AVOID INJURY OR DEATH

Before you leave the operator's position:

- Always park on a flat level surface
- Place all controls in NEUTRAL
- Engage the park brake
- Stop the engine and remove the key
- Wait for all moving parts to stop

Tractor Requirements

The V-Rake requires a tractor with 40 HP and two pairs of remote outlets.

Adjust the tractor's drawbar in / out, until the center of the hitch pin hole is 16" from the end of the tractor's PTO shaft.

See your tractor's owner's manual for correct adjustment procedures.

Connecting To Tractor

Always inspect the tractor's drawbar and equipment hitch before connecting. See the tractor's owner's manual.

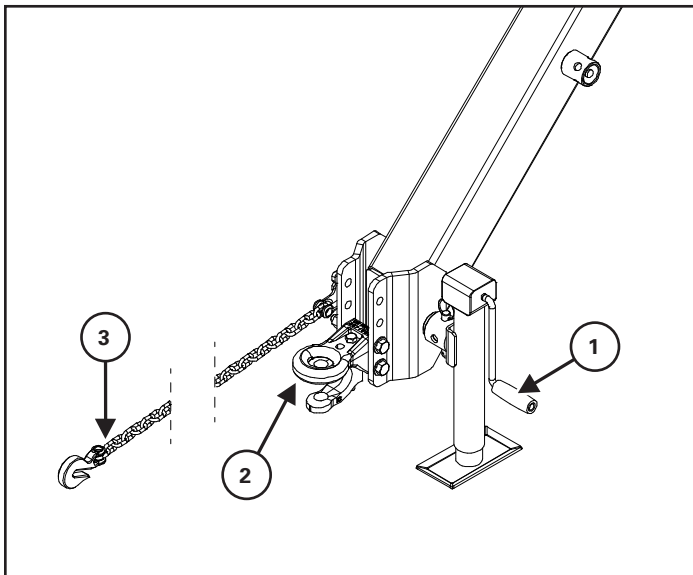
Verify that the tractor's drawbar is adjusted correctly for use with the equipment.

Enter the operator's position and move the tractor into position in front of the equipment.

Move the tractor backwards, aligning the drawbar with the equipment hitch.

Leave the operator's position.

Figure 35



Turn the jack handle (Item 1) to raise or lower the equipment hitch. Align the tractor and equipment hitch pin holes. Remove any attached hitch pins [Figure 35].

Enter the Operator's Position. Move the tractor backwards, aligning the drawbar hitch pin hole with the equipment hitch pin hole (Item 2). Stop the tractor and leave the Operator's Position [Figure 35].

Install the hitch pin and retaining pin to securely fasten the equipment hitch to the tractor drawbar [Figure 35].

Attach the safety chain (Item 3) [Figure 35].



WARNING



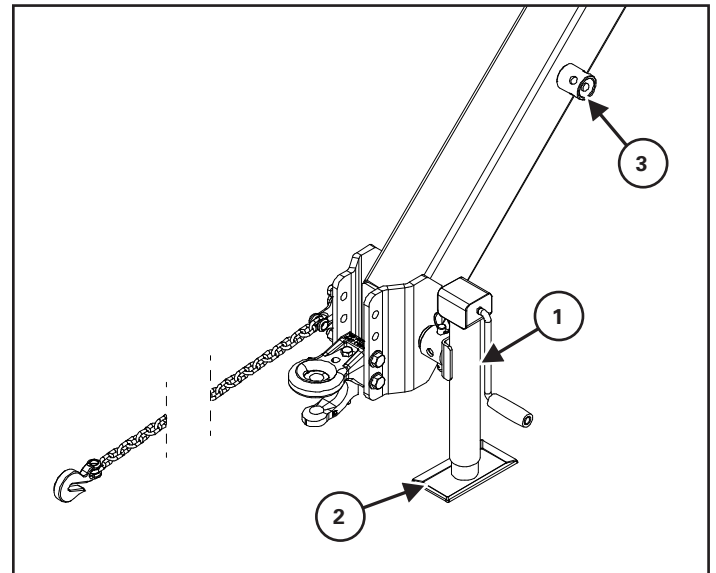
AVOID INJURY OR DEATH

Before moving the tractor, look in all directions and make sure no bystanders, especially small children are in the work area.

Do not allow anyone between the tractor and the equipment when backing up to the equipment for connecting.

Keep fingers and hands out of pinch points when connecting and disconnecting equipment.

Figure 36



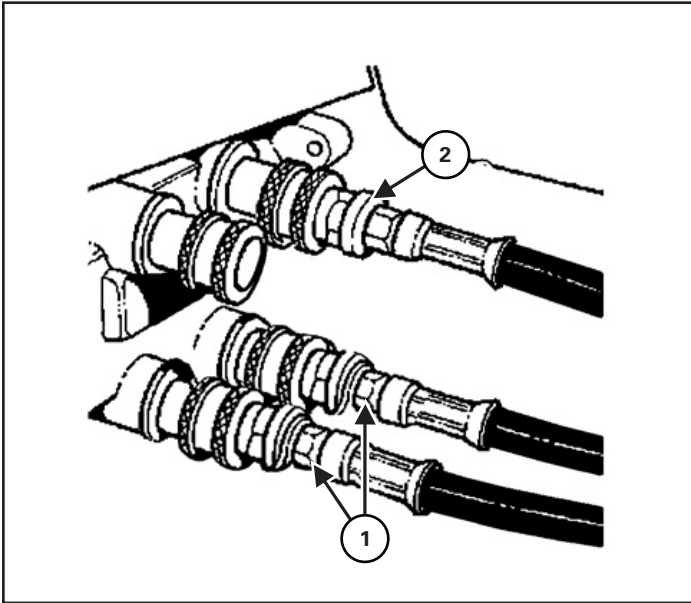
Remove the jack pin and retaining pin from the support jack (Item 1). Turn the handle and raise the jack support stand (Item 2) off the ground [Figure 36].

Move the jack to the storage position (Item 3) on the frame and reinstall jack pin and retaining pin [Figure 36].

Connecting Hydraulic Hoses

V-Rakes are equipped with a hydraulic system to raise the rake wheels and extend the wings.

Figure 37



Push the male couplers into female couplers on the tractor until they are fully engaged and locked [Figure 37].

1. Extend / retract wings
2. Raise / lower rake wheels

Note: Make sure the quick couplers are fully engaged. If the quick couplers do not fully engage, check to see that the couplers are the same size and type.



IMPORTANT

Contain and dispose of any oil leakage in an environmentally safe manner.

Thoroughly clean the quick couplers before making connections. Dirt can quickly damage the system.

Release pressure and pull the male couplers out to disconnect.



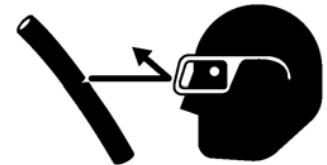
WARNING

AVOID BURNS

Hydraulic fluid, tubes, fittings and quick couplers can get hot when running equipment. Be careful when connecting and disconnecting quick couplers.



WARNING



HIGH PRESSURE FLUID HAZARD

To prevent serious injury or death from high pressure fluid:

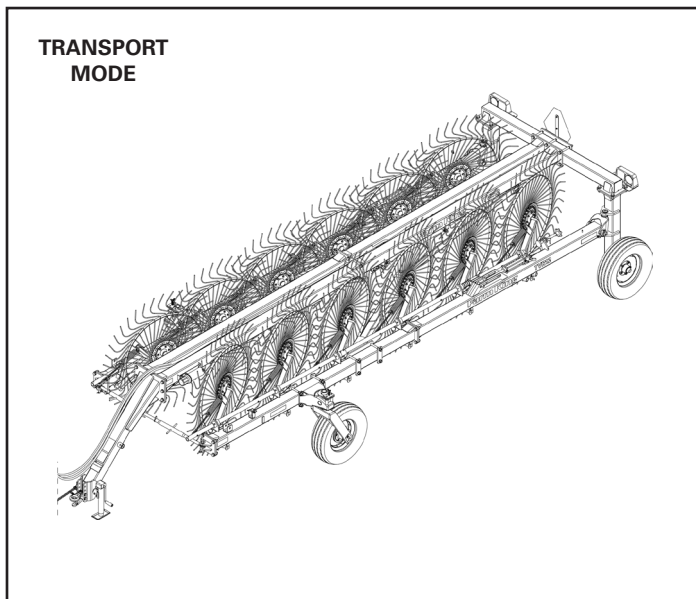
- Relieve pressure on system before repairing or adjusting.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Keep all components in good repair.

Work Configuration

Transport the equipment to the area of work (see “**Transport Configuration**” in Operation section).

Always comply with federal, state, local and provincial laws regarding the transport of farm equipment on public roadways.

Figure 38



The equipment must be configured from Transport Mode into Work Mode for proper field operation [Figure 38].

Remove all transport locks from the equipment.

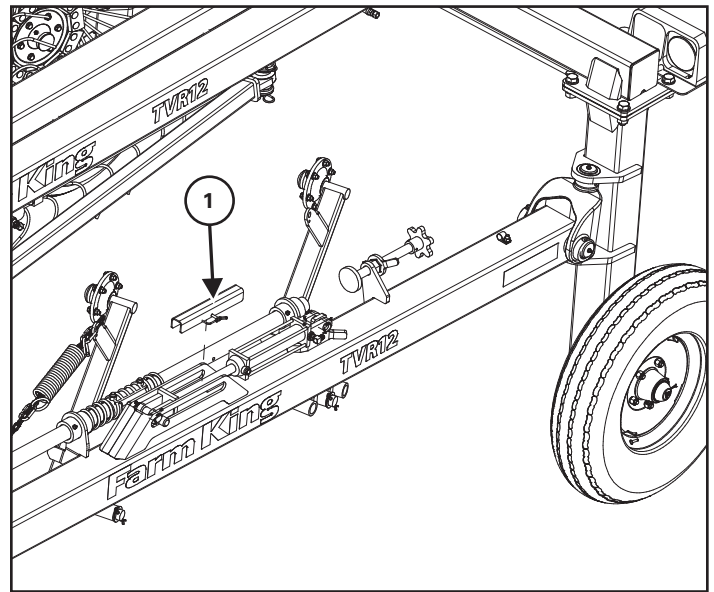


WARNING

AVOID INJURY OR DEATH

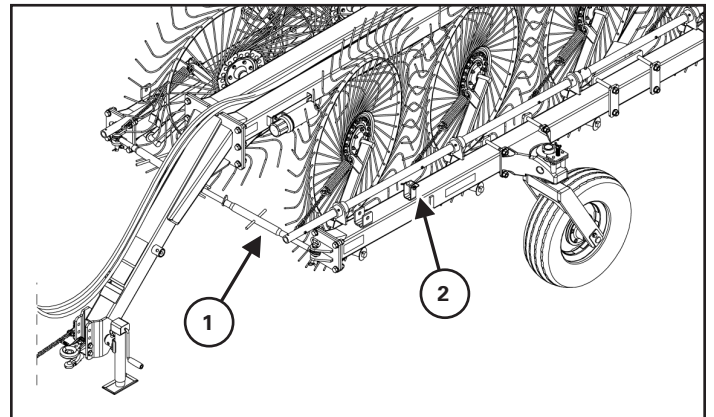
Before unlocking the wings, look in all directions and make sure no bystanders, especially small children, are in the work area.

Figure 39

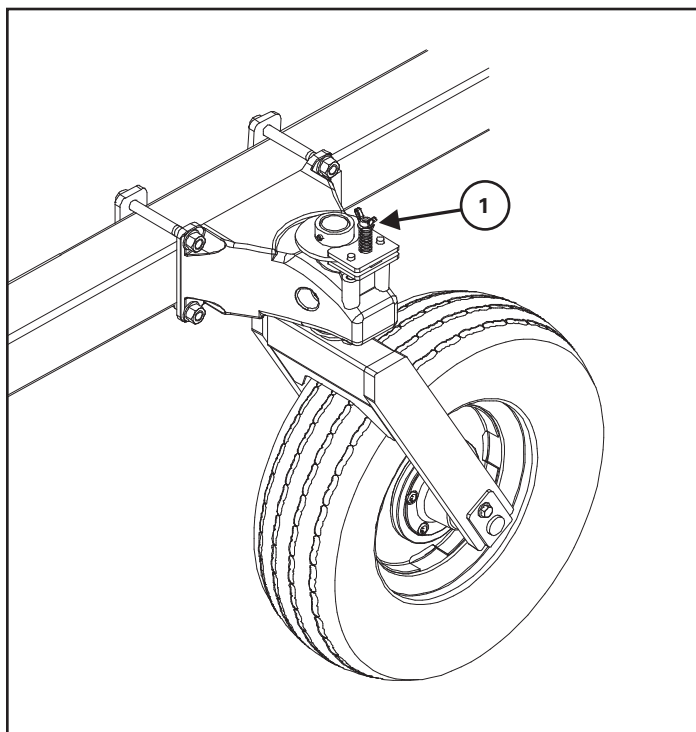


Remove the transport locks (Item 1) from the rake lift cylinders [Figure 39].

Figure 40

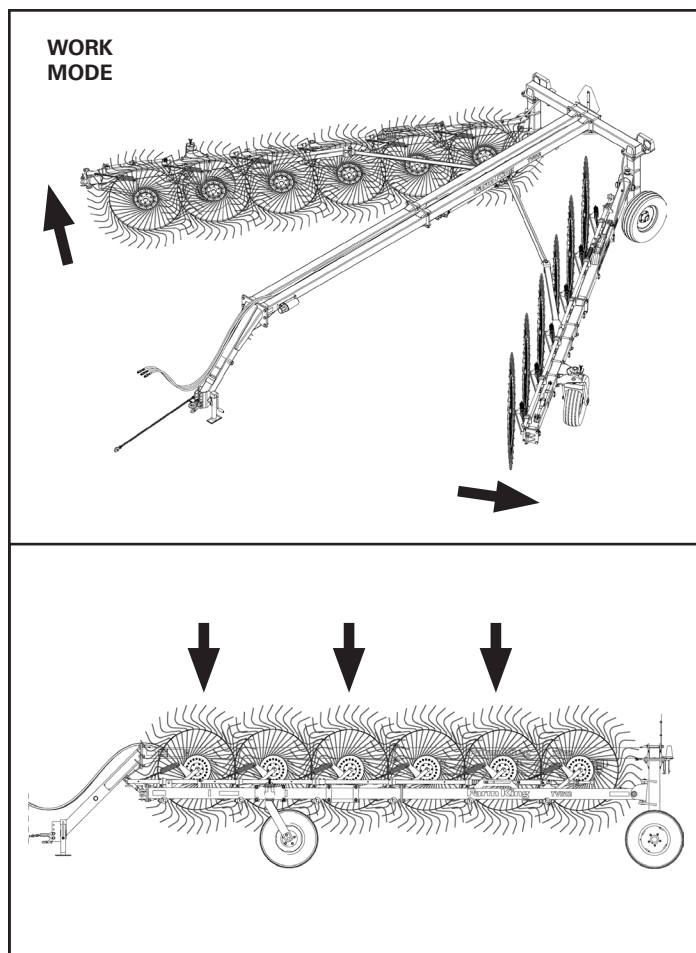


Remove the tie rods (Item 1) connecting the hitch and wings. Store the tie rods on the brackets (Item 2) on the wings during operation [Figure 40].

Figure 41


Back off the nut (Item 1) to loosen the brake discs on the front pivot wheels. The pivot wheels should be able to rotate freely **[Figure 41]**.

Do not remove nut entirely.

Figure 42


Configure the rake into Work Mode. Act on the hydraulic controls **[Figure 42]**:

- Fully extend the rake wings
- Lower the rake wheels



IMPORTANT

Rake wheels must be fully raised off the ground before extending or retracting wings.

Field Operation

Make sure the tractor is properly connected to the equipment. See **“Connecting To Tractor”** in Operation Section.

Enter the operator’s position. See **“Entering The Operator’s Position”** in the Operation Section.

Configure the V-Rake into Work Mode.

1. Extend the rake wings
2. Lower the rake wheels



IMPORTANT

Rake wheels must be fully raised off the ground before extending or retracting wings.

When starting work, operate the V-Rake for a short distance and check the result.



IMPORTANT

Operate at a maximum speed of 9 mph (14 kph).

Leave the operator’s position. See **“Leaving The Operator’s Position”** in the Operation Section.

Make adjustments as desired. See **“Adjustments”** in the Operation Section:

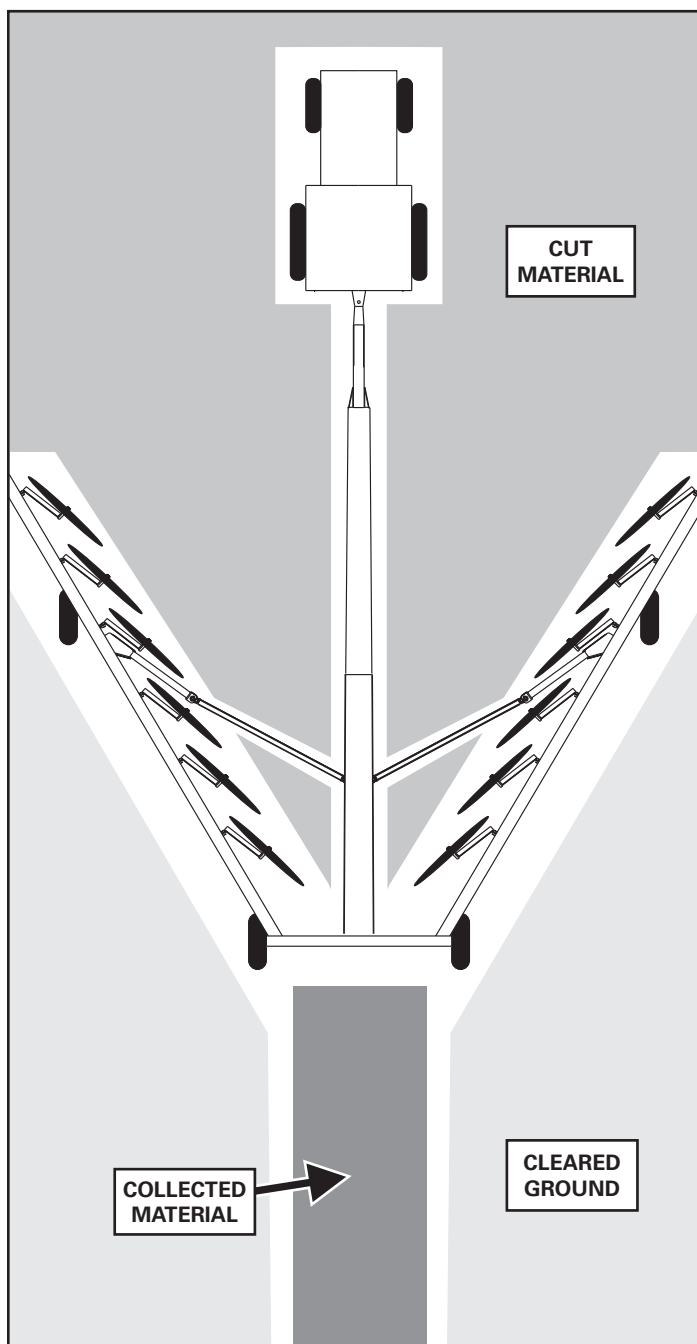
- Make adjustments for the desired windrow width
- Verify that the rake is operating parallel to the ground



CAUTION

- Read operator and parts manual before operating the implement.
- Do not permit riders.
- Keep all guards and shields in place.
- Keep hands, feet, clothing and hair away from moving parts.
- Stop engine, set brake, remove key and wait for all moving parts to stop before servicing, adjusting, repairing and unplugging.
- Remove bystanders, especially children, before starting or while operating.
- Review safety instructions annually.

Figure 43



The rake wheels rotate and collect material as the V-Rake is pulled. Material is collected into a single swath behind the center of the rake **[Figure 43]**.

The tractor and V-Rake must travel in a straight path while collecting material.

Before the end of the field, raise the rake wheels.



IMPORTANT

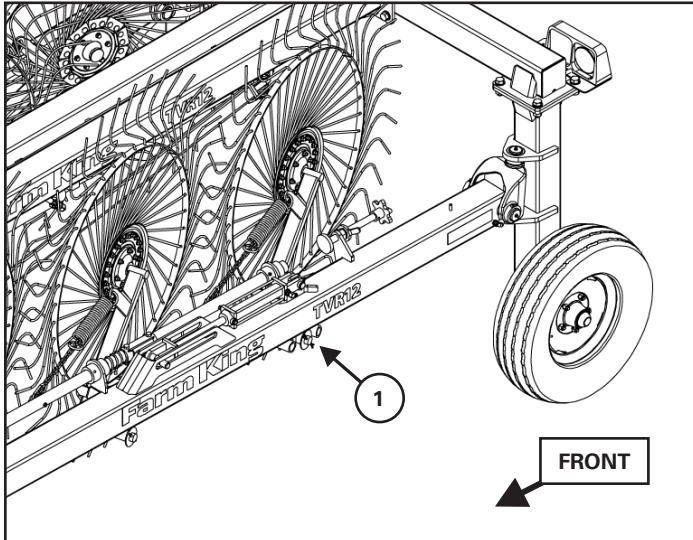
Rake wheels must be fully raised off the ground before extending or retracting wings.

Once the tractor has made a turn lower the rake wheels to continue work.

Adjustments

Windrow Width

Figure 44

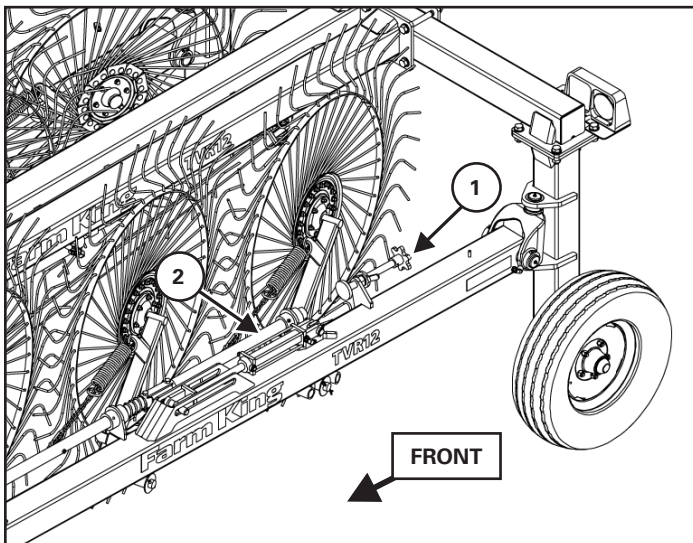


Adjust the windrow width by changing the rear rake wheel mounts (Item 1) [Figure 44]:

- Increase width by using the forward mounts
- Decrease width by using the rear mounts

Rake Wheel Height

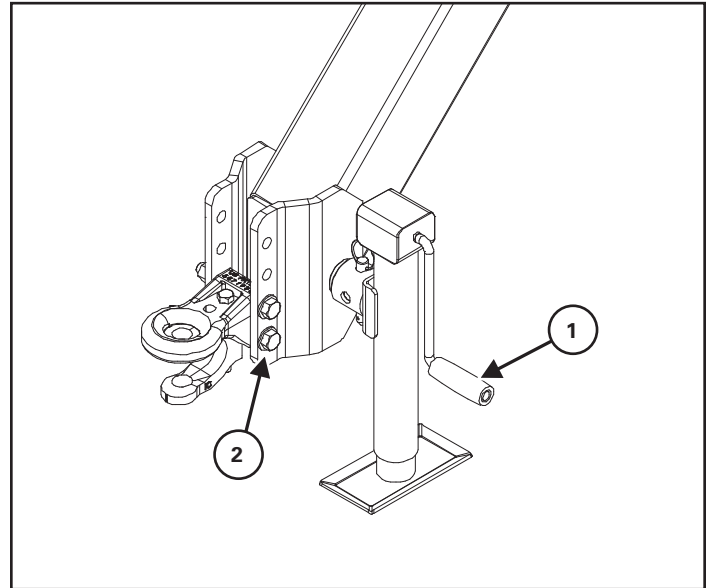
Figure 45



Adjust the rake wheel height by turning in / out the stop (Item 1) at the end of the lifting rod (Item 2). Secure with jam nut [Figure 45].

Leveling

Figure 46



Connect the V-Rake to tractor.

Lower the jack (Item 1) until the entire weight of the hitch is supported [Figure 46].



IMPORTANT

Use adequate supports as required before loosening the clevis mounting bolts.

Remove the clevis mounting bolts (Item 2) and nuts [Figure 46].

Raise or lower the jack until the V-Rake frame is parallel with the ground. Reinstall the mounting bolts and nuts.

Tighten bolts to correct torque.

Transport Configuration

Always comply with federal, state, local and provincial laws regarding the transport of farm equipment on public roadways.

Verify that the tractor / tow vehicle is approved for transporting the equipment and that the equipment is securely attached to the tractor / tow vehicle and configured into Transport Mode.

Verify safety chain is installed and properly connected before transporting equipment.

Verify that the SMV (Slow Moving Vehicle) emblem, all lights and reflectors are clean and visible.



WARNING

AVOID INJURY OR DEATH

Keep bystanders away.

Do not allow riders.



IMPORTANT

Never exceed 20 mph (32 kph) during road travel.

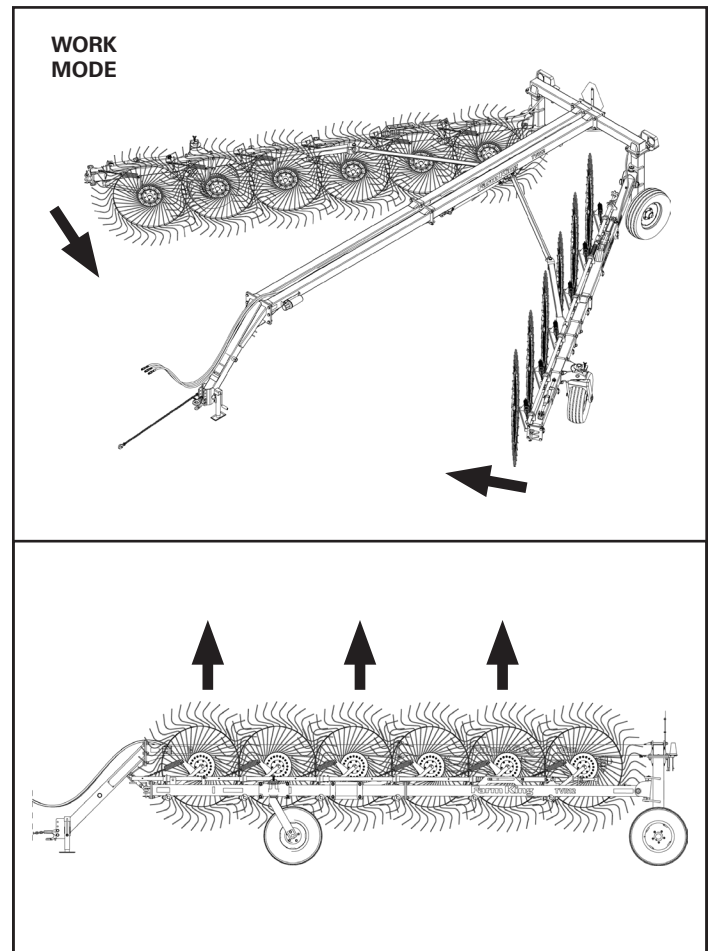


WARNING

Use of an unapproved hitch or tractor / tow vehicle can result in loss of control, leading to serious injury or death.

Tractor / tow vehicle and hitch must have the rated capacity to tow equipment.

Figure 47



The equipment must be configured from Work Mode into Transport Mode for proper road transportation [Figure 47].

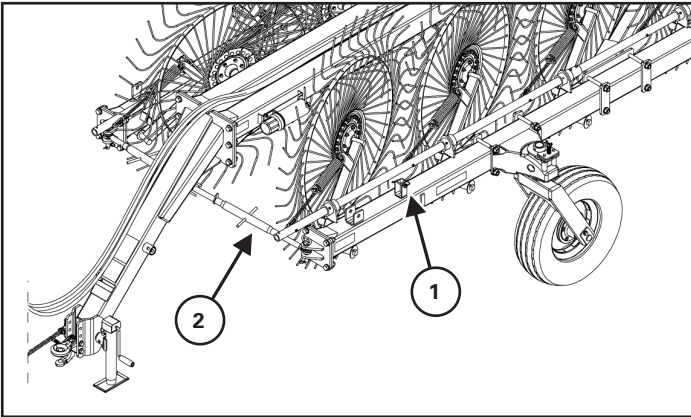
Act on the hydraulic controls:

- Fully raise the rake wheels
- Fully close the wings

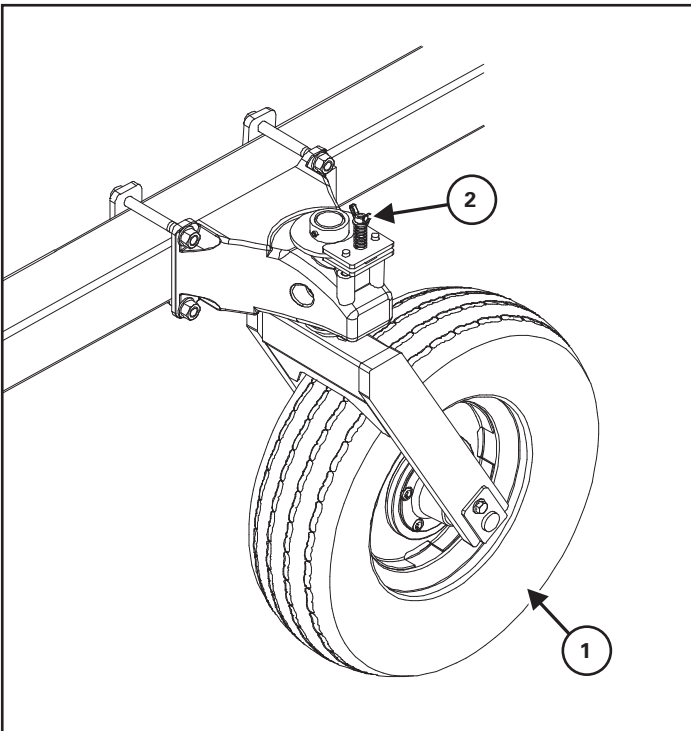


IMPORTANT

Rake wheels must be fully raised off the ground before extending or retracting wings.

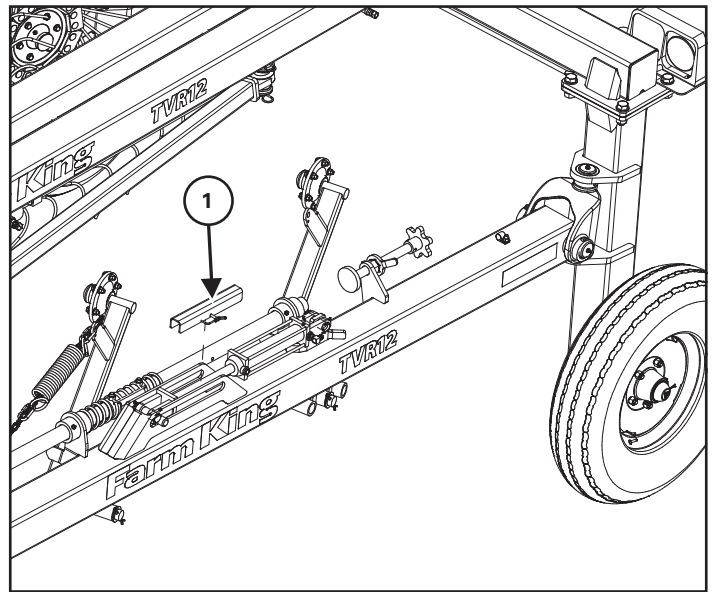
Figure 48

Remove the tie rods from the storage brackets (Item 1) on the wings. Install the tie rods (Item 2) to secure the wings to the hitch **[Figure 48]**.

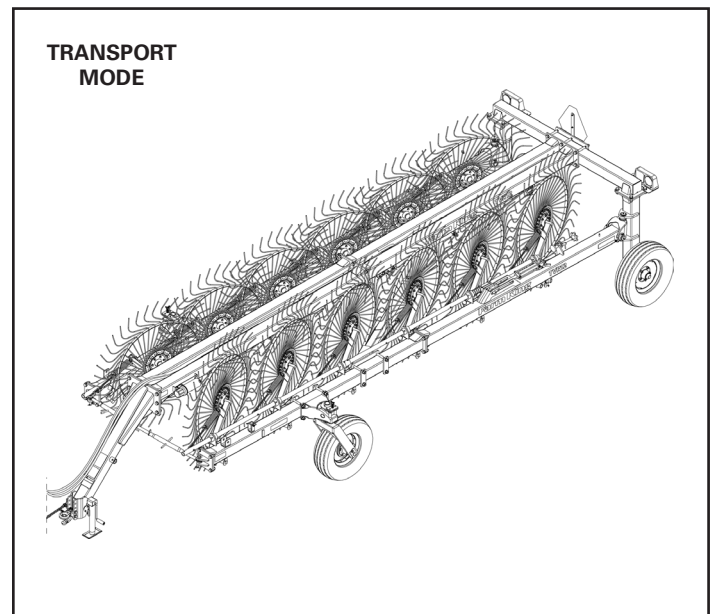
Figure 49

Position the pivot wheels (Item 1) in the direction of travel. Tighten the nut (Item 2) and brake discs **[Figure 49]**.

The pivot wheels should remain stationary during road travel.

Figure 50

Install the transport locks (Item 1) to the rake lift cylinders **[Figure 50]**.

Figure 51

The equipment is ready for road travel **[Figure 51]**.

Maintenance

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Farm King



Service Schedule Chart



WARNING

Instructions are necessary before operating or servicing equipment. Read and understand the Operator And Parts Manual and safety signs (decals) on equipment. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

Note: If a problem is encountered that is difficult to solve, even after having read through this troubleshooting section, please call your local distributor, dealer or factory. Before you call, please have this Operator And Parts Manual and the serial number of your machine at hand.

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures. The service schedule is a guide for correct maintenance of the equipment.

#	DESCRIPTION	SERVICE PROCEDURES				
		CHECK	CLEAN	LUBE	CHANGE	COVER
Daily Maintenance (or every 8 hours of use)						
1	Tire Pressure	✓				
2	Wheel Bolt Torque	✓				
3	Hydraulic Cylinders / Hoses / Fittings	✓				
4	Wing Pivots	✓		✓		
5	Rake Wheel Hubs	✓		✓		
6	Rake Arm Pivots	✓		✓		
7	Rear Wheel Hubs	✓		✓		
8	Pivot Wheel Hubs / Forks	✓		✓		
9	Lift Bar Collars	✓		✓		
Annually (or every 500 hours of use)						
10	Entire Machine	✓	✓			

Troubleshooting Chart

Problem	Cause	Service Procedure
Hydraulic functions not operating.	Hydraulic oil level low.	Check hydraulic oil level. Fill hydraulic oil as needed.
	Damaged hydraulic hose or loose connection.	Check all hoses and connections. Repair or replace as needed.
	Hydraulic pump damaged.	Check tractor's hydraulic system.
	Hydraulic oil filter plugged.	Clean or replace hydraulic oil filter.
Hydraulic functions operating intermittently.	Air in hydraulic system.	Remove air from hydraulic system.
Hydraulic cylinders not holding position.	Worn hydraulic seals in cylinders.	Replace seals.
Overheated hydraulic oil.	Hydraulic oil filter plugged.	Clean or replace hydraulic oil filter.
	Crushed hydraulic hose / line.	Repair or replace hydraulic hose / line.
	Oil level low.	Fill hydraulic oil as needed.
Losing hydraulic oil.	Damaged hydraulic hose or loose connection.	Check all hoses and connections. Repair or replace as needed.
	Worn hydraulic seals in cylinders.	Replace seals.

Lubrication

Recommendations

Always use a good quality multi-purpose / lithium base grease when lubricating the equipment.

- Always use a hand-held grease gun.
- Clean fitting before greasing, to avoid injecting dirt and grit.
- Replace and repair broken fittings immediately.
- If fittings will not take grease, remove and clean thoroughly. Replace fitting if necessary.



WARNING

AVOID INJURY OR DEATH

Stop engine, set brake, remove ignition key, and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.

Support the equipment with blocks or safety stands before working beneath it.

Follow good shop practices:

- Keep service area clean and dry
- Be sure electrical outlets and tools are properly grounded
- Use adequate light for the job

Use only tools, jacks, and hoists of sufficient capacity for the job.

Replace and secure all shields removed during servicing before operating.

Use heavy leather gloves to handle sharp objects.

Check hydraulics regularly for leaks. Use cardboard to look for leaks, and use hand and eye protection.

Relieve pressure on hydraulic system before repairing or adjusting.

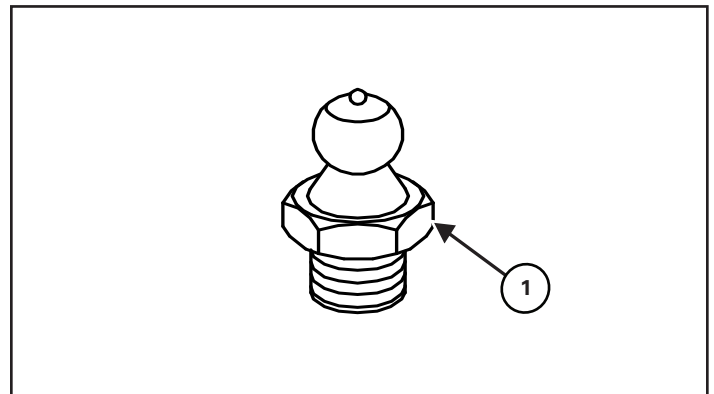
Locations



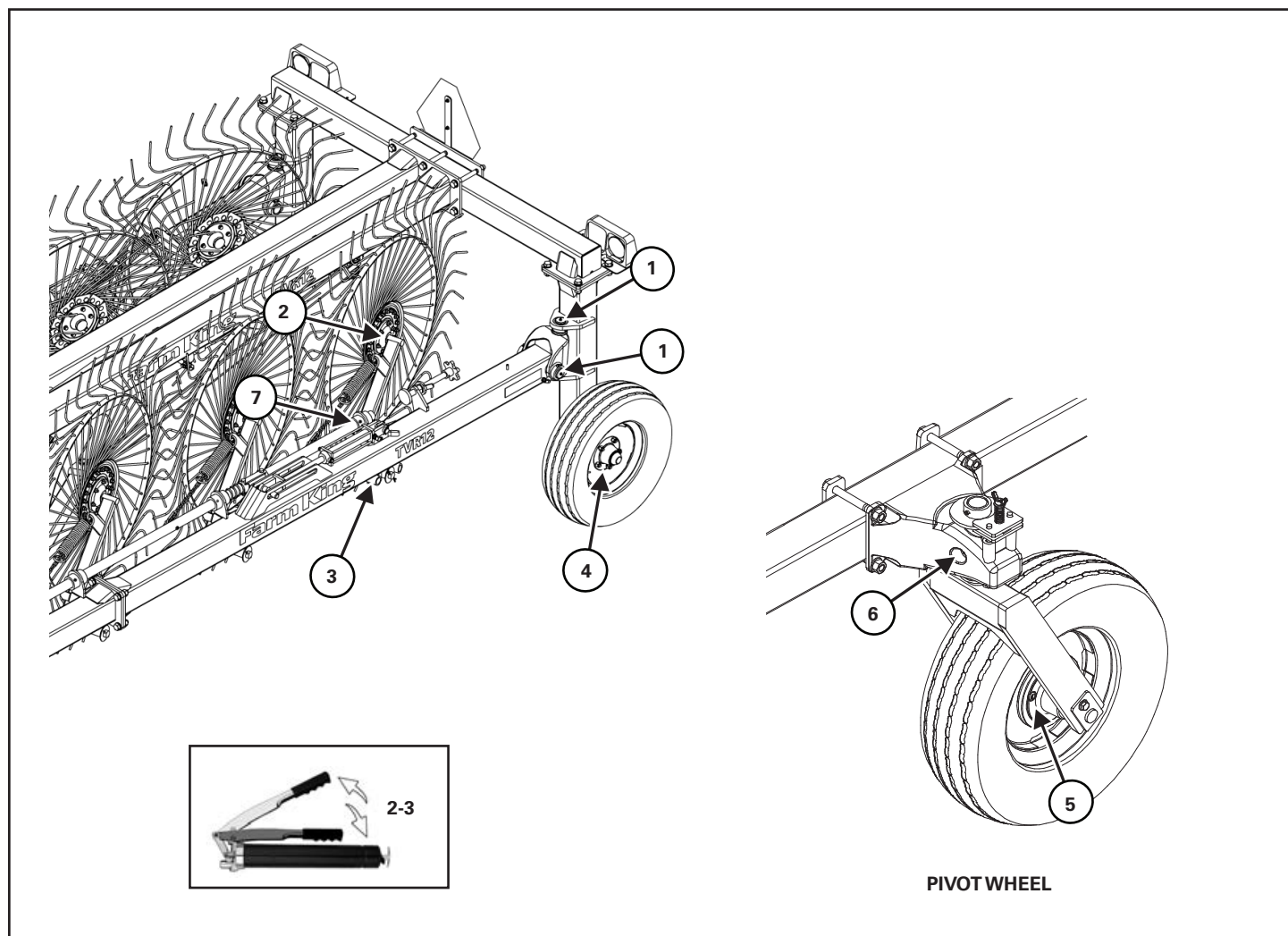
IMPORTANT

Fluid such as engine oil, hydraulic fluid, coolants, grease, etc. must be disposed of in an environmentally safe manner. Some regulations require that certain spills and leaks on the ground must be cleaned in a specific manner. See local, state and federal regulations for the correct disposal.

Figure 50



Lubrication points (Item 1) [Figure 50].

Figure 51

Apply two to three pumps of grease to all lubrication points. Repeat for multiple locations of each component **[Figure 51]**:

- Wing Pivots (Item 1)
- Rake Wheel Hubs (Item 2)
- Rake Arm Pivots (Item 3)
- Rear Wheel Hubs (Item 4)
- Pivot Wheel Hubs (Item 5)
- Pivot Wheel Forks (Item 6)
- Lift Bar Collars (Item 7)

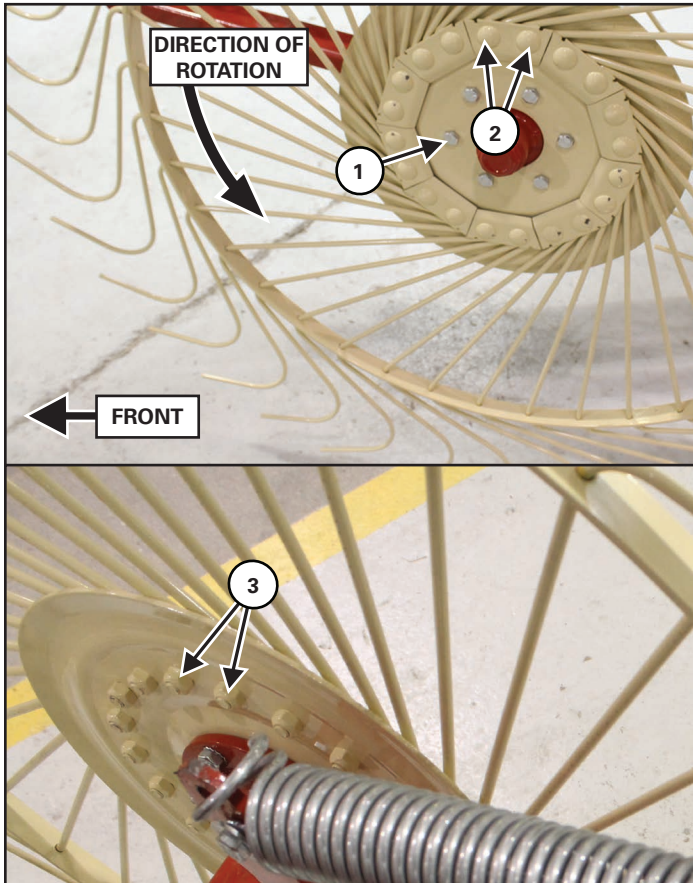
Grease daily (or every 8 hours of use).

Rake Wheels

Rake Wheels / Tines

Periodically check all rake tines for wear or damage.

Figure 52



Rake Wheels

Remove the 3/8" x 1-1/4" hex bolts (Item 1), 3/8" flat washers, and 3/8" lock nuts from the rake wheel. Replace the rake wheel **[Figure 52]**.

Rake Tines

Find the retaining plate that secures the tine to be removed. Remove the two carriage bolts (Item 2) and lock nuts (Item 3) from the retaining plate. Replace the tine **[Figure 52]**.



IMPORTANT

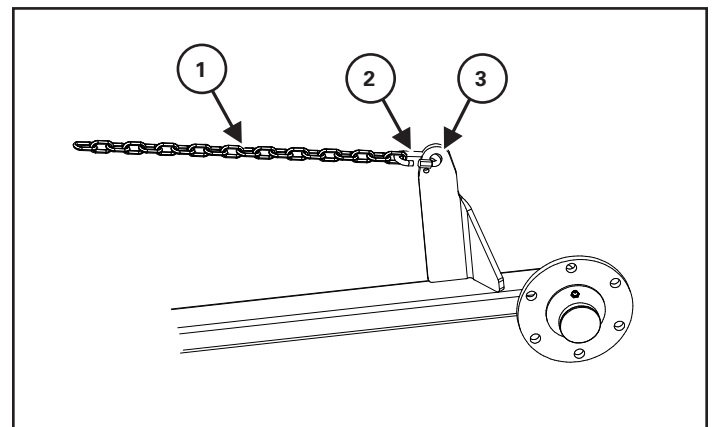
Take note of tine orientation in regards to direction of rotation when replacing rake wheels or tines.

Tines angle away from the direction of rotation.

Chain / Spring

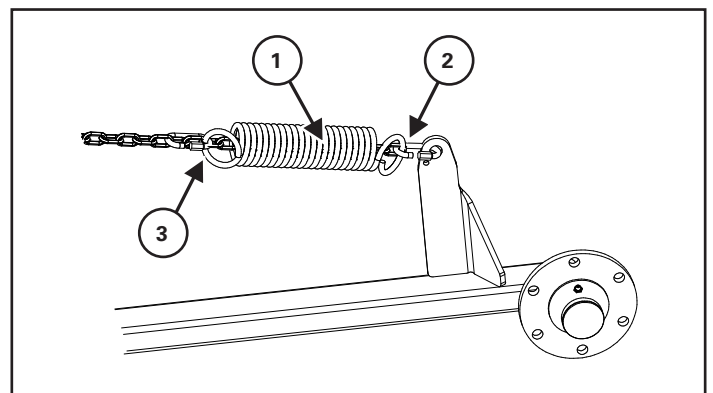
Periodically check all chain links and springs for wear or damage.

Figure 53

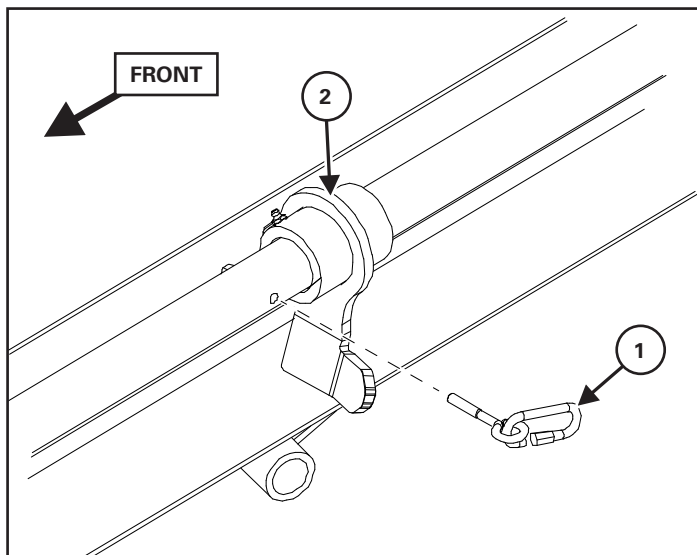


Attach chain (Item 1) and quick link (Item 2) to the top hole of the rake arm bracket (Item 3) **[Figure 53]**.

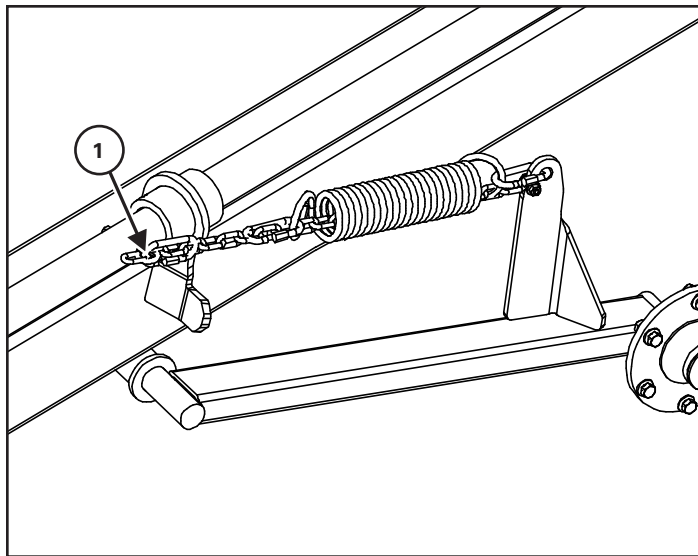
Figure 54



Attach spring (Item 1) to the quick link (Item 2) attached to the bracket. Attach the opposite end of the spring to the chain using one quick link (Item 3) **[Figure 54]**.

Figure 55

Install one 0.313" x 2" eye bolt and quick link (Item 1) to the pre-drilled hole before the tube mount (Item 2) [Figure 55].

Figure 56

Install the chain to the quick link (Item 1) [Figure 56].

Storage And Return To Service

Storage

Sometimes it may be necessary to store the equipment for an extended period of time. Below is a list of items to perform before storage.



IMPORTANT

DO NOT permit children to play on or around the stored machine.

- Thoroughly wash the machine with a pressure washer or water hose to remove all dirt, mud, debris or residue.
- Lubricate all bushings to remove any water residue from washing.
- Remove any material that has become entangled around any moving part.
- Place hydraulic hoses or electrical connector (if applicable) in the storage brackets.
- Inspect the hitch and all welds on the equipment for wear and damage.
- Check for loose hardware, missing guards, rake tines, or damaged parts.
- Check for damaged or missing safety signs (decals). Replace if necessary.
- Replace worn or damaged parts.
- Touch up all paint nicks and scratches to prevent rusting.
- Place the equipment in a dry protected shelter.

Note: If a dry protected shelter is not available, cover with a waterproof tarp and tie down securely.

- Place the equipment flat on the ground.
- Support the jack / frame with planks if required.

Return To Service

After the equipment has been in storage, it is necessary to follow a list of items to return the equipment to service.

- Be sure all shields and guards are in place.
- Lubricate the equipment.
- Connect to a tractor and operate equipment, verify all functions operate correctly.
- Repair as needed.

Decal Installation



IMPORTANT

When replacing safety signs (decals), the temperature must be above 10° C (50° F).

- Remove all portions of the damaged safety sign (decal).
- Thoroughly clean the area with adhesive remover and glass cleaner. Remove all adhesive residue.
- Allow the area to dry completely before installing the new safety sign (decal).
- Position the safety sign (decal) in the correct location.
- Remove a small portion of the backing paper on the safety sign (decal).
- Press on the safety sign (decal) where the backing paper has been removed.
- Slowly remove the remaining backing paper, pressing on the safety sign (decal) as the backing paper is removed.
- Using the backing paper, pressing firmly, move the backing paper over the entire safety sign (decal) area.

Note: Small air pockets can be pierced with a pin and smoothed out using the piece of the backing paper.

Farm King



Parts Identification

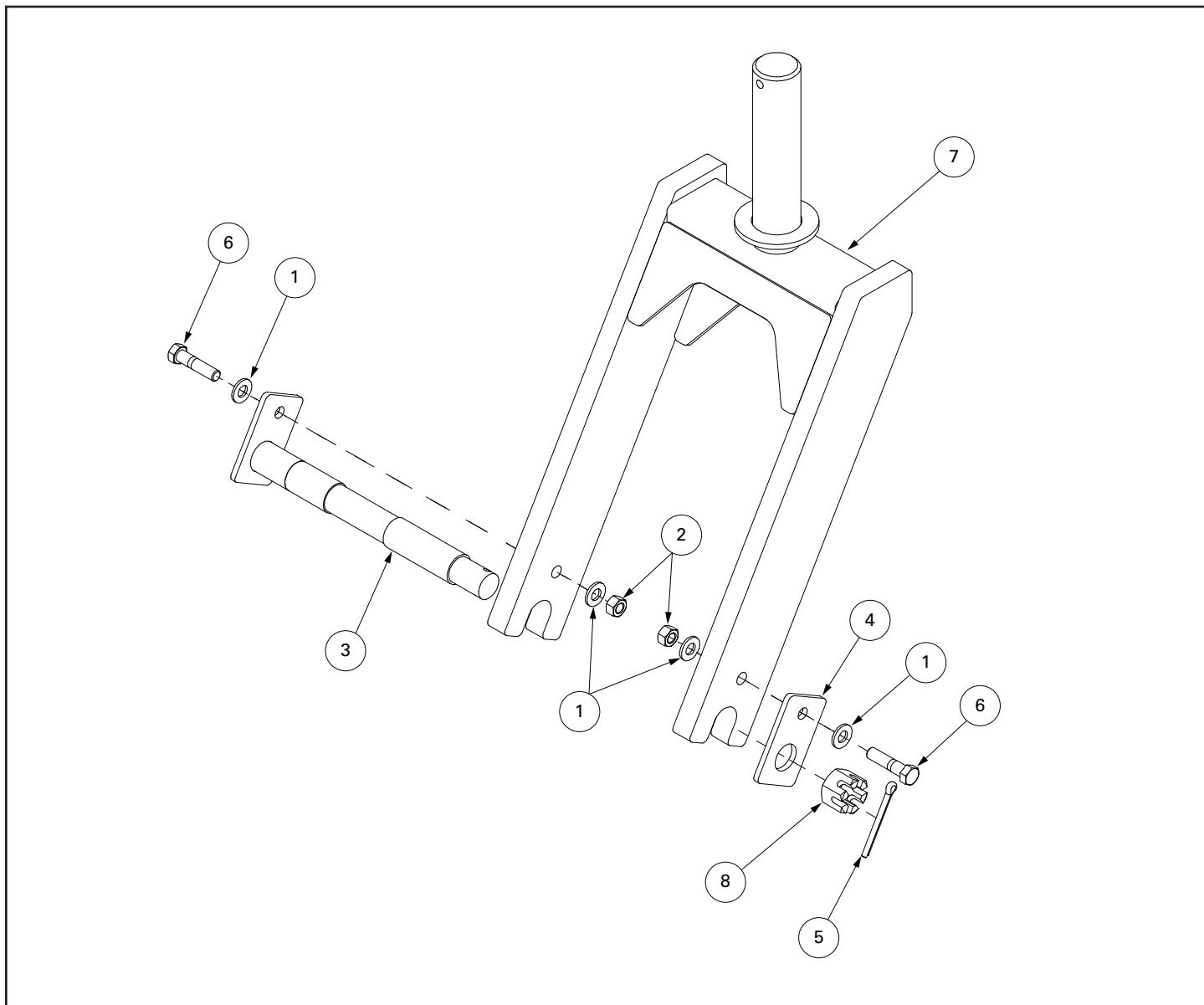
Always give your dealer the Model, Color and Serial Number of your machine to assist them in ordering and obtaining the correct parts. Use the exploded view and tabular listing of the area of interest to exactly identify the required part.

Support Wheel Yoke.....	65
Support Wheel.....	66
Support Wheel Hub.....	68
Axle.....	70
Axle Wheel Hub.....	72
Frame - TVR12.....	74
Frame - TVR14.....	76
Frame - TVR16.....	78
Rake Wheels & Lift Arms - TVR12.....	80
Rake Wheels & Lift Arms - TVR14.....	82
Rake Wheels & Lift Arms - TVR16.....	84
Frame Underside.....	86
Hitch.....	88
Hydraulic Cylinders & Hoses.....	90

Farm King

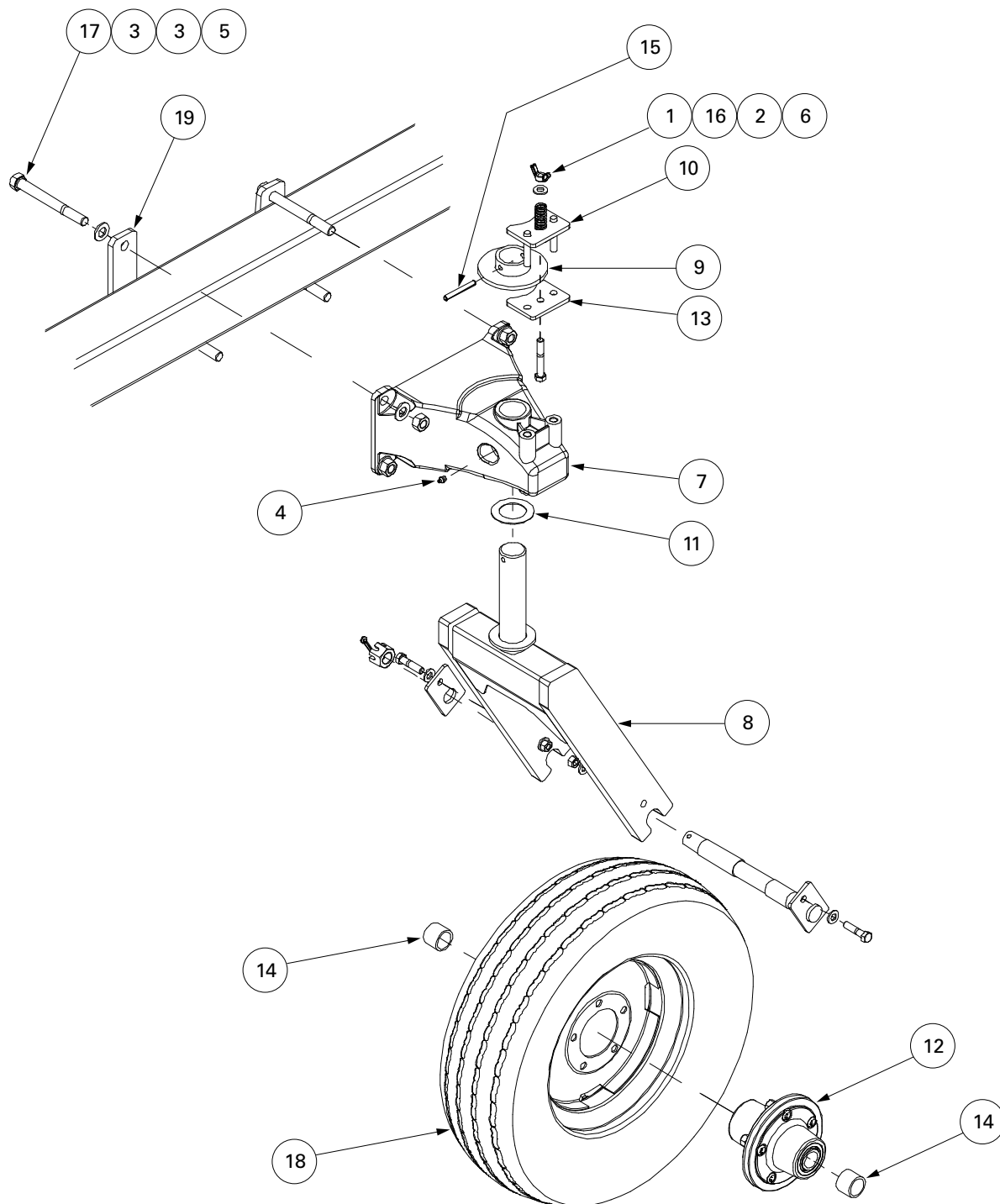


Support Wheel Yoke



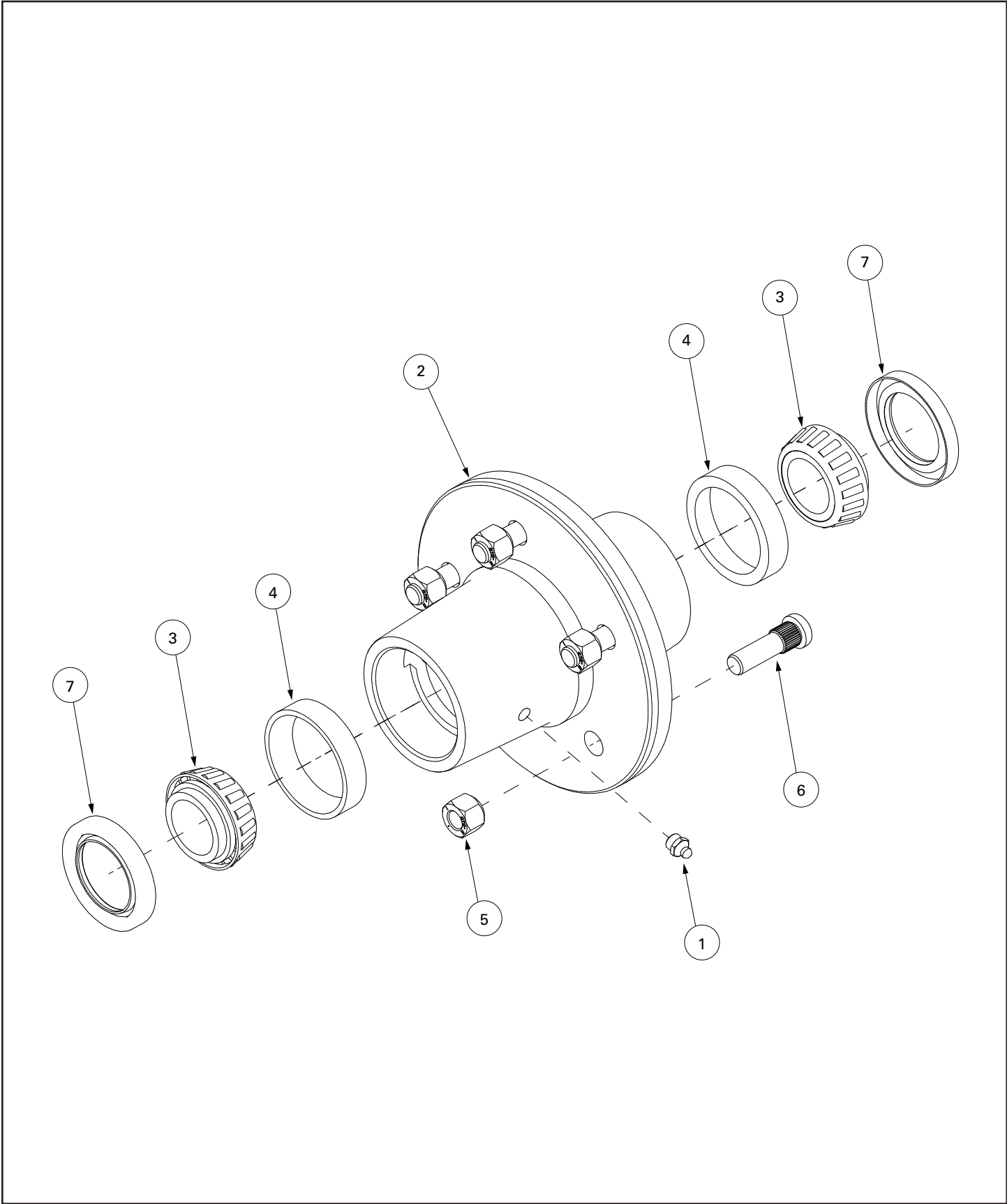
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	84048	1/2" SAE FLAT WASHER (PL)	4
2	812364	1/2" LOCK NUT (PL)	2
3	820704	WELDMENT - SUPPORT WHEEL AXLE	1
4	821128	PLATE - AXLE RETAINER	1
5	821129	PIN COTTER 0.25 X 2.75 PL	1
6	821130	BOLT HEX 0.50-13NC X 2.125 GR5PL	2
7	821302	WELDMENT - WHEEL YOKE	1
8	967217	SLOTTED HEX NUT 1.0 NF	1

Support Wheel



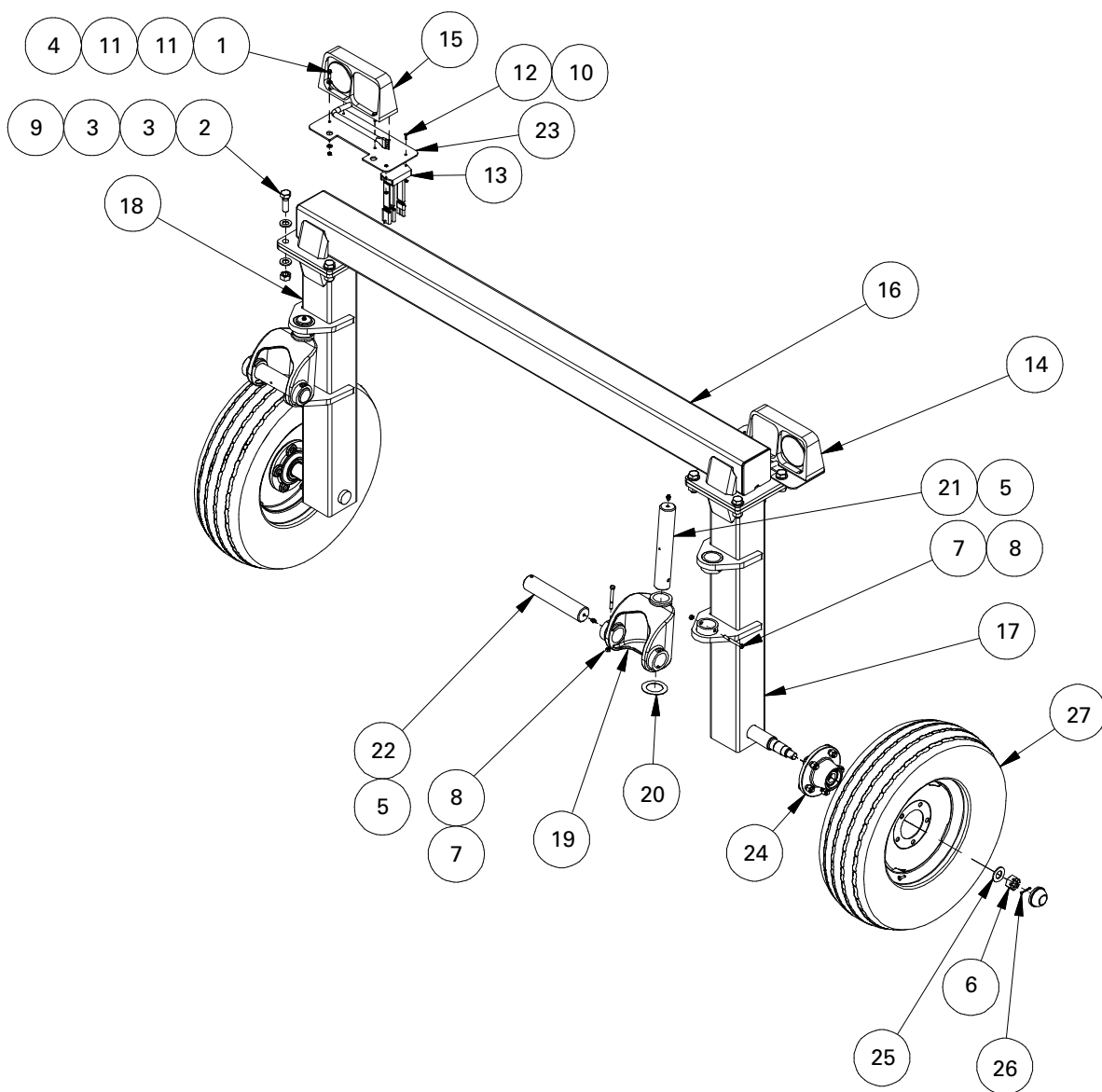
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	81628	1/2" X 3 1/4" HEX BOLT (PL)	1
2	84048	1/2" SAE FLAT WASHER (PL)	1
3	84050	3/4" S.A.E. FLAT WASHER (PL)	8
4	84583	SCREW IN GREASE FITTING	1
5	812365	3/4" LOCK NUT (PL)	4
6	813228	0.50" WING NUT	1
7	820661	CASTING - SUPPORT WHEEL MOUNT	1
8	820701	WELDMENT - SUPPORT WHEEL YOKE	1
9	820762	WELDMENT - BRAKE DISC	1
10	820765	WELDMENT- BRAKE PAD TOP	1
11	820766	SHIM - 3.25"OD X 2.06"ID X 16GA	1
12	820876	HUB - HAC520-6	1
13	821073	WELDMENT - BRAKE PAD LOWER	1
14	821110	BUSHING - 1.406 ID X 1.75 OD X 1.35L	2
15	821148	PIN - SPRING 0.375 DIA X 3.0 L	1
16	821259	SPRING - COMPRESSION 2IN X 0.635	1
17	811746	HEX BOLT-3/4 X 7-1/2" (PL)	4
18	F2508	ASSEMBLY - WHEEL ST205-75R15 MOUNTED 15X5X5	1
19	820749	PLATE- WING ATTACHMENT	2

Support Wheel Hub



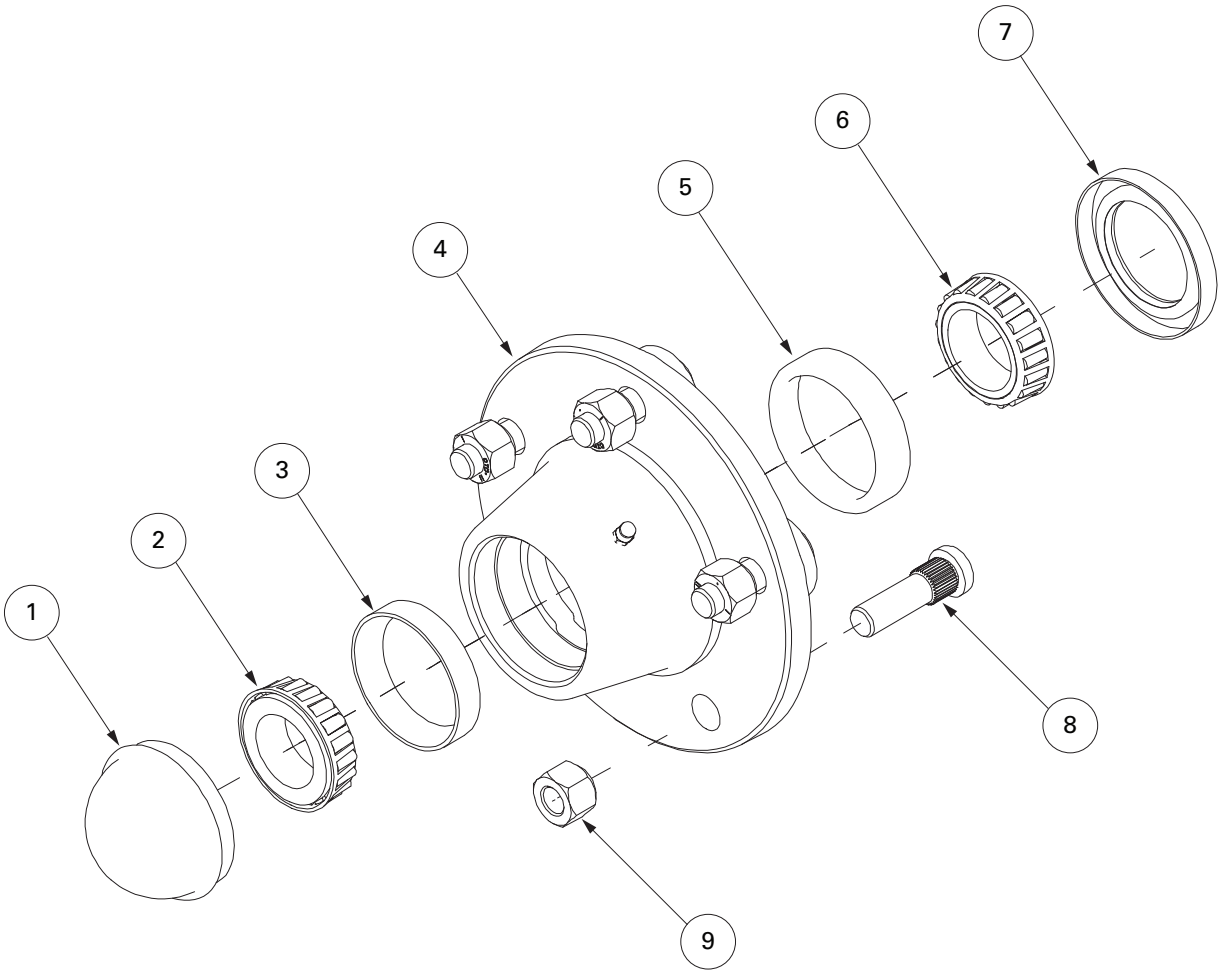
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	84583	SCREW IN GREASE FITTING	1
2	821103	HUB - HAC520-6 BARE	1
3	821104	BEARING - H520-6 CONE	2
4	821105	BEARING - H520-6 CUP	2
5	824106	WHEEL STUD NUT-WB25	5
6	919309	WHEEL BOLT-WB16	5
7	967707	OIL SEAL-SE13	2

Axle



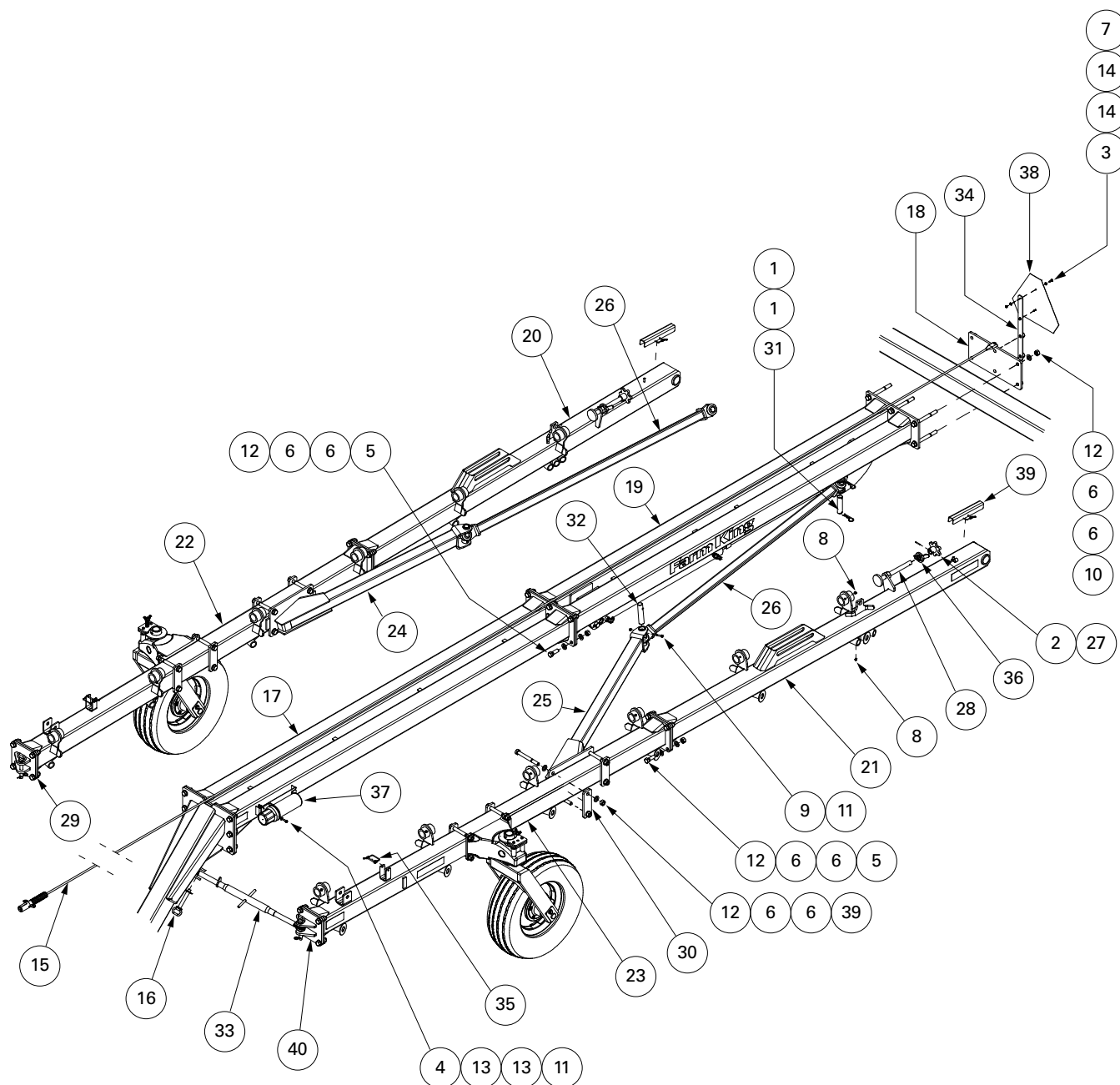
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	81527	1/4" X 1" HEX BOLT (PL)	8
2	81684	3/4" X 2 1/4" HEX BOLT (PL)	8
3	84050	3/4" S.A.E. FLAT WASHER (PL)	16
4	84498	1/4" LOCK NUT (PL)	8
5	84583	SCREW IN GREASE FITTING	4
6	810010	NUT-SLOTTED 7/8 UNF (BR)	2
7	810582	5/16" X 3" HEX BOLT (PL)	4
8	812362	5/16" LOCK NUT (PL)	4
9	812365	3/4" LOCK NUT (PL)	8
10	812537	NUT LOCK (NYLON) 0.136 NC GRB PL	2
11	812624	1/4" FLAT WASHER PL	16
12	813958	SCREW MACH #8-32 X 0.75 FLATHD	2
13	814193	ENHANCED AG LIGHTING MODULE	1
14	814195	LAMP-AG/DUAL/RH/4-WAY WP	1
15	814196	LAMP-AG/DUAL/LH/4-WAY WP	1
16	820634	WELDMENT - CROSS FRAME	1
17	820639	WELDMENT - AXLE LH	1
18	820640	WELDMENT - AXLE RH	1
19	820660	CASTING - WING PIVOT	2
20	820766	SHIM - 3.25"OD X 2.06"ID X 16GA	4
21	820773	PIN - RAKE JOINT VERT	2
22	820774	PIN - RAKE JOINT HORZ	2
23	820884	PLATE - LIGHT MOUNT	2
24	915679	HUB-HA517	2
25	967713	7/8" SAE FLAT WASHER (BR)	2
26	9812486	1/8" X 1 1/2" COTTER PIN (BR)	2
27	F2508	ASSEMBLY - WHEEL ST205-75R15 MOUNTED 15X5X5	2

Axle Wheel Hub



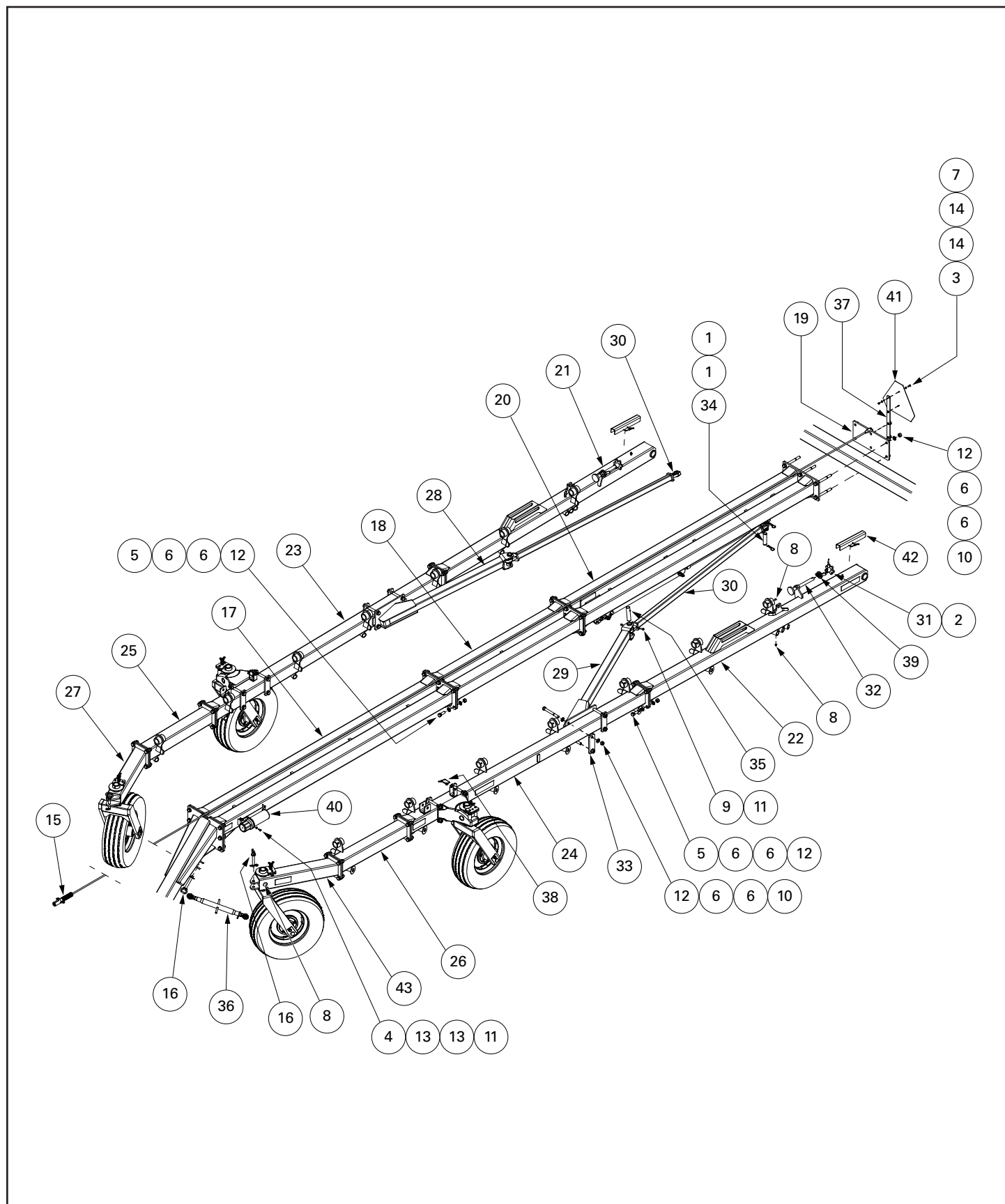
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	967716	DUST CAP	1
2	967712	BEARING CONE	1
3	967711	BEARING CUP	1
4	919312	HUB BARE	1
5	968412	BEARING CUP	1
6	967208	BEARING CONE	1
7	967707	OIL SEAL	1
8	919309	WHEEL BOLT	5
9	915665	WHEEL NUT	5

Frame - TVR12



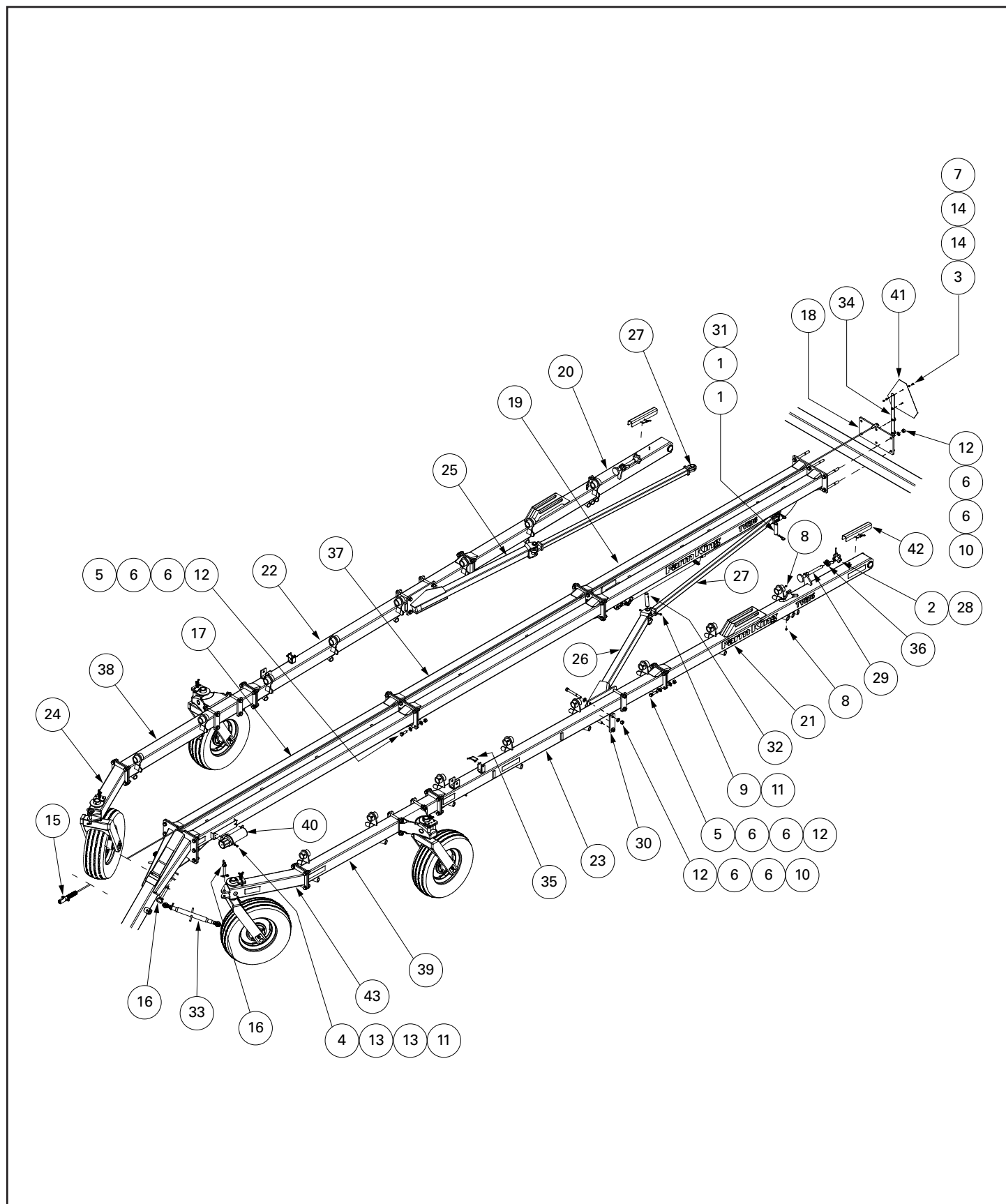
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	12779	#9 HAIR PIN CLIP (PL)	4
2	81215	SPRING PIN 0.188DIA X 1.50LG	2
3	81525	1/4" X 3/4" HEX BOLT (PL)	2
4	81549	5/16" X 3/4" HEX BOLT (PL)	3
5	81684	3/4" X 2 1/4" HEX BOLT (PL)	28
6	84050	3/4" S.A.E. FLAT WASHER (PL)	84
7	84498	1/4" LOCK NUT (PL)	2
8	84583	SCREW IN GREASE FITTING	28
9	811688	BOLT-5/16" X 2 1/4" (PL) GR.5	2
10	811746	3/4" X 7.5" HEX BOLT	22
11	812362	5/16" LOCK NUT (PL)	5
12	812365	3/4" LOCK NUT (PL)	50
13	812623	WASHER - 5/16" SAE FLAT (PL)	6
14	812624	1/4" FLAT WASHER PL	4
15	814198	MAIN HARNESS 52' LONG 7 PIN PLUG	1
16	816131	3/4" DIA. X 4.25" LG CLEV PIN	4
17	820619	WELDMENT - FORWARD MAIN FRAME	1
18	821763	PLATE - CROSS BAR BOLT	1
19	820628	WELDMENT - REAR MAIN FRAME	1
20	820653	WELDMENT - REAR WING RH	1
21	820654	WELDMENT - REAR WING LH	1
22	820658	WELDMENT - FORWARD WING RH	1
23	820659	WELDMENT - FORWARD WING LH	1
24	820680	WELDMENT - CLOSURE ARM RH	1
25	820681	WELDMENT - CLOSURE ARM LH	1
26	820685	WELDMENT - WING LINK	2
27	820737	WELDMENT - STOP HANDLE	2
28	820738	WELDMENT - RAKE HEIGHT STOP	2
29	820748	WELDMENT - LOCK CLEVIS RH	1
30	820749	PLATE- WING ATTACHMENT	4
31	820879	PIN - 1.25 DIA X 4.75	2
32	820880	PIN - 1.25 DIA X 5.5	2
33	820881	LINK - 16"L X 0.75" PINS ADJUSTABLE	2
34	821764	PLATE - SMV MOUNT	1
35	821139	PIN - 0.25"DIA X 2.50L WIRE LOCK	4
36	821192	WELDMENT - 1" WING NUT	2
37	909277	MANUAL HOLDER 3 1/2" X 12"	1
38	967066	SLOW MOVING VEHICLE SIGN	1
39	821627	PLATE - LIFT CYL LOCK	2
40	821701	WELDMENT - LOCK CLEVIS LH	1

Frame - TVR14



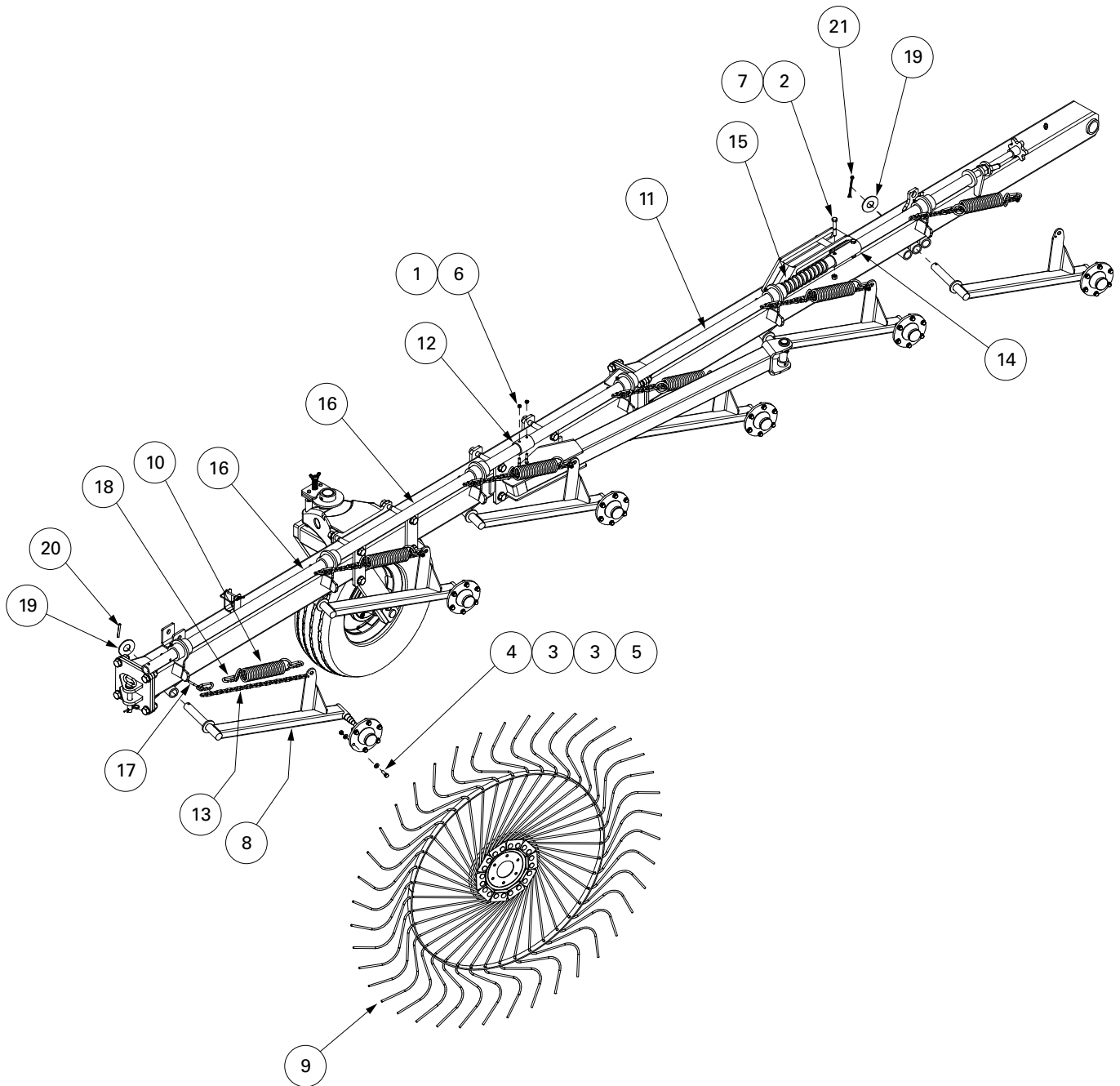
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	12779	#9 HAIR PIN CLIP (PL)	4
2	81215	SPRING PIN 0.188DIA X 1.50LG	2
3	81525	1/4" X 3/4" HEX BOLT (PL)	2
4	81549	5/16" X 3/4" HEX BOLT (PL)	3
5	81684	3/4" X 2 1/4" HEX BOLT (PL)	42
6	84050	3/4" S.A.E. FLAT WASHER (PL)	112
7	84498	1/4" LOCK NUT (PL)	2
8	84583	SCREW IN GREASE FITTING	34
9	811688	BOLT-5/16" X 2 1/4" (PL) GR.5	2
10	811746	3/4" X 7.5" HEX BOLT	22
11	812362	5/16" LOCK NUT (PL)	5
12	812365	3/4" LOCK NUT (PL)	64
13	812623	WASHER - 5/16" SAE FLAT (PL)	6
14	812624	1/4" FLAT WASHER PL	4
15	814198	MAIN HARNESS 52' LONG 7 PIN PLUG	1
16	816131	3/4" DIA. X 4.25" LG CLEV PIN	4
17	820619	WELDMENT - FORWARD MAIN FRAME	1
18	820621	WELDMENT - FRAME EXTENSION	1
19	821763	PLATE - CROSS BAR BOLT	1
20	820628	WELDMENT - REAR MAIN FRAME	1
21	820653	WELDMENT - REAR WING RH	1
22	820654	WELDMENT - REAR WING LH	1
23	820658	WELDMENT - FORWARD WING RH	1
24	820659	WELDMENT - FORWARD WING LH	1
25	820665	WELDMENT - 14 EXTENSION RH	1
26	820666	WELDMENT - 14 EXTENSION LH	1
27	820671	WELDMENT - WING END W/WHEEL RH	1
28	820680	WELDMENT - CLOSURE ARM RH	1
29	820681	WELDMENT - CLOSURE ARM LH	1
30	820685	WELDMENT - WING LINK	2
31	820737	WELDMENT - STOP HANDLE	2
32	820738	WELDMENT - RAKE HEIGHT STOP	2
33	820749	PLATE- WING ATTACHMENT	4
34	820879	PIN - 1.25 DIA X 4.75	2
35	820880	PIN - 1.25 DIA X 5.5	2
36	820881	LINK - 16"L X 0.75" PINS ADJUSTABLE	2
37	821764	PLATE - SMV MOUNT	1
38	821139	PIN - 0.25"DIA X 2.50L WIRE LOCK	4
39	821192	WELDMENT - 1" WING NUT	2
40	909277	MANUAL HOLDER 3 1/2" X 12"	1
41	967066	SLOW MOVING VEHICLE SIGN	1
42	821627	PLATE - LIFT CYL LOCK	2
43	820672	WELDMENT - WING END W/WHEEL LH	1

Frame - TVR16



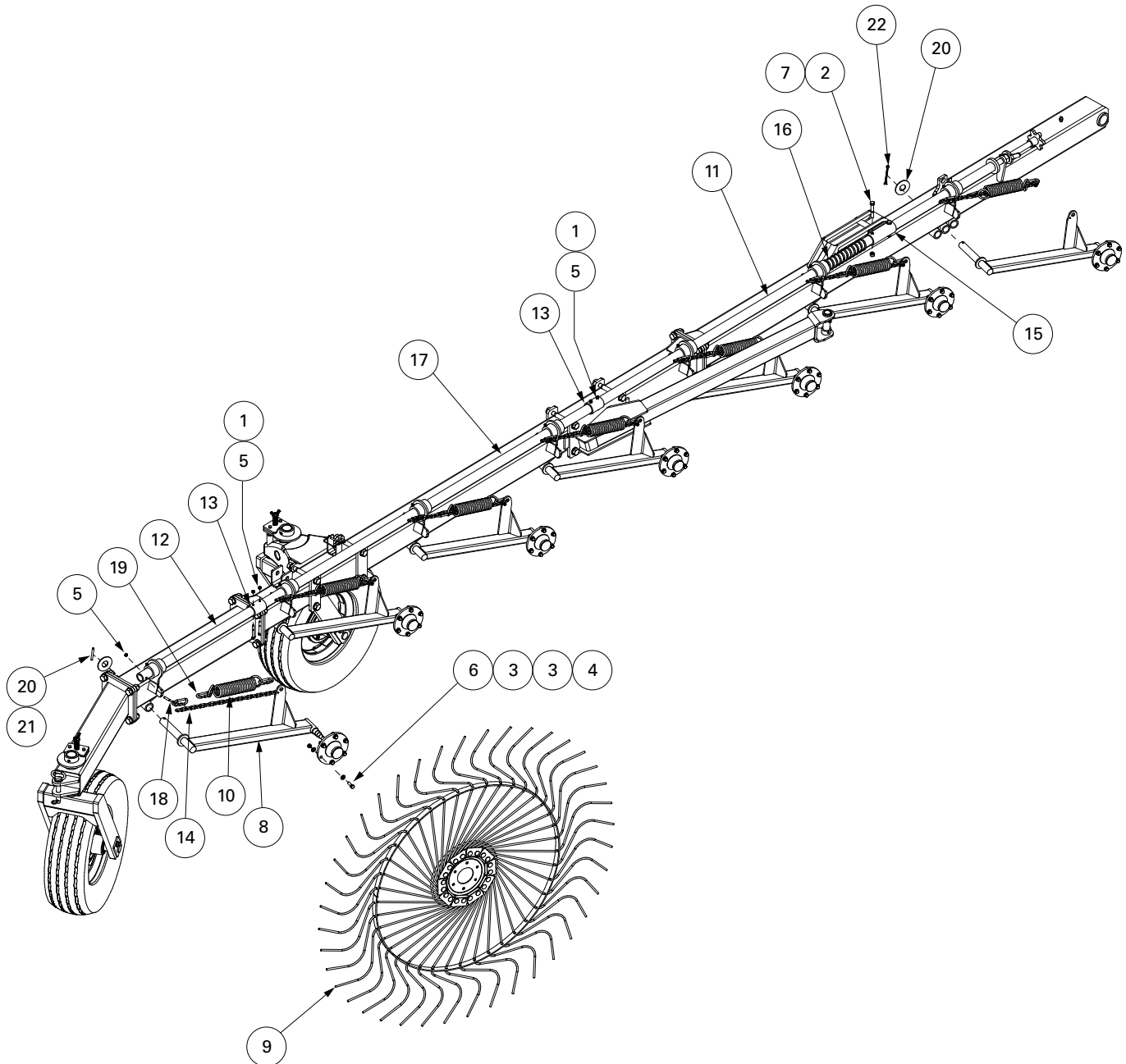
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	12779	#9 HAIR PIN CLIP (PL)	4
2	81215	SPRING PIN 0.188DIA X 1.50LG	2
3	81525	1/4" X 3/4" HEX BOLT (PL)	2
4	81549	5/16" X 3/4" HEX BOLT (PL)	3
5	81684	3/4" X 2 1/4" HEX BOLT (PL)	42
6	84050	3/4" S.A.E. FLAT WASHER (PL)	112
7	84498	1/4" LOCK NUT (PL)	2
8	84583	SCREW IN GREASE FITTING	38
9	811688	BOLT-5/16" X 2 1/4" (PL) GR.5	2
10	811746	3/4" X 7.5" HEX BOLT	22
11	812362	5/16" LOCK NUT (PL)	5
12	812365	3/4" LOCK NUT (PL)	64
13	812623	WASHER - 5/16" SAE FLAT (PL)	6
14	812624	1/4" FLAT WASHER PL	4
15	814198	MAIN HARNESS 52' LONG 7 PIN PLUG	1
16	816131	3/4" DIA. X 4.25" LG CLEV PIN	4
17	820619	WELDMENT - FORWARD MAIN FRAME	1
18	821763	PLATE - CROSS BAR BOLT	1
19	820628	WELDMENT - REAR MAIN FRAME	1
20	820653	WELDMENT - REAR WING RH	1
21	820654	WELDMENT - REAR WING LH	1
22	820658	WELDMENT - FORWARD WING RH	1
23	820659	WELDMENT - FORWARD WING LH	1
24	820671	WELDMENT - WING END W/WHEEL RH	1
25	820680	WELDMENT - CLOSURE ARM RH	1
26	820681	WELDMENT - CLOSURE ARM LH	1
27	820685	WELDMENT - WING LINK	2
28	820737	WELDMENT - STOP HANDLE	2
29	820738	WELDMENT - RAKE HEIGHT STOP	2
30	820749	PLATE- WING ATTACHMENT	4
31	820879	PIN - 1.25 DIA X 4.75	2
32	820880	PIN - 1.25 DIA X 5.5	2
33	820881	LINK - 16"L X 0.75" PINS ADJUSTABLE	2
34	821764	PLATE - SMV MOUNT	1
35	821139	PIN - 0.25"DIA X 2.50L WIRE LOCK	2
36	821192	WELDMENT - 1" WING NUT	2
37	821247	WELDMENT - FRAME EXTENSION 16	1
38	821248	WELDMENT - WING EXTENSION 16 RH	1
39	821249	WELDMENT - WING EXTENSION 16 LH	1
40	909277	MANUAL HOLDER 3 1/2" X 12"	1
41	967066	SLOW MOVING VEHICLE SIGN	1
42	821627	PLATE - LIFT CYL LOCK	2
43	820672	WELDMENT - WING END W/WHEEL LH	1

Lift Arms - TVR12



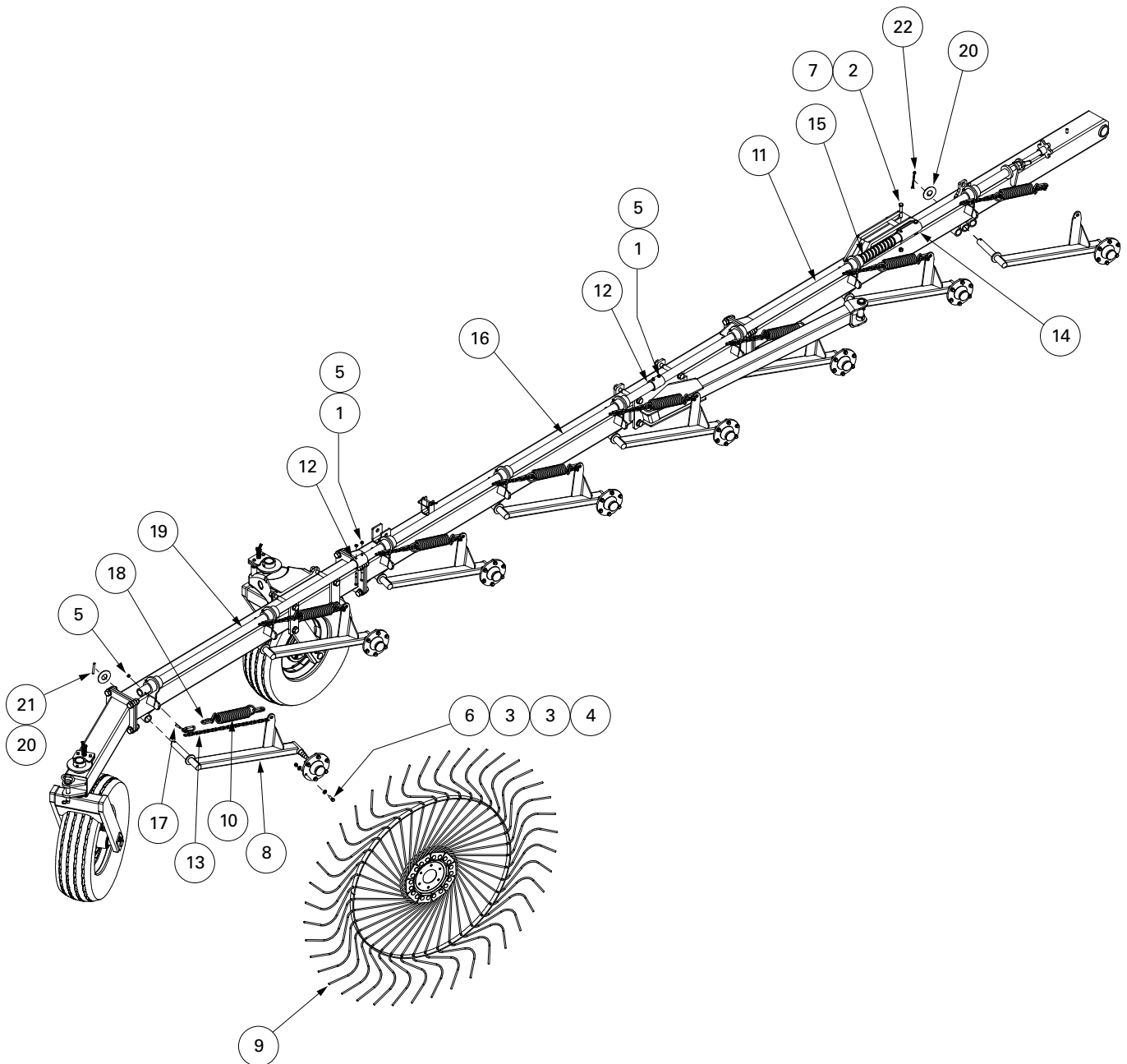
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	81558	5/16" X 2 3/4" HEX BOLT GR5 (PL)	4
2	81627	1/2" X 3" HEX BOLT (PL)	4
3	84039	WASHER - 3/8" SAE FLAT (PL)	144
4	86171	3/8" X 1 1/4" HEX BOLT (PL)	72
5	812363	3/8" LOCK NUT (PL)	72
6	812362	5/16" LOCK NUT (PL)	4
7	812364	1/2" LOCK NUT (PL)	4
8	821350	ASSEMBLY - WHEEL ARM RH	6
	821351	ASSEMBLY - WHEEL ARM LH	6
9	820705	ASSEMBLY - 60IN WHEEL RH	6
	820706	ASSEMBLY - 60IN WHEEL LH	6
10	820715	SPRING - EXTENSION 10.5 L X .25T 65LB/IN	12
11	820739	TUBE - WHEEL LIFT REAR	2
12	820741	TUBE - WHEEL LIFT CONNECTOR	2
13	820743	CHAIN - RAKE WHEEL	12
14	820753	WELDMENT-WHEEL CYL PIN	2
15	820754	SPRING - COMPRESSION 10"L X .25"T	2
16	821113	TUBE - WHEEL LIFT FRONT	2
17	821115	BOLT - EYE 0.313-18NC X 2" L	12
18	821117	LINK - QUICK 0.281T X 2.0L X .968W	36
19	967110	1.25ID X 18GA NARROW RIM WASHER	12
20	9812428	SPRING PIN 0.313 DIA X 2.50 (PL)	10
21	9812436	1/4" X 2 1/2" COTTER PIN (PL)	2

Lift Arms - TVR14



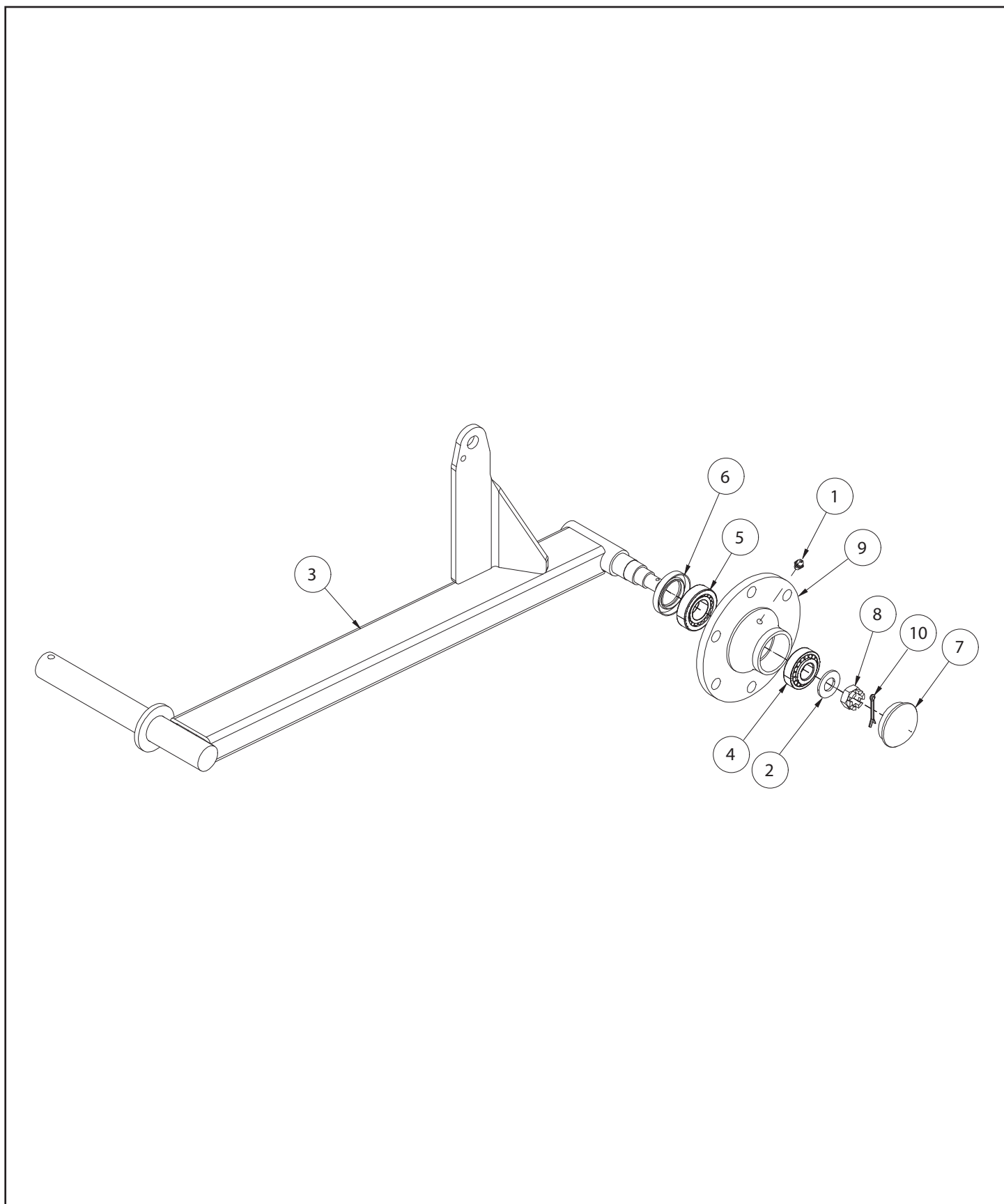
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	81558	5/16" X 2 3/4" HEX BOLT GR5 (PL)	8
2	81627	1/2" X 3" HEX BOLT (PL)	4
3	84039	WASHER - 3/8" SAE FLAT (PL)	168
4	86171	3/8" X 1 1/4" HEX BOLT (PL)	84
5	812362	5/16" LOCK NUT (PL)	10
6	812363	3/8" LOCK NUT (PL)	84
7	812364	1/2" LOCK NUT (PL)	4
8	821351	ASSEMBLY - WHEEL ARM LH	7
	821350	ASSEMBLY - WHEEL ARM RH	7
9	820706	ASSEMBLY - 60IN WHEEL LH	7
	820705	ASSEMBLY - 60IN WHEEL RH	7
10	820715	SPRING - EXTENSION 10.5 L X .25T 65LB/IN	14
11	820739	TUBE - WHEEL LIFT REAR	2
12	820740	TUBE - WHEEL LIFT EXTENSION	2
13	820741	TUBE - WHEEL LIFT CONNECTOR	4
14	820743	CHAIN - RAKE WHEEL	14
15	820753	WELDMENT- WHEEL CYL PIN	2
16	820754	SPRING - COMPRESSION 10"L X .25"T	2
17	821113	TUBE - WHEEL LIFT FRONT	2
18	821115	BOLT - EYE 0.313-18NC X 2" L	14
19	821117	LINK - QUICK 0.281T X 2.0L X .968W	42
20	967110	1.25ID X 18GA NARROW RIM WASHER	14
21	9812428	SPRING PIN 0.313 DIA X 2.50 (PL)	12
22	9812436	1/4" X 2 1/2" COTTER PIN (PL)	2

Lift Arms - TVR16



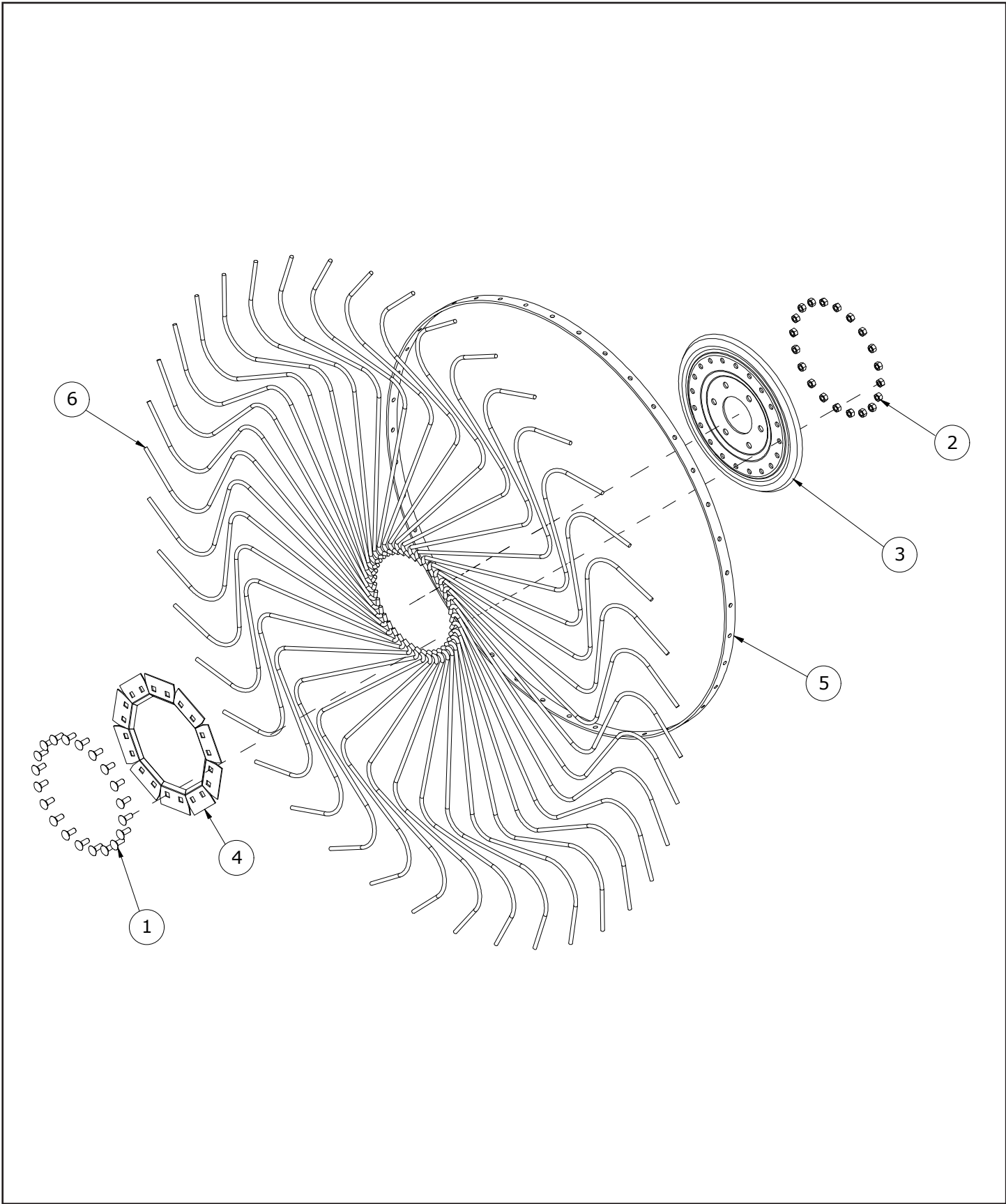
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	81558	5/16" X 2 3/4" HEX BOLT GR5 (PL)	8
2	81627	1/2" X 3" HEX BOLT (PL)	4
3	84039	WASHER - 3/8" SAE FLAT (PL)	192
4	86171	3/8" X 1 1/4" HEX BOLT (PL)	96
5	812362	5/16" LOCK NUT (PL)	10
6	812363	3/8" LOCK NUT (PL)	96
7	812364	1/2" LOCK NUT (PL)	4
8	820695	ASSEMBLY - WHEEL ARM LH	8
	820694	ASSEMBLY - WHEEL ARM RH	8
9	820706	ASSEMBLY - 60IN WHEEL LH	8
	820705	ASSEMBLY - 60IN WHEEL RH	8
10	820715	SPRING - EXTENSION 10.5 L X .25T 65LB/IN	16
11	820739	TUBE - WHEEL LIFT REAR	2
12	820741	TUBE - WHEEL LIFT CONNECTOR	4
13	820743	CHAIN - RAKE WHEEL	16
14	820753	WELDMENT-WHEEL CYL PIN	2
15	820754	SPRING - COMPRESSION 10"L X .25"T	2
16	821113	TUBE - WHEEL LIFT FRONT	2
17	821115	BOLT - EYE 0.313-18NC X 2" L	16
18	821117	LINK - QUICK 0.281T X 2.0L X .968W	48
19	821252	TUBE - WHEEL LIFT EXTENSION	2
20	967110	1.25ID X 18GA NARROW RIM WASHER	16
21	9812428	SPRING PIN 0.313 DIA X 2.50 (PL)	14
22	9812436	1/4" X 2 1/2" COTTER PIN (PL)	2

Rake Wheel Arms



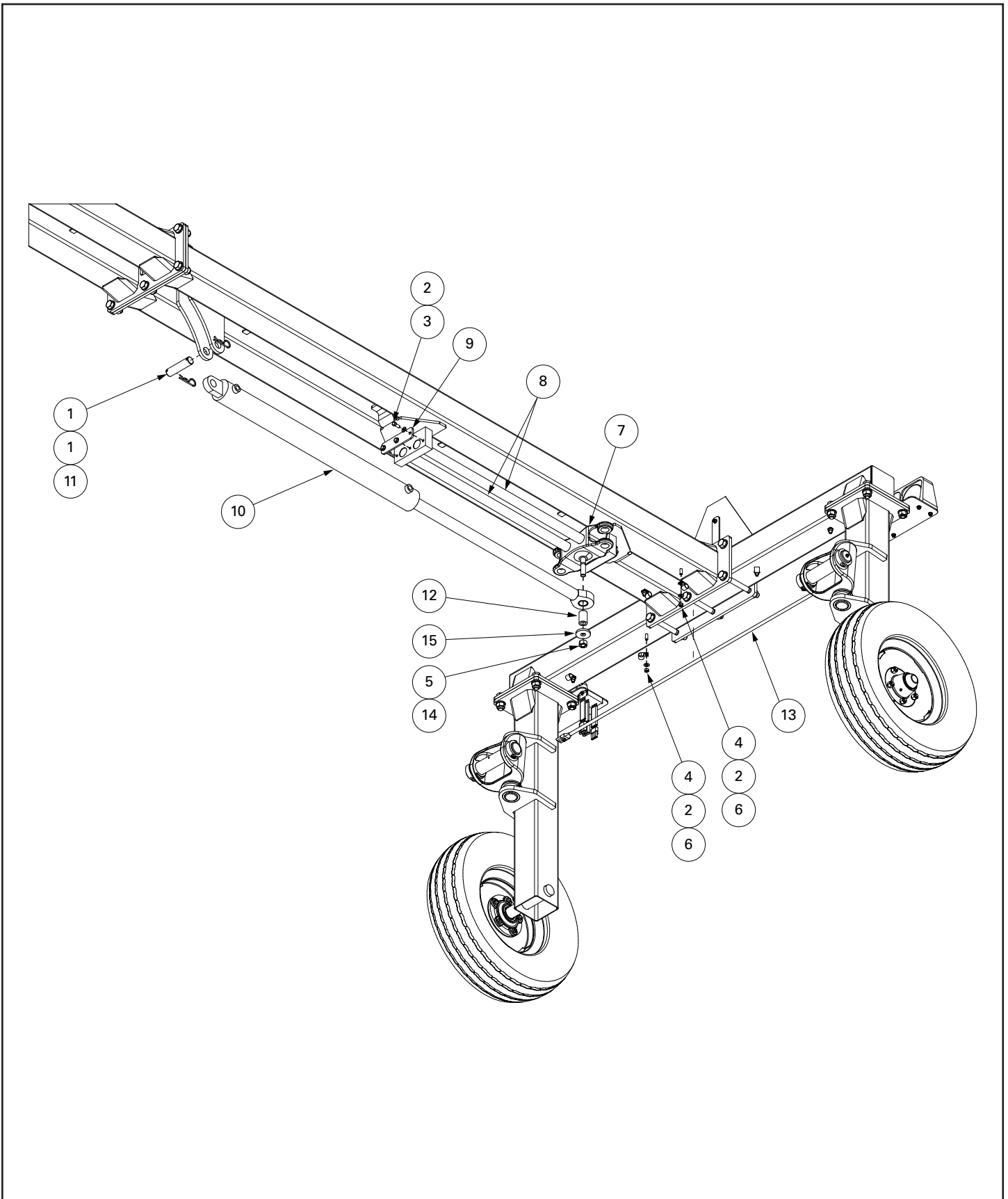
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	84062	GREASE FITTING 0.250NF STRAIGHT	1
2	812639	WASHER 0.625 SAE FLAT BS PL	1
3	820694	WELDMENT - WHEEL ARM RH	1
	820695	WELDMENT - WHEEL ARM LH	1
4	820717	BEARING - TAPERED ROLLER 30204	1
5	820718	BEARING - TAPERED ROLLER 30205	1
6	820986	SEAL - LIP 52X32X8	1
7	820987	CAP - 47MM DUST	1
8	821131	NUT SLOT 0.625-18NF	1
9	821301	HUB - 6 BOLT RAKE BARE	1
10	9812486	1/8" X 1 1/2" COTTER PIN (BR)	1

Rake Wheels



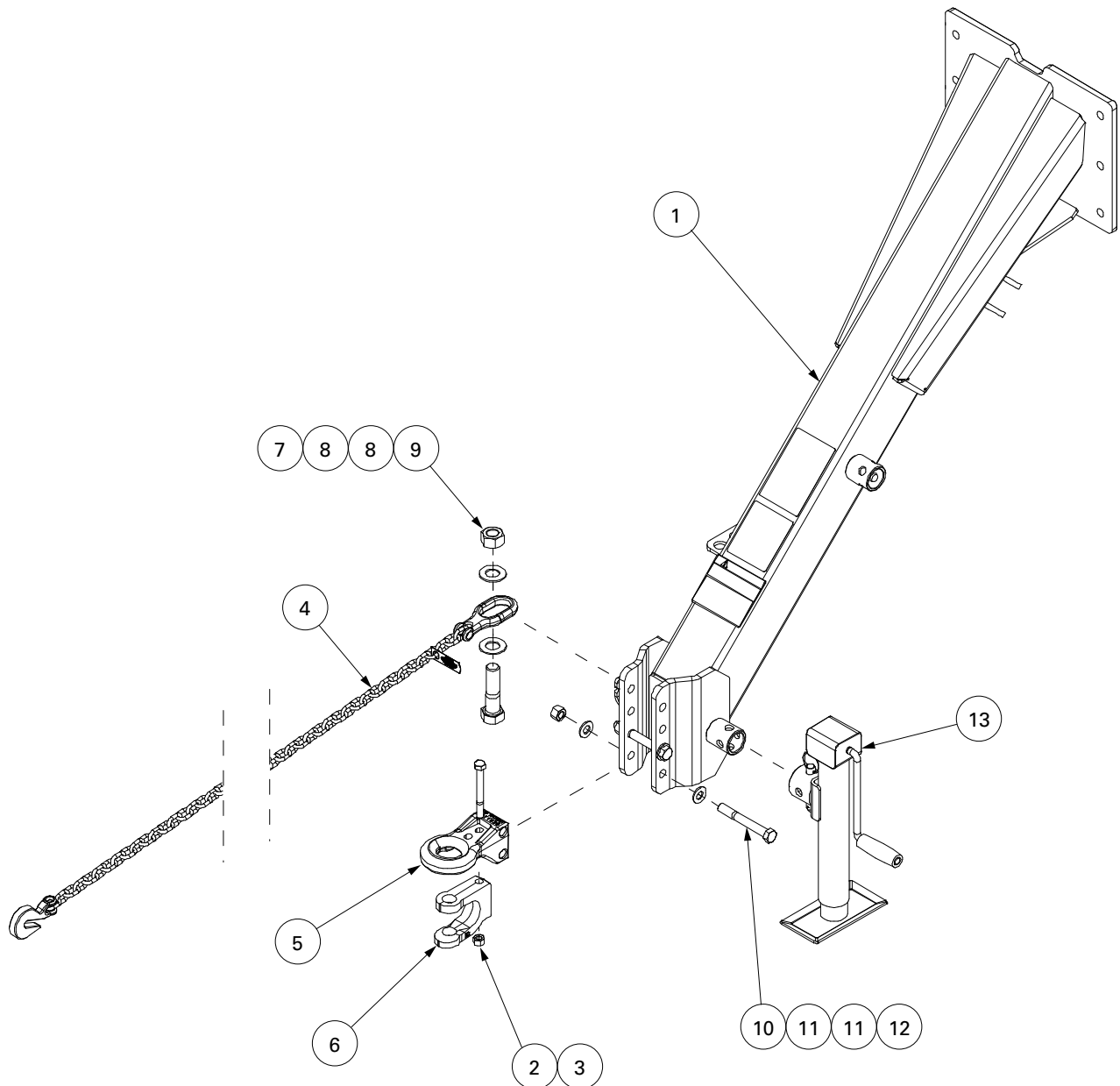
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	81914	3/8" X 1" CARRIAGE BOLT (PL)	20
2	812363	3/8" LOCK NUT (PL)	20
3	820709	FLANGE - RAKE WHEEL CENTER	1
4	820710	PLATE - RAKE TINE FASTENER	10
5	820711	RING - 60IN WHEEL OUTER	1
6	820713	TINE - 60IN RAKE WHEEL 7.5MM	40

Frame Underside



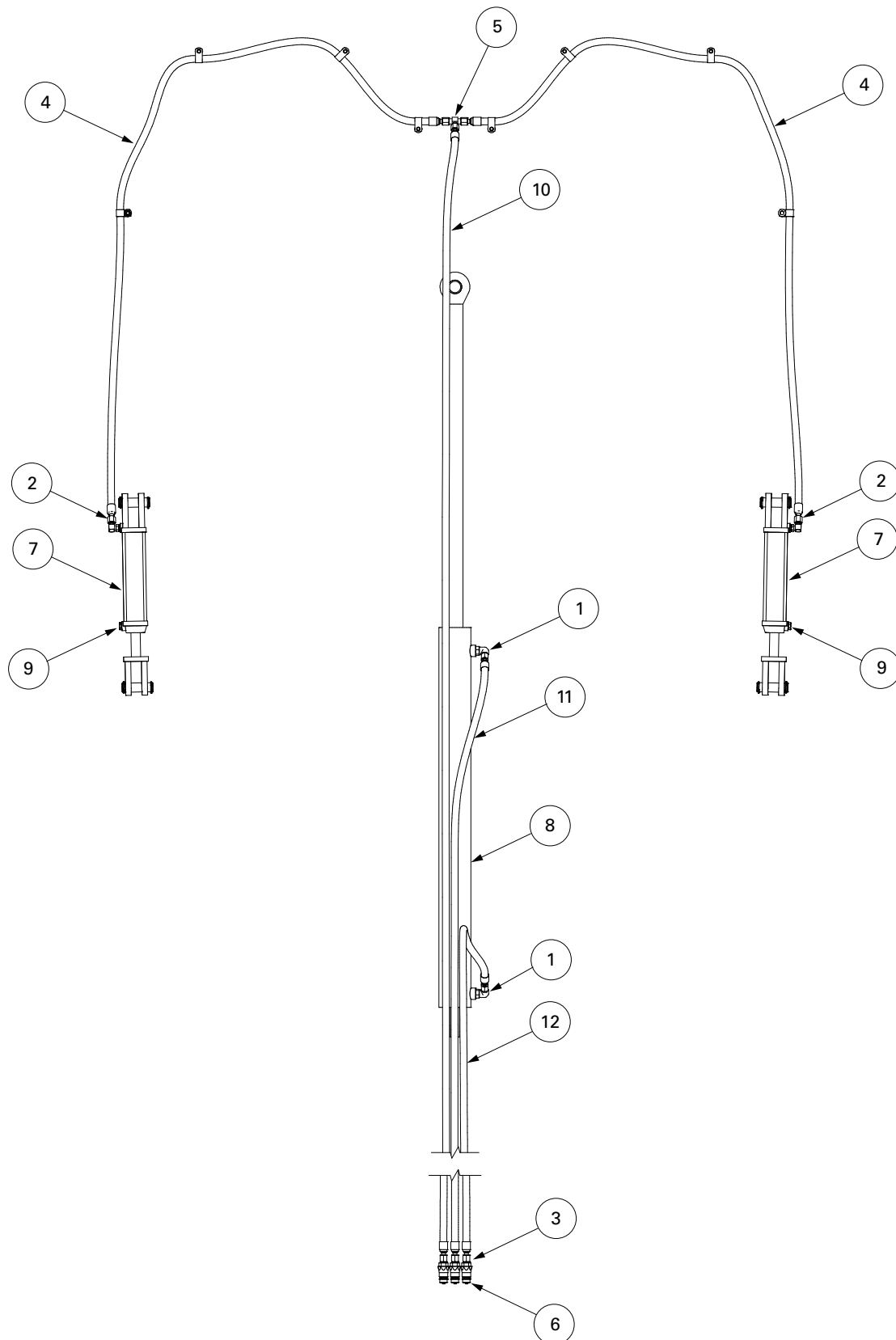
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	12779	#9 HAIR PIN CLIP (PL)	2
2	84039	WASHER - 3/8" SAE FLAT (PL)	14
3	86170	3/8" X 1" HEX BOLT (PL)	6
4	812363	3/8" LOCK NUT (PL)	2
5	812365	3/4" LOCK NUT (PL)	1
6	815250	P-CLAMP FOR 3/4 OD, .406 HOLE	8
7	820686	CASTING - WING LINK MOUNT	1
8	820744	BAR - SPREAD SLIDE	2
9	820795	PLATE - SLIDE ROD KEEPER	2
10	820855	CYLINDER - 3.0 X 36.50 BALL END	1
11	820879	PIN - 1.25 DIA X 4.75	1
12	821080	BUSHING - 1.25OD X .764ID X 2	1
13	821246	HARNESS - CROSS 4 PIN WP 62"L	1
14	967222	HEX BOLT-3/4 X 7" (PL)	1
15	86508429	WASHER 0.750X2.250X0.310 GR5 PL	1

Hitch



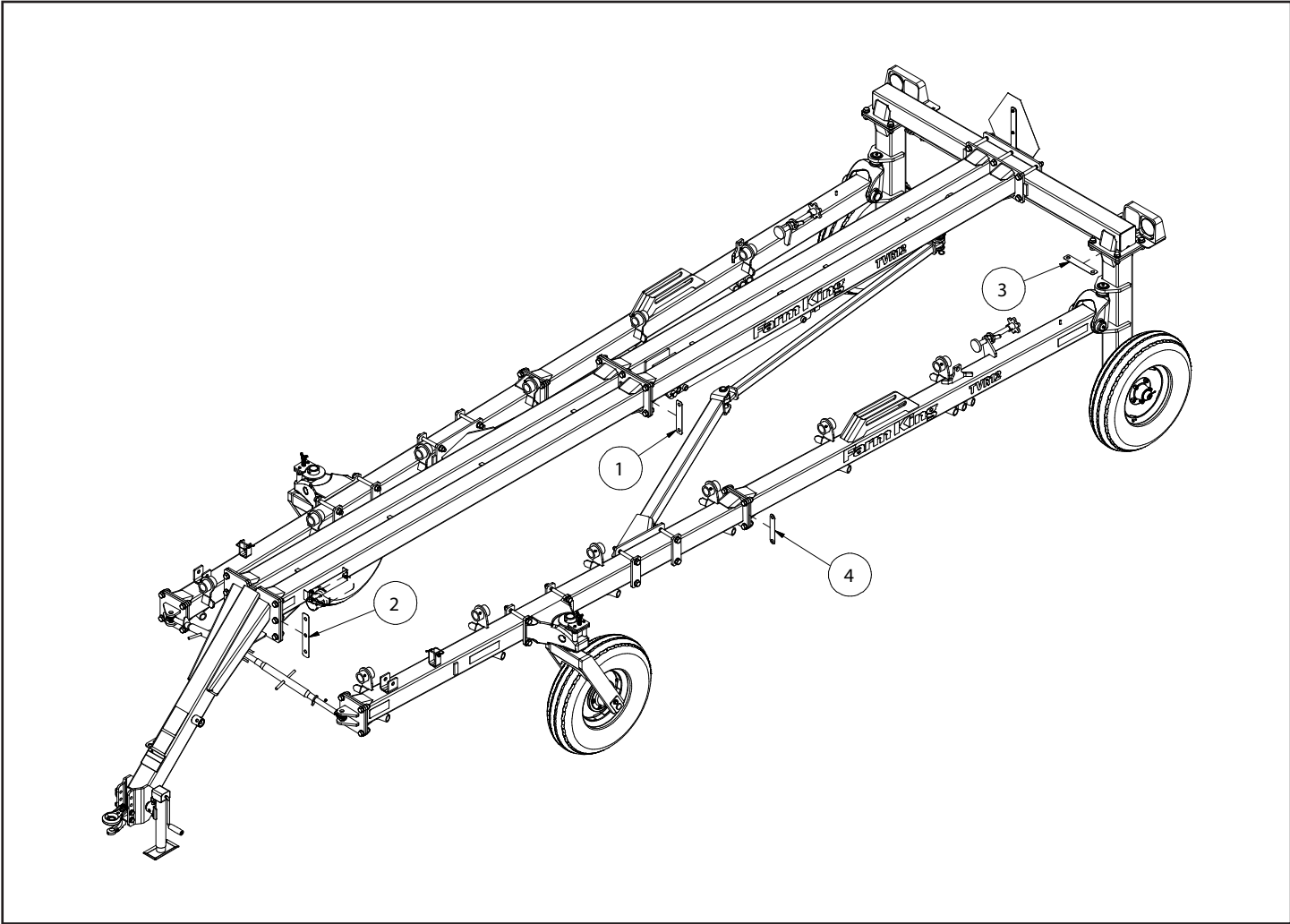
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	820614	WELDMENT - HITCH	1
2	812364	1/2" LOCK NUT (PL)	1
3	811691	1/2" X 4 1/2" HEX BOLT (PL)	1
4	910287	HOOK & SAFETY CHAIN ASSEMBLY	1
5	905040	HITCH BASE	1
6	905041	CLEVIS BOLT-ON	1
7	967228	BOLT HEX 1.000NC X 4.00 GR5PL	1
8	84522	1" ID SAE FLAT WASHER (PL)	2
9	967148	1" LOCK NUT (PL)	1
10	81673	5/8" X 5" HEX BOLT GR.5 (PL)	2
11	812639	WASHER 0.625 SAE FLAT BS PL	4
12	812482	5/8" LOCK NUT (PL)	2
13	921284	JACK-5000 LB CAP, SIDE CRANK	1

Hydraulic Cylinders & Hoses



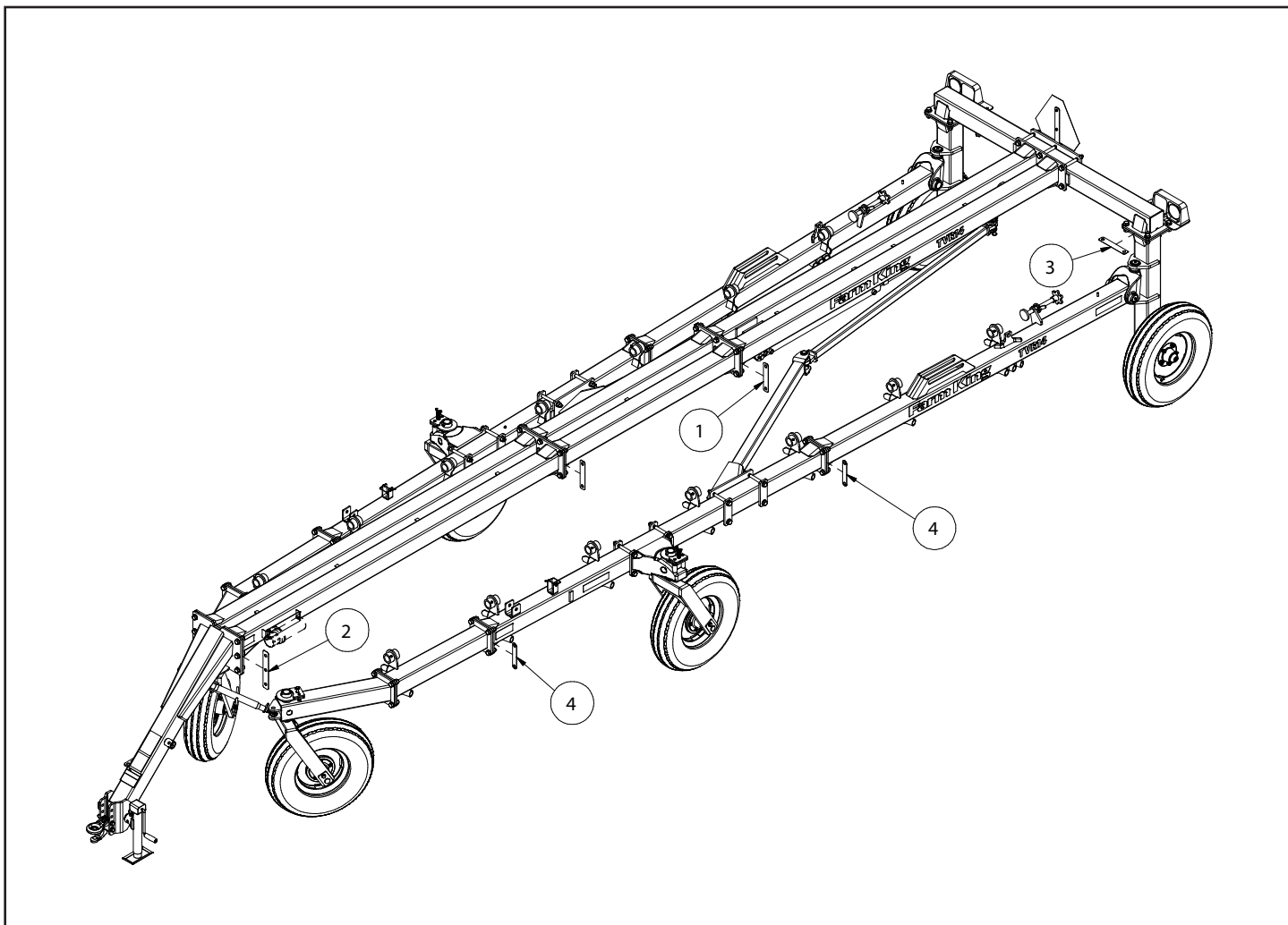
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	811916	ELBOW-8MORB X -6MJIC 90DEG	2
2	811944	ELBOW 90 3/8MNPT X 9/16 MJIC	2
3	812107	ADAPTOR STR 3/4MORB X 9/16MJI	3
4	812176	HOSE 3/8 X 96 9/16 SWFJIC X 3	2
5	812313	TEE RUN 9/16 MJIC X 9/16 MJIC	1
6	812841	MALE TIP 0.50 BODY 0.75 ORB	3
7	914022	CYLINDER-2" BORE X 8" STROKE	2
8	820855	CYLINDER - 3.0 X 36.50 BALL END	1
9	821151	BREATHER - 3/8 NPT MALE STEEL	2
10	821298	HOSE - 0.375 X 335L -06 SWFJIC X -06 SWFJIC - TVR12	1
	821295	HOSE - 0.375 X 410L -06 SWFJIC X -06 SWFJIC - TVR14	1
	821294	HOSE - 0.375 X 440L -06 SWFJIC X -06 SWFJIC - TVR16	1
11	821299	HOSE - 0.375 X 310L -06 SWFJIC X -06 SWFJIC - TVR12	1
	821296	HOSE - 0.375 X 375L -06 SWFJIC X -06 SWFJIC - TVR14	1
	821295	HOSE - 0.375 X 410L -06 SWFJIC X -06 SWFJIC - TVR16	1
12	821300	HOSE - 0.375 X 270L -06 SWFJIC X -06 SWFJIC - TVR12	1
	821298	HOSE - 0.375 X 335L -06 SWFJIC X -06 SWFJIC - TVR14	1
	821296	HOSE - 0.375 X 375L -06 SWFJIC X -06 SWFJIC - TVR16	1

Frame Shims - TVR12



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	821626	SHIM - MAIN FRAME	2
2	821628	SHIM - HITCH BOLT	2
3	821630	SHIM - AXLE BOLT	4
4	821629	SHIM - WING BOLT	4

Frame Shims - TVR14, TVR16



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	821626	SHIM - MAIN FRAME	4
2	821628	SHIM - HITCH BOLT	2
3	821630	SHIM - AXLE BOLT	4
4	821629	SHIM - WING BOLT	8

Farm King



Specifications And Shipping Kit Numbers

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Farm King



Specifications

MODEL	TVR12	TVR14	TVR16
Rake Wheels	12	14	16
Working Width	329"	377"	415"
Transport Width	100"		
Length	299"	363"	399"
Rake Wheel Size	60"		
Tine Size	7.5 mm		
Tires	ST205 - 75R15 W/ 15 X 5 X 5 RIM		
Windrow Width	36", 43", 51"		
HP Requirements	40 HP		
Weight	3450 LBS.	4175 LBS.	4450 LBS.

Note: Dimensions are approximate measurements.

Shipping Kit And Bundle Numbers

The following is a list of Kit Numbers for this product and the Bundle Numbers, Descriptions, and Quantities for each Kit.

Qty.	Bundle	Description
TVR12 Trailing V-Rake, 12-Wheel, Bi-Fold		
1	F2494	Body Assembly
TVR14 Trailing V-Rake, 14-Wheel, Bi-Fold		
1	F2495	Body Assembly
TVR16 Trailing V-Rake, 16-Wheel, Bi-Fold		
1	F2496	Body Assembly
Optional Equipment		
1	X4034	Kicker Wheel
1	X4035	Wheel Wind Guard

Hardware Torque Values

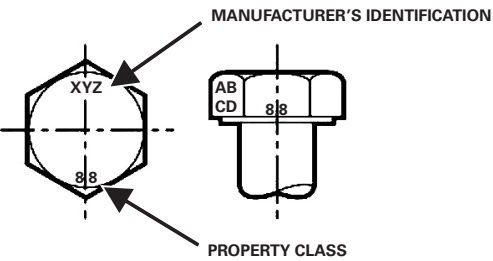
Metric Chart

NOTE: Do not use the values listed in the charts if a different torque value or tightening procedure is specified in this manual for a specific application. Torque values listed are for general use only.

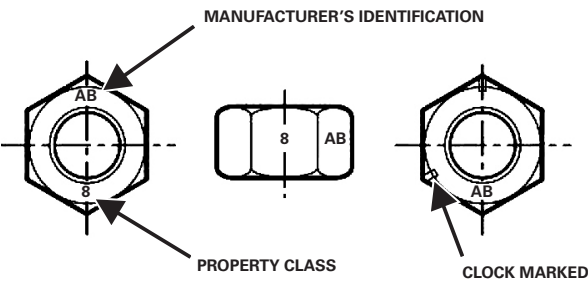
Use the following charts to determine the correct torque when checking, adjusting or replacing hardware. **Torque values are listed in newton-meters (inch* or foot pounds) for normal assembly applications.**

Nominal Size	Class 5.8		Class 8.8		Class 10.9		Lock nuts
	Unplated	Plated W / ZnCr	Unplated	Plated W / ZnCr	Unplated	Plated W / ZnCr	CL.8 W/ CL. 8.8 Bolt
M4	1.7 (15*)	2.2 (19*)	2.6 (23*)	3.4 (30*)	3.7 (33*)	4.8 (42*)	1.8 (16*)
M6	5.8 (51*)	7.6 (67*)	8.9 (79*)	12 (102*)	13 (115*)	17 (150*)	6.3 (56*)
M8	14 (124*)	18 (159*)	22 (195*)	28 (248*)	31 (274*)	40 (354*)	15 (133*)
M10	28 (21)	36 (27)	43 (32)	56 (41)	61 (45)	79 (58)	30 (22)
M12	49 (36)	63 (46)	75 (55)	97 (72)	107 (79)	138 (102)	53 (39)
M16	121 (89)	158 (117)	186 (137)	240 (177)	266 (196)	344 (254)	131 (97)
M20	237 (175)	307 (226)	375 (277)	485 (358)	519 (383)	671 (495)	265 (195)
M24	411 (303)	531 (392)	648 (478)	839 (619)	897 (662)	1160 (855)	458 (338)
NOTE: Torque values shown with * are inch pounds.							

Identification of Hex Cap Screws and Carriage Bolts - Classes 5 and up



Identification of Hex Nuts and Lock Nuts - Classes 5 and up



Hardware Torque Values (Cont'd)

Imperial Chart

NOTE: Do not use the values listed in the charts if a different torque value or tightening procedure is specified in this manual for a specific application. Torque values listed are for general use only.

Use the following charts to determine the correct torque when checking, adjusting or replacing hardware. Torque values are listed in newton-meters (inch* or foot pounds) for normal assembly applications.

Nominal Size	SAE Grade 5		SAE Grade 8		LOCK NUTS			
	Unplated or Plated Silver	Plated W / ZnCr Gold"	Unplated or Plated Silver	Plated W / ZnCr Gold"	Unplated or Plated Silver	Plated W / ZnCr Gold"	Grade W / Gr. 5 Bolt	Grade W / Gr. 8 Bolt
1/4	6.2 (55*)	8.1 (72*)	9.7 (86*)	12.6 (112*)	13.6 (121*)	17.7 (157*)	6.9 (61*)	9.8 (86*)
5/16	13 (115*)	17 (149*)	20 (178*)	26 (229*)	28 (250*)	37 (324*)	14 (125*)	20 (176*)
3/8	23 (17)	30 (22)	35 (26)	46 (34)	50 (37)	65 (48)	26 (19)	35 (26)
7/16	37 (27)	47 (35)	57 (42)	73 (54)	80 (59)	104 (77)	41 (30)	57 (42)
1/2	57 (42)	73 (54)	87 (64)	113 (83)	123 (91)	159 (117)	61 (45)	88 (64)
9/16	81 (60)	104 (77)	125 (92)	163 (120)	176 (130)	229 (169)	88 (65)	125 (92)
5/8	112 (83)	145 (107)	174 (128)	224 (165)	244 (180)	316 (233)	122 (90)	172 (127)
3/4	198 (146)	256 (189)	306 (226)	397 (293)	432 (319)	560 (413)	217 (160)	306 (226)
7/8	193 (142)	248 (183)	495 (365)	641 (473)	698 (515)	904 (667)	350 (258)	494 (364)
1	289 (213)	373 (275)	742 (547)	960 (708)	1048 (773)	1356 (1000)	523 (386)	739 (545)
NOTE: Torque values shown with * are inch pounds.								

Identification of Hex Cap Screws and Carriage Bolts



GRADE 2 SAE BOLT



GRADE 5 SAE BOLTS



GRADE 8 SAE BOLTS



GRADE 2 SAE NUTS

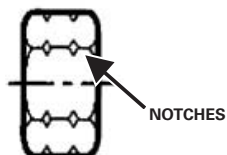


GRADE 5 SAE HEX NUTS

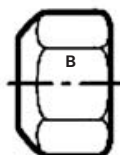


GRADE 8 SAE HEX NUTS

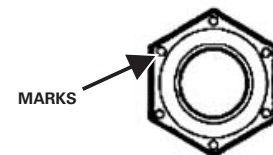
Identification of Hex Nuts and Lock Nuts



GRADE IDENTIFICATION
GRADE A: NO NOTCHES
GRADE B: ONE CIRCUMFERENTIAL NOTCH
GRADE C: TWO CIRCUMFERENTIAL NOTCHES



GRADE IDENTIFICATION
GRADE A: NO MARK
GRADE B: LETTER B
GRADE C: LETTER C



GRADE IDENTIFICATION
GRADE A: NO MARKS
GRADE B: THREE MARKS
GRADE C: SIX MARKS
MARKS NEED NOT BE LOCATED AT CORNERS

Farm King



Warranty

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Farm King



Farm King Base Limited Warranty

Farm King provides this warranty only to original retail purchasers of its products. Farm King warrants to such purchasers that all Farm King manufactured parts and components used and serviced as provided for in the Operator's Manual shall be free from defects in materials and workmanship for a period following delivery to the original retail purchaser of one (1) year. This limited warranty applies only to those parts and components manufactured by Farm King. Parts and components manufactured by others are subject to their manufacturer's warranties, if any.

Farm King will fulfill this limited warranty by, at its option, repairing or replacing any covered part that is defective or is the result of improper workmanship, provided that the part is returned to Farm King within thirty (30) days of the date that such defect or improper workmanship is, or should have been, discovered. Parts must be returned through the selling representative and the buyer must prepay transportation charges.

Farm King will not be responsible for repairs or replacements that are necessitated, in whole or part, by the use of parts not manufactured by or obtained from Farm King. Under no circumstances are component parts warranted against normal wear and tear. There is no warranty on product pump seals, product pump bearings, rubber product hoses, pressure gauges, or other components that require replacement as part of normal maintenance.

Repair Parts Limited Warranty

Farm King warrants genuine Farm King replacement parts purchased after the expiration of the Farm King Limited Warranty, and used and serviced as provided for in the Operator's Manual, to be free from defects in materials or workmanship for a period of thirty (30) days from the invoice date for the parts. Farm King will fulfill this limited warranty by, at its option, repairing or replacing any covered part that is defective or is the result of improper workmanship, provided that the part is returned to Farm King within thirty (30) days of the date that such defect or improper workmanship is, or should have been, discovered. Such parts must be shipped to the Farm King factory at the purchaser's expense.

What Is Not Covered

Under no circumstances does this limited warranty cover any components or parts that have been subject to the following: negligence; alteration or modification not approved by Farm King; misuse; improper storage; lack of reasonable and proper maintenance, service, or repair; normal wear; damage from failure to follow operating instructions; accident; and/or repairs that have been made with parts other than those manufactured, supplied, and or authorized by Farm King.

Authorized Dealer And Labor Costs

Repairs eligible for labor under this limited warranty must be made by Farm King or an authorized Farm King dealer. Farm King retains the exclusive discretion to determine whether it will pay labor costs for warranty repairs or replacements, and the amount of such costs that it will pay and the time in which the repairs will be made. If Farm King determines that it will pay labor costs for warranty work, it will do so by issuing a credit to the dealer's or distributor's account. Farm King will not approve or pay invoices sent for repairs that Farm King has not previously approved. Warranty service does not extend the original term of this limited warranty.

Warranty Requirements

To be covered by warranty, each new product must be registered with Farm King within thirty (30) days of delivery to original retail purchaser. If the customer decides to purchase replacement components before the warranty disposition of such components is determined, Farm King will bill the customer for such components and then credit the replacement invoice for those components later determined to be covered by this limited warranty. Any such replacement components that are determined not to be covered by this limited warranty will be subject to the terms of the invoice and shall be paid for by the purchaser.

EXCLUSIVE EFFECT OF WARRANTY AND LIMITATION OF LIABILITY

TO THE EXTENT PERMITTED BY LAW, FARM KING DISCLAIMS ANY WARRANTIES, REPRESENTATIONS, OR PROMISES, EXPRESS OR IMPLIED, AS TO THE QUALITY, PERFORMANCE, OR FREEDOM FROM DEFECT OF THE COMPONENTS AND PARTS COVERED BY THIS WARRANTY AND NOT SPECIFICALLY PROVIDED FOR HEREIN.

TO THE EXTENT PERMITTED BY LAW, FARM KING DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ON ITS PRODUCTS COVERED HEREIN, AND DISCLAIMS ANY RELIANCE BY THE PURCHASER ON FARM KING'S SKILL OR JUDGMENT TO SELECT OR FURNISH GOODS FOR ANY PARTICULAR PURPOSE. THE PURCHASER'S ONLY AND EXCLUSIVE REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON FARM KING'S PRODUCTS ARE THOSE SET FORTH HEREIN. IN NO EVENT SHALL FARM KING BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BY WAY OF EXAMPLE ONLY AND NOT LIMITATION, LOSS OF CROPS, LOSS OF PROFITS OR REVENUE, OTHER COMMERCIAL LOSSES, INCONVENIENCE, OR COST OF REPLACEMENT OF RENTAL EQUIPMENT). IN NO EVENT SHALL FARM KING'S CONTRACT OR WARRANTY LIABILITY EXCEED THE PURCHASE PRICE OF THE PRODUCT. (Note that some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusion may not apply to you.) This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

Farm King neither assumes nor authorizes any person or entity, including its selling representatives, to assume any other obligations or liability in connections with the sale of covered equipment, or to make any other warranties, representations, or promises, express or implied, as to the quality, performance, or freedom from defect of the components and parts covered herein. No one is authorized to alter, modify, or enlarge this limited warranty, or its exclusions, limitations and reservations.

Corrections of defects and improper workmanship in the manner, and for the applicable time periods, provided for herein shall constitute fulfillment of all responsibilities of Farm King to the purchaser, and Farm King shall not be liable in negligence, contract, or on any other basis with respect to the subject equipment.

This limited warranty is subject to any existing conditions of supply which may directly affect Farm King's ability to obtain materials or manufacturer replacement parts.

Buhler Industries Inc. reserves the right to make improvements in design or changes in specifications to its products at anytime, without incurring any obligation to owners of units previously sold.

www.farm-king.com

Farm King

1260 Clarence Avenue
Winnipeg MB, R3T 1T2
Ph.: 204.661.8711 | Fax: 204.654.2503
E-mail: info@buhler.com
www.farm-king.com

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