

Farm King

OPERATOR AND PARTS MANUAL

Easy Rake Superstar

16, 18, 20 Wheel Rake



TABLE OF CONTENTS

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 bale structure, applied techniques, weather conditions and other factors.

INTRODUCTION7

SAFETY11

MAINTENANCE35

PARTS IDENTIFICATION43

SPECIFICATIONS91

WARRANTY97

ALPHABETICAL INDEX101

Farm King



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 Name Model:

Serial Number:

Delivery Date:

I have thoroughly instructed the buyer on the above described equipment which review included the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Dealer Inspection Report

- Bearing Seals
- Lubricate Machine
- Wheel Bolt Torque
- Fasteners Tight
- Tire Pressure
- Hydraulic Hoses

Safety

- All Lights And Reflectors Installed
- All Lights And Reflectors Cleaned And Working
- Safety Chain On Hitch
- All Decals Installed
- Guards And Shields Installed And Secure
- Review Operating And Safety Instructions
- General Adjustment And Set-up Procedures
- Transportation Requirements And Regulations

Date:

Dealer Rep. Signature:

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's Signature:

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.

Farm King



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.

OWNER'S INFORMATION9
 Serial Number Location9
 Manual Storage9

EQUIPMENT IDENTIFICATION10
 Component Location10

Farm King



OWNER’S INFORMATION

Thank you for your decision to purchase a Farm King Wheel 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 from the rear of the equipment.

Serial Number Location

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

Figure 1



Model Number: _____

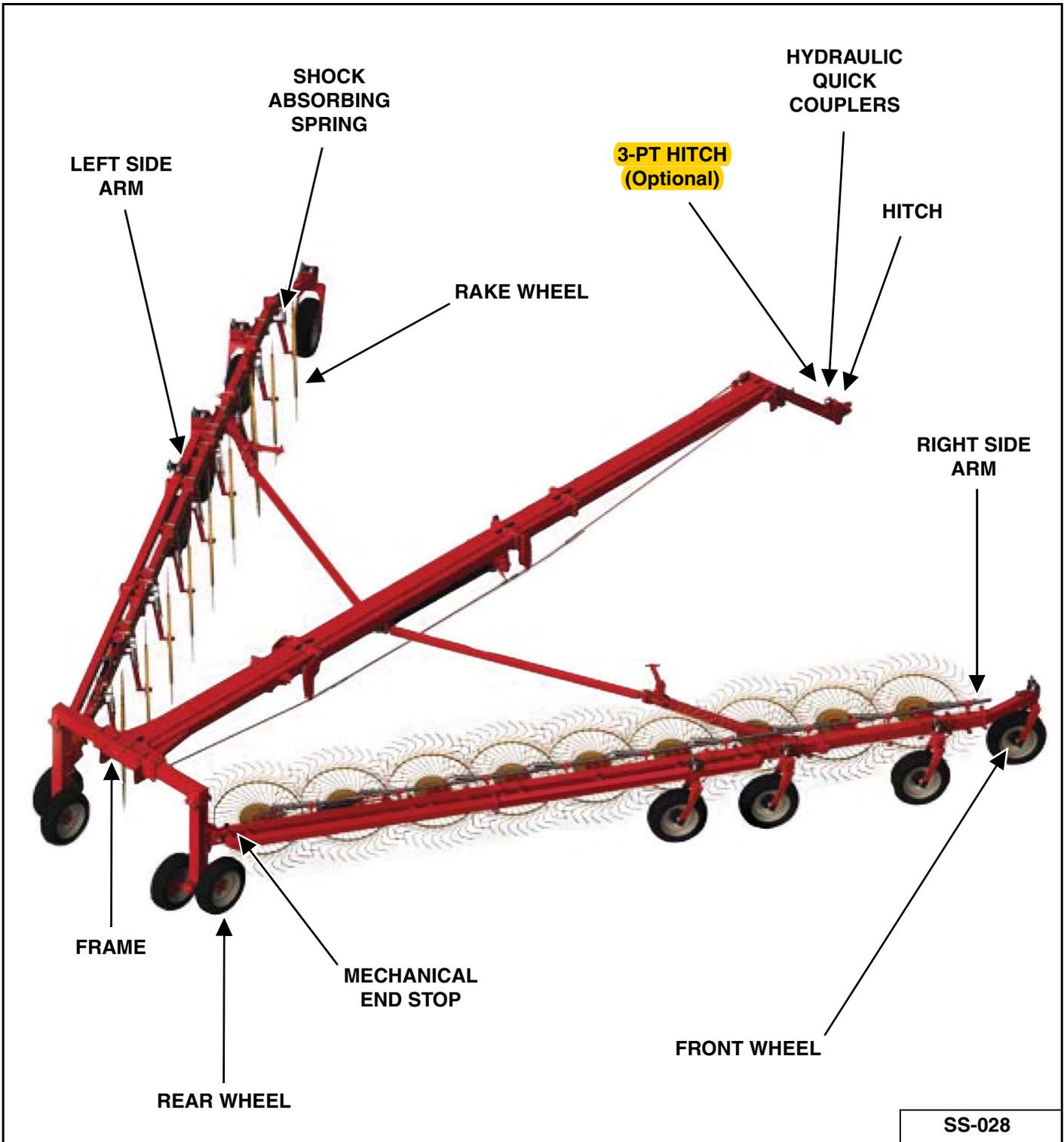
Serial Number: _____

The serial number plate (Item 1) [Figure 1] is located on the right side of the hitch frame.

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

EQUIPMENT IDENTIFICATION

Component Location



SAFETY

SAFETY INSTRUCTIONS 13
 Safe Operation Is The Operator’s Responsibility 13
 Safe Operation Needs A Qualified Operator 13
 Use Safety Rules 14
 Transport Safety 14
 Machine Requirements And Capabilities 15

FIRE PREVENTION 15
 Maintenance 15
 Operation 15
 Starting 15
 Electrical 16
 Hydraulic System 16
 Welding And Grinding 16
 Fire Extinguishers 16

SAFETY SIGNS (DECALS) 17

EQUIPMENT DECALS AND SIGNS 18

SAFETY SIGN-OFF FORM 19

Farm King



SAFETY INSTRUCTIONS

Safe Operation Is The Operator’s Responsibility

	<p>Safety Alert Symbol</p>
<p>This symbol with a warning statement means: “Warning, be alert! Your safety is involved!” Carefully read the message that follows.</p>	



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.

Safe Operation Needs A Qualified Operator



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 alcoholic drinks 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.

A Qualified Operator Must Do The Following:

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.

SAFETY INSTRUCTIONS (CONT'D)**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.
- If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.
- Stay clear of overhead power lines. Electrocutation can occur without direct contact.
- 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.
- DO NOT make any adjustments or repairs on the equipment while the machine is running.
- Keep shields and guards in place. Replace if damaged.

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 install transport locks, pins or brackets before transporting.
- 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).
- Stay away from overhead power lines. Electrocutation can occur without direct contact.

Machine Requirements And Capabilities

- 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.
- Operate this equipment with a machine equipped with an approved Roll-Over Protective Structure (ROPS). Always wear seat belt when the ROPS is up. Serious injury or death could result from falling off the machine.
- 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. Rollaway can occur because the transmission may not prevent machine movement.

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.

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. (See "SERVICE SCHEDULE" on page 38.)

Do not use the machine where exhaust, arcs, sparks or hot components can contact flammable material, explosive dust or gases.

Starting

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.

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.

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.

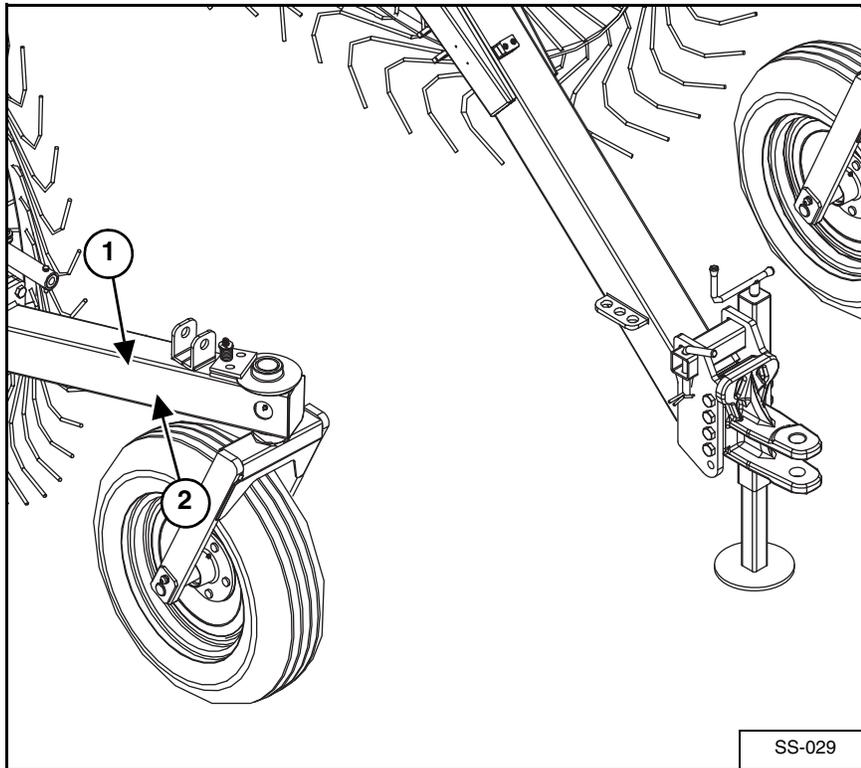
Dust generated from repairing nonmetallic parts such as hoods, fenders or covers can be flammable or explosive. Repair such components in a well ventilated area away from open flames or sparks.

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.

SAFETY SIGNS (DECALS)

Follow the instructions on all the Signs (Decals) that are on the equipment. Replace any damaged signs (decals) and be sure they are in the correct locations. Equipment signs are available from your Farm King equipment dealer.



1



FLYING DEBRIS HAZARD

Objects in the field of operation may be caught and thrown by the teeth of the wheel.

2



ROTATING HAZARD

As the rake wheel rotates, there is a risk the teeth will snag on the operator clothes or other objects on the operator body.

GENERAL INFORMATION23
 Pre - Operation Checklist23
 Break - In Checklist24
 Tractor Requirements25
 Entering And Leaving The Operator’s Position25

GENERAL ASSEMBLY INFORMATION26
 Component Unloading And Identification26

INITIAL SET-UP27
 Connecting The Wheel Rake To The Tractor27
 Leveling The Wheel Rake29
 Connecting Hydraulic Lines30
 Kicker Rake Wheel Adjustment (If Equipped)31
 Operating Setup32
 Swathing33
 Adjusting Swathing Width34

TRANSPORTING35
 Requirements35
 Transport Position35
 Placing Into Transport Position36

Farm King



GENERAL INFORMATION

Pre - Operation Checklist

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



MOVING PART HAZARD

To prevent serious injury or death from moving parts:

- Keep hands, feet, hair and clothing away from moving parts.
- Disconnect and lockout power source before adjusting or servicing.
- Do not stand or climb on machine when operating.



AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

1. Lubricate the equipment per the schedule outline in the Maintenance Section. (See "SERVICE SCHEDULE" on page 38.)
2. Check the Wheel Rake hitch for damaged, loose or missing parts. Repair as needed before operation.
3. Check that tire pressure.
4. Check that wheel bolt torque.
5. Fully clean the equipment.
6. Inspect all safety reflective decals, slow moving vehicle decals and lights where applicable.



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.

7. Check condition of all hydraulic components for leaks. Repair as required.

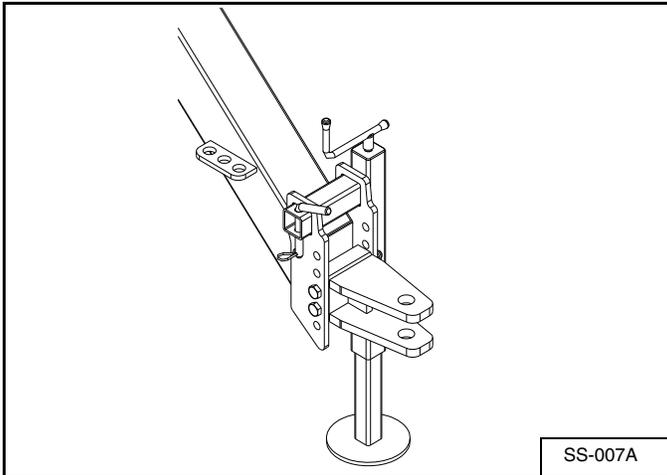
NOTE: Do not operate with hydraulic leaks.

8. Verify that the transport lock has been removed.
9. Verify that the Wheel Rake is properly connected to the tractor with the safety chain.

Break - In Checklist

Check the following mechanical items after 1 hour of operation and again after 10 hours of operation:

1. Check condition of all hydraulic components for leaks. Tighten fittings to correct leaks or replace components. Do not operate with hydraulic leaks.

Figure 2

2. Check the Wheel Rake hitch for damaged, loose or missing parts **[Figure 2]**. Repair as needed before operation.
3. Check for loose fasteners and hardware. Tighten as required.
4. Check that tire pressure.
5. Check that wheel bolt torque.

Tractor Requirements



AVOID SERIOUS INJURY OR DEATH

The tractor must be equipped with an approved Roll Over Protection Structure (ROPS) and safety belts to help prevent personal injury or death caused by tractor roll over.

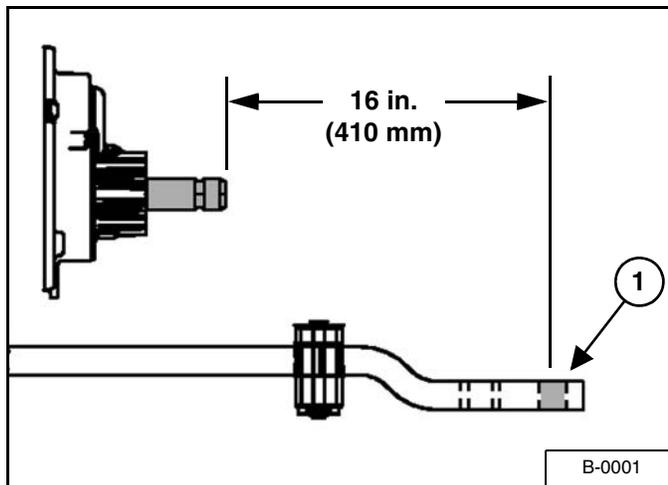
The Wheel Rake will require a tractor with minimum 80 hp (60 kw) and one pair of remote outlets.



Towing Vehicle / Tractor must have adequate braking capacity to safely control GVW trailing load. Do not tow over 20 mph (32 km/h). Towing Vehicle / Tractor unit should weigh approximately 67% of GVW.

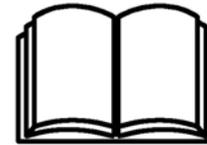
Drawbar Adjustment

Figure 3



Adjust the tractor's drawbar in / out, until the center of the hitch pin hole (Item 1) [Figure 3] is 16 inches (410 mm) from the end of the tractor's PTO shaft. See your tractor's owner's manual for correct adjustment procedures.

Entering And Leaving The Operator's Position



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

Entering The Operator's Position

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

Leaving The Operator's Position



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.**

Park the tractor / equipment on a flat level surface.

Place all controls in neutral, engage the park brake, stop the engine and wait for all moving parts to stop. Leave the operator's position.

GENERAL ASSEMBLY INFORMATION

Component Unloading And Identification

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

Assemble the wheel rake as required following the assembly instructions shipped with the wheel rake.



ELECTROCUTION HAZARD

To prevent serious injury or death from electrocution:

- Be aware of overhead power lines.
- Keep away from power lines when unloading and assembling the wheel rake.
- Electrocution can occur without direct contact.



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

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



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

INITIAL SET-UP

Connecting The Wheel Rake To The Tractor

Always inspect the tractor’s drawbar and Wheel Rake hitch before connecting. See the tractor’s owner’s manual.

Verify that the tractor’s drawbar is adjusted correctly for use with the Wheel Rake. (See “Drawbar Adjustment” on page 23.)

Enter the operator’s position. (See “Entering The Operator’s Position” on page 23.)

Move the tractor into position in front of the Wheel Rake.



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.

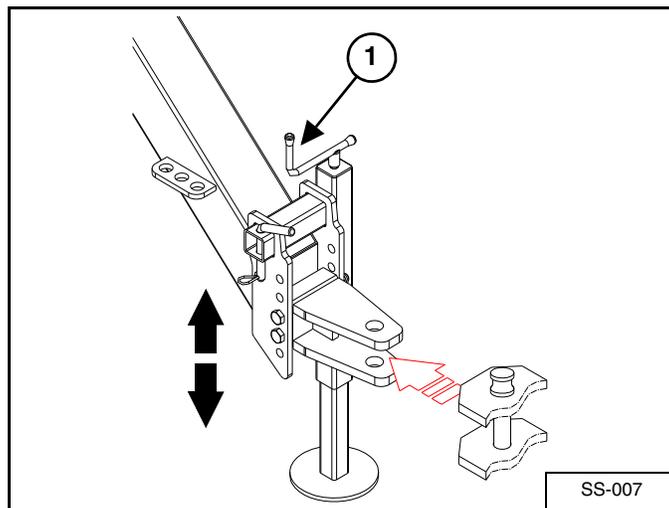
Move the tractor backwards, aligning the drawbar with the Wheel Rake hitch.

NOTE: The jack may need to be lowered or raised for proper alignment of the drawbar and hitch.

If the Wheel Rake hitch needs to be adjusted, stop the tractor when drawbar is just in front of the Wheel Rake hitch.

Leave the operator’s position. (See “Leaving The Operator’s Position” on page 23.)

Figure 4



Turn the handle (Item 1) [Figure 4] clockwise to raise the hitch or counterclockwise to lower the hitch.

Lower or raise the Wheel Rake hitch until aligned with the tractor’s drawbar.

Move to the operator’s seat, start the engine and release the parking brake.

Move the tractor backwards, aligning the drawbar hitch pin hole with the Wheel Rake hitch pin hole(s).

Stop the tractor and leave operator’s position.

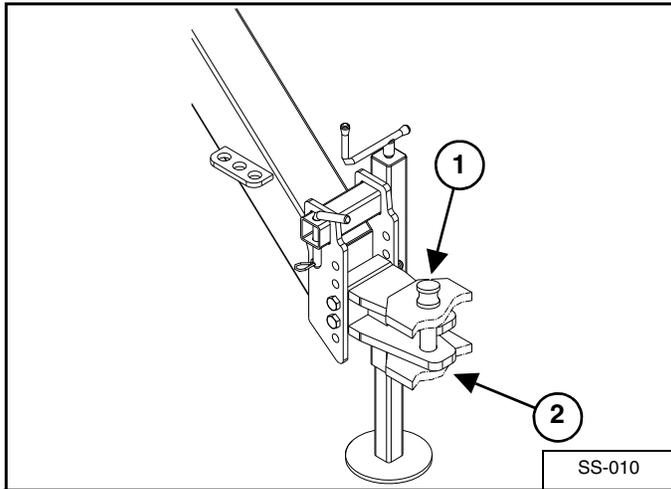


AVOID INJURY OR DEATH

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

NOTE: Always use a hitch pin of adequate size and strength and a retaining pin with a locking device.

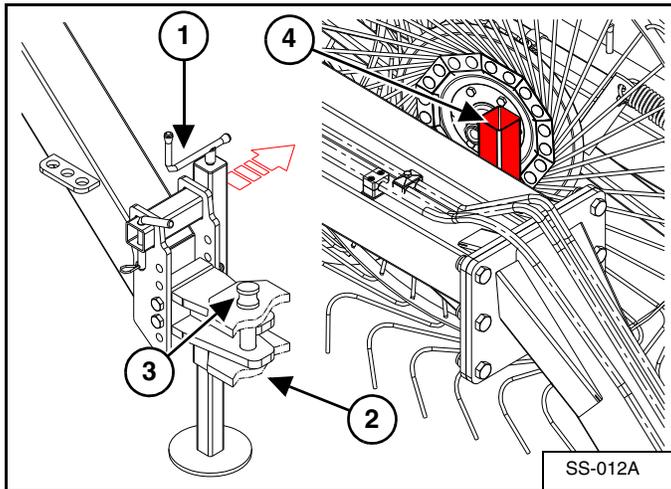
Figure 5



Install the hitch pin (Item 1) and retaining pin (Item 2) **[Figure 5]** to securely fasten the Wheel Rake hitch to the tractor drawbar.

Attach the safety chain (if equipped).

Figure 6



Turn the handle (Item 1) **[Figure 6]** counterclockwise to lower the hitch, placing Wheel Rake weight on the tractor's drawbar.

Remove retaining pin (Item 2) and pin (Item 3) **[Figure 6]**. Remove jack.

Place jack into the storage mount on the frame (Item 4) **[Figure 6]**. Reinstall pin and retaining pin securing the jack in the transport position.

Leveling The Wheel Rake

! IMPORTANT

The Wheel Rake frame must be adjusted down or up until the Wheel Rake is parallel with the ground prior to operation.

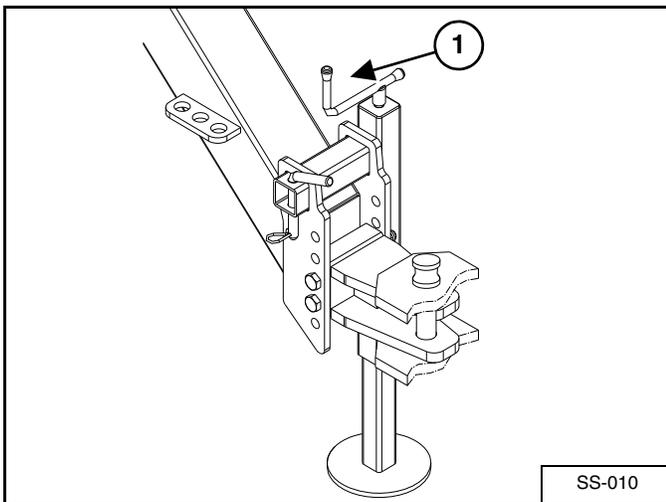
! WARNING

AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

Figure 7

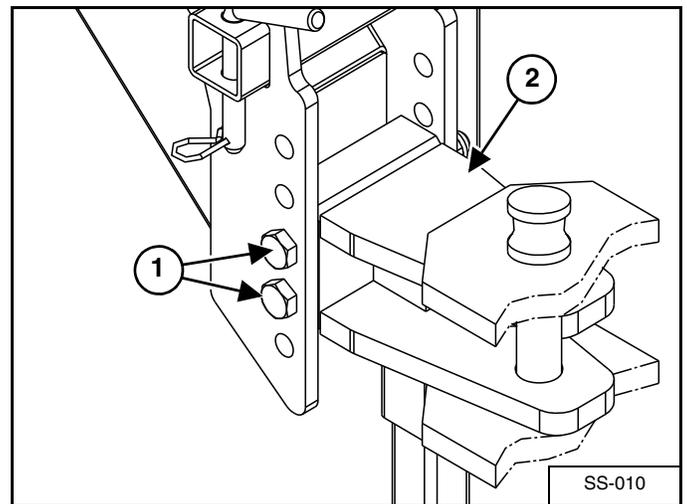


With the Wheel Rake attached to the tractor, lower the jack from the transport position. Using the handle (Item 1) [Figure 7] on the jack, raise the jack until the weight of the Wheel Rake is on the jack. This will allow the clevis mounting bolts to be loosened and moved for leveling (if required).

! IMPORTANT

Place one support stand under the two hitch beams, to evenly support the hitch beams. The two hitch beams pivot independent from each other. Hitch beam without jack will drop to the ground.

Figure 8



Remove the two clevis mounting bolts (Item 1) [Figure 8] and nuts.

Raise or lower the jack until the Wheel Rake frame is parallel with the ground. Raise or lower the clevis (Item 2) [Figure 8] and align the closest clevis mounting holes with frame. Install the three bolts.

Tighten the two clevis mounting bolts to the correct torque and raise the jack into the storage position.

! IMPORTANT

The objective of adjusting the hitch height is to bring the Wheel Rake hitch parallel to the ground.

Connecting Hydraulic Lines



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.

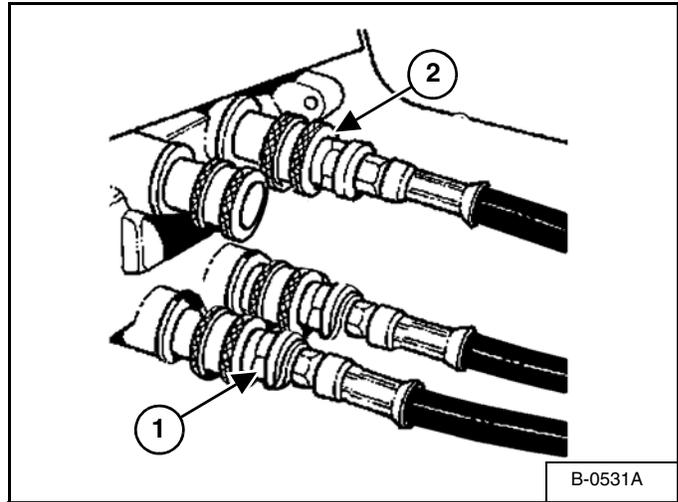


- Contain and dispose of any oil leakage in an environmentally safe manner.
- Thoroughly clean the quick couplers before making connections. Dirt can quickly damage the system.

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.

To Connect:

Figure 9



Connect the three hydraulic lines to the tractor [Figure 9].

1. Extend / Retract lift cylinders.
2. Extend / Retract wing cylinders.

To Disconnect:



AVOID BURNS

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

Pull on the hydraulic lines to disconnect.

Kicker Rake Wheel Adjustment (If Equipped)



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.

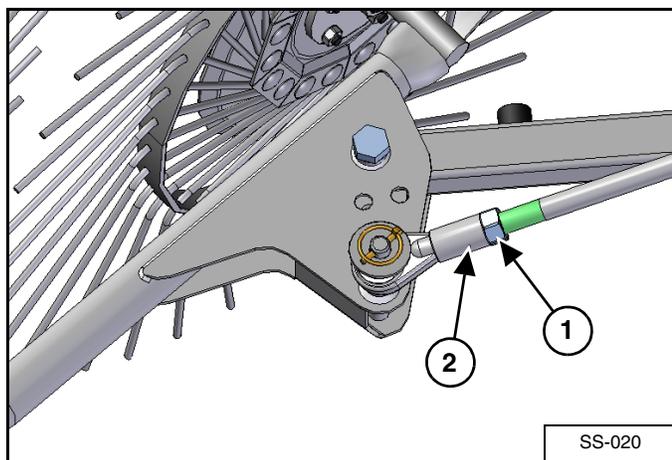


AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

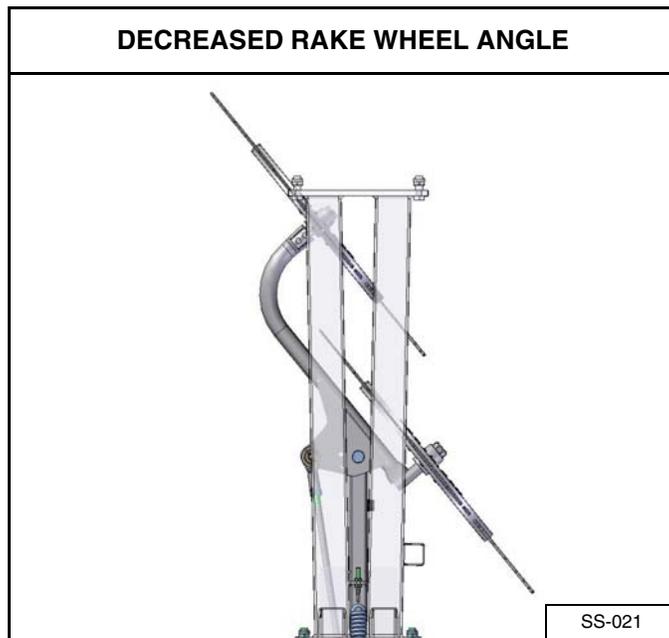
- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

Figure 10



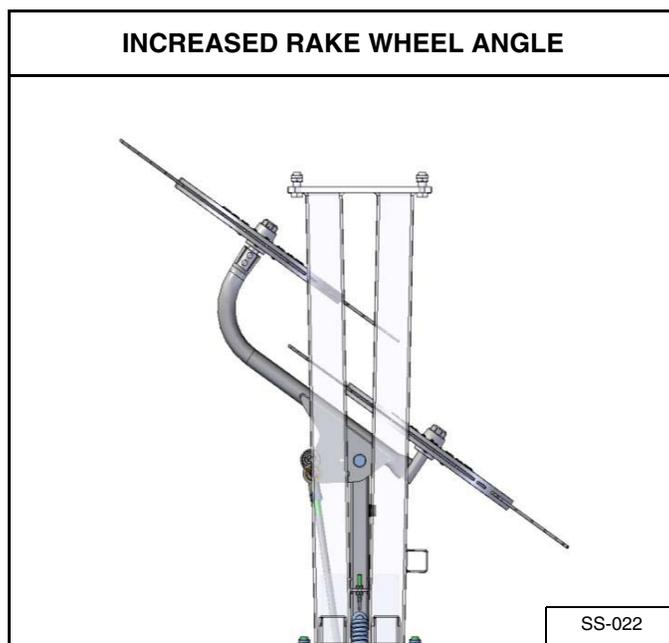
Loosen the jam nut (Item 1), loosen or tighten the bushing (Item 2) [Figure 10] to increase or decrease angle of the two kicker rake wheels.

Figure 11



Decreased Rake Wheel Angle - Hay is discharged better from the rake wheels, but the ground isn't cleared as efficiently.

Figure 12



Increased Rake Wheel Angle - Hay isn't discharged as efficiently from the rake wheels, but the ground is cleared better.

Operating Setup



Before operating the equipment:

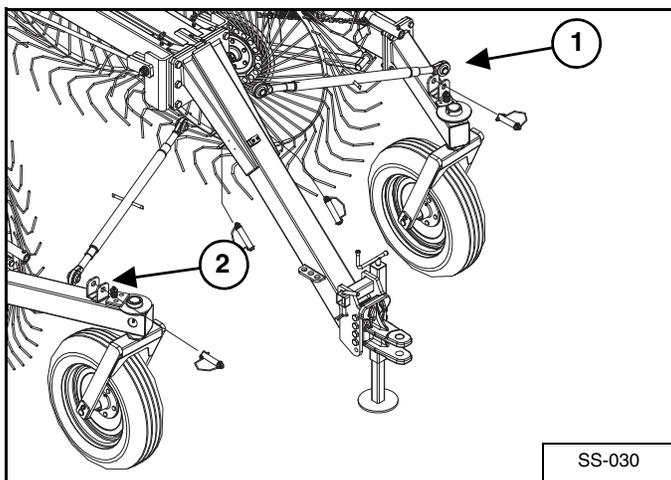
- Clear the work area of all bystanders, especially small children and animals.
- Clear the work area of all obstacles.
- Keep shields and all guards in place.
- Keep away from moving parts.

Move to the operator's position, start the engine and release the parking brake. (See "Entering The Operator's Position" on page 23.)

Move the tractor and Wheel Rake to work area.

Leave the operator's position. (See "Leaving The Operator's Position" on page 23.)

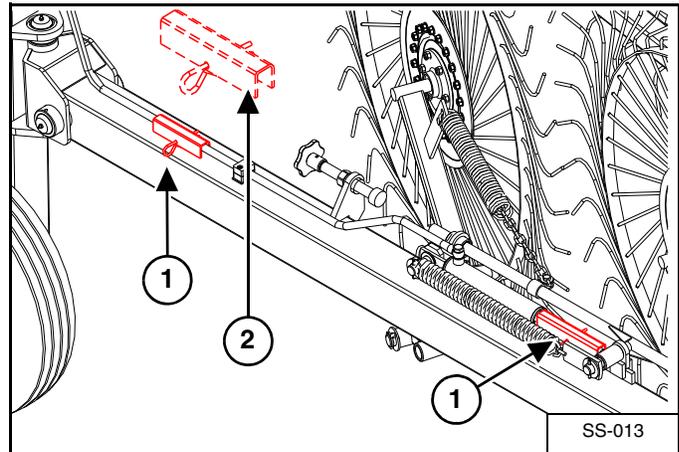
Figure 13



Remove pins and retaining pins from both ends of the tie rod and remove the tie rod (Item 1) [Figure 13] from the transport position.

Place tie rod on the storage pins on the rake arm. Install retaining pins on both ends to secure the tie rod (Item 2) [Figure 13] in the operating position.

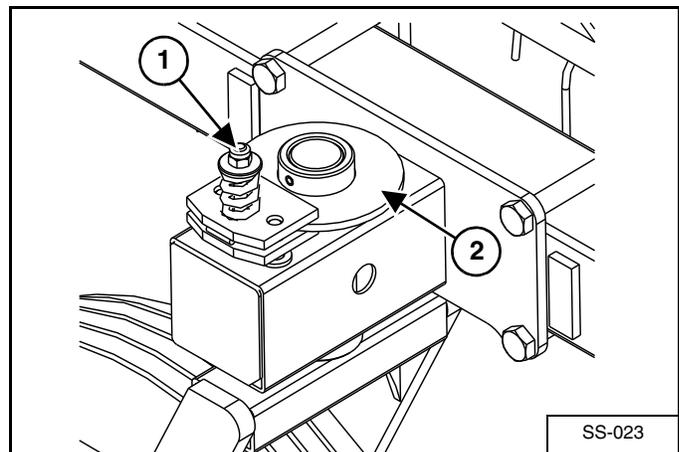
Figure 14



Remove the retaining pin (Item 1) [Figure 14] and remove the cylinder stop from the transport position.

Place cylinder stop (Item 2) [Figure 14] over the hydraulic hose and reinstall retaining pin, securing the cylinder stop in the operating position.

Figure 15



Loosen nut (Item 1) to relieve down pressure on the upper brake shoe. Loosen nut until the brake disc (Item 2) [Figure 15] moves freely.

Repeat procedure for opposite side of the wheel rake.

Swathing



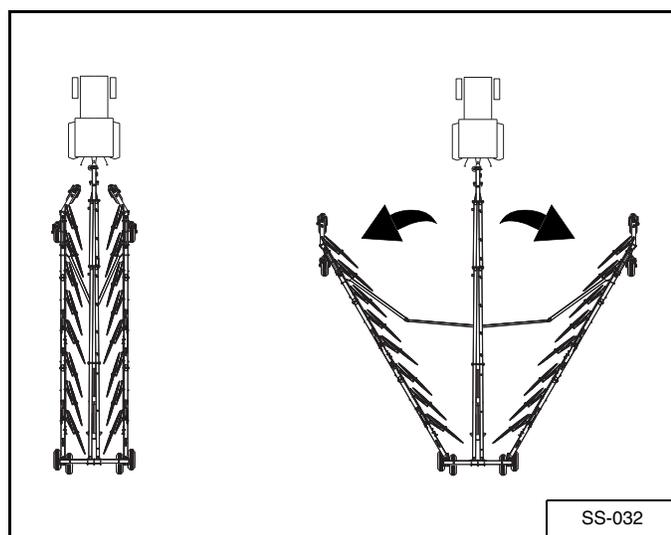
Before operating the equipment:

- Clear the work area of all bystanders, especially small children and animals.
- Clear the work area of all obstacles.
- Keep shields and all guards in place.
- Keep away from moving parts.

Move to the operator's position, start the engine and release the parking brake. (See "Entering The Operator's Position" on page 23.)

Move the tractor and Wheel Rake to the starting point in the work area.

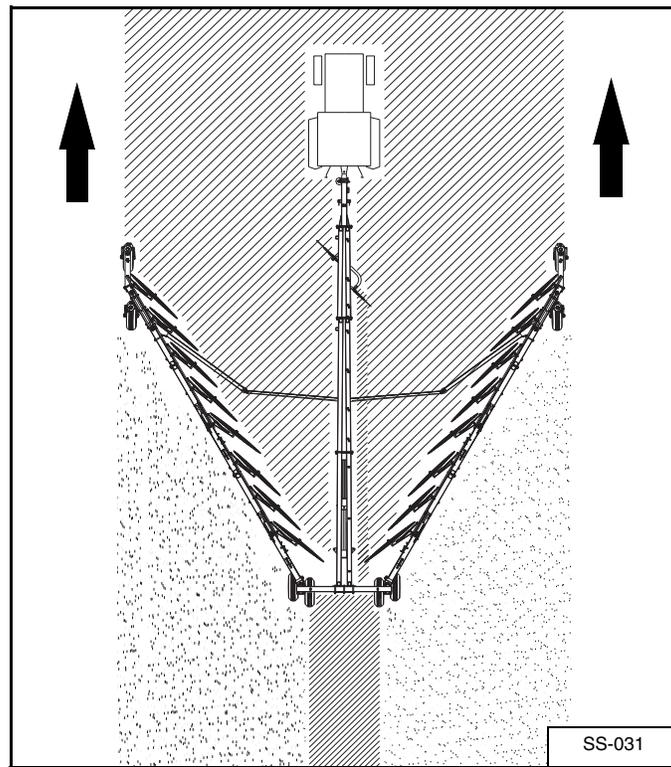
Figure 16



Stop the tractor, fully open and lower the rake frame until the rake wheels contact the ground [Figure 16].

NOTE: Fully opened, the wheel rake covers approximately 33 ft. (10 m) for some models.

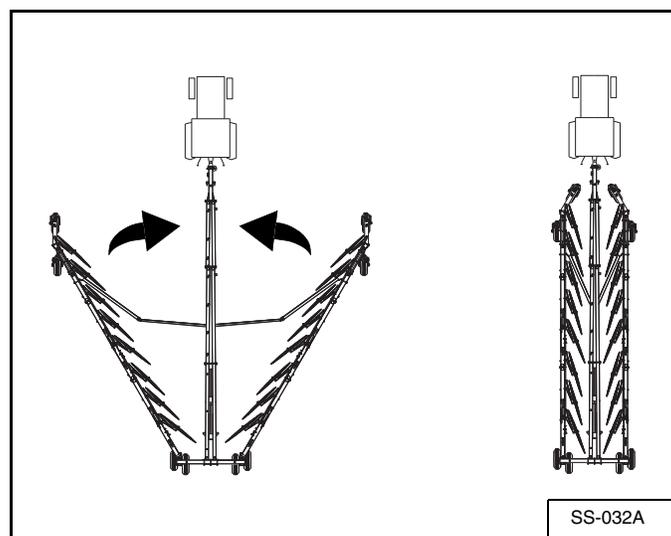
Figure 17



Drive in a straight line, do not change direction. [Figure 17].

Changing Directions

Figure 18



Changing Direction - A short distance before the end of the work area, close and raise the rake frame, and the kicker wheels (if equipped) [Figure 18] before changing

direction.

Adjusting Swathing Width



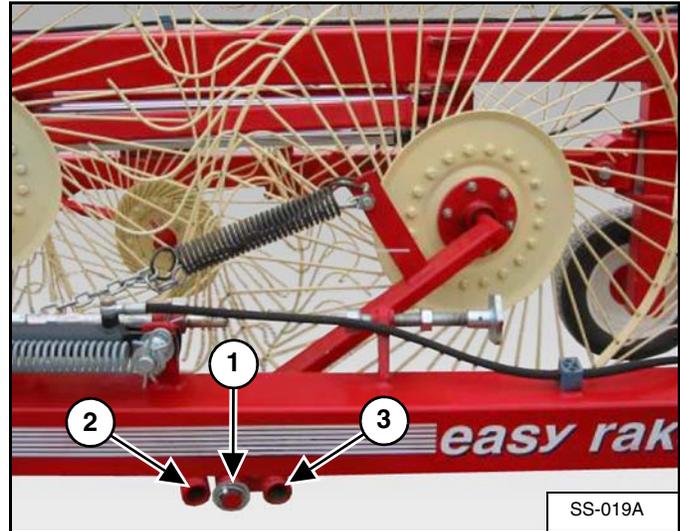
Before operating the equipment:

- Clear the work area of all bystanders, especially small children and animals.
- Clear the work area of all obstacles.
- Keep shields and all guards in place.
- Keep away from moving parts.

Move to the operator's position, start the engine and release the parking brake. (See "Entering The Operator's Position" on page 23.)

Move the tractor and Wheel Rake to flat level surface of the work area.

Figure 19



Decreasing Windrow Width

Remove retaining pin and washer (Item 1), move the rake wheel assembly to rear mounting hole (Item 2) [Figure 19].

Increasing Windrow Width

Remove retaining pin and washer (Item 1), move the rake wheel assembly to front mounting hole (Item 3) [Figure 19].

TRANSPORTING

Requirements

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



AVOID SERIOUS INJURY OR DEATH

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.



AVOID SERIOUS INJURY OR DEATH

Excess weight will greatly increase tractor stopping distance and may cause the operator to lose control of the tractor or tow vehicle.



Towing Vehicle / Tractor must have adequate braking capacity to safely control GVW trailing load. Do not tow over 20 mph (32 km/h). Towing Vehicle / Tractor unit should weigh approximately 67% of GVW.

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

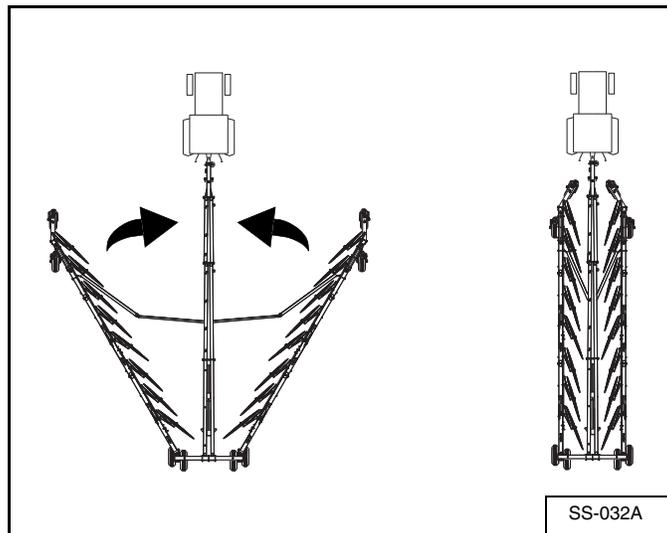
Verify safety chain is installed and properly connected before transporting equipment.

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

Transport Position

NOTE: Tie rods, cylinder stops and front wheel transport guides must be installed prior to transporting the wheel rake.

Figure 20



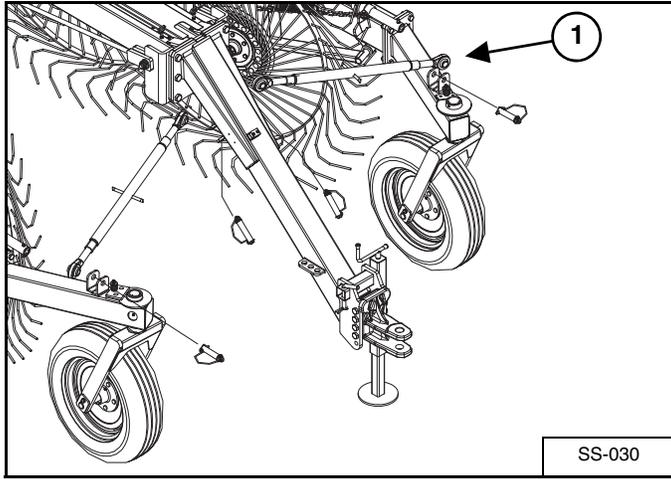
Raise the rake frame and close the arms. [Figure 20].

Secure in transport position. (See “Placing Into Transport Position” on page 34.)

Fully raise kicker wheel (if equipped). Lock in transport position.

Placing Into Transport Position

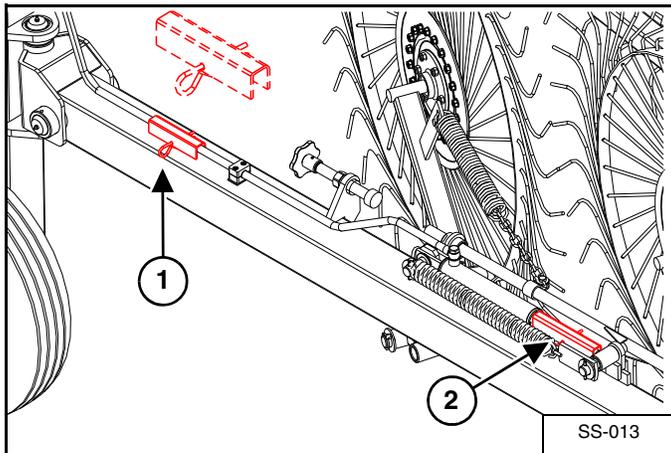
Figure 21



Remove the retaining pins from both ends of the tie rod and remove the tie rod from the storage pins on the frame.

Align tie rod with Align tie rod on the rake arm mount and hitch mount. Install retaining pins on both ends to secure the tie rod (Item 1) [Figure 21] in the transport position.

Figure 22



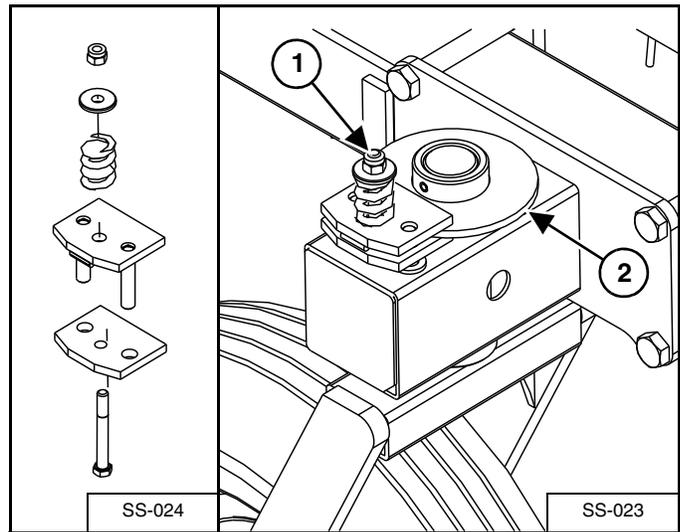
Remove the retaining pin (Item 1) [Figure 22] and remove the cylinder stop from the storage position.

Place cylinder stop (Item 2) [Figure 22] over the cylinder rod and reinstall retaining pin, securing the cylinder stop in the transport position.

! IMPORTANT

Applying pressure to the brake shoes against the brake disc limits front wheel movement when transporting the wheel rake.

Figure 23



Tighten nut (Item 1) to compress the spring, applying down pressure on the upper brake shoe. Tighten nut until the desired brake pressure is applied to the brake disc (Item 2) [Figure 23].

Repeat procedure for opposite side of the wheel rake.

MAINTENANCE

TROUBLESHOOTING39
 General Chart39

SERVICE SCHEDULE40
 Maintenance Intervals40

LUBRICATION41
 Recommendations41
 Locations41

WHEEL / TEETH REPLACEMENT42
 Wheel Removal And Installation42
 Removing And Installing Teeth42

SAFETY SIGN (DECAL) INSTALLATION43
 Procedure43

STORAGE AND RETURN TO SERVICE44
 Storage44
 Return To Service44

Farm King



TROUBLESHOOTING

General Chart



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 or dealer. Before you call, please have this Operator And Parts Manual and the serial number of your machine at hand.

PROBLEM	CAUSE	CORRECTION
Hydraulic functions 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.

SERVICE SCHEDULE

Maintenance Intervals

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 Wheel Rake.



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.

#	DESCRIPTION	SERVICE PROCEDURES						
		Check	Clean	Lube	Change	Adjust	Drain	Locations
Daily Maintenance (or every 8 hours)								
1	Tire Pressure	•						
2	Wheel Bolts	•						
3	Hydraulic Hoses And Connections	•		•				
4	Hydraulic Cylinders	•		•				
Weekly (or every 50 hours)								
5	Hydraulic Hoses And Connections	•						
6	Hydraulic Cylinders	•						
7	Check All Hardware And Safety Devices.	•						
8	Wheel Rake Condition	•	•					

LUBRICATION

Recommendations

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



Do not over-grease. Greasing too often can lead to premature component failure.

- 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.

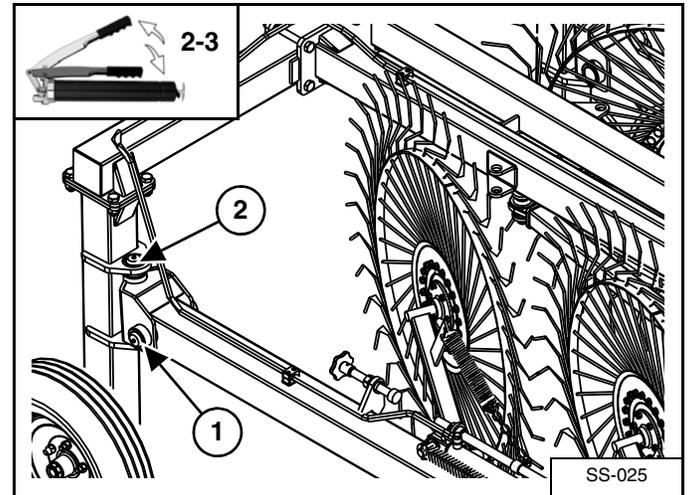
Locations



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.

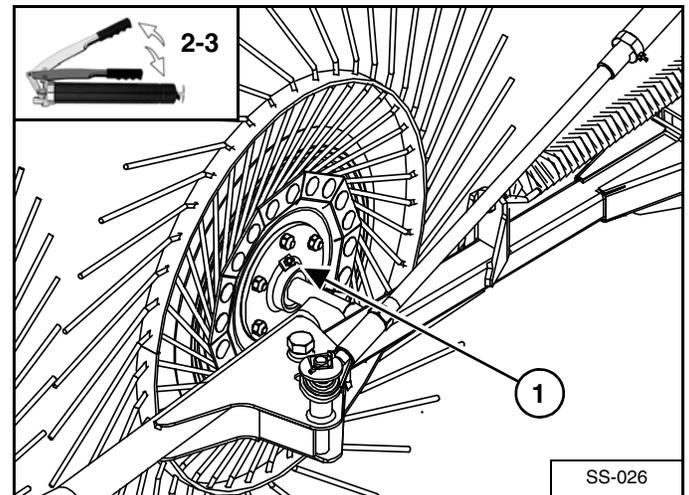
Lubricate the following grease locations EVERY 8 HOURS:

Figure 24



Apply two - three pumps of grease to all locations of the vertical pivot pins (Item 1) and horizontal pivot pins (Item 2) [Figure 24].

Figure 25



Apply two - three pumps of grease to all locations of the rake wheel hubs (Item 1) [Figure 25].

WHEEL / TEETH REPLACEMENT

Wheel Removal And Installation

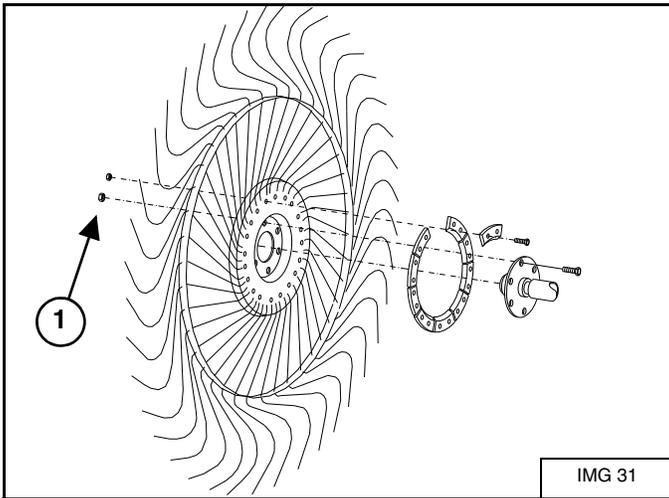


AVOID INJURY OR DEATH

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.

Figure 26



Remove the six nuts (Item 1) [Figure 26] and remove the wheel from the hub.

Align and install new wheel. Install the six nuts and tighten to securely fasten the wheel to the hub.

Removing And Installing Teeth

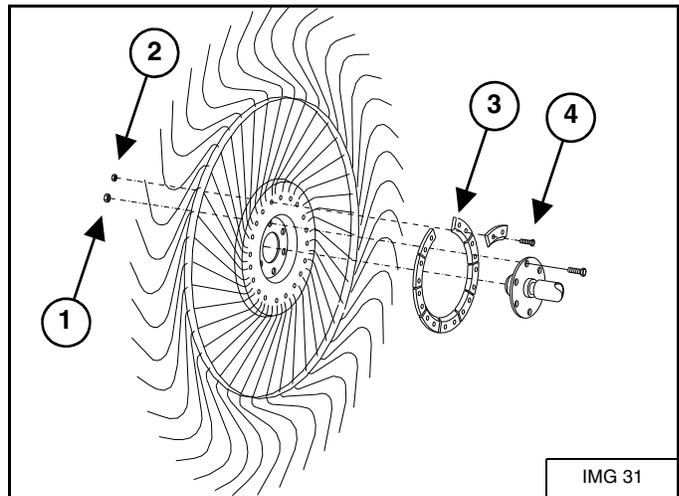


AVOID INJURY OR DEATH

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.

Figure 27



Remove the six nuts (Item 1) [Figure 27] and remove the wheel from the hub.

Remove the two nuts (Item 2) and retaining plate (Item 3) [Figure 27].

Replace broken or worn teeth as needed.

Align and install retaining plate. Install the two bolts (Item 4) [Figure 27] and nuts.

Align and install wheel. Install the six nuts (Item 1) [Figure 27] and tighten to securely fasten the wheel to the hub.

SAFETY SIGN (DECAL) INSTALLATION

Procedure



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 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.

STORAGE AND RETURN TO SERVICE**Storage**

Sometimes it may be necessary to store your Farm King Wheel Rake for an extended period of time. Below is a list of items to perform before storage.



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

- Thoroughly clean the equipment.
- Lubricate the equipment.
- Inspect the hitch and all welds on the equipment for wear and damage.
- Check for loose hardware, missing guards, 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.
- Store the Wheel Rake in a clean, dry, sheltered area.
- Place the equipment flat on the ground.

Return To Service

After the Farm King Wheel Rake 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.
- Clean and inspect pusher chain for excessive wear or stiffness. Check for proper adjustment and alignment.
- Inspect and repack wheel bearings with a SAE multi purpose type grease.
- Check that tires are properly inflated.
- Connect to a tractor and operate equipment, verify all functions operate correctly.
- Check for leaks. Repair as needed.
- Review the Operator's Manual.

PARTS IDENTIFICATION

GENERAL INFORMATION47

BASE FRAME48

 Tandem Cross Drawbar Assembly48

 Tandem Axle Hub Assembly50

 Auto Steer Axle Hub Assembly51

 Auto Steer Cross Drawbar Assembly52

 Main Drawbar Assembly (16 & 18 Wheel Rake)54

 Main Drawbar Assembly (20 Wheel Rake)56

 Right Frame Assembly60

 Front Wheel Assembly64

 Left Frame Assembly66

 Rear Hydraulic Cylinder Assembly67

 Connecting Bar Assembly68

 Hydraulic Assembly70

 Arm & Rake Wheel Assembly72

 Right / Left Frame Cylinder Assembly74

 Kicker Wheel Hub Assembly (Optional)76

 Kicker Wheel Frame Assembly (Optional)78

 Light Kit W / Flashing Light (Optional)80

 Rope Assembly82

 Tie Rod Kits84

 Frame Reinforcement86

 Front Wheel Hub Assembly87

 Front Wheel And Brake Assembly (Optional)88

 Dual Hydraulic Cylinder Assembly90

 Hydraulic Valve Assembly92

 Wheel Cylinder Assembly (Optional)94

 Rake Wheel Assembly95

 Star Rake Wheel Assembly (Optional)96

 Homologation Kit98

 Light Kit (Optional)100

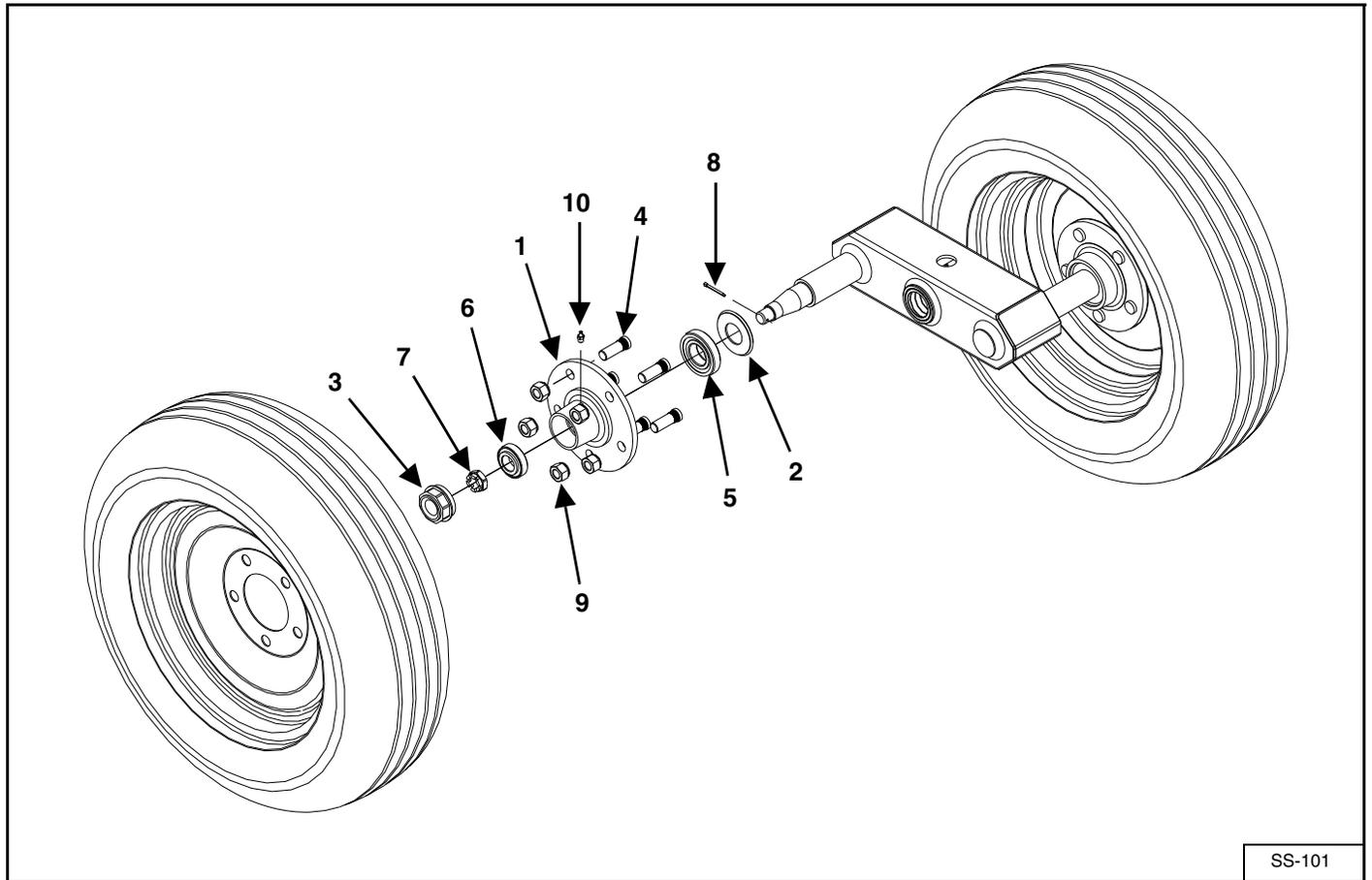
Farm King



GENERAL INFORMATION

The parts identification section lists descriptions, part numbers and quantities for the Super Star Rake. Contact your Farm King dealer for additional Super Star Rake parts information.

Tandem Axle Hub Assembly

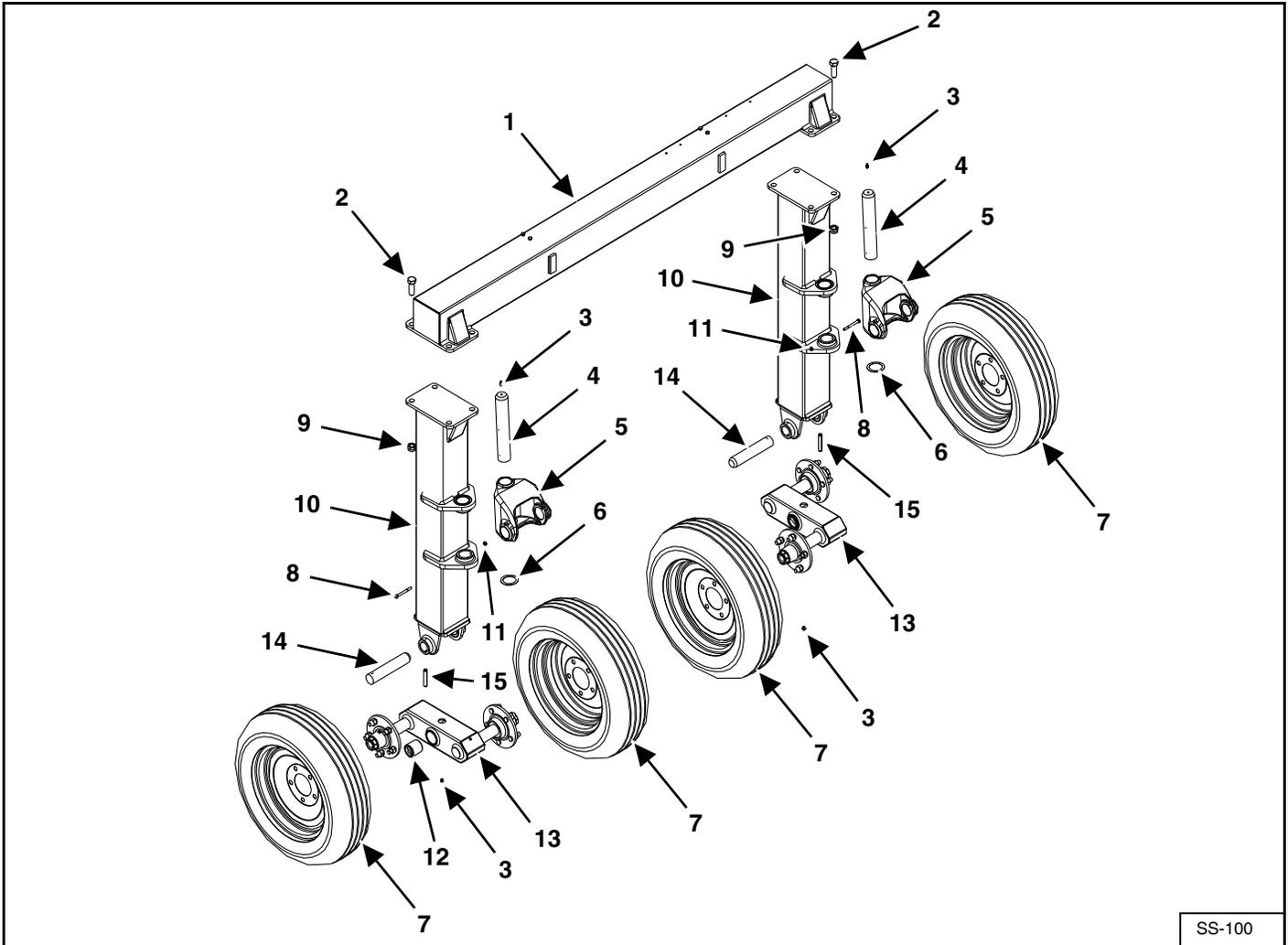


SS-101

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R12150108	HUB	
2	R12360002	DUST COVER, 35 x 72	
3	R12360003	DUST COVER CAP	
4	R3011609	STUD BOLT, M16	
5	R12240143	BEARING, 30207	
6	R12240119	BEARING, 30205	
7	R3020241	SELF LOCKING NUT, 20 MB	
8	R3040114	SPRING PIN, 4 x 35	
9	R3020218	STUD BOLT, 16 MB	
10	R3090101	GREASE ZERK, 8 MB	

BASE FRAME

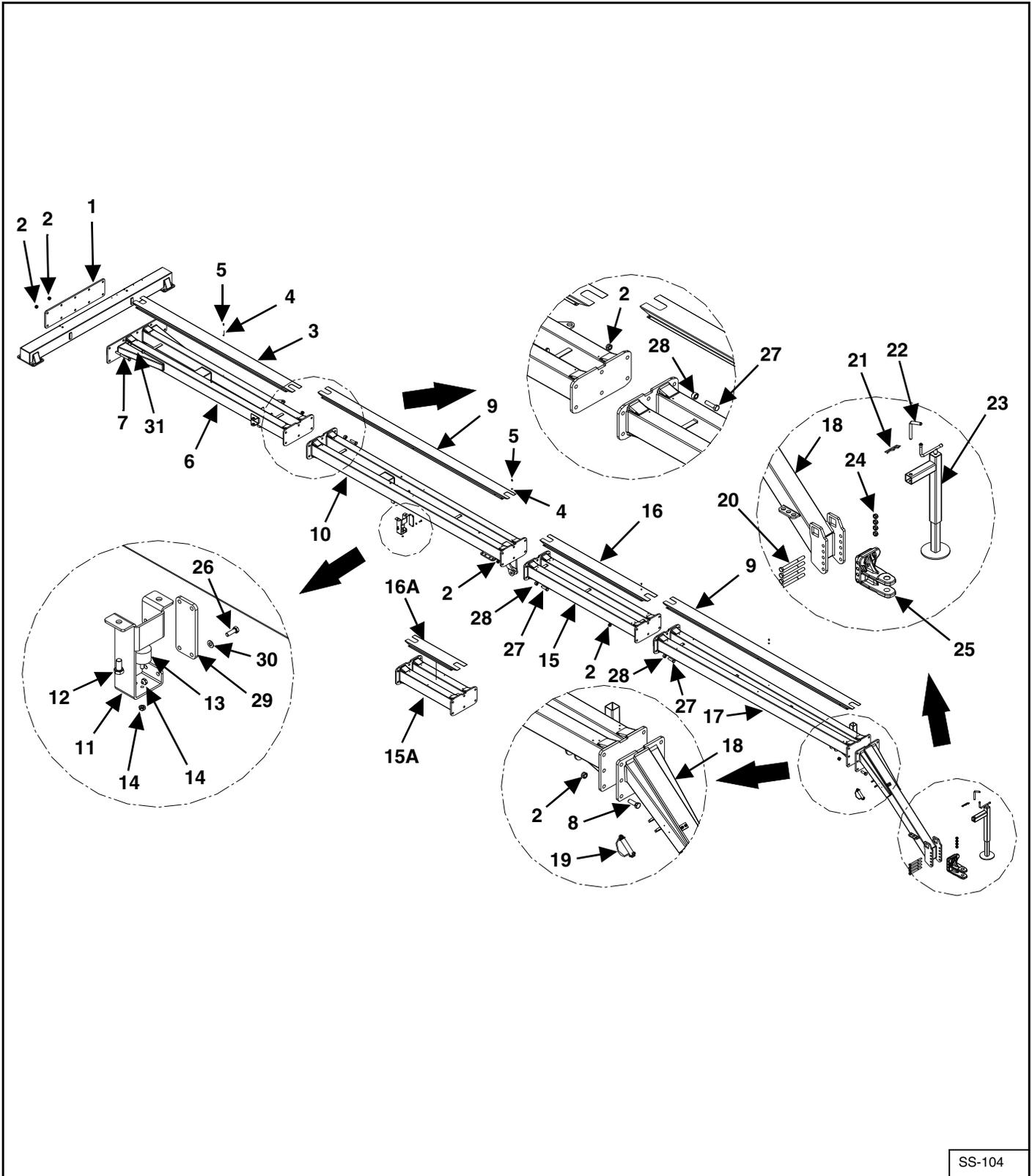
Tandem Cross Drawbar Assembly



SS-100

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032620	CROSS DRAWBAR	
2	R3011694	SCREW, M20 x 55 T.E.	
3	R3090101	GREASER, M8 x 1	
4	R18032621	PIN, 0.50 L.297	
5	R18032056	PIVOTING SUPPORT	
6	R12280007	SPACER, AS 5070	
7	R12170108	COMPLETE WHEEL, 205/70 R15	
8	R3011695	SCREW, M8 x 80 T.E.	
9	R3020216	SELF LOCKING NUT, M20	
10	R18032622	WHEEL LEG SUPPORT	
11	R3020209	SELF LOCKING NUT, M8	
12	R12071203	TANDEM BUSHING	
13	R18032623	TANDEM	
14	R18032624	PIN, 0.42 L.222	
15	R3080148	SPRING PIN, 14 x 75	

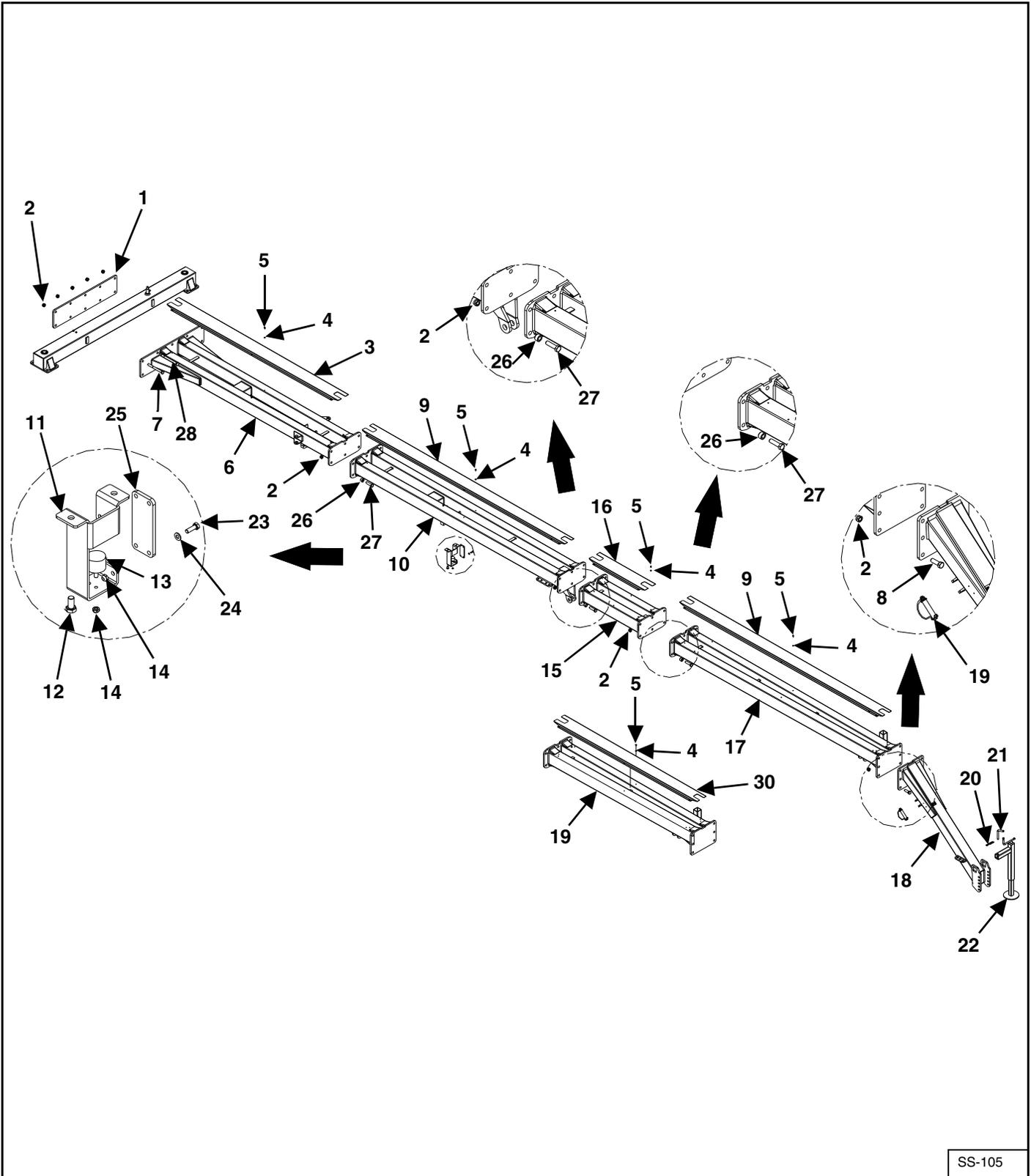
Main Drawbar Assembly (16 & 18 Wheel Rake)



SS-104

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032629	FASTENING PLATE	
2	R3020216	SELF LOCKING NUT, M20	
3	R18032630	HYDRAULIC HOSE CARTER	
4	R3030158	WASHER, M6	
5	R3011290	SCREW, M6 x 10 T.E.	
6	R18032631	PULL BAR	
7	R3011700	SCREW, M20 x 200 T.E.	
8	R3011694	SCREW, M20 X 55 T.E.	
9	R18031757	HYDRAULIC HOSE CARTER	
10	R18032632	DRAWBAR	
11	R18031768	SUPPORT FOR HYDRAULIC CYLINDER	
12	R3011255	SCREW, M12 x 25 T.E.	
13	R12660316	BUFFER PAD	
14	R3020209	SELF LOCKING NUT, M8	
15	R18032634	PULL BAR, E.R. SS 20	
15A	R18032635	PULL BAR, E.R. SS 18	
16	R18033256	HYDRAULIC HOSE CARTER, E.R. SS 20	
16A	R18031760	HYDRAULIC HOSE CARTER, E.R. SS 18	
17	R18032633	DRAWBAR	
18	R18032064	FRONT DRAWBAR	
19	R12310306	CLIP PIN	
20	R3010308	SCREW, M16 x 170 T.E.	
21	R3040202	SPLIT PIN, R 5 x 100	
22	R18033195	PIN	
23	R18032039	JACK	
24	R3020204	SELF LOCKING NUT, M16	
25	R18032040	PULL BAR LINKAGE	
26	R3011242	SCREW, M8 x 25 T.E.	
27	R3011718	SCREW, M20 x 75 T.E.	
28	R18033044	SPACER, 0.25 L.20	
29	R18032709	LINKAGE	
30	R3030156	WASHER, M8	
31	R3011722	SCREW, M20 x 220 T.E.	

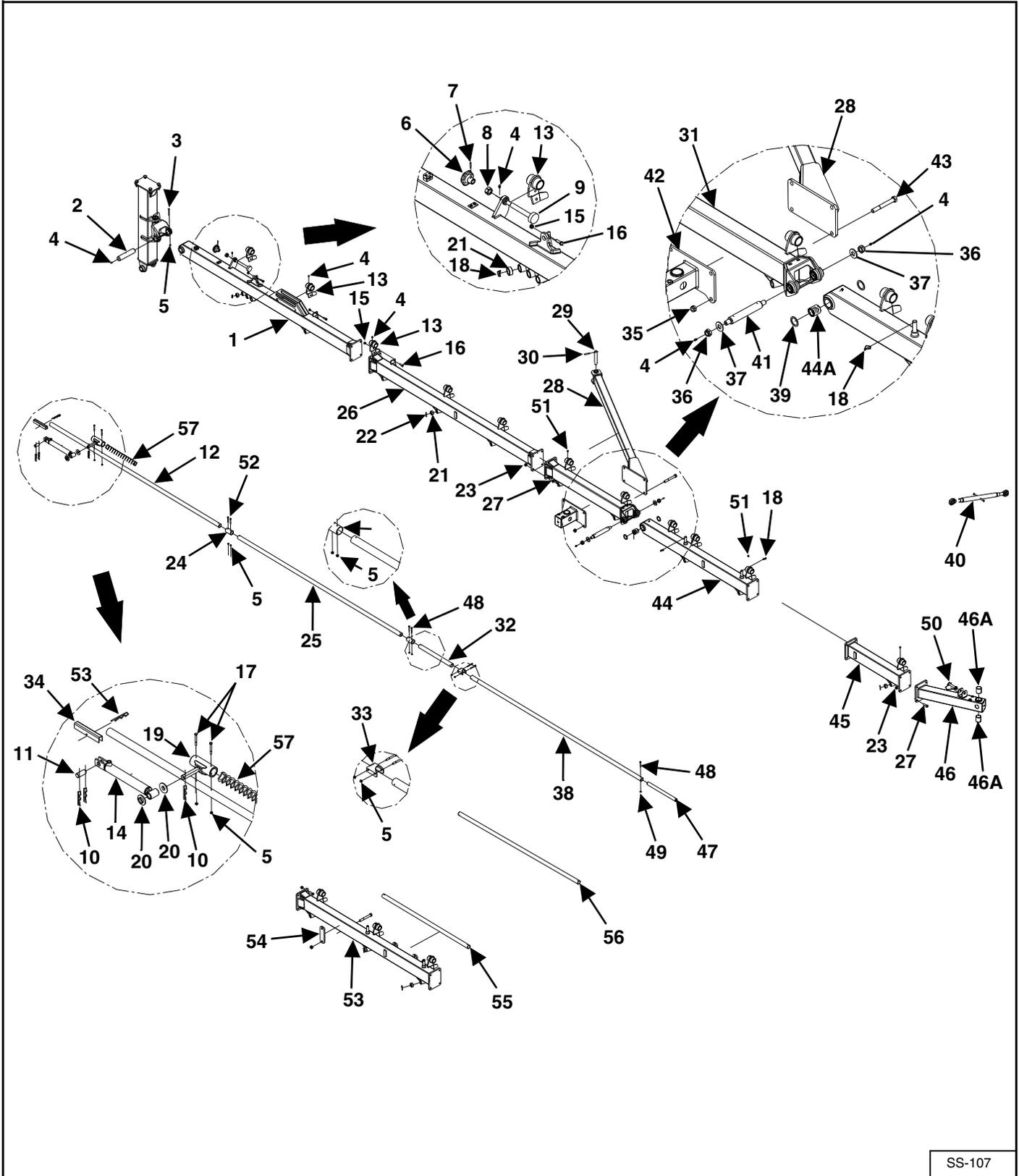
Main Drawbar Assembly (20 Wheel Rake)



SS-105

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032629	FASTENING PLATE	
2	R3020216	SELF LOCKING NUT, M20	
3	R18032630	HYDRAULIC HOSE CARTER	
4	R3030158	WASHER, M6	
5	R3011290	SCREW, M6 x 10 T.E.	
6	R18032631	PULL BAR	
7	R3011700	SCREW, M20 x 200 T.E.	
8	R3011694	SCREW, M20 x 55 T.E.	
9	R18031757	HYDRAULIC HOSE CARTER	
10	R18032632	DRAWBAR	
11	R18031768	SUPPORT FOR HYDRAULIC CYLINDER	
12	R3011255	SCREW, M12 x 25 T.E.	
13	R12660316	BUFFER PAD	
14	R3020209	SELF LOCKING NUT, M8	
15	R18032635	PULL BAR, E.R. ST 20	
16	R18031760	HYDRAULIC HOSE CARTER, E.R. S ST 20	
17	R18032633	DRAWBAR, L.3000 ERS-ST 18-20	
18	R18032064	FRONT DRAWBAR	
19	R12310306	CLIP PIN	
20	R3040202	SPLIT PIN, R 5 x 100	
21	R18033195	PIN, 0.15 L.200	
22	R18032039	JACK	
23	R3011242	SCREW, M8 x 25 T.E.	
24	R3030156	WASHER, M8	
25	R18032709	LINKAGE	
26	R18033044	SPACER, 0.25 L.20	
27	R3011718	SCREW, M20 x 75 T.E.	
28	R3011722	SCREW, M20 x 220 T.E.	
29	R18032926	PULL BAR, L.2140 ERS-ST 16	
30	R18031758	HYDRAULIC HOSE CARTER, ERS-ST 16	

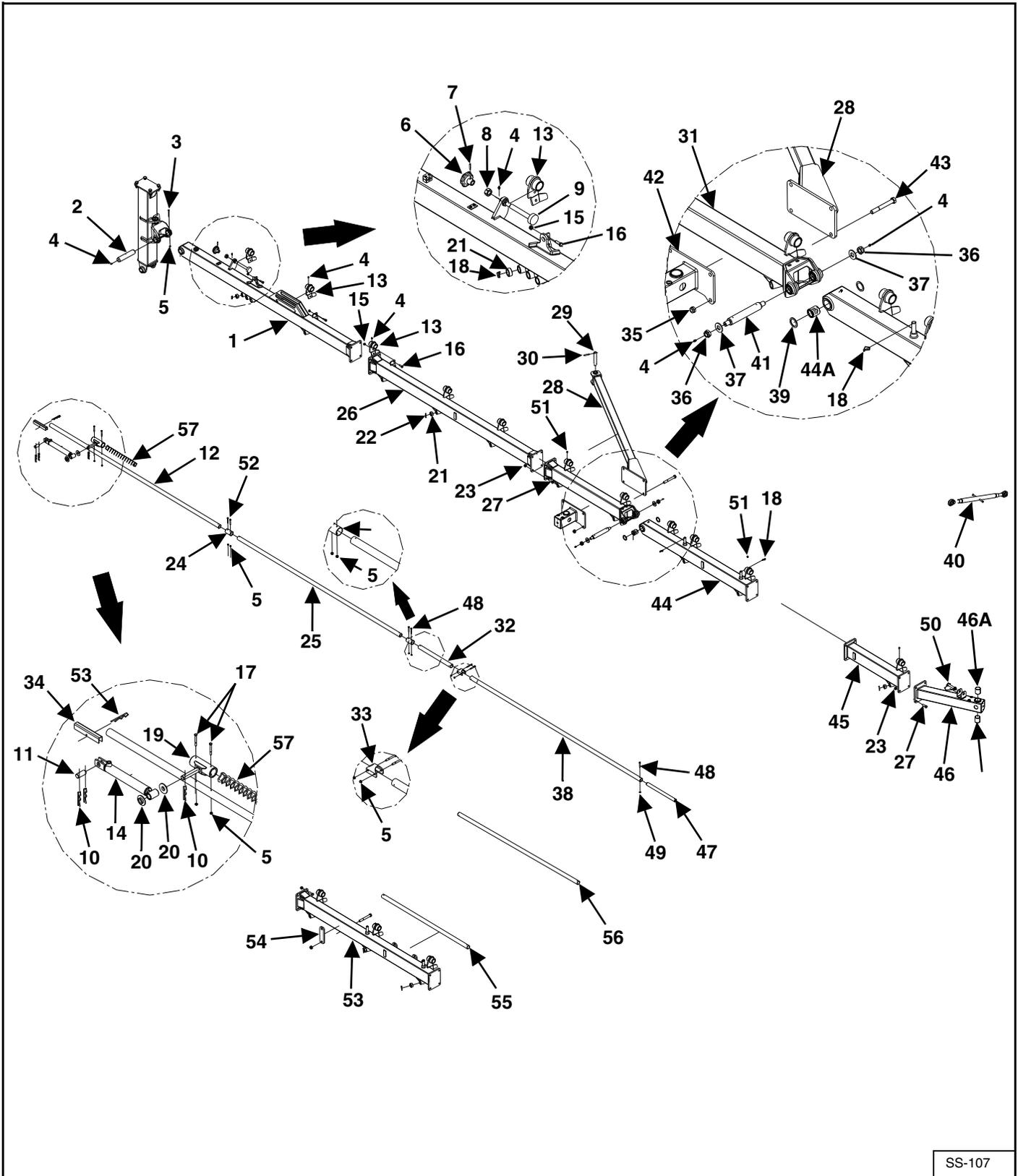
Right Frame Assembly



SS-107

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032857	RIGHT REAR FRAME, 0.46	
2	R18032556	PIVOT PIN, D.50 LG.236	
3	R3011695	SCREW, M8 x 80 T.E.	
4	R3090101	GREASER, M8,x 1	
5	R3020209	SELF LOCKING NUT, M8	
6	R18031179	REGOLATION KNOB	
7	R3080102	SPRING PIN, 6 x 36	
8	R3020337	NUT, M24	
9	R18031066	SPACER SCREW, 24MA	
10	R3040202	SPLIT PIN, R 5 x 100	
11	R18033082	PIN, 0.25 L.60	
12	R18032839	RAKING WHEEL ADJUST BAR L.2710 Ø42	
13	R18032835	BRACKET RIGHT, 0.46	
14	R12770149	CYLINDER, 40 / 20 / 250	
15	R3020202	SELF LOCKING NUT, M12	
16	R3011216	SCREW, M12 x 35 T.E.	
17	R3011612	SCREW, M8 x 70 T.E.	
18	R3080201	PIN, 0.5	
19	R18032843	SUPPORT ARM, 0.60	
20	R18032137	BUSHING, 0.60	
21	R18033045	SPACER	
22	R3080113	SPRING PIN, 6 x 50	
23	R3020204	SELF LOCKING NUT, M16	
24	R18032840	BUSHING, 0.48	
25	R18032863	RAKING WHEEL ADJUSTMENT BAR, L.2600 Ø42	
26	R18032859	RIGHT CENTRAL FRAME, 0.46	
27	R3010313	SCREW, M16 x 50 T.E.	
28	R18032644	RIGHT FRAME ELBOW ARM	
29	R18033048	PIN, 0.30 L.178	
30	R3080107	SPRING PIN, 10 x 60	

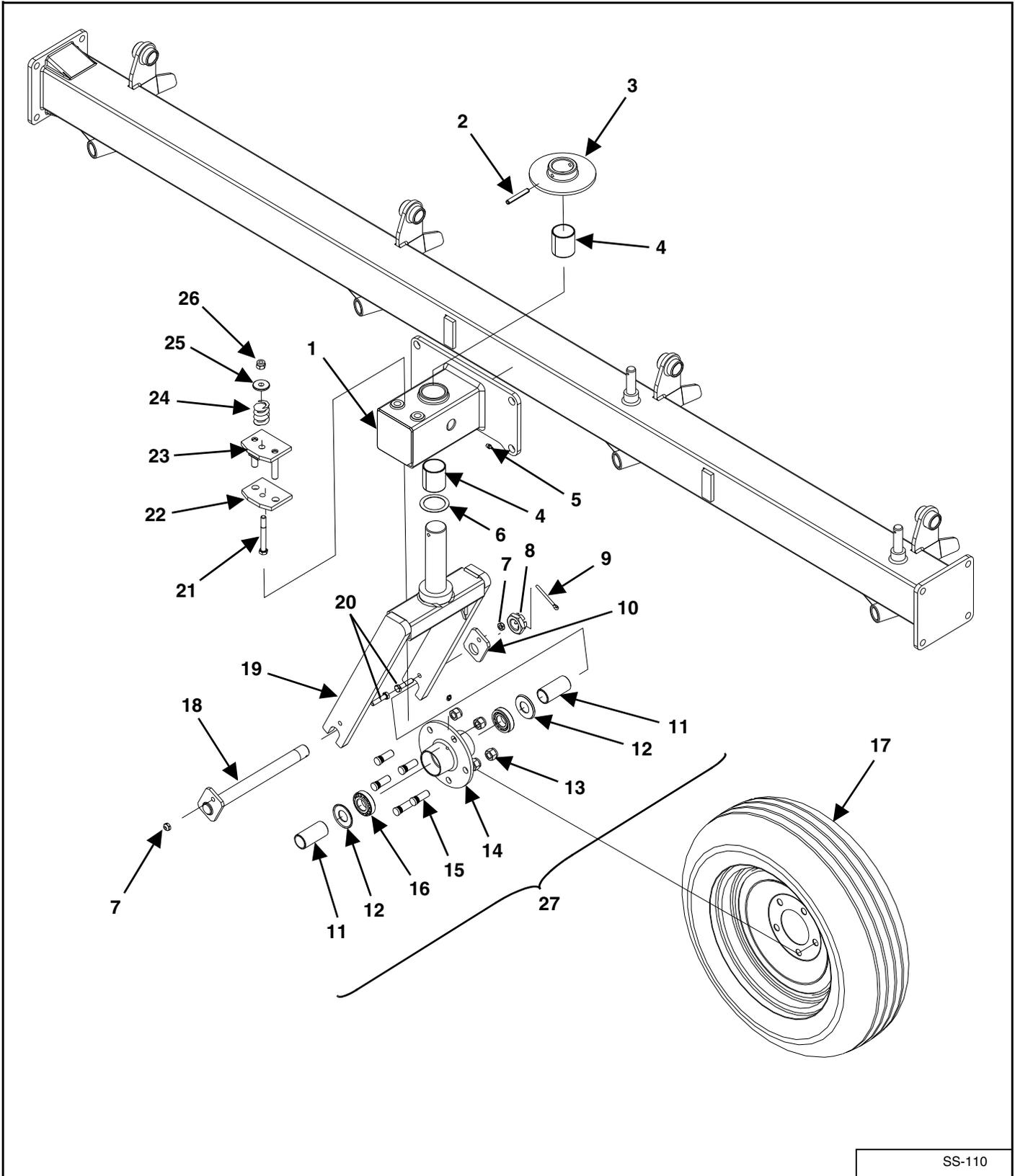
Right Frame Assembly (Cont'd)



SS-107

ITEM	PART NUMBER	DESCRIPTION	QTY
31	R18032865	RIGHT FRONT FRAME, 0.46	
32	R18032869	RAKING WHEEL ADJUSTMENT BAR, L.515 ER18-20 Ø42	
33	R18032873	BRACKET, 0.46	
34	R18030481	CYLINDER BLOCK	
35	R3020216	SELF LOCKING NUT, 20MA	
36	R3020223	NUT, M24	
37	R18031766	WASHER, 55 - 25 - 5	
38	R18032874	RAKING WHEEL ADJUSTMENT BAR, L.2726 E.R. SS 20 Ø42	
39	R18032917	WASHER, 60 x 41 x 2.5	
40	R12310707	TRANSPORT BAR	
41	R18031764	SHAFT, 0.40 L.295	
42	R18032648	WHEEL SUPPORT	
43	R3010758	SCREW, M20 x 160 T.E.	
44	R18032866	RIGHT FRONT FRAME, 0.46	
44A	R12071204	BUSHING, 50 - 40 - 50	
45	R18032871	RIGHT FRAME, 0.46	
46	R18032723	RIGHT WHEEL SUPPORT	
46A	R12070440	BUSHING, 50 - 55 - 60	
47	R18032844	REINFORCEMENT BAR, 0.33	
48	R3011616	SCREW, 8 x 60 T.E.	
49	R3020209	NUT, M8	
50	R12310306	PIN WITH CHAIN	
51	R3090101	GREASE ZERK, 8MB	
52		SCREW,	
53	R18032861	RIGHT FRONT FRAME, 0.46	
54	R18032658	ELBOW ARM ATTAC. BRACKETS	
55	R18032864	RAKING WHEEL ADJUSTMENT BAR, L.1370 E.R. SS 16 Ø42	
56	R18032870	RAKING WHEEL ADJUSTMENT BAR, L.1860 E.R. SS 18 Ø42	
57	R11010907	SPRING	

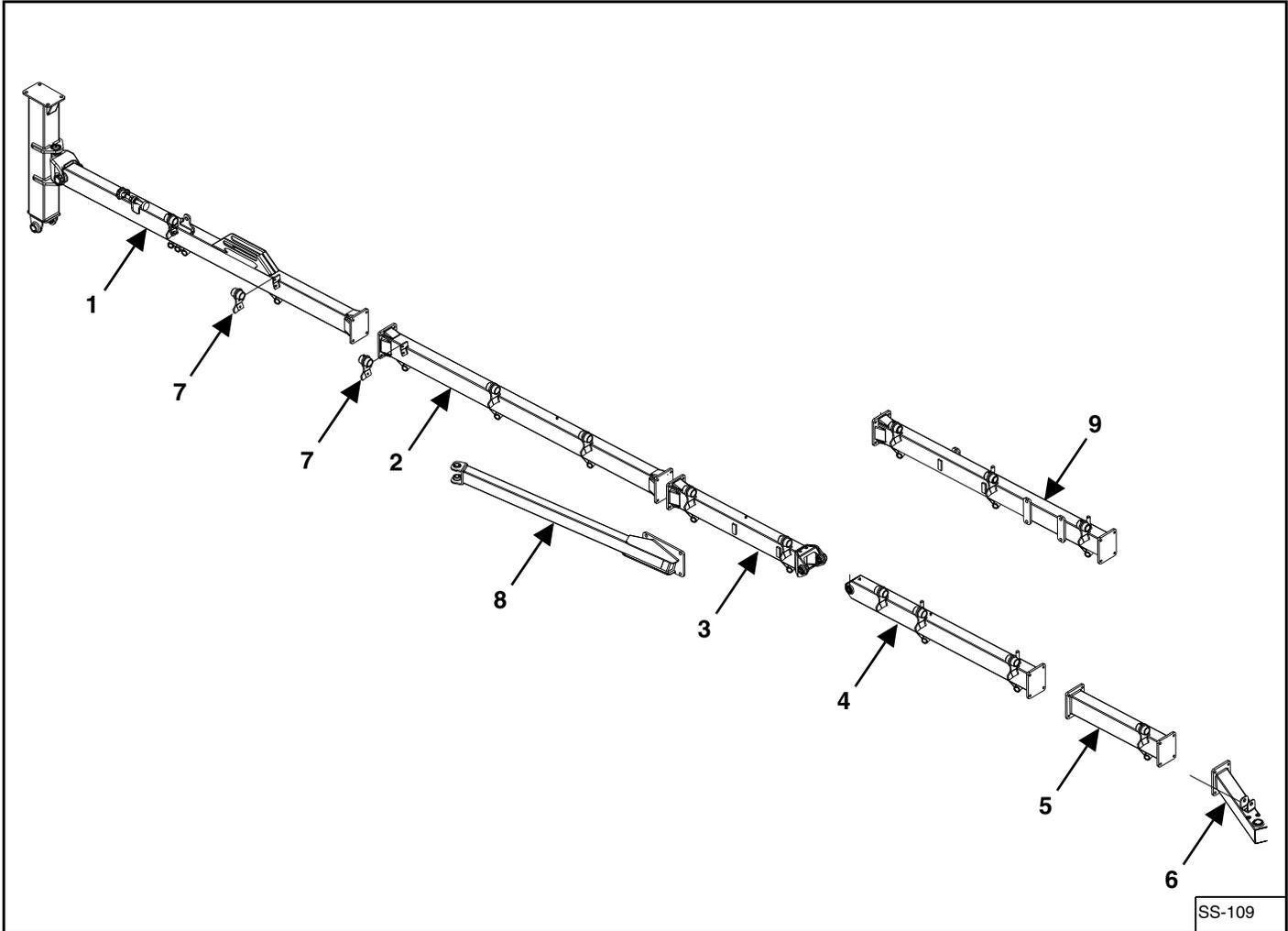
Front Wheel Assembly



SS-110

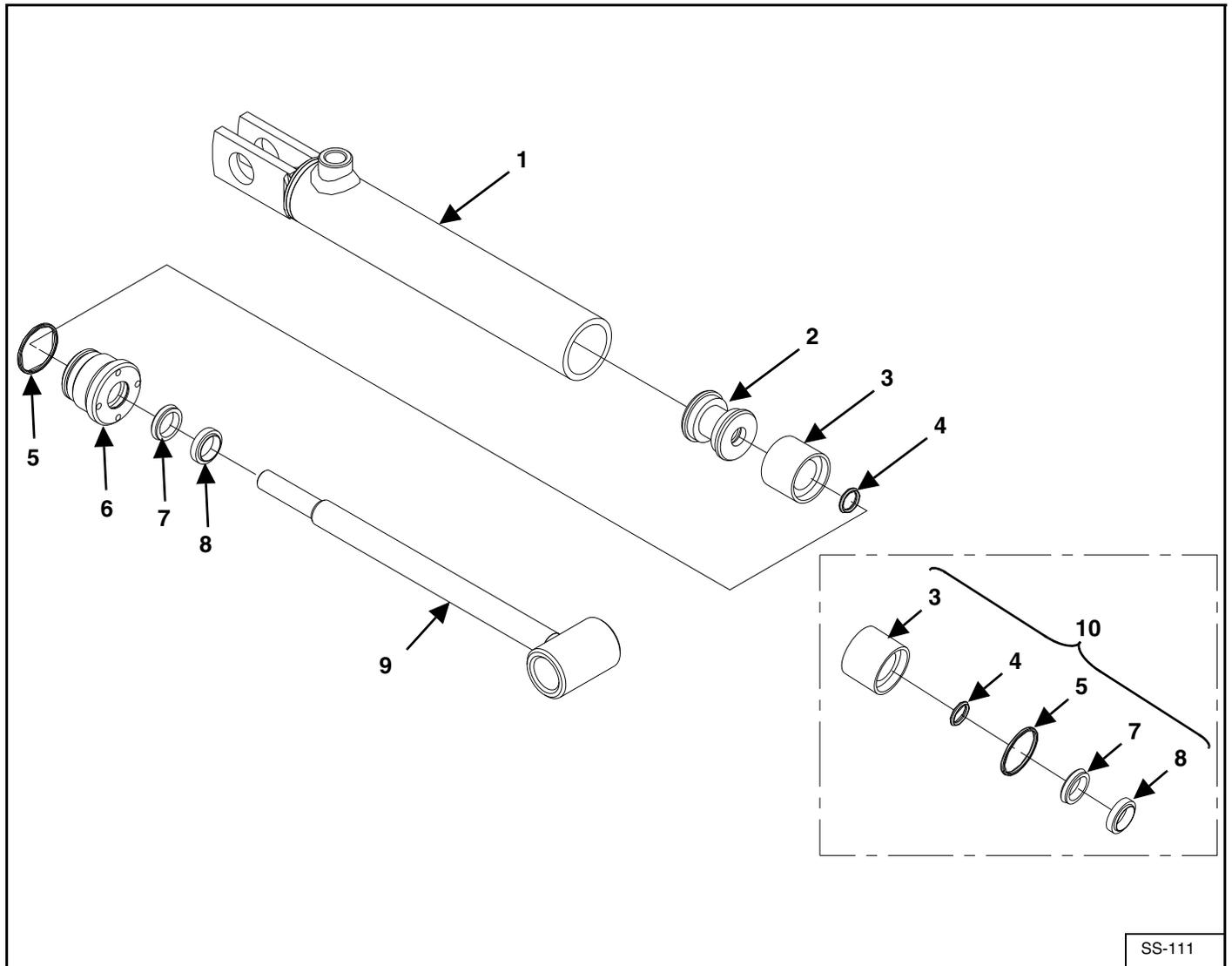
ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032648	WHEEL SUPPORT	
2	R3080117	SPRING PIN, 10 x 70	
3	R18032051	BRAKING DISC	
4	R12070440	NYLON BUSHING, 50 - 55 - 60	
5	R3090101	GREASE ZERK, 8MB	
6	R12280007	SPACER AS 5070	
7	R3020201	SELF LOCKING NUT, 10MA	
8	R3020219	NUT, 30MB	
9	R3040106	ROLL PIN, 6 x 60	
10	R18031001	LOCK WASHER	
11	R12070421	BUSHING, 38 x 78	
12	R10011308	DUST COVER, 30 x 62	
13	R3020218	STUD BOLT NUT, 16MB	
14	R12150110	HUB	
15	R3011609	STUD BOLT, M16	
16	R12240144	BEARING, 30206	
17	R12170108	COMPLETE WHEEL, 205/70 R15	
18	R18031002	FORK PIN	
19	R18032665	WHEEL FORK	
20	R3011281	SCREW, M10 x 45 T.E.	
21	R3011214	SCREW, M12 x 100 T.E.	
22	R18031128	LOWER BRAKE PAD	
23	R18031126	UPPER BRAKE PAD	
24	R11010602	BRAKE SPRING	
25	R18033240	WASHER, 0.40	
26	R3020202	SELF LOCKING NUT, 12MA	
27	R2050113	COMPLETE HUB	

Left Frame Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18033248	LEFT REAR FRAME, 0.46	
2	R18032860	LEFT CENTRAL FRAME, 0.46	
3	R18032867	LEFT FRONT FRAME, 0.46	
4	R18032868	LEFT FRONT FRAME, 0.46	
5	R18032872	LEFT FRAME, 0.46 L.880 MM	
6	R18032722	LEFT FRAME, 0.46	
7	R18032836	BRACKET LEFT, 0.46	
8	R18032643	LEFT FRAME ELBOW ARM	
9	R18032862	LEFT FRONT FRAME, 0.46	

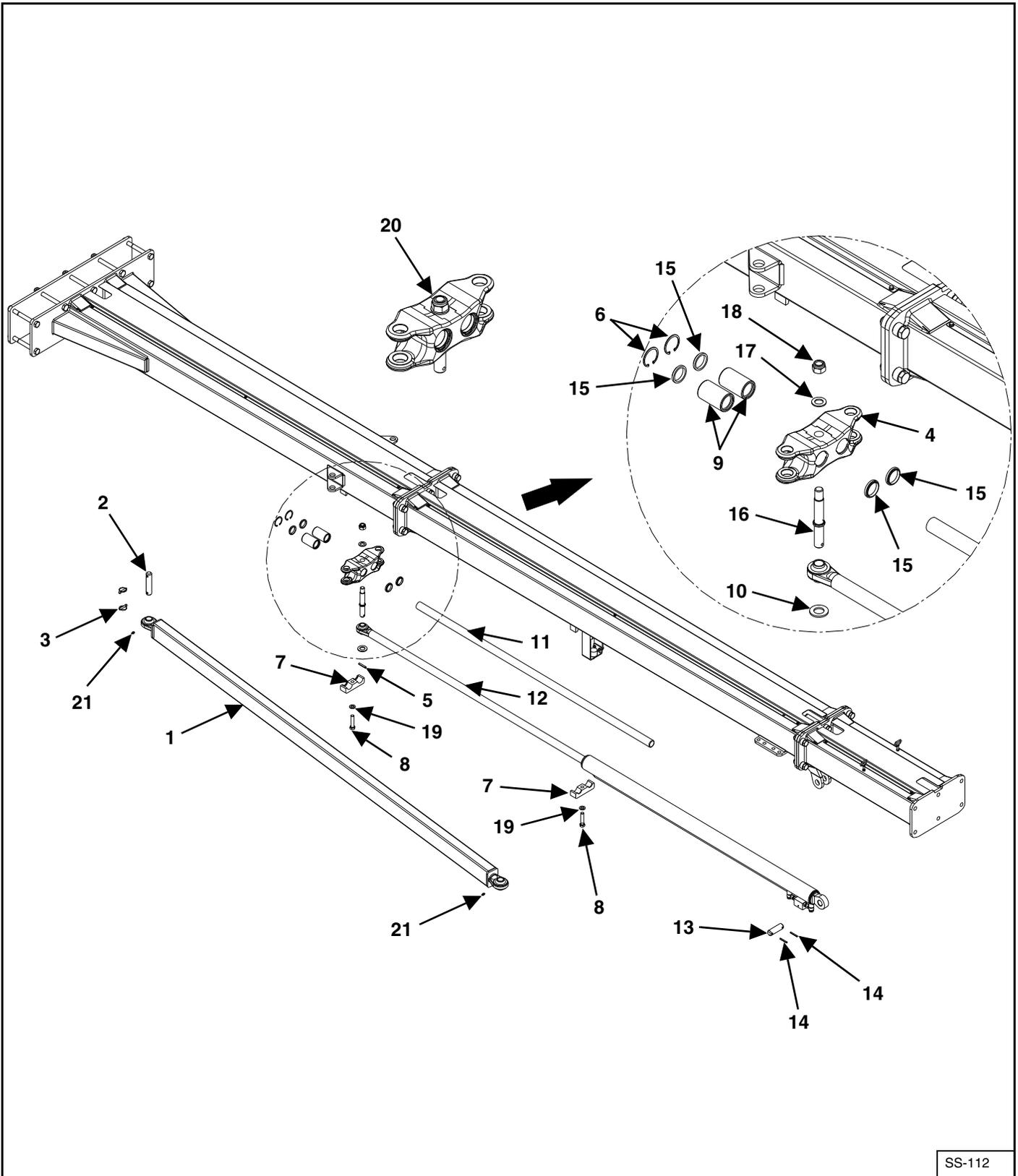
Rear Hydraulic Cylinder Assembly



SS-111

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R12770149	CYLINDER 40/20/250	
2	R12770240	PISTON 0704015 F.	
3		GASKET DBM 157118	
4		O-RING 616	
5		O-RING 219	
6	R12420101	GUIDE	
7		RETAINER	
8		SCRAPER RING WORM, 118149	
9	R12440204	SHAFT	
10	R10010636	SEAL KIT FOR CYLINDER, 12770149	

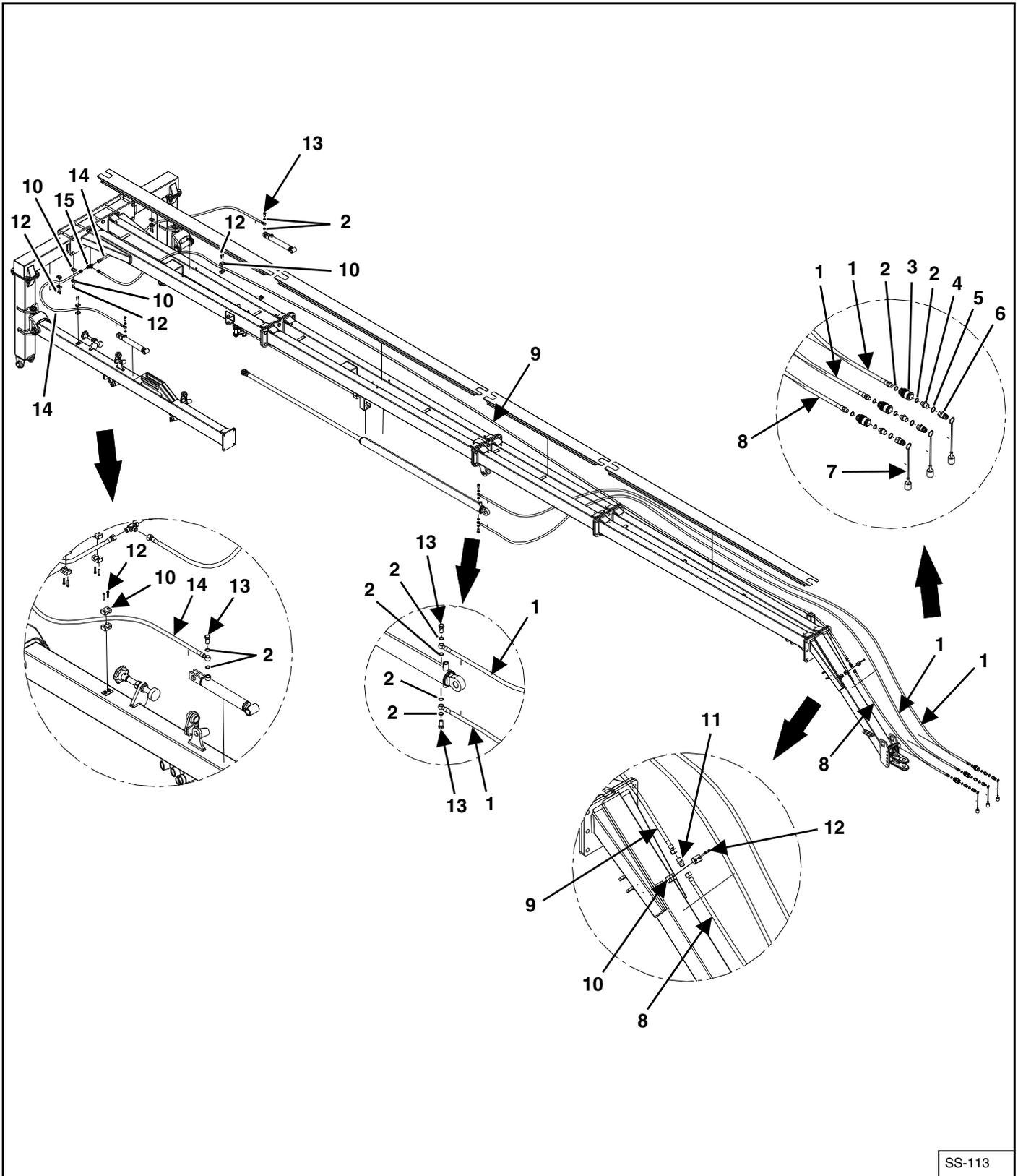
Connecting Bar Assembly



SS-112

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032666	CONNECTING BAR	
2	R18032047	PIN, 0.30 L.138	
3	R12880614	SPLIT PIN, 0.8	
4	R18032713	SKID	
5	R3080105	SPRING PIN, 8 x 50	
6	R3120111	RING, 0.52	
7	R18032028	SUPPORT	
8	R3011270	SCREW, M16 x 70 T.E.	
9	R18032730	BUSHING	
10	R3030164	WASHER, M27	
11	R12880418	SKID SHAFT	
12	R18032667	HYDRAULIC CYLINDER	
13	R18033046	PIN, 0.30 L.100	
14	R3080113	SPRING PIN, 6 x 50	
15	R3030322	GROWER, 0.6	
16	R18032708	PIN, 0.32 LG.185 MM	
17	R3030176	WASHER, 0.22	
18	R3020222	SELF LOCKING NUT, MA22	
19	R3030322	WASHER, M16 GROWER	
20	R18032834	COMPLET SKID	
21	R3090101	GREASE ZERK, 8MB	

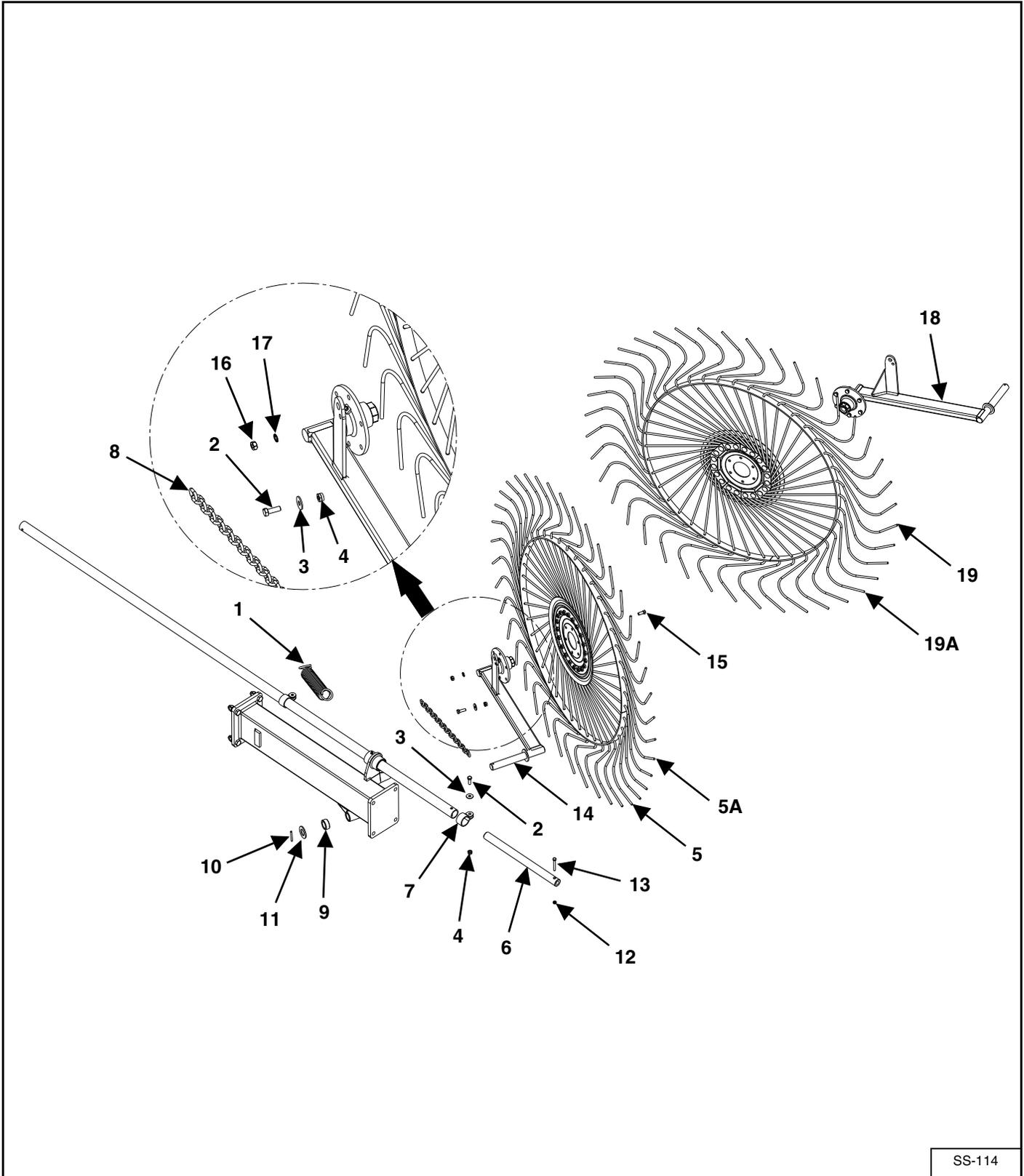
Hydraulic Assembly



SS-113

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R12760222	HYDRAULIC HOSE, L. 6100 E.R. SS 16	
1A	R12760224	HYDRAULIC HOSE, L. 6.900 E.R. SS 18	
1B	R12760215	HYDRAULIC HOSE, L. 7.800 E.R. SS 20	
2	R3030403	COPPER WASHER, 3/8	
3	R4021203	VALVE, 3/8	
4	R4010206	REDUCTION NIPPLE, 1/2 - 3/8	
5	R3030402	COPPER WASHER, 1/2	
6	R4011804	PUSH PULL, 1/2	
7		PROTECTION PLUG	
8	R12760211	HYDRAULIC HOSE, L. 1.600 E.R. SS 16-18-20	
9	R12760223	HYDRAULIC HOSE, L. 9.700 E.R. SS 16	
9A	R12760236	HYDRAULIC HOSE, L. 10.500 E.R. SS 18	
9B	R12760225	HYDRAULIC HOSE, L. 11.400 E.R. SS 20	
10	R12980005	COLLAR	
11	R4010205	NIPPLE, 1/2 - 1/2	
12		SCREW	
13	R3011605	DRILLED SCREW, 3/8	
14	R12760212	HYDRAULIC HOSE, L. 2.500 E.R. SS 16-18-20	
15	R4010915	"T" UNION, 1/2	

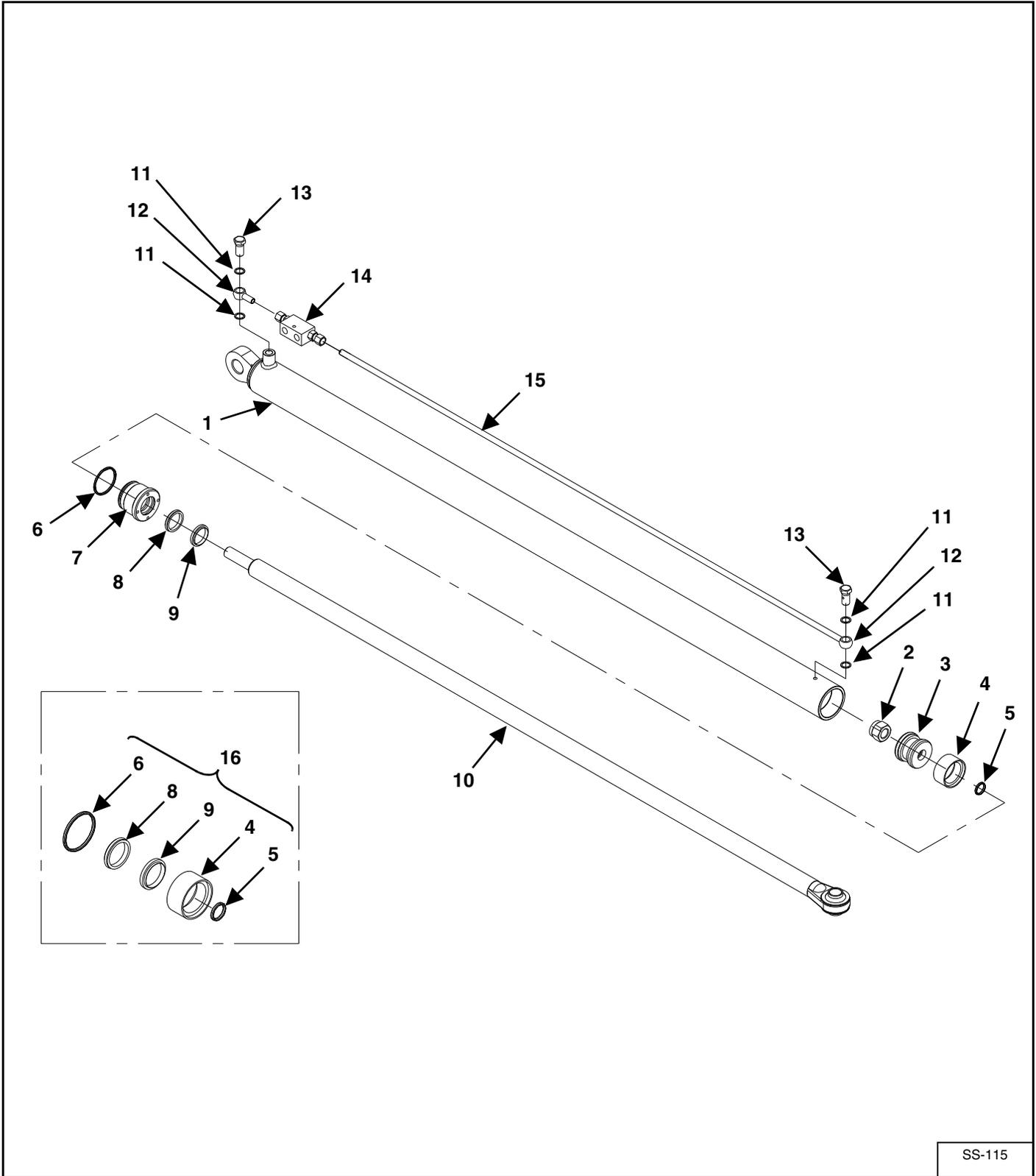
Arm & Rake Wheel Assembly



SS-114

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R11010508	ARM SPRING	
2	R3011206	SCREW, M10 x 30 T.E.	
3	R3030169	WASHER, M10,x 30	
4	R3020201	SELF LOCKING NUT, M10	
5	R18031805	COMPLETE WHEEL, HSI Ø7,5 DX	
5A	R18031064	WHEEL VICON TOOTH, 0.6,9 DX	
6	R18032844	REINFORCEMENT BAR, 0.33	
7	R18032842	CHAIN CLAMP	
8	R12070422	CHAIN	
9	R18033045	SPACER	
10	R3080113	SPRING PIN, 6 x 50	
11	R3030165	WASHER, M30	
12	R3020209	NUT, M8	
13	R3011616	SCREW, 8 x 60 T.E.	
14	R18033059	COMPLETE RIGHT ARM	
15	R3011211	SCREW, M10 x 25 T.E.	
16	R3020328	NUT, 10MA	
17	R3020227	WASHER, M10	
18	R18033060	ARM LEFT	
19	R18031806	COMPLETE WHEEL, HSI 0.7,5 SX	
19A	R17010812	COMPLETE WHEEL VICON TOOTH, 0.6,9 SX	

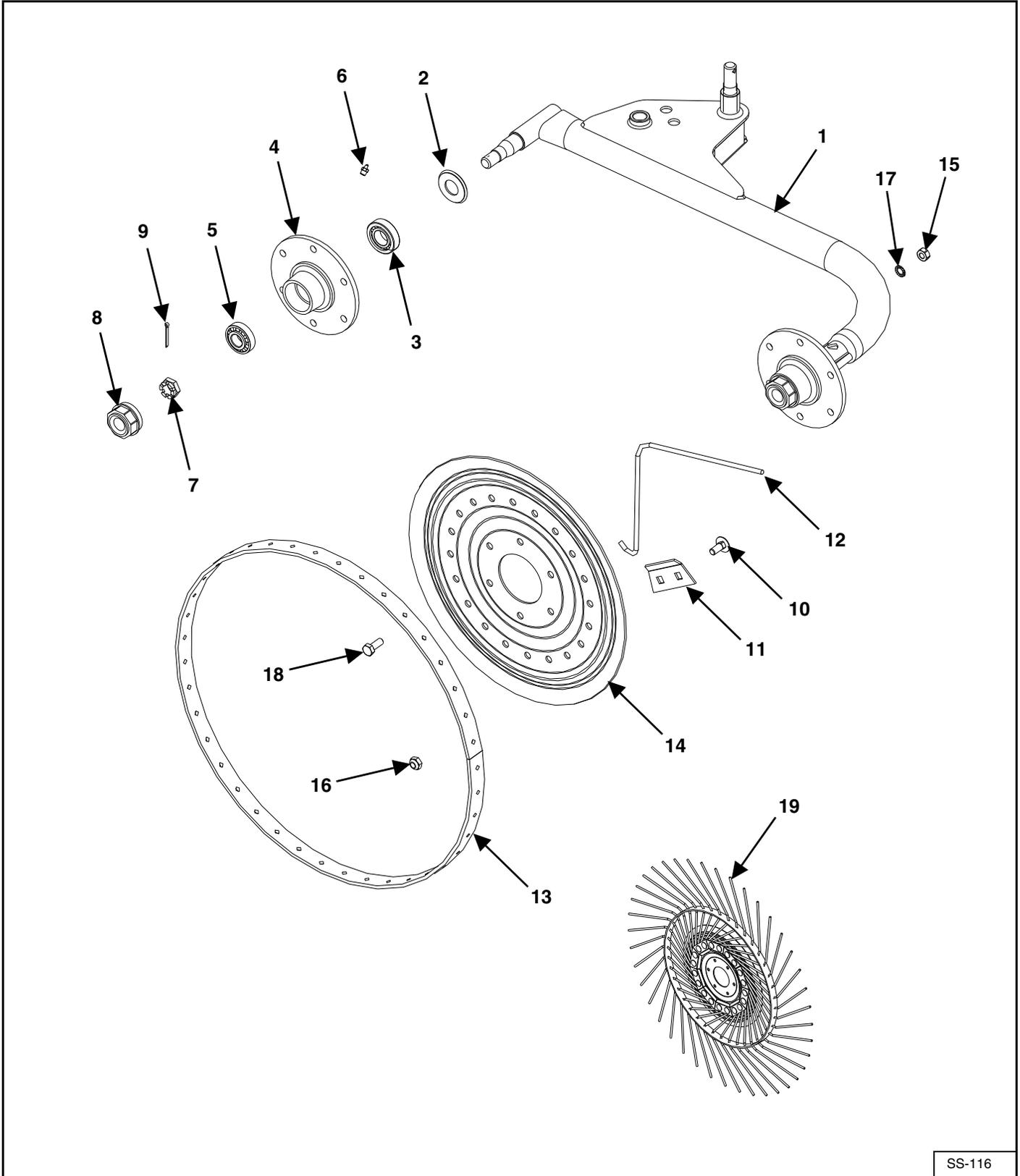
Right / Left Frame Cylinder Assembly



SS-115

ITEM	PART NUMBER	DESCRIPTION	QTY
1		CYLINDER	
2	R3020337	NUT, M24	
3	R12770218	PISTON, 0706524	
4		BALMASTER, DBM 255196	
5		O-RING, 2-119	
6		O-RING, 5-702	
7	R12770219	GUIDE, 0306540	
8		RETAINER, B196157	
9		SCRAPER RING, WRM 118149	
10	R12440203	SHAFT, D.40	
11	R3030403	WASHER COPPER, 3/8	
12	R4010951	HYDRAULIC CONNECTION	
13	R3011605	DRILLED SCREW, 3/8	
14	R4021205	BLOCK VALVE	
15	R4010952	HYDRAULIC CONNECTION, (1500 MM)	
16	R10010700	SEAL KIT	

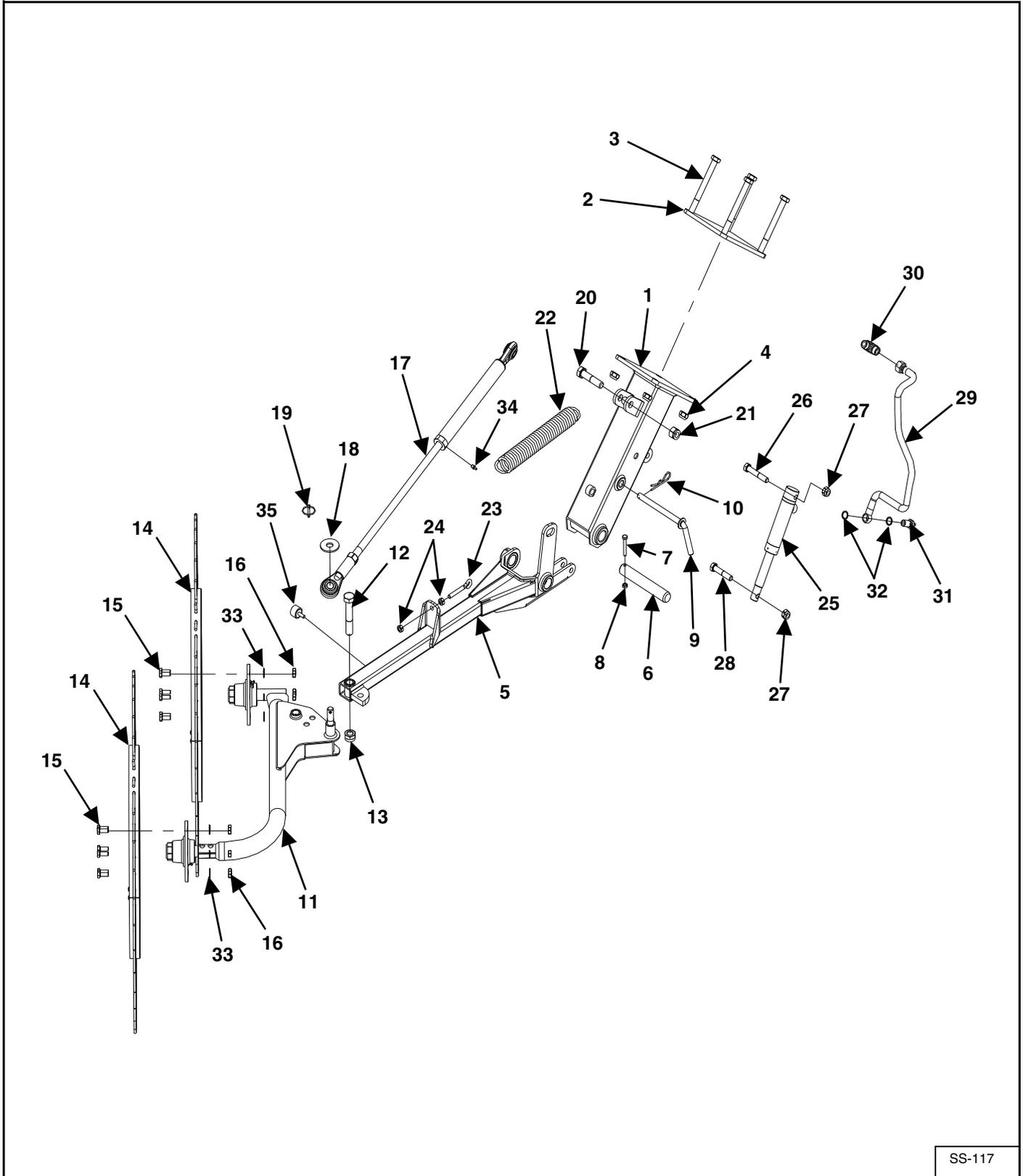
Kicker Wheel Hub Assembly (Optional)



SS-116

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032053	FRAME	
2	R12860001	DUST COVER	
3	R12240119	BEARING, 30205	
4	R12150103	HUB	
5	R12240118	BEARING, 30204	
6	R3090101	GREASE ZERK, 8MB	
7	R3020210	SELF LOCKING NUT, 18MB	
8	R12360001	DUST COVER CUP	
9	R3040114	SPRING, 4 x 35	
10	R3010105	SCREW, M10 x 25 T.T.Q.S.T.	
11	R18030416	TEETH FASTENER PLATE	
12	R18032054	TOOTH, MOD. KEB	
13	R18032055	EXTERNAL RAKING WHEEL RING	
14	R12160101	RACKING WHEEL FLANGE	
15	R3020328	NUT, 10MA	
16	R3020224	SELF LOCKING NUT, 10MA CONELOX	
17	R3030227	LOCK WASHER, 10	
18	R3011211	SCREW, M10 x 25 T.E.	
19	R17010816	COMPLETE WHEEL, MOD. KEP	

Kicker Wheel Frame Assembly (Optional)

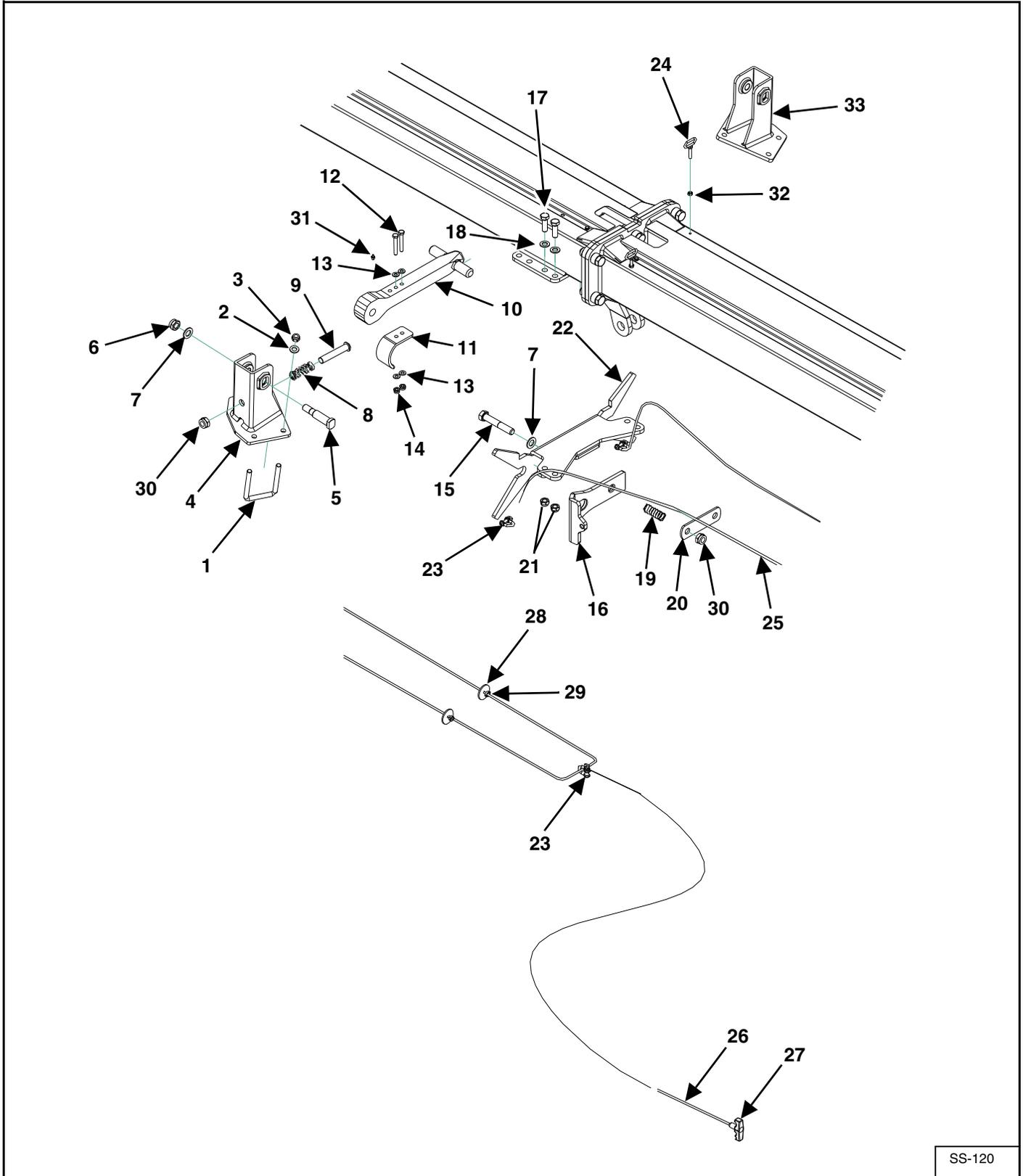


SS-117

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032047	FRAME	
2	R18033362	FASTENING PLATE	
3	R3010309	SCREW, M16 x 160 T.E.	
4	R3020204	SELF LOCKING NUT, 16MA	
5	R18032052	FRAME	
6	R12060883	PIN, D. 30 LG. 190	
7	R3010781	SCREW, M8 x 55 T.E.	
8	R3020329	NUT, 8MA	
9	R18033268	PIN, 16 x 213	
10	R3040202	SPLIT PIN, R 5 x 100	
11	R18032053	FRAME STARS	
12	R3010311	SCREW, M20 x 110 T.E.	
13	R3020216	SELF LOCKING NUT, 20MA	
14	R17010816	COMPLETE STARS KICKER	
15	R3011211	SCREW, M10 x 25 T.E.	
16	R3020201	SELF LOCKING NUT, 10MA	
17	R18032067	ROD	
18	R3030193	WASHER, M18 x 56	
19	R3080201	PIN, 5	
20	R3010310	SCREW, M18 x 80 T.E.	
21	R3020214	SELF LOCKING NUT, 18MA	
22	R11010534	SPRING, LG.270	
23	R3220201	TENSIONER, M10	
24	R3020328	NUT, 10MA	
25	R18032613	HYDRAULIC CYLINDER	
25A	R18032598	SEAL KIT FOR 18032613	
26	R3011278	SCREW, M14 x 80 T.E.	
27	R3020203	SELF LOCKING NUT, 14MA	
28	R3011631	SCREW, M14 x 70 T.E.	
29	R12760160	HYDRAULIC HOSE, LG. 550	
30	R4010915	"T" UNION, 1/2	
31	R4021503	SCREW, 3/8	
32	R3030403	COPPER WASHER, 3/8	
33	R3030227	LOCK WASHER, M10	
34	R3090101	GREASER, M8 x 1	
35	R9060103	SHOCK ABSORBER	

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032695	COMPLETE LIGHT KIT	
2	R18031791	RIGHT SUPPORT BRACKET	
3	R18031790	LEFT SUPPORT BRACKET	
4	R3011223	SCREW, M8 x 10 T.E.	
5	R3011258	SCREW, M8 x 45 T.E.	
6	R3020209	NUT, M8	
7	R18031787	SUPPORT LIGHTS	
8	R3030158	WASHER, M6	
9	R3011680	SCREW, M6 x 18	
10	R3020213	NUT, M8	
11	R3011290	SCREW, M6 x 10	
12	R18031788	STEEL PLATE	
13	R3030156	WASHER, M8	
14	R3011223	SCREW, M8 x 10	
15	R7270018	REFLECTOR LIGHT	
16	R7270015	LEFT TAIL LIGHT	
17	R7270013	FLASHING	
18	R7270014	RIGHT TAIL LIGHT	
19	R3020209	NUT, M8	
20	R12780103	PARKING	
21	R3011287	SCREW, M10 x 16	
22	R3030159	WASHER, M10	
23	R18031789	SUPPORT	
24	R18031786	HOOK, (ER14)	
25	R18031785	HOOK, (ER-ERS)	
26	R18031013	REFLECTOR PANEL	
27	R18031792	PLATE	
28	R7010832	PIN, 12V	
29	R7270016	RIGHT TAIL LIGHT	
30	R7270017	LEFT TAIL LIGHT	

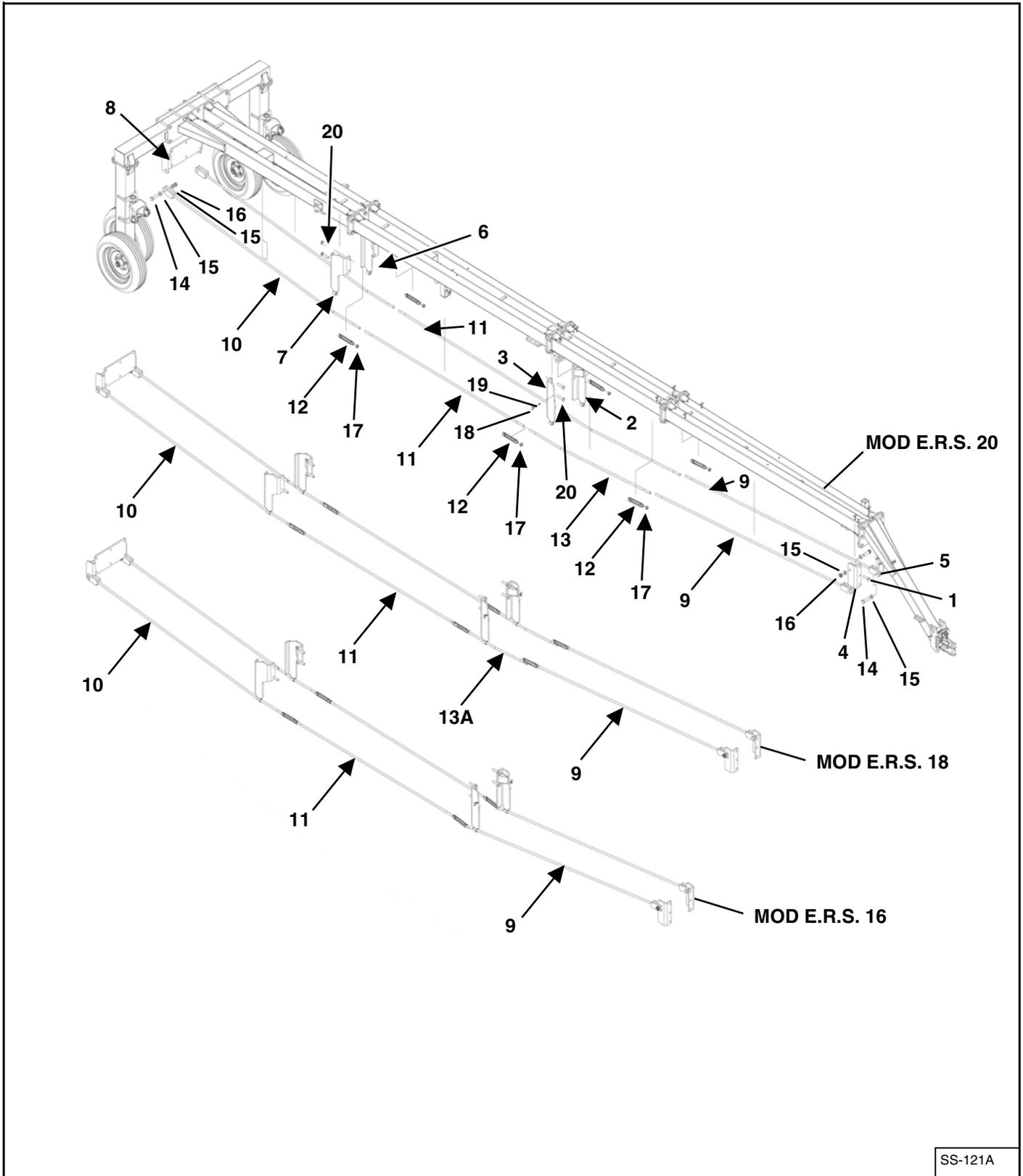
Rope Assembly



SS-120

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R3170118	U-BOLT, M14	
2	R3030161	WASHER, 0.15	
3	R3020203	NUT, M14	
4	R18032392	SUPPORT, DX	
5	R18033081	PIVOT ROD	
6	R3020216	SELF LOCKING NUT, M20	
7	R3030168	WASHER, 0.21	
8	R11010610	SPRING	
9	R18033080	SCREW BOTTON, M20 x 160	
10	R18032391	COUPLING PIN	
11	R18033233	STIRRUP	
12	R3010756	SCREW, M10 x 70 T.E.	
13	R3030159	WASHER, 0.21	
14	R3020201	SELF LOCKING NUT, 10MA	
15	R3010311	SCREW, M20 x 110 T.E.	
16	R18033241	SUPPORT	
17	R3010313	SCREW, M16 x 50 T.E.	
18	R3030175	WASHER, 0.30	
19	R11010639	SPRING	
20	R18032394	THINCKNESS	
21	R3020204	SELF LOCKING NUT, M16	
22	R18032394	SUPPORT	
23	R3160101	CRICKET, 0.8	
24	R18032909	ROPE PASSES	
25	R9130017	ROPE, 0.6	
26	R9130017	ROPE, 0.6	
27	R9060108	HANDLE	
28	R18032910	BUSH	
29	R4010727	CLAMP	
30	R3020216	SELF LOCKING NUT, M20	
31	R3090101	GREASER, M8 x 1	
32	R3020329	NUT, 8MA	
33	R18032393	SUPPORT, SX	

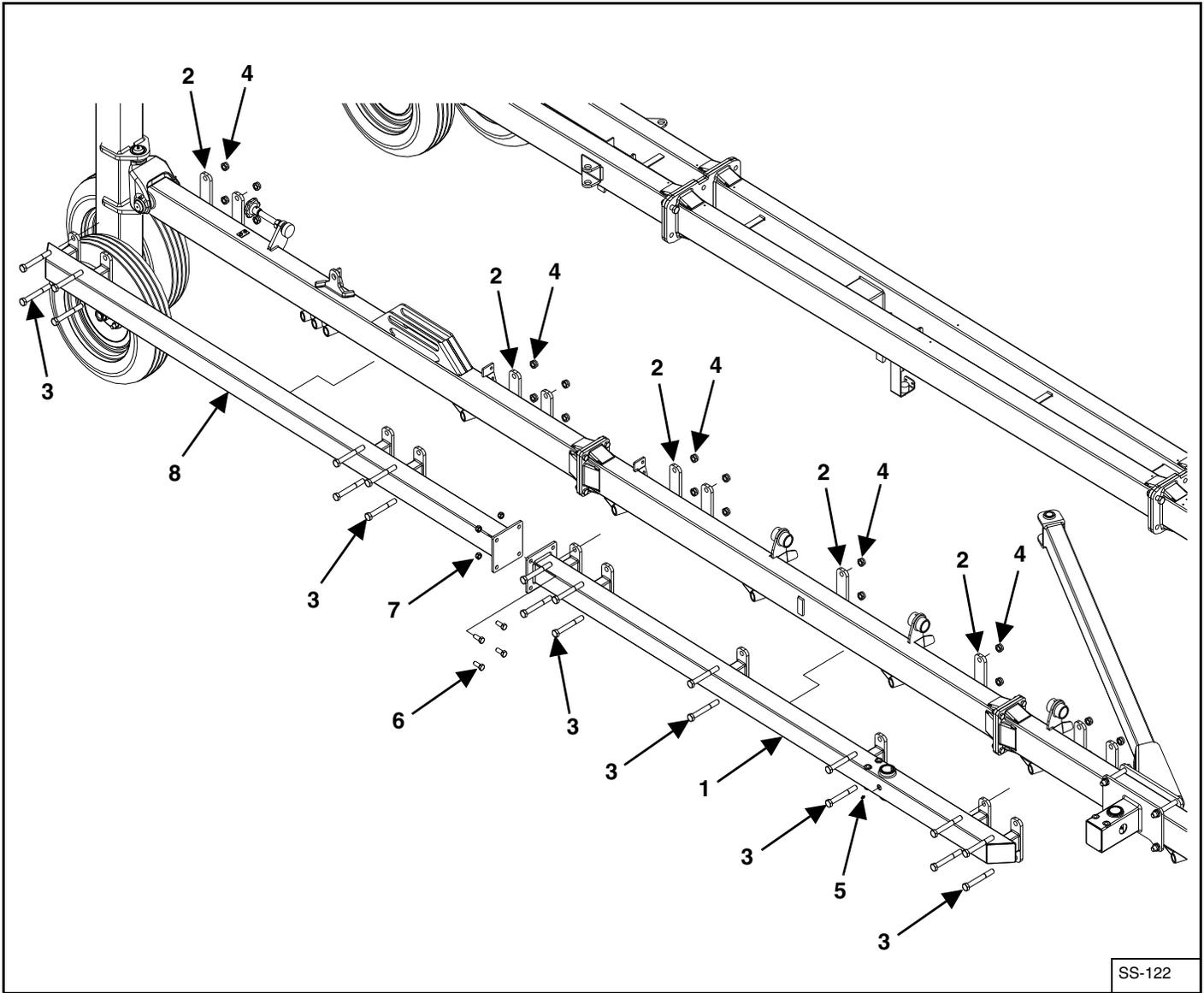
Tie Rod Kits



SS-121A

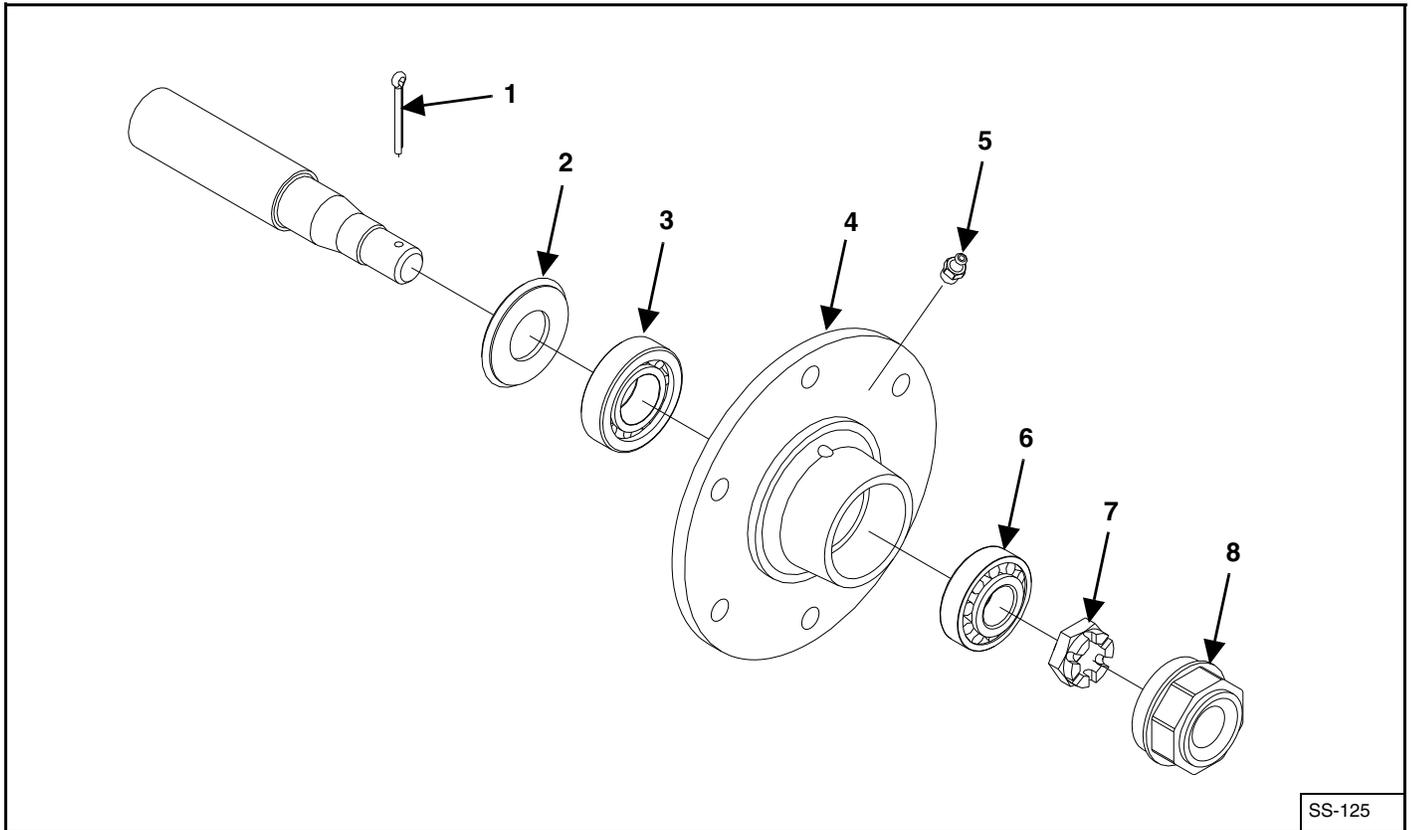
ITEM	PART NUMBER	DESCRIPTION	QTY
1	R3011718	SCREW, M20 x 75	
2	R18033091	CENTRAL RODS SUPPORT LEFT	
3	R18033092	CENTRAL RODS SUPPORT RIGHT	
4	R18033253	FRONT RODS SUPPORT LEFT	
5	R18033254	FRONT RODS SUPPORT RIGHT	
6	R18033089	CENTRAL RODS SUPPORT LEFT	
7	R18033090	CENTRAL RODS SUPPORT RIGHT	
8	R18033093	REAR FRAME RODS SUPPORT	
9	R18033087	FRONT FRAME ROD, 0.20 L=3000	
10	R18033049	REAR FRAME RODS, 0.20 L=3000	
11	R18033258	CENTRAL FRAME RODS, 0.20 L=2400	
12	R12881398	TENSIONER, M20 x 220	
13	R18033259	CENTRAL FRAME RODS, 0.20 L=1840	
13A	R14011928	CENTRAL FRAME RODS, 0.20 L=970	
14	R3011657	SCREW, M24 x 90	
15	R3030186	WASHER, M24	
16	R3020223	NUT SELF LOCKING, M24	
17	R3020336	NUT, M20	
18	R18032909	ROPE, PASS	
19	R3020329	NUT, M8	
20	R3010808	SCREW, M20 x 90	

Frame Reinforcement



ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18033084	CENTRAL FRAME REINFORCEMENT	
2	R18032658	LOCKING PLATE	
3	R3010758	SCREW, M20 x 160	
4	R3020216	SELF LOCKING NUT, M20	
5	R3090101	GREASER, M8 x 1	
6	R3011279	SCREW, M16 x 40	
7	R3020204	SELF LOCKING NUT, M16	
8	R18033086	REAR FRAME REINFORCEMENT	

Front Wheel Hub Assembly

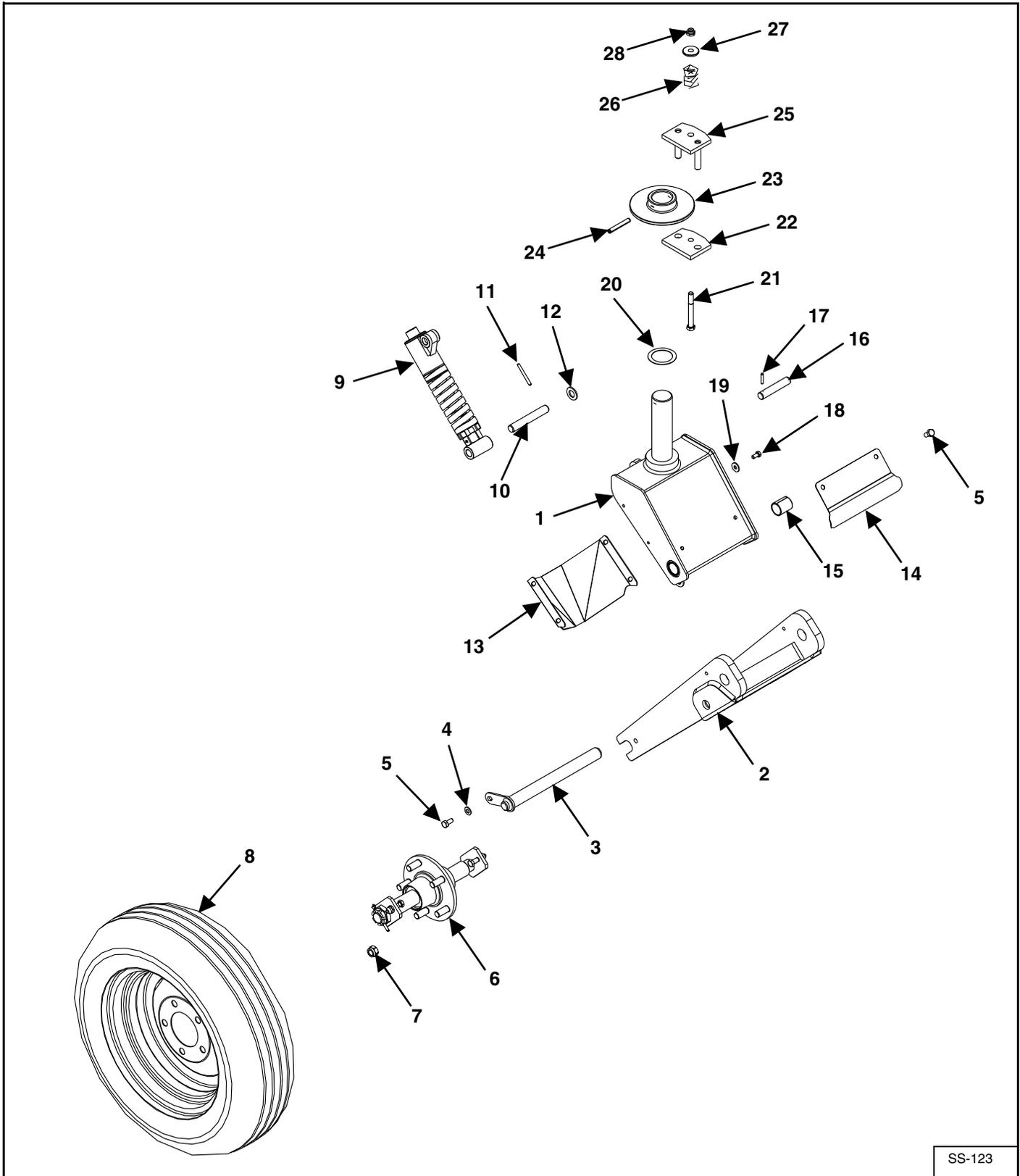


SS-125

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R3040114	SPLIT PIN	
2	R12860001	DUST COVER, 25 x 54 x 2	
3	R12240119	BEARING, 30205	
4	R12150103	HUB	
5	R3090101	GREASE ZERK	
6	R12240118	BEARING, 30204	
7	R3020210	NUT, M18 x 1.5	
8	R12360001	DUST COVER CAP	

ITEM	PART NUMBER	DESCRIPTION	QTY
1			
2	R10011343	DUST COVER, 40 x 80 x 1	
3	R12240244	BEARING, 30208	
4			
5			
6	R12240144	BEARING, 30206	
7	R3020260	NUT, M27 x 1.5	
8	R12360004	DUST COVER CAP	

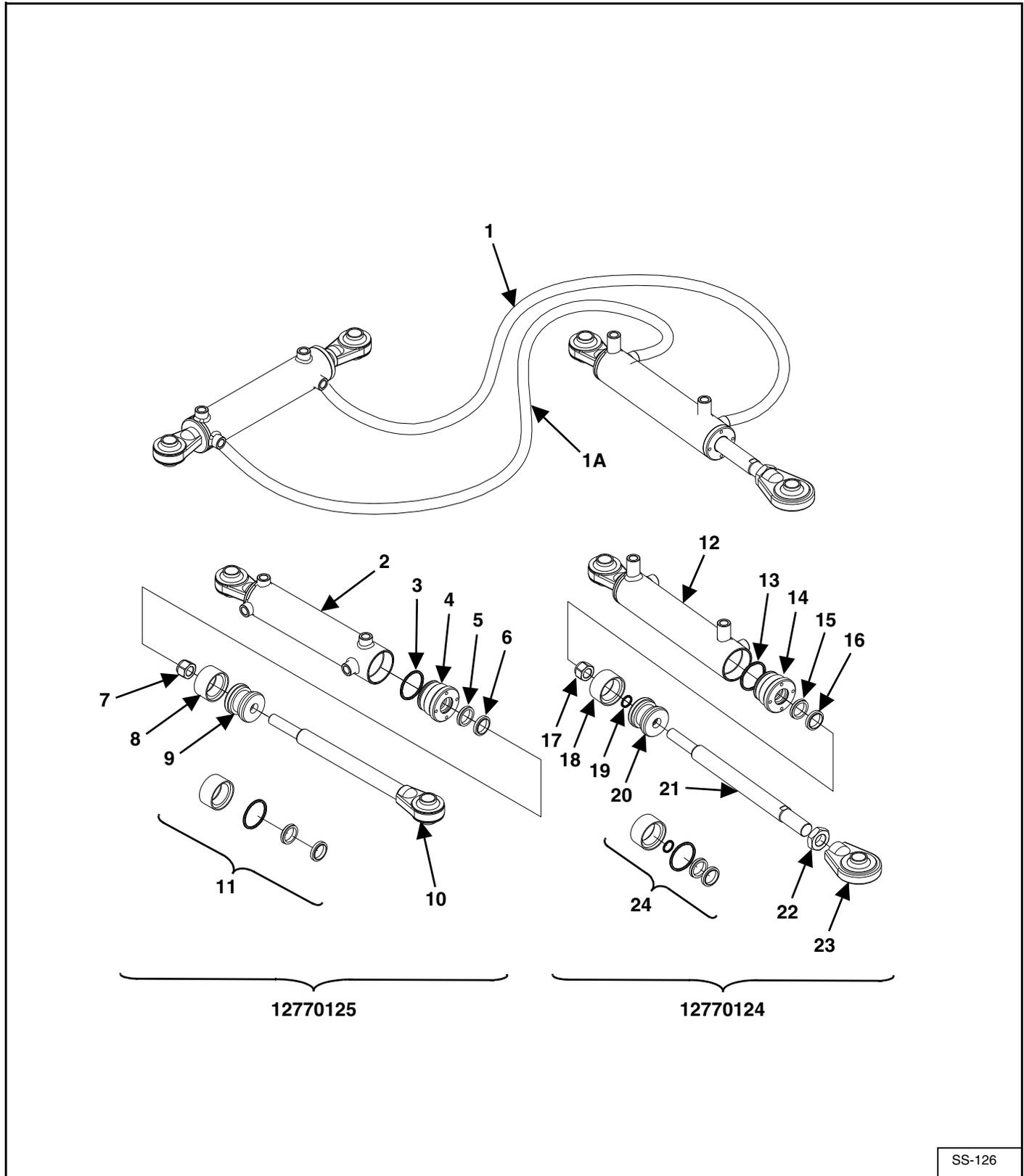
Front Wheel And Brake Assembly (Optional)



SS-123

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032970	SUPPORT FORK	
2	R18032938	FORK	
3	R18032973	PIN	
4	R3030159	WASHER, M10	
5	R3011256	SCREW, M10 x 20 T.E.	
6	R2050113	HUB	
7	R3020204	LOCKING NUT, M16	
8	R12170108	WHEEL	
9	R18032919	CYLINDER	
10	R12061000	PIN	
11	R3080104	ELASTIC PIN, 6 x 60	
12	R3030163	WASHER, M18	
13	R18033245	CARTER	
14	R18033242	CARTER	
15	R12240181	BUSHING, GLYCODUR 303440	
16	R12060944	PIN	
17	R3080109	ELASTIC PIN, 6 x 30	
18	R3011221	SCREW, T.E. M8 x 16	
19	R3030157	LARGE WASHER	
20	R12280007	AXLE WASHER	
21	R3011214	SCREW, M12 x 100 T.E.	
22	R18031128	LOWER BRAKE PAD	
23	R2050107	BRAKING DISC	
24	R3080117	ELASTIC PIN, 10 x 70	
25	R18031126	UPPER BRAKE PAD	
26	R11010602	SPRING	
27	R12880413	WASHER	
28	R3020202	LOCKING NUT, M12	

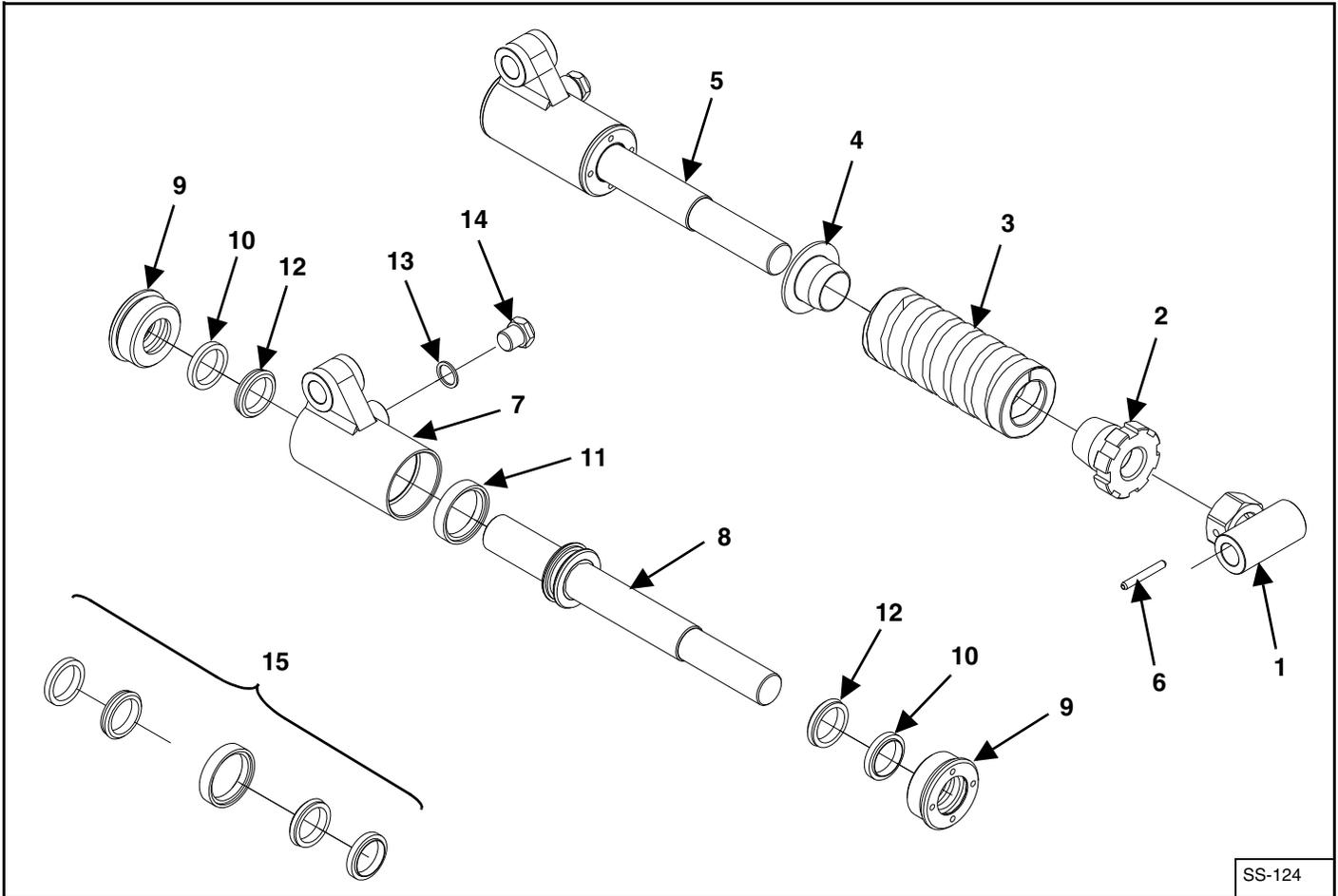
Dual Hydraulic Cylinder Assembly



SS-126

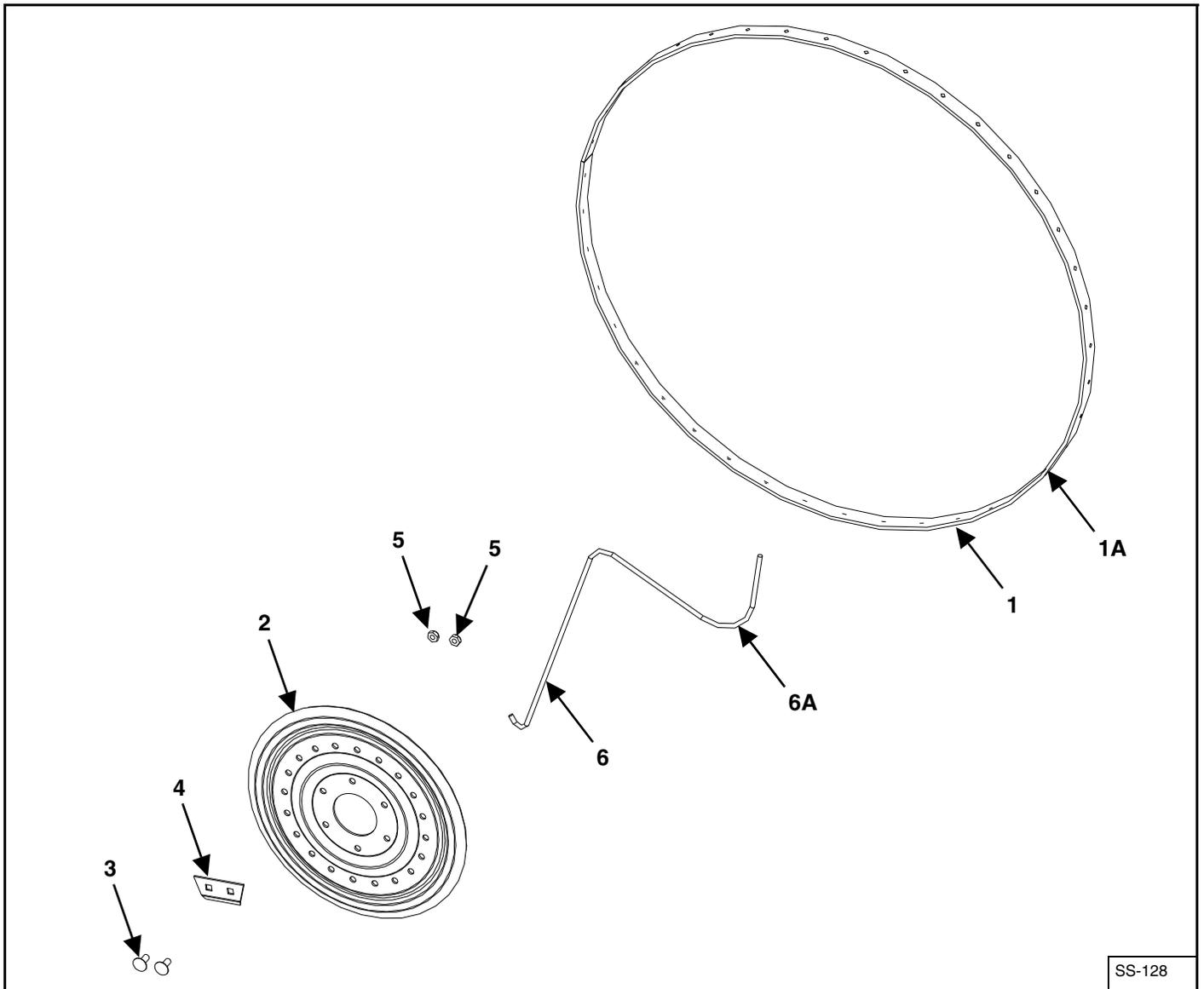
ITEM	PART NUMBER	DESCRIPTION	QTY
1	R12760309	HYDRAULIC HOSE, FOR ERS ST 20 AUTOSTEER L.12350 MM	
	R12760307	HYDRAULIC HOSE, FOR ERS ST-18 AUTOSTEER L.11500 MM	
	R12760151	HYDRAULIC HOSE, FOR ER-ST 16 AUTOSTEER L.10650 MM	
1A	R12760308	HYDRAULIC HOSE, FOR ERS ST 20 AUTOSTEER L.11700 MM	
1A	R12760306	HYDRAULIC HOSE, FOR ERS ST-18 AUTOSTEER L.10850 MM	
1A	R12760153	HYDRAULIC HOSE, FOR ER-ST 16 AUTOSTEER L.10000 MM	
2	R12770141	CYLINDER	
3		O-RING, OR616	
4	R12770220	GUIDE	
5		RETAINER	
6		SCRAPER RING	
7	R3020232	SELF LOCKING NUT, M20 x 1.5	
8		BALMASTER	
9	R12770216	PISTON	
10	R12770222	SHAFT	
11	R10010813	SEAL KIT	
12	R12770142	CYLINDER	
13		O-RING, OR616	
14	R12770220	GUIDE	
15		RETAINER	
16		SCRAPER RING	
17	R3020232	SELF LOCKING NUT, M20 x 1.5	
18		BALMASTER	
19		O-RING, OR117	
20	R12770216	PISTON	
21	R12770223	SHAFT	
22	R3020416	NUT, M27 x 2	
23	R12250026	SUPPORT	
24	R10010813	SEAL KIT	

Wheel Cylinder Assembly (Optional)



ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032930	ATTACK	
2	R12070455	BUSH	
3	R11010638	SPRING EXTRA STRONG	
4	R12070470	SHAFT	
5	R12910327	COMPLETE CYLINDER	
6	R3080120	ELASTIC PIN, 6 x 45	
7	R18032971	CYLINDER	
8	R18032972	SHAFT	
9	R12770239	GUIDE	
10	R10010620	SCRAPER RING	
11	R10010618	BALMASTER	
12	R10010643	RETAINER	
13	R3030403	COPPER WASHER, 3/8	
14	R4010811	PLUG	
15	R18033596	SEAL KIT	

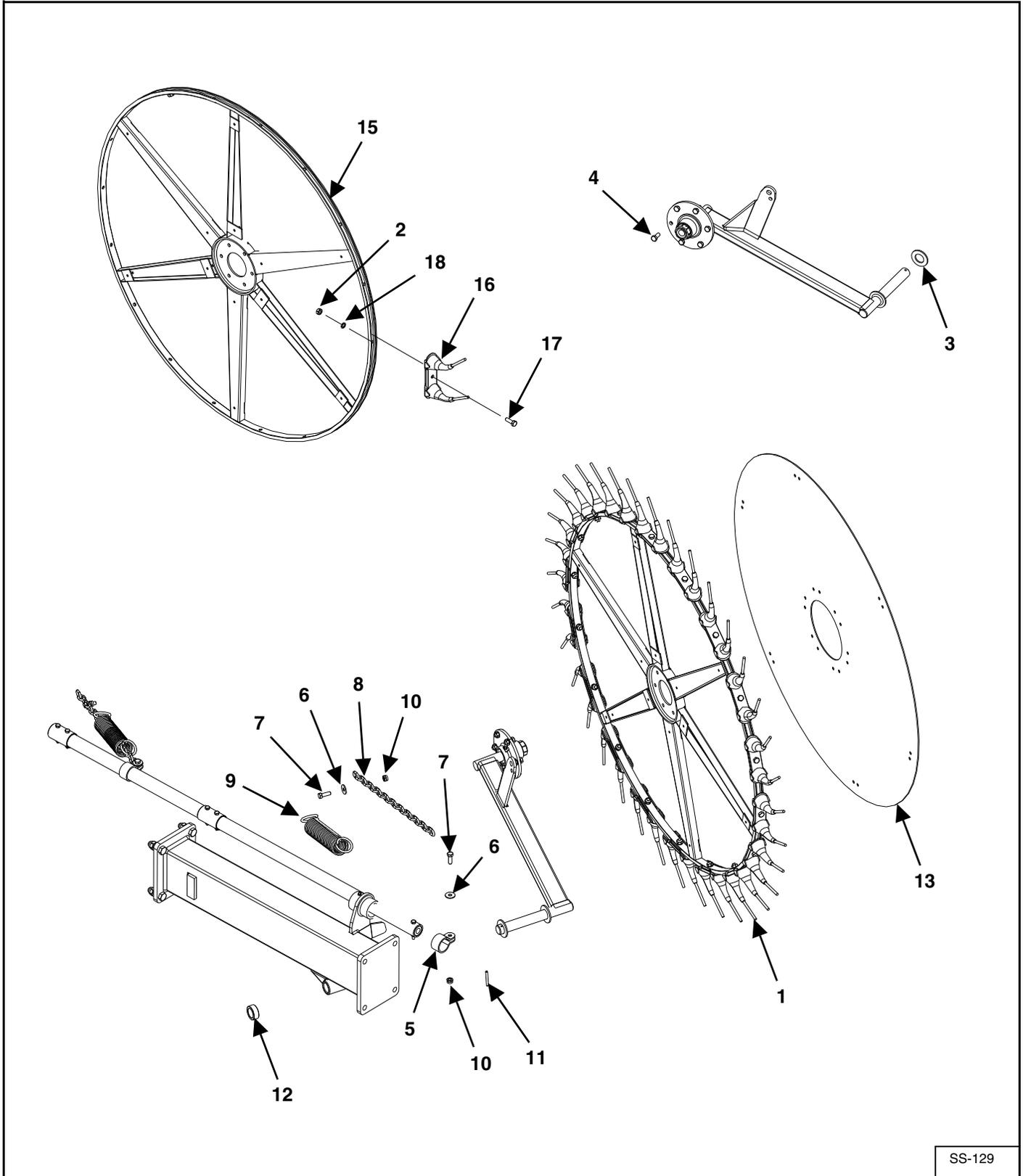
Rake Wheel Assembly



SS-128

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18033202	EXTERNAL RAKING WHEEL RING, 7.5	
1A	R18031113	EXTERNAL RAKING WHEEL RING, 6.9	
2	R12160101	RACKING WHEEL FLANGE	
3	R3010124	SCREW, M10 x 25 T.T.Q.S.T	
4	R18030416	TEETH FASTENER PLATE	
5	R3020224	NUT CONELOX, M10	
6	R18031807	TOOTH, MOD. 7.5	
6A	R18030415	TOOTH, MOD. 6.9	

Star Rake Wheel Assembly (Optional)

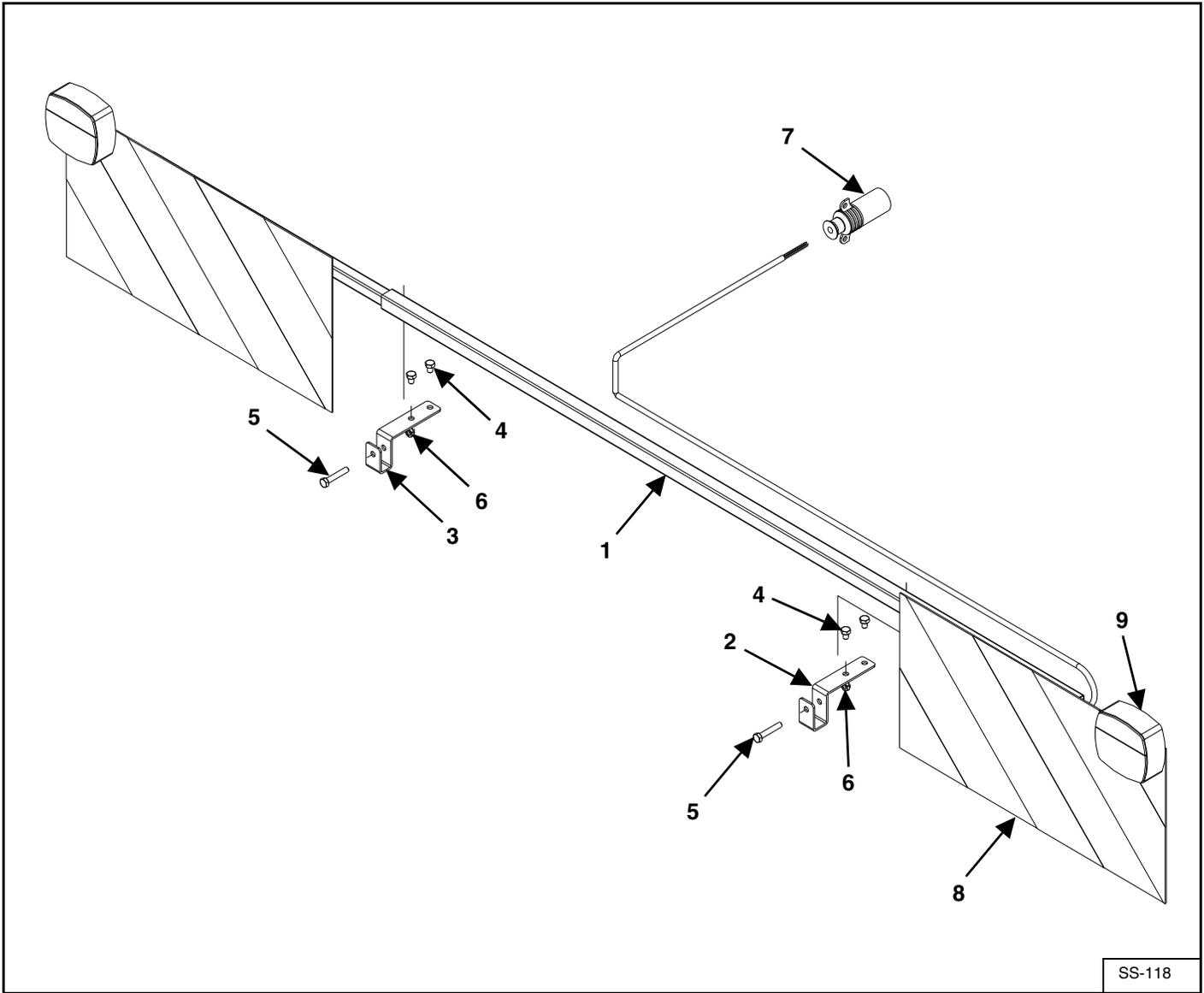


SS-129

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18031816	D. WHEEL	
2	R3020328	NUT M10	
3	R3030165	WASHER, 0.56	
4	R3011211	SCREW, M10 x 25 T.E.	
5	R18032842	CLAMP	
6	R3030169	WASHER, M10	
7	R3011206	SCREW, M10 x 30 T.E.	
8	R12070422	CHAIN	
9	R11010542	SPRING	
10	R3020201	NUT, M10	
11	R3080113	ELASTIC PIN, 6 x 50	
12	R18033045	SPACER	
13	R930004	WIND GUARD	
15	R18032397	WHEEL FRAME	
16	R12450304	DARF TOOTH	
17	R3011206	SCREW, M10 x 30 T.E.	
18	R3030319	WASHER, M10	

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18033313	CARTEL	
2	R3020329	NUT, M8	
3	R9270071	PANEL	
4	R18033307	LIGHT MOUNTS	
5	R3030156	WASHER, M8	
6	R3030613	WASHER, M10	
7	R3020307	NUT, M5	
8	R18033311	BRACKET	
9	R3030158	WASHER, M6	
10	R3011617	SCREW, M6 x 20 T.E.	
11	R3020213	SLEF LOCKING NUT, M6	
12	R18033334	PLATE	
13	R3160106	CRICKET	
14	R12010510	CHAIN	
15	R12881200	REFLECTOR	
16	R7270021	KIT LIGHT, ERS ST FR	
17	R12980104	COLLAR	
18	R3011251	SCREW, M8 x 20	
19	R12880579	PLATE, FR	
20	R9270072	STICKER, 3P	

Light Kit (Optional)



ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032627	COMPLETE LIGHT KIT	
2	R18031791	RIGHT BRACKET	
3	R18031790	LEFT BRACKET	
4	R3011223	SCREW, M8 x 10 T.E.	
5	R3011258	SCREW, M8 x 45 T.E.	
6	R3020209	SELF LOCKING NUT, M8	
7	R7010832	SEVEN PIN CONNECTOR, 12 V	
8	R18031013	REFLECTOR	
9	R7270019	LIGHT	

SPECIFICATIONS

SPECIFICATIONS103
 Dimensions103
 Performance103

HARDWARE TORQUE VALUES104
 Metric Chart104
 Imperial Chart105

HYDRAULIC CONNECTION SPECIFICATIONS106
 O-Ring Fitting (Straight Thread)106
 O-ring Face Seal Connection106
 Flare Fitting106
 Port Seal (O-ring Boss) Fitting106
 Tubelines And Hoses106

Farm King



SPECIFICATIONS

Dimensions

DESCRIPTION	ERS16	ERS18	ERS20
Transport Width	9.2 ft. (280 cm)	9.2 ft. (280 cm)	9.2 ft. (280 cm)
Working Width	32 ft. (970 cm)	35 ft. (1060 cm)	38 ft. (1150 cm)
Transport Length	34 ft. (1030 cm)	37 ft. (1120 cm)	40 ft. (1210 cm)

Performance

DESCRIPTION	ERS16	ERS18	ERS20
Weight	5619 lb. (2549 kg)	7198 lb. (3265 kg)	7519 lb. (3411 kg)
Tires	205 / 70R15	205 / 70R15	205 / 70R15
No. of Tires	8	12	12
Wheels W / Teeth	16	18	20
Teeth Per Wheel	40	40	40
Tine Size	0.3 in. (7.5 mm)	0.3 in. (7.5 mm)	0.3 in. (7.5 mm)
Rake Wheel	60 in. (152 cm)	60 in. (152 cm)	60 in. (152 cm)
Windrow Width	36 - 59 in. (90 - 150 cm)	36 - 59 in. (90 - 150 cm)	36 - 59 in. (90 - 150 cm)
Tractor HP	50 hp (36 kW)	50 hp (36 kW)	50 hp (36 kW)

HARDWARE TORQUE VALUES

Metric Chart

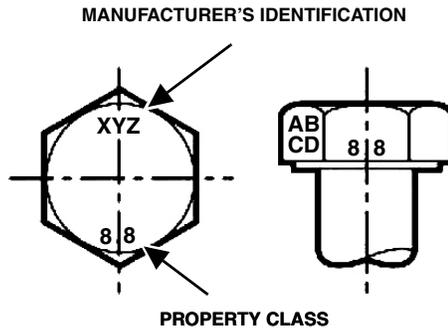
NOTE: Do not use the values listed in the charts if a different torque value or tightening procedure is specified in this manual for a specific application. Torque values listed are for general use only.

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.**

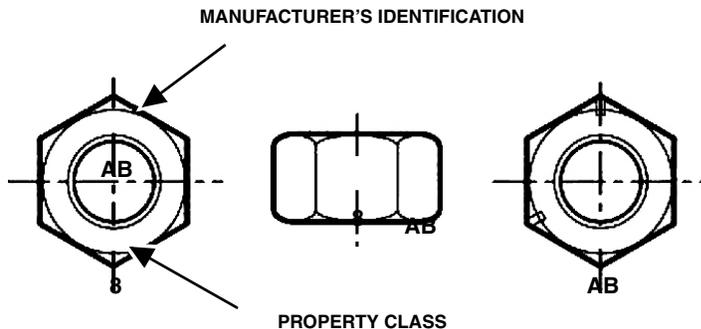
Nominal Size	Class 5.8		Class 8.8		Class 10.9		Lock nuts
	Unplated	Plated W / ZnCr	Unplated	Plated W / ZnCr	Unplated	Plated W / ZnCr	CL.8 w/ CL. 8.8 Bolt
M4	1.7 (15*)	2.2 (19*)	2.6 (23*)	3.4 (30*)	3.7 (33*)	4.8 (42*)	1.8 (16*)
M6	5.8 (51*)	7.6 (67*)	8.9 (79*)	12 (102*)	13 (115*)	17 (150*)	6.3 (56*)
M8	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

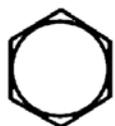
NOTE: Do not use the values listed in the charts if a different torque value or tightening procedure is specified in this manual for a specific application. Torque values listed are for general use only.

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



SAE GRADE
2 BOLTS



SAE GRADE
5 BOLTS



SAE GRADE
8 BOLTS



SAE GRADE
2 NUTS

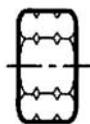


SAE GRADE
5 NUTS



SAE GRADE
8 NUTS

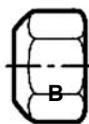
Identification of Hex Nuts and Lock Nuts



Grade A - No Notches

Grade B - One Circumferential Notch

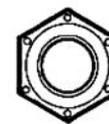
Grade C - Two Circumferential Notches



Grade A - No Mark

Grade B - Letter B

Grade C - Letter C



Grade A - No Marks

Grade B - Three Marks

Grade C - Six Marks

(Marks not always located at corners)

HYDRAULIC CONNECTION SPECIFICATIONS

O-Ring Fitting (Straight Thread)

Lubricate the O-ring before installing the fitting. Loosen the jam nut and install the fitting. Tighten the jam nut until the washer is tight against the surface.

O-ring Face Seal Connection

Figure 28

O-ring Face Seal Tightening Torque		
Tubeline O.D.	Thread Size	N•m (ft-lb)
1/4"	9/16" - 18	13 (18)
3/8"	11/16" - 16	22 (30)
1/2"	13/16" - 16	40 (54)
5/8"	1" - 14	60 (81)
3/4"	1-3/16" - 12	84 (114)
7/8"	1-3/16" - 12	98 (133)
1"	1-7/16" - 12	118 (160)
1-1/4"	1-11/16" - 12	154 (209)
1-1/2"	2" - 12	163 (221)

When the fitting is tightened, you can feel when the fitting is tight to eliminate leakage caused by under or over torqued fittings. Use petroleum jelly to hold the O-ring in position until the fittings are assembled.

Flare Fitting

Figure 29

Flare Fitting Tightening Torque		
Tubeline O.D.	Thread Size	N•m (ft-lb)
1/4"	7/16" - 20	13 (18)
5/16"	1/2" - 20	17 (23)
3/8"	9/16" - 18	22 (30)
1/2"	3/4" - 16	40 (54)
5/8"	7/8" - 14	60 (81)
3/4"	1-1/16" - 12	84 (114)
7/8"	1-3/16" - 12	98 (133)
1"	1-5/16" - 12	118 (160)
1-1/4"	1-5/8" - 12	154 (209)
1-1/2"	1-7/8" - 12	163 (221)
2"	2-1/2" - 12	252 (342)

Tighten until the nut makes contact with the seat. Use the chart [Figure 29] to find the correct tightness needed.

NOTE: If the fitting leaks, disconnect and inspect the seat area for damage.

Port Seal (O-ring Boss) Fitting

Figure 30

Port Seal And O-ring Boss Tightening Torque		
Tubeline O.D.	Thread Size	N•m (ft-lb)
1/4"	7/16" - 20	13 (18)
3/8"	9/16" - 18	22 (30)
1/2"	3/4" - 16	40 (54)
5/8"	7/8" - 14	60 (81)
3/4"	1-1/16" - 12	84 (114)
7/8"	1-3/16" - 12	98 (133)
1"	1-5/16" - 12	118 (160)
1-1/8"	1-7/16" - 12	154 (209)
1-1/4"	1-5/8" - 12	163 (221)

NOTE: Port seal and nut, washer and O-ring (O-ring Boss) fittings use the same tightening torque valve chart.

If a torque wrench cannot be used, use the following method.

Tighten the nut until it just makes metal to metal contact, you can feel the resistance.

Tighten the nut with a wrench no more than one hex flat maximum.

Do not over tighten the port seal fitting.

NOTE: If a torque wrench cannot be used, use the hex flat tightening method as an approximate guideline.

NOTE: Port seal fittings are not recommended in all applications. Use O-ring boss fittings in these applications.

Tubelines And Hoses

Replace any tubelines that are bent or flattened. They will restrict flow, which will slow hydraulic action and cause heat.

Replace hoses which show signs of wear, damage or weather cracked rubber.

Always use two wrenches when loosening and tightening hose or tubeline fittings.

WARRANTY

WARRANTY 109

Farm King



WARRANTY

Farm King

Limited Warranty

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.

Farm King

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 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.

ALPHABETICAL INDEX

BASE FRAME	46
EQUIPMENT IDENTIFICATION	10
FIRE PREVENTION	15
GENERAL ASSEMBLY INFORMATION ...	24
GENERAL INFORMATION	21
GENERAL INFORMATION	45
HARDWARE TORQUE VALUES	94
HYDRAULIC CONNECTION SPECIFICATIONS	96
INITIAL SET-UP	25
LUBRICATION	39
OWNER'S INFORMATION	9
SAFETY INSTRUCTIONS	13
SAFETY SIGN (DECAL) INSTALLATION ..	41
SAFETY SIGN-OFF FORM	18
SAFETY SIGNS (DECALS)	17
SERVICE SCHEDULE	38
SPECIFICATIONS	93
STORAGE AND RETURN TO SERVICE ...	42
TRANSPORTING	33
TROUBLESHOOTING	37
WARRANTY REGISTRATION FORM	5
WARRANTY	99
WHEEL / TEETH REPLACEMENT	40

Farm King



www.farm-king.com

Farm King

301 Mountain Street South
Morden, Manitoba Canada R6M 1X7
Toll Free: 1-888-FK-80001
E-mail: info@buhler.com
www.farm-king.com

Equipment shown is subject to change without notice.
©2016 Buhler Trading Inc. Printed in Canada TSX:BU1

bühler | a division of Buhler Industries Inc.