

Farm King

OPERATOR AND PARTS MANUAL

Wheel Rake

Bat Rake



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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 bale structure, applied 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 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.

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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 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.

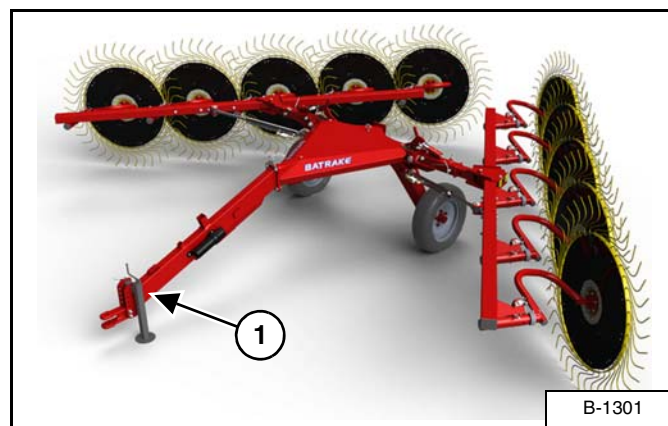
Keep this manual available for frequent reference. All new operators or owners must review the manual before using the equipment and annually thereafter. Contact your Farm King Dealer if you need assistance, information, or additional copies of the manual. Visit our website at www.farm-king.com for a 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



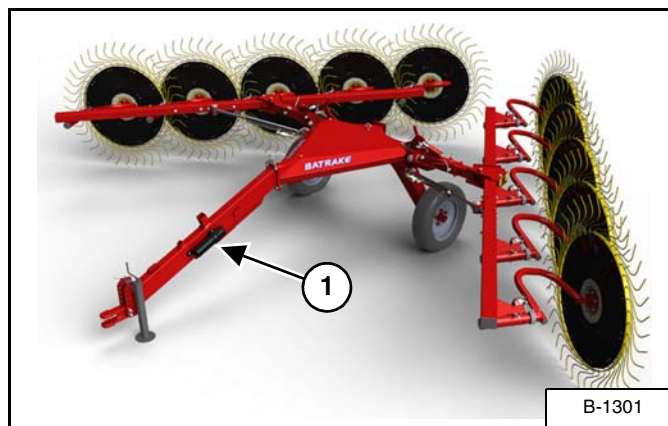
Serial Number: _____

The serial number plate (Item 1) [Figure 1] is located on the inside of the left frame forward of the jack.

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

Manual Storage

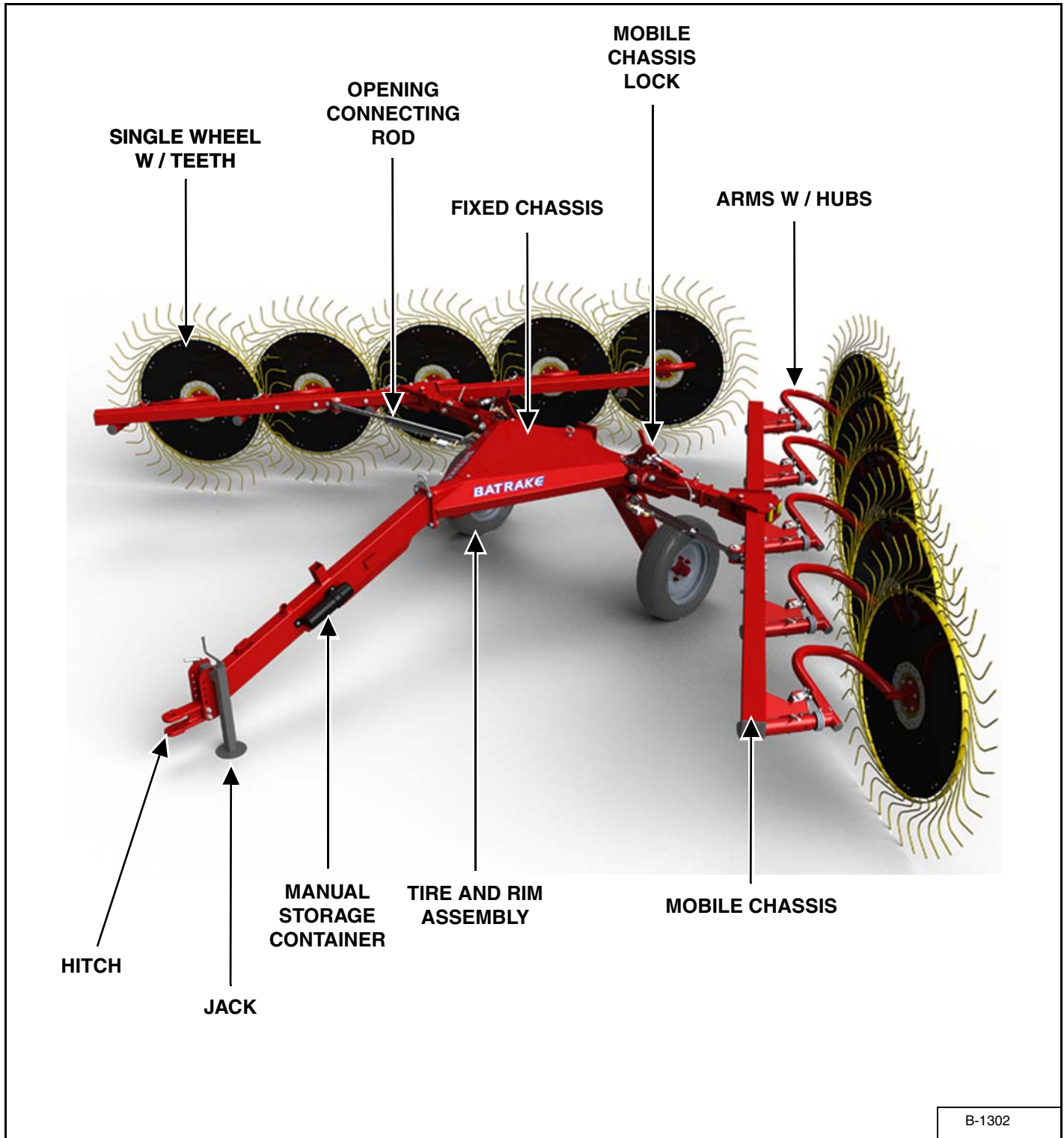
Figure 2



The Operator And Parts Manual and other documents can be stored in the canister (Item 1) [Figure 2] located on the front left side of the carrier.

EQUIPMENT IDENTIFICATION

Component Location



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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>	



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.



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.



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.



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

Safe Operation Needs A Qualified Operator



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.

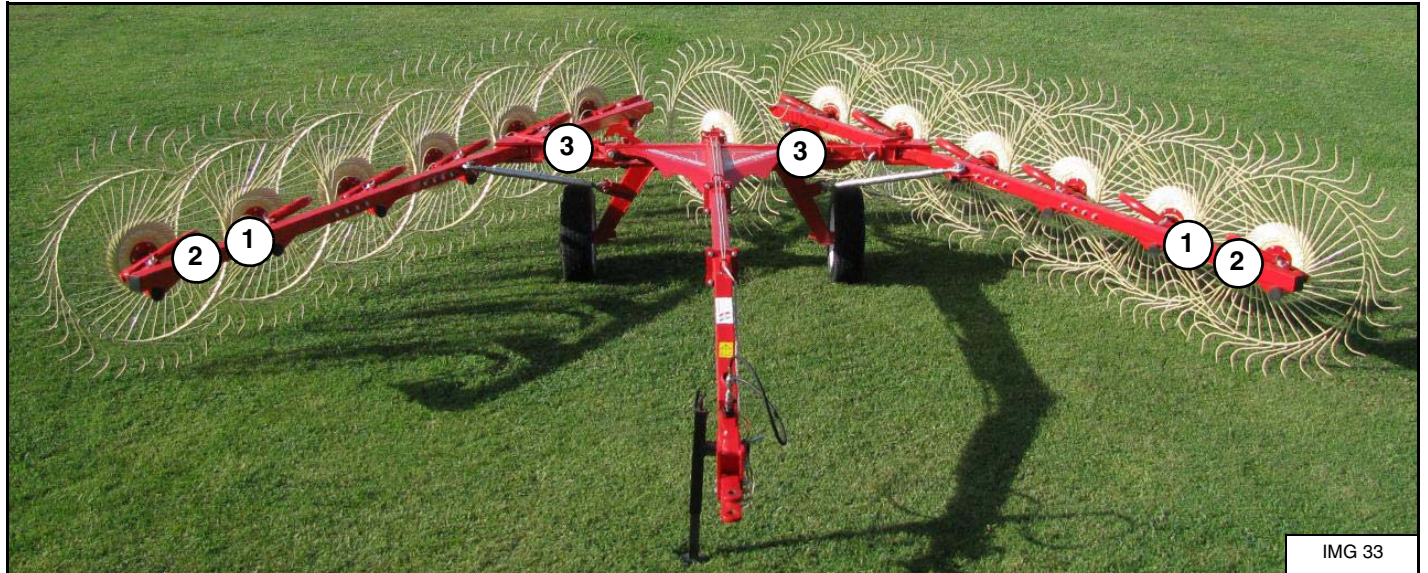
Fire Extinguishers



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.

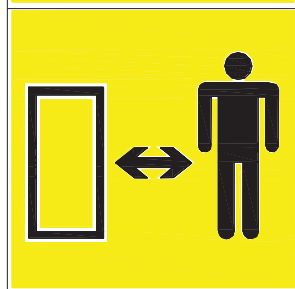
SAFETY SIGNS (DECALS)

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.



IMG 33

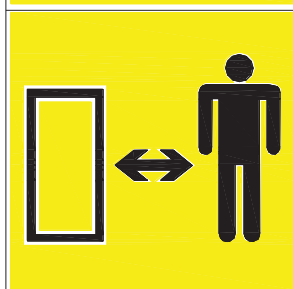
1



FLYING DEBRIS HAZARD

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

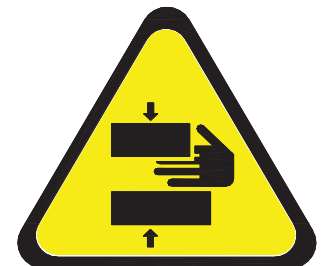
2



ROTATING HAZARD

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

3



CUTTING / CRUSHING HAZARD

Always wear protective gloves. Stay clear when tractor is running or during field operation.

SAFETY SIGN-OFF FORM



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 Wheel Rake 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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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.

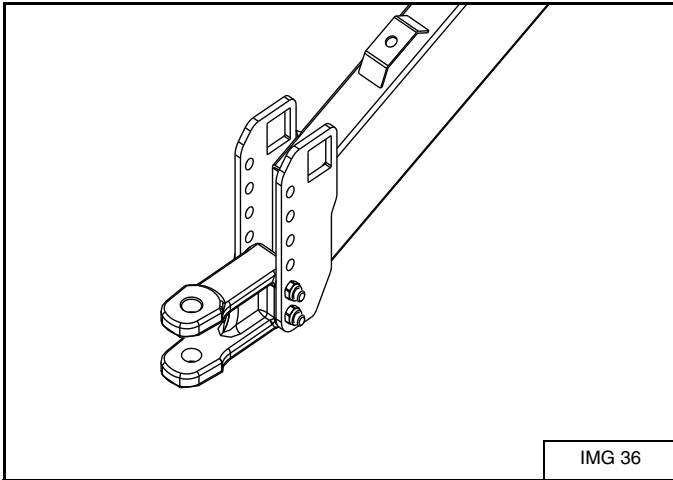
NOTE: Do not operate with hydraulic leaks.

8. Verify that the mobile chassis 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 3

2. Check the Wheel Rake hitch for damaged, loose or missing parts **[Figure 3]**. 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.



- Keep shields and all guards in place.
- Keep away from moving parts.
- Keep bystanders away.

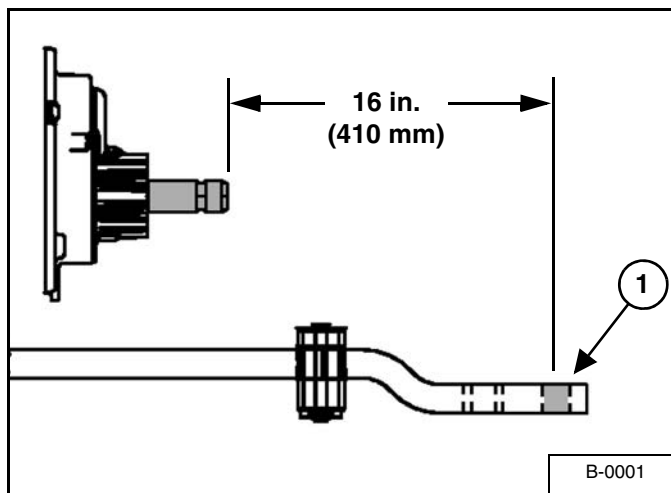
The Wheel Rake will require a tractor with minimum 80 hp (60 kw) and one pair of remote outlets.



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.

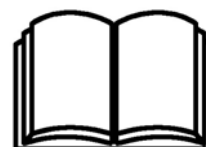
Drawbar Adjustment

Figure 4



Adjust the tractor's drawbar in / out, until the center of the hitch pin hole (Item 1) [Figure 4] 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.

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.

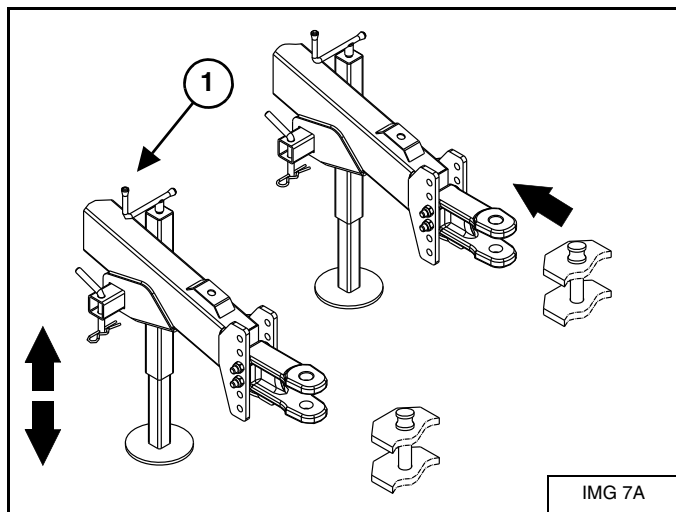
Move the tractor backwards, aligning the drawbar with the Wheel Rake hitch.

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 24.)

Figure 5



Turn the handle (Item 1) [Figure 5] 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.

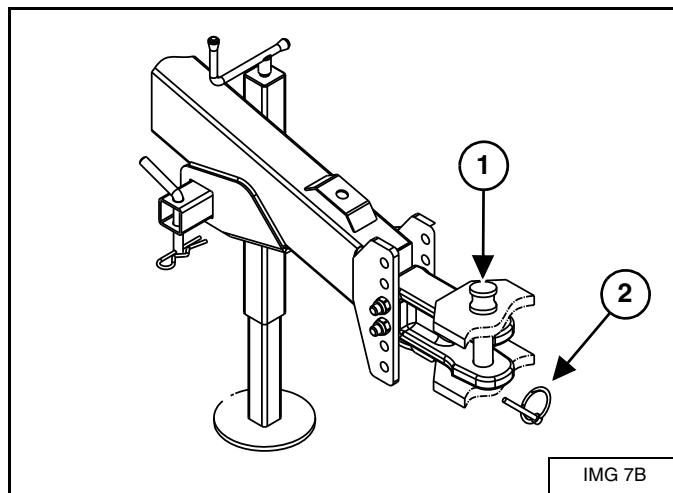


AVOID INJURY OR DEATH

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.

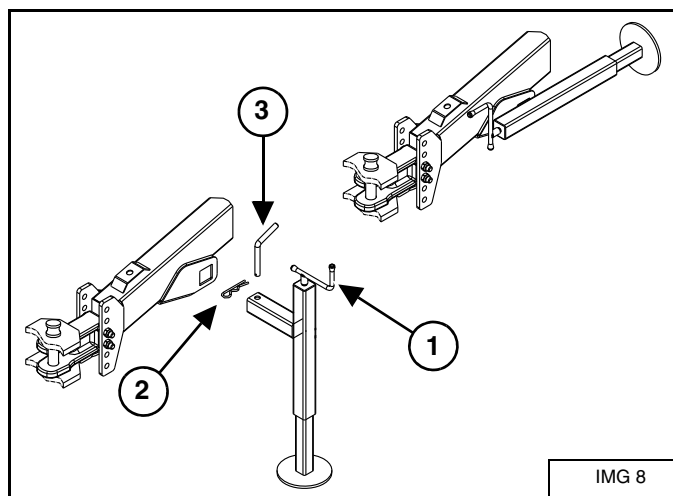
Figure 6



Install the hitch pin (Item 1) and retaining pin (Item 2) [Figure 6] to securely fasten the Wheel Rake hitch to the tractor drawbar.

Attach the safety chain (if equipped).

Figure 7



Turn the handle (Item 1) [Figure 7] 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.

Rotate jack 1/4 turn, install jack through the hitch mounting brackets. 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.

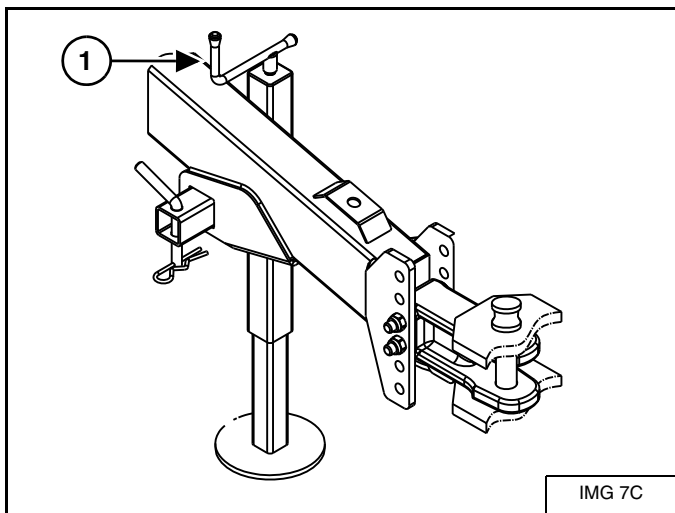
! WARNING

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 8

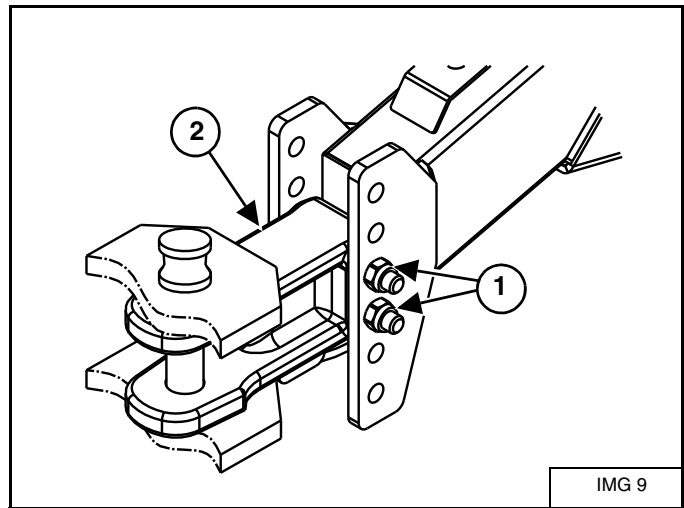


With the Wheel Rake attached to the tractor, lower the jack from the transport position. Using the handle (Item 1) [Figure 8] on the jack, raise the jack until the weight of the Wheel Rake is on the jack. This will allow the clevis mounting bolts to be loosened and moved for leveling (if required).

! 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 9



Remove the two clevis mounting bolts (Item 1) [Figure 9] 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 9] 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.

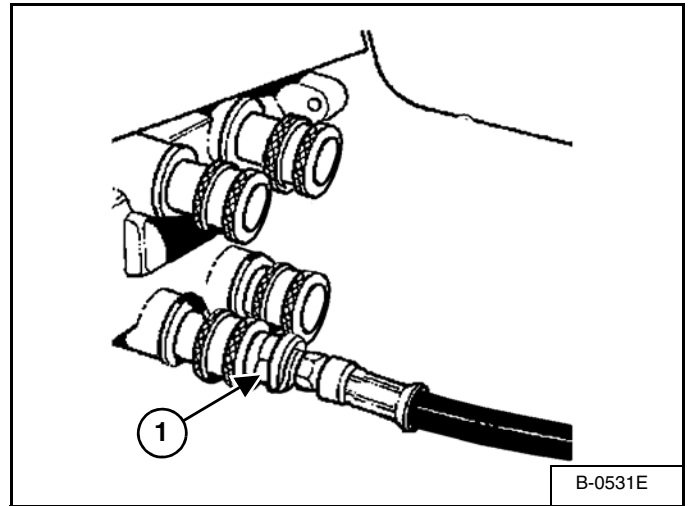


- Contain and dispose of any oil leakage in an environmentally safe manner.
- Thoroughly clean the quick couplers before making connections. Dirt can quickly damage the system.

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 10



Connect the two hydraulic lines to the tractor [Figure 10].

1. Supply Line.

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.

Operating Setup



Before operating the equipment:

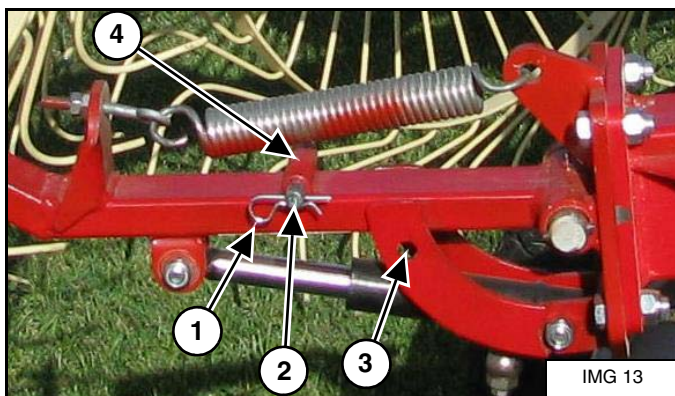
- Clear the work area of all bystanders, especially small children and animals.
- Clear the work area of all obstacles.
- Keep shields and all guards in place.
- Keep away from moving parts.

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.

Kicker Wheel

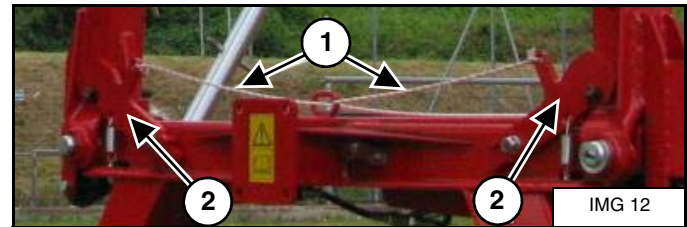
Figure 11



Remove retaining pin (Item 1) and pin (Item 2) from the transport mounting hole (Item 3) [Figure 11].

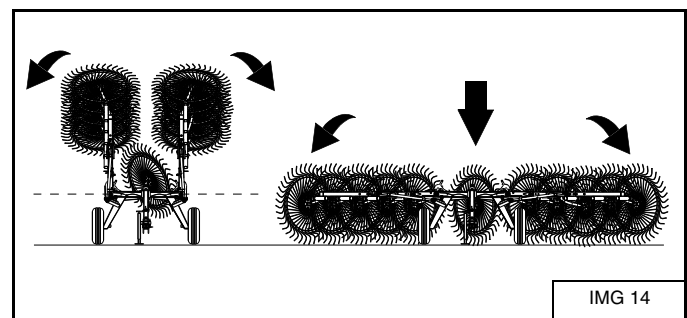
Lower the kicker wheel and reinstall pin and retaining pin in the mount (Item 4) [Figure 11] on top of the frame.

Figure 12



Pull the two cables (Item 1) at the same time to unlock the two mobile chassiss locks (Item 2) [Figure 12].

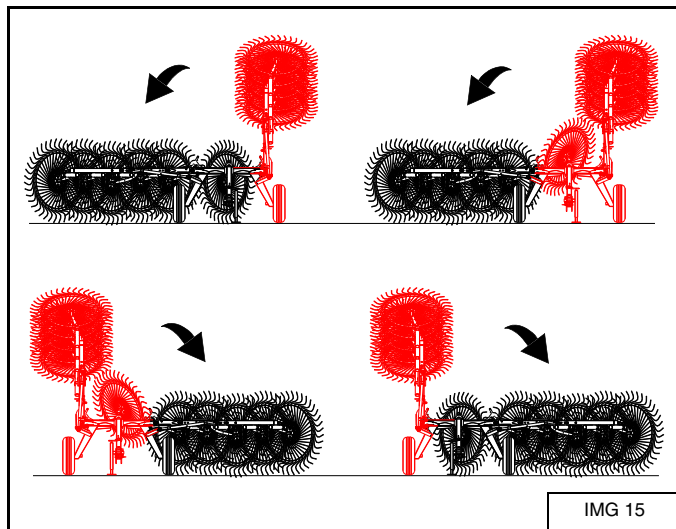
Figure 13



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

Engage the tractor's auxiliary hydraulics. Using the tractor's auxiliary control, lower the mobile chassis' until the wheel teeth contact the ground. Then lower the kicker wheel.

Figure 14



NOTE: If necessary, it is possible to lower just one of the two mobile chassis' [Figure 14]. In the same way, if the kicker wheel is present on the rake, the operator will can decide to work with or without it. To do so, it will be enough to remove its locking device (as described at the point a) or to leave the equipment in the transport configuration.

Pull the cable of the mobile chassis lock of the mobile chassis that the operator intends to lower.

NOTE: Kicker wheel (if equipped) can be used or not used. Remove kicker wheel locking device or leave in the transport position.

Swathing



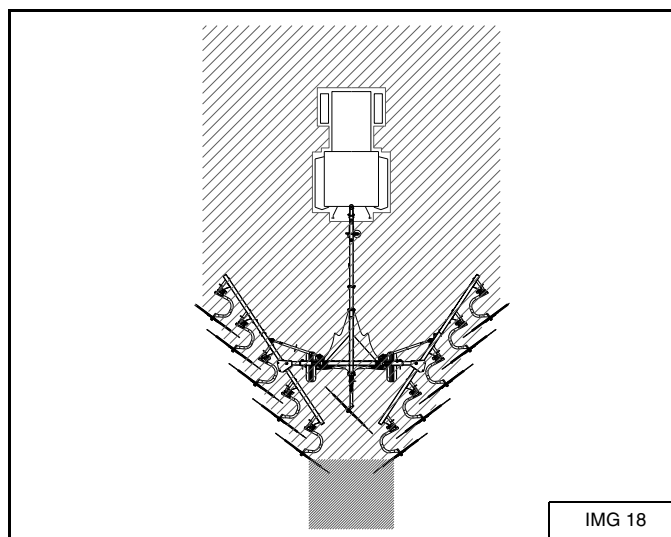
Before operating the equipment:

- 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 15



Drive tractor as straight forward as possible.

Changing Direction - A short distance before the end of the work area, raise the mobile chassis', and the kicker wheel (if equipped) [Figure 15] before changing direction.



DANGER

MOBILE CHASSIS LOCK DAMAGE

To prevent damage one or both mobile chassis locking devices, **DO NOT** exceed 2610 psi (180 bar) operating hydraulic pressure.

After changing direction, lower the mobile chassis' and kicker wheel (if equipped). Continue the working process.

When finished with work area, move the Wheel Rake to a flat level surface of the work area.

Leave the operator's position. (See "Leaving The Operator's Position" on page 24.)

Adjusting Swathing Width



WARNING



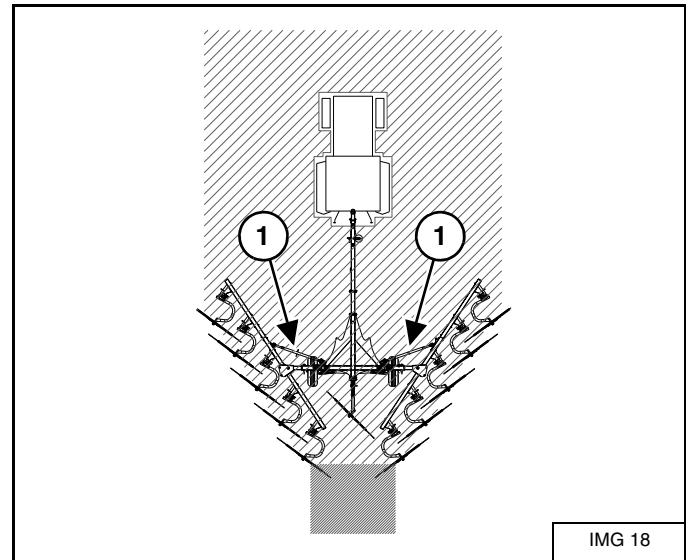
Before operating the equipment:

- 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.)

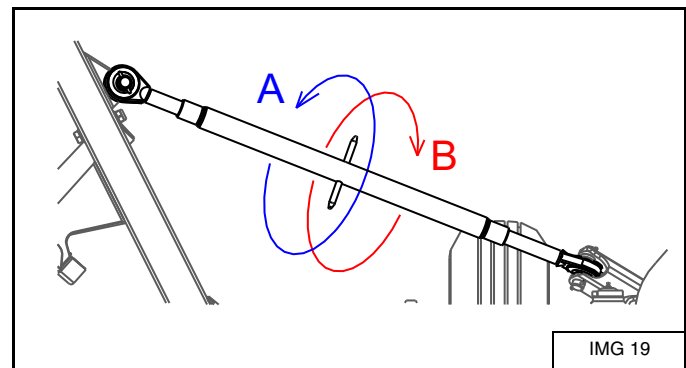
Move the tractor and Wheel Rake to flat level surface of the work area.

Figure 16



Adjust the two opening connecting rods (Item 1) [Figure 16] to increase or decrease working and windrow width.

Figure 17



Decreasing Working And Windrow Width

Rotating connecting rod [Figure 16] clockwise (A) to decrease working and windrow width.

Increasing Working And Windrow Width

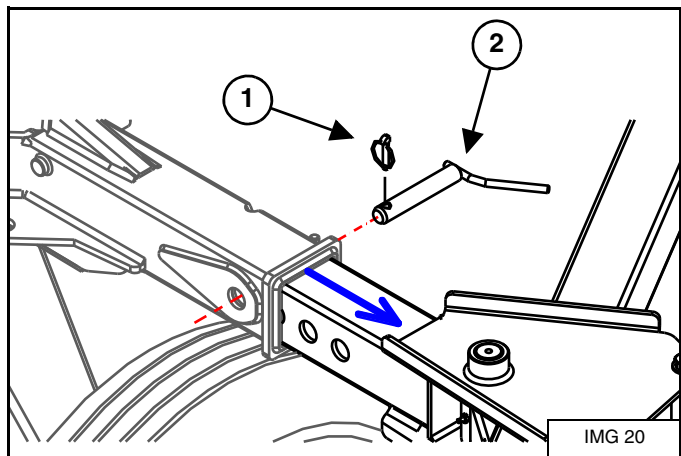
Rotating connecting rod [Figure 16] counterclockwise (B) to increase working and windrow width.

Adjusting Mobile Chassis

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 18



Remove the retaining pin (Item 1) and pin (Item 2) [Figure 18]. Move the mobile chassis, in or out to the desired location.

Reinstall pin and retaining pin to secure the mobile chassis in position.

Adjusting Mobile Chassis Ground Pressure

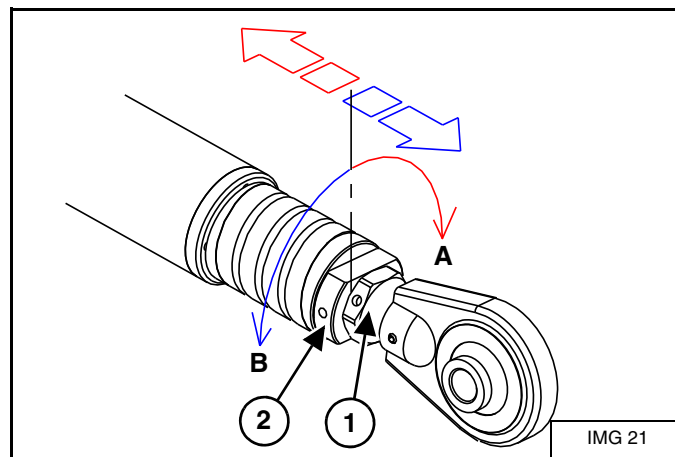


Adjusting wheel ground pressure is necessary to keep mobile chassis' parallel to the ground.

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



Loosen jam nut (Item 1) [Figure 19].

Decreasing Wheel Down Pressure

Turn nut (Item 2) [Figure 19] clockwise (A) to compress the spring, decreasing wheel ground pressure.

Tighten jam nut (Item 1) [Figure 19].

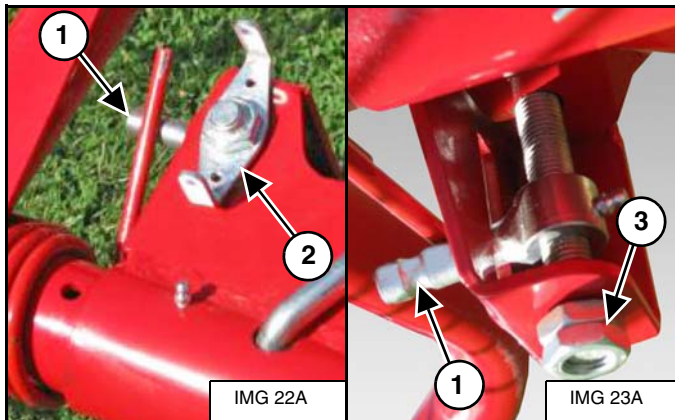
Increasing Wheel Down Pressure

Turn nut (Item 2) [Figure 19] counterclockwise (B) to release the spring, increasing wheel ground pressure.

Tighten jam nut (Item 1) [Figure 19].

Adjusting Single Wheel W/Teeth Ground Pressure

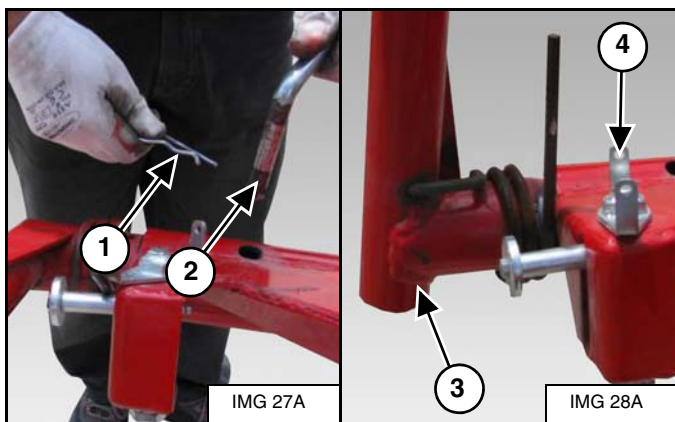
Figure 20



Each single wheel w / teeth is equipped with a spring stop (Item 1) and adjustment handle (Item 2) [Figure 20].

Loosen jam nut (Item 3) [Figure 20].

Figure 21



Remove retaining pin (Item 1) and pin (Item 2) [Figure 21].

Rotate the arm (left / right) (Item 3) [Figure 21] up to remove spring tension.

Decreasing Single Wheel Ground Pressure

Turn adjustment handle clockwise, raising the spring stop to the desired height, decreasing single wheel ground pressure.

Increasing Single Wheel Ground Pressure

Turn adjustment handle counterclockwise, raising the spring stop to the desired height and increasing single wheel ground pressure.

Rotate arm (left or right) (Item 3) [Figure 21] down, align hole of arm and hole in the mobile chassis arm mount.

Reinstall pin (Item 2) and retaining pin (Item 1) [Figure 21].

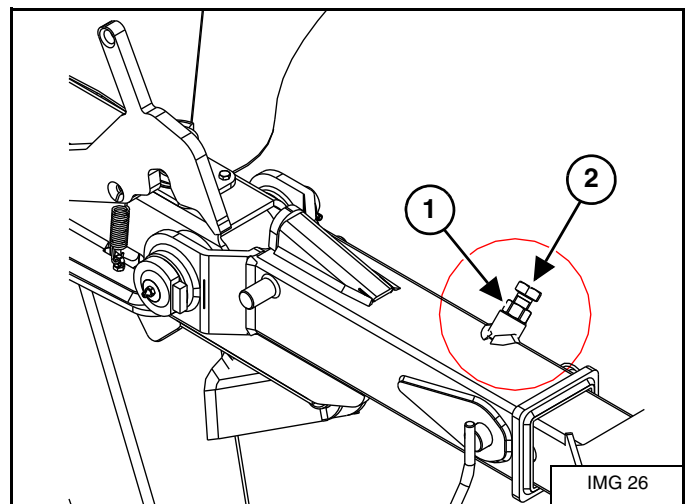
Tighten jam nut (Item 3) [Figure 20].

Locking Mobile Chassis



Mobile chassis must be locked during operation.

Figure 22



Loosen jam nut (Item 1) and tighten bolt (Item 2) [Figure 21] against the mobile chassis mounting tube. Tighten jam nut.

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.

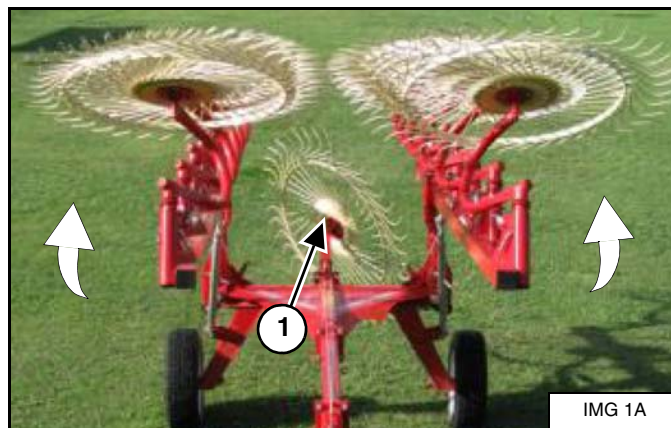
Verify that the tractor / tow vehicle is approved for transporting the equipment and that the equipment is securely attached to the tractor / tow vehicle.

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

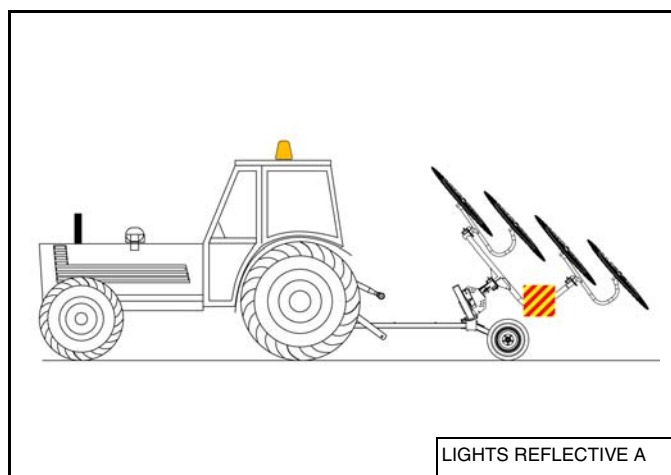
Figure 23



Fully raise mobile chassis' [Figure 23]. Lock in transport position.

Fully raise center wheel (Item 1) [Figure 23] (if equipped). Lock in transport position.

Figure 24



Transporting wheel rake [Figure 23].

Farm King



MAINTENANCE

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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.

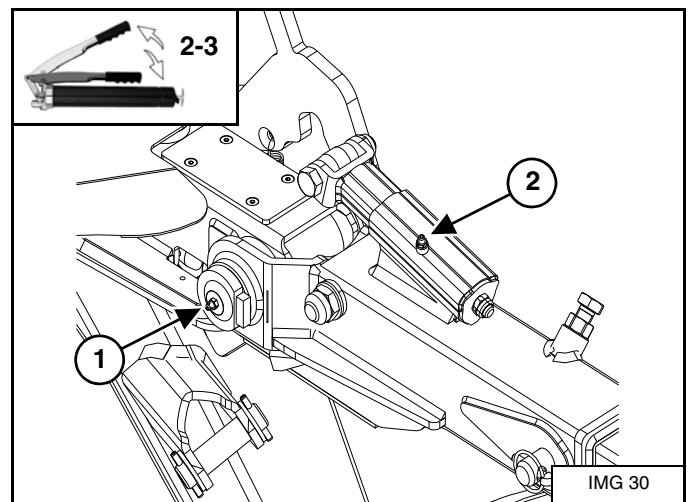
Locations



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 25



Apply two - three pumps of grease to all locations of the pivot pins (Item 1) and mobile chassis spring tension assembly (Item 2) [Figure 25].

WHEEL / TEETH REPLACEMENT

Wheel Removal And Installation

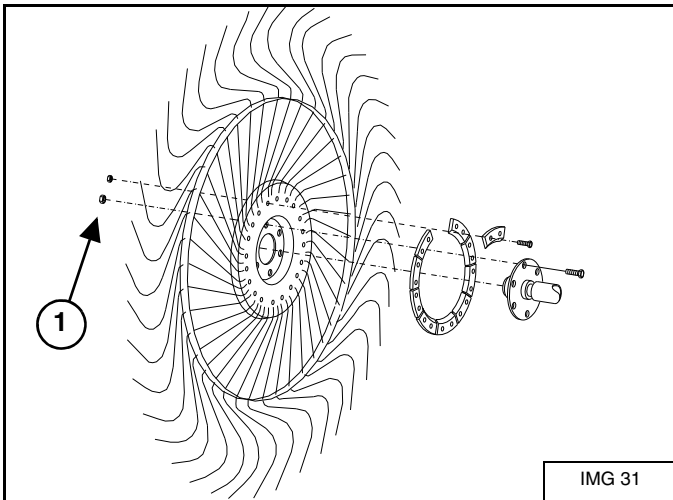


AVOID INJURY OR DEATH

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

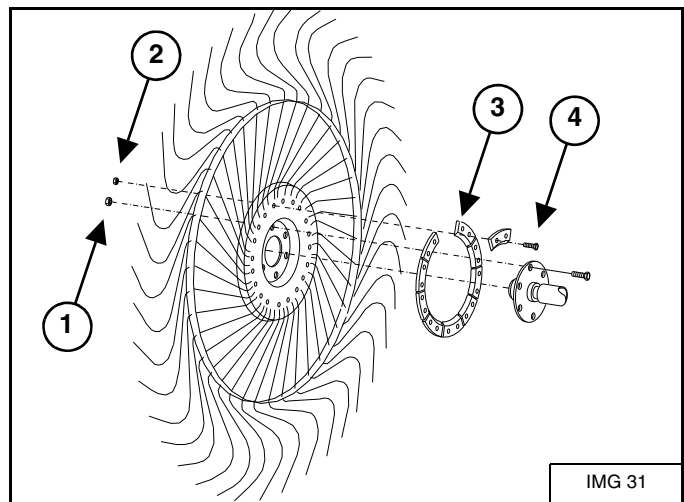


AVOID INJURY OR DEATH

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.

 **IMPORTANT**

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

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Farm King

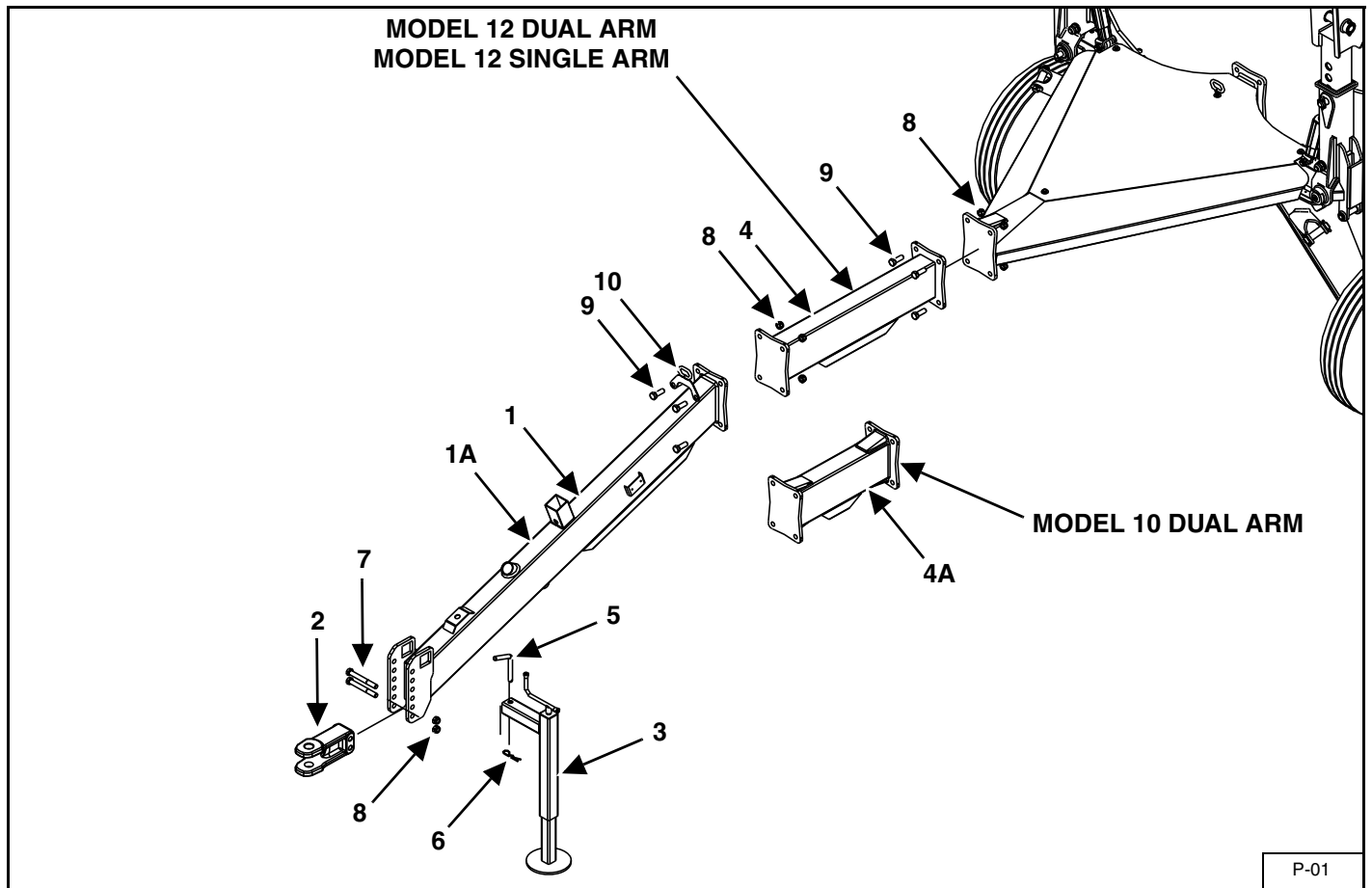


GENERAL INFORMATION

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

BASE FRAME

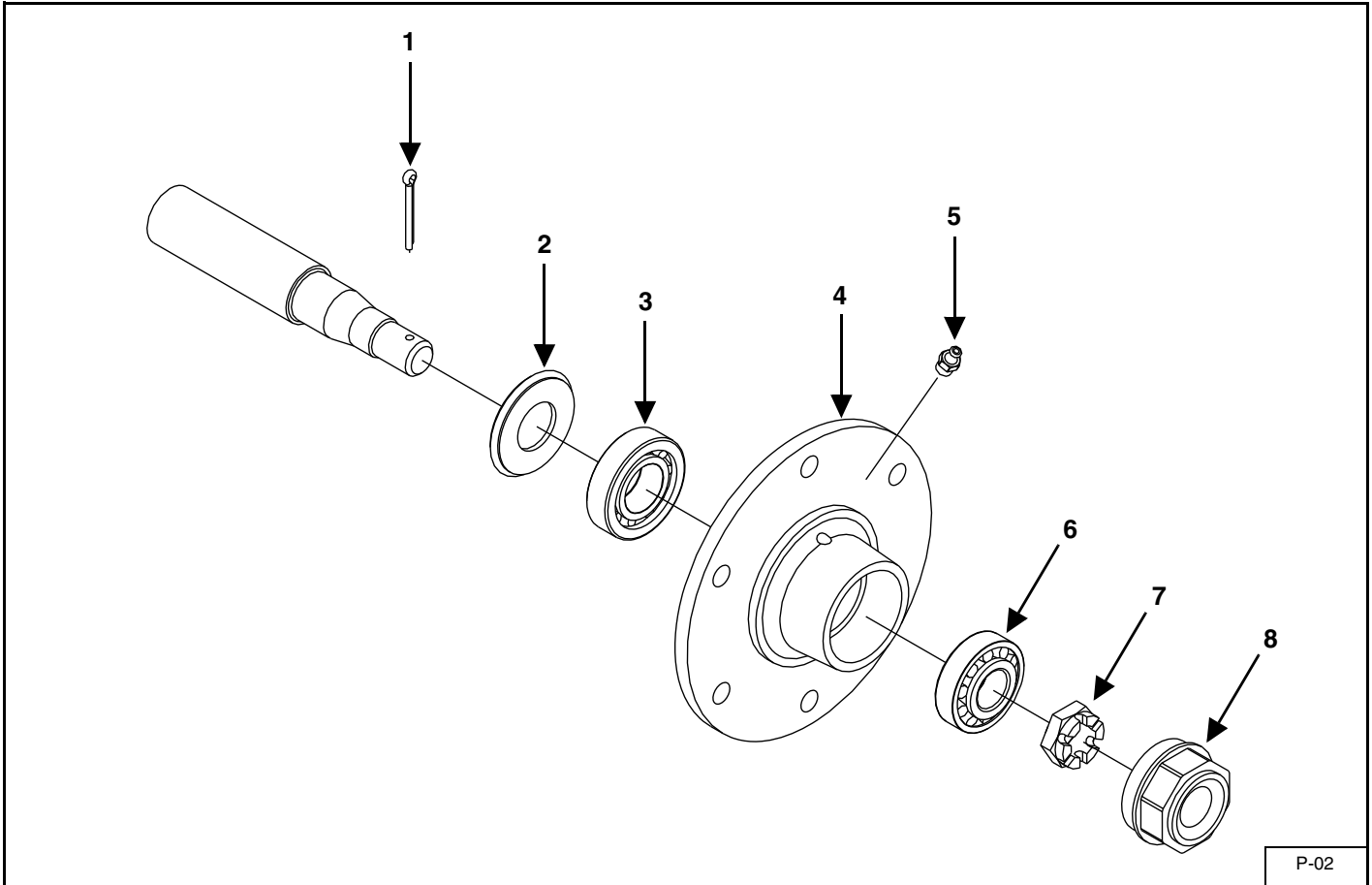
Hitch Assembly



P-01

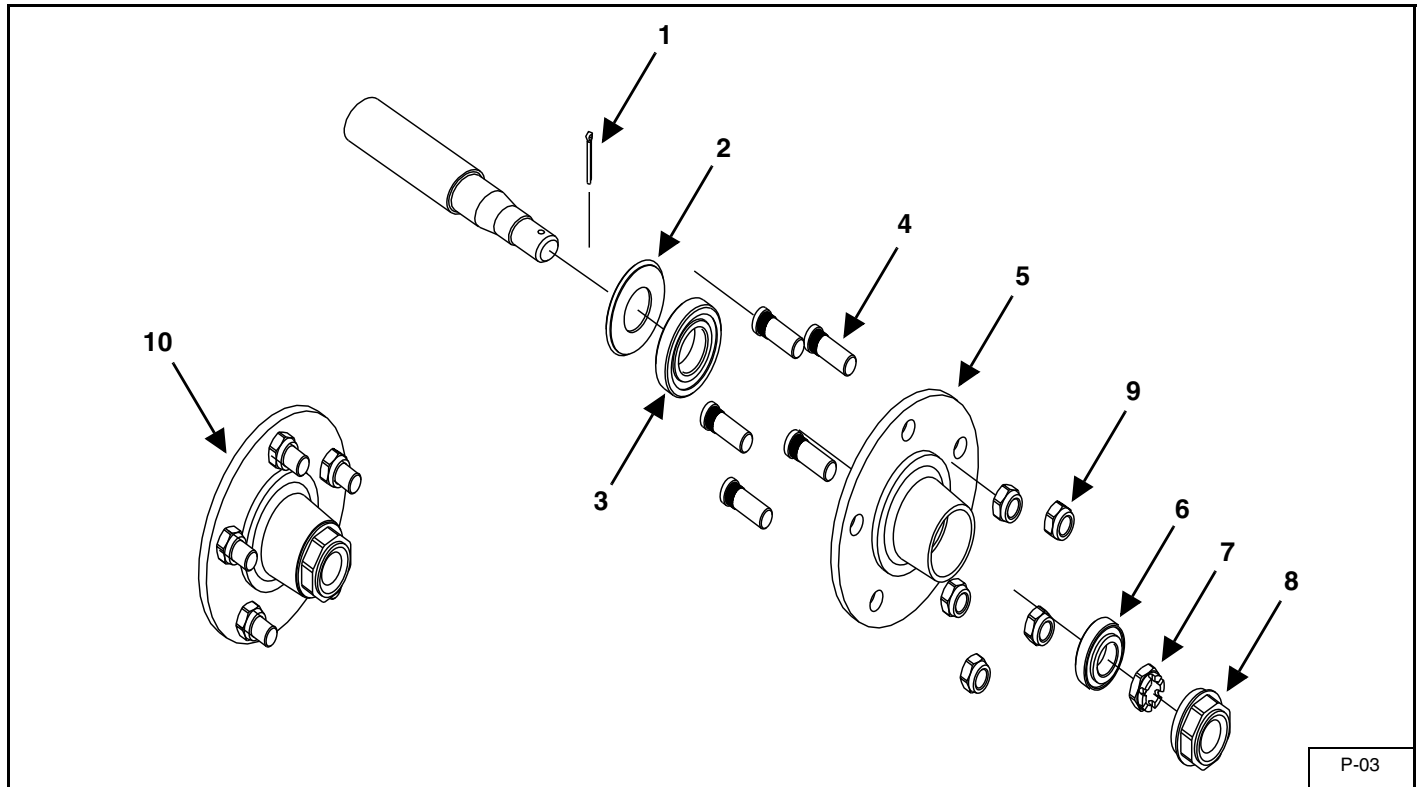
ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032896	PULL BAR, BR 8	
1A	R18032897	PULL BAR, BR 10-12	
2	R18032015	PULL LINKAGE ATTACHMENT	
3	R18032039	STAND	
4	R18032899	PULL BAR EXTENSION, L 0.800 BR-12	
4A	R18032898	PULL BAR EXTENSION, L.500 BR-10 ONLY DA	
5	R18033195	PIN	
6	R3040202	SPLIT PIN	
7	R3011295	SCREW TE M16X130	
8	R3020204	SELF LOCKING NUT M16	
9	R3011645	SCREW TE M16X45	
10	R18032170	ROPE PASSES	

Hub Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY
1	R3040114	SPLIT PIN	
2	R12860001	DUST COVER, 25 x 54 x 2	
	R10011343	DUST COVER, 40 x 80 x 1	
3	R12240119	BEARING, 30205	
	R12240244	BEARING, 30208	
4	R12150103	HUB	
5	R3090101	GREASE ZERK	
6	R12240118	BEARING, 30204	
	R12240144	BEARING, 30206	
7	R3020210	NUT, M18 x 1.5"	
	R3020260	NUT, M27 x 1.5"	
8	R12360001	DUST COVER CAP	
	R12360004	DUST COVER CAP	

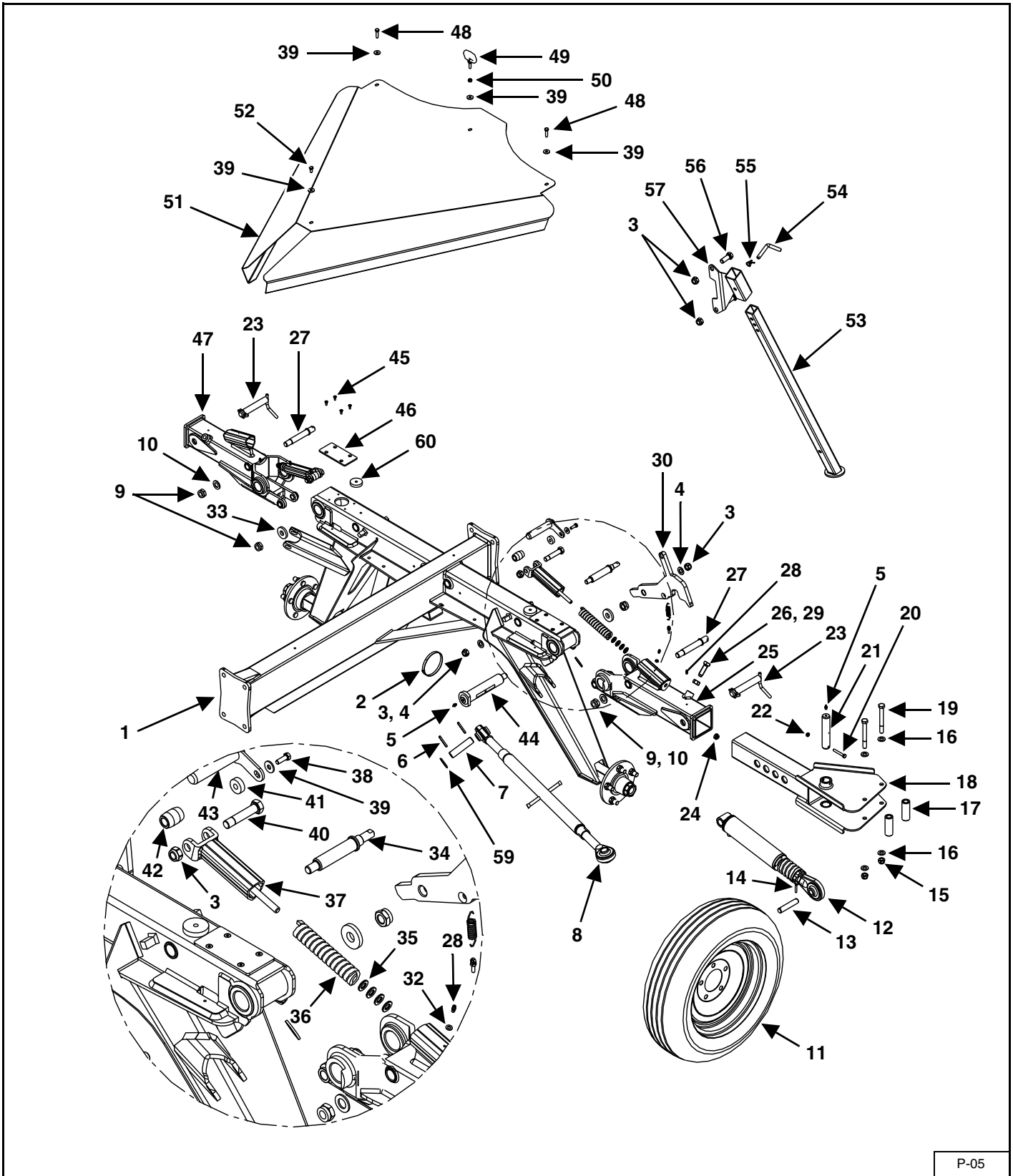
TVZ Hub Assembly



P-03

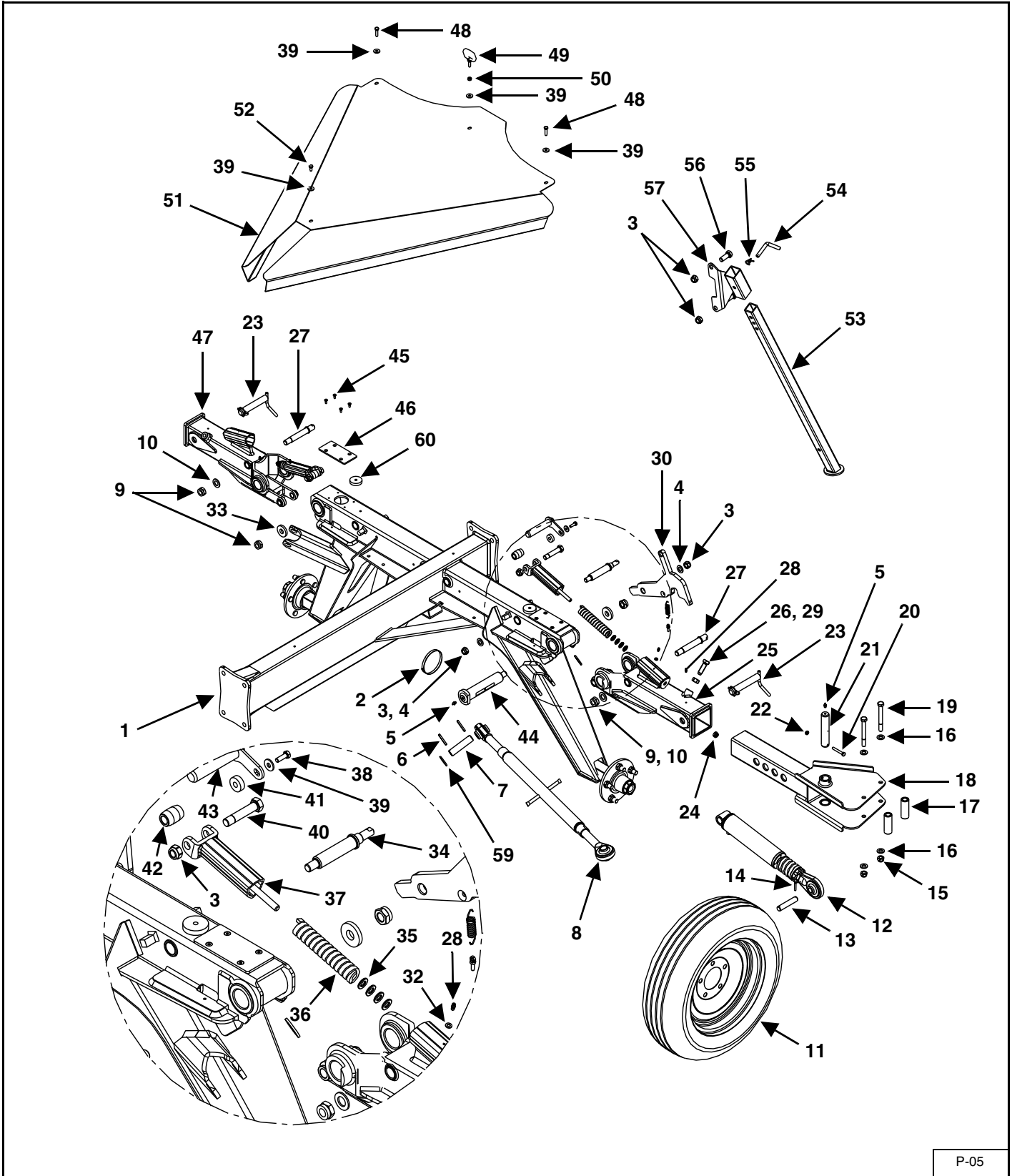
ITEM	PART NUMBER	DESCRIPTION	QTY
1	R3040114	SPLIT PIN	
2	R12860001	DUST COVER, 37 x 72 x 1.5	
	R10011343	DUST COVER, 40 x 80 x 1	
3	R12240119	BEARING, 30207	
	R12240244	BEARING, 30208	
4	R12150103	STUD BOLT, M16 x 1.5	
5	R3090101	HUB	
6	R12240118	BEARING, 30205	
	R12240144	BEARING, 30206	
7	R3020210	NUT, M20 x 1.5"	
	R3020260	NUT, M27 x 1.5"	
8	R12360003	DUST COVER CAP	
	R12360004	DUST COVER CAP	
9	R3020210	NUT, M16	
10	R2050111	COMPLETE HUB	
	R2050111	COMPLETE HUB	

Fixed Chassis Assembly



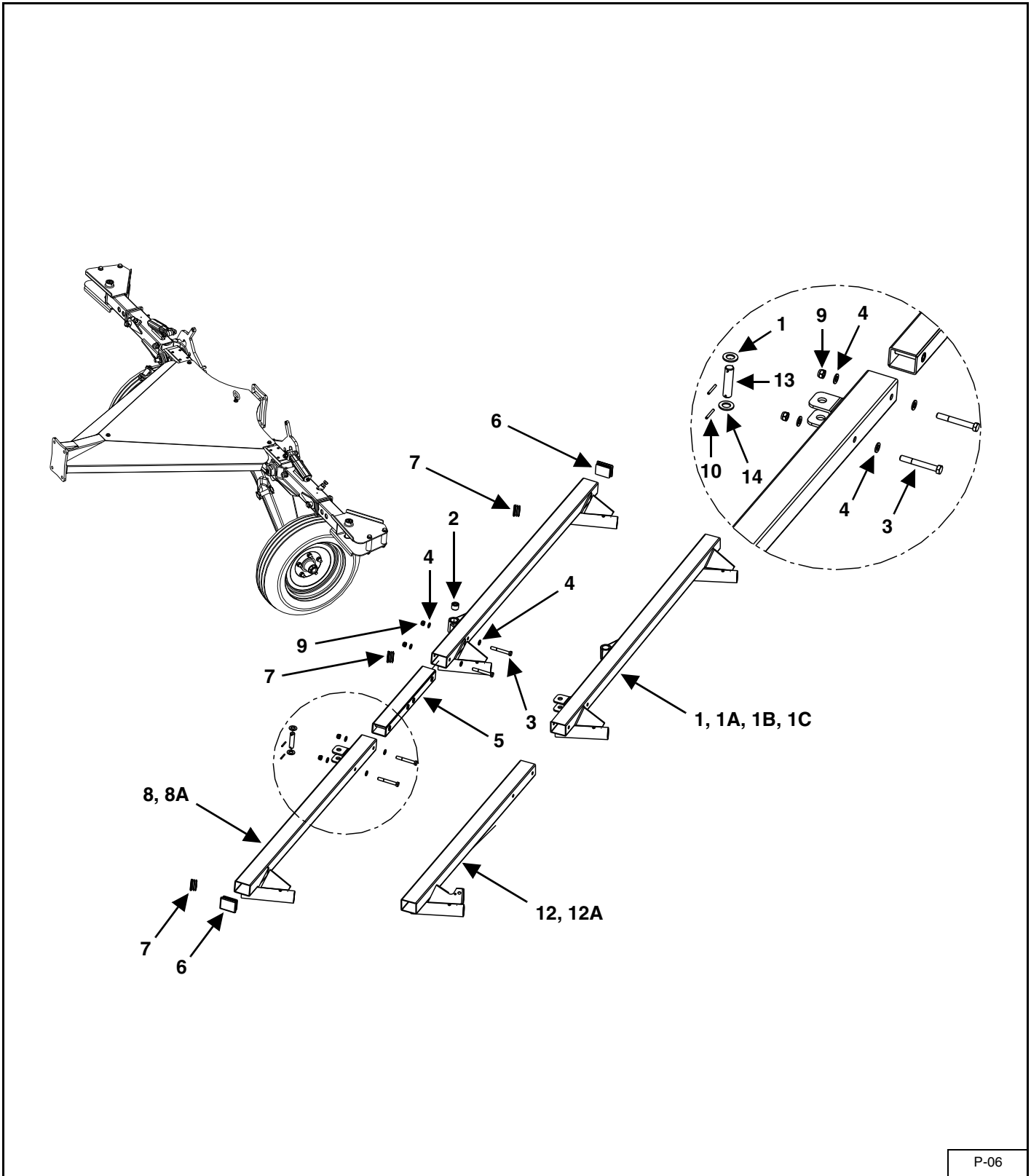
ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032901	CART	
2	R4010726	BAND	
3	R3020204	SELF LOCKING NUT, M16	
4	R3030175	WASHER, Ø16	
5	R3090101	GREASE ZERK	
6	R3080113	SPRING PIN, Ø6 x 50	
7	R18032177	PIN	
8	R12310707	TIE ROD	
9	R3020216	SELF LOCKING NUT, M20	
10	R3030168	WASHER, Ø21	
11	R12170108	TIRE	
12	R18032358	HYDRAULIC CYLINDER	
13	R18032178	PIN	
14	R3080102	SPRING PIN, Ø6 x 36	
15	R3020203	SELF LOCKING NUT, M14	
16	R3030161	WASHER, Ø15	
17	R18032150	SPACER	
18	R18032955	LEFT FRAME HOLDER	
19	R3011311	SCREW, M14 x 120 TE	
20	R3010781	SCREW, M8 x 55 TE	
21	R18032906	PIN	
22	R3020209	SELF LOCKING NUT, M8	
23	R12310312	PIN WITH CLIP PIN	
24	R3020202	SELF LOCKING NUT, M12	
25	R18032376	LEFT FRAME HOLDER	
26	R18032181	SCREW, M16 x 50 TE	
27	R18032697	SAFETY PIN	
28	R3090102	GREASE ZERK, M6 x 1	
29	R3020339	HEX NUT M16	
30	R18032154	HOOK	
30A	R18033036	HOOK	

Fixed Chassis Assembly (Cont'd)



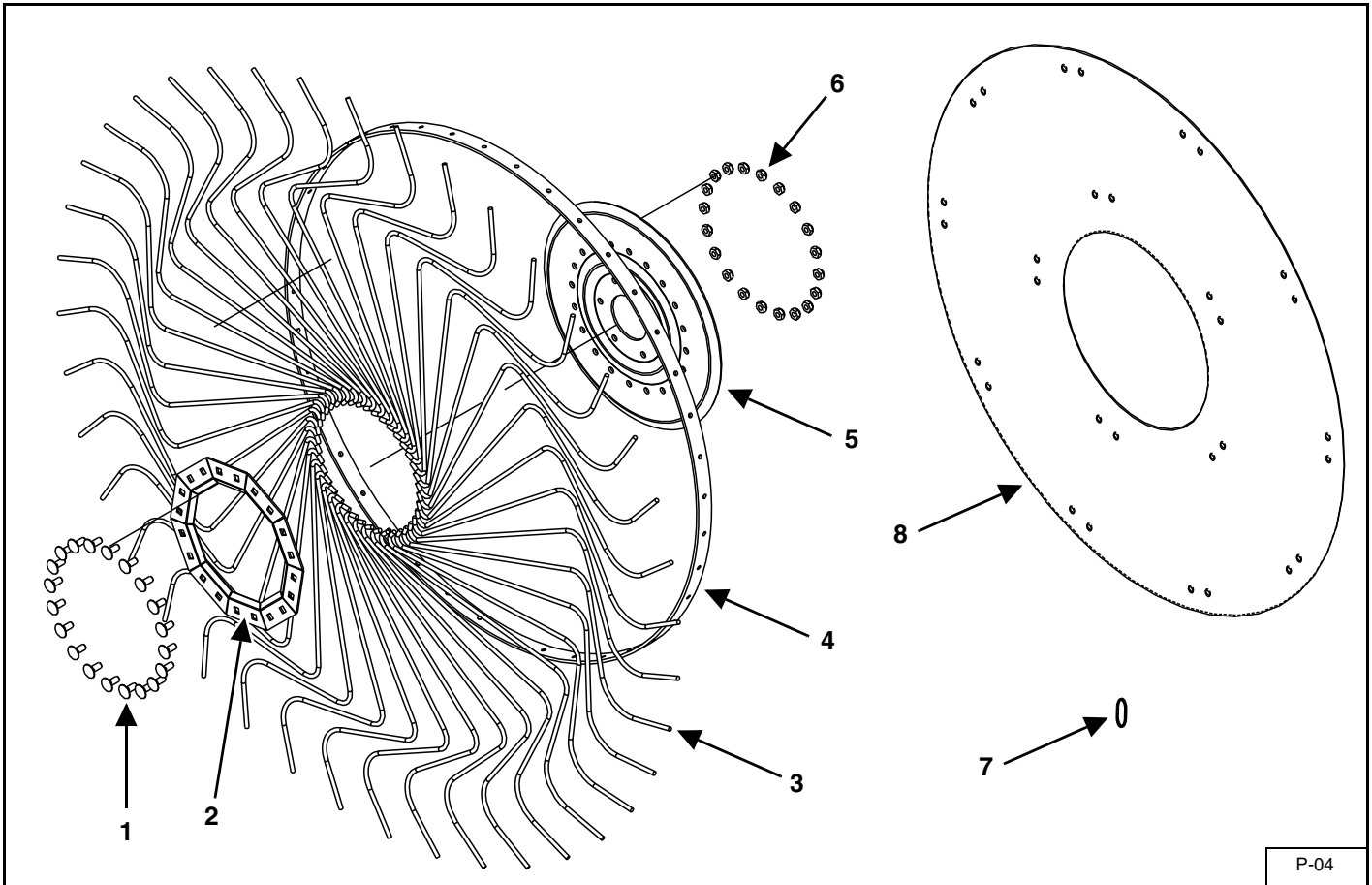
ITEM	PART NUMBER	DESCRIPTION	QTY
31	R11010535	SPRING	
32	R3030158	WASHER, Ø6	
33	R18032388	WASHER, Ø20.5	
34	R18032696	PIN	
35	R3030162	WASHER, Ø12	
36	R11010635	SPRING	
37	R18032378	SLIDING SHAFT	
38	R3011342	SCREW, M8 x 25 TE	
39	R3030157	WASHER, Ø8	
40	R18032374	ROLLING	
41	R18033585	WASHER	
42	R18032373	ROLL	
43	R18032183	CYLINDER PIN	
44	R18032389	PIN	
45	R3010802	SCREW, M6 x 16 TPSEI	
46	R18032372	SHEET METAL SCROLL	
47	R18032377	RIGHT FRAME HOLDER	
48	R3010780	SCREW, M8 x 30 TE	
49	R18032617	PASSAGE FOR CABLE	
50	R3020329	NUT, M8 HEX	
51	R18032912	MANTLE	
52	R3011221	SCREW, M8 x 16 TE	
53	R18032663	JACK	
54	R18033247	PIN, Ø12 L 0.125	
55	R3040201	SPLIT PIN, Ø3 x 60	
56	R3011645	SCREW, M16 x 45 TE	
57	R18032662	GUIDE	
58	R18032160	SPRING COUPLING	
59	R3030186	WASHER, Ø25	
60	R18032616	NYLON WASHER	

Lateral Frame Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032968	LATERAL FRAME, SX BR 8-10-12	
1A	R18032969	LATERAL FRAME, DX BR 8-10-12	
1B	R18032969	LATERAL FRAME, SX BR 8-10-12 / W	
1C	R18032964	LATERAL FRAME, DX BR 8-10-12 / W	
2	R12071209	BUSHING	
3	R3011658	SCREW, M16 x 100 TE	
4	R3030175	WASHER	
5	R18032189	JUNCTION	
6	R9190023	RUBBER CAP, 100 x 80	
7	R9190007	ROUND RUBBER CAP	
8	R18031601	LEFT FRAME, BR-12	
8A	R18032602	RIGHT FRAME, BR-12	
9	R3020204	SELF LOCKING NUT, M16	
10	R3080113	SPRING PIN, Ø6 x 50	
11	R3090101	GREASE ZERK	
12	R18032966	FRAME, BR-10	
12A	R18032965	RIGHT FRAME, BR-10	
13	R18032177	PIN, Ø25 x 100	

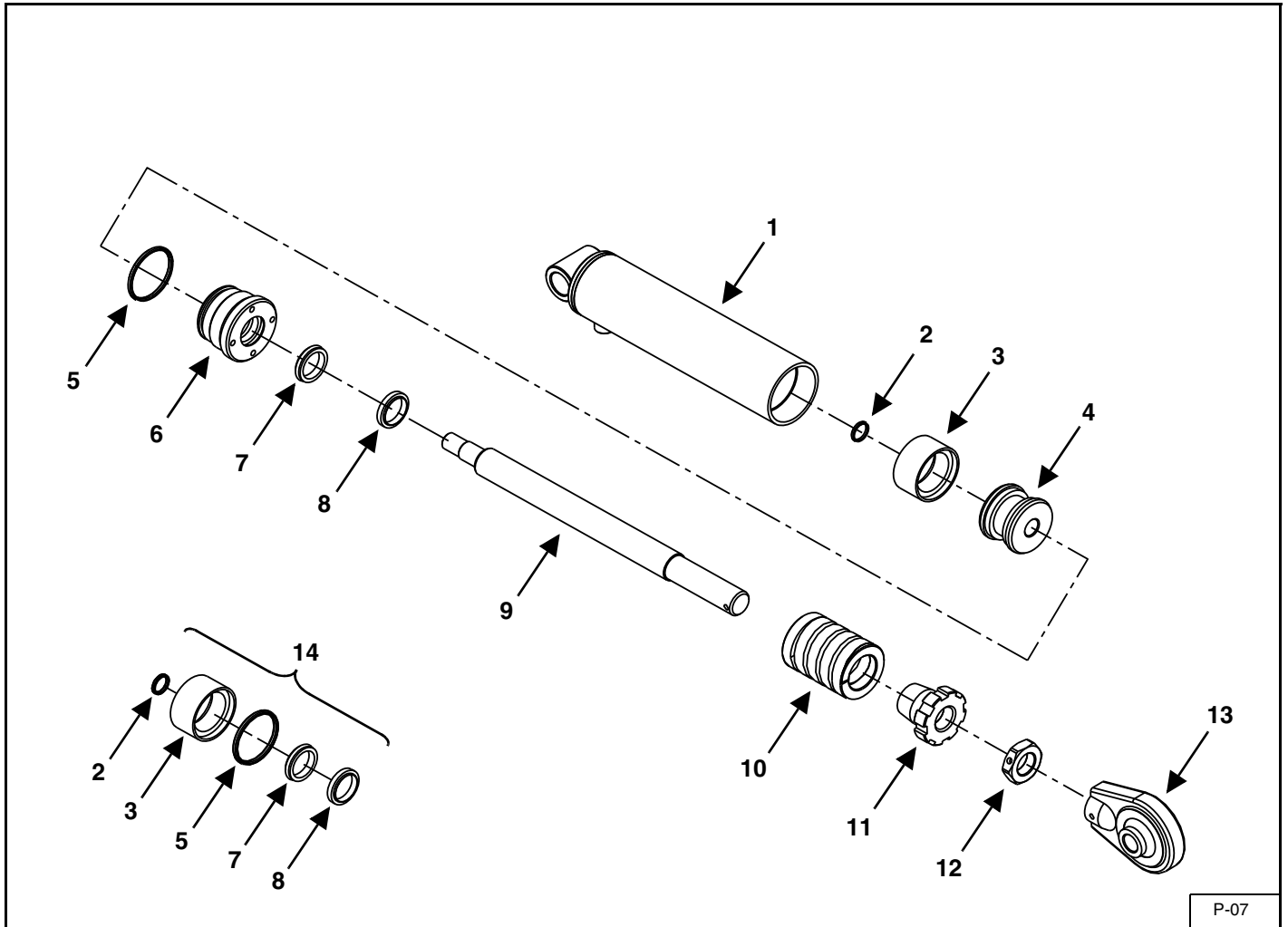
Wheel W / Teeth Assembly



P-04

ITEM	PART NUMBER	DESCRIPTION	QTY
1	3010105	SCREW, M10 x 25 TTQST	
2	18030416	PLATE	
3	18030415	VICON TOOTH, Ø6,9	
4	18031113	EXTERNAL RING	
5	12160101	CENTRAL FLANGE	
6	3020224	NUT, M10 HEX	
7	4010707	PLASTIC BAND	
8	9300002	WIND GARD	

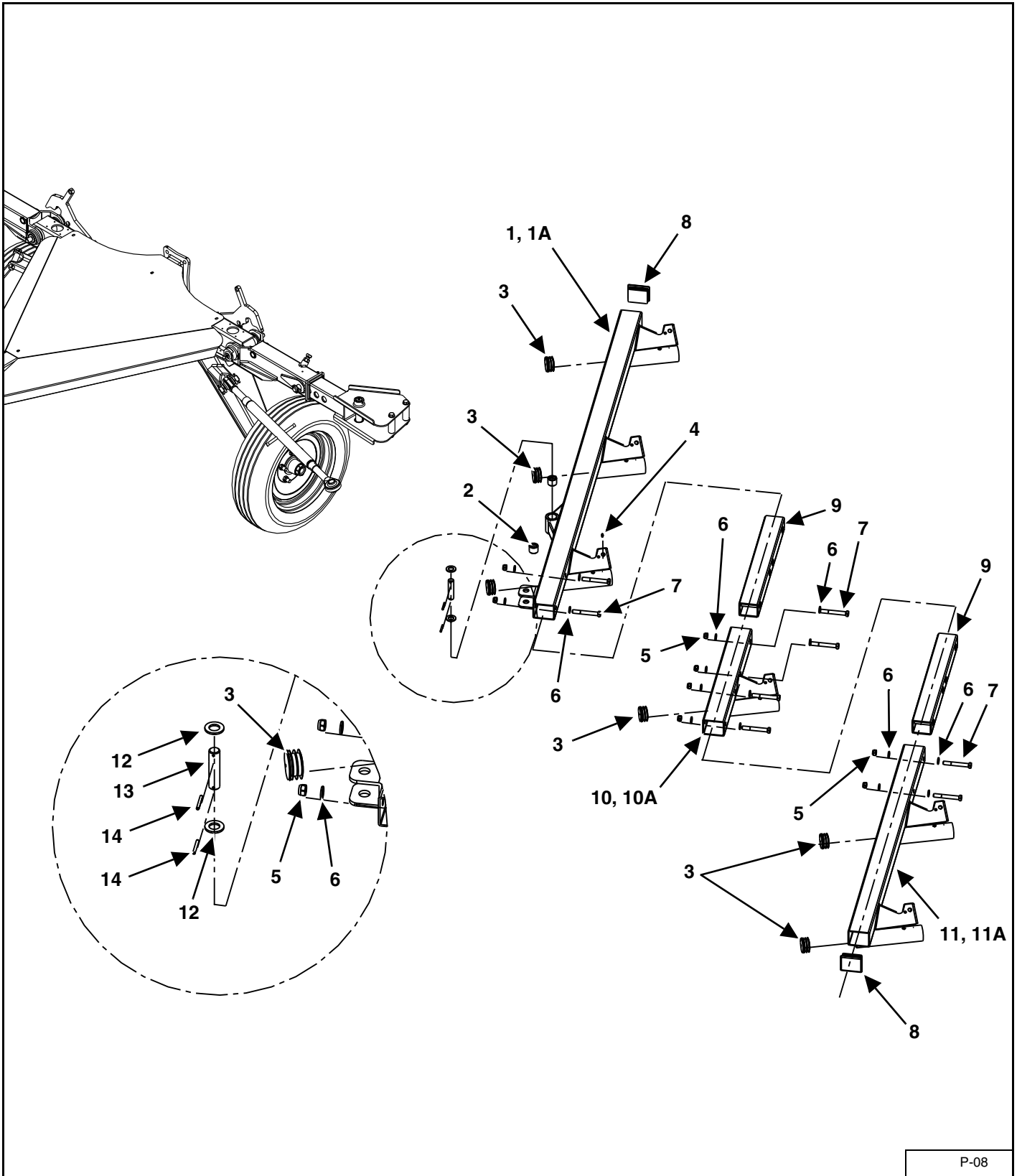
Hydraulic Cylinder Assembly



P-07

ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032185	CYLINDER	
2	SEAL KIT	TOROIDAL RING	
3	SEAL KIT	BALMASTER	
4	R12770216	PISTON	
5	SEAL KIT	TOROIDAL RING	
6	R12420104	12420104	
7	SEAL KIT	BALSELE	
8	SEAL KIT	SCRAPER	
9	R18032186	SHAFT	
10	R11010633	SPRING	
11	R18032153	BUSHING	
12	R18032153	DRILLED HEX NUT, M27 x 2	
13	R18032187	SUPPORT	
14	R18032356	SEAL KIT	

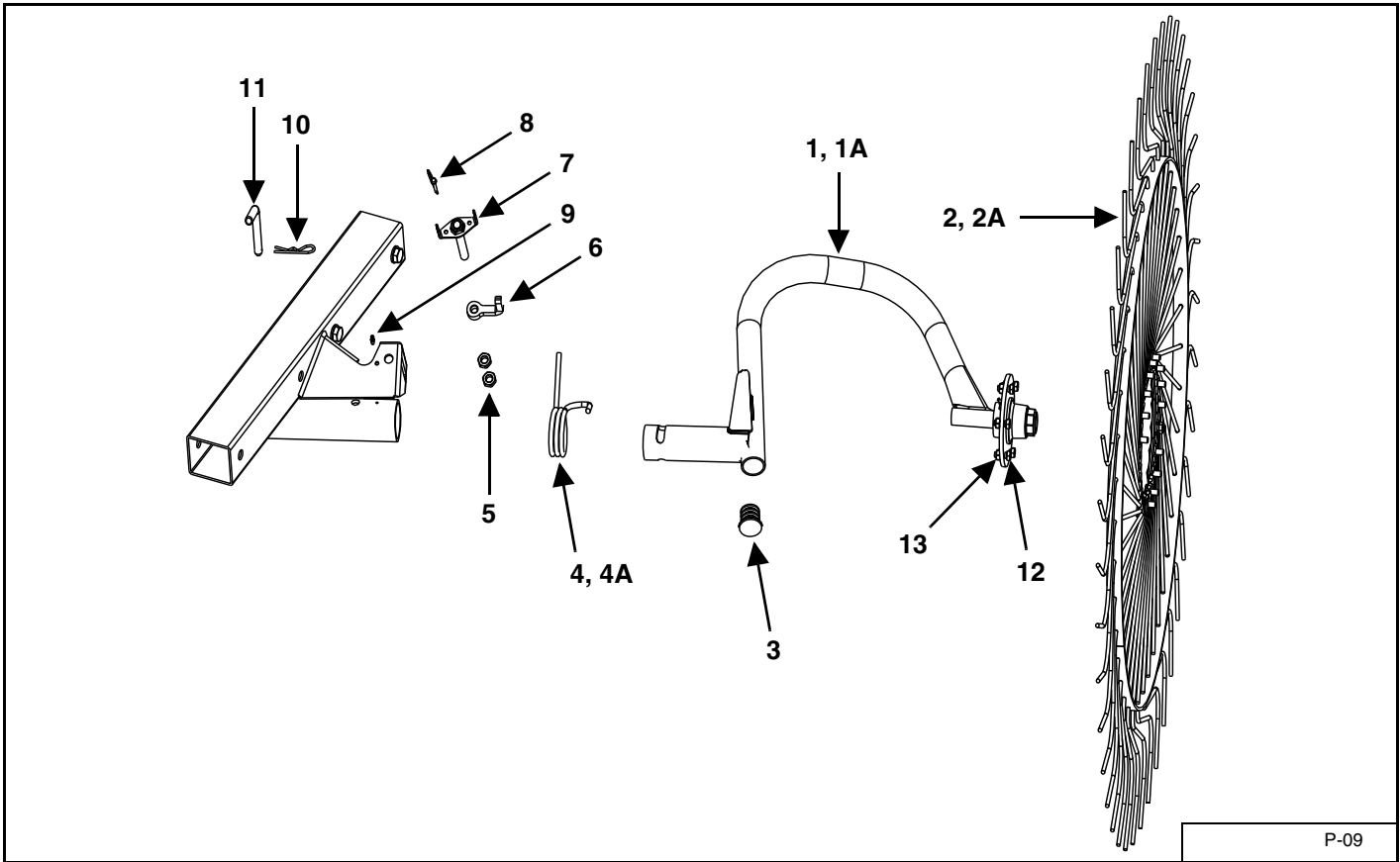
Mobile Chassis Assembly



P-08

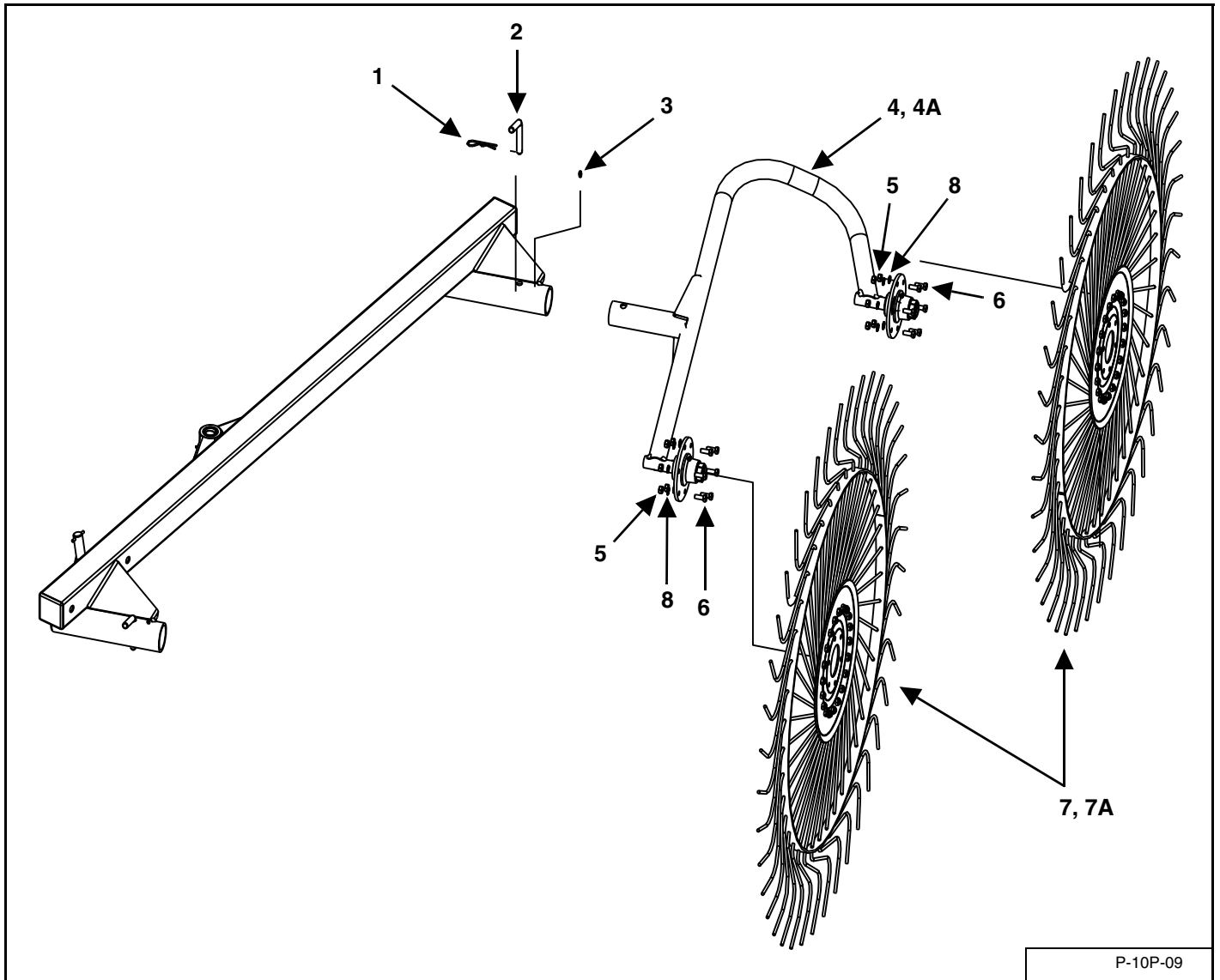
ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032956	LEFT FRAME	
1A	R18032957	RIGHT FRAME, DX	
2	R12071209	BUSHING	
3	R9190007	ROUND RUBBER CAP	
4	R3090101	GREASE ZERK	
5	R3020204	SELF LOCKING NUT, M16	
6	R3030175	WASHER, Ø16	
7	R3011658	SCREW, M16 X 100 TE	
8	R9190008	SQUARE RUBBER CAP	
9	R18032189	JUNCTION	
10	R18032959	LEFT FRAME	
10A	R18032958	RIGHT FRAME	
11	R18032960	LEFT FRAME	
11A	R18032961	RIGHT FRAME	
12	R3030174	WASHER	
13	R18032177	PIN, Ø25 x 100	
14	R3080113	SPRING PIN, Ø6 x 50	

Single Wheel Arm Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032790	LEFT ARM	
1A	R18032785	RIGHT ARM	
2	R17010812	LEFT VICON RAKE WHEEL	
2A	R17010803	RIGHT VICON RAKE WHEEL	
3	R9190009	CAP	
4	R11011103	LEFT ARM SPRING	
4A	R11011102	RIGHT ARM SPRING	
5	R3020313	NUT, M16	
6	R18032371	SPRING STOP	
7	R18032098	HANDLE	
8	R3080207	CLIP PIN	
9	R3090102	GREASE ZERK, M6 x 1	
10	R3040201	SPLIT PIN, Ø3 x 60	
11	R18033198	PIN, Ø15 x 180	
12	R3011211	SCREW, M10 x 25 TE	
13	R3020328	NUT, M10	

Double Wheel Arm Assembly

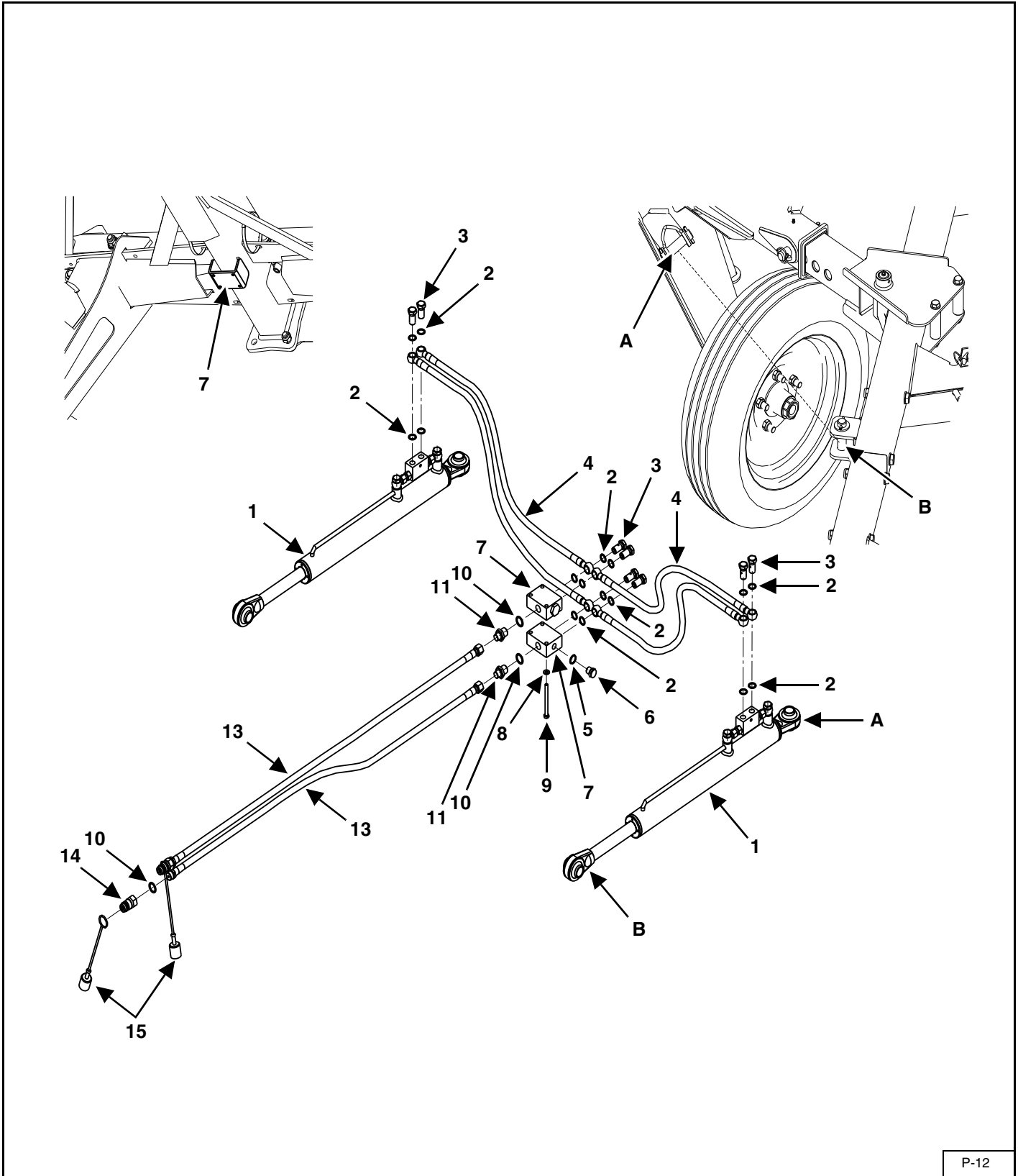


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ITEM	PART NUMBER	DESCRIPTION	QTY
1	R3040201	SLIT PIN	
2	R18033198	PIN, Ø15 X 180	
3	R3090102	GREASE ZERK, M6 x 1	
4	R18032607	LEFT ARM	
4A	R18032608	RIGHT ARM	
5	R3020328	NUT, M10	
6	R3011211	SCREW, M10 x 25 TE	
7	R17010812	LEFT RAKE WHEEL	
7A	R17010803	RIGHT RAKE WHEEL	
8	R3030227	SERRATED WASHER, M10	

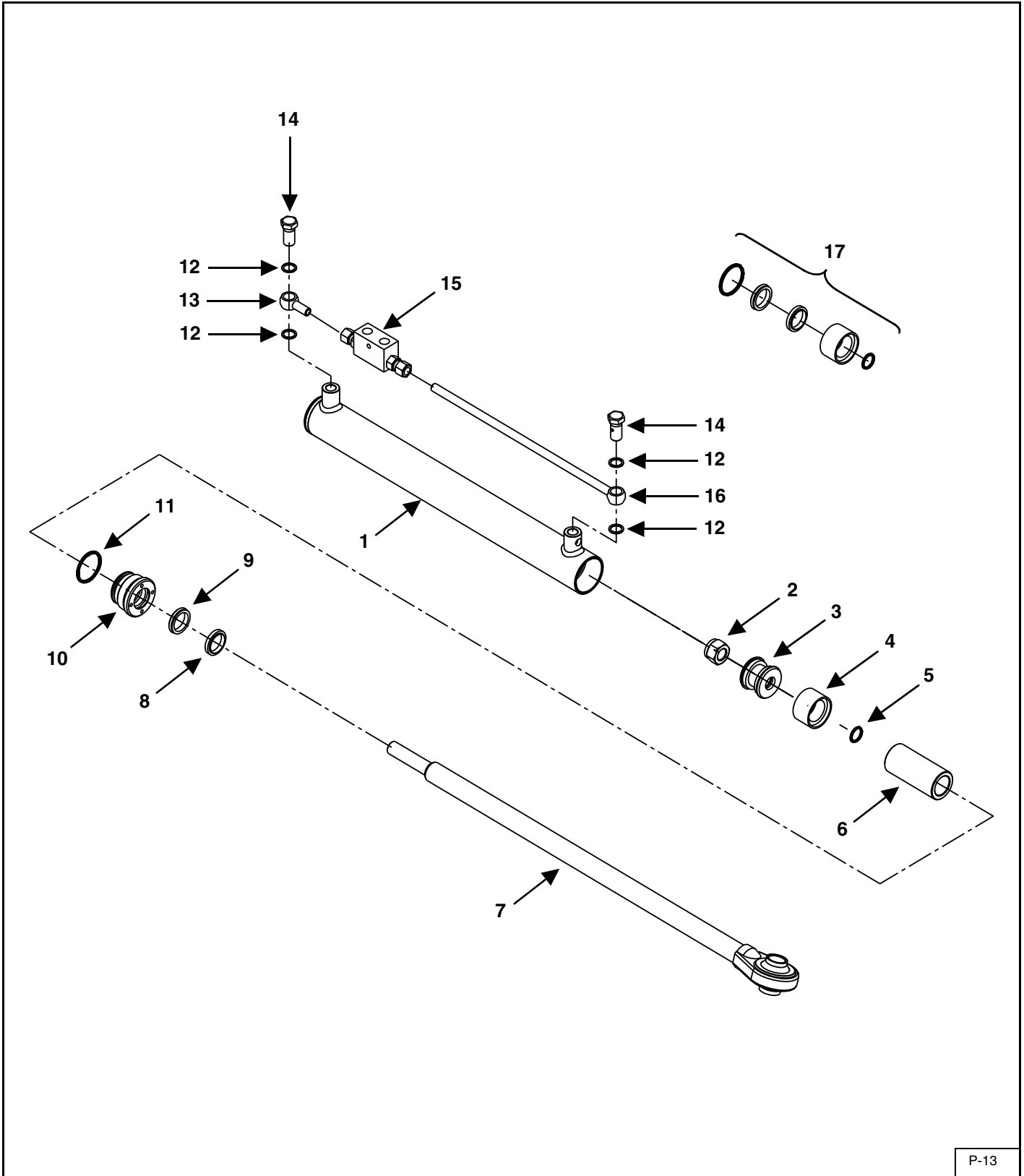
ITEM	PART NUMBER	DESCRIPTION	QTY
1	R9190021	CAP	
2	R4011804	QUICK COUPLER, 1/2	
3	R3030402	COPPER WASHER, 1/2	
4	R4010211	NIPPLE, 1/2-1/4	
5	R3030406	COPPER WASHER, 1/4	
6	R4020403	FLOW VALVE	
7	R4010212	NIPPLE, 1/4	
8	R12760718	HYDRAULIC HOSE, L 0.3300	
8A	R12760718	HYDRAULIC HOSE, L 0.3800	
8B	R12760718	HYDRAULIC HOSE, L 0.4600	
9	R12980101	HYDRAULIC HOSE HOLDER	
10	R4010938	TEE UNION	
11	R12760716	HYDRAULIC HOSE	
12	R3011643	DRILLED SCREW, 1/4"	
13	R4011702	EXTENSION	
14	R4010726	CLAMP	
15	R9080022	MANUAL HOLDER	
16	R3030160	WASHER, M6 EXL	
17	R3011617	SCREW, M6 x 20 TE	

Double Hydraulic Assembly



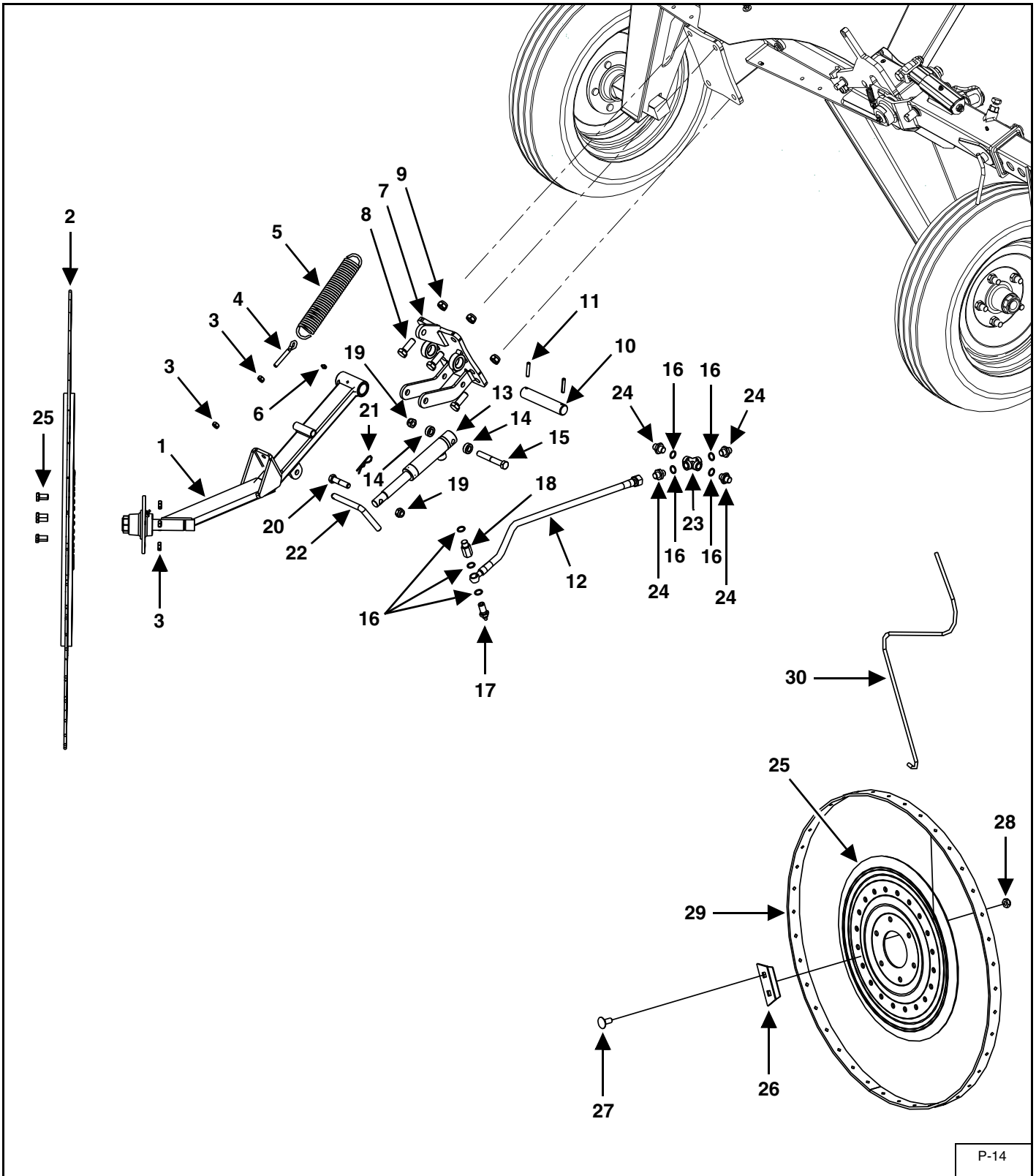
ITEM	PART NUMBER	DESCRIPTION	QTY
1	R12770234	HYDRAULIC CYLINDER	
2	R3030403	COPPER WASHER, 3/8	
3	R3011605	DRILLED SCREW, 3/8	
4	R12760166	HYDRAULIC HOSE	
5	R10010726	TOROIDAL RING	
6	R4010840	CAP	
7	R4020144	3 WAY HYDRAULIC.CONNECTION	
8	R3030158	WASHER, Ø6	
9	R3011647	SCREW TE M6X80	
10	R3030402	COPPER WASHER, 1/2	
11	R4010206	NIPPLE, 1/2-3/8	
12	R4020145	VALVE FLOW DIVIDER	
13	R12760169	HYDRAULIC HOSE, L 0.4600	
14	R4011804	PUSH PULL, 1/2	
15	R9190021	CAP	

Hydraulic Cylinder Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18033019	HYDRAULIC CYLINDER	
2	R3020235	SELF LOCKING NUT M20	
3	R12770211	PISTON	
4	SEAL KIT	BALMASTER	
5	SEAL KIT	TOROIDAL RING	
6	R18033021	SPACER	
7	R18033020	SHAFT	
8	SEAL KIT	SCRAPER	
9	SEAL KIT	BALSELE	
10	SEAL KIT	HEAD	
11	SEAL KIT	TOROIDAL RING	
12	R3030403	COPPER WASHER, 3/8	
13	R4010951	FITTING	
14	R3011605	DRILLED SCREW, 3/8	
15	R4021205	VALVE BLOCK	
16	SEAL KIT	FITTING	
17	R10010821	SEAL KIT	

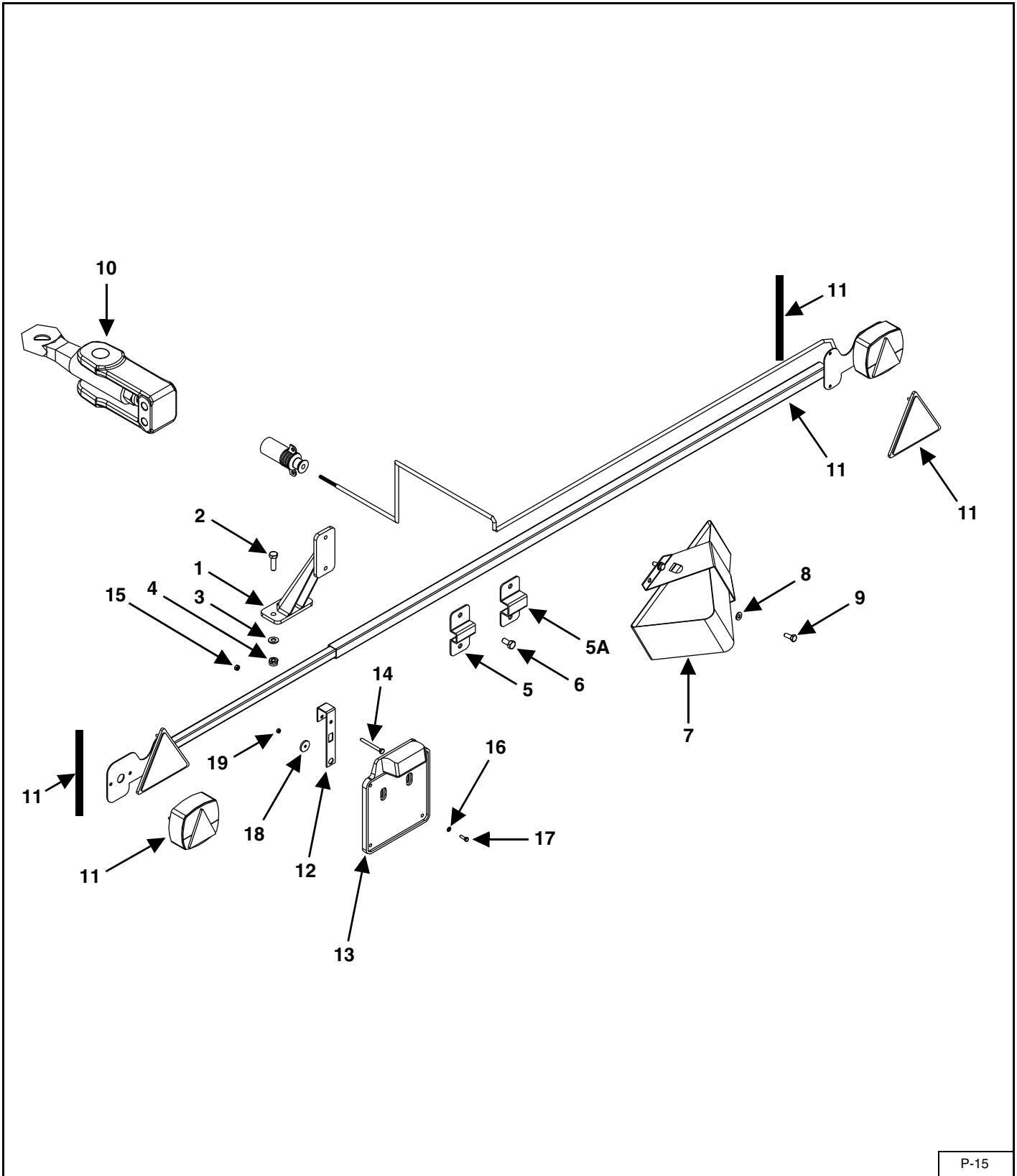
Center Wheel Assembly



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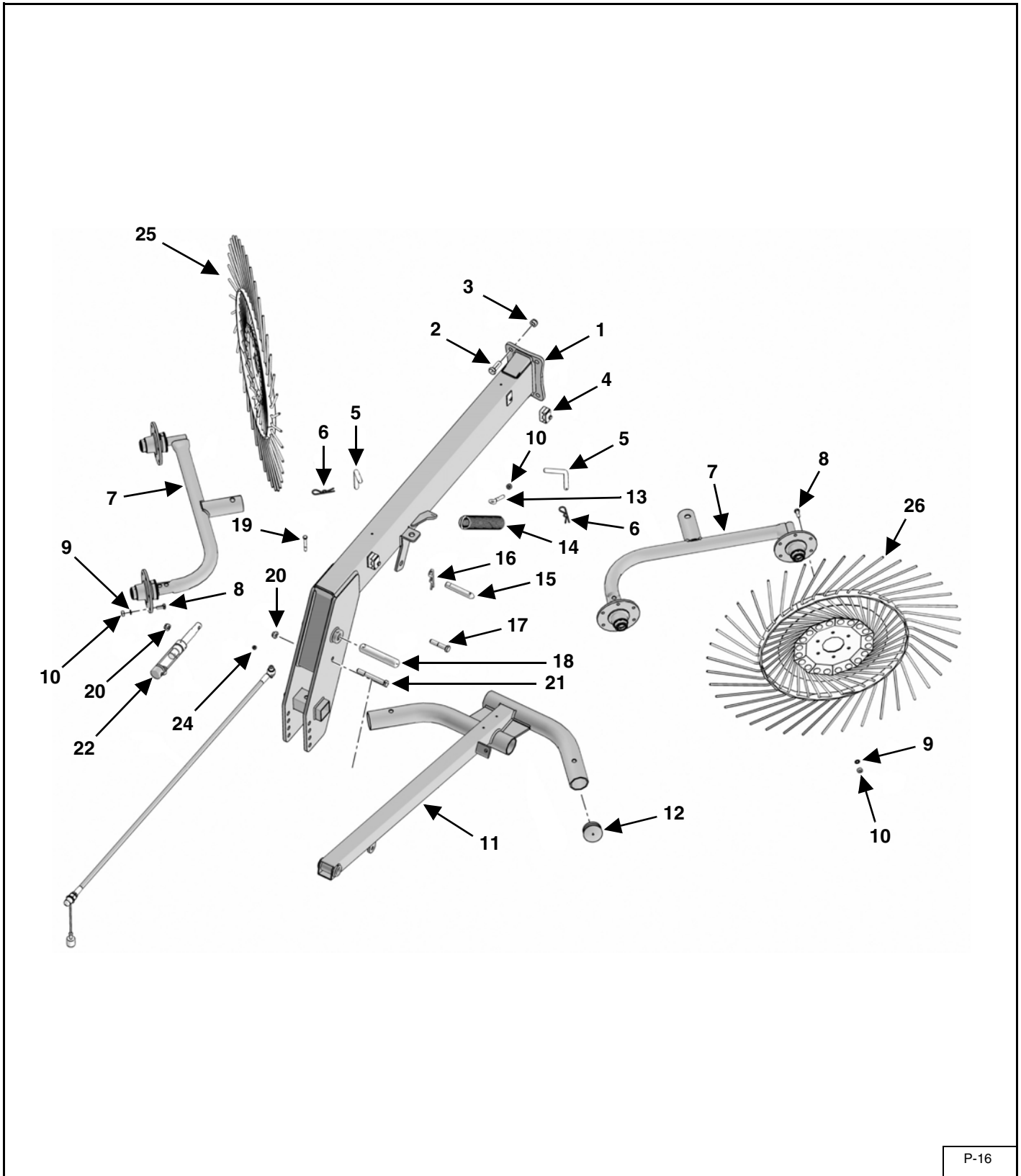
ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18032609	KICKER WHEEL ARM	
2	R18031808	RAKE WHEEL	
3	R3020328	NUT, M10	
4	R3220201	THREADED RING	
5	R11010534	SPRING	
6	R3090101	GREASE ZERK	
7	R18032610	BRACKET	
8	R3011645	SCREW, M16 x 45 TE	
9	R3020204	SELF LOCKING NUT, M16	
10	R18032171	ARM PIN	
11	R3080123	SPRING PIN, 8 x 40	
12	R12760719	HYDRAULIC HOSE, L 500	
13	R18032613	HYDRAULIC CYLINDER, 40-30 / 100	
14	R18032611	WASHER, 28 x 14.5 x 11	
15	R3011266	SCREW, M14 x 100 TE	
16	R3030403	COPPER WASHER, 3/8	
17	R4021503	DRILLED SCREW, 3/8	
18	R4011704	EXTENSION, 3/8	
19	R3020203	SELF LOCKING NUT, M14	
20	R3011202	SCREW, M14 x 60 TE	
21	R3040202	SPLIT PIN	
22	R18033195	PIN, Ø15 x 198	
23	R4010907	CROSS UNION, 3/8	
24	R4010207	NIPPLE, 3/8	
25	R18032928	RACKING WHEEL FLANGE	
26	R18030416	PLATE	
27	R3010124	SCREW, M10 x 25 T.T.Q.S.T.	
28	R3020224	NUT CONELOX, M10	
29	R1014340	RAKING WHEEL RING KEP	
30	R12450303	TOOTH, "KEP 110"	

Light Kit (Optional)



ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18033022	ATTACHMENT FRAME	
2	R3011260	SCREW, M10 x 35 TE	
3	R3030159	WASHER, M10	
4	R3020201	LOCKING NUT, M10	
5	R18033119	ATTACHMENT FRAME, 20 MM	
5A	R18033125	ATTACHMENT FRAME, 25 MM	
6	R3011256	SCREW, M10 x 20 TE	
7	R12780103	WEDGE	
8	R3030156	WASHER, M8	
9	R3011251	SCREW, M8 x 20 TE	
10	R18052404	ATTACHMENT FRAME	
11	R7270020	COMPLETE LIGHT KIT	
12	R18031792	PLATE	
13	R3011687	SCREW, M6 x 60 TE	
14	R3020308	NUT, M6	
15	R3030613	WASHER, M5	
16	R3011682	SCREW, M5 x 16 TE	
17	R1014385	WASHER	
18	R3020307	NUT, M5	
19	-	BRACKET	

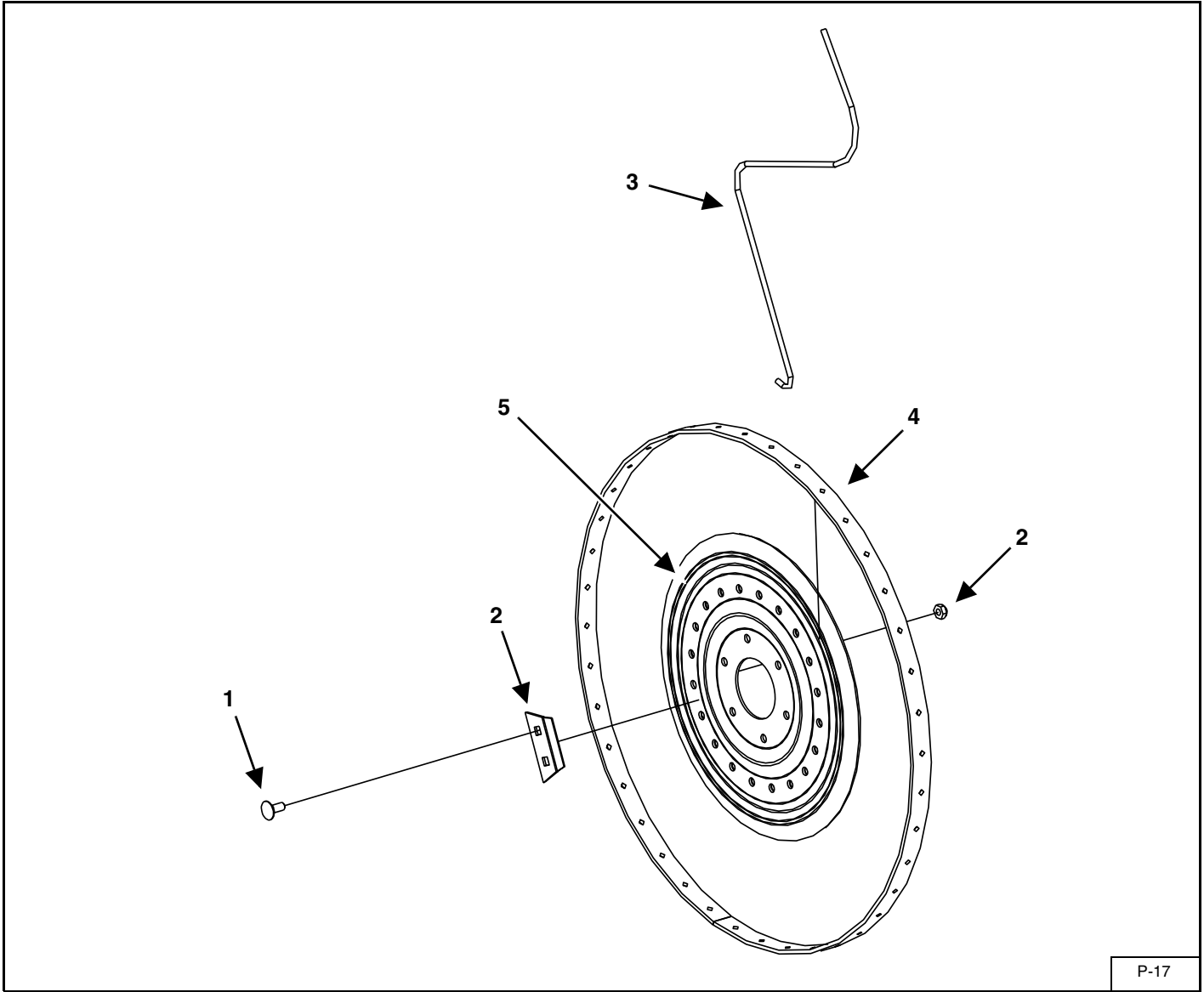
Front Wheel Assembly (Optional)



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ITEM	PART NUMBER	DESCRIPTION	QTY
1	R18033677	FRONT FRAME	
2	R3011645	SCREW, M16 x 45 TE ZN	
3	R3020204	SELF LOCKING NUT, M16	
4	R18033342	COLLAR, CF2	
5	R18033198	PIN	
6	R3040201	PIN	
7	R18033679	WHEEL FRAME	
8	R3011211	SCREW, M10 x 25 TE ZN	
9	R3030227	WASHER, M10	
10	R3020328	NUT, M10 ZN	
11	R18033678	FRONT CARRIER ARMS	
12	R18032661	FINNED PUSH-ROD	
13	R3220201	TENSIONER RING	
14	R11010534	SPRING	
15	R12061021	PIN	
16	R3040202	GALVANIZED SPRING PIN	
17	R3011631	SCREW, M14 x 70 TE ZN	
18	R18033680	FRONT FRAME PIN	
19	R3011612	SCREW, M8 x 70 TE ZN	
20	R3020203	SELF LOCKING NUT, M14	
21	R3011311	SCREW, M14 x 120 TE ZN	
22	R18032613	SINGLE-ACTING CYLINDER	
23	R12760610	HYDRAULIC TUBING	
24	R3020209	SELF LOCKING NUT M8	
25	R17010818	RAKE WHEEL DX	
26	R17010816	RAKE WHEEL SX	

Front Wheel Assembly (Optional)



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ITEM	PART NUMBER	DESCRIPTION	QTY
1	R3010124	SCREW, M10 x 25 T.T.Q.S.T.	
2	R18030416	PLATE	
3	R12450302	TOOTH "KEP"	
4	R1014738	RAKING WHEEL RING KEP	
5	R18032928	RACKING WHEEL FLANGE	
6	R3020224	NUT CONELOX, M10	

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SPECIFICATIONS

Dimensions

DESCRIPTION	BAT RAKE 8	BAT RAKE 10	BAT RAKE 12
Transport Length	17' 7" (5.35 m)	19' 2" (5.85 m)	21' 10" (6.65 m)
Transport Width	9'2" (2.8 m)	9'2" (2.8 m)	9'2" (2.8 m)
Transport Height	8' 2" (2.5 m)	8' 2" (2.5 m)	8' 2" (2.5 m)
Working Width (Minimum)	16' 5" (5.0 m)	18' 4" (5.6 m)	19' 8" (6.0 m)
Working Width (Maximum)	18' 4" (5.6 m)	21' 8" (6.6 m)	24' 3" (7.4 m)

Performance

DESCRIPTION	BAT RAKE 8	BAT RAKE 10	BAT RAKE 12
Weight	1433 lb. (650 kg)	1631 lb. (740 kg)	1874 lb. (850 kg)
Number of Wheels	8	10	12
Windrow Width (Minimum)	3' 1" (0.95 m)	3' 1" (0.95 m)	3' 1" (0.95 m)
Windrow Width (Maximum)	6' 11" (2.1 m)	6' 11" (2.1 m)	6' 11" (2.1 m)
Tractor HP	20 (15 kW)	20 (15 kW)	30 (22 kW)

HARDWARE TORQUE VALUES

Metric Chart

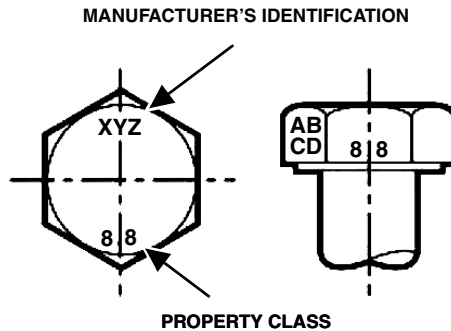
NOTE: Do not use the values listed in the charts if a different torque value or tightening procedure is specified in this manual for a specific application. Torque values listed are for general use only.

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.**

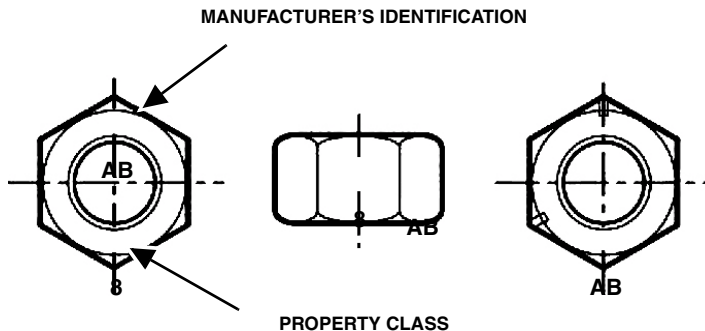
Nominal Size	Class 5.8		Class 8.8		Class 10.9		Lock nuts
	Unplated	Plated W / ZnCr	Unplated	Plated W / ZnCr	Unplated	Plated W / ZnCr	CL.8 w/ CL. 8.8 Bolt
M4	1.7 (15*)	2.2 (19*)	2.6 (23*)	3.4 (30*)	3.7 (33*)	4.8 (42*)	1.8 (16*)
M6	5.8 (51*)	7.6 (67*)	8.9 (79*)	12 (102*)	13 (115*)	17 (150*)	6.3 (56*)
M8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

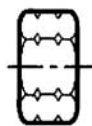


SAE GRADE
5 NUTS



SAE GRADE
8 NUTS

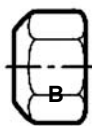
Identification of Hex Nuts and Lock Nuts



Grade A - No Notches

Grade B - One Circumferential Notch

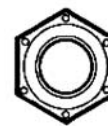
Grade C - Two Circumferential Notches



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

WARRANTY81

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.

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