

OPERATOR AND PARTS MANUAL

Tedder

Model RT17, RT19



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 soil fertility, applied agricultural techniques, weather conditions, and other factors.

Warranty Registration Form	3
Introduction	5
Owner's Information	7
Equipment Identification	8
Safety	11
Safety Instructions	
Fire Prevention	
Equipment and Safety Decals	
Safety Sign-Off Form	
Operation	21
Pre - Operation Checklist	23
Entering The Operator's Position	
Leaving The Operator's Position	
Tractor Requirements	23
Connecting to Tractor	24
Connecting PTO Driveline	26
Connecting Hydraulic Hoses	
Work Configuration	
Field Operation	<u>3</u> 2
Adjustments	
Transport Configuration	35
Maintenance	
Service Schedule Chart	
Lubrication	40
Tine Replacement	42
Safety Sign (Decal) Installation	42
Storage And Return To Service	43
Parts Identification	
Center Frame	
Wing Frame	<u>5</u> 0
Wing Lift, Locking Device, Guards	<u>5</u> 2

Pull-Type Hydraulic Hoses	<u>5</u> 4
Pull-Type Hitch, PTO	55
Pull-Type Mechanical Angle Adjust, Release Rope	
Pull-Type Hydraulic Angle Adjust	
Mounted-Type Guards	60
Mounted-Type Hitch, PTO, Release Rope	
Mounted-Type Hydraulic Hoses, Stabilizer Bars	64
Hydraulic Cylinder - Angle Adjust	
Hydraulic Cylinder - Wing Fold	67
PTO Shaft - RT17	
PTO Shaft - RT19	
Specifications And Shipping Kit Numbers	71
Specifications	
Shipping Kit And Bundle Numbers	
Hardware Torque Values	
Warranty	77
Farm King Base Limited Warranty	

Warranty Registration Form

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

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

Equipment Model:	Serial Number:	Delivery Date:

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

Dealer Inspection Report

Raise and lower wings	Safety chain is on hitch
Adjust angle of rotary group	All decals installed
Lubricate machine	Guards and shields installed and secure
Check wheel bolt torque	Review operating and safety instructions
All fasteners tight	
Check tire pressure	
Check hydraulic hoses	

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 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.

Safety



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 Information	7
Serial Number Location	
Equipment Identification	8
Component Location - PullType	8
Component Location - Mounted Type	9



Owner's Information

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

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

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

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

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

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

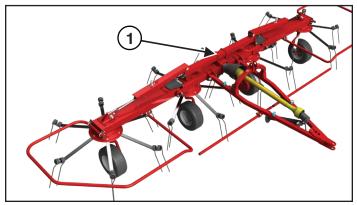
Visit our website at **www.farm-king.com** for a complete list of dealers in your area.

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

Serial Number Location

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

Figure 1



Model Number: _____

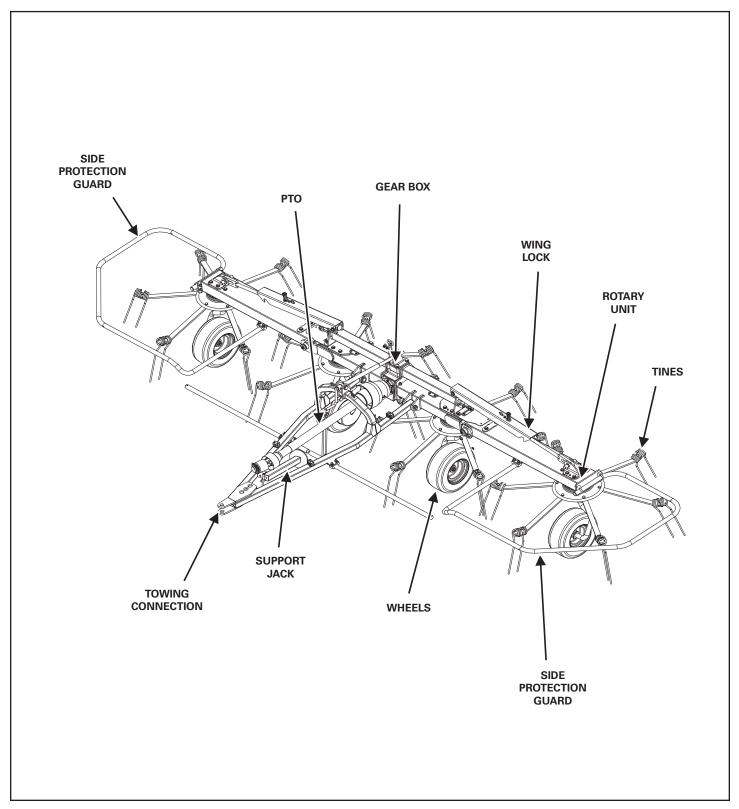
Serial Number: _____

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

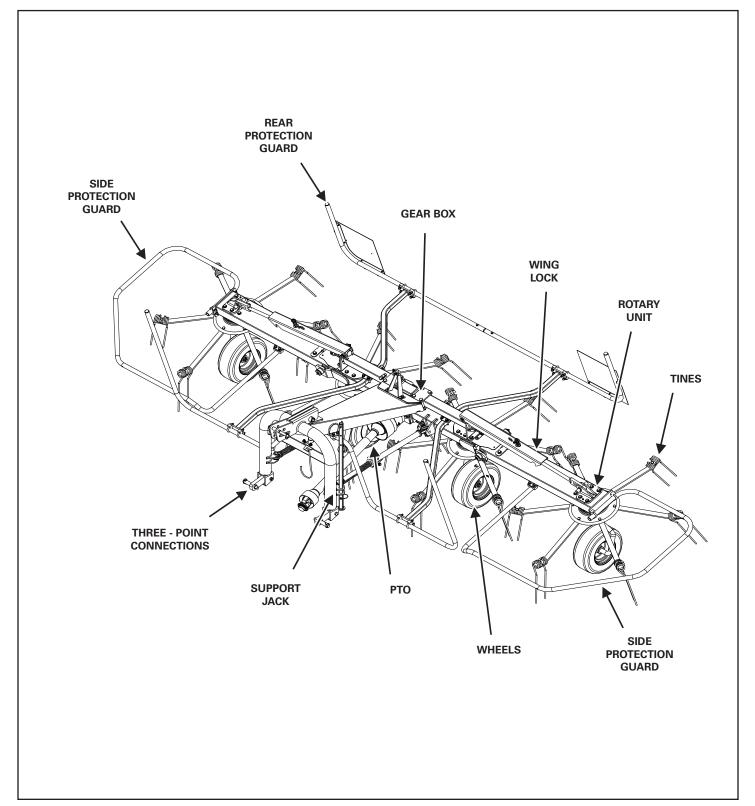
Always use your serial number when requesting information or when ordering parts.

Equipment Identification

Component Location - Pull Type



Component Location - Mounted Type





Farm King _____

Safety

Safety Instructions	13
Safe Operation is The Operator's Responsibility	13
Safe Operation Needs A Qualified Operator	13
Use Safety Rules	14
Safety Rules For PowerTake-Off (PTO) Driven Equipment	14
Machine Requirements And Capabilities	15
Transport Safety	15
Fire Prevention	16
Maintenance	
Operation	16
Starting	16
Electrical	16
Hydraulic System	16
Fueling	16
Welding And Grinding	17
Fire Extinguishers	17
Equipment and Safety Decals	
Safety Sign-Off Form	19



Safety Instructions

Safe Operation is The Operator's Responsibility



Safety Alert Symbol

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



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.



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 alcohol which impair alertness or coordination while working. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine and the equipment.

Understand the written instructions, rules and regulations:

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

Have Training with Actual Operation:

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

Know the Work Conditions:

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

Use Safety Rules

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

Safety Rules For Power Take-Off (PTO) Driven Equipment

- Keep PTO shields and all guards in place. Replace damaged or missing shields and guards before operating.
- Follow warnings and instructions on machine signs (decals). Replace damaged or missing decals.
- Do not wear loose or bulky clothing around the PTO or other moving parts.
- Keep bystanders away from PTO driven equipment, and never allow children near machines.
- Read and understand the manuals for the PTO driven equipment and be aware of safe operating procedures and hazards that may not be readily apparent.
- Never operate over 540 rpm.
- Always walk around equipment to avoid coming near a turning PTO driveline. Stepping over, leaning across or crawling under a turning PTO driveling can cause entanglement.
- Position the machine and equipment hitch correctly to prevent driveline stress and separation.
- Use caution when turning. Turning too sharp can cause driveline damage.
- Use caution when raising PTO driven equipment.
- Excessive driveline angle can cause driveline damage. Use stops if needed.

Machine Requirements And Capabilities

- Fasten seat belt securely. If equipped with a foldable Roll-Over Protective Structure (ROPS), only fasten seat belt when ROPS is up and locked. DO NOT wear seat belt if ROPS is down.
- Stop the machine and engage the parking brake. Install blocks in front of and behind the rear tires of the machine. Install blocks underneath and support the equipment securely before working under raised equipment.
- Keep bystanders clear of moving parts and the work area. Keep children away.
- Use increased caution on slopes and near banks and ditches to prevent overturn.
- Make certain that the Slow Moving Vehicle (SMV) emblem is installed so that it is visible and legible. When transporting the equipment, use the flashing warning lights (if equipped) and follow all local regulations.
- 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.

Transport Safety

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

Fire Prevention



Maintenance

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

Operation

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

Starting

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

Electrical



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

Hydraulic System

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

Fueling



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

Welding And Grinding

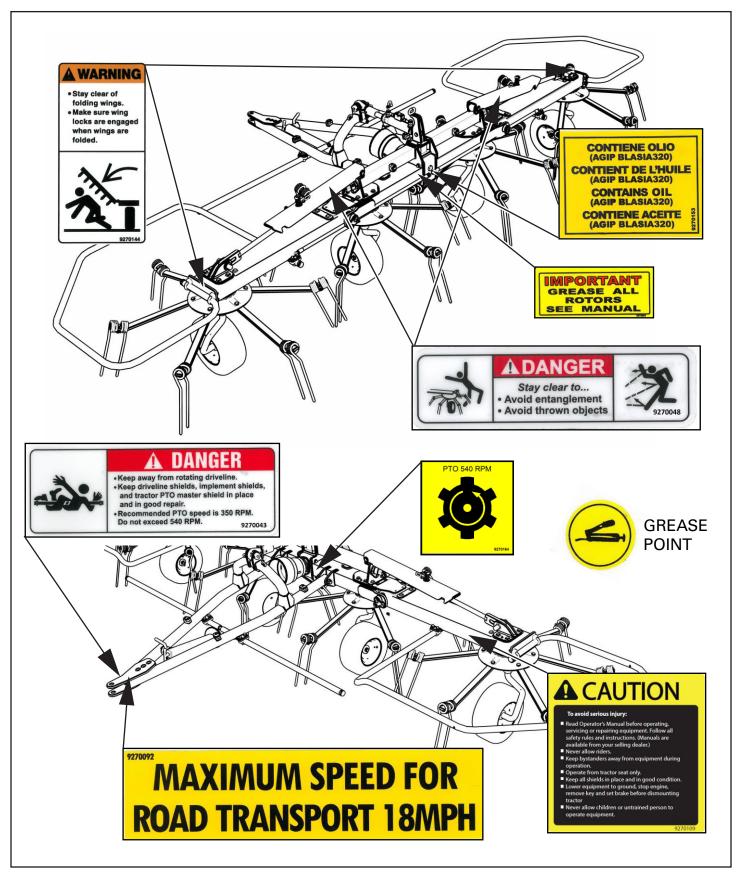
- Always clean the machine and equipment, disconnect the battery, and disconnect the wiring from the machine controls before welding. Cover rubber hoses, battery and all other flammable parts. Keep a fire extinguisher near the machine when welding.
- Have good ventilation when grinding or welding painted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

Fire Extinguishers



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

Equipment and Safety Decals



Safety Sign-Off Form

WARNING

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

Farm King follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and / or maintaining the Rotary 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		



Operation

Pre - Operation Checklist	23
Entering The Operator's Position	
Leaving The Operator's Position	
Tractor Requirements	23
Connecting to Tractor	24
Three-Point Hitch	
PullType Hitch	
Connecting PTO Driveline	
PTO Driveline Length Check	27
PTO Driveline Bottoming Out Check	
Reducing The PTO Driveline Length	
PTO Driveline Engagement Check	
Connecting Hydraulic Hoses	
Work Configuration	31
Field Operation	
Adjustments	34
Three-Point Hitch Models	34
Pull-Type Models	
Transport Configuration	35



Pre - Operation Checklist

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

- 1. Lubricate the equipment per the schedule outline in the Maintenance Section.
- 2. Check the equipment hitch for damaged, loose or missing parts. Repair as needed before operation.

Note: Do not operate with leaks.

- 3. Make sure that all guards and shields are in place, secured and functioning as designed.
- 4. Check condition of all hydraulic components for leaks. Repair as required.



HIGH PRESSURE FLUID HAZARD

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

Note: Do not operate with hydraulic leaks.

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

Entering The Operator's Position

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



Leaving The Operator's Position

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



Before you leave the operator's position:

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

Tractor Requirements

The RT17 and RT19 Tedders require a tractor with 20 HP (15 KW).

IMPORTANT

Towing Vehicle / Tractor must have adequate braking capacity to safely control Gross Vehicle Weight (GVW) trailing load.

Do not tow over 20 mph (32 km/h). Towing Vehicle / Tractor unit should weigh approximately 67% of GVW.

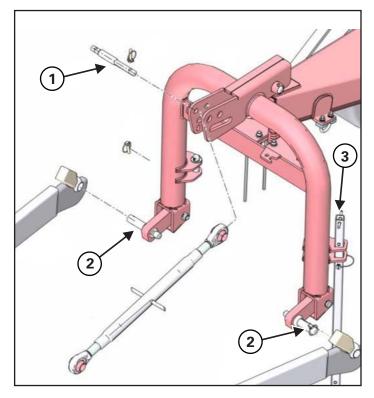
Connecting to Tractor

Three-Point Hitch

Always inspect the tractor's three-point hitch and equipment three-point mounts before connecting.

Move the tractor drawbar into the storage position or remove (if necessary) to prevent interference with equipment operation (See the tractor's operator's manual for the correct procedure).

Figure 2



Remove the top implement mounting pin (Item 1) and retaining clips [Figure 2].

Remove the retaining clips from the left and right lower mounts (Item 2) **[Figure 2]**.

Enter the operator's position (See "Entering The Operator's Position" in Operation section).

Move the tractor into position in front of the equipment. Move the tractor backwards, aligning the tractor's three-point hitch and equipment three-point mounts.

Leave the operator's position (See "Leaving The Operator's Position" in Operation section).

Install the left and right lower three-point mounts of the tractor to the equipment left and right lower mounting pins.

Reinstall the retaining pins.

Note: Always use retaining pins with a locking device.

Lower the top link of the three-point hitch until it aligns with the implement upper mount.

Reinstall the mounting pin and retaining pin.

Note: It may be necessary to lengthen or shorten the top link to align it with the implement mounting hole. (See the tractor's operator's manual for the correct procedure.)

The implement can be leveled front to back by adjusting the top link (See the tractor's operator's manual for the correct procedure).

Adjust the lower link sway chains or blocks on the tractor to restrict side movement of the equipment when operating.

The support jack (Item 3) **[Figure 2]** must be fully raised when operating.



AVOID INJURY OR DEATH

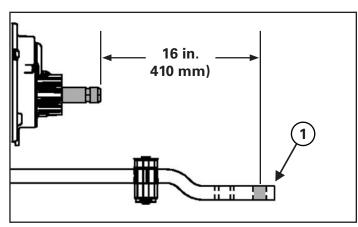
Before moving the tractor, look in all directions and make sure no bystanders, especially small children are in the work area.

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

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

Pull Type Hitch

Figure 3



Adjust the tractor's drawbar in / out, until the center of the hitch pin hole (Item 1) 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 [Figure 3].

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

Enter the operator's position (See "Entering The Operator's Position" in Operation section).

Move the tractor into position in front of the equipment.



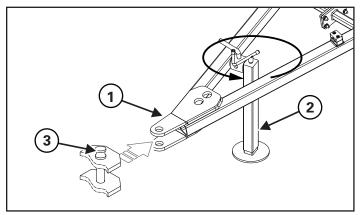
AVOID INJURY OR DEATH

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

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

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





Move the tractor backwards, aligning the drawbar with the equipment hitch (Item 1). Lower or raise the support jack (Item 2) to properly align the drawbar and hitch [Figure 4].

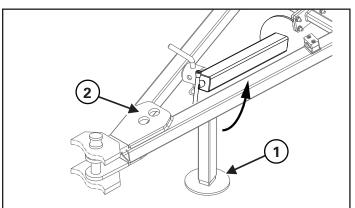
Move the tractor backwards, aligning pin holes with the equipment hitch pin holes.

Leave the operator's position (See "Leaving The Operator's Position" in Operation section).

Install the hitch pin (Item 3) **[Figure 4]** and retaining pin to securely fasten the equipment hitch to the tractor drawbar.

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

Figure 5

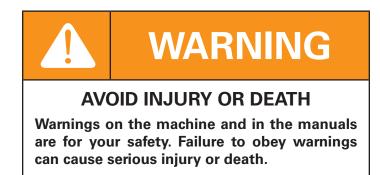


Raise the support jack (Item 1). Rotate and secure the support jack in the storage position. Connect the safety chain to the holes (Item 2) on the hitch **[Figure 5]**.

Connecting PTO Driveline

Stop the engine and leave the operator's position (See "Leaving The Operator's Position" in Operator's section).

Note: The PTO shafts are shipped with the slip clutch disengaged. Engage the slip clutch.



Note: Clean and grease tractor's PTO shaft and PTO driveline coupling each time driveline is connected.

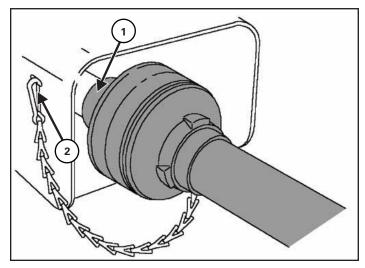


Improper hitch installation can cause PTO driveline damage.

- Do not modify the three point hitch.
- Make sure the PTO driveline is of adequate length and that u-joints are in the correct phase.

Remove the PTO driveline from the storage position (if applicable).

Figure 6



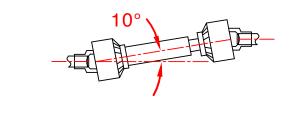
Retract the collar (Item 1) **[Figure 6]** and slide the PTO driveline onto the tractor PTO shaft. Release the collar and the driveline will lock onto the shaft. Push and pull the PTO driveline back and forth several times and make sure it is securely attached to the PTO shaft.

Install PTO driveline safety chain (Item 2) [Figure 6].

Note: The PTO driveline must have a means to retain it to the PTO shaft on the tractor.



- Do NOT exceed 540 RPM PTO.
- Keep PTO shields and all guards in place.
- Keep away from moving parts.
- Keep bystanders away.
- Do NOT connect the PTO at an angle higher than 10° between the two connections.



PTO Driveline Length Check

Due to variations in distances between tractor PTO shafts and implement input shafts, drivelines may need to be shortened or a longer shaft may be required.

When fitting the implement to the tractor, the PTO driveline, with telescoping sections, must be inspected. When the sections are at the most compressed operating position, the sections must not "bottom out".

At its shortest length, there must be at least 2 in. (50.8 mm) of clearance between each section end and opposite section end at the most compressed operating position.

When the sections are at the most extended position, there must be sufficient engagement between the sections.

At its farthest operating extension, a minimum section engagement of 33% of shaft length must be maintained.



AVOID INJURY OR DEATH

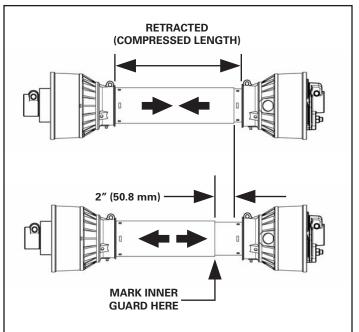
- Do NOT exceed the rated implement PTO speed.
- Stay clear of rotating driveline.
- Keep bystanders away.
- Keep hands, feet, clothing and long hair away.
- Keep PTO shields and all guards in place.
- Disengage PTO, move the tractor controls to the Neutral position, stop the engine and make sure all rotating components are stopped before leaving the operator's position.
- Do NOT service the tractor or implement with the PTO engaged.
- Do NOT service the implement in a raised position unless properly blocked and with all rotating components stopped.
- Disengage PTO for road travel.

PTO Driveline Bottoming Out Check

Stop the engine and leave the operator's position (See "Leaving The Operator's Position" in Operation section).

Make sure the PTO driveline and all rotating components have come to a complete stop before leaving the operator's position (if applicable).





- Disconnect the PTO driveline from the tractor and slide the PTO driveline together until fully retracted (compressed).
- 2. Measure the retracted (compressed) length of PTO driveline [Figure 7].
- 3. Extend the PTO driveline 2 in. (50.8 mm) from the retracted length and place a mark on the inner guard at the end of the outer guard **[Figure 7]**.
- 4. Reattach the PTO driveline to the tractor PTO shaft.
- 5. Enter the operator's position. Start the engine.
- 6. With the rear PTO DISENGAGED, raise and lower the implement and watch the PTO driveline extend and retract.
- 7. If the outer PTO driveline guard slides in (retracts) over the mark at any point of travel, the PTO driveline needs to be shortened.

Reducing The PTO Driveline Length

Stop the engine and leave the operator's position (See "Leaving The Operator's Position" in the Operation section). Make sure the PTO driveline and all rotating components have come to a complete stop before leaving the operator's position.



- Do NOT exceed the rated implement PTO speed.
- Stay clear of rotating driveline.
- Keep bystanders away.
- Keep hands, feet, clothing and long hair away.
- Keep PTO shields and all guards in place.
- Disengage PTO, move the tractor controls to the Neutral position, stop the engine and make sure all rotating components are stopped before leaving the operator's position.
- Do NOT service the tractor or implement with the PTO engaged.
- Do NOT service the implement in a raised position unless properly blocked and with all rotating components stopped.
- Disengage PTO for road travel.

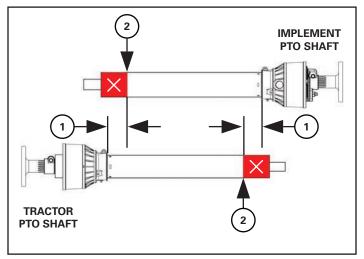
Remove the PTO driveline from the tractor and place in storage position (if equipped).

Enter the operator's position (See "Entering The Operator's Position" in the Operation section). Start the engine.

Raise or lower the three-point implement to get the shortest distance between the tractor PTO shaft and three-point implement gearbox PTO shaft. Stop the engine and leave the operator's position.

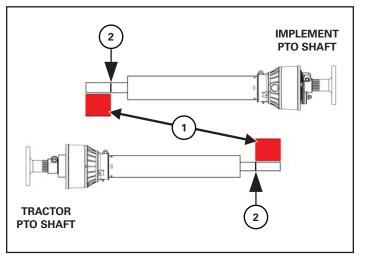
Pull the PTO driveline apart and reinstall each individual section; one half to the tractor PTO shaft and one half to the implement gearbox PTO shaft.

Figure 8



 Hold PTO driveline sections parallel to one another and measure back 2 in. (50.8 mm) (Item 1) [Figure 8] from the yoke of each section and place mark on opposite section. Cut the plastic shield at this length (Item 2) [Figure 8].

Figure 9



- Using the plastic guard lengths that were cut off in [Figure 8], align the cut off lengths (Item 1) [Figure 9] with the end of the inner & outer shafts. Place a mark (Item 2) [Figure 9] on the inner & outer shafts and cut the inner & outer shafts off at this length.
- 3. Round off all sharp edges and deburr.
- 4. Thoroughly grease and install the PTO driveline halves together.
- 5. Recheck for proper operation.

PTO Driveline Engagement Check

Stop the engine and leave the operator's position (See "Leaving The Operator's Position" in the Operation section).

Make sure the PTO driveline and all rotating components have come to a complete stop before exiting the tractor.



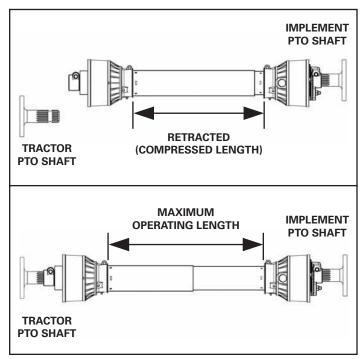
- Keep PTO shields and all guards in place.
- Disengage PTO, move the tractor controls to • the Neutral position, stop the engine and make sure all rotating components are stopped before leaving the operator's position.
- Do NOT service the tractor or implement with ٠ the PTO engaged.
- Do NOT service the implement in a raised position unless properly blocked and with all rotating components stopped.
- **Disengage PTO for road travel.** •
- 1. Disconnect the PTO driveline from the tractor and fully slide the driveline sections together (retracted).
- 2. Measure the retracted (compressed) length of the PTO driveline between the bases of the plastic guards [Figure 10].
- 3. Multiply the retracted driveline length by 1.667 to determine the PTO driveline Maximum Operating Length. (i.e.: 25.5 in. (647.7 mm) x 1.667= 42.5 in. (1079.7 mm) Maximum Operating Length).
- 4. Attach the PTO driveline to the tractor PTO output shaft.
- 5. Enter the operator's position. (See "Entering The Operator's Position" in the Operation section)

- 6. With the PTO driveline attached, position the threepoint implement to where the telescoping PTO driveline is at its maximum operating extension.
- 7. Stop the engine and leave the operator's position. Make sure the PTO driveline and all rotating components have come to a complete stop before leaving the operator's position.
- Measure the length of the PTO driveline between the 8. bases of the plastic shields [Figure 10] to determine the maximum operating length.

If the measured maximum operating length is less than the Maximum Operating Length calculation (from Step 3), the PTO driveline has adequate engagement

If the measured maximum operating length is equal to or more than the Maximum Operating Length calculation (from Step 3), the PTO driveline does not have adequate engagement and should be replaced with a longer driveline. See your Farm King dealer for available PTO drivelines.

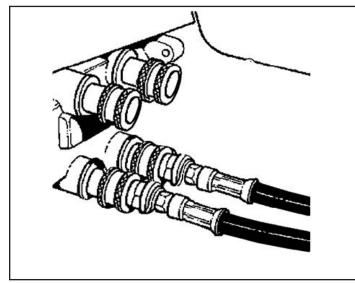
Figure 10



Connecting Hydraulic Hoses

Tedders are equipped with a hydraulic wing lift system.

Figure 11



Push the male couplers into female couplers on the tractor until they are fully engaged and locked [Figure 11].

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.



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

Release pressure and pull the male couplers out to disconnect.

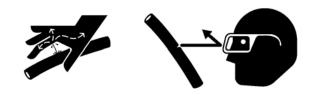


WARNING

AVOID BURNS

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





HIGH PRESSURE FLUID HAZARD

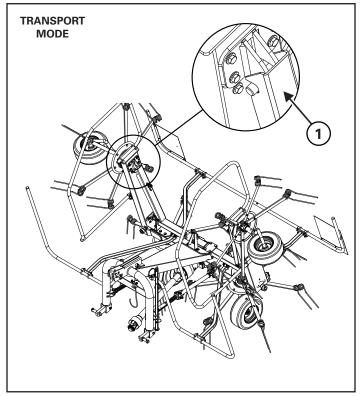
To prevent serious injury or death from high pressure fluid:

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

Work Configuration

Transport the Tedder to the area of work (See "Transport Mode" in Operation section). Always comply with federal, state, local and provincial laws regarding the transport of farm equipment on pubic roadways.





The equipment must be configured into Work Mode for proper field operation.

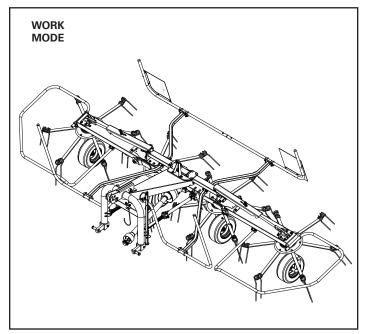
From the operator's position, manually and simultaneously pull the two strings to unlock the rams from their mechanical locking devices (Item 1) on each wing **[Figure 12]**.



AVOID INJURY OR DEATH

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

Figure 13



The wings will descend once unlocked.

Three-Point Models - Lower the hydraulic lifter until the equipment front tines skim the soil.

Pull-Type Models - Verify the equipment inclination in respect to the ground with tines skimming the soil. Make sure the support jack is in the storage position.

Field Operation

Make sure the tractor is properly connected to the equipment.

Enter the operator's position. See "Entering the Operator's Position" in the Operation section.

When starting work, operate the equipment for a short distance and check the result.

Leave the operator's position. See "Leaving the Operator's Position" in the Operation section.

Make adjustments for the desired performance and verify that the correct equipment angle. See "Adjustments" in the Operation section.

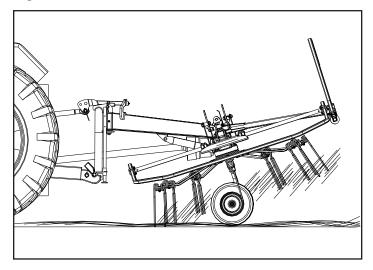
Operate only at 540 RPM.

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



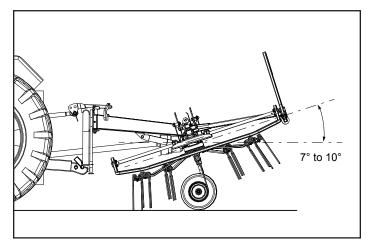
- Do not permit riders.
- Keep all guards and shields in place.
- Keep hands, feet, clothing and hair away from moving parts.
- Stop engine, set brake, remove key and wait for all moving parts to stop before servicing, adjusting, repairing and unplugging.
- Remove bystanders, especially children, before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

Figure 14



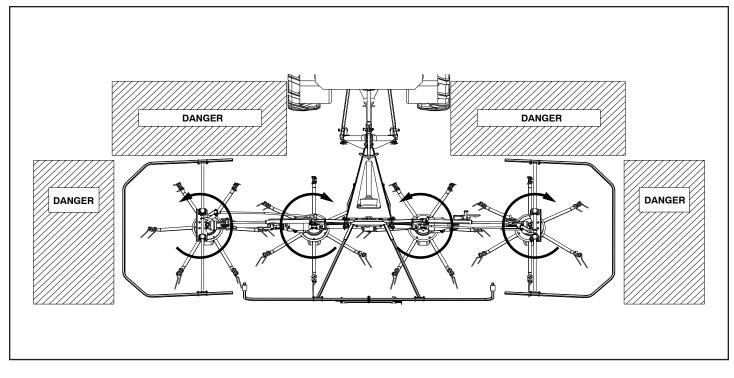
The tines scrape the ground and collect the cut material. The material is pushed to the rear and spread evenly **[Figure 14]**.

Figure 15



For best results, the rotary groups must operate at an angle of 7° to 10° from the ground **[Figure 15]**.

Figure 16



Rotary group rotation is as shown [Figure 16].



AVOID INJURY OR DEATH

During operation make sure no bystanders, especially small children, are in the work area.

Keep away from all dangerous areas around the machine.

Adjustments



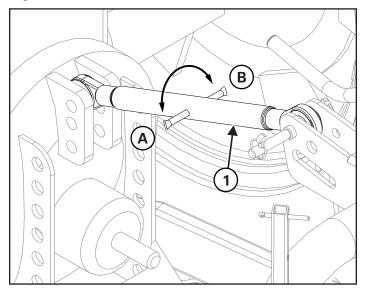
- Always park on a flat level surface.
- Place all controls in NEUTRAL.
- Engage the park brake.
- Stop the engine and remove the key.
- Wait for all moving parts to stop.

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.

Three-Point Hitch Models

Figure 17

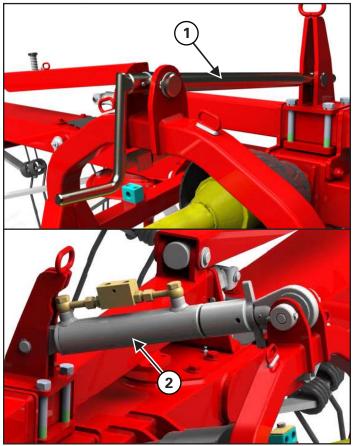


Turn the lever (Item 1) counterclockwise (Direction A), to reduce the angle of the rotary groups **[Figure 17]**.

Turn the lever (Item 1) clockwise (Direction B), to increase the angle of the rotary groups **[Figure 17]**.

Pull-Type Models

Figure 18



Turn the crank (Item 1), or act on the hydraulic cylinder (Item 2), to change the angle of the rotary groups **[Figure 18]**.

Transport Configuration

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

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

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.



AVOID INJURY OR DEATH

- Disengage PTO for road travel.
- Keep PTO shields and all guards in place
- Keep bystanders away.
- Do not allow riders.

IMPORTANT

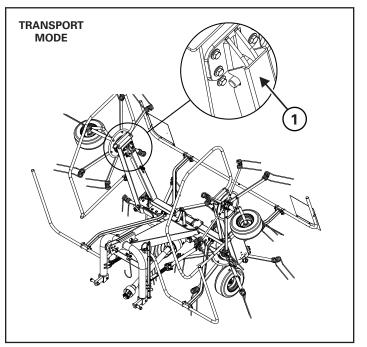
Never exceed 20 mph (32 kph) during road travel.

WARNING

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

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

Figure 19



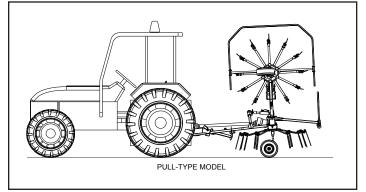
Act on the hydraulic controls and raise the left and right wings until the two mechanical locks (Item 1) snap in place **[Figure 19]**.



IMPORTANT

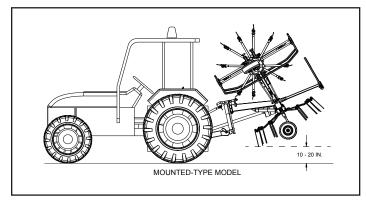
Make sure both wings are securely locked in place, in transport configuration, before road travel.

Figure 20



Pull-Type Models: Level the rotary group front to back. Make sure no tines are touching the ground **[Figure 20]**.

Figure 21



Mounted-Type Models: Raise the three point hitch and lift the equipment off the ground. The lowest point of the equipment must be 15 to 20 in. (40 to 50 cm) off the ground **[Figure 21]**.

Maintenance

Service Schedule Chart	39
Lubrication	40
Recommendations	40
Locations	40
Tine Replacement	42
Safety Sign (Decal) Installation	42
Storage And Return To Service	43
Storage	43
Return To Service	43



Service Schedule Chart

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

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

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

#	DECODIDITION	SERVICE PROCEDURES					
#	DESCRIPTION	CHECK	CLEAN	LUBE	CHANGE	COVER	DRAIN
Daily	Maintenance (or every 8 hours)						
1	PTO Cross and Bearings	~		~			
Weel	kly (or every 50 hours)						
2	PTO Telescoping Tubes			1			
3	Slip Clutch Connector			~			
4	PTO Quick Disconnect			~			
5	Hitch / Wing Pivot Points			~			
Mon	thly (or every 100 hours)						
6	Transfer Box	~		~			
Annually (or every 500 hours)							
5	Driveline & Gears	~		~			
7	Machine	~					

Lubrication

Recommendations

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

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



AVOID INJURY OR DEATH

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

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

Follow good shop practices:

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

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

Replace and secure all shields removed during servicing before operating.

Use heavy leather gloves to handle sharp objects.

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

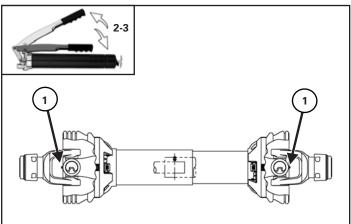
Relieve pressure on hydraulic system before repairing or adjusting.

Locations



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

Figure 22



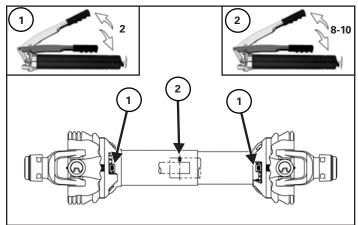
Apply two to three pumps of grease to the cross and bearings (Item 1) [Figure 22] on the PTO driveline.

Grease every 8 hours.

Note: Images may not show your exact PTO driveline but the procedure is correct.

Farm King

Figure 23

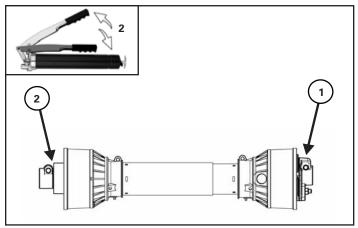


Apply two pumps of grease to the guard bushings (Item 1) [Figure 23].

Apply eight to ten pumps of grease to the telescoping member (Item 2) [Figure 23].

Grease every 50 hours.

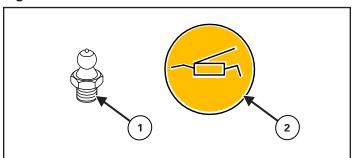
Figure 24



Apply two pumps of grease to the slip clutch (Item 1) [Figure 24] and PTO quick disconnect (Item 2) [Figure 24].

Grease every **50 hours**.

Figure 25



Lubrication point locations (Item 1) are identified with a sticker (Item 2) [Figure 25].

Lubrication points include:

- Wheels
- Driveline mounts
- Hitch pivot points
- Wing pivot points

Grease every 50 hours.

Figure 26



Check the grease in the transfer box (Item 1). Internal components must be immersed in grease **[Figure 26]**.

Use grease type: AGIP GREASE MU EP2

Grease type equivalents:

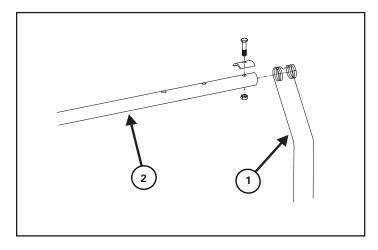
- ISO L-X-BCHB 2
- DIN 51825 KP2K-20
- CINCINNATI MILACRON P-64

Check / fill grease in gearbox every 100 hours.

Tine Replacement

Periodically check all tines for wear or damage.

Figure 27



Replace the tines (Item 1) by removing the bolt, nut, and retaining plate **[Figure 27]**.

Slide the tine off of the arm (Item 2) [Figure 27].

Replace tine and attach with the bolt, nut, and retaining plate.

Safety Sign (Decal) Installation



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

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

Storage And Return To Service

Storage

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



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

- Thoroughly wash the machine with a pressure washer or water hose to remove all dirt, mud, debris or residue.
- Lubricate all bushings to remove any water residue from washing.
- Remove any material that has become entangled around any moving part.
- Place hydraulic hoses or electrical connector (if applicable) in the storage brackets.
- Inspect the hitch and all welds on the equipment for wear and damage.
- Check for loose hardware, missing guards, tines, or damaged parts.
- Check for damaged or missing safety signs (decals). Replace if necessary.
- Replace worn or damaged parts.
- Touch up all paint nicks and scratches to prevent rusting.
- Place the equipment in a dry protected shelter.
- **Note:** If a dry protected shelter is not available, cover with a waterproof tarp and tie down securely.
- Place the equipment flat on the ground.
- Support the jack / frame with planks if required.

Return To Service

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

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



Parts Identification

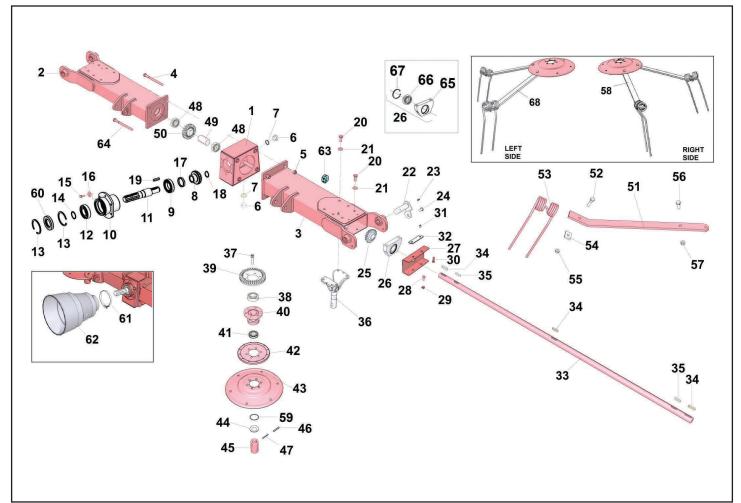
Always give your dealer the Model, Color and Serial Number of your machine to assist them in ordering and obtaining the correct parts. Use the exploded view and tabular listing of the area of interest to exactly identify the required part.

Center Frame	47
Wing Frame	50
Wing Lift, Locking Device, Guards	52
Pull-Type Hydraulic Hoses	54
Pull-Type Hitch, PTO	55
Pull-Type Mechanical Angle Adjust, Release Rope	56
Pull-Type Hydraulic Angle Adjust	58
Mounted-Type Guards	60
Mounted-Type Hitch, PTO, Release Rope	62
Mounted-Type Hydraulic Hoses, Stabilizer Bars	64
Hydraulic Cylinder - Angle Adjust	66
Hydraulic Cylinder - Wing Fold	67
PTO Shaft - RT17	68
PTO Shaft - RT19	69



Farm King

Center Frame



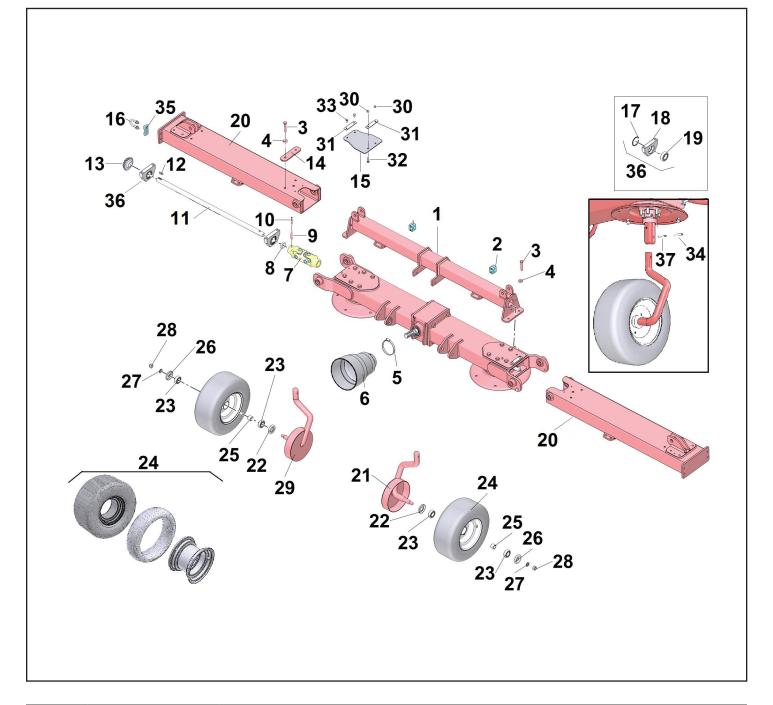
ITEM	PART NUMBER	DESCRIPTION
1	R18033776	HAYTEDDER GEARBOX
2	R18033479	R LATERAL ARM - RT17
	R18033728	R LATERAL ARM - RT19
3	R18033727	L LATERAL ARM - RT17
	R18033729	L LATERAL ARM - RT19
4	R3010814	HH SCREW M14X190 ZN
5	R3020203	SELF LOCKING NUT M10
6	R4010816	PLUG 3/4
7	R3030409	COPPER WASHER ¾"
8	R8010302	BEVEL PINION CENTRAL BOX
9	R12240190	BEARING 6009 2RS
10	R18033775	SLEEVE
11	R12320301	SHAFT PDF
12	R12240145	BEARING 6207 2RS
13	R3120105	SNAP RING E.72

Farm King

ITEM	PART NUMBER	DESCRIPTION
14	R3120102	CIR CLIP D.35
15	R3010294	HH SCREW M8X20
16	R3030802	WASHER M12 S.E.
17	R12061035	SPACER 54X45X8
18	R3120101	CIR CLIP Ø30
19	R3110003	TAB 8X7X40
20	R3010228	HH SCREW M12X30
21	R3030800	WASHER M12 S.E.
22	R18033491	PIN Ø30 L.119
23	R3090101	GREASE ZERK M8X1
24	R3011268	HH SCREW M12X120 ZN
25	R8010303	BEVEL PINION FOR ROTOR
26	R18033601	COMPLETE DRAFT SUPPORT
27	R1015252	CENTRAL CLOSING HOUSING
28	R3010250	HH SCREW M8X16
29	R3020302	NUT M8
30	R3010780	HH SCREW M8X30 ZN
31	R3020209	SELF LOCKING NUT M8
32	R18033544	PLATE
33	R18033777	SHAFTTRANSMISSION L.1560 MM - RT17
	R12010211	SHAFTTRANSMISSION L.1783 MM - RT19
34	R3110002	TAB 8X7X35
35	R3110008	TAB 8X7X30
36	R18034226	CENTRAL PIN WITH BRACKET
37	R3010605	SCREWTCEI M12X55
38	R12240109	BEARING 6207
39	R18031169 or R8010317	BEVEL CROWN FOR ROTOR
40	R18031171 or R2010422	SAFETY LOOP
41	R12240160	BEARING 32007A
42	R18033532	PROTECTION SCREEN
43	R18031170	ARM CONNECTION FLANGE
44	R10011315	NILOS RING 32007 AV
45	R18032308	BUSH Ø54 L.106
46	R3080141	ELASTIC PIN 10X55
47	R3080142	ELASTIC PIN 6X55
48	R12240108	BEARING 6206 2RS
49	R12070330	SPACER 42X8X74
50	R8010304	CROWN FOR CENTRAL BOX
51	R18030620	ARM - RT17
	R18032339	ARM - RT19
52	R3011297	SCREWTE M12X45 ZN.

ITEM	PART NUMBER	DESCRIPTION
53	R18030616	TINE
54	R18030627	SPRING CLAMP
55	R3020202	SELF LOCKING NUT M12
56	R3011215	SCREWTE 12X40
57	R3020202	SELF LOCKING NUT M12
58	R18033631	R COMPLETE ARM - RT17
	R18033736	R COMPLETE ARM - RT19
59	R3120126	AXIAL WASHER PS 355205
60	R12260003	SEAL
61	R4010702	BAND
62	R9070101	COVER
63	R18033216	COLLAR C3
64	R3010813	HH SCREW M14X170 ZN
65	R18033702	SUPPORT SHAFT
66	R12240108	BEARING 6206 2RS
67	R3120108	SNAP RING 1.62
68	R18033740	R COMPLETE ARM - RT17
	R18033734	R COMPLETE ARM - RT19

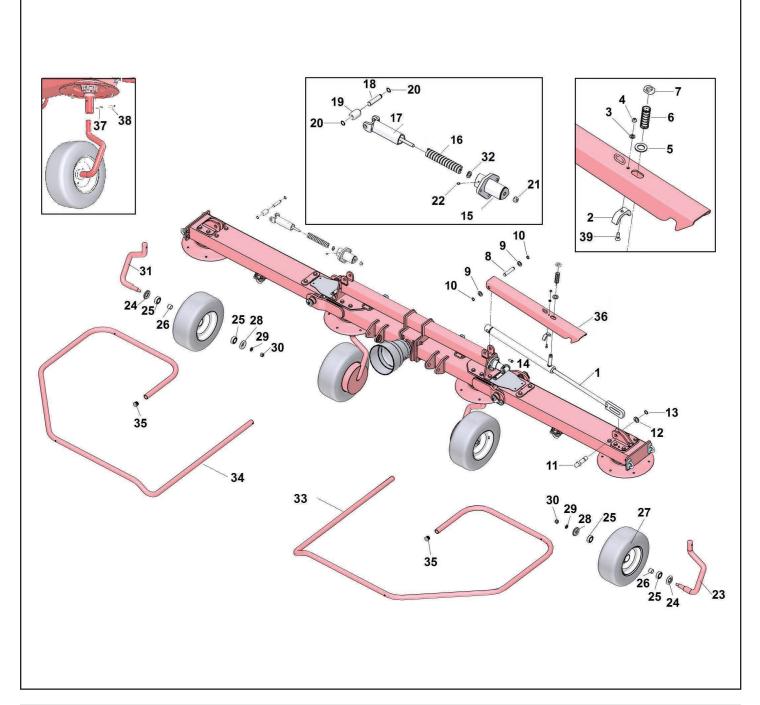
Wing Frame



ITEM	PART NUMBER	DESCRIPTION
1	R18033535	CROSS ATTACK L.1365 MM - RT17
	R18033730	CROSS ATTACK L.1590 MM - RT19
2	R18033216	COLLAR C3
3	R3010231	SCREWTE M12X70
4	R3030800	WASHER M12 S.E.
5	R4010702	BAND

ITEM	PART NUMBER	DESCRIPTION
6	R9070101	COVER
7	R8020702	JOINT DOUBLE DG2
8	R18033703	SPACER D.42 L.8
9	R3080141	ELASTIC PIN 10X55
10	R3080142	ELASTIC PIN 6X55
11	R12010103	SHAFT L.916 MM - RT17
	R12010104	SHAFT L.1041 MM - RT19
12	R3110008	TAB 8X7X30
13	R8010303	BEVEL PINION FOR ROTOR
14	R1015143	SHEET METAL SCROLL
15	R9170006	DUST COVER CUP
16	R3070118	U BOLTO M10
17	R3120108	RING SEEGER I62
18	R18033702	SUPPORT SHAFT
19	R12240108	BEARING 6206 2RS
20	R18033486	LATERAL ARM - RT17
	R18033731	LATERAL ARM - RT19
21	R18032307	AXLE FENDER SX
22	R12070314	INTERNAL SHIELD
23	R12240128	BEARING 6205 2RS
24	R12170106	WHEEL 16.650.8 COMPLETE
	R12070327	TIRE 16.650.8
	R12070326	AIRTUBE 16.650.8
	R12070325	WHEEL RIM
25	R12070307	SPACER
26	R12070315	EXTERNAL SHIELD
27	R3030175	WASHER M16 ZN
28	R3020204	SELF LOCKING NUT M16
29	R18032315	AXLE FENDER DX
30	R3020209	SELF LOCKING NUT M8
31	R18033544	PLATE
32	R3010780	SCREWTE M8X30
33	R3011221	SCREWTE M8X16 ZN
34	R3080142	ELASTIC PIN 6X55
35	R12881497	BASE COLLAR
36	R18033601	COMPLETE DRAFT SUPPORT
37	R3080141	ELASTIC PIN 10X55

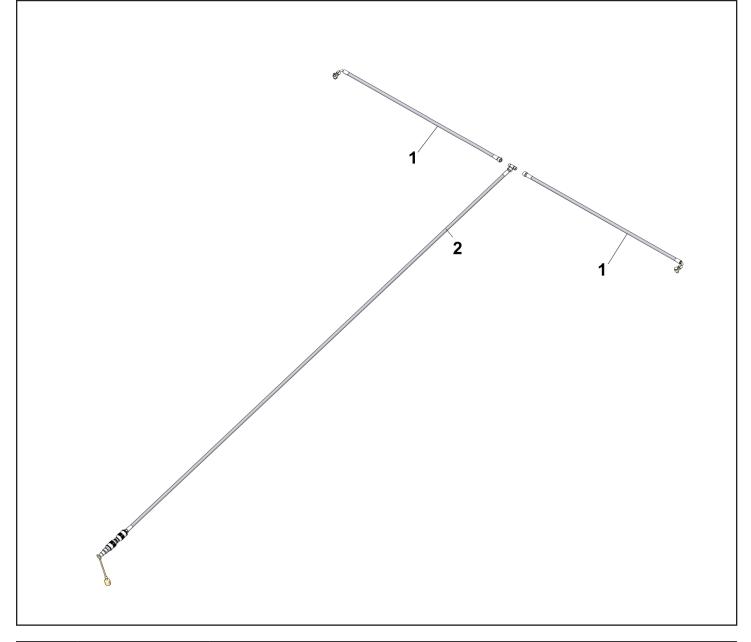




ITEM	PART NUMBER	DESCRIPTION
1	R18033536	CYLINDER - RT17
	R18033732	CYLINDER - RT19
2	R12881406	END POINT D.50
3	R3030156	WASHER M16 ZN
4	R3020209	SELF LOCKING NUT M8

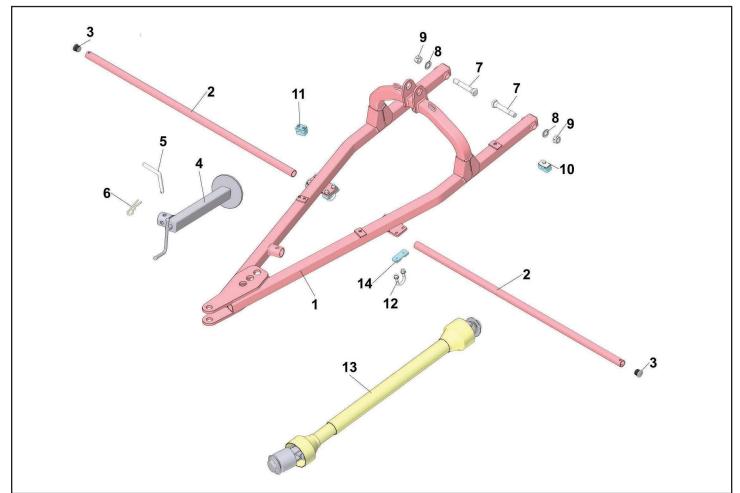
ITEM	PART NUMBER	DESCRIPTION
5	R3030176	WASHER M22 ZN
6	R11010906	SPRING D.27 L.78
7	R18033542	STOP FRAME
8	R18033700	PIN HYDRAULIC CYLINDER D20 L100
9	R3030168	WASHER M20
10	R3120157	SEEGER E20
11	R18033538	PIN
12	R3030115	WASHER 53X26X5
13	R3120127	RING SEEGER D.25
14	R3011211	SCREWTE M10X25 ZN
15	R18033541	SEAT SHAFT
16	R11010635	SPRING
17	R18032378	SLIDING SHAFT
18	R18033704	PIN HYDRAULIC CYLINDER D16 L72
19	R18032373	ROLLER
20	R3120128	RING SEEGER D.16
21	R3020202	SELF LOCKING NUT M12
22	R3090102	GREASE ZERK M6X1
23	R18032318 or R14013144	RIGHT WHEEL AXLE
24	R12070314	INTERNAL SHIELD
25	R12240113	BEARING 6205 2RS
26	R12070307	SPACER
27	R12170106	WHEEL COMPLETE 16/650/8
28	R12070315	EXTERNAL SHIELD
29	R3030175	WASHER M16 ZN
30	R3020204	SELF LOCKING NUT M16
31	R18032316	LEFT WHEEL AXLE
32	R3030800	WASHER S.E. M12
33	R18033551	PROTECTION - RT17
	R18033738	PROTECTION - RT19
34	R18033550	PROTECTION - RT17
	R18033737	PROTECTION - RT19
35	R9190018	RUBBER CUP
36	R18033537	BLOCK - RT17
	R18033733	BLOCK - RT19
37	R3080141	ELASTIC PIN 10X55
38	R3080142	ELASTIC PIN 6X55
39	R3010936	SCREWTPSEI M8X25 ZN

Pull-Type Hydraulic Hoses



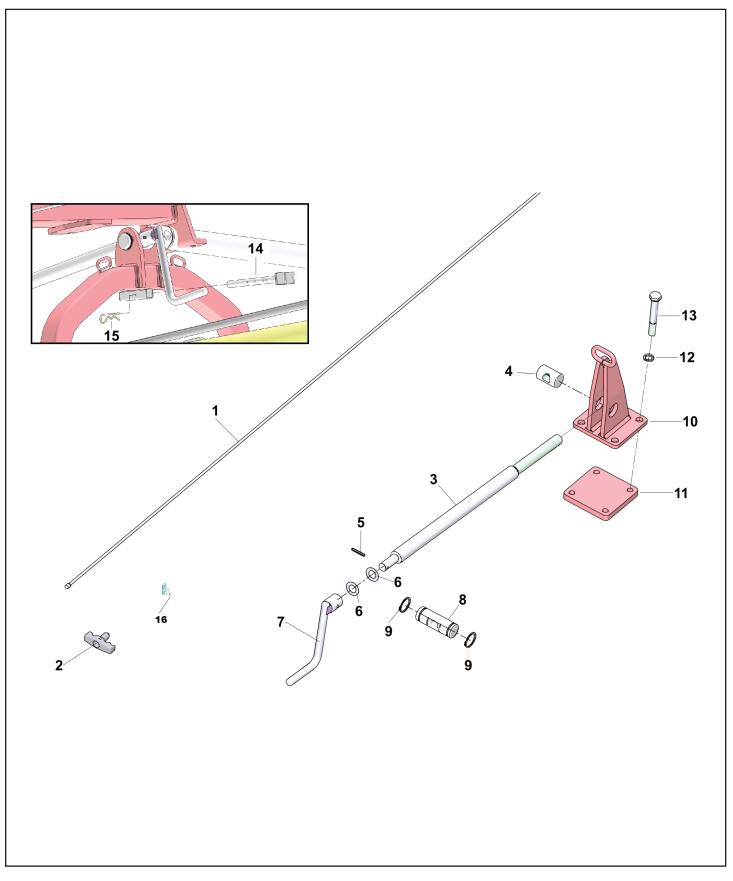
ITEM	PART NUMBER	DESCRIPTION
1	R12760724	HYDRAULIC HOSE L.1350
2	R12760722	HYDRAULIC HOSE L.3300

Pull-Type Hitch, PTO



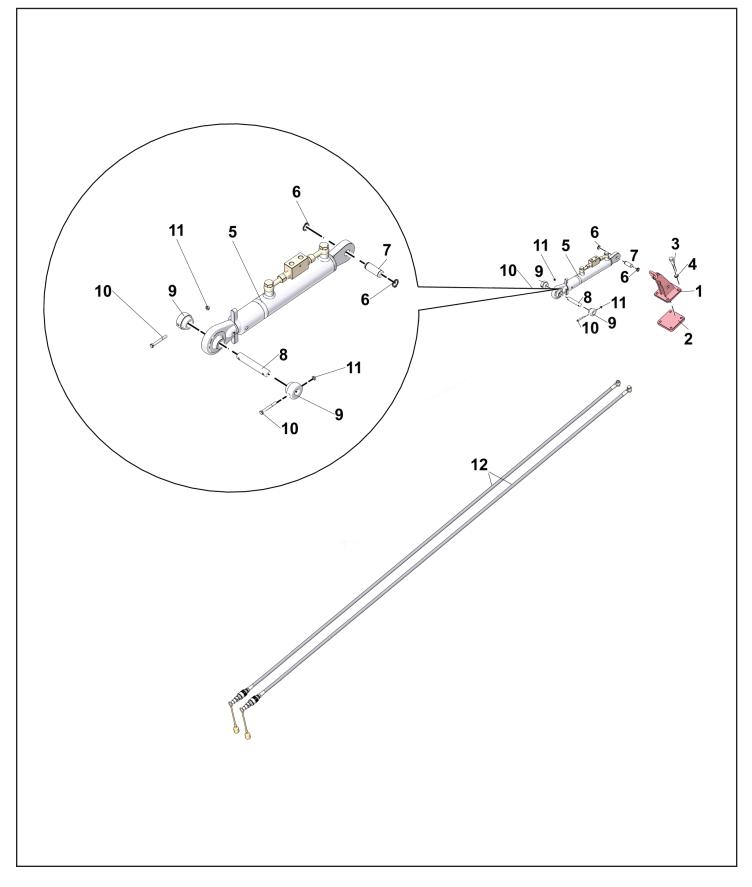
ITEM	PART NUMBER	DESCRIPTION
1	R18033556	HELM
2	R14013151	FRONT PROTECTION L.1300
3	R9190018	RUBBER CUP Ø32
4	R18032774	STAND
5	R18033195	PIN
6	R3040202	ELASTIC PIN 5X100
7	R18033636	PIN
8	R3030168	WASHER M20 ZN
9	R3020216	SELF LOCKING NUT M20
10	R18033342	COLLAR CF2
11	R18033216	COLLAR C3
12	R3070118	U BOLT M10
13	R8020438	PTO SHAFT 90 KG/M L.1480 - RT17
	R8020426	PTO SHAFT 120 KG/M L.1520 - RT19
14	R12881497	BASE COLLAR 30X20

Pull-Type Mechanical Angle Adjust, Release Rope



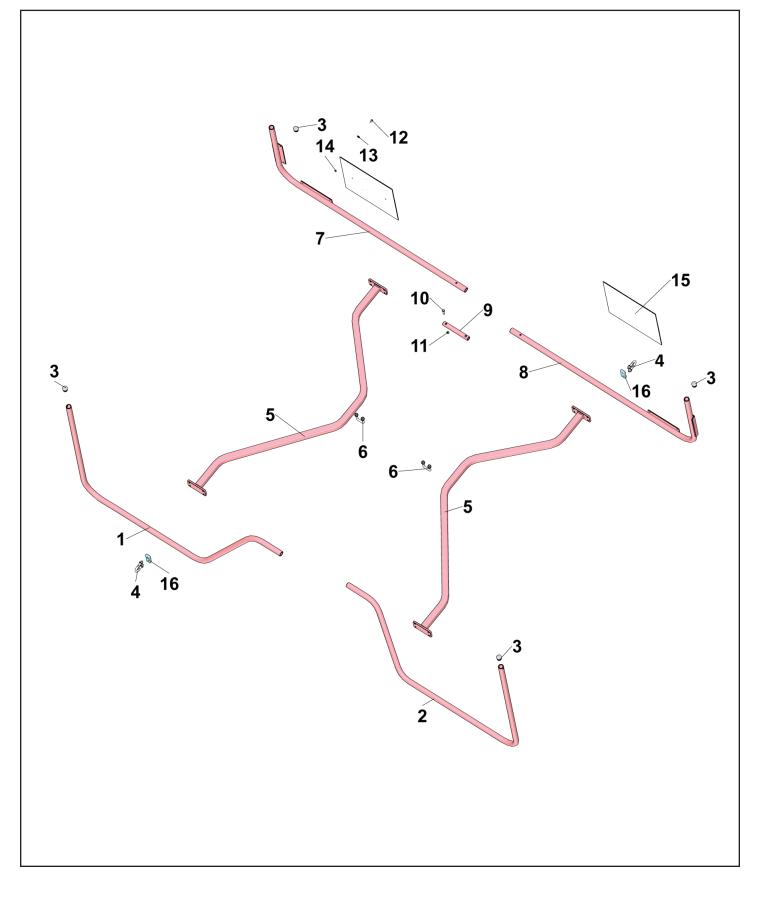
ITEM	PART NUMBER	DESCRIPTION
1	R18033715	ROPE
2	R9060108	HANDLE
3	R18033712	SCREW REGULATION
4	R18033714	SNAIL M24 L.55
5	R3080102	ELASTIC PIN 6X36
6	R12280003	WASHER AS2035
7	R18030697	HANDLE
8	R18033711	FRONT SNAIL
9	R3120146	SEEGER D.35
10	R18034347	ATTACK REGULATION
11	R18035418	PLATE ATTACK
12	R3030322	GROWER WASHER M16
13	R3010408	SCREWTE M16X110 ZN
14	R18030691	HANDLE STOP
15	R3040201	SPLIT PIN 3X60
16	R3160101	CRICKET Ø8

Pull-Type Hydraulic Angle Adjust



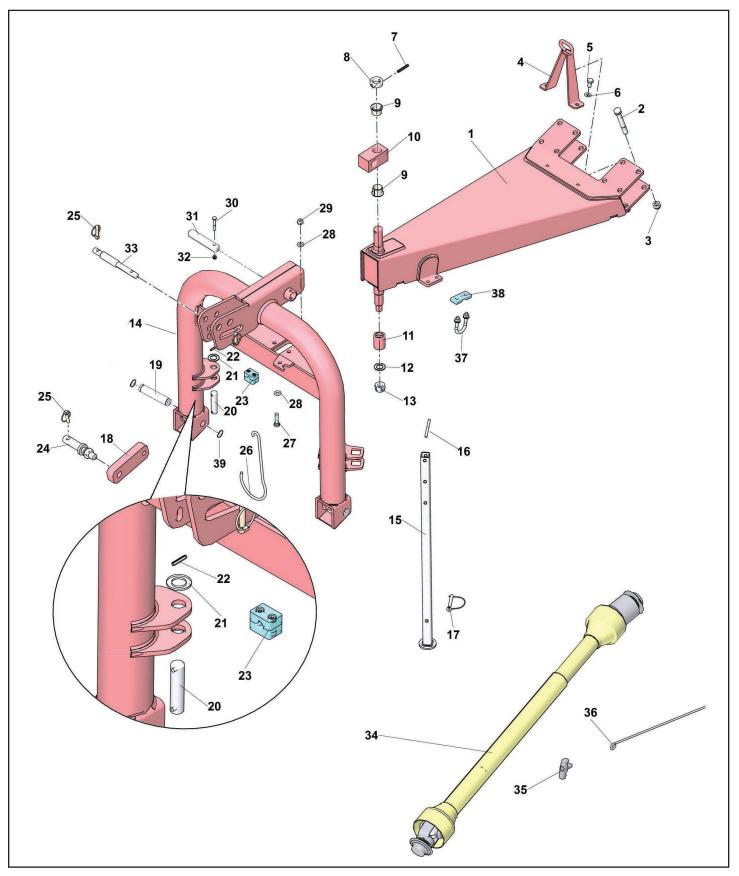
ITEM	PART NUMBER	DESCRIPTION
1	R18035531	ATTACK CYLINDER
2	R18035418	PLATE ATTACK
3	R3010408	SCREWTE M16X110 ZN
4	R3030322	GROWER WASHER M16
5	R18033957	CYLINDER
6	R3120157	SEEGER E20
7	R18033713	PIN HYDRAULIC CYLINDER D20 L100
8	R18033321	PIN Ø25 L.160
9	R18033716	BUSH
10	R3010760	SCREWTEM6X55 ZN
11	R3020213	SELF LOCKING NUT M6
12	R12760723	HYDRAULIC HOSE L.3400

Mounted-Type Guards

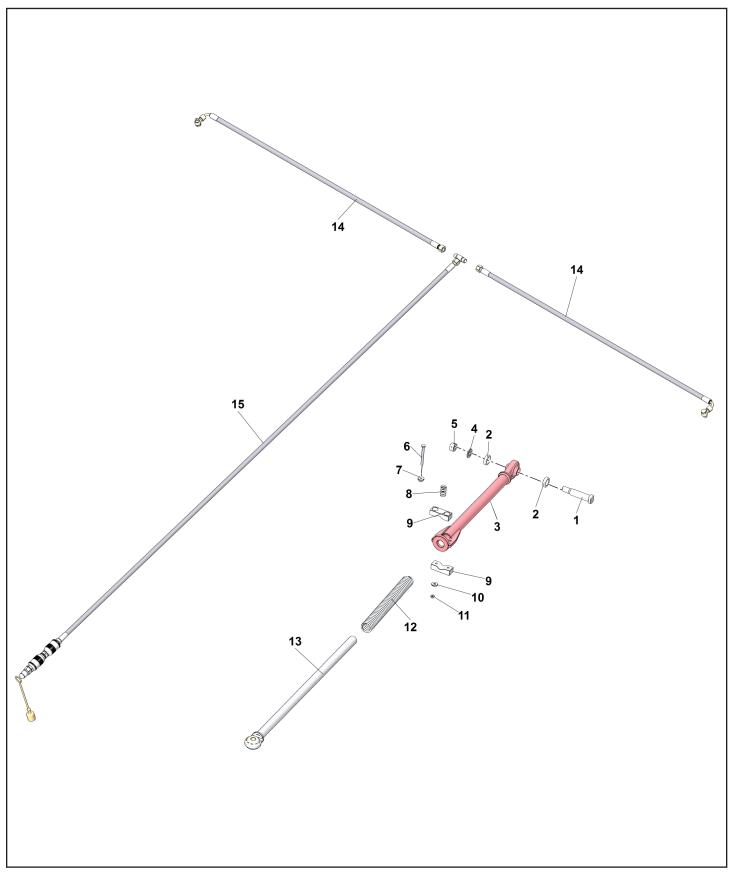


ITEM	PART NUMBER	DESCRIPTION
1	R18033553	FRONT PROTECTION DX
2	R18033554	FRONT PROTECTION SX
3	R9190018	RUBBER CUP Ø32
4	R3070118	U BOLTO M10
5	R18033552	UNION PROTECTION
6	R3170120	U BOLTO M10X40
7	R18033708	PROTECTION BACK DX
8	R18033555	PROTECTION BACK SX
9	R14013219	CONNECTION PROTECTION
10	R3011258	SCREWTE M8X45 ZN
11	R3020209	SELF LOCKING NUT M8
12	R3011672	SCREWTE M16X16 ZN
13	R3030160	WASHER M6 EXL ZN
14	R3020213	SELF LOCKING NUT M6
15	R12880422	PANEL
16	R14080901	BASE COLLAR

Mounted-Type Hitch, PTO, Release Rope



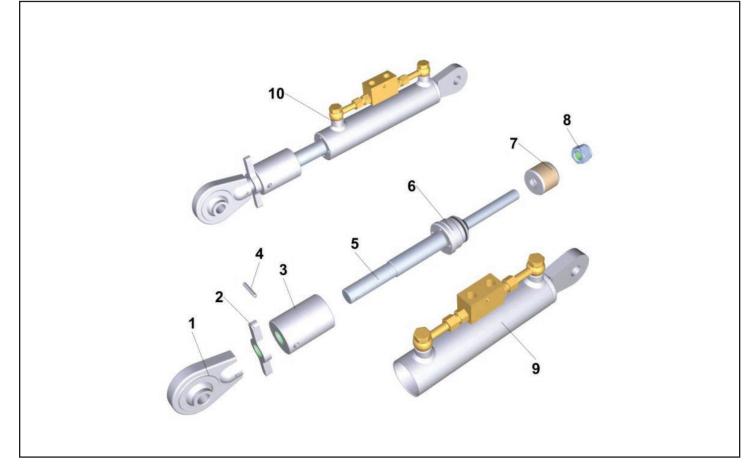
ITEM	PART NUMBER	DESCRIPTION
1	R18033546	FRAME
2	R3010405	SCREWTE M16X120 ZN
3	R3020204	SELF LOCKING NUT M16
4	R18033973	SUPPORT ROPE 3P
5	R3011268	SCREWTE M12L20 ZN
6	R3030162	WASHER M12 ZN
7	R3080105	ELASTIC PIN 8X50
8	R18032266	BUSH
9	R12240237	BUSH GLYCODUR 3030426
10	R18032257	SUPPORT
11	R12071212	BUSH
12	R3030176	WASHER M22 ZN
13	R3020222	SELF LOCKING NUT M22
14	R18032254	3P ATTACK
15	R18032260	STAND
16	R3040117	ELASTIC PIN
17	R3080204	PIN Ø10
18	R18033185	BRACKET
19	R12310122	PIN
20	R18032362	PIN Ø22 L.91
21	R3030176	WASHER M22 ZN
22	R3080109	ELASTIC PIN 6X30
23	R18033216	COLLAR
24	R12310307	PIN 2°
25	R3080202	PIN
26	R18032512	НООК
27	R3011707	SCREWTE M12L45 10.9 ZN
28	R3030162	WASHER M12 ZN
29	R3020202	SELF LOCKING NUT M12
30	R3011210	SCREWTE M8X50
31	R18032256	PIN Ø28 L.135
32	R3020209	SELF LOCKING NUT M8
33	R12310115	PIN 3POINT
34	R8020438	PTO SHAFT 900 NM L.1480 GVL GV
35	R9060108	HANDLE
36	R18033715	ROPE
37	R3070118	U BOLT M10
38	R12881497	BASE COLLAR 30X20
39	R3120128	SEEGER Ø16



Mounted-Type Hydraulic Hoses, Stabilizer Bars

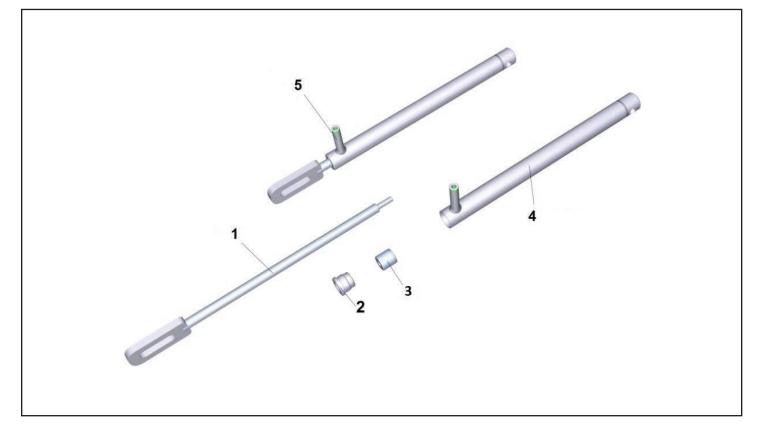
ITEM	PART NUMBER	DESCRIPTION
1	R18033543	PIN
2	R18033572	WASHER Ø40
3	R18033548	CYLINDER
4	R3030168	WASHER M20 ZN
5	R3020216	SELF LOCKING NUT M20
6	R3011312	SCREWTE M8X90 ZN
7	R18033165	SUPPORT SPRING
8	R11010708	SPRING
9	R18033569	BRAKE
10	R3030157	WASHER M8 EXL ZN
11	R3020209	SELF LOCKING NUT M8
12	R11010536	SPRING
13	R18033549	ROD
14	R12760724	HYDRAULIC HOSE L.1350 MM
15	R12760725	HYDRAULIC HOSE L.2400

Hydraulic Cylinder - Angle Adjust



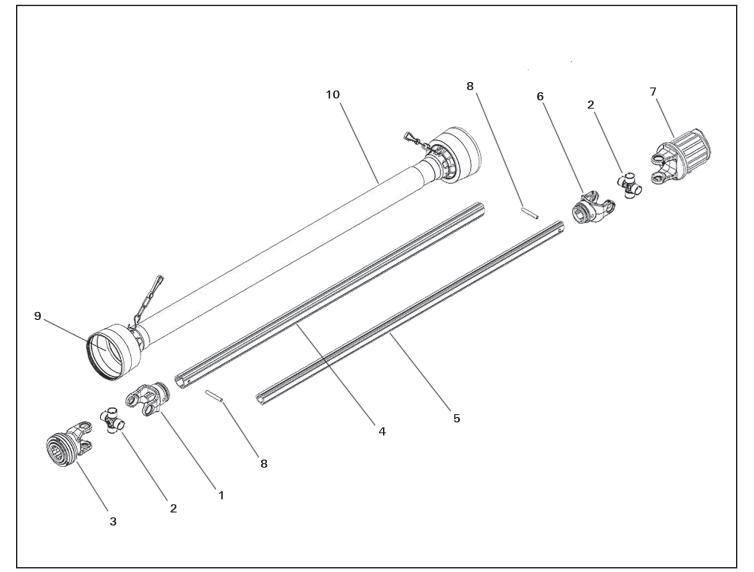
ITEM	PART NUMBER	DESCRIPTION
1	R18053185	SUPPORT
2	R18053179	HANDLE
3	R18053180	BUSH
4	R3080103	ELASTIC PIN 6X40
5	R18053181	ROD
6	R18053182	HEAD
7	R18033666	SEAL KIT COMP.
8	R3020232	SELF LOCKING NUT M20
9	R18053184	CYLINDER WITH VALVE
10	R18033957	CYLINDER COMPLETE Ø50 C.100

Hydraulic Cylinder - Wing Fold



ITEM	PART NUMBER	DESCRIPTION
1	R18053172	ROD - RT17
	R18053174	ROD - RT19
2	R18053175	HEAD
3	R18033665	SEAL KIT - RT17
	R18033667	SEAL KIT - RT19
4	R18053177	CYLINDER - RT17
	R18053178	CYLINDER - RT19
5	R18033536	CYLINDER COMPLETE - RT17
	R18033732	CYLINDER COMPLETE - RT19

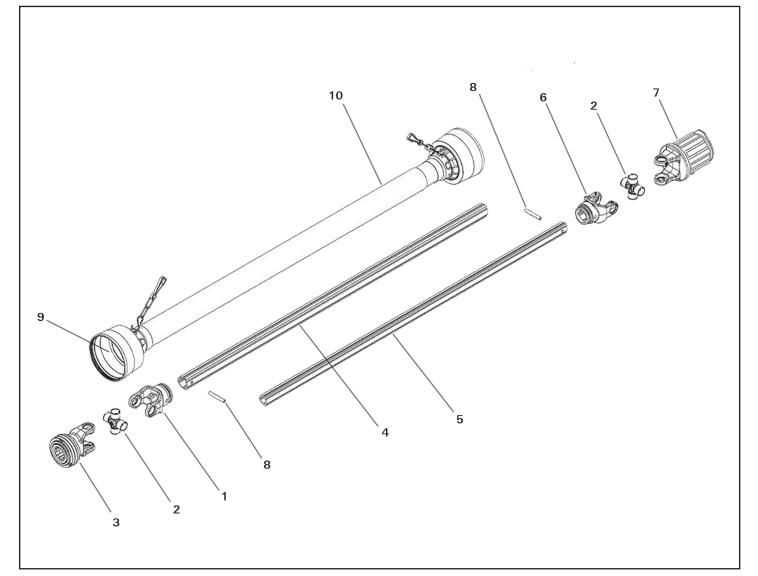
PTO Shaft - RT17



ITEM	PART NUMBER	DESCRIPTION
1	R12881456	FORK
2	R12881457	CROSS
3	R12881458	FORK SPLINED
4	R12881459	TUBE EXT. L.1085
5	R12881460	TUBE INT. L.1085
6	R12881461	FORK INT.
7	R12881462	LIMITING
8	R12881463	ELASTIC PIN 8X55 DIN 1481
9	R12881464	EXTERNAL PROTECTION L.1210
10	R12881465	INTERNAL PROTECTION L.1210
-	R8020438	PTO SHAFT COMPLETE RT17

Farm King

PTO Shaft - RT19



ITEM	PART NUMBER	DESCRIPTION
1	R12881466	FORK
2	R12881467	CROSS
3	R12881468	FORK SPLINED
4	R12881469	TUBE EXT. L.1060
5	R12881470	TUBE INT. L.1060
6	R12881471	FORK INT.
7	R12881472	LIMITING
8	R12881473	ELASTIC PIN 8X65 DIN 1481
9	R12881474	EXTERNAL PROTECTION L.1210
10	R12881475	INTERNAL PROTECTION L.1210
-	R8020426	PTO SHAFT COMPLETE RT19



Specifications And Shipping Kit Numbers

Specifications	73
Shipping Kit And Bundle Numbers	73
Hardware Torque Values	74
Metric Chart	74
Imperial Chart	75



Specifications

MODEL	RT17	RT19		
Working Width	17′ (520 cm)	19′ (570 cm)		
Transport Width	9' 2″ (280 cm)	10′ 5″ (320 cm)		
Working Speed	9 mph (14 kph)	9 mph (14 kph)		
Rotors	4	4		
Arms Per Rotor	6	6		
Tires	4, 16 x 6.50 x 8 ply	4, 16 x 6.5 x 8 ply		
HP Requirements	20 hp (15 kW)	20 hp (15 kW)		
РТО	540 RPM	540 RPM		
Weight	1,275 lb (578 kg)	1,400 lb (635 kg)		

Note: Dimensions are approximate measurements.

Shipping Kit And Bundle Numbers

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

Qty.	Bundle	Description			
17' Pull Type W/ Hydraulic Fold					
1	RT417VTFK	Body Assembly			
19' Pull Type W/ Hydraulic Fold					
1	RT419VTFK	Body Assembly			

Hardware Torque Values

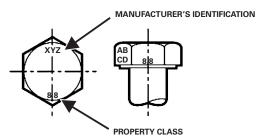
Metric Chart

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.

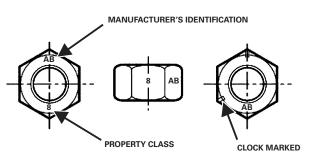
Use the following charts to determine the correct torque when checking, adjusting or replacing hardware. **Torque values are listed in newton-meters (inch* or foot pounds) for normal assembly applications**.

Nominal Size	Class 5.8		Clas	s 8.8	Class	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**.

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

Identification of Hex Cap Screws and Carriage Bolts





GRADE 5 SAE BOLTS



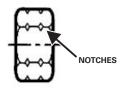






GRADE 8 SAE HEX NUTS

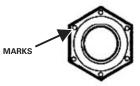
Identification of Hex Nuts and Lock Nuts



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



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



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



Warranty

Farm King Base Limited Warranty	
Repair Parts Limited Warranty	
What Is Not Covered	79
Authorized Dealer And Labor Costs	
Warranty Requirements	80
EXCLUSIVE EFFECT OF WARRANTY AND LIMITATION OF LIABILITY	



Farm King Base Limited Warranty

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

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

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

Repair Parts Limited Warranty

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

What Is Not Covered

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

Authorized Dealer And Labor Costs

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

Warranty Requirements

To be covered by warranty, each new product must be registered with Farm King within thirty (30) days of delivery to original retail purchaser. If the customer decides to purchase replacement components before the warranty disposition of such components is determined, Farm King will bill the customer for such components and then credit the replacement invoice for those components later determined to be covered by this limited warranty. Any such replacement components that are determined not 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 BYTHE PURCHASER ON FARM KING'S SKILL OR JUDGMENT TO SELECT OR FURNISH GOODS FOR ANY PARTICULAR PURPOSE. THE PURCHASER'S ONLY AND EXCLUSIVE REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON FARM KING'S PRODUCTS ARE THOSE SET FORTH HEREIN. IN NO EVENT SHALL FARM KING BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BY WAY OF EXAMPLE ONLY AND NOT LIMITATION, LOSS OF CROPS, LOSS OF PROFITS OR REVENUE, OTHER COMMERCIAL LOSSES, INCONVENIENCE, OR COST OF REPLACEMENT OF RENTAL EQUIPMENT). IN NO EVENT SHALL FARM KING'S CONTRACT OR WARRANTY LIABILITY EXCEED THE PURCHASE PRICE OF THE PRODUCT. (Note that some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusion may not apply to you.) This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

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

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

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

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

www.farm-king.com



1260 Clarence Avenue Winnipeg MB, R3T 1T2 Ph.: 204.661.8711 | Fax: 204.654.2503 Toll Free: 888.524.1004 E-mail: info@buhler.com www.farm-king.com

Equipment shown is subject to change without notice. ©2018 Buhler Trading Inc. Printed in Canada TSX:BUI

bühler | a division of Buhler Industries Inc.