

OPERATOR'S MANUAL

ROTARY RAKE

RR2109



FRONTIER™

5PQ990104 (08/28/2012)

To the Owner;

Thank-You for choosing a quality product from Frontier Equipment. We strive to give you the best equipment and the best level of service of any company. With a little care and maintenance this machine will do your work for you for many years. In this manual, we make an effort to get you better acquainted with the machine so you can achieve maximum performance. We design and build all of our equipment with the end user in mind so we welcome any suggestions or ideas for improvement. Please note that it is within our rights to make changes or improvements to our equipment without updating the equipment that was manufactured before the change took place.

Please take a few minutes to fill out the area below. This information will be valuable to you when ordering parts or requesting service from your dealer.

Dealer Name: _____

Dealer Phone Number: _____

Service Manager/Technician: _____

Model# and Description: _____

Serial Number: _____

Date of Purchase: _____

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INTRODUCTION

Thank-You for choosing the Frontier Rotary Rake. Your rake is the result of years of research and development work. This Operator's Manual will familiarize the operator with the safety and operation of the machine. Included are complete instructions for assembly, operation, lubrication, and maintenance procedures. Understanding and following these procedures will result in years of maximum performance from your Frontier Rake.

Read entire manual before operating. Failure to follow the instructions outlined in this manual may result in personal injury and/or damaged equipment, and could void the warranty.

Rake Serial Number

The rake's serial number can be found near the front on the main frame of the rake. Please use this number when requesting service, seeking information, or ordering parts. For the operator's convenience, space to record the serial number, model number, purchase date, and dealer has been provided inside the front cover of this manual.

All pictures and instructions in this manual assume that the right and left side of the machine are that of someone standing behind the rake facing forward.

Specifications



| Specifications | RR2211 | RR2109 |
|----------------------------|---|-----------------|
| Working Width | 13' (4.3m) | 10' 8" (3.2m) |
| Raking Width | 11' (3.3m) | 9' (2.7m) |
| Transport Width | 59" (1.5m) | 9' 4" (2.8m) |
| Gear Box | Enclosed Oil Bath | |
| Gear Reduction | 9.7 to 1 | |
| Tine Arms | 11 | 9 |
| Double Tines per Arm | 4 | 3 |
| PTO/HP Required | 40 HP - 540 RPM | 30 HP - 540 RPM |
| Direction of Raking Action | Left | |
| Hydraulic Requirement | 1200 psi | |
| Weight | 1550 lbs. | 1050 lbs. |
| Tandem Axle Beam | Standard | |
| Tires | 18.5 x 8 Flotation Tires on 4-Bolt Painted Wheels | |

SAFETY

-  ***This symbol precedes specific safety instructions throughout this manual. When reading the manual pay close attention to the information that follows this symbol.***
-  FAILURE TO FOLLOW INSTRUCTIONS IN THIS MANUAL COULD RESULT IN PERSONAL INJURY OR DEATH. READ ENTIRE MANUAL BEFORE OPERATING ROTARY RAKE.
-  Keep hands, feet and clothing away from the machine's input power take-off (PTO) and any other moving parts until the machine has been shut down and the power source has been locked out. (Refer to Power Source Safety)
-  Do not adjust, unclog, lubricate, or service the machine until it has been shut down and the power source has been locked out. (Refer to Power Source Safety)
-  Do not lubricate or adjust the machine while it is in motion.
-  Support the rake securely while working under it.
-  Do not stand between the tractor and the rake while attaching or detaching the rake unless the tractor engine is shut off and the parking brake has been set.
-  Be certain all bystanders and animals are a safe distance away from the rake before raising or lowering it. Never allow anyone to ride on the rake or the tractor.
-  When transporting, never exceed a speed of 20 MPH (32kkm/hr) and avoid sudden turns which may compromise the operator's control of the tractor.
-  Be constantly aware of the location of the ends of the rake to avoid collision with other objects.
-  When moving the rake on public roads use the proper reflectors, lights, and slow moving vehicle signs required by local government agencies.

Power Source Safety

-  Do not use a power take-off (PTO) shaft without a rotating shield in good working order. Make sure drive system safety shields are in place for both the power source and the rake.
-  The rake input PTO must be securely attached to both the power source and the input shaft.
-  Do not overextend the input PTO shaft.
-  Make sure PTO is disengaged before starting power source.
-  PTO shield chains must be attached to the tractor and the rake to keep the shield from rotating.

SAFETY CONT'D

Safety Decals

Decals and reflectors are for the protection of yourself and others. If they are missing, faded, or not readable, get replacements from your dealer immediately.

CAUTION

To avoid serious injury:

- Read Operator's Manual before operating, servicing or repairing equipment. Follow all safety rules and instructions. (Manuals are available from your selling dealer.)
- Never allow riders.
- Keep bystanders away from equipment during operation.
- Operate from tractor seat only.
- Keep all shields in place and good condition.
- Lower equipment to ground, stop engine, remove key and set brake before dismounting tractor.
- Never allow children or untrained persons to operate equipment.

WARNING

High-Pressure hydraulic oil leaks can penetrate skin resulting in serious injury, gangrene, or death.

- Check for leaks with cardboard; never use hand.
- Before loosening fittings: lower load, release pressure, and be sure oil is cool.
- Consult physician immediately if skin penetration occurs.

DANGER

Entanglement in rotating driveline can cause serious injury or death.

Keep all shields in place.

Avoid contact with rotating parts.

CAUTION

Operate only with 540 rpm PTO

WARNING

THROWN OBJECTS

Do not operate near people. Debris can be thrown a long distance.

WARNING

To help prevent entanglement, stand clear of tines.

Disengage and shut off all engine power before adjusting tine height.

WARNING

ROTATE LEVER TO CLOSE

Avoid crushing injuries or loss of control. Close lockup valve before transporting or servicing machine.

WARNING

Do not exceed this Implement's maximum transport speed of 32km/h (20mph).

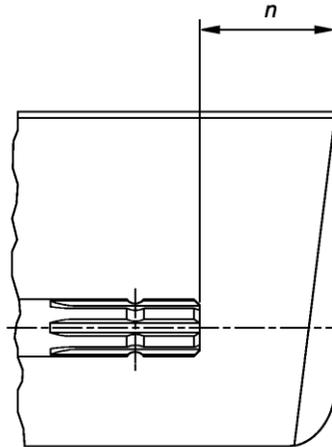
Exceeding this speed may result in loss of control during transport or braking and serious injury or death.

Transport only with a properly ballasted tractor and a properly attached safety tow chain. Do not transport with a motor vehicle. Reduce speed and use additional caution when on inclines, towing under adverse surface conditions, and turning.

Stay Clear of Rotating Drivelines



TS1644-UN-22AUG95



H96219-UN-29APR10

Entanglement in rotating driveline can cause serious injury or death.

Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields turn freely.

Wear close fitting clothing. Stop the engine and be sure that PTO driveline is stopped before making adjustments, connections, or cleaning out PTO driven equipment.

Do not install any adapter device between the tractor and the primary implement PTO drive shaft that will allow a 1000 rpm tractor shaft to power a 540 rpm implement at speeds higher than 540 rpm.

Do not install any adapter device that results in a portion of the rotating implement shaft, tractor shaft, or the adapter to be unguarded. The tractor master shield shall overlap the end of the splined shaft and the added adaptor device as outlined in the table.

| PTO Type | Diameter | Splines | $n \pm 5 \text{ mm (0.20 in.)}$ |
|----------|-------------------|---------|---------------------------------|
| 1 | 35 mm (1.378 in.) | 6 | 85 mm (3.35 in.) |
| 2 | 35 mm (1.378 in.) | 21 | 85 mm (3.35 in.) |
| 3 | 45 mm (1.772 in.) | 20 | 100 mm (4.00 in.) |

DEALER SETUP

Tine Arms

Remove the rubber cap from the gearbox shaft. Slide the tine arm onto the shaft. Line up the hole and insert the M10 metric socket head bolt. Place one of the cupped washers on either side of the tine arm and tighten the locknut. Repeat for all 9 arms.



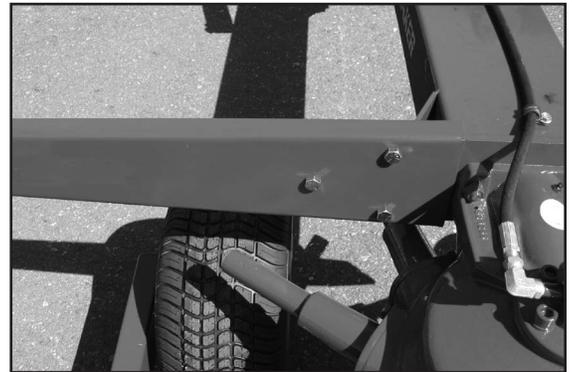
Tines

Attach three tines to each arm using the 1/2 x 3-1/4 Grade 8 bolts. Insert bolt from the top and clamp the tine in place with the 1/2" heavy washer and locknut. Torque to 60-65 ft.-lbs.



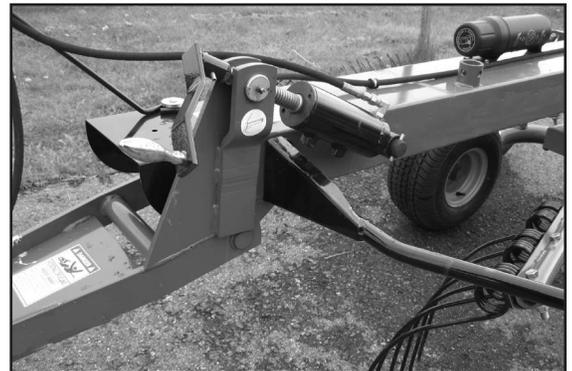
Guard Support Arms

Attach the guard support arms to both sides of the rake using the 1/2" bolts. NOTE: The guard arm with the curtain mount tube is for the left side of the rake.



Guards, Front

Attach the front half of the guard to the main frame using the 3/8 x 1 bolts, lockwashers & nuts. Repeat both sides.



DEALER SETUP CONT'D

Guards, Rear

Attach the rear half of the guard to the guard support arm using the 5/16 bolts, lockwashers & nuts. Also attach to the front guard using 3/8 hardware.



Hay Curtain

Slide the curtain mount tube into the tube on the guard arm and lock with the locking handle. Attach the curtain and select the desired height. Insert locking pin to secure.



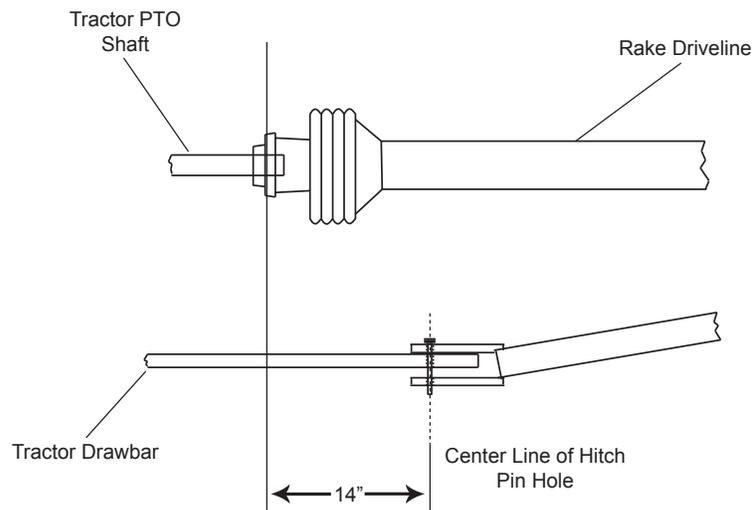
Note to customer: This setup for the RR2109 is usually done by the dealer, however, the arms and guards can easily be removed for winter storage if you prefer.

HITCHING

Tractor Requirements

The Frontier Rotary Rake is designed to be used with a tractor having a 540 RPM PTO. The hitch pin hole on the tractor should be 14" (35cm) from the rear of the groove in the PTO output shaft. (See illustration below)

NOTE: If the hitch pin hole is located well behind the tractor tires there is the potential of making a sharp enough turn to damage the rake PTO shaft.



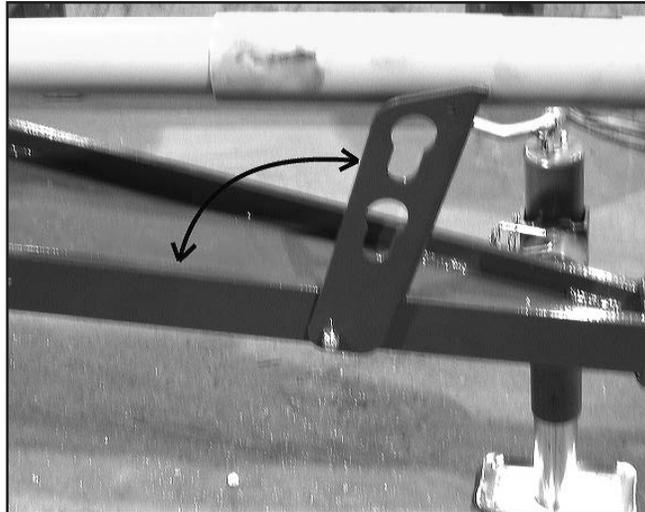
Hitching

Align the hole in the tractor draw bar with the hole in the rake tongue and insert an approved hitch pin. Lock hitch pin with a safety clip to insure that it cannot work its way out. Attach the safety chain to the tractor.



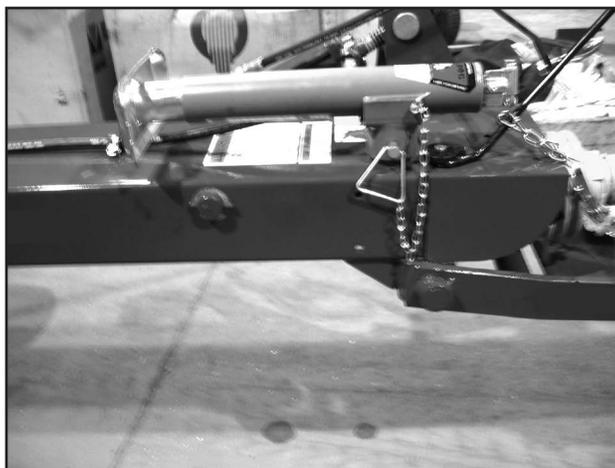
HITCHING, CONT'D

With PTO shaft connected to the rake, slide shaft safety collar back and slide the tractor side of the PTO shaft onto the tractor drive shaft. Release the shaft safety collar. Insure that the PTO shaft is securely locked onto the tractor drive shaft. Fold the PTO stand down onto the frame to avoid damaging the PTO shaft shielding. (See illustration below)



Connect the rake hydraulic line to the tractor implement hydraulic output.

Crank the rake jack off of the ground and remove the locking pin. Pull the jack off of the mount, place in storage position on the main frame, and reinsert locking pin. (See illustration below) The jack can also be stored on the hitch beam by simply giving it a quarter turn. This position is not recommended in the field though as it increases the risk of damaging the jack with the tractor wheel when turning.



TRANSPORTING

Field Transport

- Make sure that the rake is raised into the transport position.
- Never allow anyone to ride on the rake or the tractor other than the operator.
- Avoid tight turns to reduce the possibility of loss of control or PTO shaft damage.
- Remain fully aware of the width of the rake in relation to the objects you are passing, either stationary or moving.
- Never travel at speeds over 10 MPH (16km/hr.) in the field.

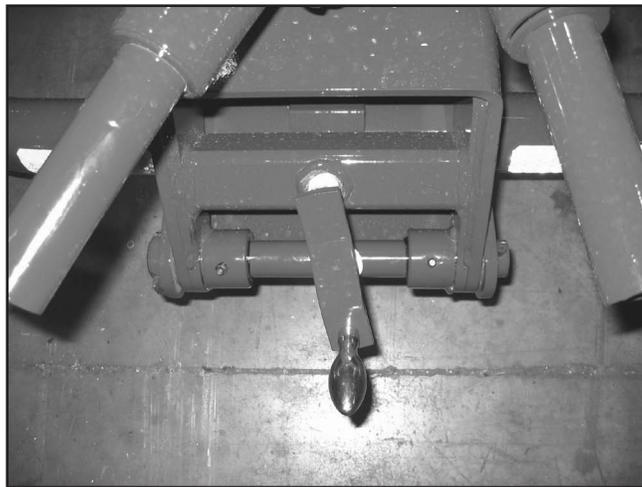
Road Transport

- Adhere to all suggestions for transport in the field listed above.
- Follow all local regulations for moving agricultural equipment on public roads, especially those related to reflectors, SMV (slow moving vehicle) symbols and safety markers.
- Never travel at speeds over 20 MPH (32km/hr.) on the road.

HEIGHT AND LEVEL ADJUSTMENT

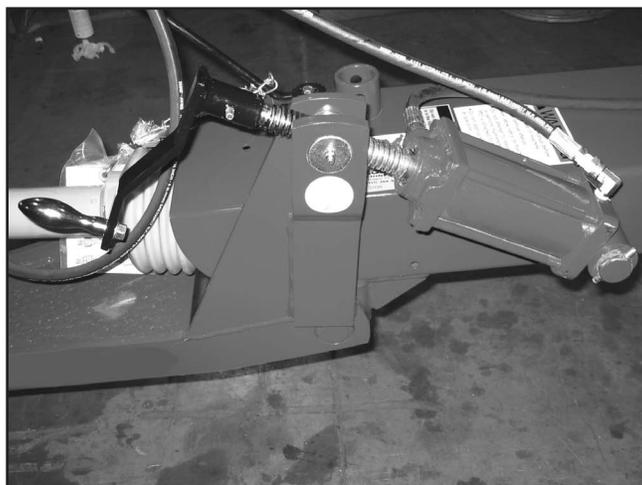
Height Adjustment

The RR2109 Rake has an adjustment screw for the rear height adjustment. (See illustration below) Turn clockwise to raise or counterclockwise to lower the rake. With the rake setting on level ground, set the height so that the tips of the tines are 1" (25mm) from the ground. This setting will offer the best performance in most field and crop conditions, however, in uneven or rocky areas we recommend setting the tines higher off the ground to reduce tine wear and stress. There is no advantage to having the tines actually hit the ground. Hitting the ground will cause unnecessary wear on the tines, and will cause the hay to become contaminated with dust, resulting in premature wear of other processing equipment. An occasional adjustment will also be necessary to account for normal tine wear.



Leveling the Rake

Your rake is also equipped with a leveling cylinder. This is on the front of the main frame and can be adjusted quickly at any time to accommodate different draw bar heights. Simply turn the handle clockwise to raise or counter-clockwise to lower the front of the rake. NOTE: You will get the best performance with the front of the rake slightly lower than the rear.



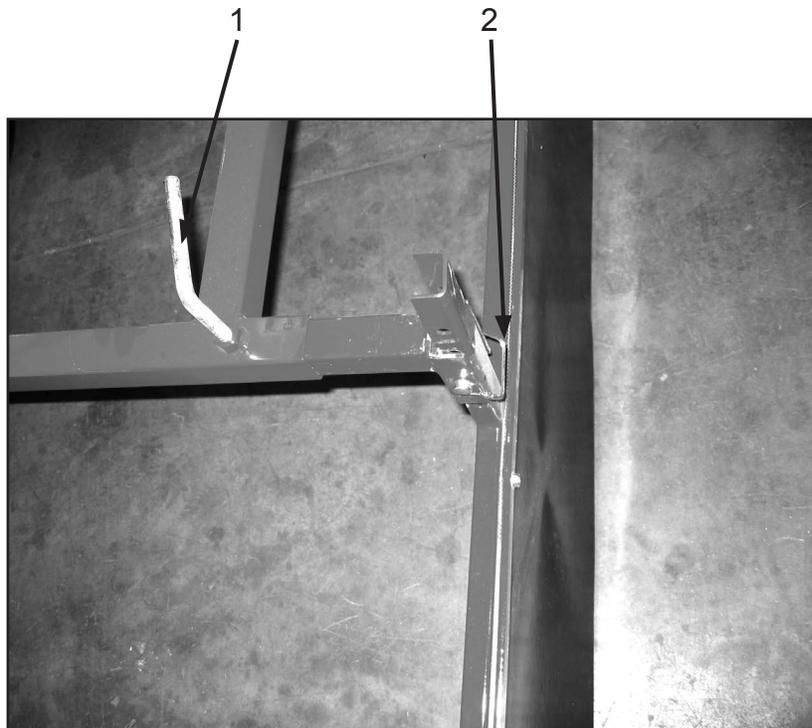
HAY CURTAIN ADJUSTMENTS

Whenever desired, the hay curtain on your hay rake can easily be adjusted to accommodate your requirements. The hay curtain adjustment determines the width of the windrow, and is used when turning a windrow or removed when combining windrows.

The working width of your swath is adjusted by positioning the hay curtain. To change the curtain position, turn the L-shaped rod (1) on the curtain mounting tube. Loosen by turning counter clockwise and tighten by turning clockwise until tight. (Do not overtighten)

The height of the hay curtain is adjusted by removing the stop pins (2) on the curtain frame and raising or lowering the curtain to the desired height. We recommend setting it so the bottom of the curtain just touches the cut plant.

When combining windrows the curtain may be turned upside down or eliminated completely.



OPERATING

Having made adjustments (where necessary) described in the previous sections, drive the tractor to where you will begin raking. With the tractor standing still, lower the rake to its operating position. Engage the tractor's PTO at a low RPM, (this is especially important on a tractor with an electric clutch) and without getting off the tractor seat, visually determine that the rake is properly adjusted. If further adjustments are required, disengage the PTO and stop the tractor's engine and adjust where needed.

When ready, increase PTO speed to the desired RPM and engage the tractor's forward gear. Remember, ground speed and PTO speed, along with the proper adjustment for height and level, will play a large role in making a clean sweep and a nice even windrow. 6 MPH ground speed and 350 PTO RPMs is the ideal combination for fluffy windrows. Adhere to all safety requirements as listed previously for field operation.

Always operate the rake at the lowest RPM possible that allows you to rake cleanly at your chosen ground speed. Higher speeds result in more leaf loss and lower quality hay, especially if you are raking dry hay. Higher speeds will also cause more wear on the rake.

When finished, reduce PTO speed before disengaging. Disengage PTO and raise rake into transport position before leaving field.

Requirements will change according to field and crop conditions.

Field Dangers

While operating the rake you must constantly be aware of all your surroundings. The fold-down guards are designed for human safety and will not withstand a collision with a stationary object such as a fence post or an electric pole. If such a collision does occur and you cannot stop before the tine arms hit the obstacle, the safety slip clutch on the PTO shaft will automatically engage and protect the gearbox from any serious damage. The slip clutch will not engage fast enough to protect the tine arms.

The rake is also equipped with an anti rollover system for the axle tandem walking beams. This is a safety feature that will keep the axle tandems from going over center and flipping up into the tine arms when accidentally driving over a washout, sink hole, or animal den. However, this is no excuse for careless driving, as other damage can occur when the wheels hit a rut or a hole.

LUBRICATION

It is extremely important to keep your rake properly lubricated at all times. Failure to do so will greatly decrease the performance and the life of the machine.

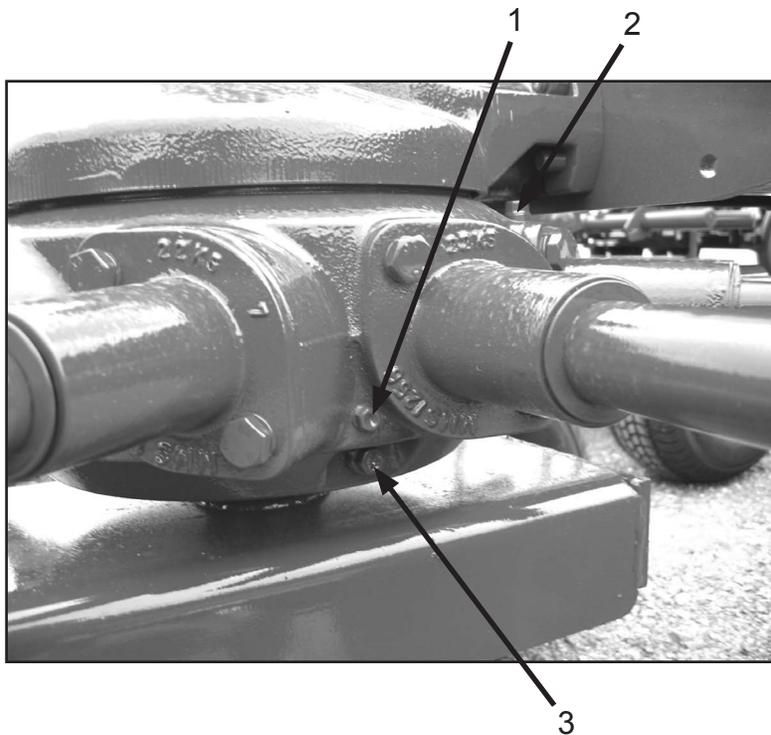
Never lubricate or perform any maintenance, adjustments or repairs with the machine running. The PTO must be disengaged and the tractor's engine must be shut off.

With a clean cloth wipe off both the grease fitting and the tip of the grease gun. This will eliminate any chance of dirt or dust particles getting inside and damaging the bearings.

Do not overgrease the flange bearings. Overgreasing could rupture the seals exposing the bearing to a lot of dust particles. Roller bearings are sealed and are generally maintenance free. The friction bearing points cannot be overgreased.

Gearbox Lubrication

The oil level in the gearbox can be checked by removing the check plug on the side of the gearbox (1) and using a straw to insure that the oil level is near the bottom of the plug hole. If oil needs to be added, use SAE 85W140 Gear Lube and fill using the plug located on the top of the gear box (2).

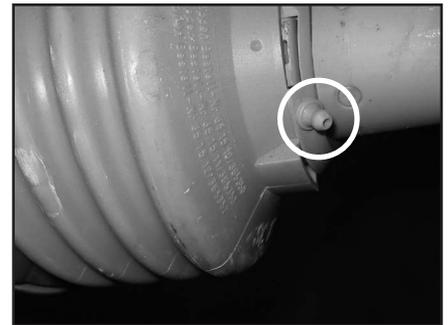
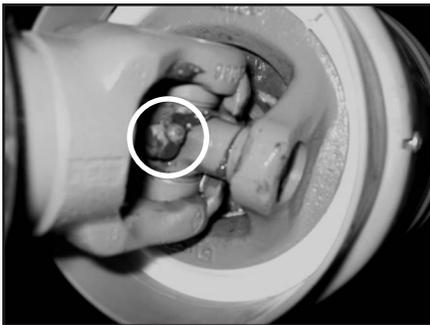


We recommend changing the oil after every 200 hours of use. To do this, remove the plug at the bottom of the gear box (3) and drain the oil into a container for proper disposal. Always follow local guidelines for disposal of waste oil in an environmentally appropriate manner. Never drain waste oil directly onto the ground.

LUBRICATION

PTO Lubrication

There are grease fittings on both the tractor end and the rake end of the PTO shaft. Grease these after every 8 hours of operation. Use a high quality lithium grease.



General Lubrication

All other grease fittings should be lubricated after every 50 hours of operation. Use a high quality gear grease for the grease fittings on top of the gearbox. For all other bearings, joints, and pivot points, use either a lithium or a gear grease. In dry, dusty conditions it may be necessary to grease more than every 50 hours.

MAINTENANCE

Check and replace any safety decals that are damaged or missing.

After first use of the rake, we recommend a thorough inspection of all bolts and nuts. Retighten any loose hardware and check periodically thereafter.

Check the air pressure of the tires. They should be inflated to approx. 20 psi.

Inspect the tines and replace any broken, missing, or bent tines.

Visually inspect condition of the hay curtain. Replace if necessary.

Periodically pressure wash your equipment and touch up any scratches with high quality rust resistant paint.

Apply a light weight oil to all moving parts not specified in other lubrication instructions in this manual.

STORING YOUR RAKE

Before winter storage, perform all lubrication and other maintenance procedures as previously described.

Store in a dry, covered place with the rake lowered into the raking position. Storing in the raised (transport) position exposes the cylinder rod to dust and other elements that could cause it to rust.

TORQUE SPECIFICATIONS

The torque chart below lists the standard torque values for all attachment hardware on the rake unless otherwise specified in this manual.

Standard Torque Chart

| BOLT SIZE | GRADE 5 BOLTS | | GRADE 8 BOLTS | |
|-----------|-------------------------|-----------------------|-------------------------|-----------------------|
| | TORQUE (DRY) FT.LBS. | LUBRICATED FT.LBS. | TORQUE (DRY) FT.LBS. | LUBRICATED FT.LBS. |
| 1/4 20 | 8 | 6 | 12 | 9 |
| 1/4 28 | 10 | 7 | 14 | 10 |
| 5/16 20 | 17 | 13 | 24 | 18 |
| 5/16 24 | 19 | 14 | 27 | 20 |
| 3/8 16 | 30 | 23 | 45 | 35 |
| 3/8 24 | 35 | 25 | 50 | 35 |
| 7/16 14 | 50 | 35 | 70 | 50 |
| 7/16 20 | 55 | 40 | 80 | 60 |
| 1/2 13 | 75 | 55 | 110 | 80 |
| 1/2 20 | 85 | 65 | 120 | 90 |
| 9/16 12 | 110 | 80 | 150 | 110 |
| 9/16 18 | 120 | 90 | 170 | 130 |
| 5/8 11 | 150 | 110 | 210 | 160 |
| 5/8 18 | 170 | 130 | 240 | 180 |
| 3/4 10 | 260 | 200 | 380 | 280 |
| 3/4 16 | 300 | 220 | 420 | 310 |
| 7/8 9 | 430 | 320 | 600 | 450 |
| 7/8 14 | 470 | 350 | 670 | 500 |
| 1-8 | 640 | 480 | 910 | 680 |
| 1-14 | 720 | 540 | 1,020 | 760 |

TORQUE SPECIFICATIONS

Metric Torque Chart

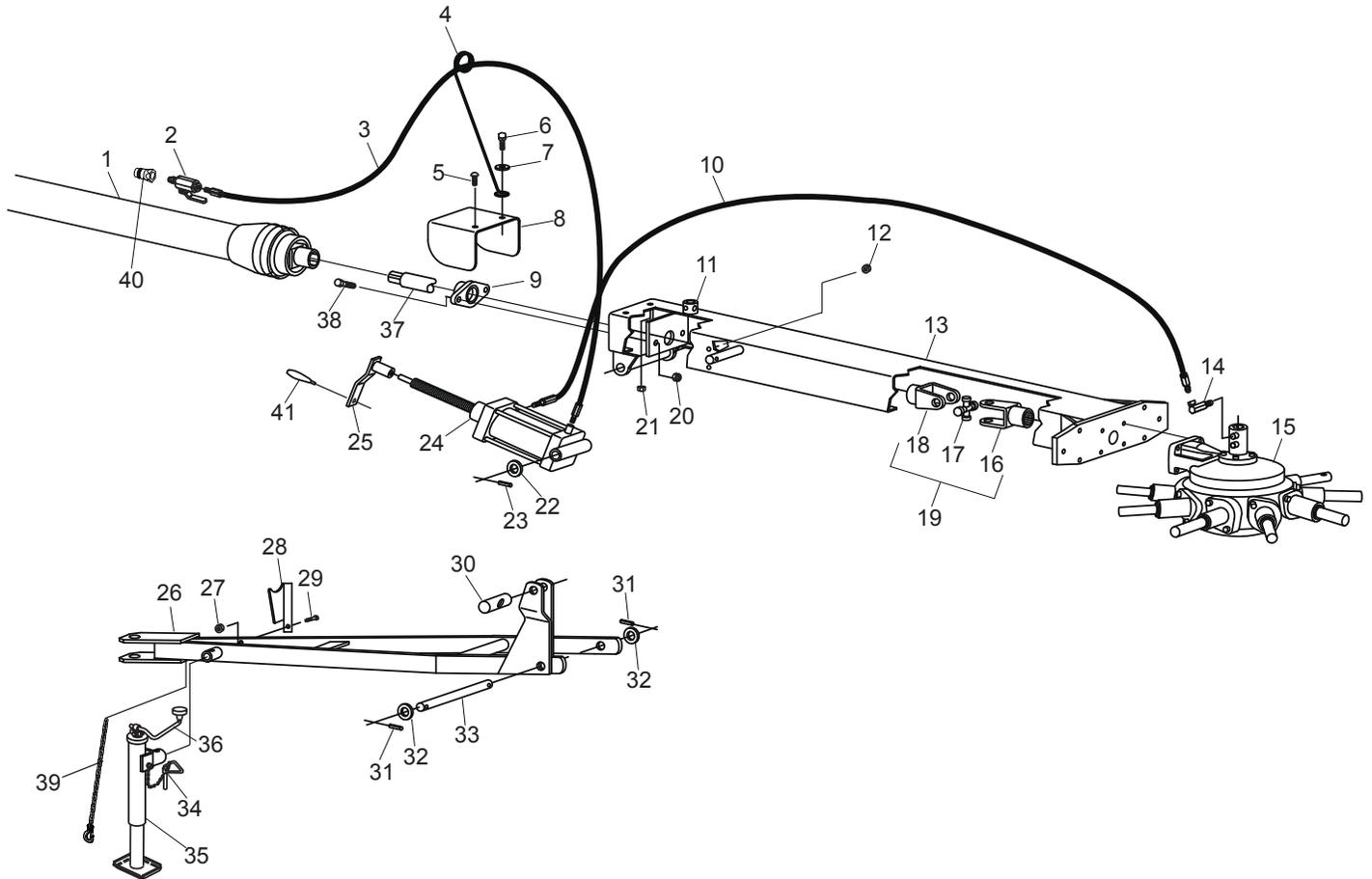
| | | <i>NEWTON METERS (NM)</i> | | <i>FOOT POUNDS (FT. LBS.)</i> | |
|------------------------------|--------------|---------------------------|-----------------|-------------------------------|-----------------|
| BOLT SIZE & PITCH | CLASS | PLATED | UNPLATED | PLATED | UNPLATED |
| M4 x .70 | 8.8 | 3.10 | 2.20 | 2.30 | 1.65 |
| M5 x .80 | 8.8 | 6.10 | 5.50 | 4.58 | 4.13 |
| M6 x 1.00 | 8.8 | 10.40 | 9.50 | 7.80 | 7.13 |
| M7 x 1.00 | 8.8 | 17.00 | 15.50 | 12.75 | 11.63 |
| M8 x 1.25 | 8.8 | 25.00 | 23.00 | 18.75 | 17.25 |
| M8 x 1.00 | 8.8 | 27.00 | 24.50 | 20.25 | 18.38 |
| M10 x 1.50 | 8.8 | 51.00 | 46.00 | 38.25 | 34.50 |
| M10 x 1.25 | 8.8 | 54.00 | 49.00 | 40.50 | 36.75 |
| M10 x 1.00 | 8.8 | 57.00 | 52.00 | 42.75 | 39.00 |
| M12 x 1.75 | 8.8 | 87.00 | 79.00 | 65.25 | 59.25 |
| M12 x 1.50 | 8.8 | 92.00 | 83.00 | 69.00 | 62.25 |
| M12 x 1.25 | 8.8 | 96.00 | 87.00 | 72.00 | 65.25 |
| M14 x 2.00 | 8.8 | 140.00 | 125.00 | 105.00 | 93.75 |
| M14 x 1.50 | 8.8 | 150.00 | 135.00 | 112.50 | 101.25 |
| M16 x 2.00 | 8.8 | 215.00 | 195.00 | 161.25 | 146.25 |
| M18 x 2.50 | 8.8 | 300.00 | 280.00 | 225.00 | 210.00 |
| M20 x 2.50 | 8.8 | 430.00 | 390.00 | 322.50 | 292.50 |
| M22 x 2.50 | 8.8 | 580.00 | 530.00 | 435.00 | 397.50 |
| M24 x 3.00 | 8.8 | 740.00 | 670.00 | 555.00 | 502.50 |
| M6 x 1.00 | 10.9 | 15.50 | 14.00 | 11.63 | 10.50 |
| M8 x 1.25 | 10.9 | 37.00 | 34.00 | 27.75 | 25.50 |
| M10 x 1.50 | 10.9 | 75.00 | 68.00 | 56.25 | 51.00 |
| M12 x 1.75 | 10.9 | 160.00 | 117.00 | 97.50 | 87.75 |
| M14 x 2.00 | 10.9 | 205.00 | 185.00 | 153.75 | 138.75 |
| M16 x 2.00 | 10.9 | 310.00 | 280.00 | 232.50 | 210.00 |

WARRANTY

Warranty coverage is provided by John Deere according to the terms of the Agricultural/Commercial & Consumer Equipment Warranty Statement. Carefully read the warranty statement on the back of your original purchase order for details on coverage and limitations of this warranty.

Illustrated Parts Breakdowns

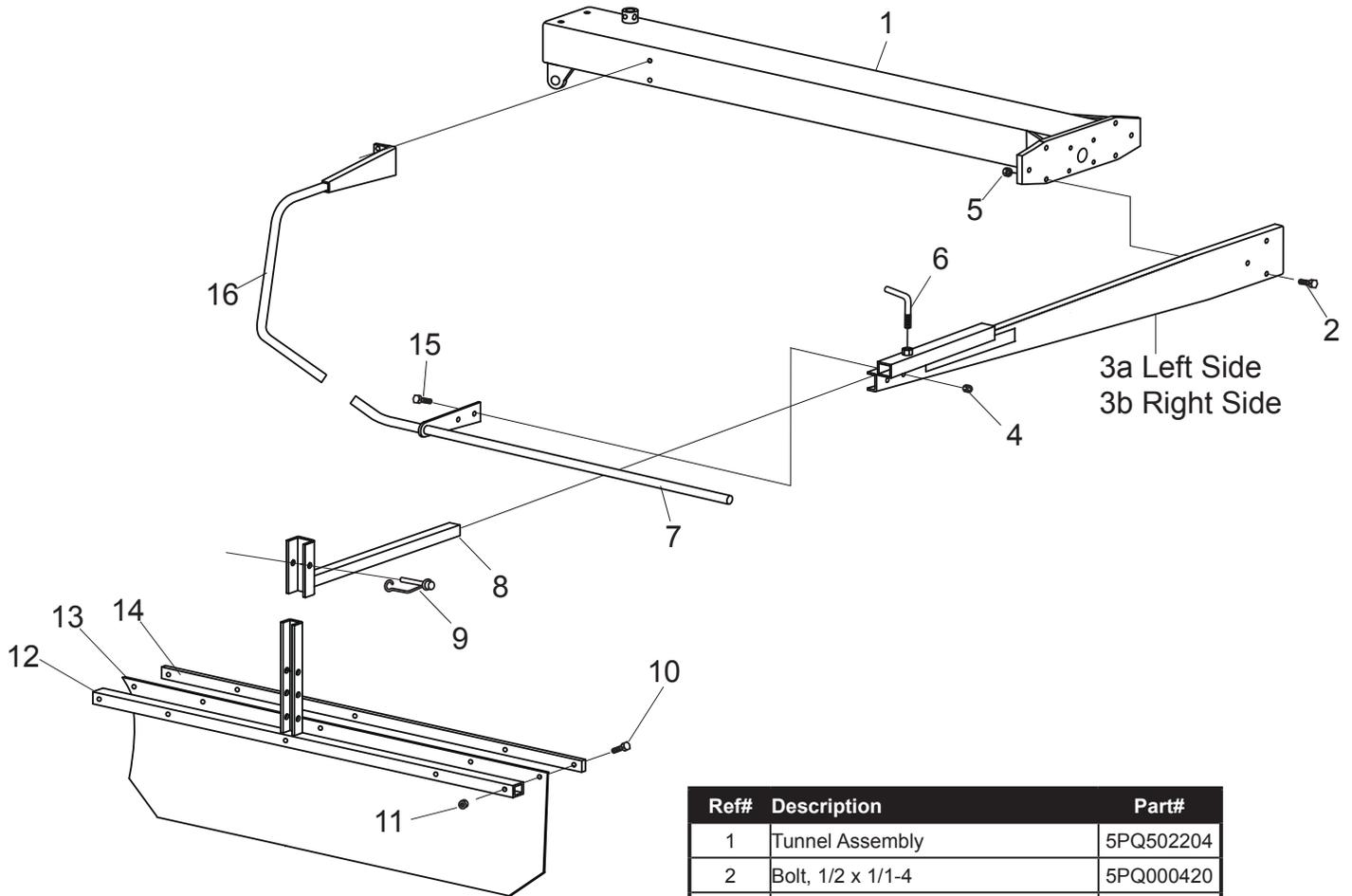
Tongue & Main Frame



| Ref# | Description | Part# |
|------|-----------------------------|-----------|
| 1 | Complete PTO Shaft | 5PQ503039 |
| 2 | Ball Valve | 5PQ502322 |
| 3 | Hydraulic Hose | 5PQ502294 |
| 4 | Hose Support | 5PQ502288 |
| 5 | Bolt, 5/16 x 3/4 Truss Head | 5PQ000210 |
| 6 | Bolt, 5/16 x 1 | 5PQ000221 |
| 7 | Hose Support Washer | 5PQ502308 |
| 8 | PTO Guard | 5PQ502234 |
| 9 | 1-3/8 Flange Bearing | 5PQ500067 |
| 10 | Hydraulic Hose | 5PQ502281 |
| 11 | Jack Mount Bracket | 5PQ500005 |
| 12 | Locknut, 3/8 | 5PQ003000 |
| 13 | Tunnel Assembly | 5PQ502204 |
| 14 | Elbow Fitting, 1502-4-4 | 5PQ502300 |
| 15 | Gearbox Complete | 5PQ502264 |
| 16 | Splined Yoke | 5PQ500269 |
| 17 | Cross & Bearing Kit | 5PQ500272 |
| 18 | Keyed Yoke | 5PQ500270 |
| 19 | Complete U-Joint | 5PQ500268 |
| 20 | Nut, 1/2 | 5PQ000940 |

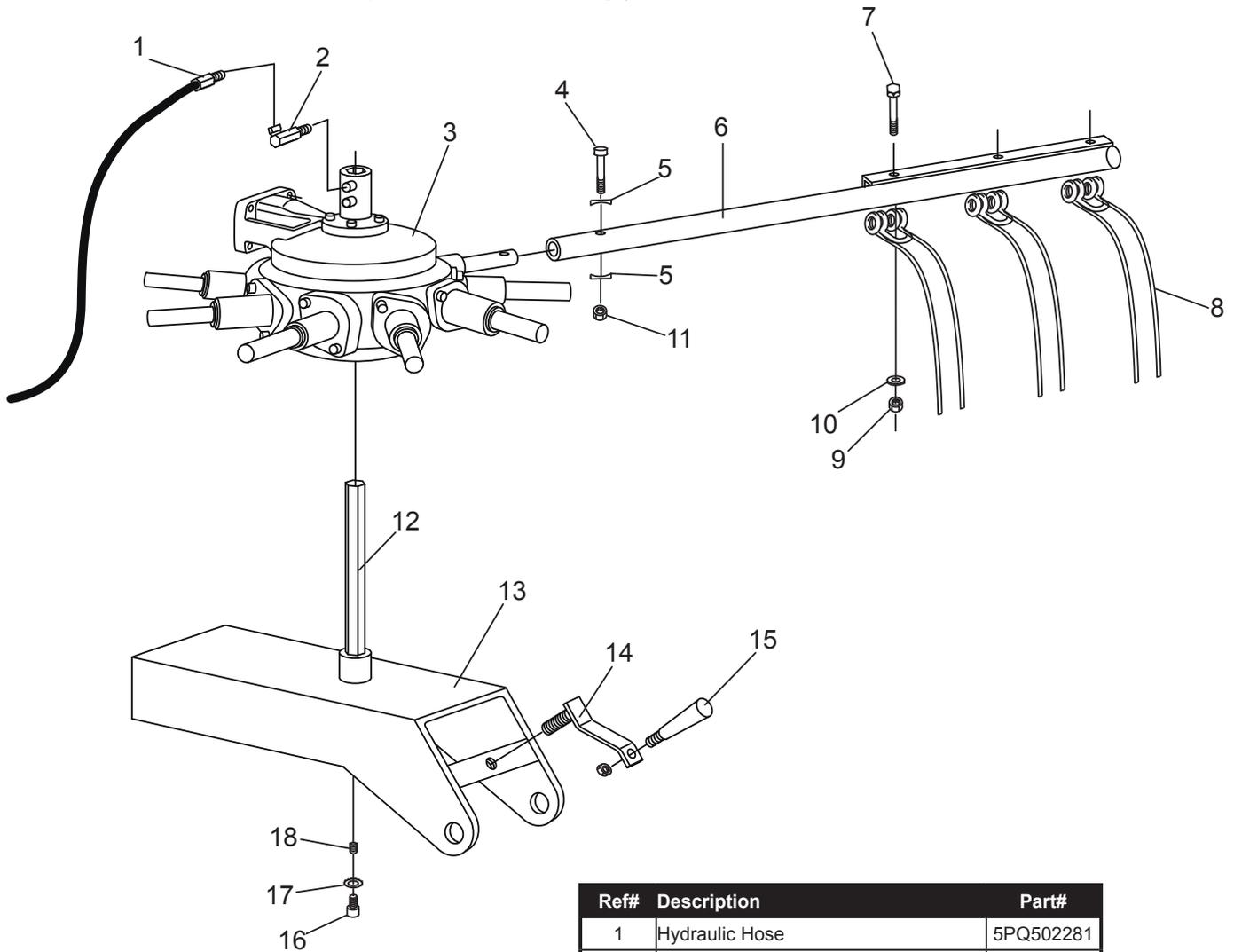
| Ref# | Description | Part# |
|------|---------------------------|-----------|
| 21 | Locknut, 5/16 | 5PQ002999 |
| 22 | 1.25-14 Machinery Bushing | 5PQ500185 |
| 23 | Roll Pin, 1/4 x 2 | 5PQ500017 |
| 24 | Front Cylinder | 5PQ502279 |
| 25 | Front Cylinder Handle | 5PQ503037 |
| 26 | Tongue Assembly | 5PQ502237 |
| 27 | Locknut, 3/8 | 5PQ003000 |
| 28 | PTO Stand | 5PQ500015 |
| 29 | Bolt, 3/8 x 1-1/4 | 5PQ000275 |
| 30 | Cylinder Mount | 5PQ502218 |
| 31 | Roll Pin, 1/4 x 2 | 5PQ500017 |
| 32 | 1.25-14 Machinery Bushing | 5PQ500185 |
| 33 | Tongue Pin | 5PQ502225 |
| 34 | Pin & Chain | 5PQ500012 |
| 35 | Complete Jack | 5PQ500009 |
| 36 | Jack Handle | 5PQ500010 |
| 37 | Drive Shaft | 5PQ502257 |
| 38 | Bolt, 1/2 x 1-1/2 | 5PQ000435 |
| 39 | Safety Chain | 5PQ101200 |
| 40 | Male Hydraulic Coupler | 5PQ290105 |
| 41 | Handle | 5PQ502149 |

Guards



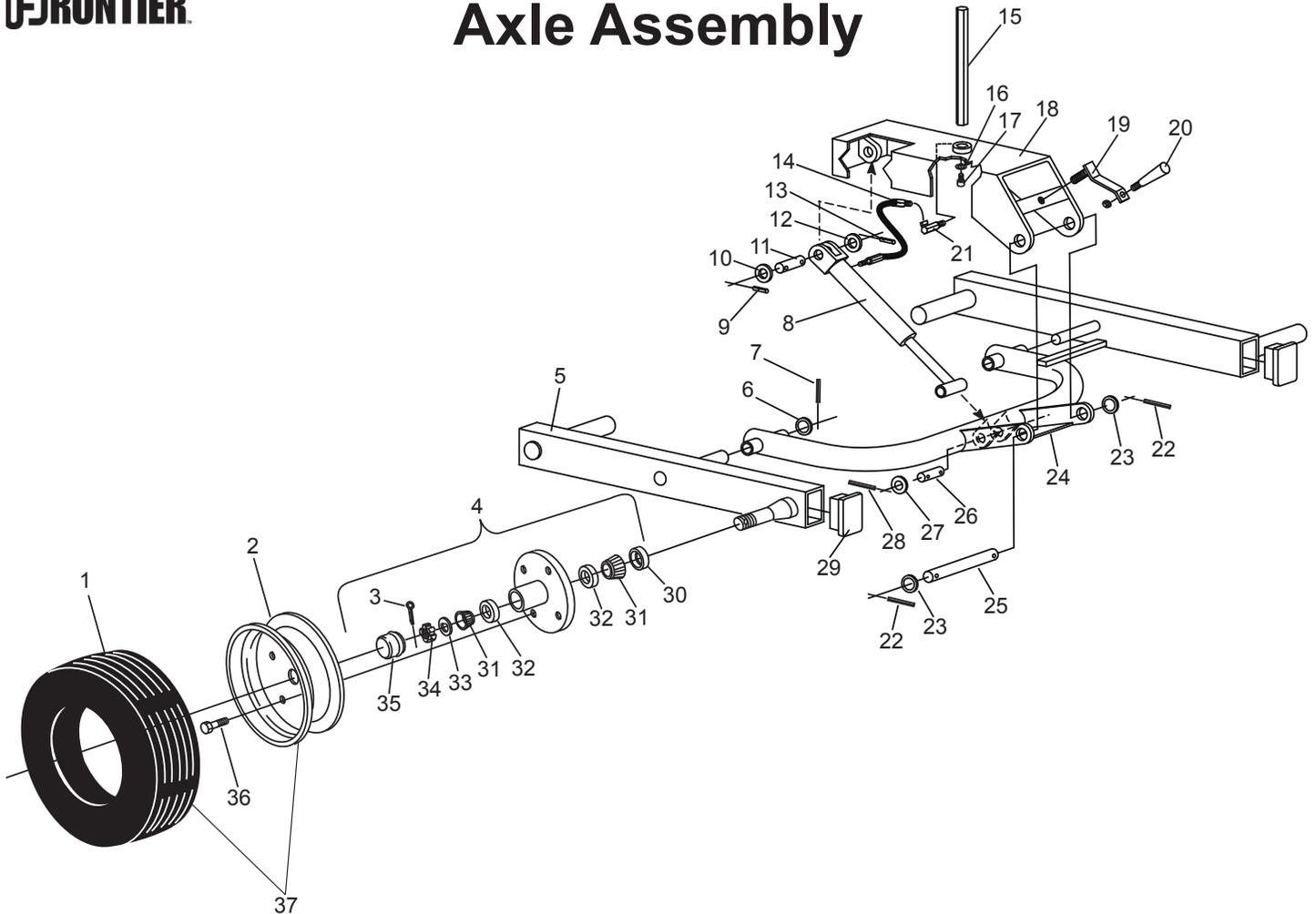
| Ref# | Description | Part# |
|------|----------------------------|-----------|
| 1 | Tunnel Assembly | 5PQ502204 |
| 2 | Bolt, 1/2 x 1-1/4 | 5PQ000420 |
| 3a | Guard Arm, Left | 5PQ502246 |
| 3b | Guard Arm, Right | 5PQ502239 |
| 4 | Nut, 3/8 | 5PQ000915 |
| 5 | Nut, 1/2 | 5PQ000940 |
| 6 | Curtain Set Bolt | 5PQ500148 |
| 7 | Tine Guard Assembly, Rear | 5PQ503096 |
| 8 | Telescoping Tube | 5PQ500149 |
| 9 | Snapper Pin | 5PQ500158 |
| 10 | Bolt, 1/4 x 1-3/4 | 5PQ000187 |
| 11 | Locknut, 1/4 | 5PQ003001 |
| 12 | Curtain Mount Assembly | 5PQ502251 |
| 13 | Hay Curtain | 5PQ502252 |
| 14 | Curtain Bar | 5PQ502247 |
| 15 | Bolt 3/8 x 1 | 5PQ000270 |
| 16 | Tine Guard Assembly, Front | 5PQ503095 |

Gearbox & Tine Arm



| Ref# | Description | Part# |
|------|------------------------------|-----------|
| 1 | Hydraulic Hose | 5PQ502281 |
| 2 | Elbow Fitting, 1502-4-4 | 5PQ502300 |
| 3 | Complete Gearbox, 9 Arm | 5PQ502264 |
| 4 | M10 x 80 Socket Head Bolt | 5PQ001080 |
| 5 | Radius Washer | 5PQ701008 |
| 6 | Tine Arm | 5PQ903147 |
| 7 | Bolt, 1/2 x 3-1/4 | 5PQ000478 |
| 8 | Curved Rake Tine | 5PQ500218 |
| 9 | Locknut, 1/2 | 5PQ000950 |
| 10 | Heavy Duty Flat Washer | 5PQ000520 |
| 11 | M10 Nylon Locknut | 5PQ002822 |
| 12 | Hexagon Shaft | 5PQ500258 |
| 13 | Gearbox Stand Assembly | 5PQ502241 |
| 14 | Rear Height Adjustment Lever | 5PQ502274 |
| 15 | Stainless Steel Handle | 5PQ502149 |
| 16 | 3/4 x 3/4 Socket Head Bolt | 5PQ000693 |
| 17 | External Tooth Lock Washer | 5PQ001087 |
| 18 | Pipe Plug | 5PQ502298 |

Axle Assembly

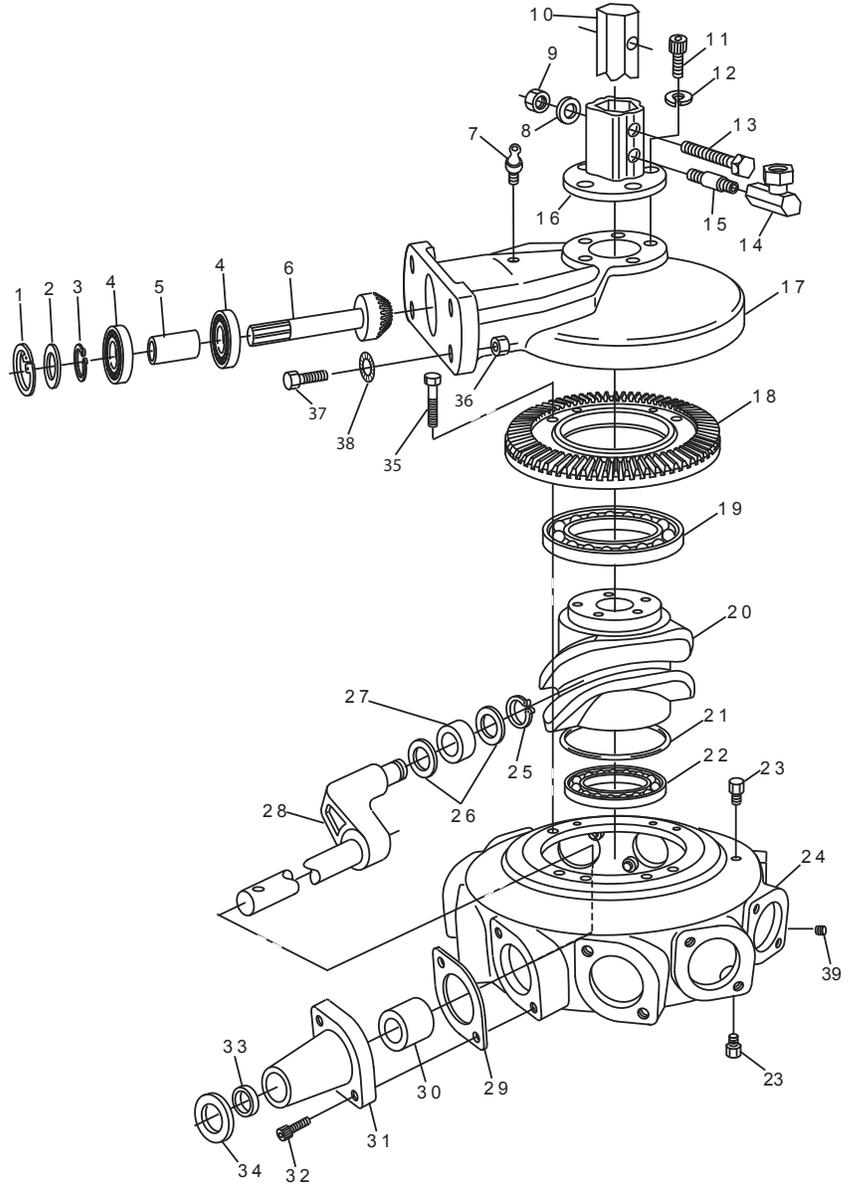


| Ref# | Description | Part# |
|------|-------------------------------|-----------|
| 1 | 215/60-8 Tire, "C" Ply | 5PQ500221 |
| 2 | 4-Hole Rim | 5PQ500222 |
| 3 | Cotter Pin | 5PQ500208 |
| 4 | Complete Hub | 5PQ500199 |
| 5 | Walking Beam Assembly | 5PQ502240 |
| 6 | 1.50-14 Machinery Bushing | 5PQ500197 |
| 7 | Roll Pin, 1/4 x 2 | 5PQ500017 |
| 8 | Rear Cylinder | 5PQ502278 |
| 9 | Roll Pin, 1/4 x 2 | 5PQ500017 |
| 10 | 1.00-14 Machinery Bushing | 5PQ001008 |
| 11 | Head/Cylinder Pin | 5PQ502213 |
| 12 | 1.00-14 Machinery Bushing | 5PQ001008 |
| 13 | Roll Pin, 1/4 x 2 | 5PQ500017 |
| 14 | Hydraulic Hose | 5PQ500116 |
| 15 | Hexagon Shaft | 5PQ500258 |
| 16 | External Tooth Lock Washer | 5PQ001087 |
| 17 | 3/4 x 3/4 Socket Head Bolt | 5PQ000693 |
| 18 | Gearbox Stand Assembly | 5PQ502241 |
| 19 | Rear Height Adjustment Handle | 5PQ502274 |

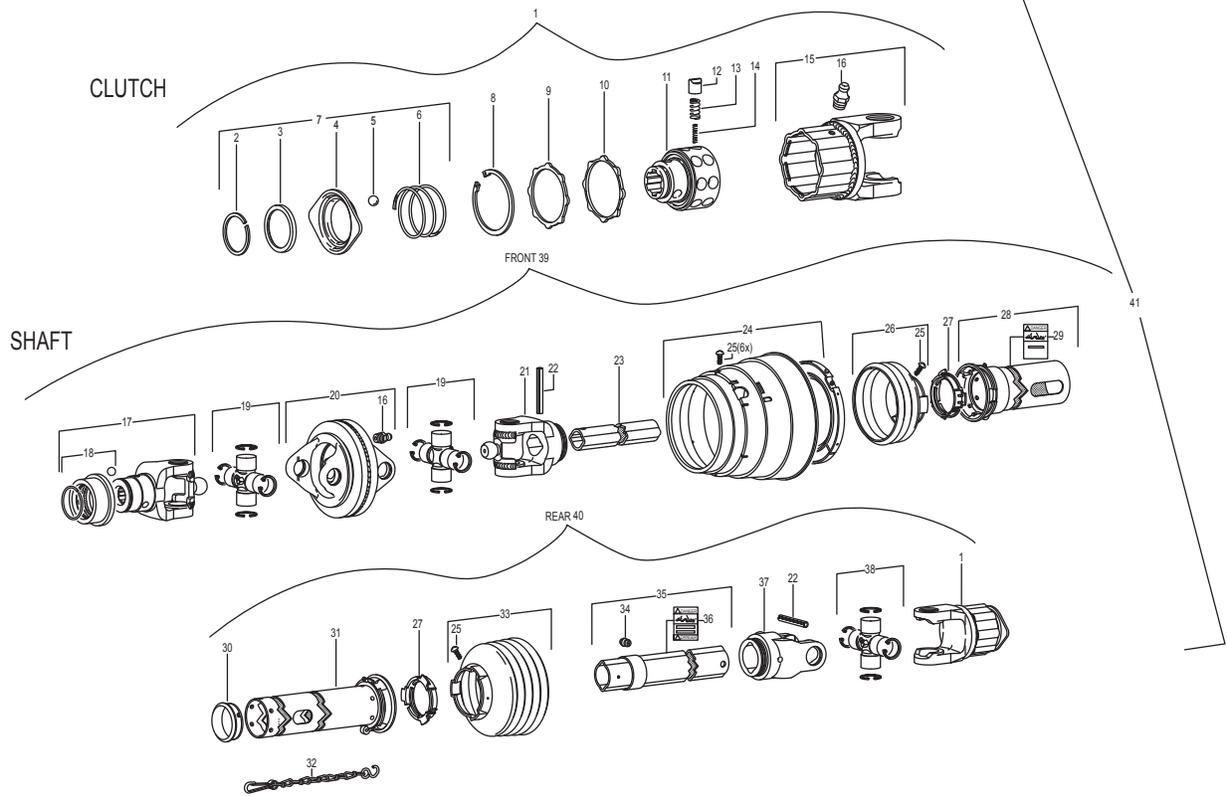
| Ref# | Description | Part# |
|------|---------------------------|-----------|
| 20 | Stainless Steel Handle | 5PQ502149 |
| 21 | Elbow Fitting, 1501L-4-4 | 5PQ502301 |
| 22 | Roll Pin, 1/4 x 2 | 5PQ500017 |
| 23 | 1.25-14 Machinery Bushing | 5PQ500185 |
| 24 | Axle Assembly | 5PQ502243 |
| 25 | Gear Box Stand/Axle Pin | 5PQ502244 |
| 26 | Axle/Cylinder Pin | 5PQ502212 |
| 27 | 1.00-14 Machinery Bushing | 5PQ001008 |
| 28 | Roll Pin, 1/4 x 2 | 5PQ500017 |
| 29 | Plastic End Cap | 5PQ502276 |
| 30 | Grease Seal | 5PQ500201 |
| 31 | Bearing, LM44643 | 5PQ500202 |
| 32 | Race, LM44610 | 5PQ500204 |
| 33 | Spindle Washer | 5PQ500206 |
| 34 | Spindle Nut | 5PQ500207 |
| 35 | Dust Cap | 5PQ500209 |
| 36 | Lug Bolt, 1/2 x 20 | 5PQ500210 |
| 37 | Rim & Tire Assembly | 5PQ500220 |

Rotary Gearbox

| Ref# | Description | Part# |
|------|----------------------------|-----------|
| 1 | Retaining Ring, Internal | 5PQ500227 |
| 2 | Washer | 5PQ500228 |
| 3 | Retaining Ring, External | 5PQ500229 |
| 4 | Bearing | 5PQ500230 |
| 5 | Spacer | 5PQ500231 |
| 6 | Pinion Gear | 5PQ500232 |
| 7 | Grease Fitting | 5PQ500233 |
| 8 | Lock Washer, 9/16 | 5PQ500234 |
| 9 | Nut, 9/16 | 5PQ500235 |
| 10 | Hexagon Shaft | 5PQ500258 |
| 11 | Bolt, M14 x 110 | 5PQ500236 |
| 12 | Lock Washer, M14 | 5PQ500237 |
| 13 | Bolt, 9/16 x 3-1/2 | 5PQ500238 |
| 14 | Elbow Fitting /w Swivel | 5PQ502300 |
| 15 | Nipple | 5PQ502299 |
| 16 | Hexagon Shaft Cover | 5PQ500240 |
| 17 | Gear Box Cover | 5PQ502333 |
| 18 | Ring Gear | 5PQ500242 |
| 19 | Upper Bearing | 5PQ500243 |
| 20 | Cam Center | 5PQ502334 |
| 21 | Oil Seal | 5PQ500245 |
| 22 | Lower Bearing | 5PQ500246 |
| 23 | Oil Plug | 5PQ500247 |
| 24 | Gear Box Housing | 5PQ502335 |
| 25 | Retaining Ring | 5PQ500249 |
| 26 | Washer | 5PQ500250 |
| 27 | Cam Roller | 5PQ500251 |
| 28 | Crank Arm Shaft | 5PQ502336 |
| 29 | Gasket | 5PQ500253 |
| 30 | Spacer | 5PQ502337 |
| 31 | Cast Arm Support | 5PQ500255 |
| 32 | Bolt, M12 x 30 | 5PQ500256 |
| 33 | Oil Seal | 5PQ500257 |
| 34 | Bushing | 5PQ500279 |
| 35 | Socket Head Bolt, M10 x 25 | 5PQ002426 |
| 36 | Locknut, M14 | 5PQ002826 |
| 37 | Bolt, M14 x 55 | 5PQ002658 |
| 38 | NordLock Washer | 5PQ000770 |
| 39 | Oil Plug | 5PQ502332 |
| | Complete Gear Box | 5PQ502264 |



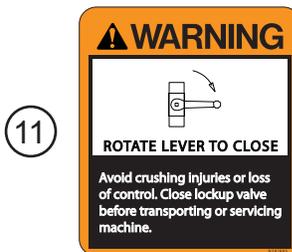
PTO Shaft



| Ref# | Description | Part # |
|------|----------------------------|-----------|
| 1 | Radial Pin Clutch Assembly | 5PQ500028 |
| 2 | Retainer Ring | 5PQ500048 |
| 3 | Flanged Collar | 5PQ500047 |
| 4 | Lock Collar | 5PQ500046 |
| 5 | Ball | 5PQ500044 |
| 6 | Compression Spring | 5PQ500045 |
| 7 | Flange Kit | 5PQ500050 |
| 8 | Retainer Ring | 5PQ500043 |
| 9 | Thrust Ring | 5PQ500042 |
| 10 | Seal Ring | 5PQ500041 |
| 11 | Hub | 5PQ500037 |
| 12 | Cam | 5PQ500038 |
| 13 | Outer Spring | 5PQ500039 |
| 14 | Inner Spring | 5PQ500040 |
| 15 | Clutch Housing | 5PQ500036 |
| 16 | Grease Fitting | 5PQ500049 |
| 17 | Yoke | 5PQ500026 |
| 18 | Collar Kit | 5PQ500064 |
| 19 | Cross & Bearing Kit | 5PQ500030 |
| 20 | Double Yoke | 5PQ500027 |
| 21 | Inboard Yoke | 5PQ500034 |

| Ref# | Description | Part # |
|------|----------------------------|-----------|
| 22 | Spring Pin | 5PQ500031 |
| 23 | Inner Profile | 5PQ500032 |
| 24 | CV Cone & Bearing Assembly | 5PQ500055 |
| 25 | Screw | 5PQ500058 |
| 26 | Shield Cone, 3 Rib | 5PQ500056 |
| 27 | Bearing Ring | 5PQ500052 |
| 28 | Outer Shield Tube | 5PQ500053 |
| 29 | Decal | 5PQ500059 |
| 30 | Support Bearing | 5PQ500063 |
| 31 | Inner Shield Tube | 5PQ500054 |
| 32 | Safety Chain | 5PQ500060 |
| 33 | Shield Cone, 4 Rib | 5PQ500057 |
| 34 | Grease Fitting | 5PQ500062 |
| 35 | Outer Profile & Sleeve | 5PQ500033 |
| 36 | Decal | 5PQ500061 |
| 37 | Inboard Yoke | 5PQ500029 |
| 38 | Cross & Bearing Kit | 5PQ500051 |
| 39 | Front Shaft Assembly | 5PQ500024 |
| 40 | Rear Shaft Assembly | 5PQ500097 |
| 41 | Complete PTO Shaft | 5PQ503039 |

Decals & Reflectors



| Ref# | Description | Part# |
|------|------------------------------|-----------|
| 1 | Frontier Logo | 5PQ903110 |
| 2 | Model Number Decal, RR2109 | 5PQ903120 |
| 3 | Caution, General Information | 5PQ903103 |
| 4 | Caution, 540 RPM | 5PQ903107 |
| 5 | Danger, PTO Entanglement | 5PQ903122 |
| 6 | Important, Avoid Damage | 5PQ903126 |
| 7 | Warning, Do Not Exceed | 5PQ903124 |
| 8 | Warning, Hydraulic Pressure | 5PQ903114 |

| Ref# | Description | Part# |
|------|--------------------------------|-----------|
| 9 | Warning, Thrown Objects | 5PQ903106 |
| 10 | Warning, Prevent Entanglement | 5PQ903123 |
| 11 | Warning, Lock-up Valve | 5PQ903125 |
| 12 | Important, Rake Speed | 5PQ903116 |
| 13 | Decal, Amber Retroreflective | 5PQ903121 |
| 14 | Decal, Red Retroreflective | 5PQ903112 |
| | Complete Decal Kit | 5PQ903128 |
| | French Decal/OM Conversion Kit | 5PQ903180 |

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