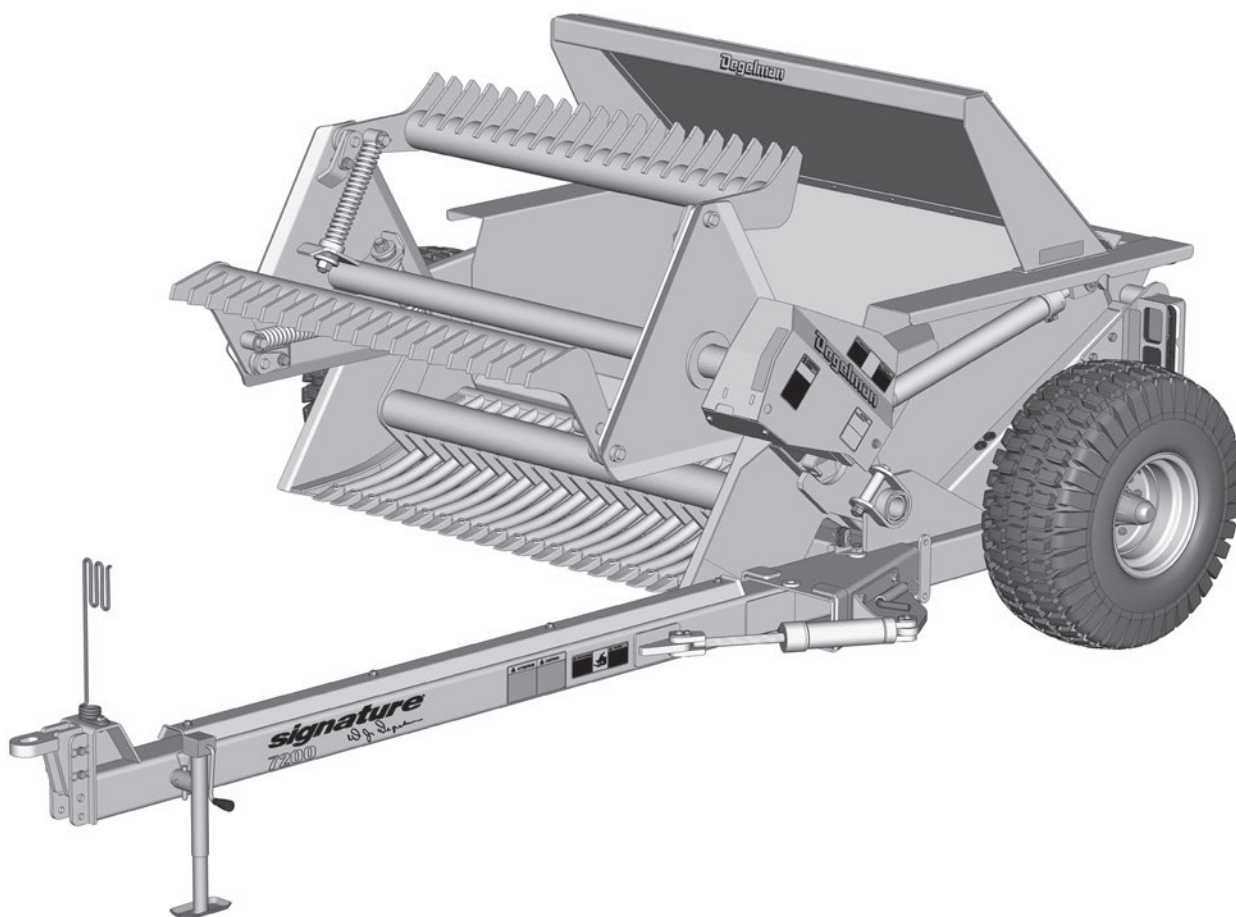

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6000/7200



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DEGELMAN INDUSTRIES LP

BOX 830-272 INDUSTRIAL DRIVE,
REGINA, SK, CANADA, S4P 3B1
FAX 306.543.2140 PH 306.543.4447
1.800.667.3545 DEGELMAN.COM

SIGNATURE SERIES **6000/7200** **ROCK PICKERS**

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6000/7200 *W. J. Degelman*

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⚠ IMPORTANT:

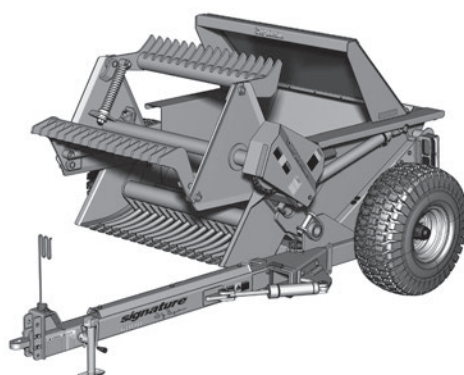


READ MANUAL

Introduction

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6000/7200 *W. J. Degelman*

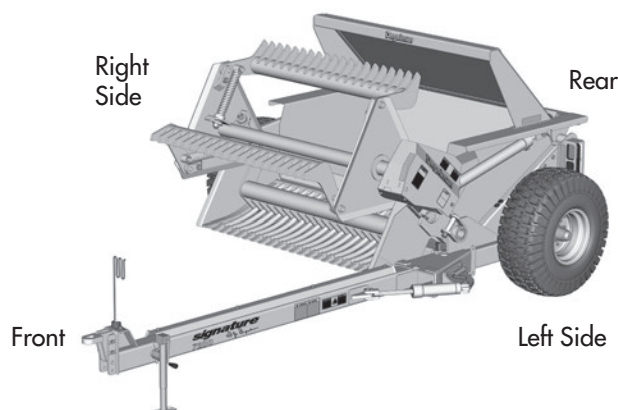


CONGRATULATIONS Congratulations on your choice of a Degelman Signature Series 6000 or 7200 Rock Picker to complement your farming operation. It has been designed and manufactured to meet the needs of a discerning Agricultural market for the efficient picking of rocks. Use this manual as your first source of information about this machine. If you follow the instructions given in this manual, your machine will work well for many years.

Safe, efficient and trouble free operation of your Degelman Rock Picker requires that you and anyone else who will be operating or maintaining the Picker, read and understand the Safety, Operation, Maintenance and Troubleshooting information contained within this Manual.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Degelman Dealer if you need assistance, information or additional copies of the manual.

OPERATOR ORIENTATION - The directions left, right, front and rear, as mentioned throughout the manual, are as seen from the tractor drivers' seat and facing in the direction of travel.



Why is **SAFETY** important to **YOU**?

3 **BIG** Reasons:

- **Accidents Can Disable and Kill**
- **Accidents Are Costly**
- **Accidents Can Be Avoided**



SAFETY ALERT SYMBOL

The **Safety Alert Symbol** identifies important safety messages applied to the Rock Picker and in this manual. When you see this symbol, be alert to the possibility of **injury or death**. Follow the instructions provided on the safety messages.

The **Safety Alert Symbol** means:

ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!

SIGNAL WORDS

Note the use of the Signal Words: **DANGER**, **WARNING**, and **CAUTION** with the safety messages. The appropriate Signal Word has been selected using the following guidelines:



DANGER: Indicates an imminently hazardous situation that, if not avoided, **WILL** result in death or serious injury if proper precautions are not taken.



WARNING: Indicates a potentially hazardous situation that, if not avoided, **COULD** result in death or serious injury if proper precautions are not taken.



CAUTION: Indicates a potentially hazardous situation that, if not avoided, **MAY** result in minor or moderate injury if proper practices are not taken, or, serves as a reminder to follow appropriate safety practices.

SAFETY

YOU are responsible for the safe operation and maintenance of your Degelman Rock Picker. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Rock Picker be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual.

This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating this equipment.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Rock Picker owners must give operating instructions to operators or employees before allowing them to operate the Rock Picker, and at least annually thereafter.
- The most important safety device on this equipment is a SAFE operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. All accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
- 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.
- Think SAFETY! Work SAFELY!

GENERAL SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining or adjusting the Rock Picker.



2. Install and properly secure all shields and guards before operating. Use hitch pin with a mechanical locking device.

3. Have a first-aid kit available for use should the need arise and know how to use it.

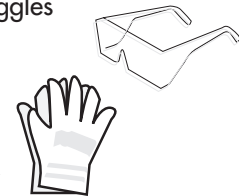


4. Have a fire extinguisher available for use should the need arise and know how to use it.



5. Wear appropriate protective gear. This list includes but is not limited to:

- A hard hat
- Protective shoes with slip resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Hearing protection
- Respirator or filter mask



6. Clear the area of people, especially small children, and remove foreign objects from the machine before starting and operating.

7. Do not allow riders.

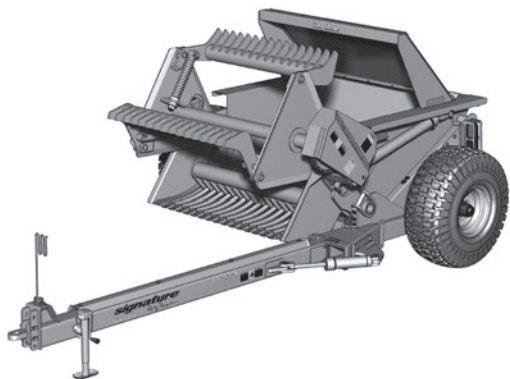
8. Stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.

9. Review safety related items with all operators annually.

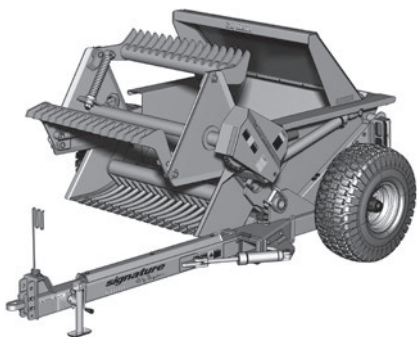
Overview

signature®
6000 *W. J. DeGruyter*

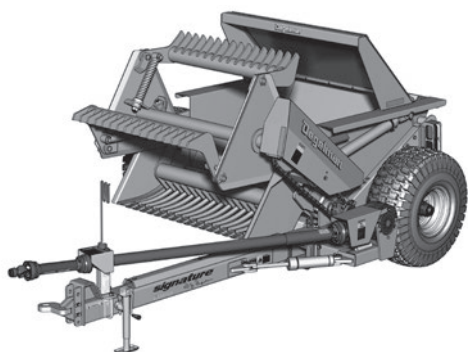
6000 HYDRAULIC DRIVE (standard long pole)



6000 HYDRAULIC DRIVE (short pole option)

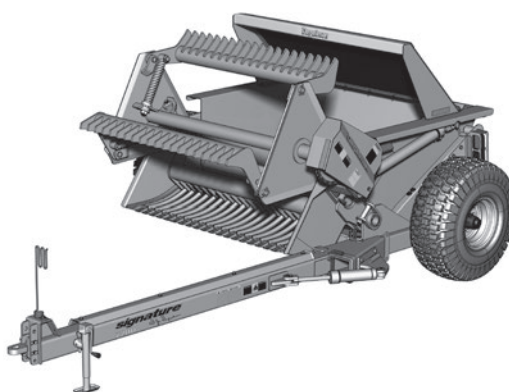


6000 PTO DRIVE (short pole only)

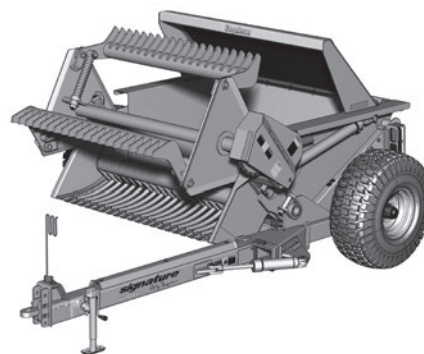


signature®
7200 *W. J. DeGruyter*

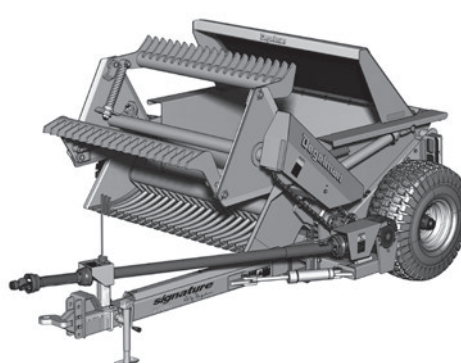
7200 HYDRAULIC DRIVE (standard long pole)



7200 HYDRAULIC DRIVE (short pole option)



7200 PTO DRIVE (short pole only)



Overview

TO THE NEW OPERATOR OR OWNER

The Degelman Signature Series Rock Pickers are designed to efficiently gather rocks from 1-3/4 to 24 inches (45 to 600mm) diameter and debris from fields. Many of the features incorporated into this machine are the result of suggestions made by customers like you.

It is the owner's or operator's responsibility to read this manual carefully to learn how to operate the machine safely and how to set it to provide maximum efficiency. Safety is everyone's business. By following safe operating practices, a safe environment is provided for the operator and bystanders.

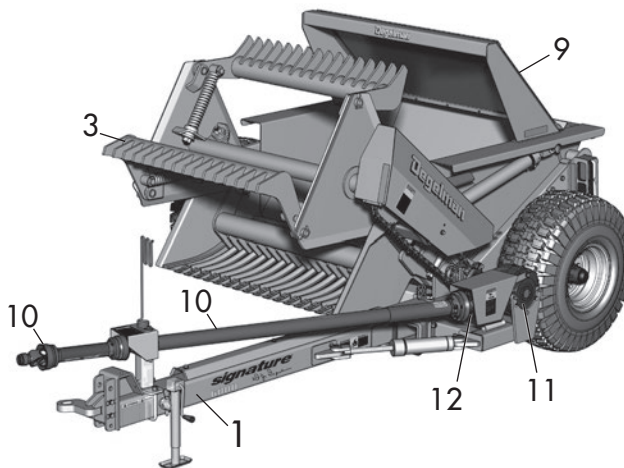
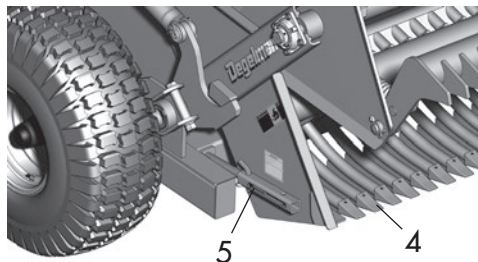
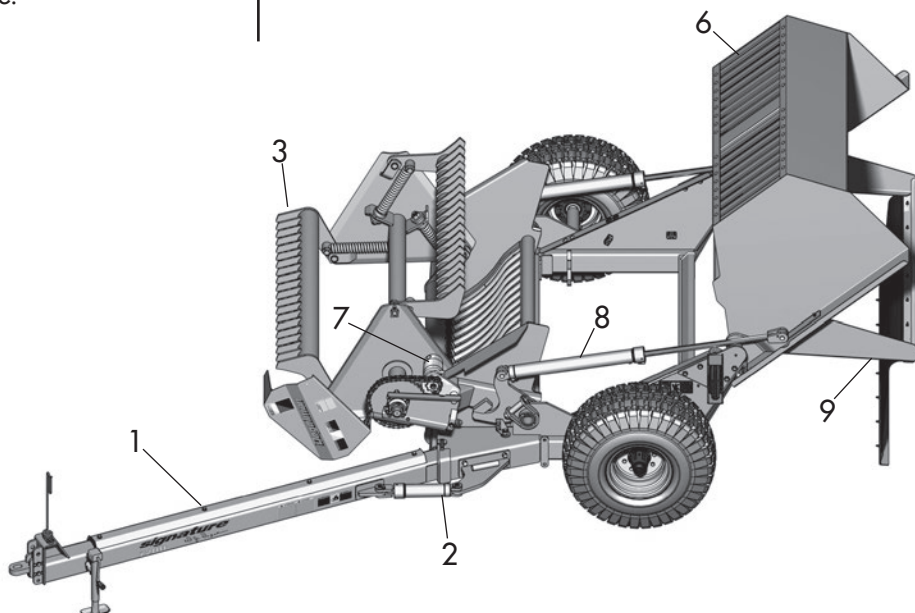
The manual will take you step-by-step through your working day. By following the operating instructions in conjunction with a good maintenance program, your machine will provide many years of trouble-free service.

PRINCIPLES OF OPERATION

The Rock Picker is a framework of steel bars called a grille that moves along the surface of the ground to gather rocks and debris. A rotating paddle moves along the top of the grille to move the rocks and material into the hopper box. When the hopper box fills, it is emptied by dumping out the back.

Rock Picker Components

1. Hitch Pole
2. Swing Arm Cylinder (optional)
3. Paddles
4. Grille
5. Transport Lock
6. Hopper Box
7. Paddle Drive Chain/ Hydraulic Motor
8. Unloading Cylinder
9. Rock Guard
10. PTO Drive Line
11. Gear Box
12. Torque Limiter




Preparation

OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before using.
2. Lower grille and hopper box, 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 or unplugging.
3. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.
4. Do not allow riders on the Rock Picker or tractor during operation or transporting.
5. Keep all shields and guards in place when operating.
6. Clear the area of all bystanders, especially children, before starting.
7. Do not operate machine or raise hopper box on steep side hills or slopes.
8. Use a long pole or bar to dislodge material from paddles or grille. Pressure in hydraulic system and paddle spring tension can cause paddles to kick back if they are jammed.
9. Be careful when working around or maintaining a high-pressure hydraulic system. Ensure all components are tight and in good repair before starting.
10. Clean all reflectors, lights and the SMV sign before transporting on a highway or public road. Be sure to check with local highway authorities and comply with their lighting requirements.
11. Stay well back from machine when operating to prevent being hit by flying rocks. Keep others away.
12. Turn to the left when manoeuvring to keep the tractor away from the path of flying rocks.

BREAK-IN

Although there are no operational restrictions on the Rock Picker when it is new, there are some mechanical checks that must be done to ensure the long term integrity of the unit. When using the machine for the first time, follow this procedure:

 *It is extremely important to follow all of the Break-In procedures especially those listed in the "Before using" section below to avoid damage:*

Before using:

1. Read Safety Info. & Operator's Manual.
2. Complete steps in "Pre-Operation Checklist".
3. Lubricate all grease points.
4. Check all bolt tightness.

After operating for 2 hours:

1. Retorque wheel bolts.
2. Check all hardware. Tighten as required.
3. Check all hydraulic system connections. Tighten if any are leaking.
4. Tighten chain.


After operating for 8 hours:

1. Repeat Step B.
2. Go to the service schedule as outlined in the "Service & Maintenance" section.

Preparation

PRE-OPERATION CHECKLIST

It is important for both personal safety and maintaining the good mechanical condition of the machine that this pre-operational checklist be followed.

Before operating the machine and each time thereafter, the following areas should be checked off: 

- ☐ 1. Lubricate the machine per the schedule outlined in the "Service & Maintenance Section".
- ☐ 2. Use only a tractor of adequate power (70 hp minimum) and weight to carry the Rock Picker.
- ☐ 3. Ensure that the machine is properly attached to the tractor using a drawbar pin with provisions for a mechanical retainer. Make sure that a retainer such as a Klik pin is installed.
- ☐ 4. Ensure that a safety chain on the hitch is installed.
- ☐ 5. Check tires and ensure that they are inflated to the specified pressure: 36 psi (248kPa).
- ☐ 6. Check oil level in the tractor hydraulic reservoir. Top up as required.
- ☐ 7. Inspect all hydraulic lines, hoses, fittings and couplers for tightness. Tighten if there are leaks. Use a clean cloth to wipe any accumulated dirt from the couplers before connecting to the tractor's hydraulic system.
- ☐ 8. Check all roller chains and sprockets for proper alignment and tension. Adjust for tension as required.
- ☐ 9. Inspect all moving and rotating parts. Remove any debris that has become entangled in them.
- ☐ 10. Make sure that all guards and shields are installed and secured in position.
- ☐ 11. Check the paddles, grille and hopper box. Remove any rocks or debris that have become jammed in any of the components.
- ☐ 12. Check the oil level in the gearbox. Top up as required (PTO models).
- ☐ 13. Insure that the PTO driveline is securely attached on both ends and can telescope easily. Check that the PTO driveline shield rotates freely.

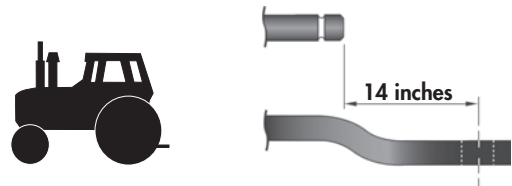
TRACTOR PREPARATION

Follow this procedure when selecting and preparing a tractor for use with the machine:

1. Use only a tractor of sufficient power and weight to adequately handle the machine. It is recommended that the tractor have at least **70 PTO** horsepower for normal operating conditions, **100 PTO** horsepower for hilly conditions. (**Note:** Tractors with duals are not recommended as the right hand tires push the rocks into the ground.)
2. It is recommended to pin the drawbar in its centre draft position.
3. Use only a drawbar pin with provisions for a mechanical retainer such as a Klik pin. Always install the retainer.
4. Always attach a safety chain between the tractor and the machine to prevent unexpected separation.
5. It is not recommended to use a tractor that is equipped with duals. The right outer tire will drive over the rocks, push them into the ground and make them difficult to pick up with the grille.

PTO Models

6. The drawbar pin to PTO shaft end dimension should be 14 in. (540 PTO).



⚠ IMPORTANT: Do not use on a tractor equipped with a PTO shaft adapter to prevent mismatching of PTO speeds and over telescoping of the driveline.

⚠ WARNING: Use extreme care when working around a high pressure hydraulic system. Make sure all connections are tight and all components are in good repair. Wear hand and eye protection when searching for suspected leaks.



Preparation

HOOK-UP / UNHOOKING

The Rock Picker should always be parked on a level, dry area that is free of debris and foreign objects. Follow this procedure when attaching:

1. Clear the area of bystanders and remove foreign objects from the machine and working area.
2. Make sure there is enough room to back the tractor up to the hitch pole.
3. Start the tractor and slowly back it up to the hitch point.
4. Stop the tractor engine, place all controls in neutral, set park brake and remove ignition key before dismounting.
5. Use the hitch pole jack to raise or lower the pole to align with the drawbar. Ensure that the rock picker hitch pole is parallel to the ground.
6. Install a drawbar pin with provisions for a mechanical retainer such as a Klik pin. Install the retainer.
7. Install a safety chain between the tractor drawbar and the hitch pole.

8. Connect the hydraulics. To connect, proceed as follows:

- Use a clean cloth or paper towel to clean the couplers on the ends of the hoses. Also clean the area around the couplers on the tractor.
- Remove the plastic plugs from the couplers and insert the male ends.

If the direction of motion is wrong, reverse the couplers.

9. PTO Models: Connect PTO driveline to tractor.

10. Raise the hitch jack and rotate it 90° to place in its stowed position.

11. When unhooking from the tractor, reverse the above procedure.

Occasionally air may become trapped in the hydraulic circuit, making it necessary to "bleed" the circuit.

To perform this operation cycle the hydraulics several times or especially on older tractors, temporarily loosen an easily accessible hose fitting enough to allow any trapped air to escape while cycling the hydraulics. Retighten fitting.

PTO: Connect the PTO Driveline

- Check that the PTO driveline telescopes easily and the shield rotates freely
- Attach the driveline to tractor by:
 - Retracting the locking collar
 - Slide the yoke over the shaft
 - Push yoke until lock collar clicks into position

Always park on a level surface clear of debris and obstacles.

Connect the Hyd lines

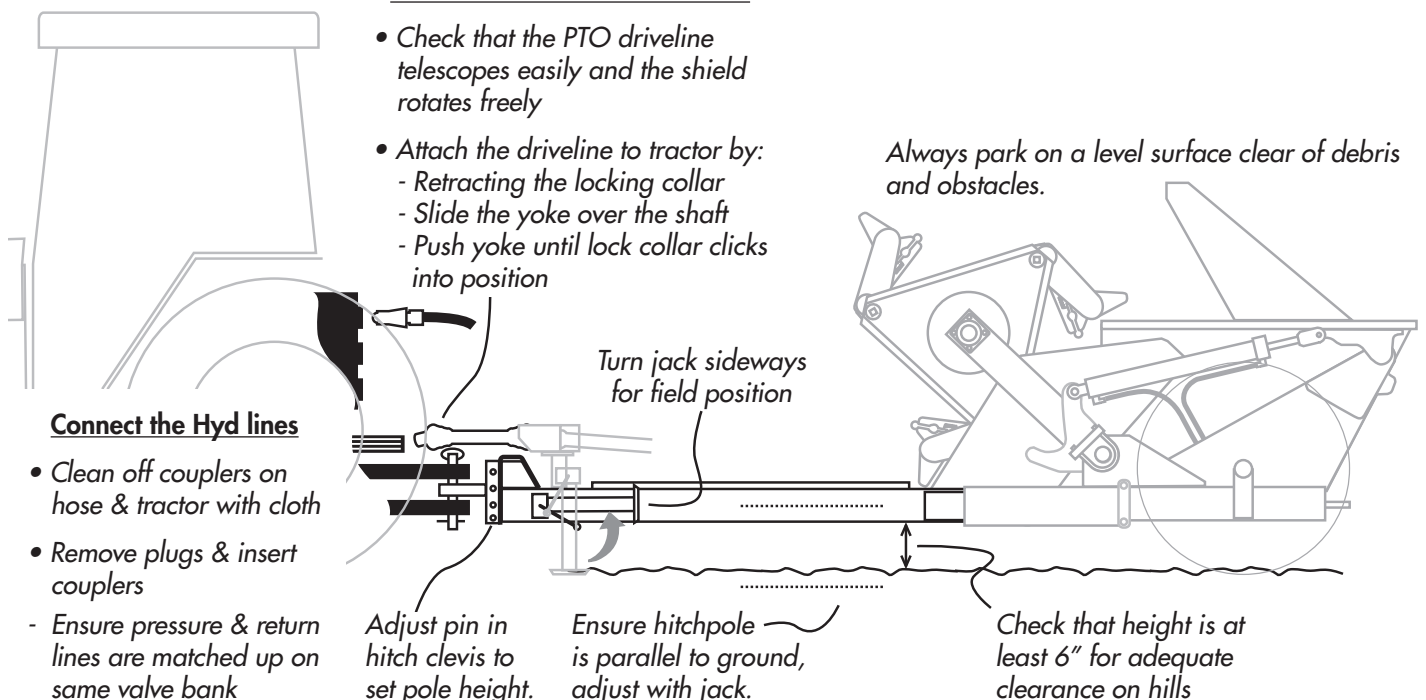
- Clean off couplers on hose & tractor with cloth
- Remove plugs & insert couplers
- Ensure pressure & return lines are matched up on same valve bank

Turn jack sideways for field position

Adjust pin in hitch clevis to set pole height.

Ensure hitchpole is parallel to ground, adjust with jack.

Check that height is at least 6" for adequate clearance on hills



Preparation

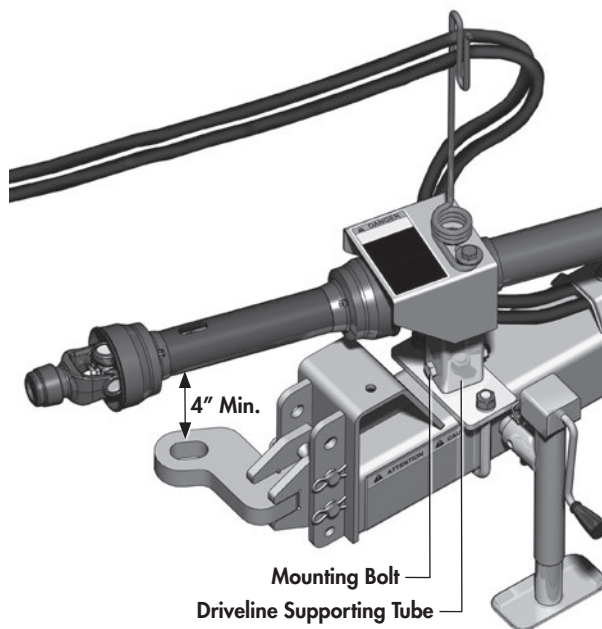
DRIVELINE HEIGHT

(PTO Drive Models)

The clearance between the PTO driveline and the top of the hitch clevis should be at least 4 inches to provide adequate clearance when going over the crest of a hill.

To adjust this clearance, follow this procedure:

1. Attach the machine to tractor by following the "Hook-Up" procedure in the "Operation - Preparation" section.
2. Measure the distance between the driveline and the top of the hitch clevis.
3. If this dimension does not exceed 4 inches, remove the mounting bolt in the driveline support tubing.
4. Raise or lower the unit to give the required distance.
5. Reinstall the mounting bolt in the appropriate matching holes.



HYDRAULIC FLOW CONTROL VALVE

(Optional Hydraulic Drive Models)

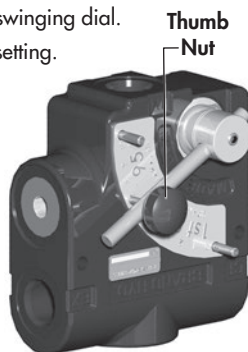
For tractors that are not equipped with a built-in flow control valve, this unit will be necessary to regulate the rate of oil flowing through the picker hydraulic motor which in turn determines the reel/paddle speed.

The flow control valve in the hydraulic circuit is used to adjust the motor speed. To adjust, follow this procedure:

FLOW CONTROL VALVE ADJUSTMENT

1. Loosen thumb nut on swinging dial.
2. Move dial to desired setting.
3. Tighten thumb nut.

NOTE: Move the dial in small increments as a small movement can result in a dramatic speed change.



Preparation

ROCK PICKER PREPARATION

1. Hitch Pole "Field/Transport" configuration:

The hitch pole has a "transport" position that is normally used when the machine is new or when it will be transported for long distances to bring the body of the machine as close behind the tractor as possible.

The hitch pole must be changed to "field" position before starting to work. "Field" position will swing the body of the machine over to clear the tires of the tractor.

NOTE: This Rock Picker has either standard "manual adjustment" or optional "hydraulic adjustment" for positioning the hitch pole.

To change to "field" position with the optional simply retract the hitch pole cylinder to its closed position.

To change positions with **manual adjustment**, follow this procedure:

- Remove the hardware shown holding the pole in transport.
- "Jack-knife" the pole into field position.
- Reinstall the hardware just removed.

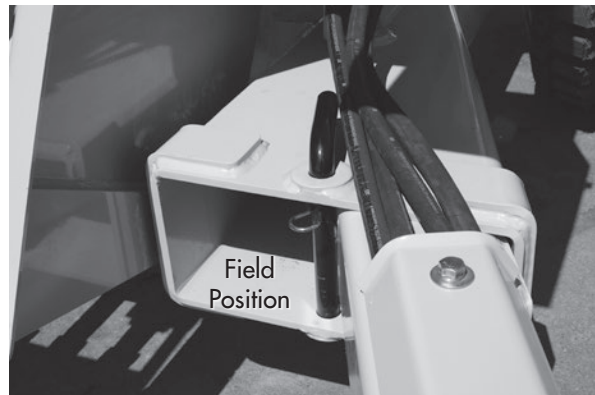
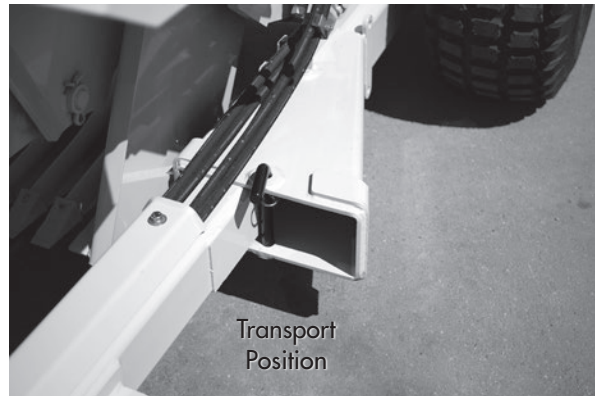
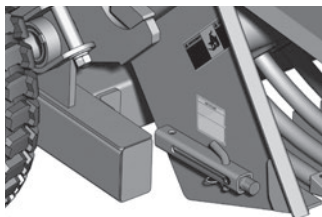
To change positions with **hydraulic adjustment**, follow this procedure:

- Remove the hardware shown holding the pole in transport position (shown) and store.
- Retract the hitch pole cylinder to its closed position ("field" position).
- Reverse order for "transport" position.

2. Grille Preparation:

Fully retract the dump cylinder to take the weight of the grille off the red transport pin.

Remove the red transport lock pin from its transport position.



Operation

OPERATING

Refer to these operational hints before starting:

1. Material size:

The machine was designed to pick and unload rock and debris ranging in size from 1-3/4 to 24 inches (45 to 600mm) in diameter. Smaller pieces will fall through the spacing in the grille and larger rocks will stall the paddle drive.



2. Operator's Responsibility:

Every operator should read this manual and be instructed in safe operating procedures. An untrained operator is not qualified to operate this machine and could place themselves or bystanders in danger.

3. Grille Height:

The grille should be lowered to allow the front of the teeth to skim the ground surface. This will provide the best gathering angle and allow a minimum amount of dirt being carried into the hopper box.

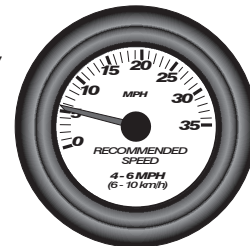
All rocks should be laying on top of the ground for best results when picking. Rocks that are partially submerged or have been run over by the tractor tire are difficult to pick. In these conditions, the grille can be set to momentarily run below the ground surface in an attempt to pick the rock. However, raise the grille back to skimming the surface to reduce the amount of dirt going into the hopper.

⚠ IMPORTANT: Do not use the Rock Picker grille to pry out deeply buried rock or debris. Grill teeth striking a buried rock will shock the machine and damage it.

4. Ground Speed:

Operating speed will vary according to:

- rock size and density
- whether spot picking or windrow picking

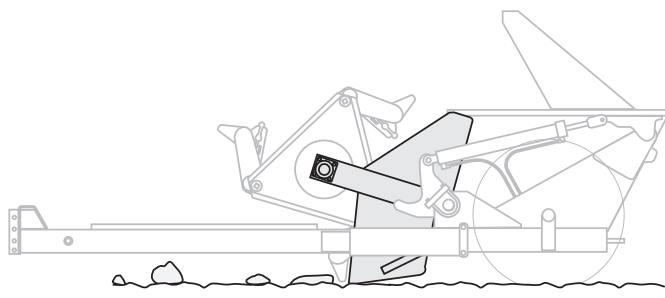


Experience will teach you the correct combination of forward travel speed and reel RPM to suit field conditions:

Normal Operating Speed:

As a rule **4 to 6 MPH** (6 to 10 km/h) is a normal operating speed.

Slow the travel speed when picking heavy rock windrows.



5. Buried Rocks:

The machine is only designed to pick up material that is loose and on top of the ground. Lodged or solid objects will shock load the frame of the machine when trying to pick them up and cause failures. They should be dug out by hand and placed on top of the ground.

Operation

6. Reel Speed:

The purpose of the reel is to sweep the rocks from the front of the grille over the grille framework and into the hopper box. The spring loaded paddles should keep the grille framework clear of rocks by moving them into the hopper.

⚠ DANGER: There is a danger that the paddle will catch the rocks and throw them forward if the reel speed is too fast.

Spot Picking: Best results are obtained when the reel is running 5% to 40% faster than ground speed.

Windrow Picking: The reel must be allowed to sweep the rocks from the grille even when there are large numbers as in windrows. To control the number of rocks entering the machine, reduce the forward speed.

Hydraulic Drive Models

The reel and paddle speeds are determined by the flow rates through the hydraulic system. Increase or decrease the reel speed by adjusting the *flow control valve* (optional) at the front of hitch pole or by the control valve on the tractor.

⚠ IMPORTANT: When stopping reel always place the tractor hydraulic lever into float position or for tractors not equipped with float position be sure to idle tractor speed down before placing the hydraulics into neutral.

Never reverse reel direction without first completely stopping reel. Failure to do this will result in costly hydraulic motor damage.

PTO Drive Models

The reel and paddles always run at a constant speed as determined by the PTO input speed and the drive ratios through the gearbox. The ratio of reel speed to ground speed is changed by changing ground speed. Slowing ground speed allows the paddles to sweep over the grille more frequently and clear the rocks. This is particularly important when picking up heavy rock windrows.

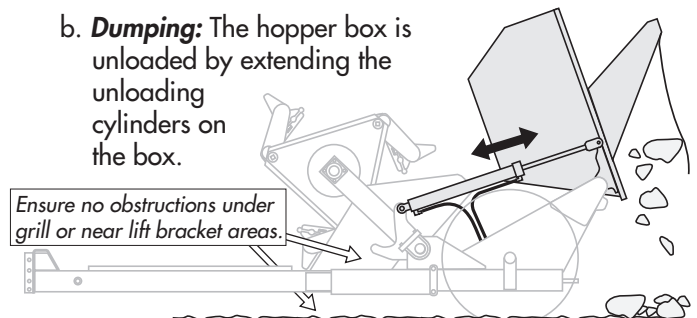
7. Loading/Dumping:

- a. **Loading:** The machine can be loaded until the hopper box is filled and rocks stay on the back edge of the grille. Do not overfill the box as to overflow onto the grill. It is possible that the paddles will carry the rocks over the top of the paddle and throw them out.

When hopper box is full, stop the reel to prevent throwing rocks.

⚠ DANGER: Rocks can be thrown from machine. Stand well clear of machine when operating. Keep others away.

- b. **Dumping:** The hopper box is unloaded by extending the unloading cylinders on the box.



- When backing up with a full load, switch the hitchpole back to the transport position. This will prevent damage to the frame.
- Be sure the machine is on level ground when raising the hopper box to unload. Uneven ground conditions can cause the box to tilt and could be dangerous or result in damage to the machine.
- Ensure there are no obstructions below the grille/grate area or the side cylinder lift bracket area when dumping. Obstructions in these areas can cause extreme loading on pins and brackets due to over-extension of the cylinders and result in damage to the machine.

⚠ WARNING: Stay clear of the machine and surrounding area when unloading. Keep others away.

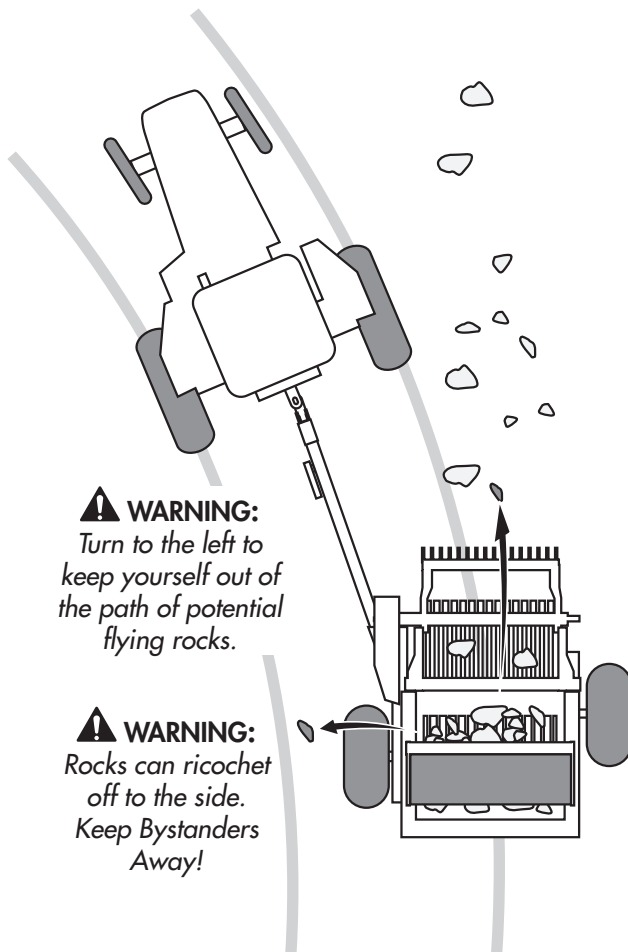
⚠ WARNING: Ensure there are no obstructions below the grille/grate area or the side cylinder lift bracket areas when dumping.

Operation

8. Safety Area:

Always treat the machine with the utmost respect when it is operating. Since the paddles are all loaded with strong springs, they can catch and throw rocks a considerable distance as they move around the reel. Although the most common direction is in the plane of reel motion, they can also hit the frame and bounce off to the sides.

It is recommended that the tractor be turned to the left as much as possible when picking to keep it out of the path of flying rocks. This has the added benefit of eliminating the right hand tractor tire from running over rocks and pushing them into the ground.



9. Jamming/Unplugging:

⚠ WARNING: *Never use hands. Never get your head or arms into the machine. Stay clear of the paddle when removing any lodged material. The paddles could kick back from hydraulic pressure or spring tension. Always use a long bar to remove object.*

Small rocks or debris can get jammed between the grille, paddle or frame jamming the reel and stopping it from turning. To unplug, follow these procedures:

a. Hydraulic Drive Models ONLY

⚠ IMPORTANT:

Never reverse reel direction without first completely stopping reel. Failure to do this will result in costly hydraulic motor damage.

When stopping reel always place the tractor hydraulic lever into float position.

For tractors not equipped with float position be sure to idle tractor speed down before placing the hydraulics into neutral.

- After reel has completely stopped as described above, move the hydraulic control lever the other direction to reverse the hydraulic motor. Reversing the reel will in most cases dislodge the jammed rock.
- If it does not unplug the machine, proceed to Step b.

b. Hydraulic or PTO Drive Models

- Lower grille to ground
- Stop tractor engine
- Place all controls in neutral,
- Relieve the pressure in hydraulic system
- Set park brake
- Remove ignition key.
- Use a long pry bar (not hands) to dislodge the material.

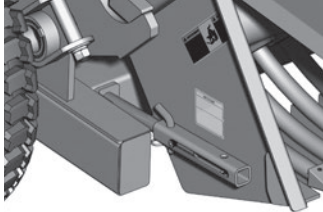
Transporting

TRANSPORT SAFETY

- Read and understand ALL the information in the Operator's Manual regarding procedures and SAFETY when operating the Rock Picker in the field/yard or on the road.
- Check with local authorities regarding machine transport on public roads. Obey all applicable laws and regulations.
- Always travel at a safe speed. Use caution when making corners or meeting traffic. 
- Make sure the SMV (Slow Moving Vehicle) emblem and all the lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.
- Keep to the right and yield the right-of-way to allow faster traffic to pass. Drive on the road shoulder, if permitted by law.
- Always use hazard warning flashers on tractor when transporting unless prohibited by law.
- Always use a pin with provisions for a mechanical retainer and a safety chain when attaching to a tractor or towing vehicle.
- Ensure the red transport pin on the grille is in transport position and the swing hitch pole is fully inward and secured before moving on a public road.

TRANSPORTING

Follow this procedure when preparing to transport:

1. Clear the area of bystanders, especially small children, before converting into transport configuration.
2. Raise the grille to its highest position by retracting the hopper box cylinders.
3. Position the red transport pin into transport position and secure pins. 
4. Lower the grille to rest on the red pin.
5. Rotate hitchpole jack out of the way and secure with chained pin.
6. Unpin hitchpole.
7. Carefully 'jack-knife' tractor/hitch pole combination into full transport.
8. Reinstall hitchpole pin and secure.
9. Clean the SMV, lights and reflectors.
10. Maintain a safe speed. Slow down when cornering and on rough roads.
11. Slow down and pull off to the side of the road when meeting other traffic.
12. Use hazard flashers on tractor unless prohibited by law.

Troubleshooting

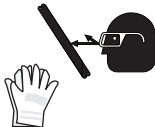
TROUBLESHOOTING

In the following section, we have listed some of the problems, causes and solutions that you may encounter. If you encounter a problem that is difficult to solve, even after having read through this troubleshooting section, please call your local dealer or distributor. Before you call, have this manual and the serial number from your unit ready.



SYMPTOM	PROBLEM	SOLUTION
Grille creeps down during operation.	Tractor hydraulic leak.	To verify, raise grille, disconnect at tractor and observe if grille creeps down. If not, repair tractor hydraulics.
	Damaged hose or loose fittings.	Search for leaks with a piece of paper (<i>not by hand</i>). Repair as necessary.
	Hydraulic cylinder leak.	Replace seals or damaged components.
Grille raises too slowly.	Hydraulic pressure from tractor too low.	Check pressure, should be 1500-2500 psi.
Loaded box will not lift for dumping.	Restriction in hose.	Disconnect & blow out lines with compressed air.
	External hydraulic leak.	Repair as needed.
Oil accumulation on cylinder shaft.	Hydraulic cylinder leak.	Replace seals or damaged components.
	Oil bypassing seals.	Seal manufacturer advises that small amounts of oil getting past seals is desirable. If problem becomes excessive, replace seals.
Excessive picking of dirt.	Grille set to low.	Maintain grille just skimming ground.
Excessive rock pile-up at bottom of grille.	Reel speed too slow in relation to forward travel.	Change tractor gear range and/or hydraulic flow control valve setting.
	Worn reel springs or inadequate spring tension.	Replace springs.
	Excessive torque limiter slippage. (<i>PTO models</i>)	Check and adjust unit.
Paddle teeth contact grille teeth.	Reel misaligned	Realign reel.
	Bent teeth.	Straighten teeth.

Service & Maintenance

MAINTENANCE SAFETY

- Review the Operator's Manual and all safety items before working with, maintaining or operating the Rock Picker.
- Lower grille and hopper box, stop the 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 or unplugging.
- Keep hands, feet, clothing and hair away from all moving and/or rotating parts.
- Clear the area of bystanders, especially children, when carrying out any maintenance and repairs or making adjustments.
- Place safety stands or large blocks under the frame before removing tires or working beneath the machine.
- Be careful when working around or maintaining a high-pressure hydraulic system. Wear proper eye and hand protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop when searching for a pin hole leak in a hose or a fitting. 
- Always relieve pressure before disconnecting or working on hydraulic system.
- Use a long pole or bar to dislodge material from paddles or grille. Pressure in hydraulic system and paddle spring tension can cause paddles to kick back if they are jammed.
- When a guard is opened or removed for servicing, be sure to install or close it before starting.

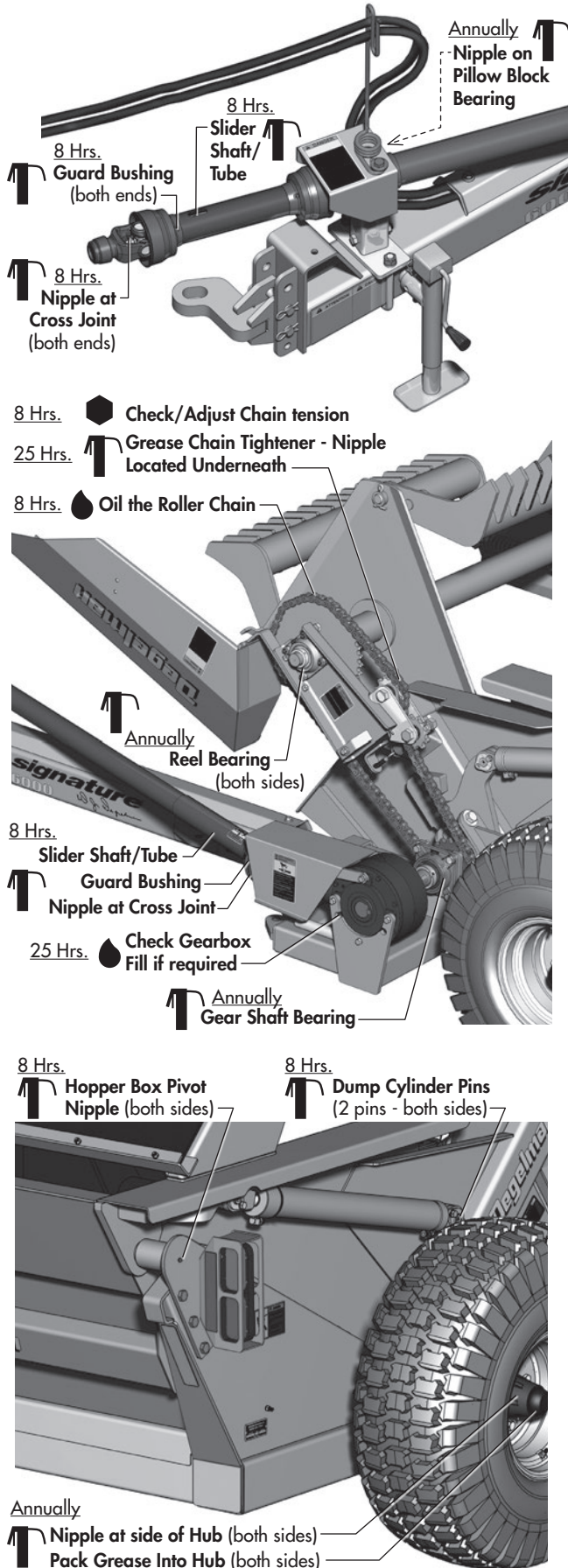
FLUIDS AND LUBRICANTS

1. Grease: Use an SAE multi-purpose grease with extreme pressure (EP) performance. Also acceptable is an SAE multi-purpose lithium base grease. 
2. Gearbox Reservoir Oil: Use an SAE 85W90 gear oil for all operating conditions. Reservoir capacity: 1 quart (1litre). 
3. Storing Lubricants: Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

GREASING

1. Use only a hand-held grease gun for all greasing.
2. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.
5. Inject grease until you see grease being expelled from the bearing or bushing areas.

Service & Maintenance



SERVICE INTERVALS

CAUTION: Machine may be shown with guard(s) opened for illustrative purposes only. Close all guards before using.

LUBE AFTER EVERY 8 HRS.

8 Hrs.

- oil the roller chain - 1 location
- check/adjust chain tension - 1 location
- grease hopper box pivots - 2 locations
- grease dump cylinder pins - 4 pins
- check for hydraulic fluid leaks - general
- check for damaged hoses - general
- check tire pressure - general

PTO Models:

- Front driveline: slider shaft/tube - 1 location
- cross joint fitting - 2 locations
- guard bushing - 2 locations
- Rear driveline: slider shaft/tube - 1 location
- cross joint fitting - 1 locations
- guard bushing - 1 locations

25 Hrs.

PTO Models:

- grease chain tightener - 1 location
(nipple located underside of tightener)
- check gear box oil level - 1 location
 - Remove threaded plug to check oil level.
 - Oil should be level with threads.
 - Add as required through top vent cap.

Annually

- check hardware/bolt tightness - general
- grease reel bearing units - 2 locations
- grease wheel hub nipple - 2 locations
- check/repack wheel bearings - 2 locations
(use a good grade of bearing grease)

PTO Models:

- driveline pillow block bearing - 1 location
- gear shaft bearing unit - 1 location

Service & Maintenance

HARDWARE SPECIFICATIONS



Note: Unless stated otherwise, hardware is typically:
Hex, Plated GR5 UNC or P8.8 (metric)

TORQUE SPECIFICATIONS



TORQUE

Checking Bolt Torque

The tables below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check the tightness of bolts periodically, using these bolt torque charts as a guide. Replace hardware with the same strength (Grade/Class) bolt.

IMPERIAL TORQUE SPECIFICATIONS

(Coarse Thread - based on "Zinc Plated" values)



Size	Grade 5 lb.ft (N.m)	Grade 8 lb.ft (N.m)
1/4"	7 (10)	10 (14)
5/16"	15 (20)	20 (28)
3/8"	25 (35)	35 (50)
7/16"	40 (55)	60 (80)
1/2"	65 (90)	90 (120)
9/16"	90 (125)	130 (175)
5/8"	130 (175)	180 (245)
3/4"	230 (310)	320 (435)
7/8"	365 (495)	515 (700)
1"	550 (745)	770 (1050)
1-1/8"	675 (915)	1095 (1485)
1-1/4"	950 (1290)	1545 (2095)
1-3/8"	1250 (1695)	2025 (2745)
1-1/2"	1650 (2245)	2690 (3645)

METRIC TORQUE SPECIFICATIONS

(Coarse Thread - based on "Zinc Plated" values)



Size	Class 8.8 lb.ft (N.m)	Class 10.9 lb.ft (N.m)
M6	7 (10)	10 (14)
M8	16 (22)	23 (31)
M10	30 (42)	45 (60)
M12	55 (75)	80 (108)
M14	90 (120)	125 (170)
M16	135 (185)	195 (265)
M18	190 (255)	270 (365)
M20	265 (360)	380 (515)
M22	365 (495)	520 (705)
M24	460 (625)	660 (895)
M27	675 (915)	970 (1315)
M30	915 (1240)	1310 (1780)
M33	1250 (1695)	1785 (2420)
M36	1600 (2175)	2290 (3110)

HYDRAULIC SAFETY



- Make sure that all components in the hydraulic system are kept in good condition and are clean.
- Replace any worn, cut, abraded, flattened or crimped hoses and metal lines.
- Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.
- Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.
- If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.
- Before applying pressure to the system, make sure all components are tight and that lines, hoses and couplings are not damaged.



HYDRAULIC HOSE SPECIFICATIONS



Note: Unless otherwise stated, Hydraulic Hoses are either 3/8 or 1/2 with 3/4 JIC female swivel ends.

HYDRAULIC HOSE INSTALLATION TIPS



The following tips are to help you identify some possible problem areas in the installation of hydraulic hoses.

1. Ensure hoses are not twisted during installation as this may weaken the hose. Also, the pressure in a twisted hose may loosen fittings or connections.
2. Allow sufficient bend radius in hoses when installing to prevent lines from collapsing and flow becoming restricted.
3. When installing hoses in an area of movement or flexing, allow enough free length for motion and to ensure fitting connections are not stressed.
4. Ensure hoses are properly clamped and secured in position after routing is complete to provide a cleaner installation and prevent possible damage or hazards.

Service & Maintenance

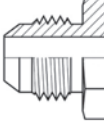
HYDRAULIC FITTING INSTALLATION



The following info is to help you identify and properly install some of our standard hydraulic fittings.

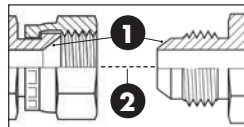
SAE (JIC) 37° Flare

JIC fittings - Metal-to-metal sealing type fittings featuring a 37° flare (angle of sealing surface) and straight UNF (United National Fine) Threads.

(Lubricated Values)	Dash	Thread Size	Torque - lb.ft (N.m)
	-4	7/16 - 20	9-12 (12-16)
	-6	9/16 - 18	14-20 (19-27)
	-8	3/4 - 16	27-39 (37-53)
	-10	7/8 - 14	36-63 (50-85)
	-12	1-1/16 - 12	65-88 (90-119)

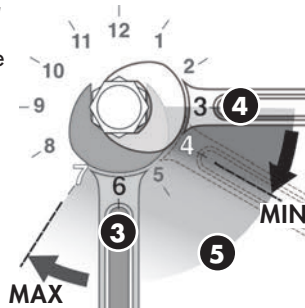
Tightening JIC 37° Flare Type Fittings

1. Check flare and flare seat for defects that might cause leakage.
2. Align fittings before tightening. Lubricate connections & hand tighten swivel nut until snug.
3. Using two wrenches, torque to values shown in table.



Alternate Installation Method

3. Using two wrenches. Place one wrench on the fixed connector body at a clock position of 6 o'clock.
4. Place the second wrench on the second connection as close to the 3 o'clock position as possible.
5. Tighten by rotating the second connection firmly to at least the 4 o'clock position, but no more than the 7 o'clock position. Typically, the larger the fitting size the less rotation required.

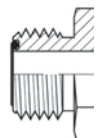


ORFS (O-Ring Face Seal)

ORFS fittings use an O-ring compression method to seal. This method offers a high level of sealing along with good vibration resistance. Male fittings include an O-ring located in a groove on the flat face. Female fittings feature a flat face and UNF straight threaded swivel nut.

The **Torque** method is recommended for ORFS installation.

Dash	Thread Size	Torque - lb.ft (N.m)
-4	9/16 - 18	18 (25)
-6	11/16 - 16	30 (40)
-8	13/16 - 16	40 (55)
-10	1 - 14	60 (80)
-12	1-3/16 - 12	85 (115)



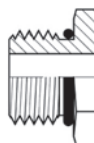
Tightening ORFS (O-Ring Face Seal) Fittings

1. Inspect components and ensure the O-Ring seal is undamaged and properly installed in the groove of the face seal. Replacing the O-Ring may be necessary.
2. Align, thread into place and hand tighten.
3. Tighten to proper torque from the table shown above.

Note: A **DASH** size refers to a diameter of a hose (*inside*) or of a tube (*outside*) measured in 1/16" increments. For example, a **Hose** specified as **dash 8** or **-8** would have an **inside** diameter of 8/16" or 1/2". Alternatively, a **Tube** specified as **dash 8** or **-8** would have an **outside** diameter of 8/16" or 1/2".

ORB (O-Ring Boss)

Male ORB fittings have straight UNF threads, a sealing face and an O-ring. The female fittings are generally found in the ports of machines and feature straight threads, a machined surface, and a chamfer to accept the O-ring. Sealing is achieved through the compression of the male O-ring against the chamfered sealing face of the female fitting.

(Lubricated Values)	Dash	Thread Size	Torque Non-Adjustable lb.ft (N.m)	Torque Adjustable lb.ft (N.m)
	-4	7/16 - 20	30 (40)	15 (20)
	-6	9/16 - 18	35 (46)	35 (46)
	-8	3/4 - 16	60 (80)	60 (80)
	-10	7/8 - 14	100 (135)	100 (135)
	-12	1-1/16 - 12	135 (185)	135 (185)

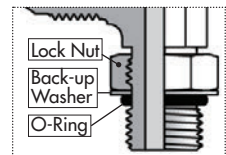
Tightening ORB (O-Ring Boss) Fittings

Non-adjustable Port End Assembly

1. Inspect the components to ensure that male and female threads and sealing surfaces are free of nicks, burrs, scratches, or any foreign material.
2. Ensure O-Ring seal is properly installed and undamaged.
3. Lubricate threads and O-ring to help the O-ring slide past the port entrance corner and avoid damaging it.
4. Screw the fitting into position tighten to proper torque value from the table shown above.

Adjustable Port End Assembly

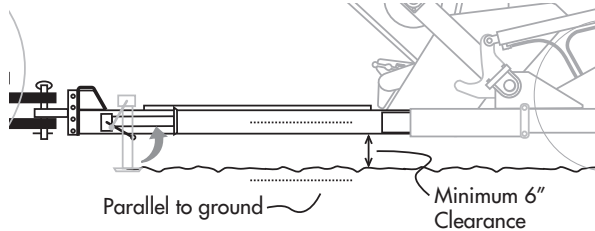
1. Inspect the components to ensure male & female threads and sealing surfaces are free of nicks, burrs, scratches, or any foreign material.
2. Ensure O-Ring seal is properly installed and undamaged.
3. Lubricate threads and O-ring to help the O-ring slide smoothly into the port and avoid damage.
4. Loosen back the lock nut as far as possible. Make sure back-up washer is not loose and is pushed up as far as possible.
5. Screw the fitting into port until the back-up washer or the retaining ring contacts face of the port. Light wrenching may be necessary. Over tightening may damage washer.
6. To align the end of the fitting to accept incoming tube or hose assembly, unscrew the fitting by the required amount, but not more than one full turn.
7. Using two wrenches, hold the fitting in desired position and tighten the locknut to the proper torque value from the table located above.
8. Inspect to ensure that O-ring is not pinched and that washer is seated flat on the face of the port.



Service & Maintenance

HITCH CLEVIS ADJUSTMENTS

The hitch pole should always be set to be parallel to the ground when attached to the tractor. To set this angle, follow this procedure:



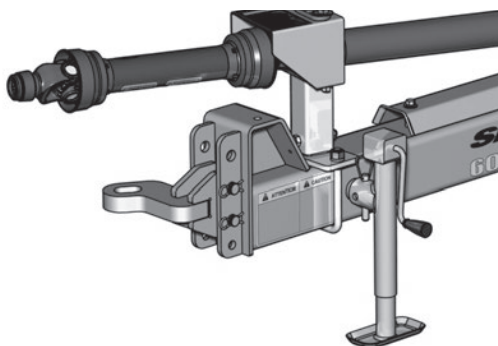
1. Clear the area of bystanders, especially small children.
2. Install the drawbar pin to attach the clevis to the tractor.
3. Use the hitch jack to lower the hitch and transfer the weight off the drawbar.
4. Step back and check to see if the pole is parallel to the ground.
5. If it isn't, use the jack to raise the pole and centre the clevis to the drawbar.
6. Remove the clevis mounting pin.
7. Move the clevis up or down as required.
8. Install the clevis mounting pin and retainer.
9. Lower the hitch and check the pole angle again.

⚠ IMPORTANT: *The machine operates at maximum efficiency when the hitch pole is parallel to the ground.*

PTO Drive Models

NOTE: *Be sure to face the hitch tongue in the direction shown.*

Hitch must be turned inboard as shown to help cut down on U-joint "knuckling" when turning machine during operation.



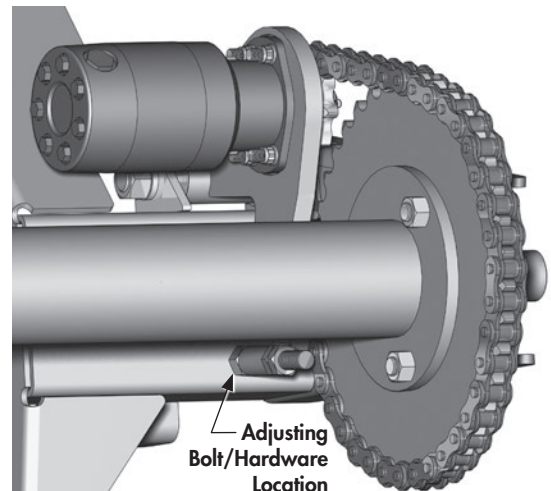
REEL DRIVE CHAIN TENSION

A roller chain transmits power to the reel. Check tension daily and tighten to remove excessive slack. To adjust the tension, follow this procedure:

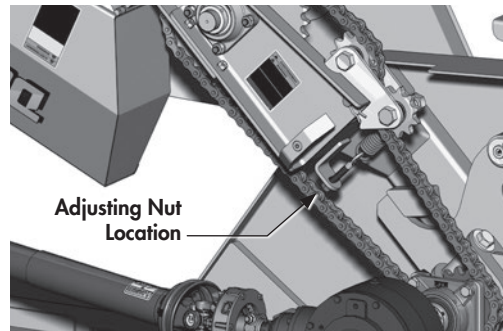
1. Clear the area of bystanders, especially small children.
2. Lower grille to ground, stop engine, place all controls in neutral, relieve hydraulic pressure, set park brake and remove ignition key before dismounting.
3. Open chain drive shield.

⚠ CAUTION: *Machine may be shown with guard(s) opened for illustrative purposes only. Close guards before using.*

4. **Hydraulic Drive Model:** Back off hardware and turn adjusting bolt to remove excessive slack.



PTO Drive Model: Tighten adjusting nut on eye bolt to remove excessive slack.



5. Retighten hardware.
6. Lubricate chain.
7. Close chain shield.

Service & Maintenance

PADDLE SPRING TENSION (6000 Model)

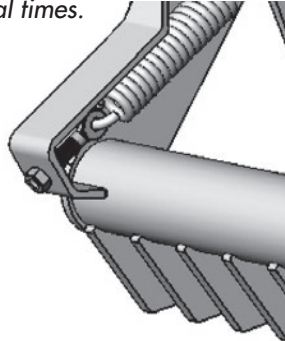
A spring on the paddles allows the paddles to flip back out of the way when blocked by a rock and yet return to their normal position for the next reel cycle. A small adjustment is available with the eye bolt on the end of the spring.

To adjust the tension, follow this procedure:

1. Clear the area of bystanders, especially small children.
2. Lower grille to ground, stop engine, place all controls in neutral, relieve hydraulic pressure, set park brake and remove ignition key before dismounting.

⚠ IMPORTANT: *Relieve hydraulic pressure by moving hydraulic control levers back and forth through neutral several times.*

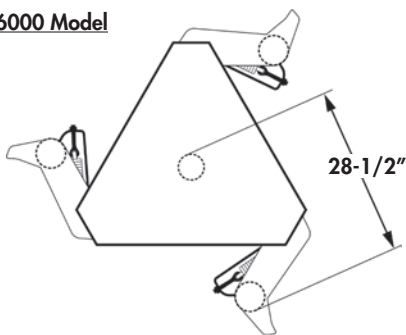
3. Tighten the nut on the spring eye bolt.



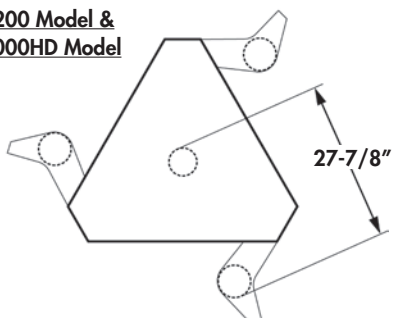
6000 - Spring Tension Model

SPRING TENSION DISTANCE REFERENCE

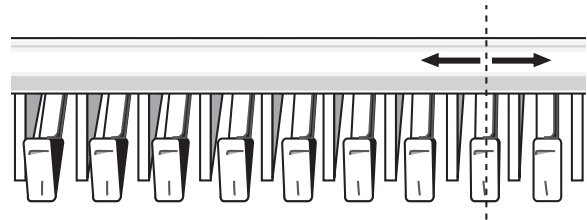
6000 Model



7200 Model &
6000HD Model



PADDLE TEETH ALIGNMENT



Occasionally it may become necessary to shift the reel assembly over to realign the paddle teeth to ensure that they pass through the grille teeth evenly.

To realign, proceed as follows:

1. Remove chain shield to expose bearing.
2. Loosen set screw on bearing lock collar. Then using a drift punch and hammer, loosen lock collar (opposite the direction of rotation). Repeat on the opposite side.
3. Slide reel over until each of the paddles turn evenly through grille teeth.
4. Secure this setting by tightening lock collar of both bearings (in direction of rotation). Tighten set screw.
5. Reposition the chain shield.

⚠ WARNING: *DO NOT operate machine without shield secured in position.*

Service & Maintenance

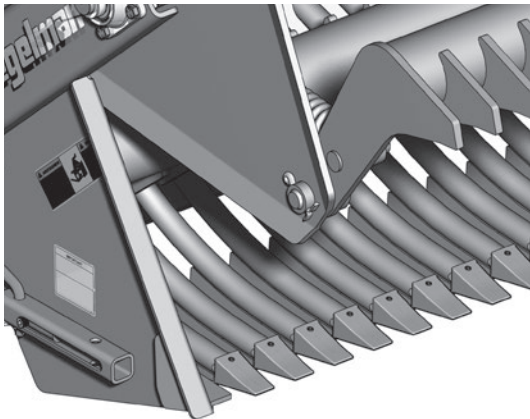
PADDLE AND GRILLE TEETH REPAIR OR REPLACEMENT

! Securely block up grille before attempting any work on grille teeth.

! When performing arc welding operations on this machine, the current between the rod and the ground must not pass through any bearing unit to eliminate the possibility of "pitting" due to current arcing across ball bearings and bearing race.

Restoring or Replacing Teeth: Build up and resurface teeth as required using hard surface welding rods. A hardness of RC45-50 is desirable.

The paddle teeth and grille teeth can be replaced with new ones as required. It will be necessary to cut off and grind away the welding that held the old tooth. Then evenly space, tack up and weld each tooth into position.

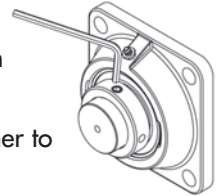


Grille Tooth Tip Replacement: Replace broken cast tips immediately to prevent wearing down of mating stub. Replace tips by driving out roll pin, wedging new tip into position and reinstalling roll pin.

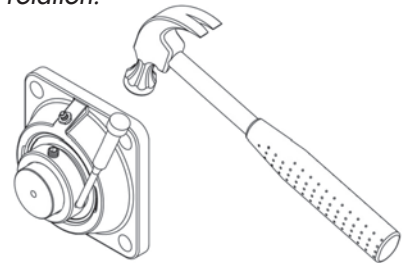
BEARING REPLACEMENT

When bearing noise becomes evident, replacement of the bearing is necessary. Whether the complete bearing unit or just the bearing insert was purchased, proceed as follows:

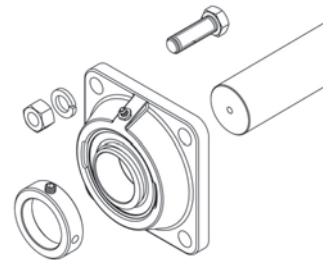
1. Loosen set screw with allen wrench.
2. Use drift punch and hammer to loosen lock collar.



NOTE: Lock collar loosens opposite the direction of rotation.



3. Remove lock collar and bolts.
4. Pull bearing unit from shaft and replace.



To re-install:

5. Relocate lock collar and tighten.
6. Tighten set screw.
7. Lubricate grease fitting.

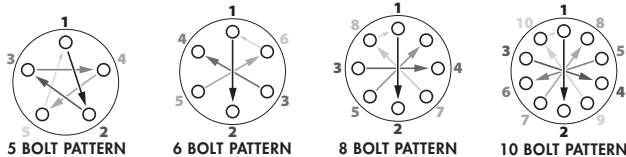
Service & Maintenance

⚠ TIRE SAFETY

1. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce a blow out which may result in serious injury or death.
2. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
3. Have a qualified tire dealer or repair serviceman perform required tire maintenance.

WHEEL NUT & WHEEL BOLT TORQUE

BOLT PATTERNS



Wheel Nut/Bolt Torque

Size	lb.ft (N.m)
9/16	120-130 (165-175)
5/8	185-190 (250-260)
3/4	280-300 (380-405)

Wheel Tightening Procedure

1. Install and **hand tighten** nuts/bolts.
2. Tighten to approx. **20% Torque** value using the Bolt **Star or CrissCross** patterns shown above.
3. Tighten to **Full Torque** value using the **Star or CrissCross** pattern.
4. If applicable, install **Rear Locknuts** using **Wheel Torque Values**.

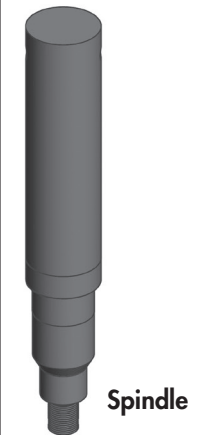
WHEEL HUB REPAIR

DISASSEMBLY

1. Remove dust cap.
2. Remove cotter pin from nut.
3. Remove nut and washer.
4. Pull hub off spindle.
5. Dislodge the inner cone bearing and dust seal.
6. Inspect cups that are press fitted into hub for pits or corrosion and remove if necessary.
7. Inspect and replace defective parts with new ones.

⚠ IMPORTANT: Be sure to block up unit securely before removing tires.

COMMON HUB & SPINDLE COMPONENTS



Spindle

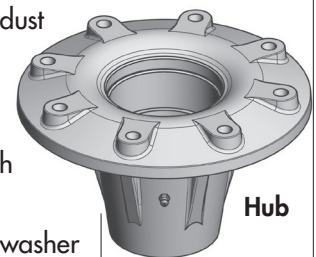
Dust Seal

Inner Cone

Inner Cup

ASSEMBLY

1. If cups need replacing, be careful to install them gently and evenly into hub until they are fully seated.
2. Apply a thick wall of grease inside hub. Pack grease in cones.
3. Install inner cone and dust seal as illustrated.
4. Position hub onto spindle and fill surrounding cavity with grease.
5. Assemble outer cone, washer and nut.
6. Tighten nut while rotating hub until there is a slight drag.
7. Turn nut back approximately 1/2 turn to align cotter pin hole with notches on nut.
8. Install cotter pin and bend legs sideways over nut.
9. Fill dust cap half full of grease and gently tap into position.
10. Pump grease into hub through grease fitting until lubricant can be seen from dust seal.



Hub

Outer Cup

Outer Cone

Flat Washer

Slotted Nut & Cotter Pin

Dust Cap

Service & Maintenance

HYDRAULIC CYLINDER REPAIR

PREPARATION

When cylinder repair is required, clean off unit, disconnect hoses and plug ports before removing cylinder.

When removed, open the cylinder ports and drain the cylinder's hydraulic fluid.

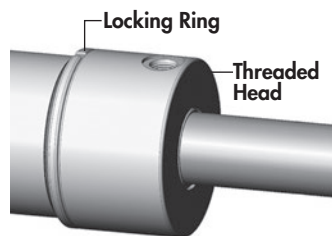
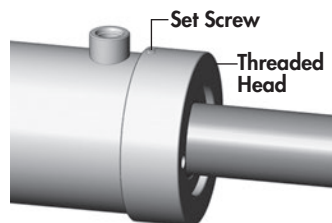
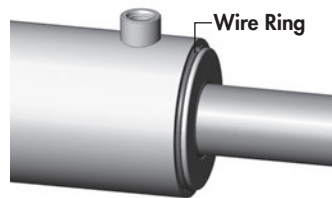
Examine the type of cylinder. Make sure you have the correct tools for the job.

You may require the following tools:

- Proper **Seal Kit**
- Rubber Mallet
- Screwdriver
- Punch
- Pliers
- Emery cloth
- Torque Wrench

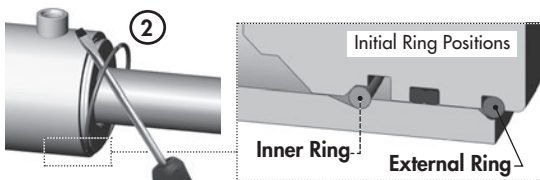
Types of Cylinders

(Wire Ring / Threaded Head)



REPAIRING A WIRE RING CYLINDER

1. Retract the rod assembly.
2. Remove the external steel wire ring.

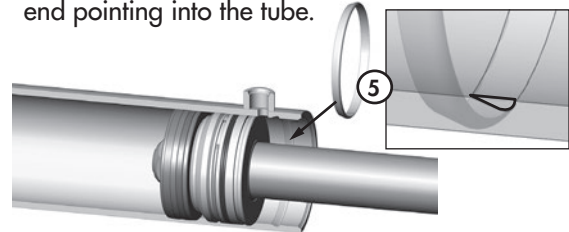


3. Remove any dirt that may have accumulated on the cylinder head.

4. Using the mallet and punch, push the head into the cylinder tube until the internal tube groove is fully exposed. This will also move the internal wire ring into its removal position.



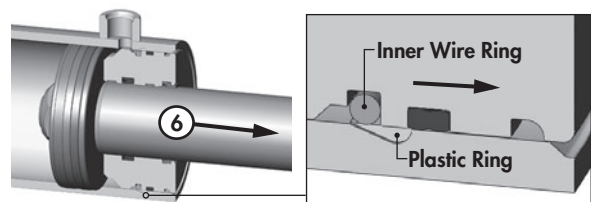
5. Take the plastic removal ring from the seal kit:
 - a) Straighten the ring and remove any kinks or excessive curl to make installation easier and prevent it from falling out.
 - b) Insert the removal ring into the internal groove with the feathered end pointing into the tube.



- c) Use a screwdriver or a finger to hold one end of the ring in the groove while fitting the other end of the ring into the groove. The tips should snap in together. Ensure it is secure and fully seated before the next step.

IMPORTANT: It is important to ensure the removal ring is completely in the groove before pulling the rod out. If the ring sticks out it will get stuck between the head and tube.

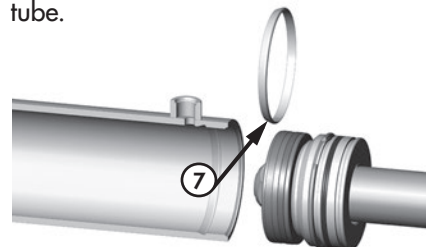
6. a) Extend the rod to pull head out of tube. If the rod does not pull out easily, push the head back in and ensure the ring is properly in the groove. Replace ring if necessary.



Note: Excessive force will not overcome a jammed ring and could damage the cylinder.

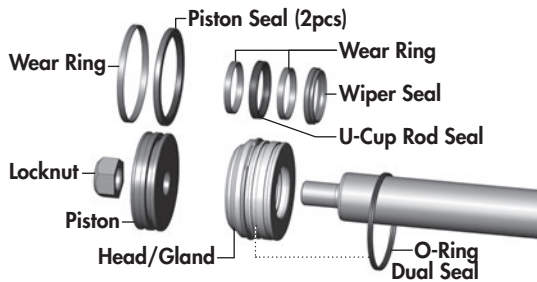
- b) Completely remove rod and head from tube.

7. Remove plastic removal ring from the cylinder tube.

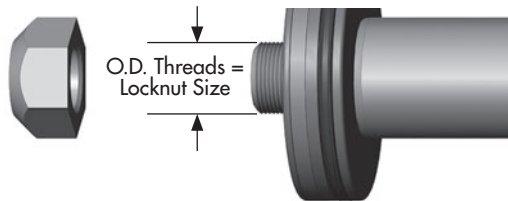


Service & Maintenance

8. Remove locknut, piston and head from rod.

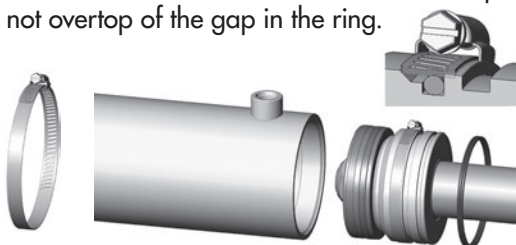


9. a) Inspect and replace all of the seals with new components.
 b) Inspect the inside of the cylinder barrel, piston, rod and other polished parts for burrs and scratches. Smooth areas as needed with an emery cloth.
 c) During re-assembly of head/gland assembly, leave the outer O-Ring Dual Seal loose on the rod to re-install at a later step.
10. Replace piston and torque the locknut to required value. (Refer to chart below)



LOCKNUT SIZE (PISTON)	TORQUE VALUE	
3/8 - 24 UNF	25-30 lb.ft	(35-42 N.m)
1/2 - 20 UNF	40-60 lb.ft	(55-80 N.m)
5/8 - 18 UNF	95-105 lb.ft	(130-140 N.m)
3/4 - 16 UNF	175-225 lb.ft	(240-305 N.m)
7/8 - 14 UNF	200-275 lb.ft	(270-370 N.m)
1 - 14 UNF	300-380 lb.ft	(405-515 N.m)
1 1/8 - 12 UNF	400-500 lb.ft	(540-675 N.m)
1 1/4 - 12 UNF	500-600 lb.ft	(675-810 N.m)
1 1/2 - 12 UNF	700-800 lb.ft	(950-1085 N.m)
1 3/4 - 12 UNF	800-900 lb.ft	(1085-1220 N.m)

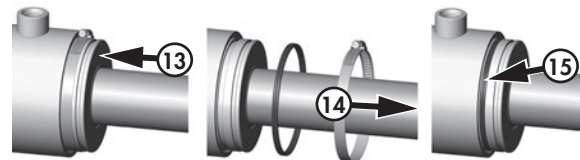
11. a) Install the supplied band clamp to compress the inner wire ring on the head/gland assembly so it will fit into the tube.
- Note:** Make sure the cam of the band clamp is not overtop of the gap in the ring.



- b) Tighten the band clamp to ensure the wire ring is fully seated. Then, loosen the clamp approx. 1/2 a turn to allow band clamp to slide during final assembly.

12. Lubricate the cylinder tube and piston seals.

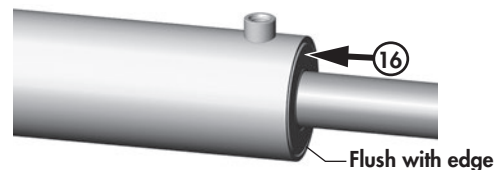
13. Insert the piston into the tube. Tap the cylinder head into the tube until the clamp slides over and the inner wire ring is inside the tube.



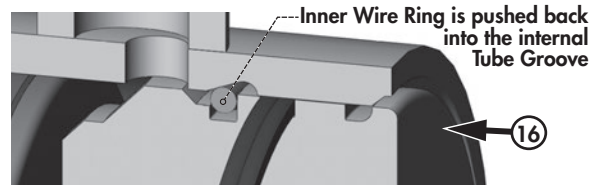
14. Loosen the clamp and remove.

15. Install the O-Ring Dual seal.

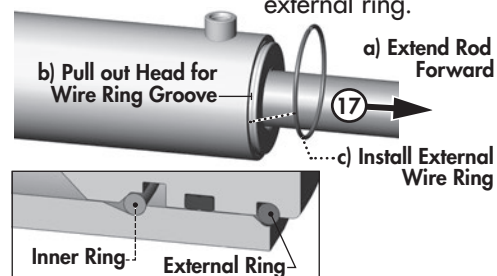
16. Tap the head the rest of the way until the end is flush with the tube.



IMPORTANT: The head/gland must be inserted until it is flush with the tube to allow the inner wire ring to snap into its seated position in the internal cylinder groove. Failure to insert the head flush as shown will result in the head and rod assembly coming out of the tube when pressure is applied to the cylinder.



17. Pull the rod out to expose the external wire ring groove in cylinder head, and then install the external ring.

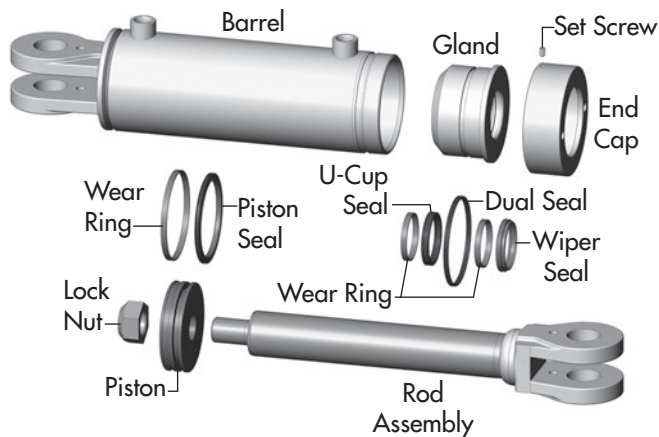


18. Before using the cylinder, ensure that you double check your work.

Service & Maintenance

REPAIRING A THREADED HEAD CYLINDER

Set Screw Style



DISASSEMBLY

1. Loosen Set Screw and turn off end cap.
2. Carefully remove piston/rod/gland assemblies.
3. Disassemble the piston from the rod assembly by removing lock nut.

NOTE: DO NOT clamp rod by chrome surface.

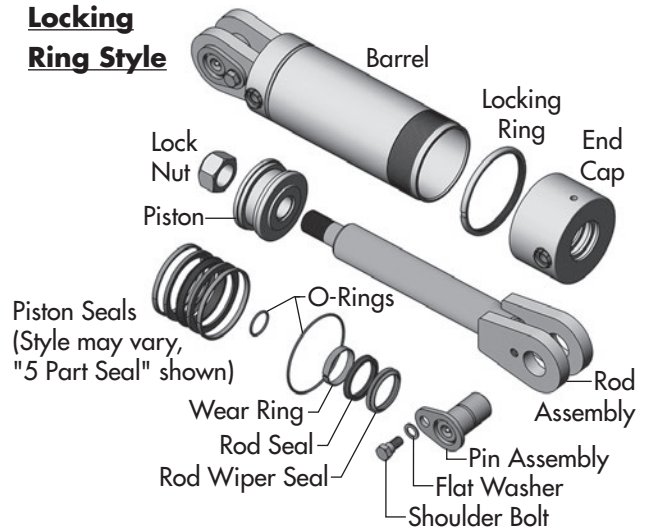
4. Slide off gland assembly & end cap.
5. Remove seals and inspect all parts for damage.
6. Install new seals and replace damaged parts with new components.
7. Inspect the inside of the cylinder barrel, piston, rod and other polished parts for burrs and scratches. Smooth areas as needed with an emery cloth.

REASSEMBLY

1. Reinstall rod through end cap & gland assembly.
2. Secure piston to rod with lock nut. Torque lock nut to proper value (refer to chart on previous page for proper torque value).
3. Lube inside of barrel, piston seals, and gland seals with hydraulic oil.
4. With cylinder body held gently in a vise, insert piston, gland, end cap and rod combination using a slight rocking motion.
5. Apply Loctite anti-seize before installing cylinder end cap.
6. Torque cylinder end cap to 440 lb.ft (600 N.m).
7. Tighten Set Screw on end cap to 6 lb.ft (8 N.m).

REPAIRING A THREADED HEAD CYLINDER

Locking Ring Style



DISASSEMBLY

1. Loosen Locking Ring and turn off end cap.
2. Carefully remove piston, rod and end cap.
3. Disassemble the piston from the rod assembly by removing lock nut.

NOTE: DO NOT clamp rod by chrome surface.

4. Slide off end cap.
5. Remove seals and inspect all parts for damage.
6. Install new seals and replace damaged parts with new components.
7. Inspect the inside of the cylinder barrel, piston, rod and other polished parts for burrs and scratches. Smooth areas as needed with an emery cloth.

REASSEMBLY

1. Reinstall rod through end cap.
2. Secure piston to rod with lock nut. Torque lock nut to proper value (refer to chart on previous page for proper torque value).
3. Thread lock ring fully onto barrel.
4. Lube inside of barrel and piston seals with hydraulic oil.
5. With cylinder body held gently in a vise, insert piston, end cap and rod combination using a slight rocking motion.
6. Turn end cap fully against lock ring then back off end cap to align ports.
7. Tighten Locking Ring against end cap using a punch and hammer.

Service & Maintenance

PTO TORQUE LIMITER/SLIP CLUTCH

Torque Limiter Run In & Repair

Tools Required: 1/2" or M13 box wrench or socket.

Run-In of the Friction Clutch

(Necessary for all new clutches and clutches that have not been operated for (1) season or approximately 60 days.)

1. Make sure the tractor is off and the PTO is disengaged.
2. Disconnect the driveline from the tractor.
3. Locate the long bolts on the O.D. of the clutch pak. Loosen the bolts until all are finger tight, then tighten each one half a turn.
4. Attach the implement to the tractor and the driveline to the tractor PTO. Stand clear.
5. Turn the tractor on. Engage the PTO clutch and run for a few seconds, or until the clutch visibly smokes, then disengage the PTO.
6. Make sure the tractor is off and the PTO is disengaged.
7. Disconnect the driveline from the tractor.
8. Tighten the long bolts on the O.D. of the clutch pak until the compression plate is in full contact with the housing.
9. Grease the fitting on the yoke using Shell Super Duty or an equivalent lithium grease.

Repair And Rebuilding

Disassembly

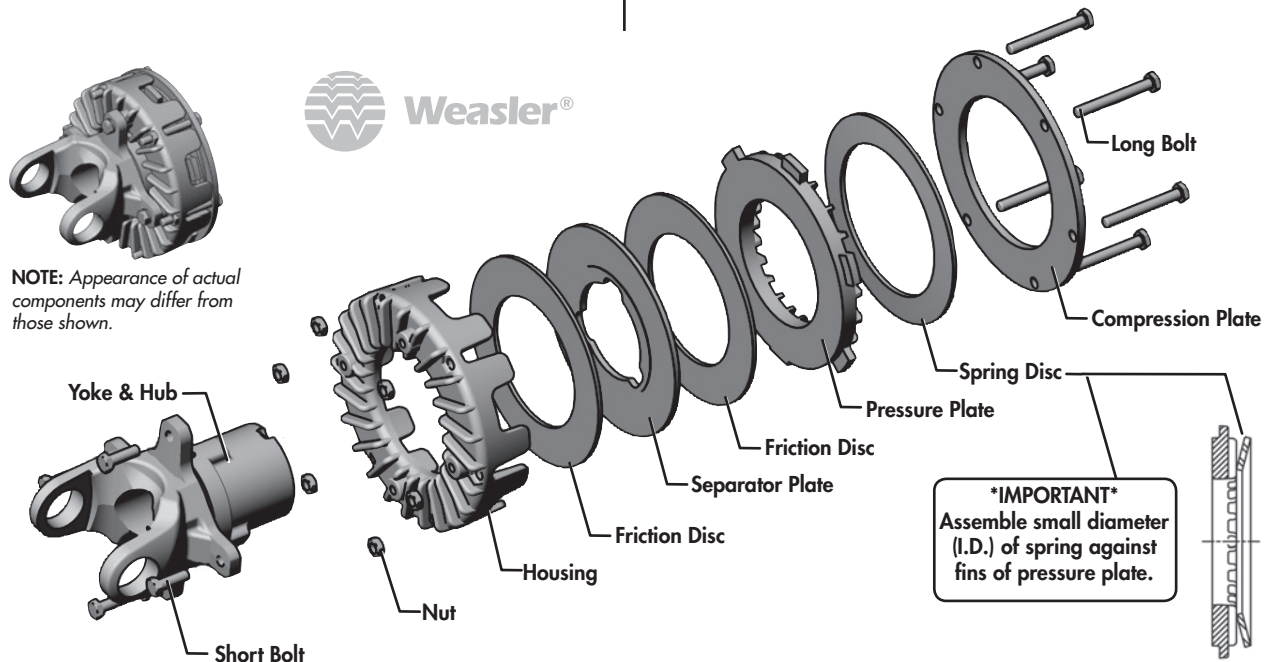
1. Place the clutch and universal joint assembly on a bench, with the end of the clutch accessible.
2. Remove the long bolts on the outside of the housing that hold the friction pack together.
3. Remove the plate(s) and all internal components, leaving the yoke/hub intact.
4. Discard the friction discs if worn below 1/16".

Inspection

6. Inspect the steel and iron parts for wear, warpage or cracking and replace if necessary.
7. Inspect the yoke/hub for looseness. If there is more than .03 end play, replace.
8. Clean any, rust or dust from the plate surfaces with a wire brush or steel wool.

Assembly

9. Place one new friction disc inside the housing, then the separator plate, then the other friction disc.
10. Add the pressure plate so that the flat surface rests on the friction disc (the tangs on the plate must fall into the reliefs in the housing).
11. Add the disc spring so that the spring inside diameter contacts the fins of the pressure plate.
12. Assemble the compression plate and all long bolts, making sure that all nuts are in their pockets. Tighten all long bolts to 30 ft-lbs.



Storage

STORAGE SAFETY

- Store unit in an area away from human activity.
- Store Rock Picker only with grille and hopper box lowered.
- Do not permit children to play around the stored unit.

STORAGE

After the season's use, completely inspect all major systems of the machine. Repair or replace any worn or damaged components to prevent unnecessary down time at the beginning of next season.

Since the unit can be used in extremely adverse conditions during the season, the machine should be carefully prepared for storage to ensure that all dirt, mud, debris and moisture has been removed.

Follow this procedure when preparing to store:

1. Wash the entire machine thoroughly using a water hose or pressure washer to remove all dirt, mud, debris or residue.
2. Inspect all moving or rotating parts to see if anything has become entangled in them. Remove the entangled material.
3. Lubricate all grease fittings to remove any moisture in the bearings.
4. Run the machine slowly for 1 minute to distribute lubricant to all surfaces.
5. Apply a light coat of oil to the roller chains while the unit is running to prevent rusting.
6. Inspect all hydraulic hoses, fittings, lines, couplers and valves. Tighten any loose fittings. Replace any hose that is badly cut, nicked or abraded or is separating from the crimped end of the fitting.
7. Touch up all paint nicks and scratches to prevent rusting.
8. Oil the exposed rams on the hydraulic cylinders to prevent rusting.
9. Select an area that is dry, level and free of debris.
10. Follow the procedure given in Section 4.6 when unhooking.

STORAGE SAFETY - DECALS

- Keep safety decals and signs clean and legible at all times.
- Replace safety decals and signs that are missing or have become illegible.
- Replaced parts that displayed a safety sign should also display the current sign.
- Safety decals or signs are available from your Dealer Parts Department. Safety decals will be available upon request.

REPLACEMENT DECALS AND REFLECTORS

PART NO.	DESCRIPTION	QTY.
142364	Decal, Danger - Thrown Rock	2
142363	Decal, Warning - High Pressure	1
142360	Decal, Warning - Jammed Paddle	2
142357	Decal, Warning - Missing Shield	1
142359	Decal, Warning - Rotating Parts - Chain	1
142356	Decal, Caution - 1-10 Point of Safety	1
142365	Decal, Important - Grille Preparation	1
142407	Decal, Important - Chain Maintenance	1
142010	Decal, Degelman - 2-3/4" x 12"	1
142009	Decal, Degelman - 3-3/4" x 16-1/4"	3
142008	Decal, Degelman - 6" x 25-3/4"	1
142418	Decal, WJD - Signature 6000	1
142468	Decal, WJD - Signature 7200	1
142156	Decal, Slow Moving Vehicle	1
142556	Reflector Tape - Red, 2" x 9"	2
142557	Reflector Tape - Amber, 2" x 9"	5
142650	Reflector Tape - Fluorescent, 2" x 9"	2
119295	Decal, Danger - Driveline - Outer	2
119296	Decal, Danger - Driveline - Outer (French)	1
119297	Decal, Danger - Driveline - Inner	2
142372	Decal, Danger - Rotating Driveline	1
142358	Decal, Warning - Rotating Part - U-Joint	1

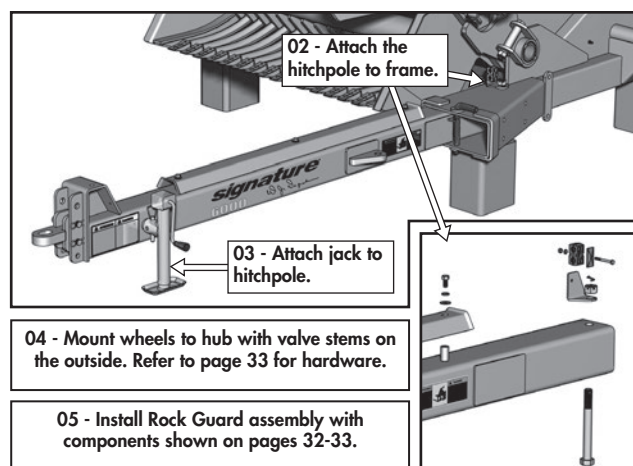
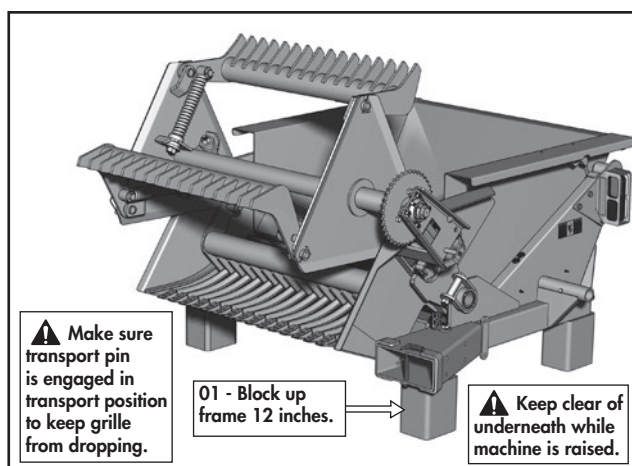
Parts Section

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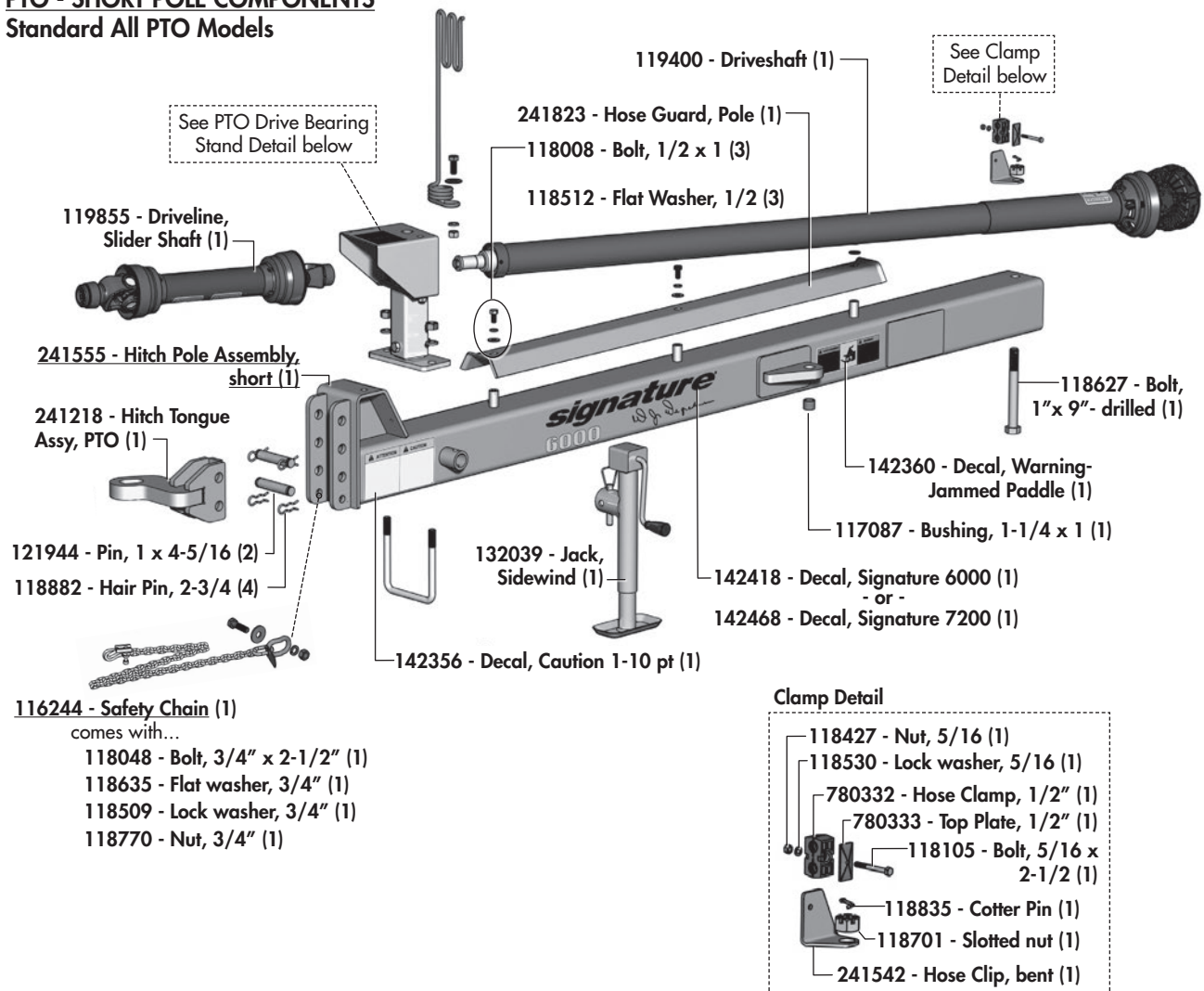


Initial Assembly Set-Up

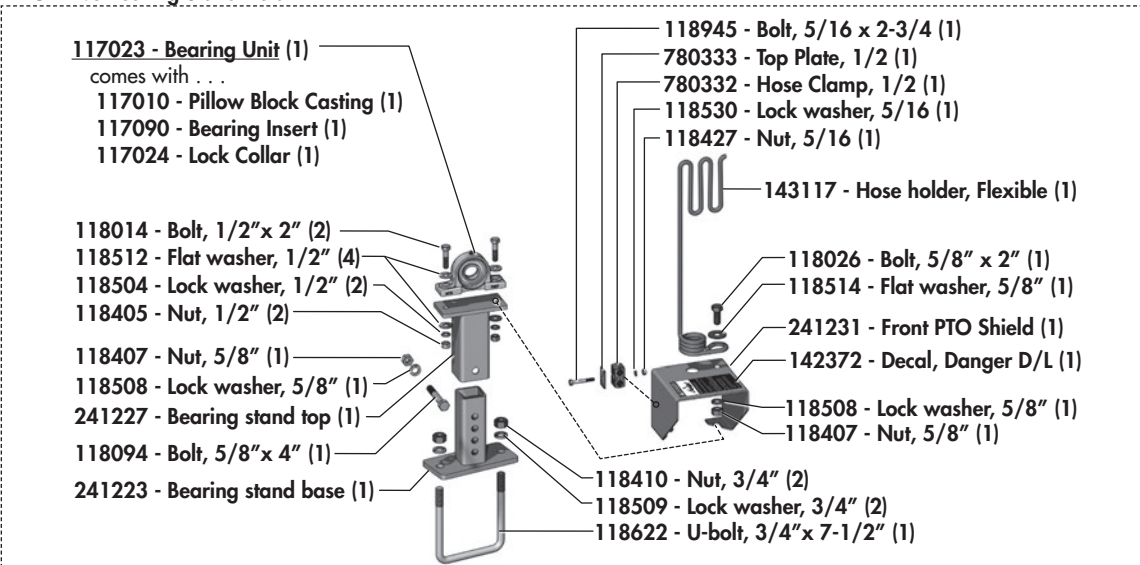


Hitch Pole Components - PTO

PTO - SHORT POLE COMPONENTS Standard All PTO Models



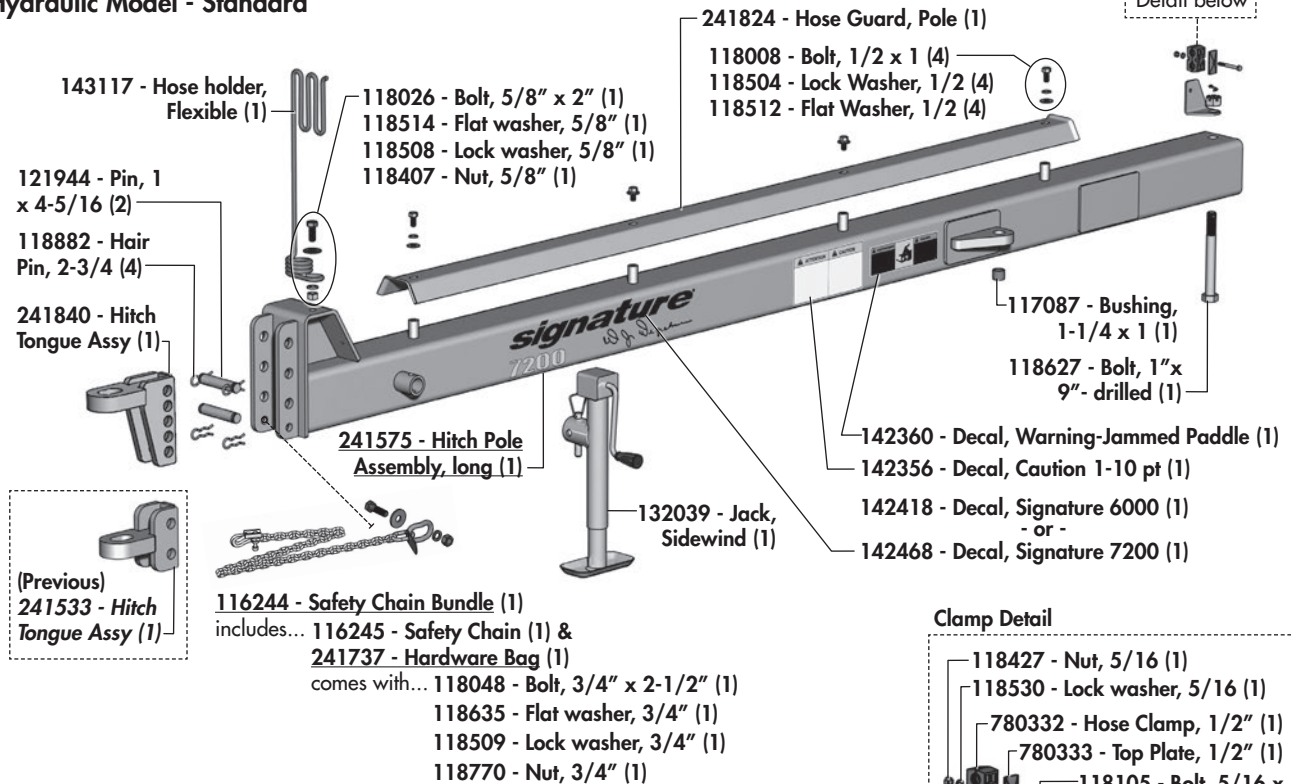
PTO Drive Bearing Stand Detail



Hitch Pole Components - Hydraulic

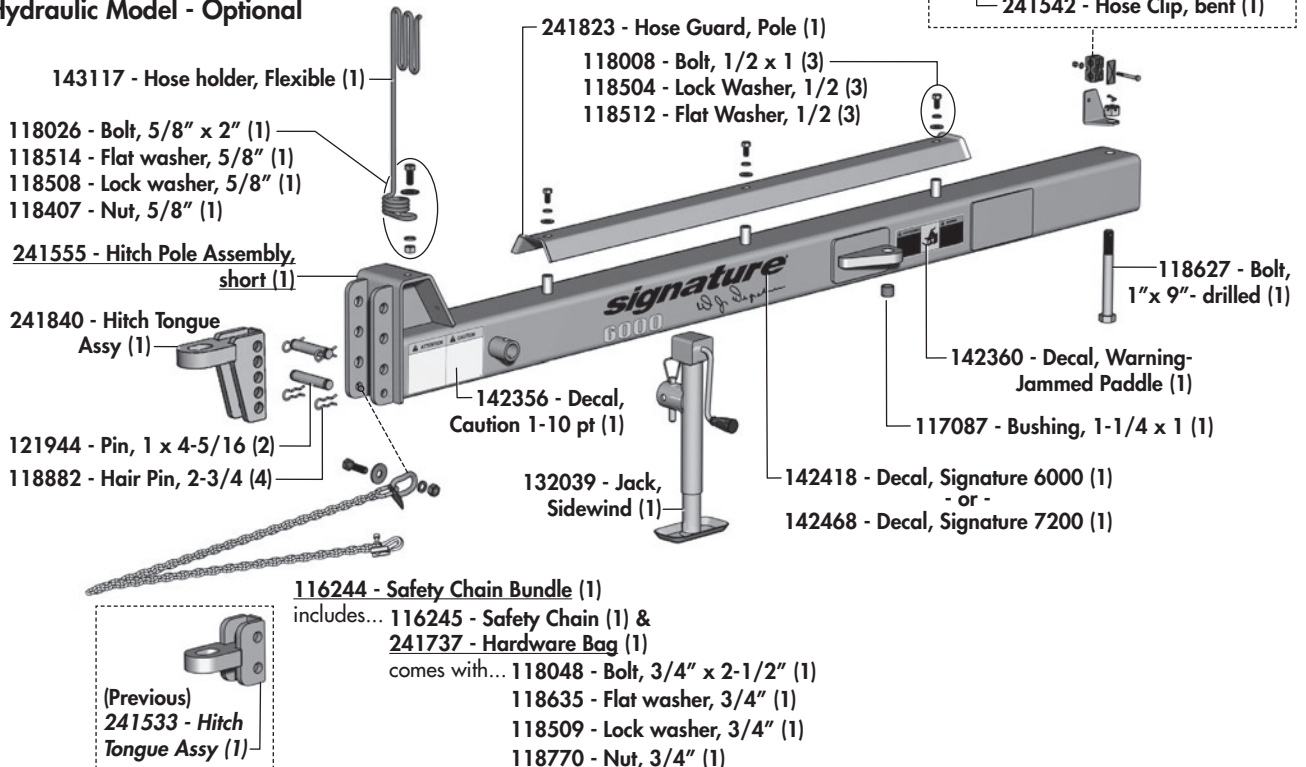
LONG POLE COMPONENTS

Hydraulic Model - Standard



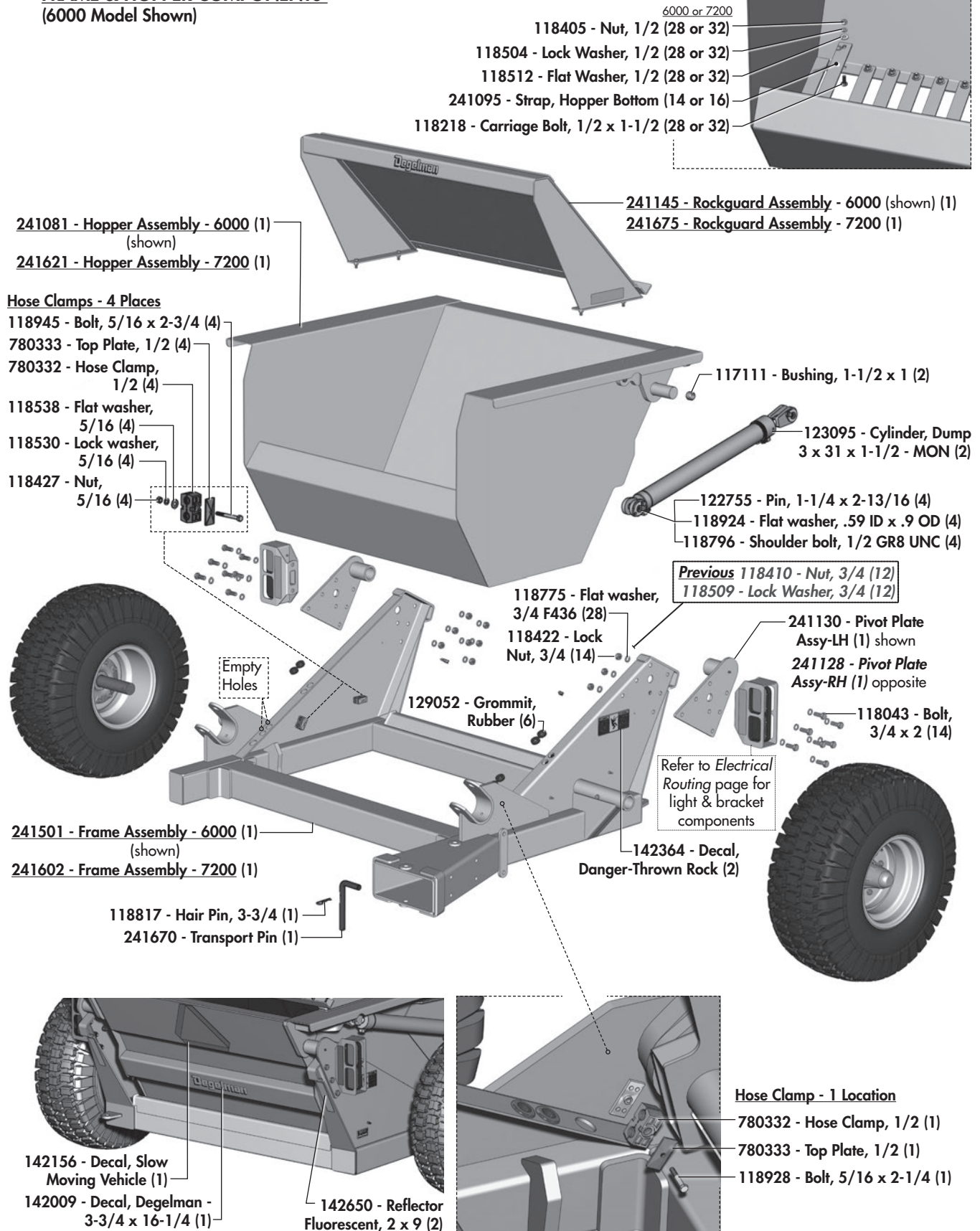
SHORT POLE COMPONENTS

Hydraulic Model - Optional



Frame & Hopper Components

FRAME & HOPPER COMPONENTS (6000 Model Shown)

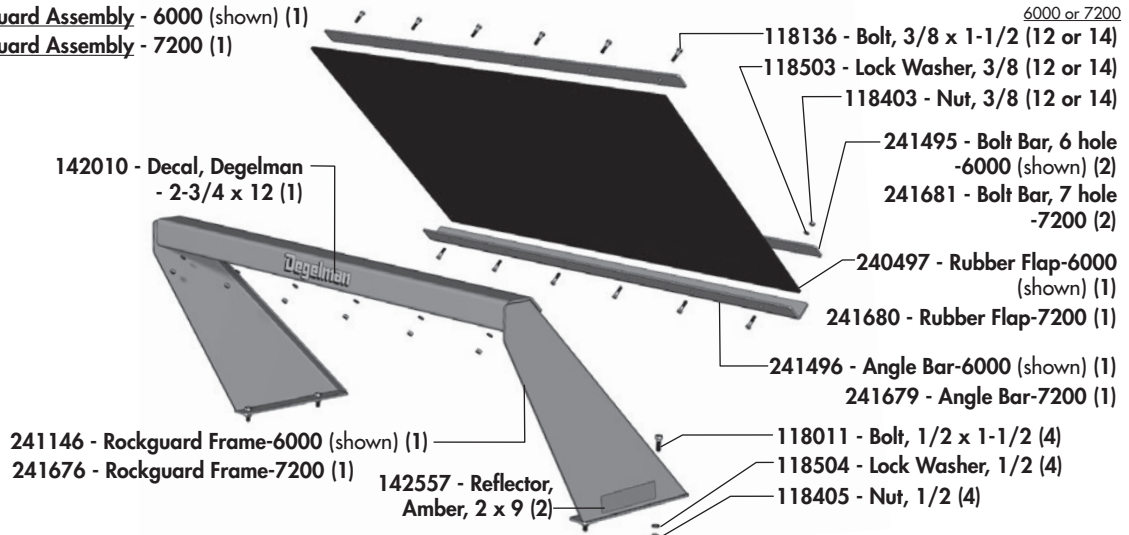


Rockguard & Wheel Components

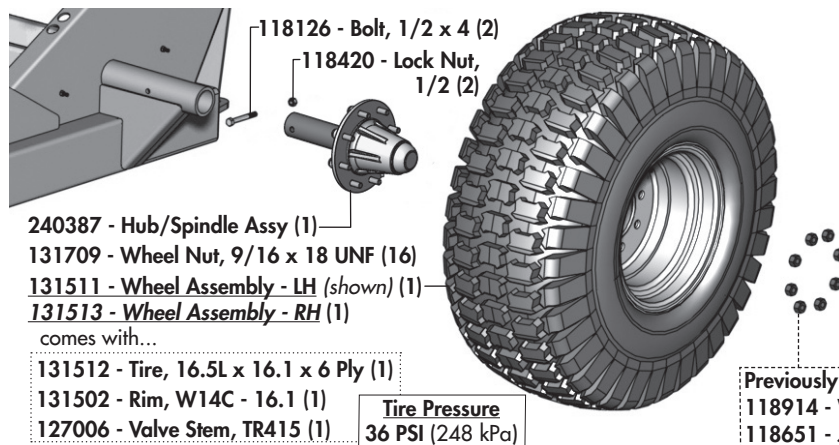
ROCKGUARD COMPONENTS (6000 Model shown)

241145 - Rockguard Assembly - 6000 (shown) (1)

241675 - Rockguard Assembly - 7200 (1)



WHEEL COMPONENTS (Left Side Shown)



Tire /Hub Spindle Option:

- 131735 - Hub/Spindle Assy (2)
- 131776 - Wheel Nut, 5/8 -18 UNF (16)
- 131861 - Wheel, LH Assembly (1)
- 131860 - Wheel, RH Assembly (1)
- comes with...
- 131862 - Tire 550/45-22.5 (1)
- 131863 - Rim, 22.5 x 16 8H (1)
- 131521 - Valve Stem TR501 (1)

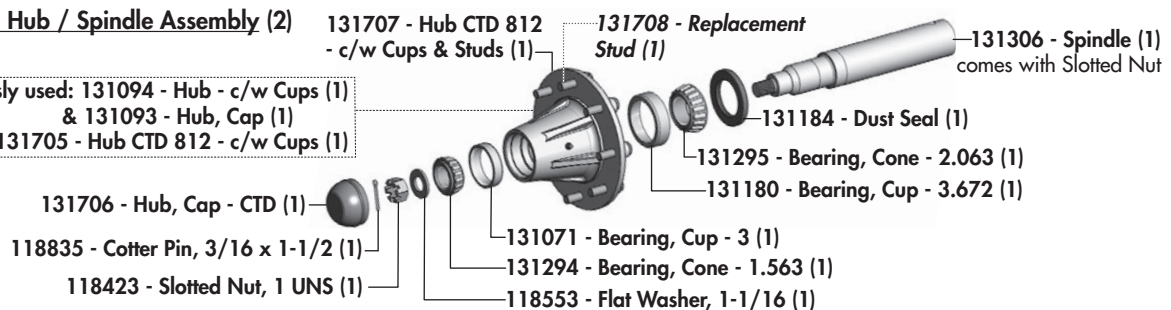
Tire Pressure
 41 PSI (283 kPa)

Previously used:

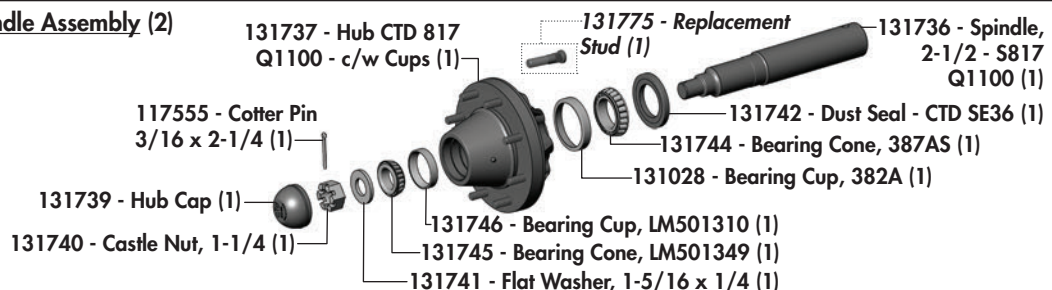
- 118914 - Wheel Bolt 9/16 x 1-3/4 UNF (16)
- 118651 - Jam Nut, 9/16 UNF GR2 (16)

240387 - Hub / Spindle Assembly (2)

Previously used: 131094 - Hub - c/w Cups (1)
 & 131093 - Hub, Cap (1)
 -or- 131705 - Hub CTD 812 - c/w Cups (1)

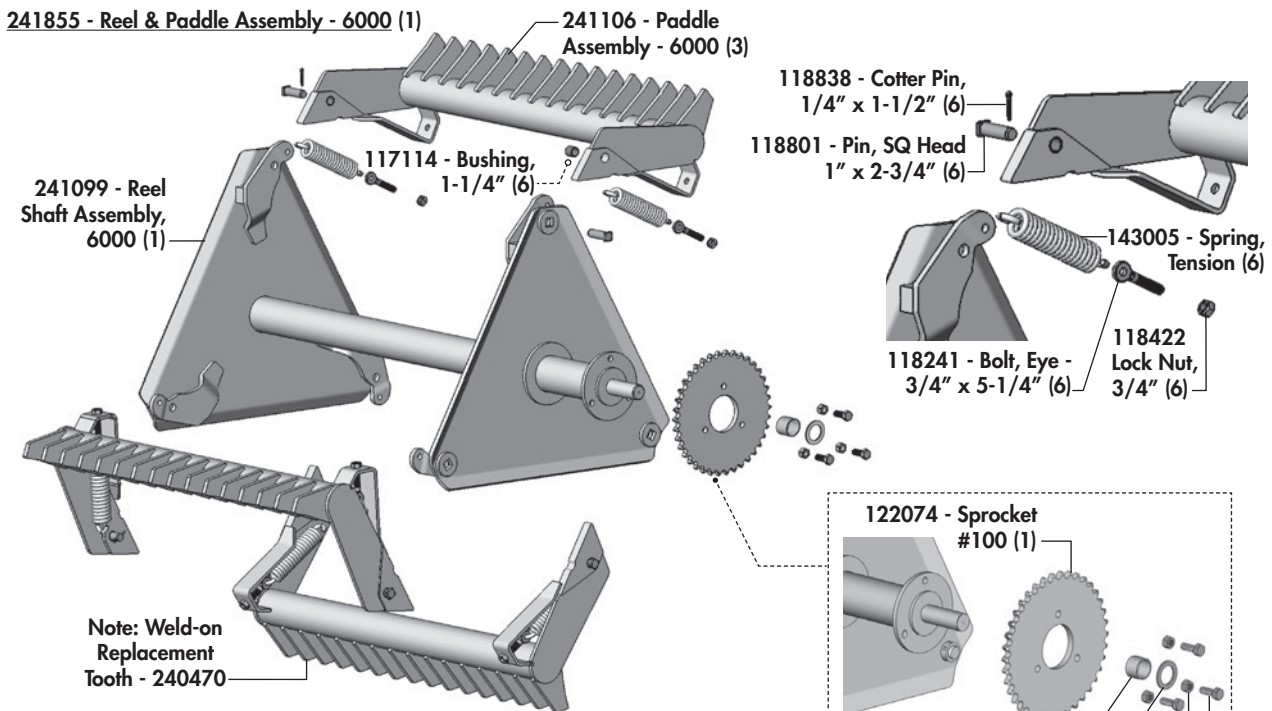


131735 - Hub / Spindle Assembly (2)



Reel Components - 6000, 6000HD, & 7200

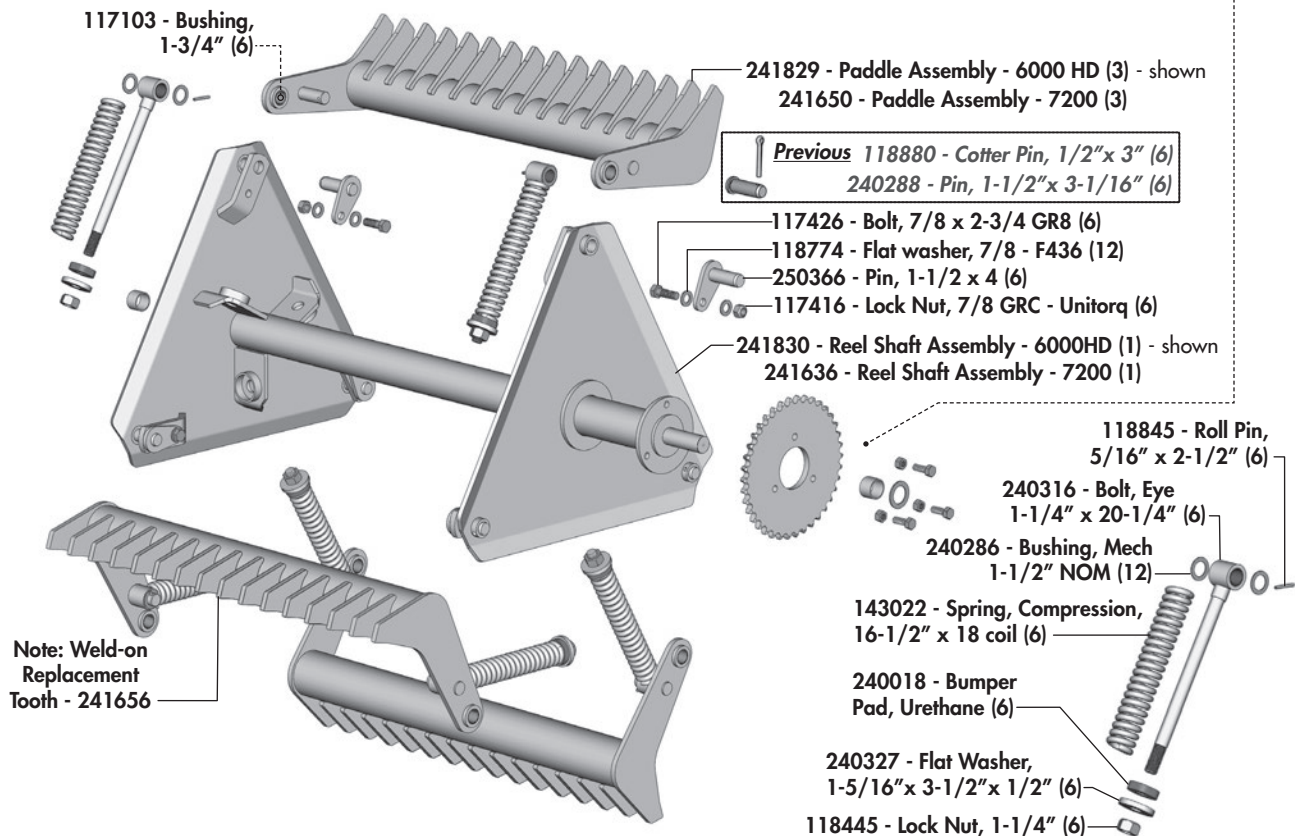
REEL ASSEMBLY COMPONENTS - 6000 Model



REEL ASSEMBLY COMPONENTS - 6000HD & 7200

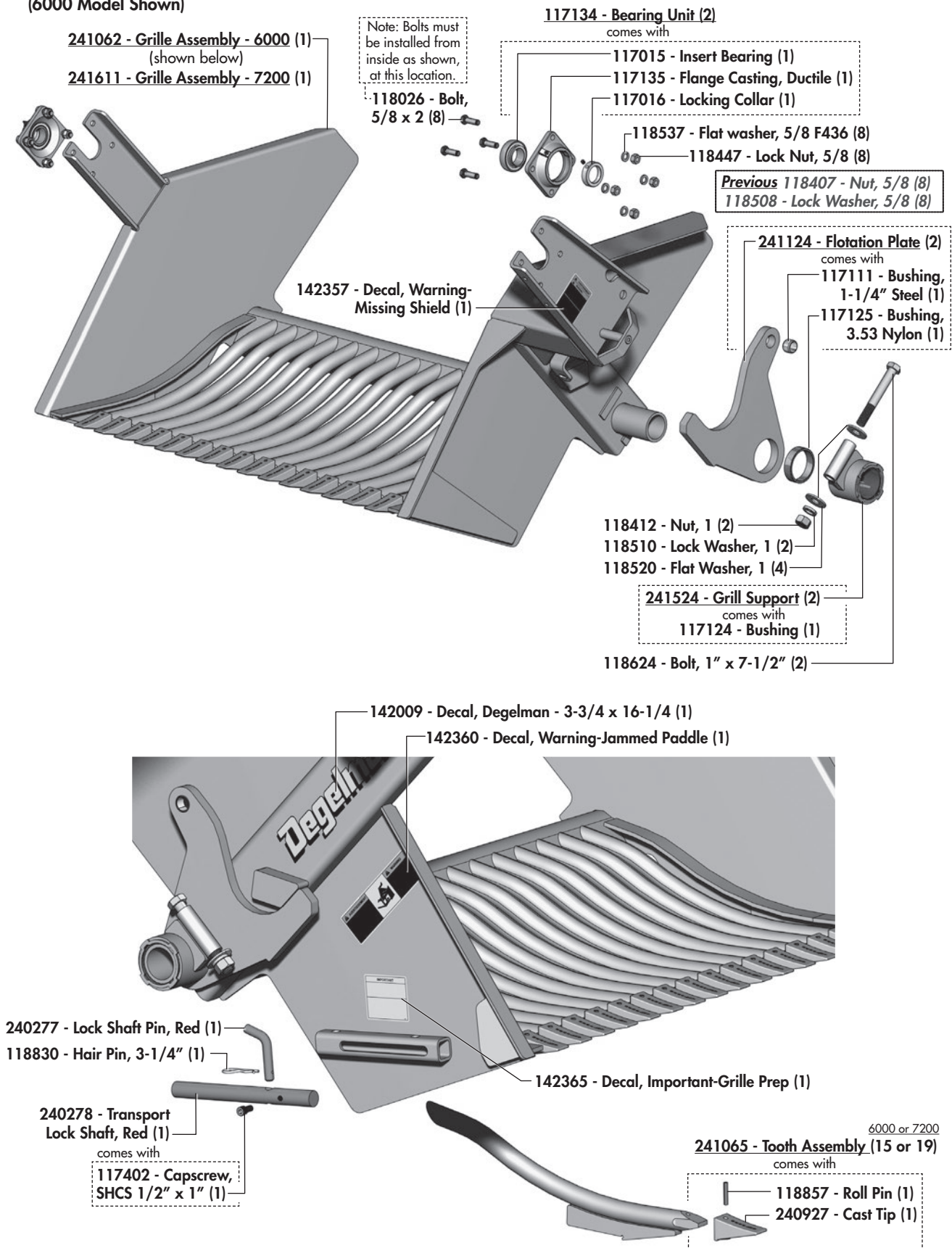
241828 - Reel & Paddle Assembly - 6000HD (shown below) (1)

241764 - Reel & Paddle Assembly - 7200 (1)

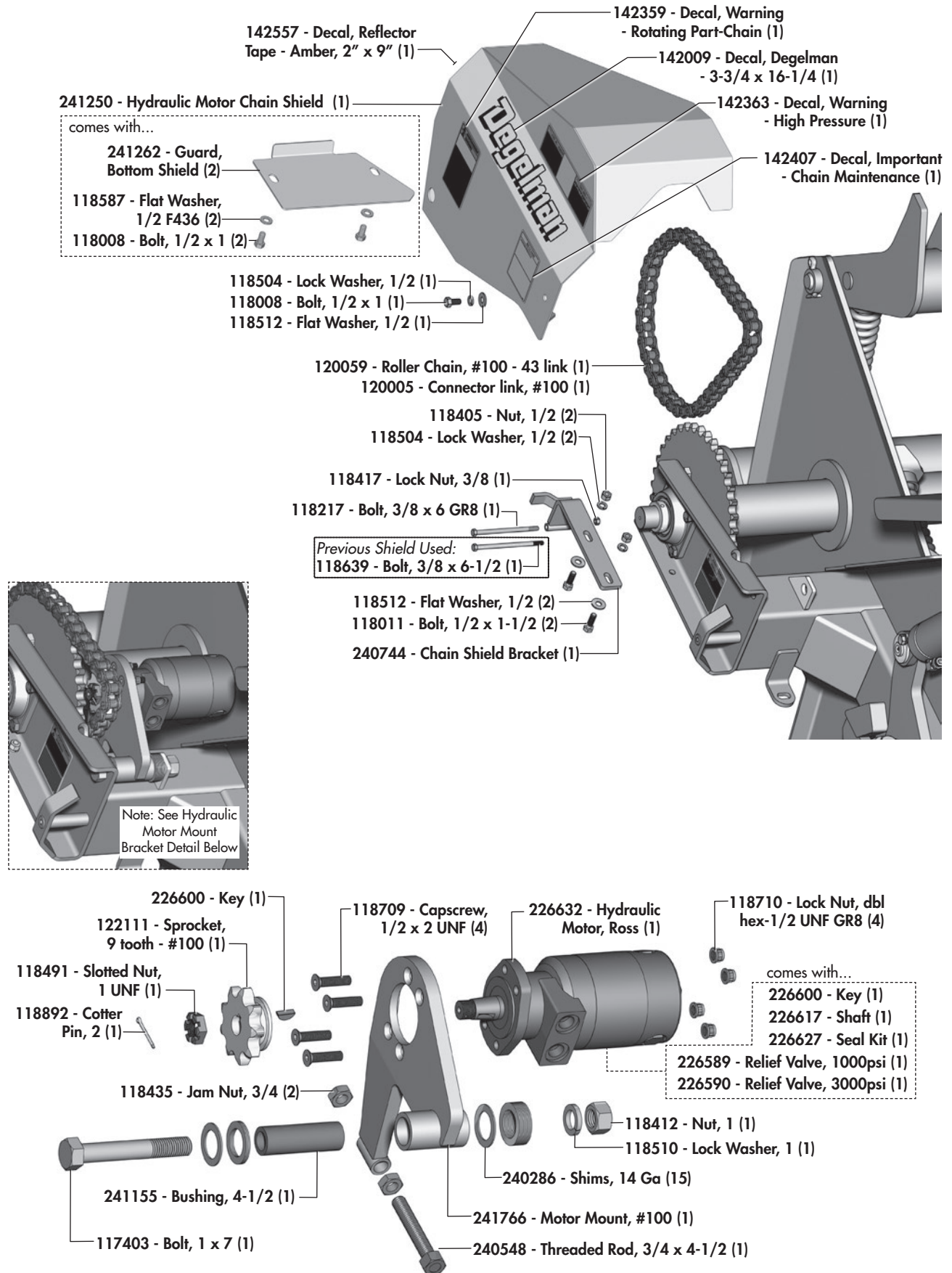


Grille Components

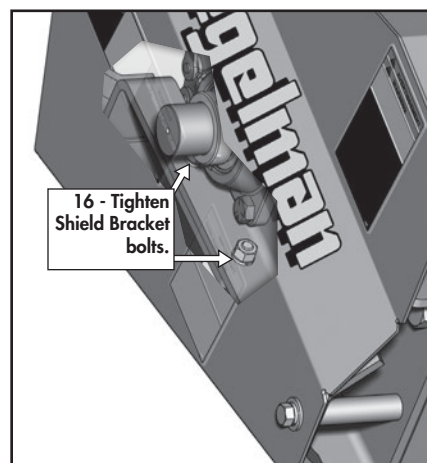
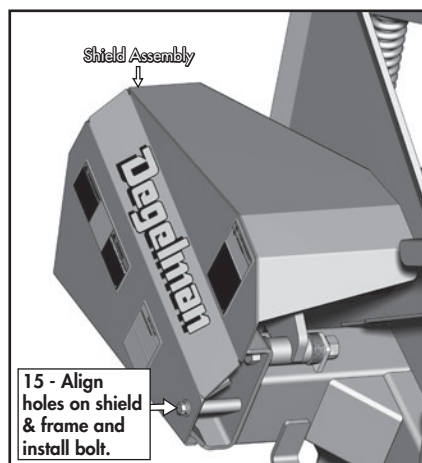
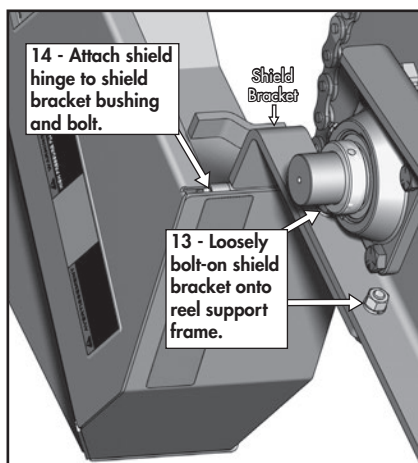
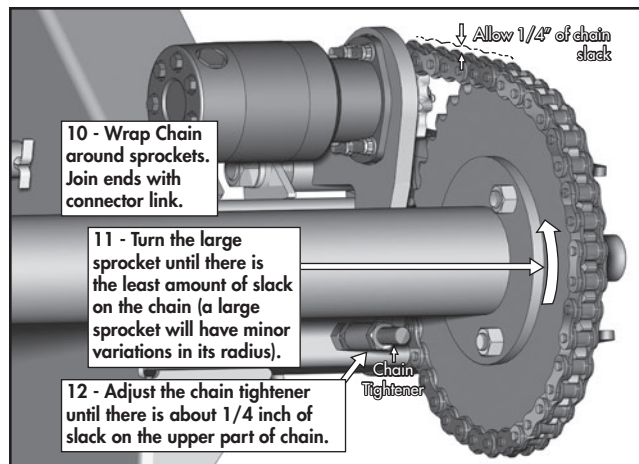
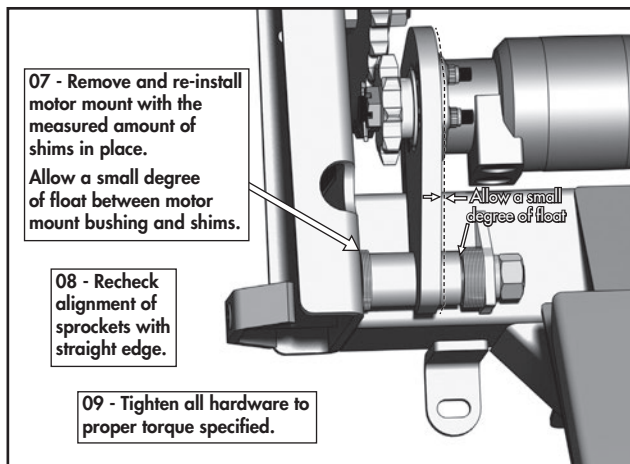
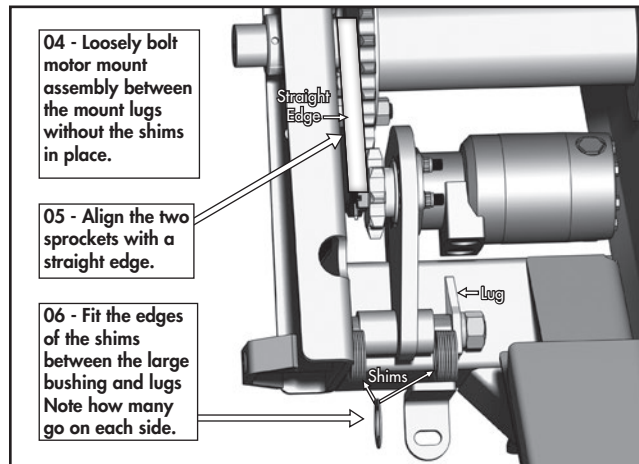
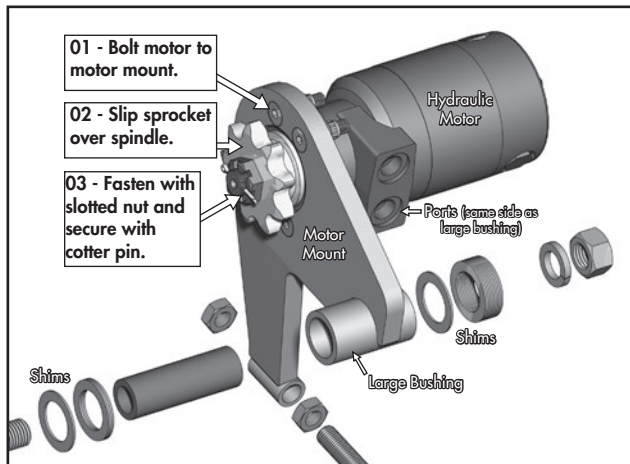
GRILLE ASSEMBLY COMPONENTS (6000 Model Shown)



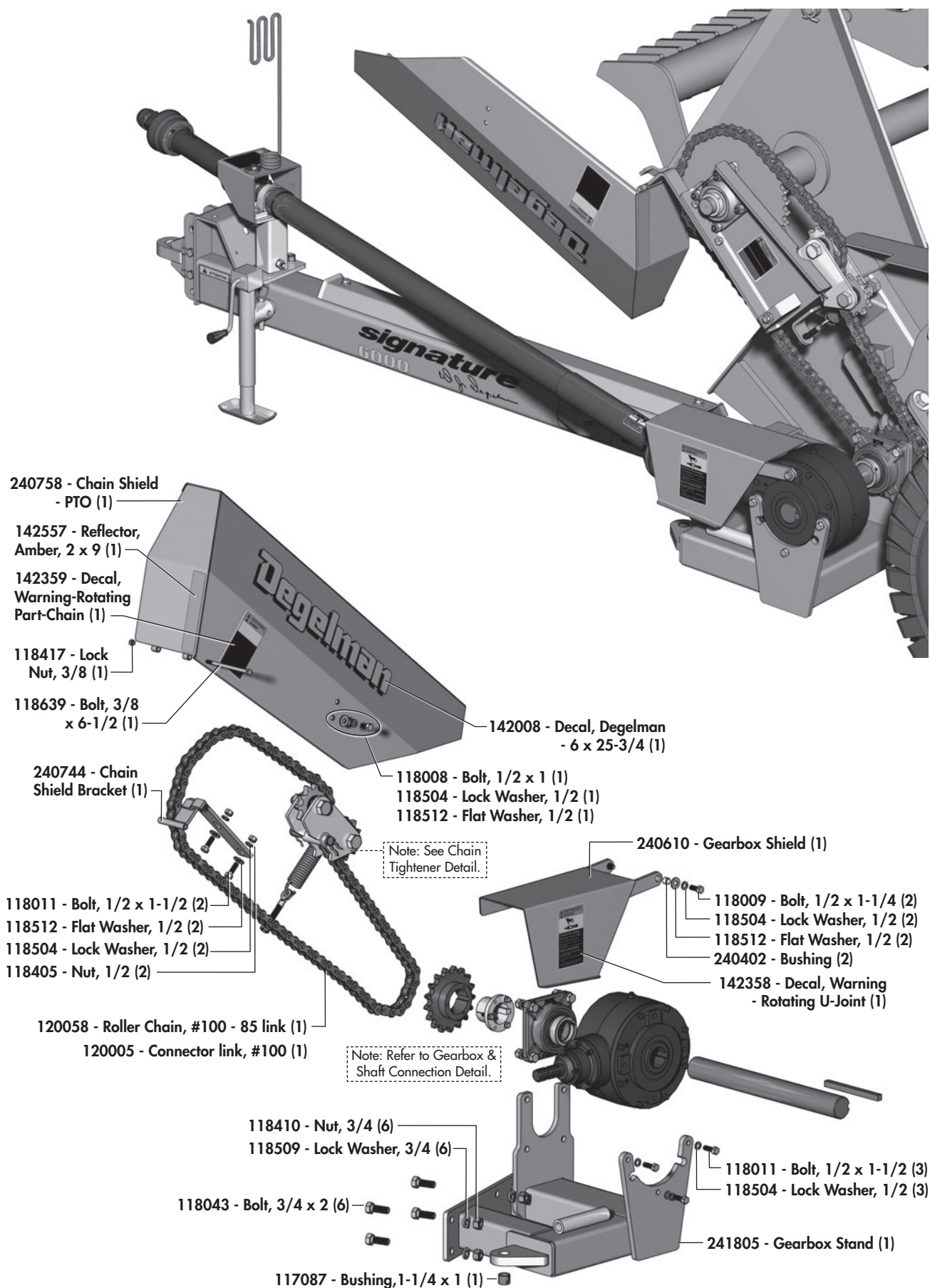
Hydraulic Drive Components



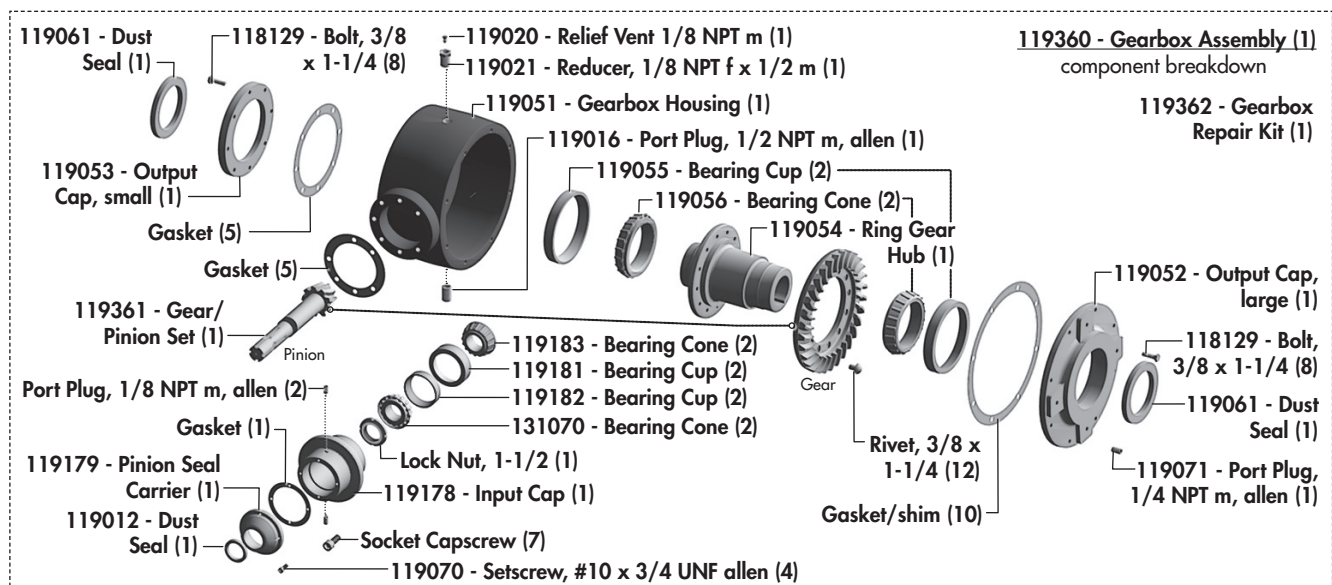
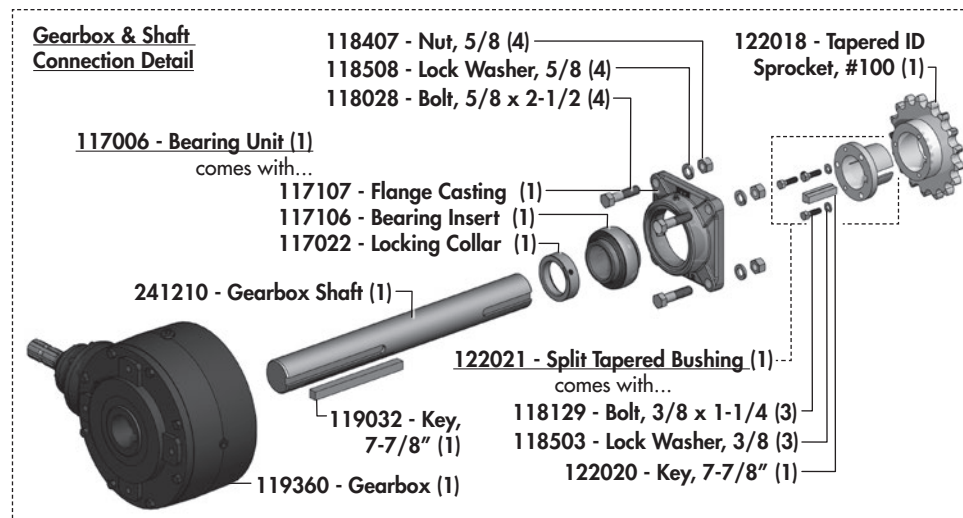
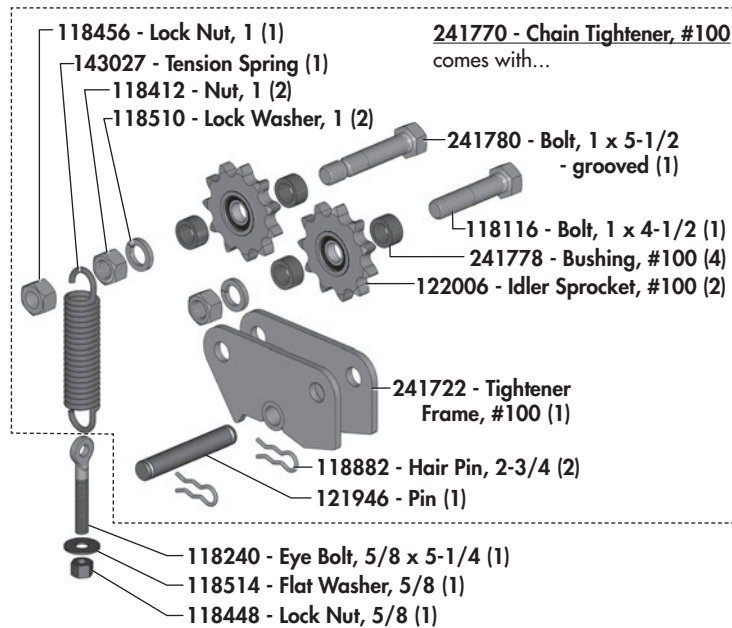
Hydraulic Drive Motor Installation



PTO Drive Components

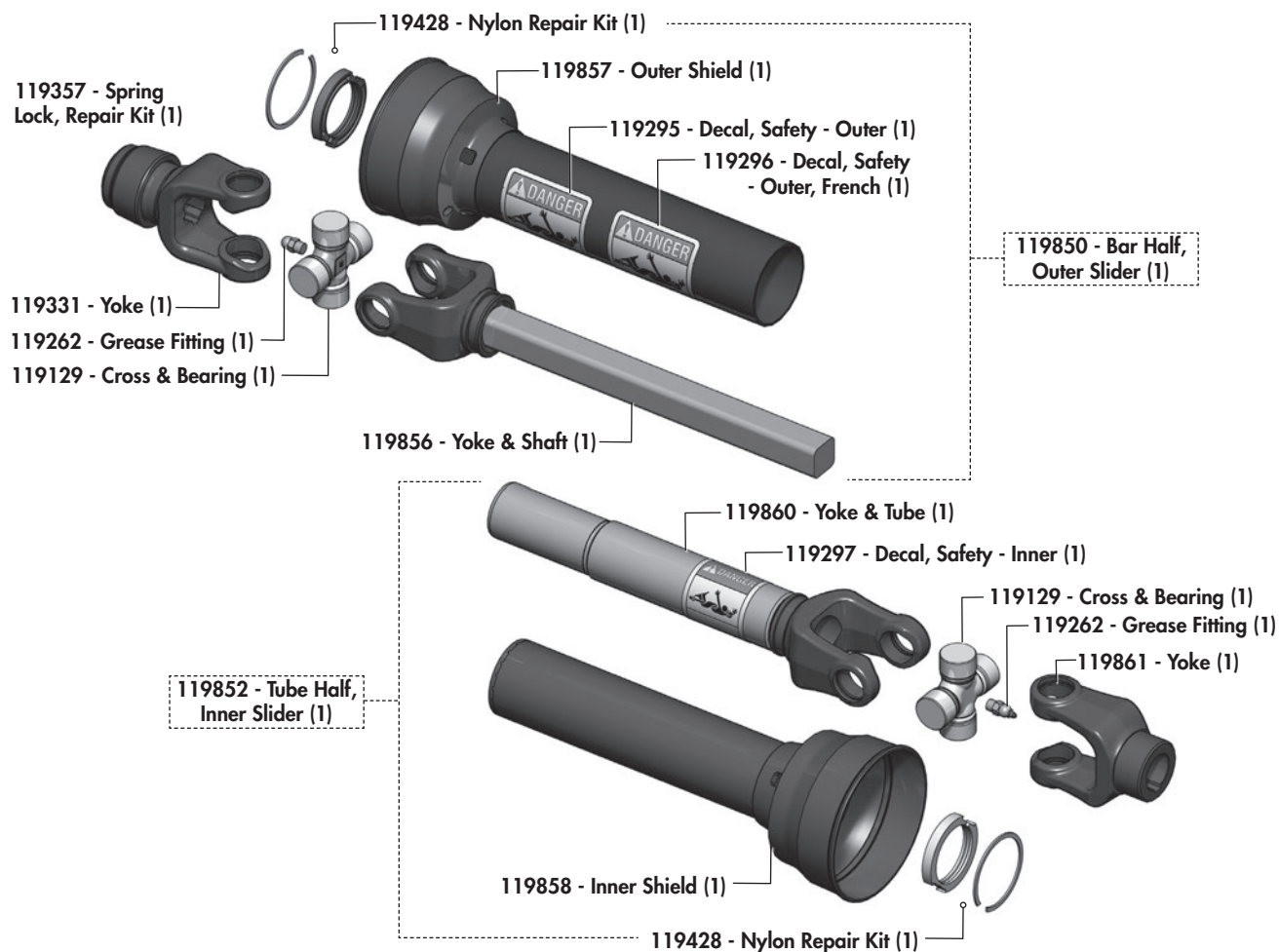


PTO Drive Components



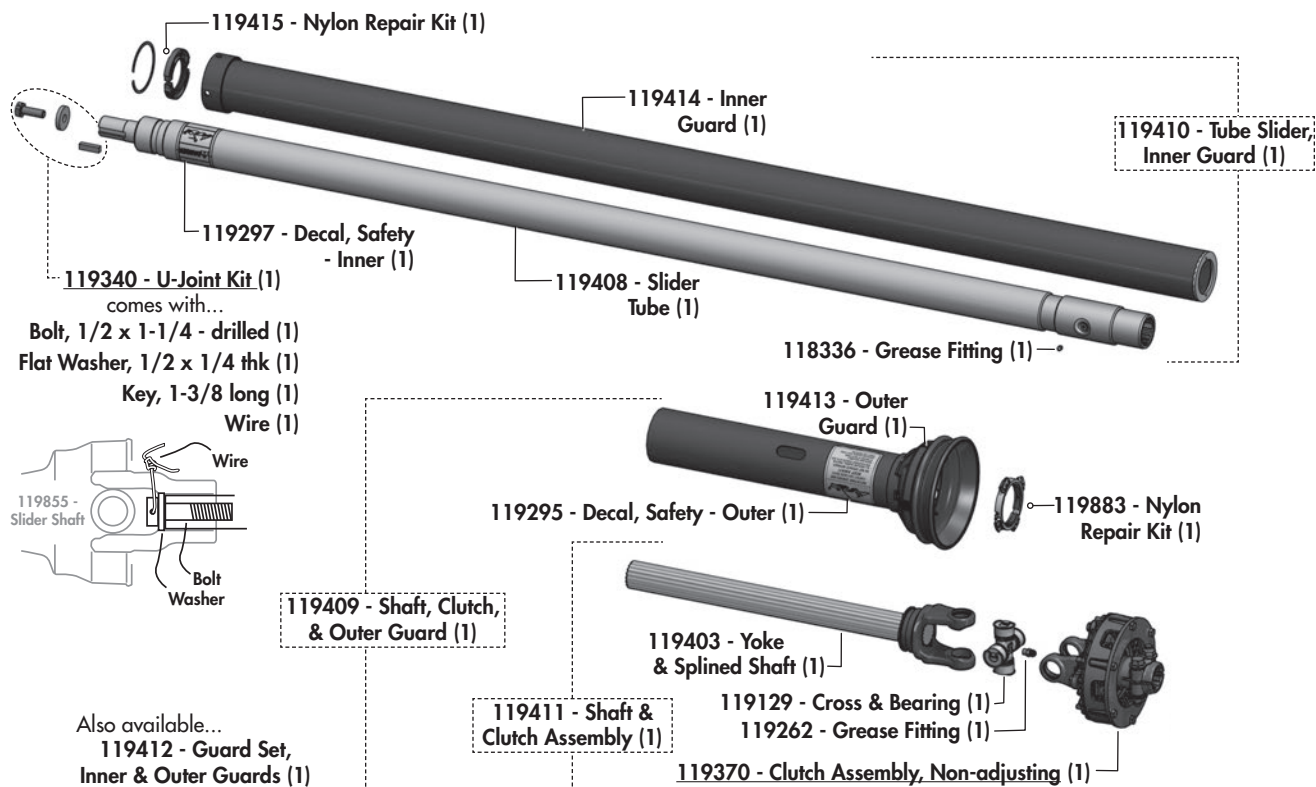
PTO Driveline Components

119855 - SLIDER SHAFT

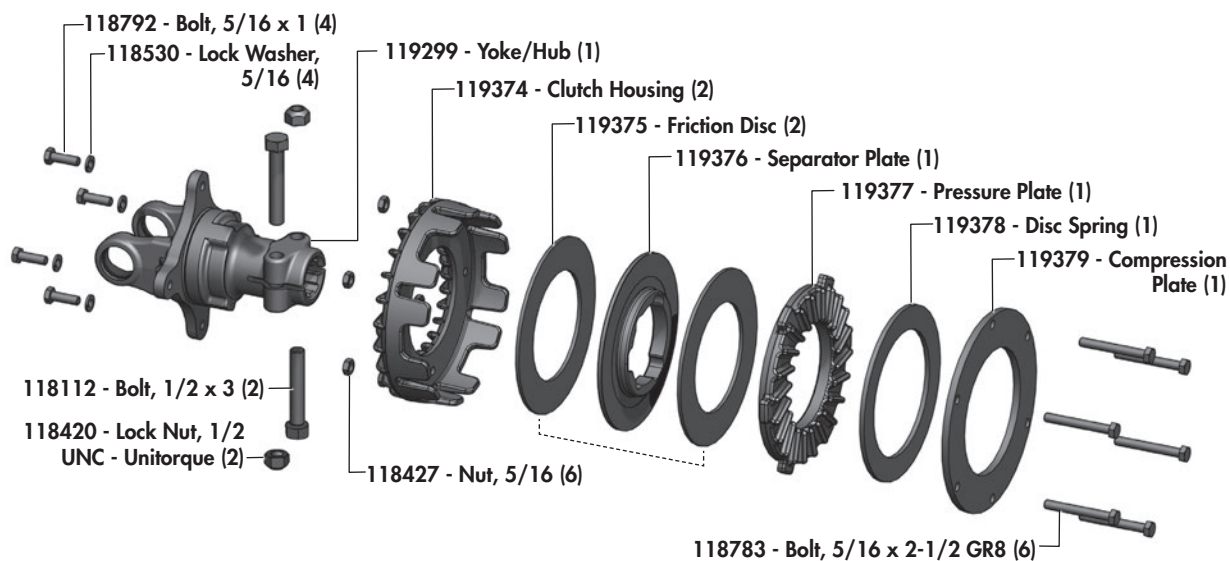


PTO Driveline Components

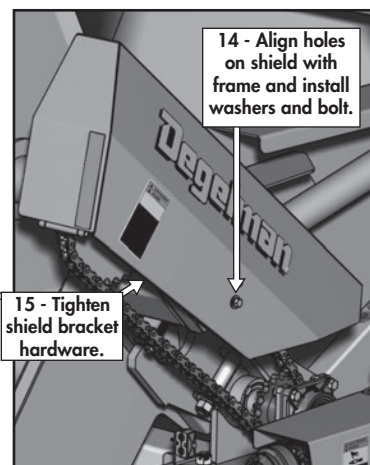
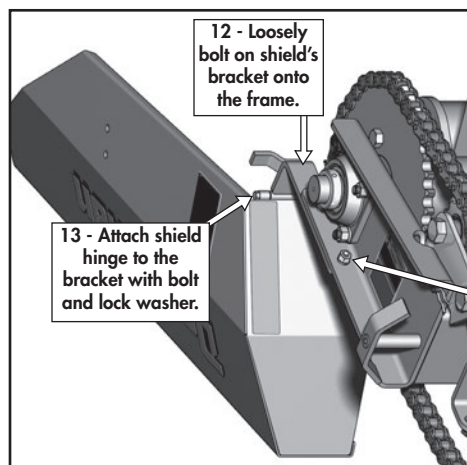
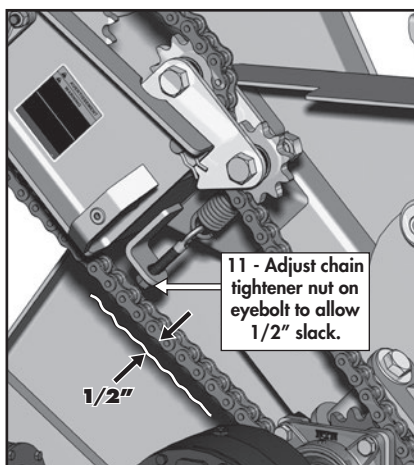
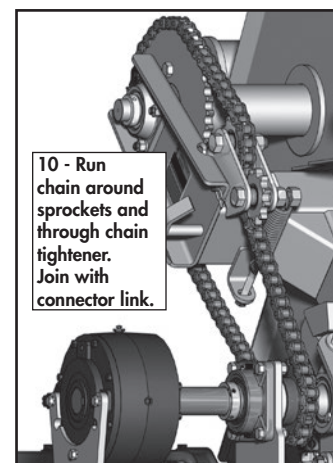
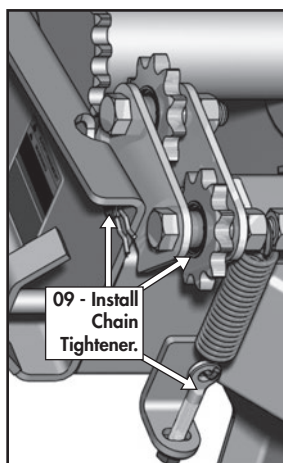
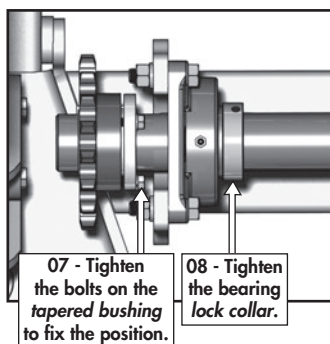
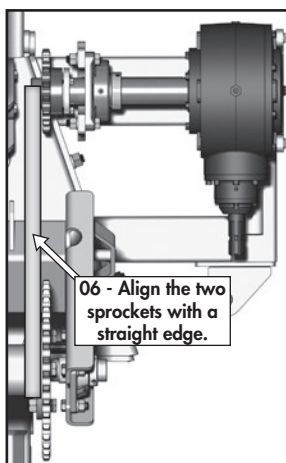
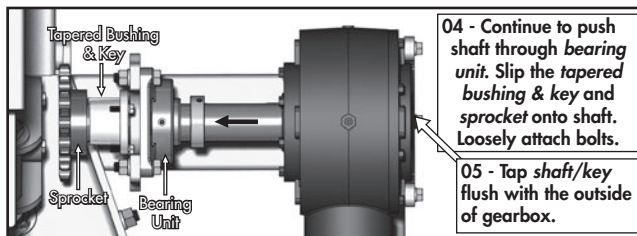
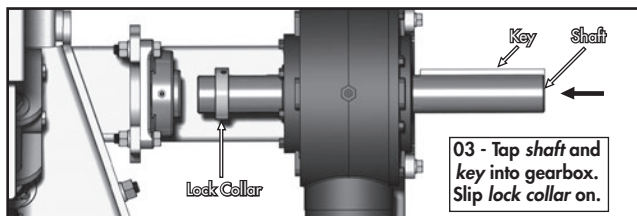
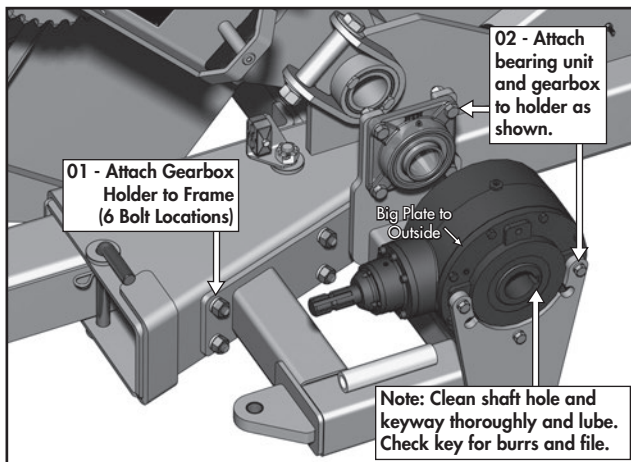
119400 - DRIVELINE SLIDER SHAFT



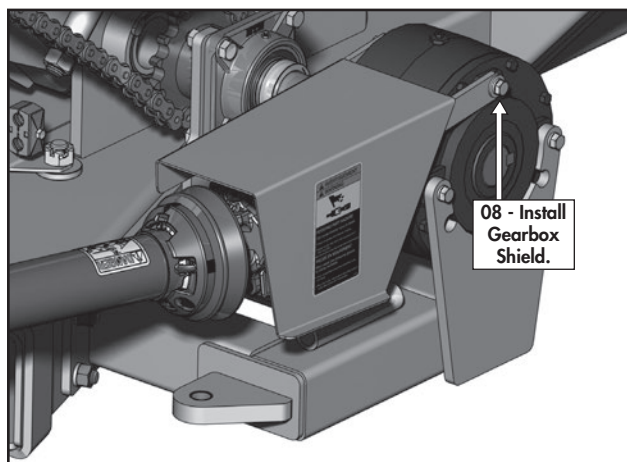
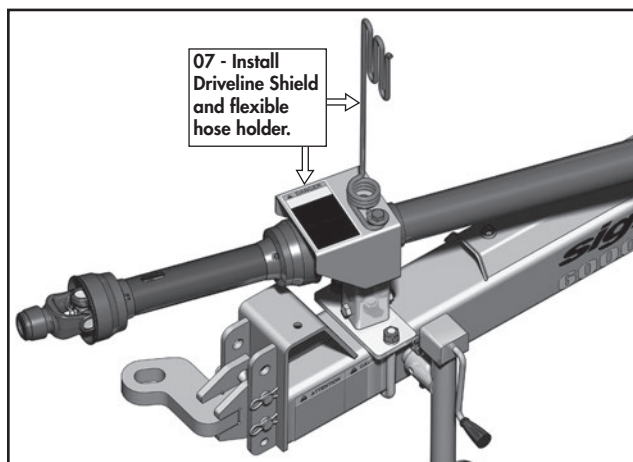
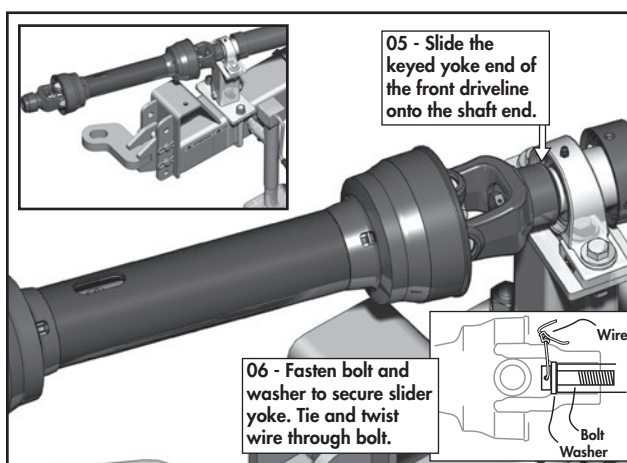
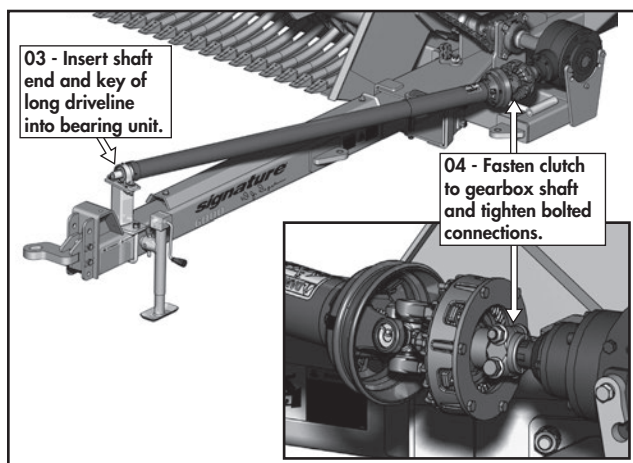
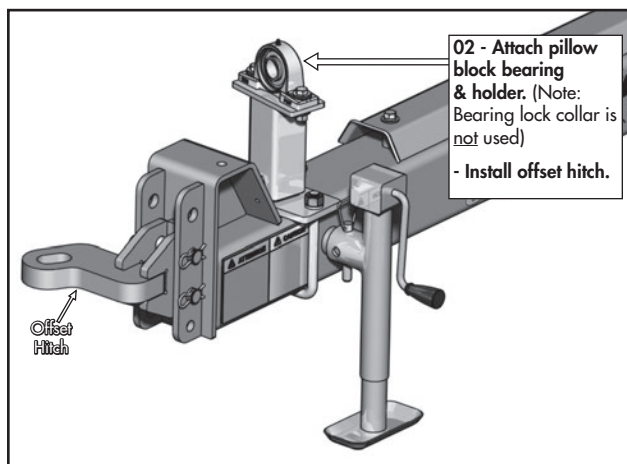
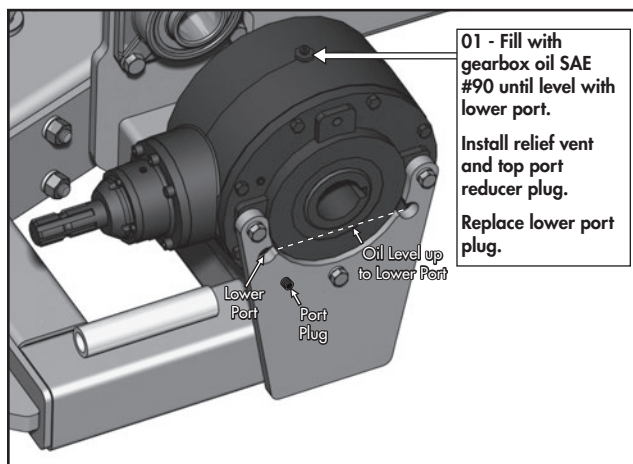
119370 - CLUTCH ASSEMBLY, NON-ADJUSTING



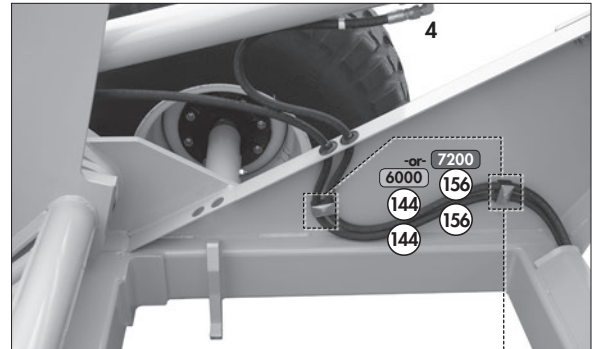
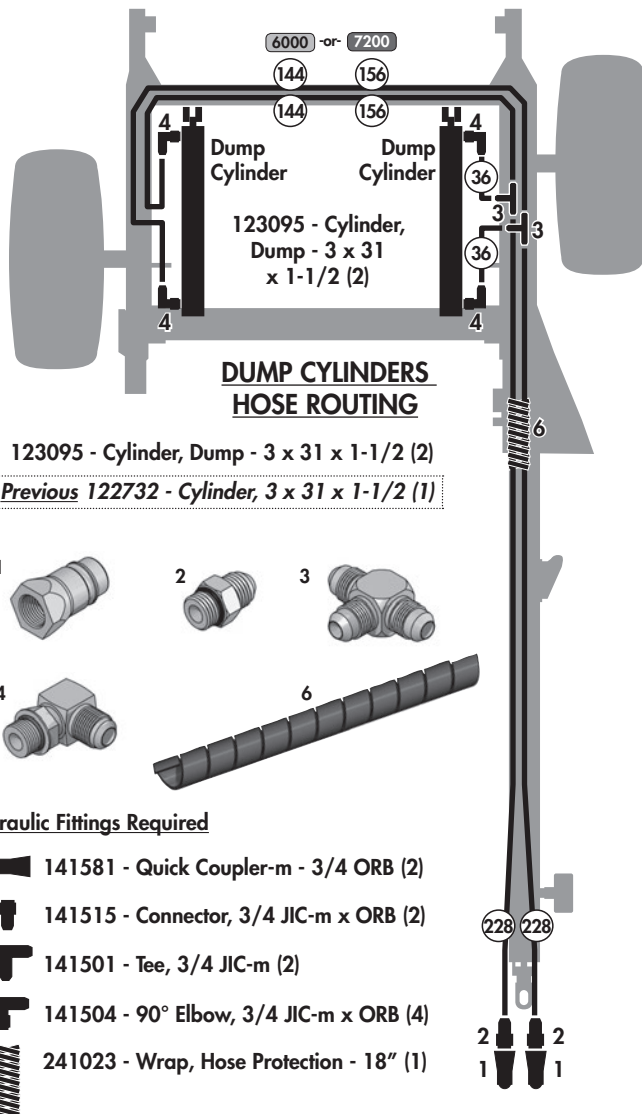
PTO Gearbox and Chain Installation



PTO Driveline Installation

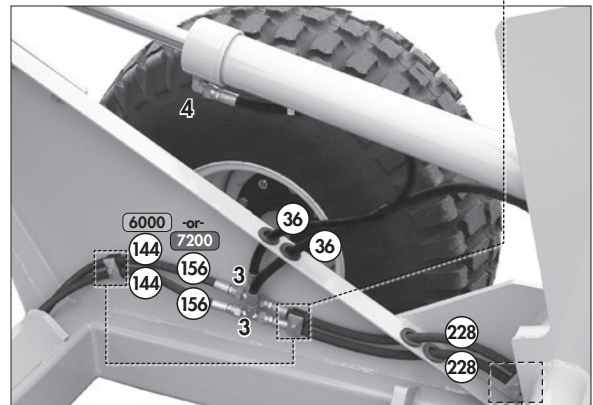


Hydraulic Routing - Dumping Cylinders



Hose Clamps - 4 Places

- 118945 - Bolt, 5/16 x 2-3/4 (4)
- 780333 - Top Plate, 1/2 (4)
- 780332 - Hose Clamp, 1/2 (4)
- 118538 - Flat washer, 5/16 (4)
- 118530 - Lock washer, 5/16 (4)
- 118427 - Nut, 5/16 (4)



Front Inner Frame Hose Clamp - 1 Place

- 780333 - Top Plate, 1/2 (1)
- 118928 - Bolt, 5/16 x 2-1/4 (1)
- 780332 - Hose Clamp, 1/2 (1)

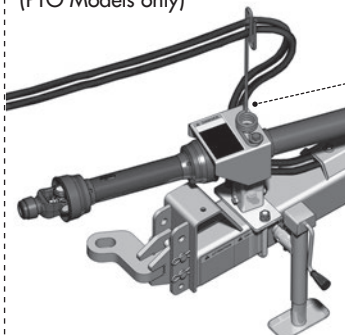
Required Hoses for Dump Cylinders

- 228 126499 - Hose, 1/2 x 228 (2)
- 36 126570 - Hose, 1/2 x 36 (2)
- 144 126563 - Hose, 1/2 x 144 (2) 6000
 - or -
 156 126571 - Hose, 1/2 x 156 (2) 7200

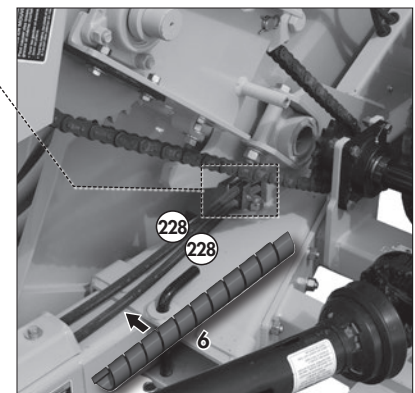
Hitchpole Bolt Clamp - 1 Place

- 118427 - Nut, 5/16 (1)
- 118530 - Lock washer, 5/16 (1)
- 780332 - Hose Clamp, 1/2 (1)
- 780333 - Top Plate, 1/2 (1)
- 118105 - Bolt, 5/16 x 2-1/2 (1)
- 241542 - Hose Clip, bent (1)

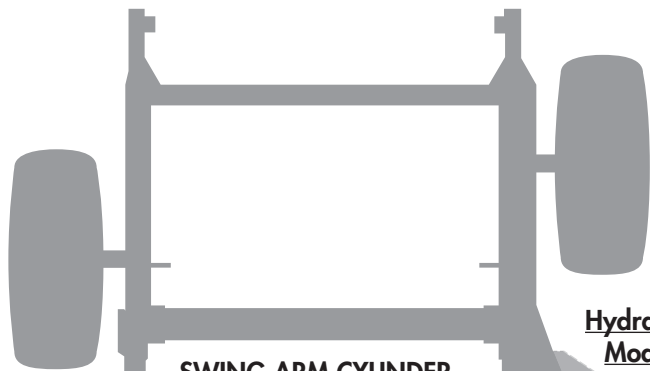
Shield Bolt Clamp - 1 Place (PTO Models only)



- 118945 - Bolt, 5/16 x 2-3/4 (1)
- 780333 - Top Plate, 1/2 (1)
- 780332 - Hose Clamp, 1/2 (1)
- 118530 - Lock washer, 5/16 (1)
- 118427 - Nut, 5/16 (1)



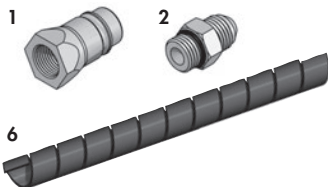
Hydraulic Routing - Swing Arm (Optional)



SWING ARM CYLINDER HOSE ROUTING

123094 - Cylinder, 3" x 10" x 1-1/2" (1)

Previous 122741 - Cylinder, 3" x 10" x 1-1/4" (1)

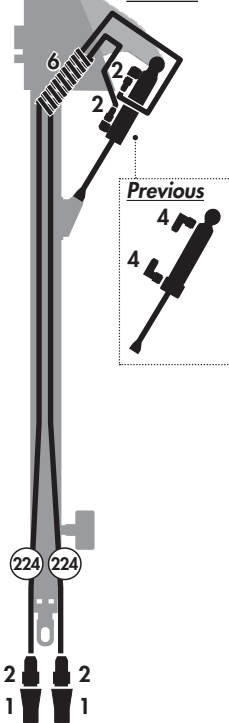


Hydraulic Fittings Required

- 1 141581 - Quick Coupler-m - 3/4 ORB (2)
- 2 141515 - Connector, 3/4 JIC-m x ORB (4)
- 6 241023 - Wrap, Hose Protection - 18" (1)

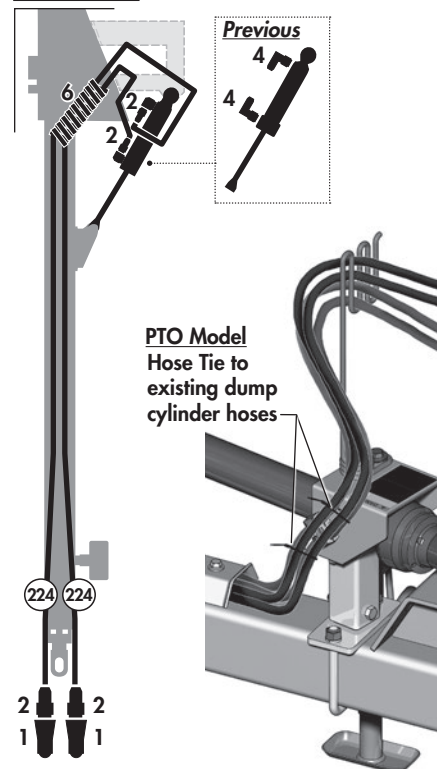
- 2 141515 - Connector, 3/4 JIC-m x ORB (2) *Previously used*
- 4 141504 - 90° Elbow, 3/4 JIC-m x ORB (2)

Hydraulic Model



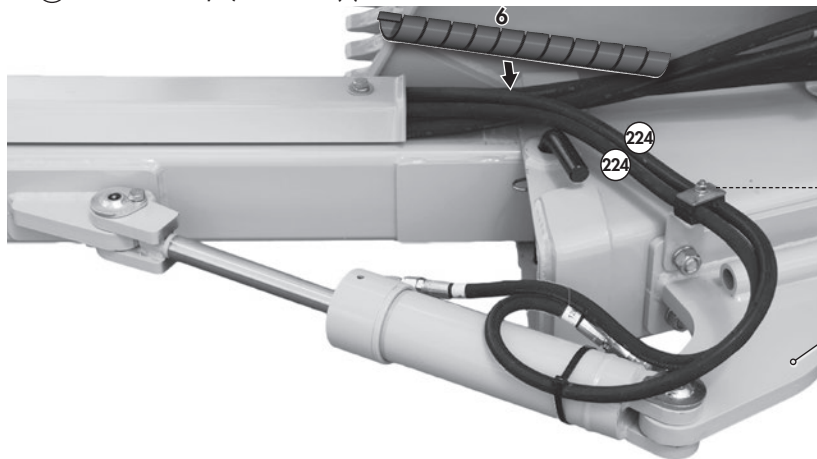
-or-

PTO Model



Required Hoses for Swing Arm

- 224 126636- Hose, 3/8 x 224 (2)



Clamp Detail

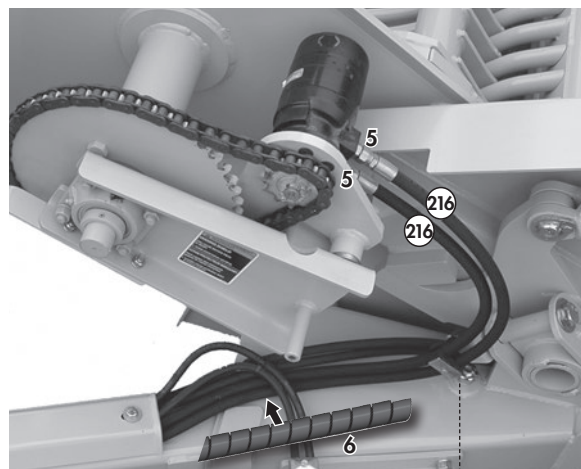
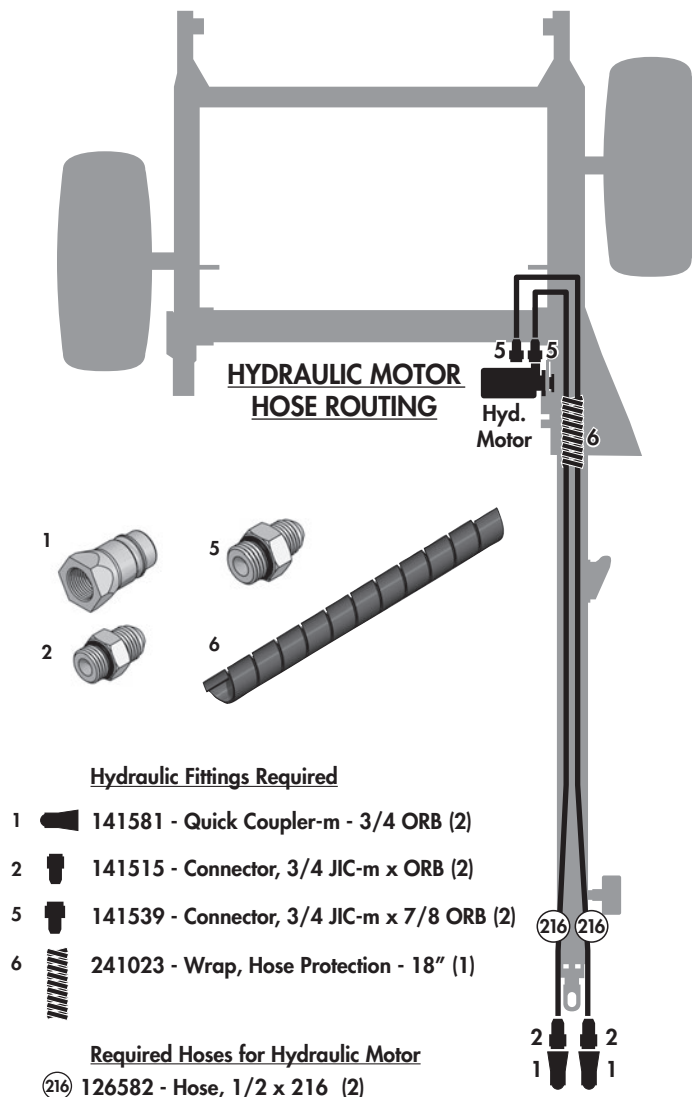
- 118945 - Bolt, 5/16 x 2-3/4 (1)
- 780279 - Top Plate, 3/8" (1)
- 780278 - Hose Clamp, 3/8" (1)
- 241813 - Hose Clip Bracket (1)
- 118530 - Lock washer, 5/16 (1)
- 118427 - Nut, 5/16 (1)

241800 - Hyd Pole Bracket Assembly (1)

mounts with:

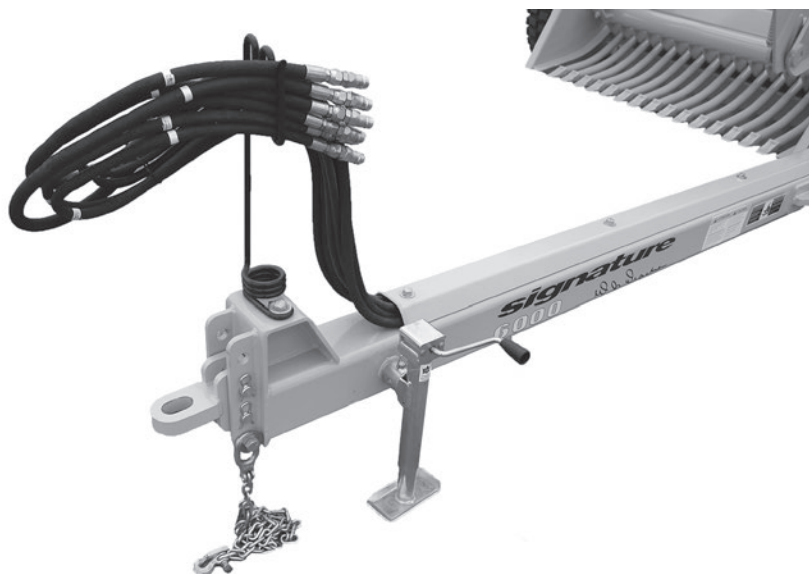
- 118043 - Bolt, 3/4 x 2 (4)
- 118509 - Lock Washer, 3/4 (4)
- 118410 - Nut, 3/4 (4)

Hydraulic Routing - Hydraulic Motor (Hyd. Option)

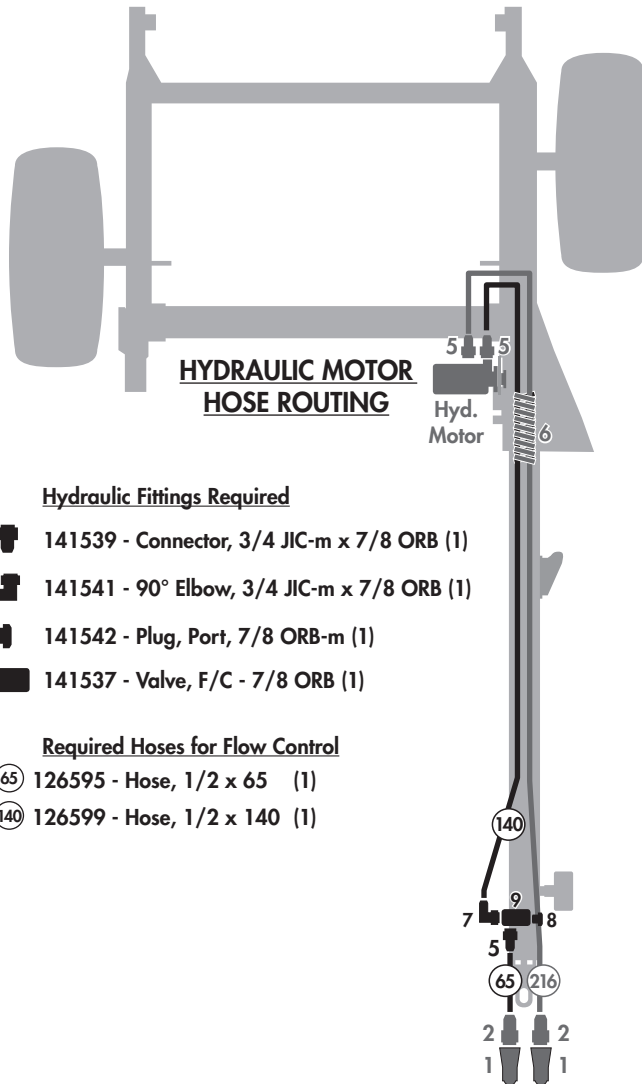


Clamp Detail





- 118427 - Nut, 5/16 (1)
- 118530 - Lock washer, 5/16 (1)
- 241542 - Hose Clip, bent (1)
- 780332 - Hose Clamp, 1/2" (1)
- 780333 - Top Plate, 1/2" (1)
- 118105 - Bolt, 5/16 x 2-1/2 (1)



Hydraulic Routing - Hyd. Flow Control (Optional)



Hydraulic Fittings Required

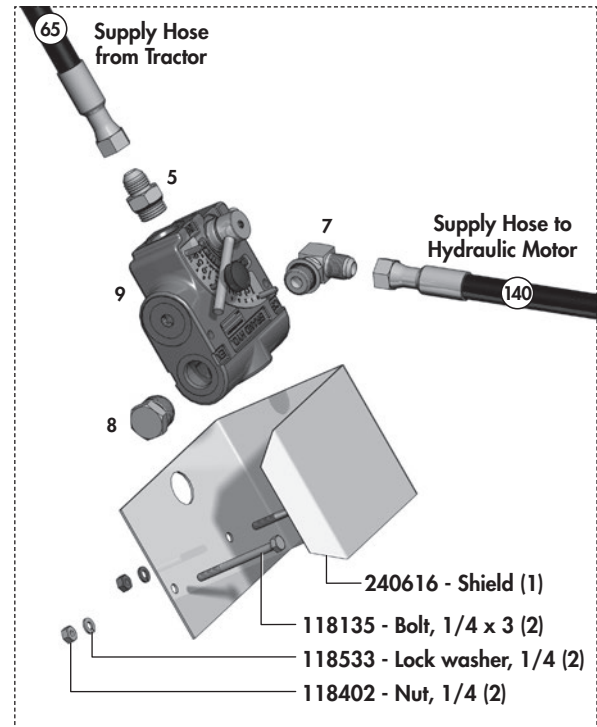
- 5  141539 - Connector, 3/4 JIC-m x 7/8 ORB (1)
- 7  141541 - 90° Elbow, 3/4 JIC-m x 7/8 ORB (1)
- 8  141542 - Plug, Port, 7/8 ORB-m (1)
- 9  141537 - Valve, F/C - 7/8 ORB (1)

Required Hoses for Flow Control

- (65) 126595 - Hose, 1/2 x 65 (1)
- (140) 126599 - Hose, 1/2 x 140 (1)

OPTIONAL FLOW CONTROL VALVE INSTALLATION

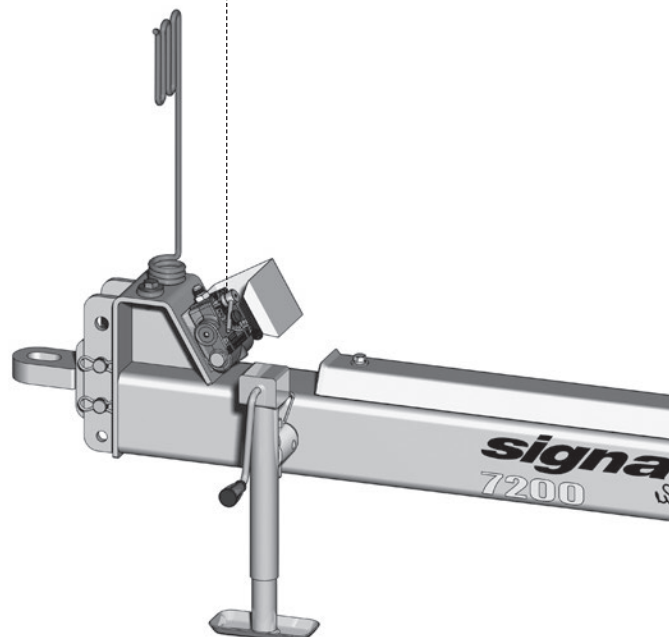
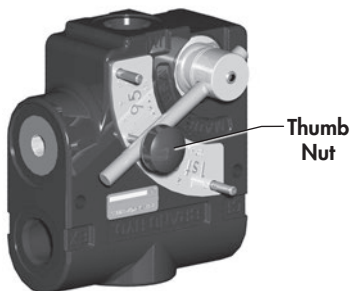
1. Using 1/4" x 3" bolts provided, attach flow control valve to hitch pole in the location shown.
2. Using hydraulic fittings supplied, route hydraulic supply line as follows:
 - Supply hose from tractor should be attached to the port at the top of the valve using nipple provided.
 - Supply hose to motor should be attached to the port at the side of the valve using elbow provided.
3. Plug other side hole in valve using plug provided.



FLOW CONTROL VALVE ADJUSTMENT

1. Loosen thumb nut on swinging dial.
2. Move dial to desired setting.
3. Tighten thumb nut.

NOTE: Move the dial in small increments as a small movement can result in a dramatic speed change.



Hydraulic Cylinders

DUMP CYLINDERS

(Standard - All Models)

123095 - Cylinder, Dump - 3 x 31 x 1-1/2, Monarch (2)

Repair Parts

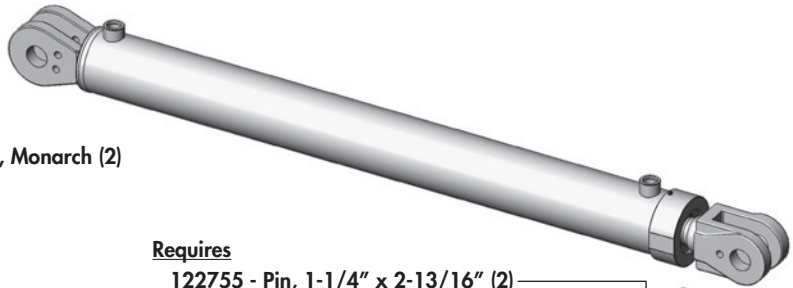
123661 - Seal Kit (1)

Requires

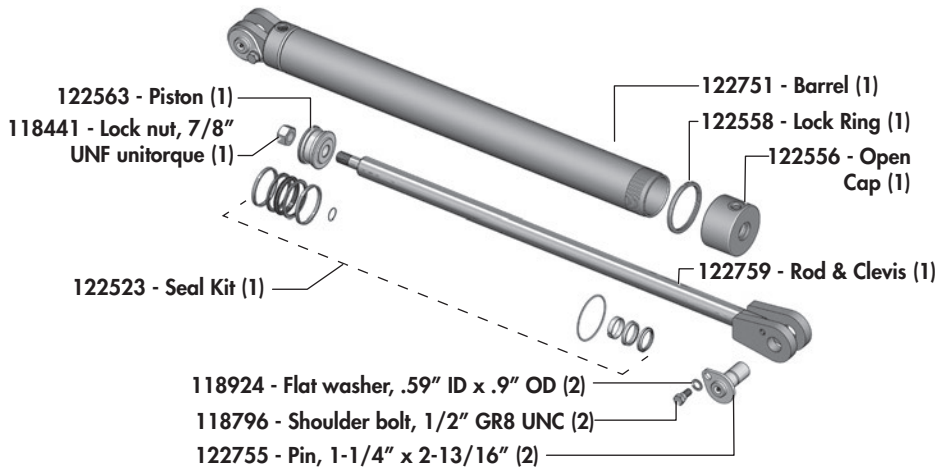
122755 - Pin, 1-1/4" x 2-13/16" (2)

118924 - Flat washer, .59" ID x .9" OD (2)

118796 - Shoulder bolt, 1/2" GR8 UNC (2)



(Previous Cylinder & Components) 122732 - Cylinder, Dump - 3 x 31 x 1-1/2 (2)



SWING ARM CYLINDER

(For Models with Hyd Swing Arm)

123094 - Cylinder, Dump - 3 x 10 x 1-1/2, Monarch (2)

Repair Parts

123665 - Seal Kit (1)

Previous: Wire Ring Cylinder

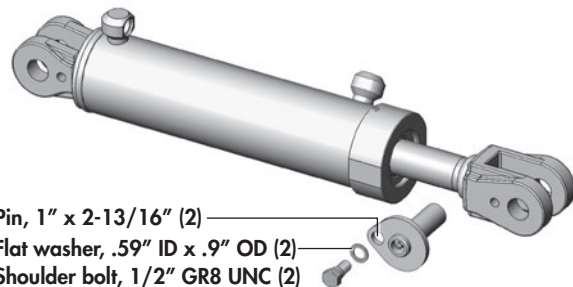
123661 - Seal Kit (1)

Requires

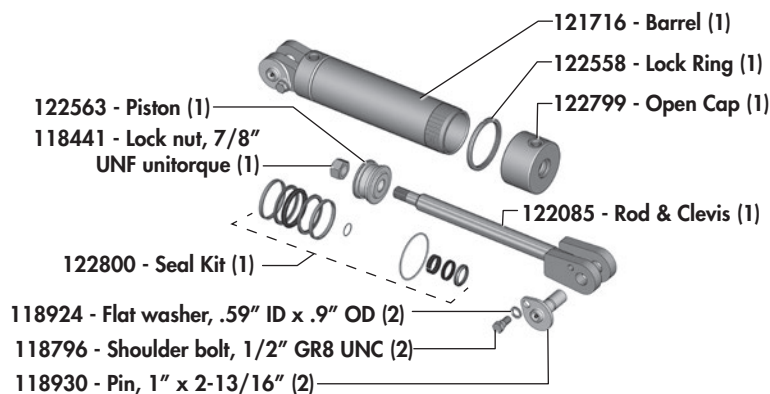
118930 - Pin, 1" x 2-13/16" (2)

118924 - Flat washer, .59" ID x .9" OD (2)

118796 - Shoulder bolt, 1/2" GR8 UNC (2)

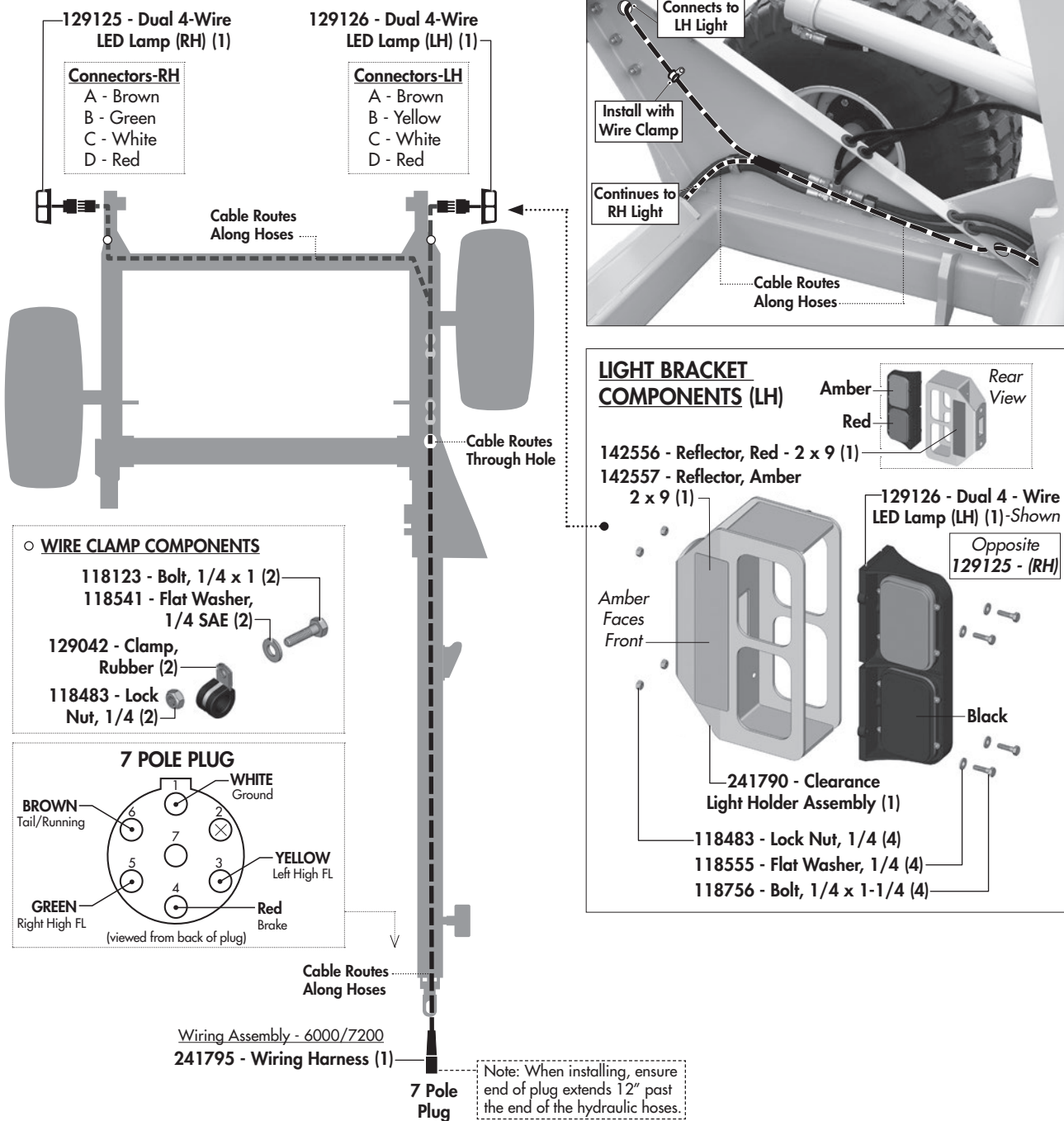


(Previous Cylinder & Components) 122741 - Cylinder, 3 x 10 x 1-1/4 (1)



Electrical Routing & Components

CLEARANCE LIGHT WIRE ROUTING



Warranty

2 Year **Limited Warranty - Agricultural Products**

Degelman Industries LP ("Degelman") warrants to the original purchaser of any new Degelman equipment, purchased from an authorized Degelman dealer, that the equipment will be free from defects in material and workmanship for a period of two (2) years from the date of delivery, for non-commercial use (including farm, institutional, government, and municipality) and (1) year from the date of delivery for commercial use. The obligation of Degelman to the purchaser under this warranty is limited to the repair or replacement of defective parts in the first year and to the provision, but not the installation of replacement parts in the second year. Degelman reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

This warranty limits its replacement or repair coverage to what is consistent with the warranty of Degelman's suppliers of purchased components.

Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of delivery of such part or the expiration of the applicable new equipment warranty period, whichever occurs later. Warranted parts shall be provided at no cost to the user at an authorized Degelman dealer during regular working hours. Warranted replacement parts will either be replaced or rebuilt at Degelman's discretion.

Disclaimer of implied warranties & consequential damages

This warranty shall not be interpreted to render Degelman Industries LP liable for injury, death, property damage or damages of any kind, whether direct, consequential, or contingent to property. Without limiting the generality of the foregoing, Degelman shall not be liable for damages resulting from any cause beyond its reasonable control, including, without limitation, loss of crops, any expense or loss of labour, supplies, rental machinery or loss of use.

No other warranty of any kind whatsoever, express or implied is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale. This exclusion shall not apply in any jurisdiction where it is not permitted by law.

This limited warranty shall not apply:

1. If, in the sole opinion of Degelman, the unit has been subjected to misapplication, abuse, misuse, negligence accident or incorrect off-site machine set-up.
2. To any goods that have sustained damage or deterioration attributable to a lack of routine maintenance (eg. Check and Re-torque of fastening hardware, Hydraulic fluid purities, drive train alignments, and clutch operation)
3. If parts not made or supplied by Degelman have been used in the connection with the unit, if, in the sole judgement of Degelman such use affects its performance, safety, stability or reliability.
4. If the unit has been altered or repaired outside of an authorized Degelman dealership in a manner which, in the sole judgement of Degelman, affects its performance, safety, stability or reliability.
5. To expendable or wear items such as (eg. Harrow tines, Rock Picker and Rock Rake wear teeth and replaceable bushings and pins.) and any other items that in the company's sole judgement are a wear item.

No employee or representative of Degelman Industries LP is authorized to change this limited warranty in any way or grant any other warranty unless such change is made in writing and signed by the Degelman Service Manager.

This limited warranty is subject to any future availability of supply, which may directly affect Degelman's ability to obtain materials or manufacture replacement parts.

Degelman reserves the right to make improvements in design or changes in specifications at any time, without incurring obligations to owners of equipment previously delivered.

This limited warranty is subject to compliance by the customer to the enclosed *Retail Customer's Responsibility Under Degelman Warranty*.

Warranty

Retail Customer's Responsibility Under Degelman Warranty.

It is the retail customer and/or Operator's responsibility to read the Operator's Manual, to operate, lubricate, maintain and store the equipment in accordance with all instructions and safety procedures. Failure of the operator to read the operators manual is a misuse of this equipment.

It is the retail customer and/or operators responsibility to inspect the product and to have any part(s) repaired or replaced when continued operation would cause damage or excessive wear to other parts or cause safety hazard.

It is the retail customer's responsibility to deliver the product to the authorized Degelman dealer, from whom he purchased it, for service or replacement of defective parts, which are covered by warranty. Repairs to be submitted for warranty consideration must be made within forty-five days of failure.

It is the Retail Customer's responsibility for any cost incurred by the dealer for hauling of the product for the purpose of performing a warranty obligation or inspection.

WARRANTY INFORMATION

Make certain the warranty registration card has been forwarded to:

**Degelman Industries LP
Box 830 -272 Industrial Dr.
Regina, SK, Canada
S4P 3B1**

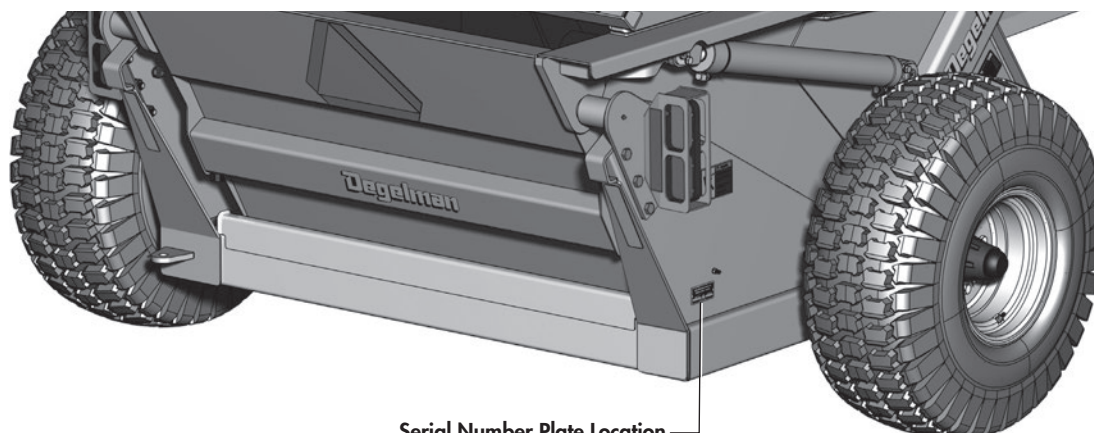
Always give your dealer the serial number of your Degelman product when ordering parts or requesting service or other information.

The serial number is located on the machine as shown in the diagram below. In the space provided record the model number, the serial number and the date of purchase to assist your dealer in providing you with prompt and efficient service.

SERIAL NUMBER: _____

MODEL NUMBER: _____

DATE OF PURCHASE: _____



Serial Number Plate Location

