

Power Rake Heavy Duty Series 2

Operation and Maintenance Manual



Register your
WARRANTY
within 30 days
of purchase



888-376-7027 | BlueDiamondAttachments.com



BD-092

Introduction: Owner Information

Thank you for your decision to purchase a Blue Diamond® Power Rake Heavy Duty Series 2. To ensure maximum performance of your equipment, it is mandatory that you thoroughly study the Operator's manual and follow the recommendations. Proper operation and maintenance are essential to maximize equipment life and prevent personal injury.

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

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

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

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

Keep this manual available for frequent reference. All new operators or owners must review the manual before using the equipment and annually thereafter. Contact your Blue Diamond Attachments Dealer for assistance, information, or additional copies of the manual. Contact www.bluediamondattachments.com or call 888-376-7027 for a complete list of dealers in your area.

Serial Number Location:

Please record attachment information in the space provided for future reference.



Model Number: _____

Serial Number: _____

Dealer Name: _____

Dealer Number: _____

Date of Purchase: _____

The serial number plate is located on the right side of the attachment.

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

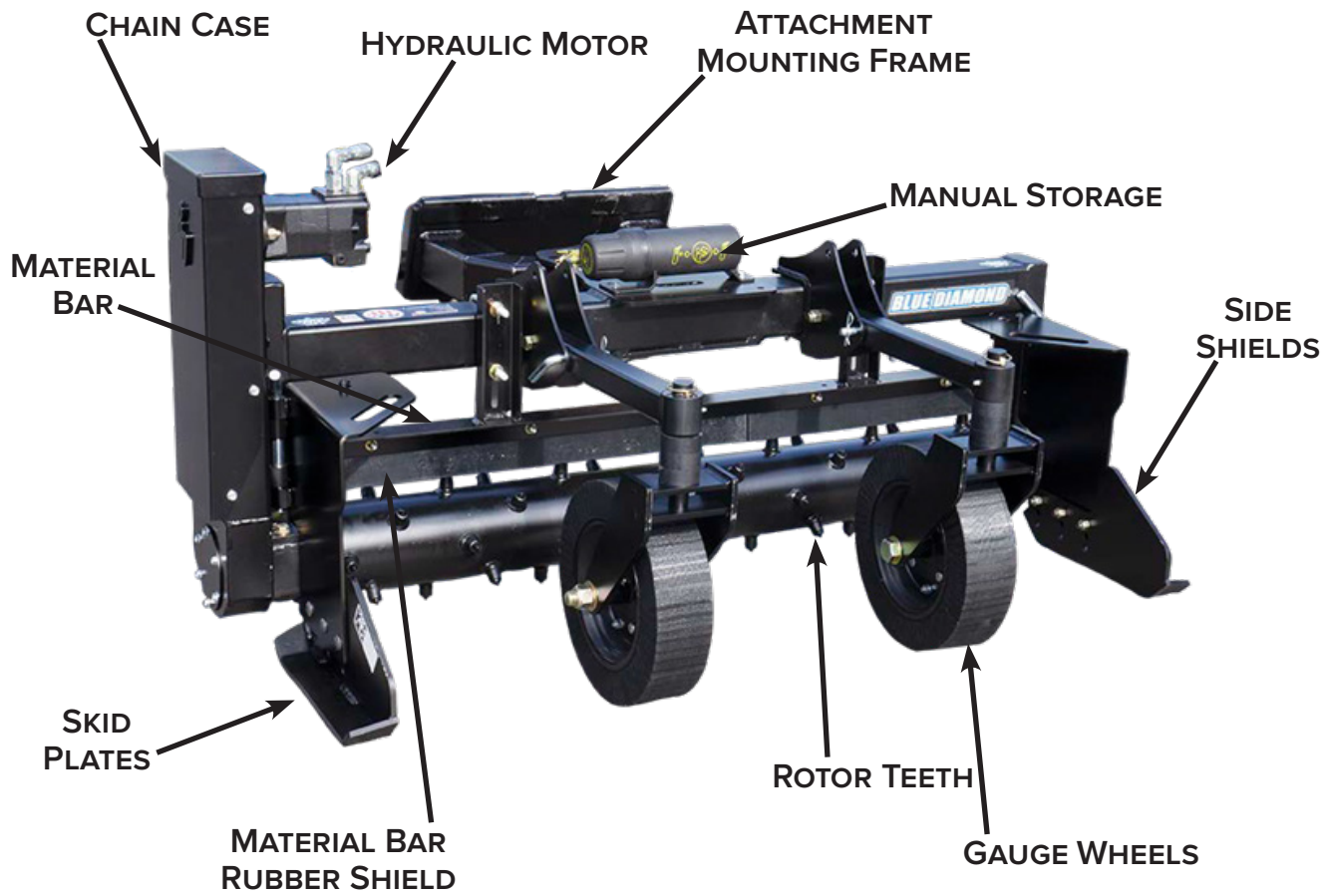
NOTE: The directions left, right, front, and rear, as mentioned throughout this manual, are as viewed from the operator's position.

Table of Contents

1. Introduction.....	4-5	6. Parts.....	30-37
1.1 Attachment Identification.....	4	6.1 Model Options.....	30
1.2 Attachment Specifications.....	5	6.2 PTO Guards.....	31
2. Safety.....	6-8	6.3 PTO Mount.....	32
2.1 General Safety Information.....	6	6.4 PTO Lower Driveline.....	33
2.2 Importance of Safety.....	7	6.5 PTO Upper Driveline.....	34
3. Operation.....	9-18	6.6 Hydraulic Mount.....	35
3.1 General Information.....	9	6.7 Hydraulic Driveline.....	36
3.2 Attachment Inspection.....	10	6.8 Rotor Options.....	37
3.3 Attachment Installation.....	11	7. Main Sub-Assemblies.....	38-44
3.4 Skid Steer Requirements.....	13	7.1 Mount, 3-Point Cat 1-2.....	38
3.5 Initial Setup for Clutch.....	13	7.2 Skid Steer Mount.....	39
3.6 Initial Setup.....	15	7.3 Skid Steer Mini Mount.....	39
3.7 Job Site Tips / Recommendations.....	16	7.4 Chain Case PTO.....	40
3.8 Startup and Shutdown.....	18	7.5 Chain Case Hydraulic.....	41
4. Maintenance.....	19-28	7.6 Chain Tensioner.....	42
4.1 Service Schedule.....	19	7.7 Chain Coupler, 50 Series.....	42
4.2 Lubrication.....	20	7.8 Bearing Housing 2 Bolt.....	43
4.3 Material Bar.....	22	8. Accessories.....	44-48
4.4 Side Shields and Skid Plates.....	23	8.1 Side Shield Options.....	44
4.5 Gauge Wheels.....	24	8.2 Gauge Wheel Options with Arm.....	45
4.6 Drive Chain.....	24	8.3 Material Bar Options.....	46
4.7 Pivot Lock Down.....	26	9. Specifications.....	49
4.8 Rotor.....	26	9.1 Torque Specifications.....	49
4.9 Cleaning the Attachment.....	27	10. Warranty.....	51
4.10 Storage and Return to Service.....	28		
5. Troubleshooting.....	29		

1. Introduction

1.1 Attachment Identification





1. Introduction

1.2 Safety Decals



ITEM	DESCRIPTION	QTY
1	Warning, High Pressure Fluid Hazard	1
2	Grease all Fittings Every 8 Hours	1
3	Must Read Operator Manual	1

**WARNING**

Replace any worn, torn, or missing safety decals before operating!

2. Safety

2.1 General Safety Information



This **SAFETY ALERT SYMBOL** identifies important safety messages on the equipment and in the owner's manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.



The signal word **IMPORTANT** identifies procedures which must be followed to avoid damage to the machine.



The signal word **DANGER** on the machine and in the manuals indicates a hazardous situation which, if not avoided, will result in death or serious injury.



The signal word **WARNING** on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



The signal word **CAUTION** on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



AVOID SERIOUS INJURY OR DEATH

Operators must receive instructions before operating the machine. Untrained operators can cause serious injury or death.

For an operator to be qualified, he or she must not use drugs or alcoholic drinks which impair alertness or coordination while working. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine and the equipment.

For an operator to be qualified, he or she must have read and understood the instructions of this manual, he or she must make adequate preparation for the proper use of the machine, and he or she must hold a driving license.

In case of doubt regarding the use of the machine and/or the interpretation of this manual, the operator must contact either their dealer or Blue Diamond.

Operator Training

- Check the rules and regulations at your location. The rules may include an employer's work safety requirements. Regulations may apply to local driving requirements or use of a Slow Moving Vehicle (SMV) emblem. Regulations may identify a hazard such as a utility line.
- The new operator must start in an area without bystanders and use all the controls until he or she can operate the machine safely under all conditions of the work area.

2. Safety

2.2 Importance of Safety

Operating Safety

- Read and follow instructions in this manual and the machine's Operator's Manual before operating.
- This equipment is dangerous to persons unfamiliar with its operation.
- Check for overhead and/or underground lines before operating equipment (if applicable).
- In addition to the design and configuration of equipment, hazard control, and accident prevention are dependent upon the awareness, concern, and prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.
- Check that the attachment is securely fastened to the machine.
- Make sure all the machine controls are in NEUTRAL before starting the machine.
- Operate the equipment according to the Operator's Manual.
- When learning to operate the equipment, do it at a slow rate in an area clear of bystanders.
- DO NOT permit personnel to be in the work area when operating the equipment.
- The equipment must be used ONLY on approved machines.
- Modification without approval by an authorized Blue Diamond® representative will void the warranty.
- DO NOT make any adjustments or repairs on the equipment while the machine is running.
- Keep shields and guards in place. Replace if damaged.
- DO NOT operate equipment in poor visibility conditions such as fog, darkness, or any conditions that limit clear visibility less than 300 feet (100 m) in front of and to the sides of the equipment.
- When conditions make it necessary to slow ground speed, shift to a lower gear rather than reducing engine speed. The engine will maintain rated speed and keep the power rake running at optimal speed.
- DO NOT operate in a work area that has not been inspected for foreign debris and obstacles.
- Remove any foreign objects and clearly mark any objects that cannot be removed.
- Wear safety glasses, gloves, hearing protection, and other protective clothing when required.

Machine Requirements and Capabilities

- The machine's operator's cab should be equipped with a thermoplastic polycarbonate or similar material front window, and similar protection on the sides of the operator's cab before operating the equipment.
- Use caution on slopes and near banks and ditches to prevent overturn.

2. Safety

2.2 Importance of Safety Cont'd

Fire Prevention Safety

- Flammable debris (leaves, grass, etc.) must be removed regularly. If flammable debris is allowed to accumulate, it can cause a fire hazard. Clean often to avoid this accumulation.
- The equipment's hydraulic motor compartment must be inspected every day and cleaned if necessary to prevent fire hazards and overheating.
- All fuels, most lubricants, and some coolant mixtures are flammable. Flammable fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire.

Transportation Safety

- Comply with state and local laws governing highway safety and movement of machinery on public roads.
- Check local laws for all highway lighting and marking requirements.
- Never allow riders on either machine or equipment.
- If transporting the attachment on a truck or trailer, make sure it is properly secured to the transport vehicle.

Hydraulic System

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

3. Operation

3.1 General Information

Pre-Operation Inspection

Before operating the power rake for the first time and each time thereafter, use the following list as a guideline during equipment inspection.



WARNING



AVOID SERIOUS INJURY OR DEATH

- Disengage machine's auxiliary hydraulics, engage the machine's parking brake, stop the engine, and make sure all rotating components are completely stopped before connecting, disconnecting, adjusting, or cleaning equipment.
- Always keep shields and all guards in place when using the equipment.
- Disengage machine's auxiliary hydraulics for road travel.
- Keep hands, feet and clothing away from rotating parts.

- Fully clean the attachment. See section 4.9 "Cleaning the Attachment" on page 27.
- Lubricate the attachment per the schedule outline in the Maintenance Section. See section 4.1 "Service Schedule" on page 19.
- Check the power rake mounting frame for damage or cracks.
- Check that all shields and guards are in place.
- Check for loose bolts and tighten them if necessary.
- Check the rotor and rotor teeth for wear or damage.
- Check all welds on the attachment for wear and damage each time the attachment is removed from the machine.
- Check for damaged or missing safety decals. Replace if necessary.

- Inspect the machine's mounting frame. (See the machine's Operator's Manual for inspecting the mounting frame). Replace any parts that are damaged, bent, or missing. Keep all fasteners tight. Look for cracked welds.



WARNING



Leaking fluids under pressure can enter the skin and cause serious injury or death. Immediate medical attention is required.

Wear goggles. Use cardboard to check for leaks.

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

NOTE: Do not operate with hydraulic leaks

- Verify that the power rake is properly connected to the machine.



IMPORTANT



After the first five hours of operation, check all hardware on the power rake and tighten if needed. Grease all fittings.

3. Operation

3.2 Attachment Inspection

Daily Inspection

NOTE: Inspect the attachment by performing a walk around daily before and after use. Use the following inspection checklist as a guideline.

Check the following items every 10 hours of operation:

- Verify that the power rake is properly connected to the machine.
- Check that all shields and guards are in place.
- Check hydraulic lines, connections, and fittings for hydraulic oil leaks. Repair or replace damaged parts if necessary.
- Check the power rake mounting hardware for wear or damage. Inspect the pins and mount (on the attachment) for wear or damage. Repair or replace damaged parts if necessary.
- Check for debris build up between rotor and frame. Remove any debris.
- Check that the rotor turns freely.

Weekly Inspection

Check the following items every 40 hours of operation:

- Check rotor and rotor teeth for wear or damage.
- Check all bolts for tightness.
- Inspect the power rake frame for cracks, bends, or damage.
- Check and adjust hitch to frame pivot point as needed. As wear occurs, the nut may need to be tightened to compensate for wear. Do not over-tighten.

Monthly Inspection

- Check chain tension.
- Check the drive chain tension.
- Check skid plates for wear.
- Check that all bolts are tight.
- Check rotor housing and rotor teeth for cracks or damage. Replace if necessary.
- Check mounting plate hardware or three-point mounts.
- Check power rake frame, shields, guards. Repair if damaged or replace if necessary.
- Check for damaged or missing decals. Replace if necessary.
- Check for damaged or leaking hydraulic hoses or fittings. Replace if necessary.
- Lubricate as required.
- Check the PTO driveline for wear or damage.



WARNING



AVOID SERIOUS INJURY OR DEATH

Before servicing the attachment:

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

SEE MACHINE'S OPERATOR'S MANUAL FOR ADDITIONAL INFORMATION.

3. Operation

3.3 Attachment Installation

! IMPORTANT !



See the machine's Operator's Manual for detailed information on operating the loader.

Entering The Operator's Position

Use the attachment safety treads, handles, and steps (on the machine) to enter the operator's position.

When in the operator's position, lower safety seat bar (if equipped), fasten the seat belt, start the engine, and release the parking brake.

Leaving The Operator's Position

! WARNING !

AVOID SERIOUS INJURY OR DEATH

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

SEE MACHINE'S OPERATOR'S MANUAL FOR ADDITIONAL INFORMATION.

Park the machine/attachment on a flat level surface.

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

Connecting Attachment To The Skid Steer

! WARNING !



CRUSH HAZARD

- Before moving the machine, look in all directions and make sure no bystanders, especially small children are in the work area. Do not allow anyone between the machine and attachment when approaching the attachment for connecting.
- Keep fingers and hands out of pinch points when connecting and disconnecting the attachment.

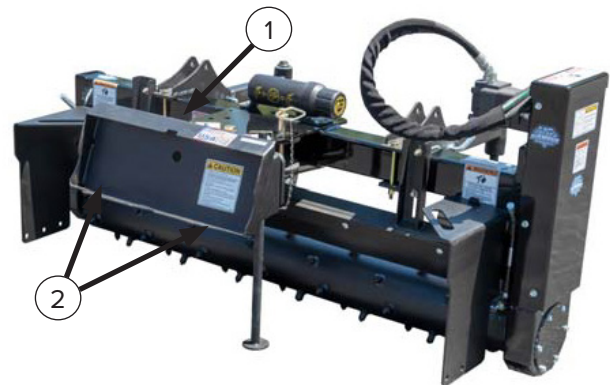


Figure 1

Inspect the power rake's mounting flange (Item 1) and wedge mounts (Item 2) [Figure 1] and all welds on the power rake for wear or damage each time the power rake is removed from the machine.

Enter the operator's position. See "Entering the Operator's Position" on page 11.

Drive the machine slowly forward, until the top edge of the machine's mounting plate is under the top flange of the attachment mounting plate.

3. Operation

3.3 Attachment Installation Cont'd

Connecting Attachment To The Skid Steer Cont'd

Slowly tilt the machine's mounting plate back until the attachment mounting frame fully contacts the front of the machine's mounting plate.

Leave the operator's position. See "Leaving the Operator's Position" on page 11.



WARNING



AVOID SERIOUS INJURY OR DEATH

The locking pins/wedges must extend through the holes in the attachment mounting frame. Failure to secure locking pins/wedges can allow attachment to come off. SEE MACHINE'S OPERATOR'S MANUAL FOR ADDITIONAL INFORMATION.

Engage attachment locking levers/wedges (See the machine's Operator's Manual for detailed information).

Connecting Hydraulic Hoses



IMPORTANT



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

Remove dirt or debris from the male and female couplers. Visually inspect the couplers for corroding, cracking, damage, or excessive wear. Replace as needed.

Connect the attachment hydraulic hoses to the machine. Pull on each hose to verify full connection is made.

Disconnecting Hydraulic Hoses



WARNING



AVOID BURNS

Hydraulic fluid, tubes, fittings, and quick couplers can get hot during operation. Be careful when connecting and disconnecting hydraulic hoses.

Relieve auxiliary hydraulic pressure. (See the machine's Operator's Manual for correct procedure.)

Disconnect attachment hydraulic hoses from the machine.

Disconnecting Attachment from Skid Steer

Relieve auxiliary hydraulic pressure. (See machine's Operator's Manual for correct procedure.)

Park the machine and attachment on a flat level surface. Lower the attachment flat on the ground.

Leave the operator's position. See "Leaving the Operator's Position" on page 11.

Disconnect attachment hydraulic hoses from the machine.

Disengage locking pins/wedges. (See the machine's Operator's Manual for correct procedure.)

Enter the operator's position. See "Entering the Operator's Position" on page 11.

Slowly tilt the machine's mounting plate forward until the attachment mounting frame is free from the machine's mounting plate.

Drive the machine slowly backward, away from the attachment.

3. Operation

3.4 Skid Steer Requirements

WARNING

AVOID SERIOUS INJURY OR DEATH
Use a machine with a roll over protection system ROPS.

DESCRIPTION	48", 60", 72"
Hydraulics	15 GPM (56.7 L) @ 2500 PSI (172 bar) Max flow of 24 GPM
Lift Capacity	1500 lbs. (680 kg)

3.5 Slip Clutch Maintenance and Settings

When delivered from the factory, the slip clutch is loose. The clutch will need to be set to suit the specific application.

Slip Clutches need to be set if one of the following occurs

- The clutch is new
- The clutch has been repaired (including replacing the friction discs).
- The clutch is slipping in work (clutch getting hot, burning out friction discs).
- The clutch has been freed up after a period of storage (see "How to Free up Clutch" on page 14).

This is achieved by tensioning the clutch springs to their recommended compressed length of no more than 1". This distance is measured from the clutch plate to end of spring [Figure 2].

WARNING

Compressing the springs beyond these lengths will cause damage to the clutch and drive line.



Figure 2

3. Operation

3.5 Initial Setup for Clutch Cont'd

How to Set Clutch:

The setting on the clutch is dependent on many variables - the work, the size of the tractor, and the size of the power rake. It is best to set up each clutch individually if possible. The aim is to start with a loose clutch and tighten it up to the exact point where it stops slipping in normal work. If set in this way, the clutch will slip if any load exceeds this point, protecting both the power rake and the tractor. It is best to set up the clutch with the power rake on the tractor and in conditions which approximate to the normal work desired.

The bolts which go through the springs and hold tension on the clutch determine the point at which the clutch slips. These must all be set evenly, either by measuring spring length or counting the number of turns the nut has been tightened. The clutch must be quite loose initially to ensure it will slip. Slipping can be identified by the clutch getting very hot. (The clutch will always be quite warm in work as the gearbox gets warm). Run the power rake for a short distance (5-10 ft) in work and check the clutch slips. Then tighten each tension bolt up a turn (more if the clutch was very loose) evenly and run a short distance again. Keep repeating this procedure until the clutch is not slipping - it should only take a few stops.

As you get to the point at which you think it is not slipping, tighten the tension bolts on quarter to half a turn instead of a full turn. Continue to operate the power rake checking the clutch regularly; you will soon get an idea of how the clutch is performing. You may want to adjust it for varying conditions. If the clutch is too loose it will slip, wearing out the friction discs, getting hot and possibly damaging the clutch pressure surfaces as well. If the clutch is too tight it will fail to protect the tractor and power rake.

How to Free up the Clutch after a Period of Storage:

The slip clutch can seize if left for long periods without use. The best way to free up a slip clutch is to loosen all the bolts that hold the spring tension on the friction plates (so they are quite loose), then operate power rake with rotor engaging the ground for 30 – 60 seconds verifying clutch is slipping. If clutch does not slip it will need to be disassembled and inspected for damage.

3. Operation

3.6 Initial Setup

NOTE: The ground conditions will determine the best settings for the power rake. Choose the tilling mode or landscaping mode.

The normal gap between the rotor teeth and material bar for average conditions is about 1" (25 mm). A wider opening will allow more dirt and rock to pass through soil conditioning allowing wet soil to dry for final raking. For finer raking, adjust the material bar down. Be careful not to let rotor teeth damage the material's bar. The gap should be the same all the way across between rotor teeth and material bar.

Adjust the hitch to frame pivot point as desired.

Tilling Mode

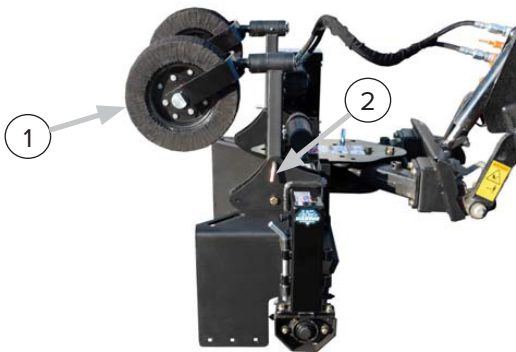


Figure 3

To convert the power rake into tilling mode, remove the pin and raise the gauge wheels (Item 1) [Figure 3] to the storage position and secure with pin (Item 2) [Figure 3].

Remove the side shields. Opening up the material bar hold back rubber shield will allow for material flow when in tilling mode.

Skid Steer Model — For processing compacted soil, adjust power rake so that down pressure can be exerted on the rotor.

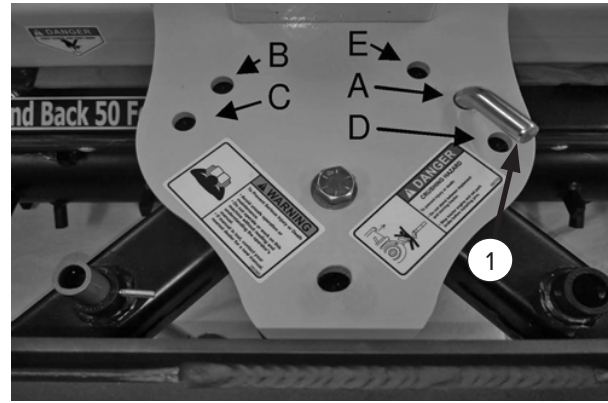


Figure 4

When in tilling mode and in hard packed soil - gravel, remove the pin (Item 1) [Figure 4] adjust the pivot angle to 10 or 20° for aggressive sawtooth action. Install the pin at the desired setting.

Adjust the angle to 10 or 20° for material windrowing (such as rocks and debris).

- A — Straight
- B — 10 degrees left
- C — 20 degrees left
- D — 10 degrees right
- E — 20 degrees right

NOTE: The machine can be operated with one gauge wheel up and one down to slope the area if needed.

Landscaping Mode

For landscaping, side shields are installed and material bar set to desired gap with gauge wheels down.

NOTE: The side shields contain the material in front of the rotor while the clean material passes between rotor and material bar rubber shield.

NOTE: There may be times the gauge wheels will not work for landscaping and must be raised to storage position. Example: hard to reach areas, ditch lines, and banks, getting to and back grading the bottom of ditches.

3. Operation

3.7 Job Site Tips / Recommendations



IMPORTANT



- DO NOT operate in a work area that has not been cleared of foreign debris and obstacles.
- Rocks, metal, construction debris, and other objects can damage the power rake.
- Clearly mark any objects that cannot be removed.
- If an area contains tall grass, clear cut the area first, either by mowing or tilling the ground.

Processing Action: Processing settings are a combination of all the power rake features. Material bar, side shields, gauge wheels, motor angle, tooth action, machine adjustments.

Raking Action: Rake setting is where only the teeth are contacting the ground, if at all. In this setting, the operator needs to slow down and drive straight, blending all passes together. In the raking mode there should be NO material going over the rotor. If so, the small rock and debris will be left behind and NOT collected.

NOTE: If the job or site mulched contains cut down tall grass, it may need a few days to dry out. Once the cut grass has dried the material can be mulched into the soil.

1. Check the job site, plan on where to deposit debris such as rock and unwanted material. Check for underground obstacles, electrical, utilities, property line stake, large rocks or buried concrete, or ledge rock.
2. Start settling grade and removing debris. On the first pass, it is not necessary to do complete coverage or drive in a straight line (roughing up the job site). It's recommended to have material side shields up or off on the first pass to prevent damage to side shields.
3. In grass or green material, it is recommended to open up the material bar so material may flow through the machine. If there's too much green material you may have to wait for green material to dry out. After the material dries it will process more efficiently.
4. In hard packed soil, after the first pass there may be hard spots in the job site. This is remedied by putting the power rake into the tilling mode and working the hard spots.
5. Place the power rake into landscaping mode. Set the power rake for 2" seedbed, with the material side shields down, the material bar set close to the teeth, this will remove the smaller rock and debris. Process the job site. If the job site is not to your satisfaction, repeat the operation.
6. Final Operation — Set the material bar so it is almost touching the teeth and the rotor teeth are either not touching or just touching the ground. Make sure the side shields are running level. If not, material will escape under side shields leaving a windrow of unwanted material behind. The tooth needs to be in a raking action not processing action. Raking action will remove unwanted material leaving behind processed soil.

NOTE: On the final operation, there should be no material going over the rotor; if so, it will leave behind unwanted material.

3. Operation

Processing Tips

Gravel Processing: Rework driveways by processing the existing compacted gravel. Set the materials bar to regulate the amount of material needed to flow through the power rake. This may be done by removing or adding spacers on the gauge wheel spindles. On 3-point models the draft arms may also need to be adjusted to pitch the hitch which will in turn pitch the rotor.

Leaving the material side shields on will trap and collect the material. If you need to make more aggressive contact, remove the shields. Removing the ditch side end shields will let the rotor teeth make more contact with the soil/gravel. Removing the end shields/material shields will also prevent damage to the shields if contact is made with ledge rocks, deadheads, roots, and other sub surface objects.

Wet Conditions: Open the material bar to allow material to flow over the rotor. This allows the material to fluff up and aerates the soil

Setting Grade: Loosens up the material, start setting a 2" seed bed.

Blending existing and processed lawn together: Set the gauge wheel on one side of the machine in the up position, allow the rotor to overlap the existing lawn 6" to 12". Outside rotor teeth will be just touching or not touching surface, while the other side will be touching and processing the material bringing the two surfaces together.

Dimpling: If water pockets are required for water control, set the rotor teeth just off the surface and let the teeth dimple the surface.

Final Grade: Set the rotor teeth so they are just touching the surface. This will collect the small rocks and debris (this is raking action).

3. Operation

3.8 Startup and Shut-down



WARNING



AVOID SERIOUS INJURY OR DEATH

Wear safety glasses at all times. The machine may pick up material such as plastic sheeting, roots, etc. and wrap them around the rotor creating a high velocity spinning of material and then eject that material into the operator or bystanders.



IMPORTANT



When operating or transporting, run the power rake with the gauge wheels contacting the ground.



WARNING



ROTOR WRAPPING

Debris such as rope, wire, roots, plastic, etc. may wrap around rotor. **STOP IMMEDIATELY** and remove foreign material. Spinning of rotor and throwing of material may cause harm to the operator or bystanders!

Starting the Power Rake

Install the power rake onto the machine.

Move to the operator's position, lower seat bar, put on seat belt, start the engine, and release the parking brake.

Raise the power rake slightly off the ground.

With the machine's engine RPM just above idle, engage the auxiliary hydraulic flow (see the machine's operator's manual) to the power rake.

Slowly raise the machine's engine RPM to the correct and desired speed.

Slowly lower the power rake to the ground and begin forward travel.

NOTE: Recommended ground speed is between 2 to 6 mph (3 to 9 kph). In severe duty applications, reduce ground speed.

Stopping the Power Rake

Position the power rake slightly off the ground.

Set the machine's engine RPM to an idle, allow the power rake to slow down, disengage the auxiliary hydraulic flow (see the machine's operator's manual) to the power rake.

4. Maintenance

4.1 Service Schedule

DESCRIPTION	SERVICE PROCEDURES			
	Check	Clean	Lube	Change
Daily Maintenance (or every 8 hours)				
Hydraulic Fittings	•			
Hydraulic Hoses	•			
Hydraulic Motor	•	•		
Rotor Teeth (wear, damage, and loosening)	•	•		
Chain			•	
All Hardware	•			
Power Rake Frame	•	•		
Weekly Maintenance (or every 40 hours)				
Wheel Axles			•	
Gauge Wheel Spindles			•	
Angle Pivot Points			•	
Rotor Teeth (wear, damage, and loosening)	•			
Rotor (cracks or excessive wear)	•			
All Hardware	•			
Monthly Maintenance				
Rotor Bearings			•	
Drive Chain	•		•	
Skid Plates	•			
Rotor Teeth (wear, damage, and loosening)	•			
Rotor (cracks or excessive wear)	•			
All Hardware	•			

4. Maintenance

4.2 Lubrication



DANGER



AVOID SERIOUS INJURY OR DEATH

Before servicing the power rake:

- Lower the power rake and place on a flat, level surface.
- Engage the parking brake, stop the engine, remove the key, and exit the machine.
- Disconnect attachment hydraulic hoses.



WARNING



AVOID SERIOUS INJURY OR DEATH

DO NOT work under the machine/attachment without the machine/attachment properly locked or blocked (see machine operator manual for more information).



IMPORTANT



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

NOTE: Clean off grease fittings before greasing.

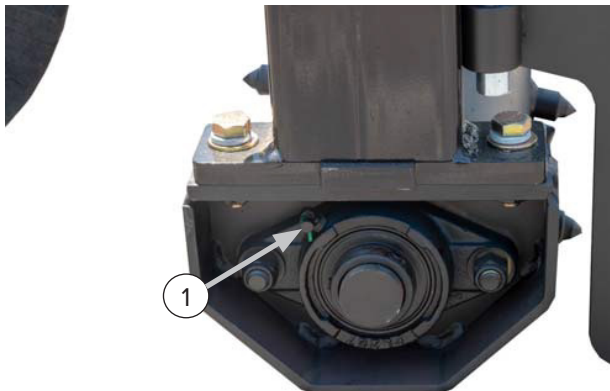


Figure 5

Apply grease to the bearing zerks on each end of the rotor (Item 1) [Figure 5].

NOTE: DO NOT over-torque zerks.



Figure 6

Remove the bottom cover (Item 1) [Figure 6] on the chain case, grease the rotor bearing grease zerk fitting.



Figure 7

Apply 2-3 pumps of grease to the grease zerk (Item 1) [Figure 7] on the wheel axles.

4. Maintenance



Figure 8

Apply 2-3 pumps of grease to the grease zerk (Item 1) [Figure 8] on the gauge wheel spindles.

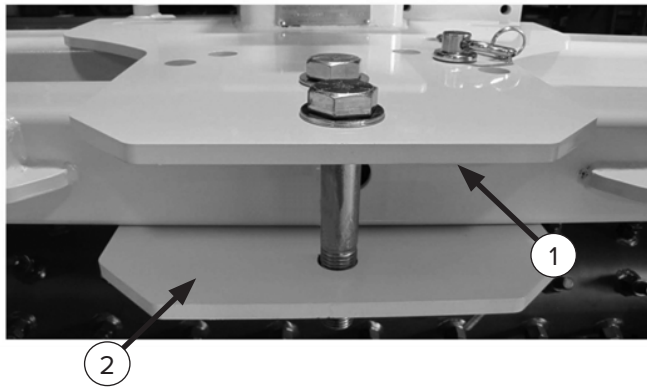


Figure 9

Apply a coat of grease to the inside upper pivot plate (Item 1) and lower pivot plate (Item 2) [Figure 9]

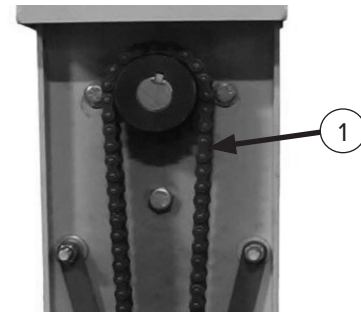


Figure 10

NOTE: Chain comes lubricated with a spray lubricant.



Chain must be kept lubricated. Alternatives to the oil bath include any viscosity lubricant applied using the appropriate method for each lubricant.
DO NOT MIX LUBRICANTS.

Oil Bath Option

NOTE: The chain case oil should be changed after the first 100 hours or 30 days of operation and 250 hours thereafter.

NOTE: To check the chain case oil, park the power rake on a smooth level surface. Remove the bolt (Item 1) [Figure 6]. If no oil present, fill the chain case with 80/ 90W oil until oil leaks out the bolt hole. Install bolt.

4. Maintenance

4.3 Material Bar

Material Bar Adjustment / Replacement



DANGER



AVOID SERIOUS INJURY OR DEATH

Before servicing the power rake:

- Lower the power rake and place on a flat, level surface.
- Engage the parking brake, stop the engine, remove the key, and exit the machine.
- Disconnect attachment hydraulic hoses.

Material Bar Adjustment

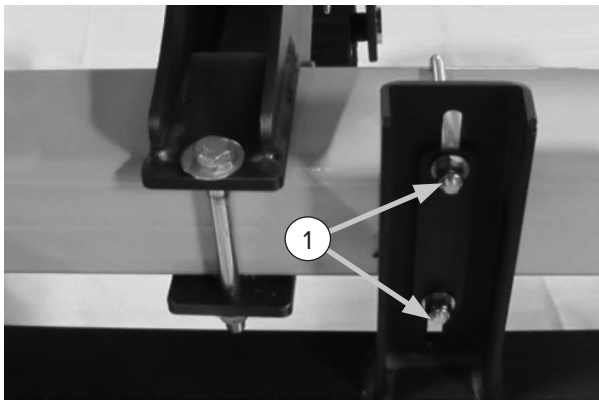


Figure 11

To adjust the material bar, loosen both nuts (Item 1) [Figure 11] (both sides and adjust either up or down.

Adjusting the material bar up will let more material pass through the power rake and adjusting the material bar down will hold back material like rocks and debris.

NOTE: When adjusting the material bar, make sure the material bar is level.

Material Bar Removal/Installation

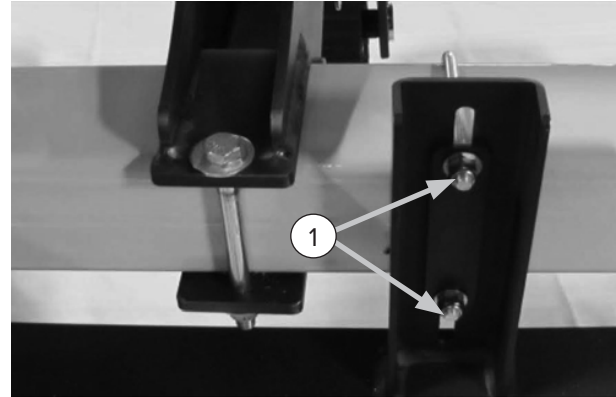


Figure 12

Remove the nuts, washers, and U-bolts (Item 1) [Figure 12] from the material bar (both sides). Remove material bar.

Align material bar mounts (both sides) onto the frame.

Install U-bolts, washers, and nuts.

NOTE: Verify that material bar is level, centered, and adjusted to desired gap, then tighten bolts.

4. Maintenance

Material Bar Rubber Shield Replacement

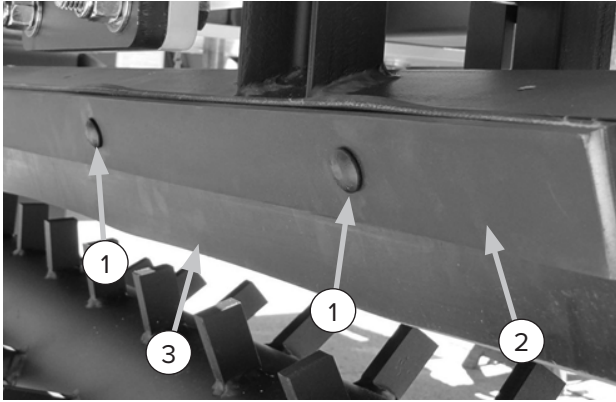


Figure 13

Remove material bar. See material bar removal on page 22.

Remove the nuts and bolts (Item 1)[Figure 13].

Remove the rubber shield mounting strip (Item 2) and the rubber shield (Item 3) [Figure 13].

Align the rubber shield and mounting strip onto the material bar. Install bolts and nuts, then tighten.

Install material bar. See material bar installation on page 22.

4.4 Side Shields and Skid Plates

Material Side Shields Removal/Installation

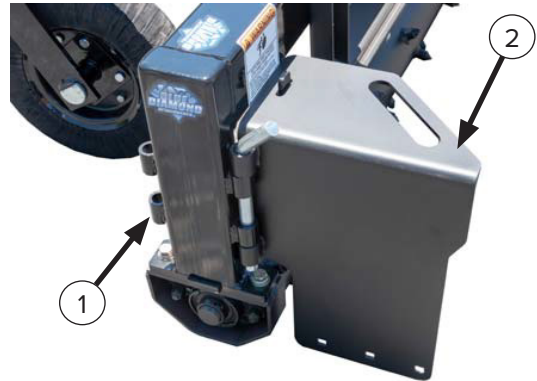


Figure 14

Remove the pin (Item 1) [Figure 14] and side shield (Item 2) [Figure 13] on both sides.

Skid Plate Adjustment

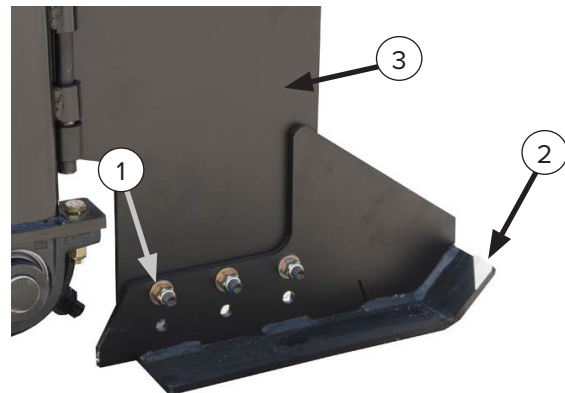


Figure 15

Remove the three nuts and bolts (Item 1) [Figure 15] remove the skid plate (Item 2) [Figure 15].

Align the desired skid plate holes with the side shield holes (Item 3) [Figure 15], install the nuts and bolts then tighten.

Install the spindle and retaining pin.

4. Maintenance

4.5 Gauge Wheels

Gauge Wheel Adjustment

WARNING

AVOID SERIOUS INJURY OR DEATH
Securely block up the attachment before working underneath.

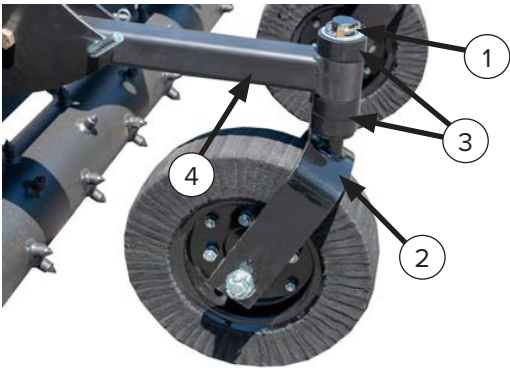


Figure 16

Remove the retaining pin (Item 1) [Figure 16] and lower the spindle (Item 2) [Figure 16]. Relocate spacers (Item 3) [Figure 16] as desired above or below the spindle mount arm (Item 4) [Figure 16]. Install the spindle and retaining pin.

4.6 Drive Chain

Chain Tensioner

NOTE: The drive chain should be inspected monthly. New chains have a tendency to stretch.

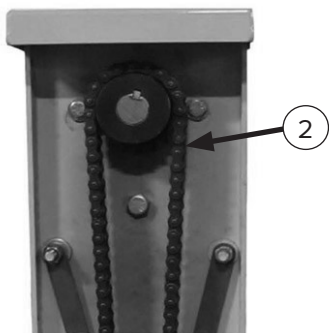


Figure 17

Chain Tensioner Adjustment

CAUTION

Over tightening chain tensioner may damage or cause excessive wear to chain, sprockets, and tensioner rollers.

1. Raise and support the attachment so the rotor is free.
2. Remove the upper access cover (Item 1) [Figure 18] to perform inspection. Use inspection chart below.
3. Tighten nut (Item 3) [Figure 18] until snug, back off 1/2 - 3/4 of a turn. The tensioner arms (Item 2) [Figure 18] should swing freely.

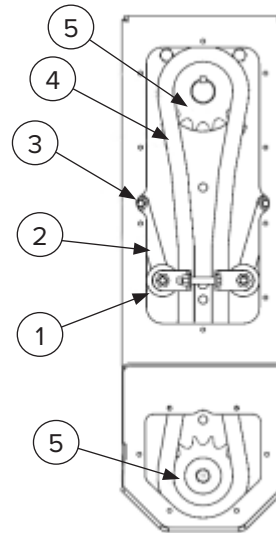


Figure 18

4. Maintenance

1. Adjust nut (Item 6) and bolt (Item 7) [Figure 19].

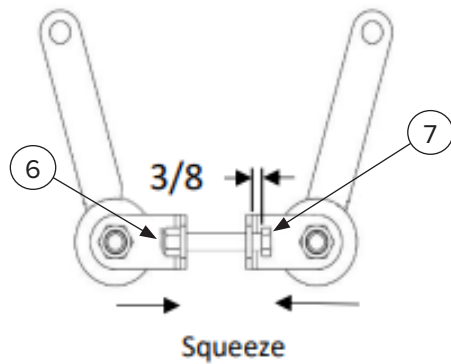


Figure 19

2. There should be approximately a 3/8" clearance under bolt head when tensioner brackets are squeezed together.
3. By hand, spin the rotor and observe that the chain has some slack. On hydraulic models, connect the hoses together to allow fluid to circulate so the rotor can spin.
4. Reinstall the upper access cover. Install fasteners and tighten to recommended torque. See Section 9.2 Torque Specifications on page 49.

Inspection

ITEMS	
✓	Check for loose, missing, or damaged hardware.
✓	Check for any cracks.
✓	Inspect for worn tensioner rollers (Item 1) [Figure 18].
✓	Inspect the chain (Item 4) and sprockets (Item 5) [Figure 18] for excessive wear.

Chain Removal

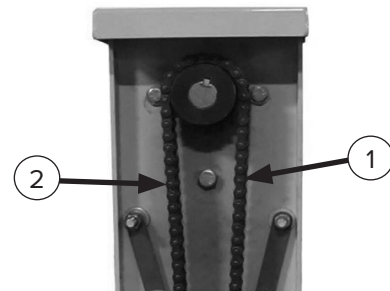


Figure 20

Remove the chain case top cover and the chain tensioner bolt.

Remove the master link (Item 1) [Figure 20] and chain (Item 2) [Figure 20]. Install new chain and master link.

Re-install the chain tensioner bolt, check for proper tension. Re-install top cover.

Lubricate chain every 10 hours of operation with a chain spray lubricant.

4. Maintenance

! IMPORTANT !

- Chain must be kept lubricated.
- Alternatives to the oil bath include any viscosity lubricant, applied using the appropriate method for each lubricant.
- Do not mix lubricants.

The drive chain should be inspected monthly. New chains have a tendency to stretch, so it is necessary to check the chain tension in order to prevent flopping which can cause problems. Chain tension is preset with the extension spring. If the chain becomes excessively loose, it may be necessary to remove one link (two pitches).

4.7 Pivot Lock Down

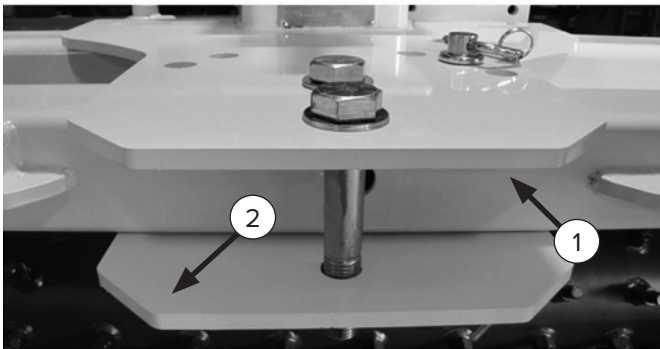


Figure 21

If the angle pivot has signs of spreading open or paint wearing off of frame, use the lock down bolt (Item 1) [Figure 21] to adjust (tighten) the angle pivot back to correct tolerance.

NOTE: The lock down bolt can be installed to prevent the angle pivot weldment from spreading.

4.8 Rotor

Rotor Removal/Installation



WARNING

AVOID SERIOUS INJURY OR DEATH
Securely block up the attachment before working underneath.

1. Remove the side shields. See side shield and skid plates on page 23.
2. Remove the chain case cover.
3. Remove the drive chain. See drive chain on page 24.



WARNING

AVOID SERIOUS INJURY OR DEATH
Secure the rotor with a lifting device before removing bearing mount bolts.

4. Remove the bearing mount by removing the bearing mount bolts, one on the front and back of each (4 total).
5. Slide the rotor away from the chain case until the rotor is free.

To install the rotor, reverse the procedures.

4. Maintenance

Rotor Teeth (Replaceable)



Figure 22

Remove the damaged tooth by turning counterclockwise. Install the new tooth by turning clockwise.

Rotor Teeth (Fixed)

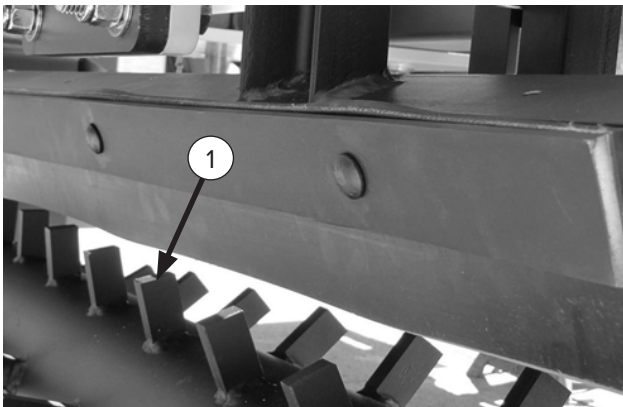


Figure 23

The fixed tooth rotor (Item 1) [Figure 23] is also offered for the power rake.

NOTE: If a tooth is damaged and needs to be replaced, cut, and remove the damaged tooth and weld on the new tooth.

4.9 Cleaning the Attachment

Wash down equipment and clean all debris from the machine.



DANGER



AVOID SERIOUS INJURY OR DEATH

Before servicing the power rake:

- Lower the power rake and place on a flat, level surface.
- Engage the parking brake, stop the engine, remove the key, and exit the machine.
- Disconnect attachment hydraulic hoses.



WARNING



AVOID SERIOUS INJURY OR DEATH

Securely block up the attachment before working underneath.



IMPORTANT



Rotor wrapping may cause damage to bearings or bearing seals by jamming/cutting causing premature wear and damage.

4. Maintenance

4.10 Storage and Return to Service

Storage

After the season's or when the power rake will not be in use for a period of time, thoroughly wash the machine and make sure all material or debris is removed.

NOTE: Gauge wheels can be raised for storage if desired.

- Make sure all covers, guards, and shields are installed.
- Inspect all components and hardware to ensure everything is secure and thoroughly tightened.
- Inspect the frame and all welds for cracks or damage.
- Inspect the wheels and tires.
- Inspect the hydraulic components and hoses for wear, damage, or leaks.
- Inspect the rotor and rotor teeth for wear or damage.
- Lubricate the power rake. (See section 4.2 Lubrication on page 20.)
- Make sure there is no water in the chain case when machine is put into storage.
- Inspect the machine's safety decals for damage.

NOTE: Replace any damaged parts, components, decals, or reflectors.

Return to Service

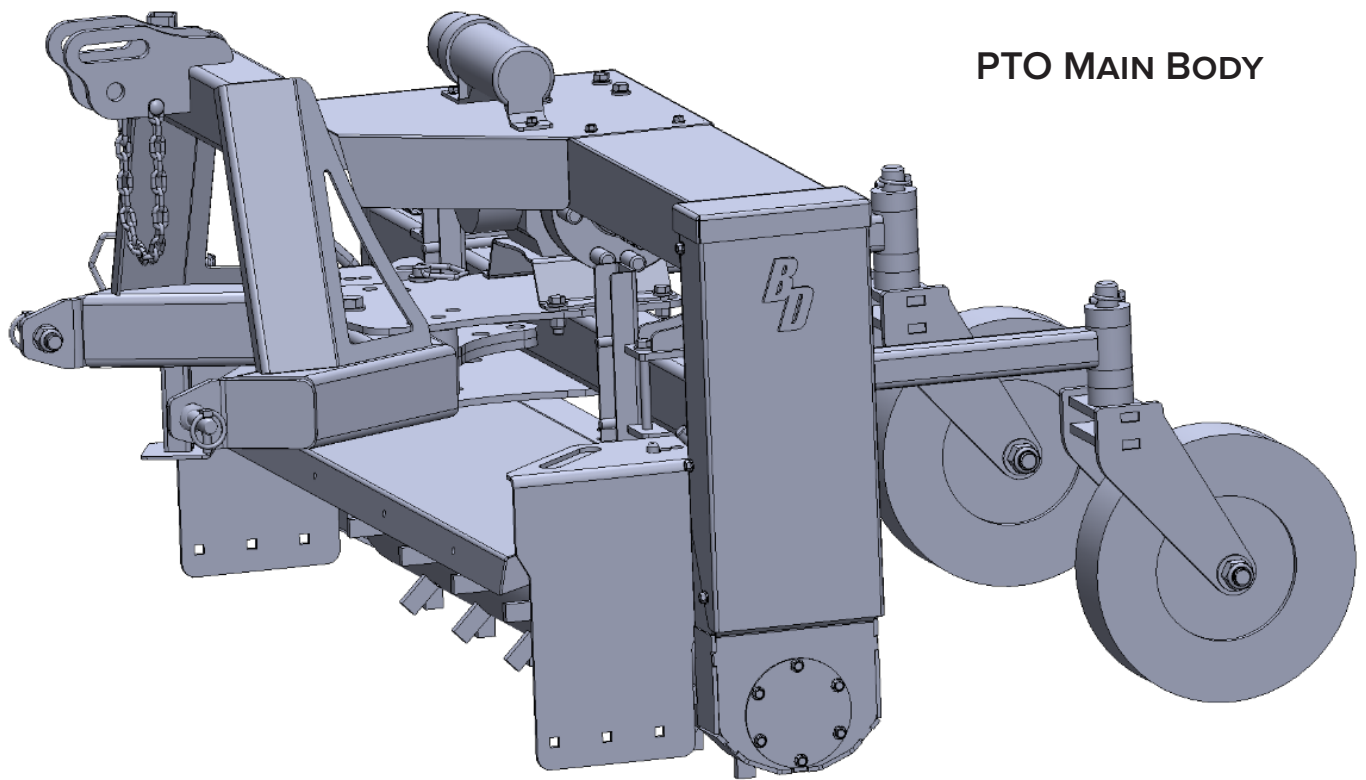
- Inspect the machine's safety decals for damage.
- Re-grease with a small amount of grease as to break the seal on any grease that may have dried.
- Inspect the wheels and tires.
- Check for correct chain tension.
- Make sure there is no rust build-up on pivot points.
- Operate the machine and check for any oil leaks.

5. Troubleshooting

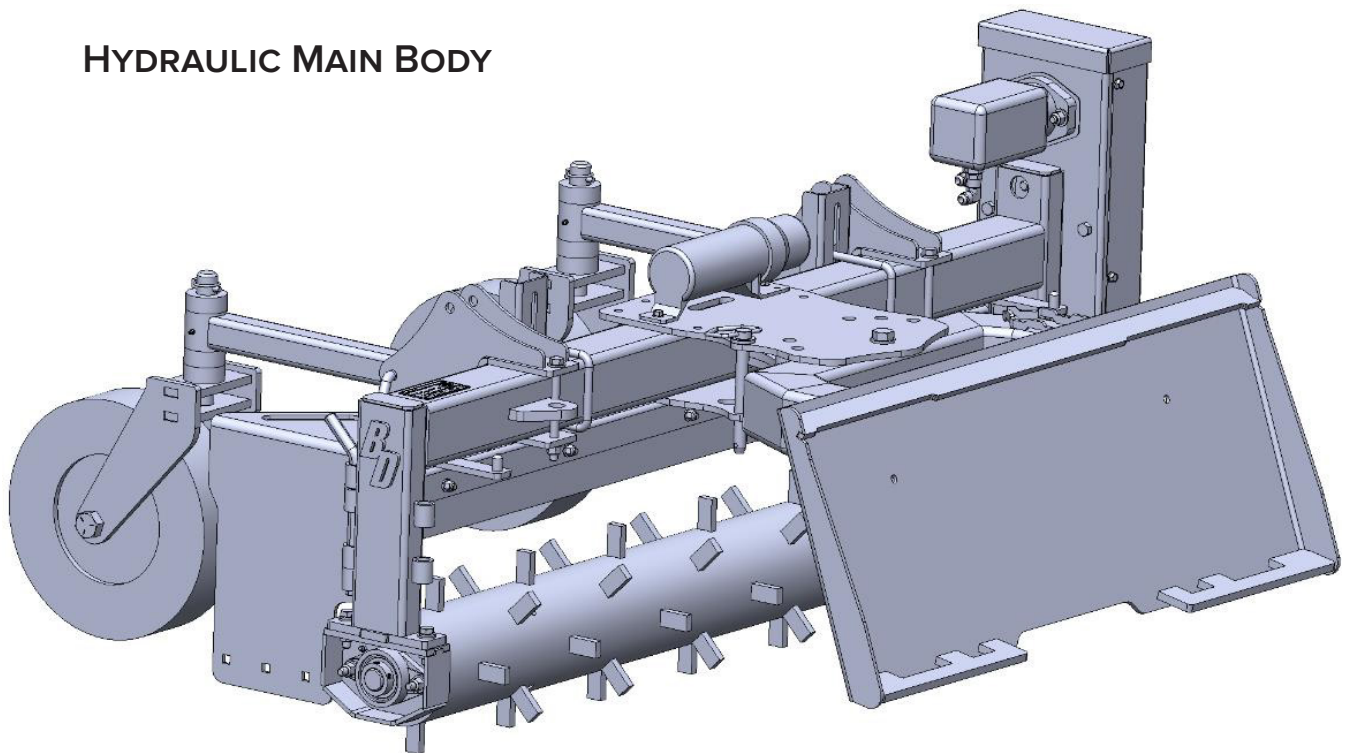
PROBLEM	CAUSE	SOLUTION
Power rake vibrating	Debris build up between rotor and frame	Remove debris
	Faulty rotor bearing	Replace bearing
	Debris build up between rotor and frame	Remove debris
Rotor not turning or stalls	Broken chain	Replace chain
	Sheared key in sprocket or rotor	Replace key
	Bad hydraulic hose connection	Check hydraulic hose connections
	Obstruction between rotor and frame	Remove debris
	Damaged motor shaft or seized motor	Remove debris
	Faulty hydraulic coupler	Replace hydraulic coupler
	Hydraulics not engaged	Engage hydraulics
Low pressure at startup/rotor turning slow	Hydraulic couplers are reversed	Reverse male and female. Check for correct pressure
	Faulty relief valve on power rake or machine	Contact your dealer or Blue Diamond® Attachments Service Department
	Debris build up between rotor and frame	Remove debris
Noise in chain case	Chain and sprockets worn	Replace chain and sprockets
	Broken or stretched chain tensioner spring	Replace spring
	Idler worn	Replace idler
Gauge wheels do not turn	Axle bolt too tight	Loosen axle bolt
	Debris lodged between wheel and saddle assembly	Remove debris
Gauge wheels wobbles	Not enough downward pressure	Increase downward pressure
	Arms not positioned correctly.	Re-position arms. Adjust arm holder/plate downward
Angle will not hold position	Faulty manifold	Contact Blue Diamond® support
	Faulty solenoid	Repair or replace solenoid
Rocks are being left behind	Material bar out of adjustment	Adjust material bar
	Material bar rubber is worn	Replace material bar rubber
Rocks are flowing out from front shields	Over capacity	Install optional skid plate
		Reduce travel speed
		Reduce engine speed
Side shields allowing material out leaving ridges	Over capacity	Install optional skid plate
Side shields are bending	Over capacity	Install optional skid plate
Material bar keeps going out of adjustment	Slider plate is bent	Replace slider plate

6. Parts

6.1 Model Options

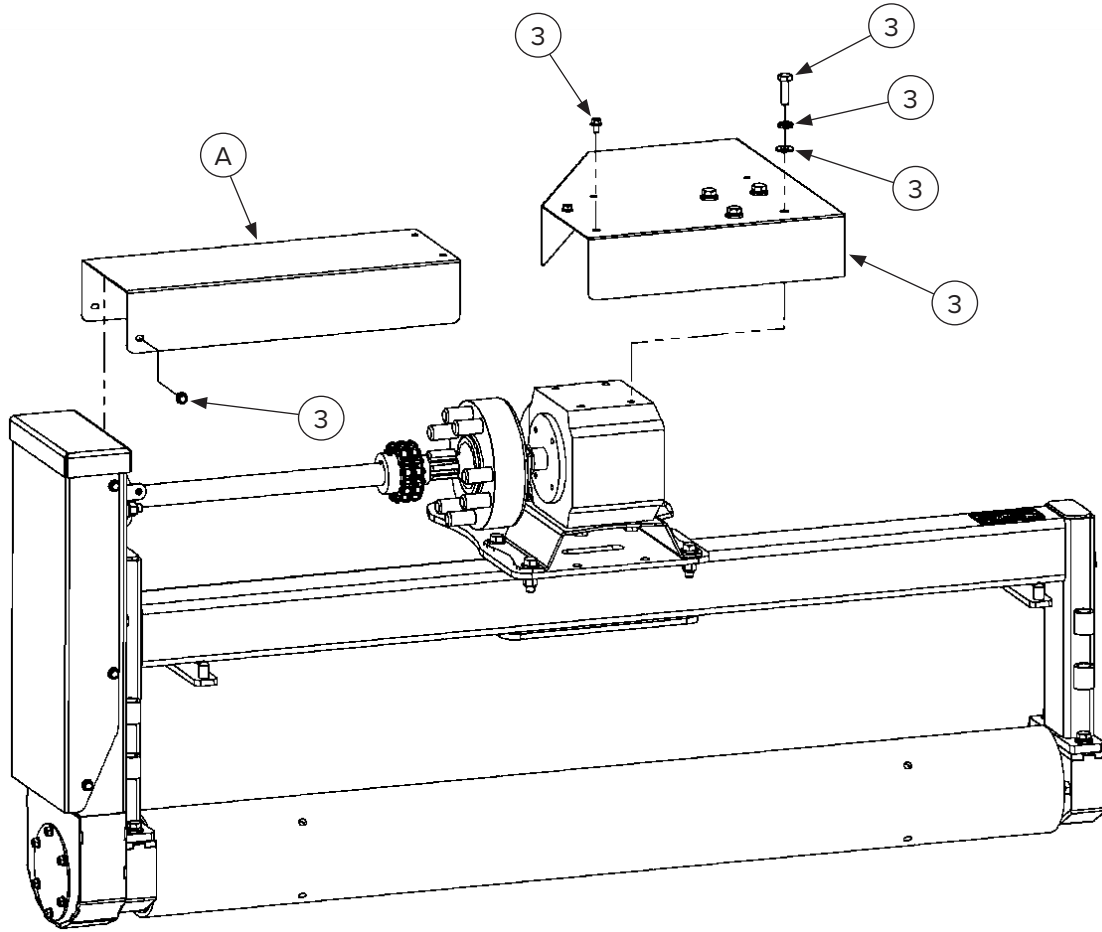


HYDRAULIC MAIN BODY



6. Parts

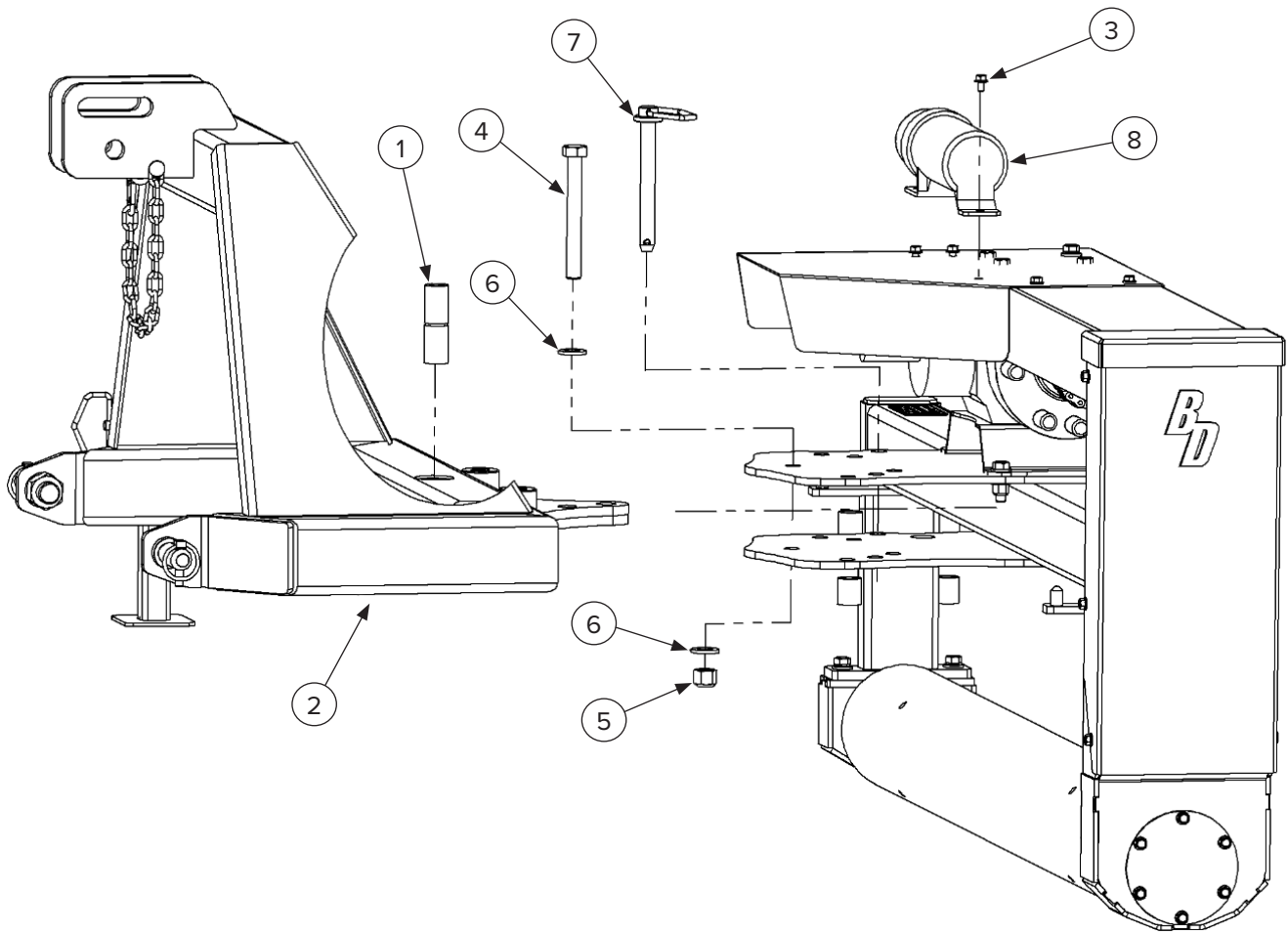
6.2 PTO Guards



ITEM	PART NUMBER	DESCRIPTION	QTY
A	532402	4' PTO Chain Case	1
	532103	5' PTO Chain Case	1
	532000	6' PTO Chain Case	1
1	532003	Reduction Gear Box	1
2	232222	Bolt, 5/16" - 18 X 1/2" Anti Vibe	5
3	532004	Bolt M12-1.75 X 40mm HHCS Gr8	4
4	232234	Washer, 1/2" x 1.062" SAE Gr8	4
5	232049	Washer, 1/2" Split Lock Med	4

6. Parts

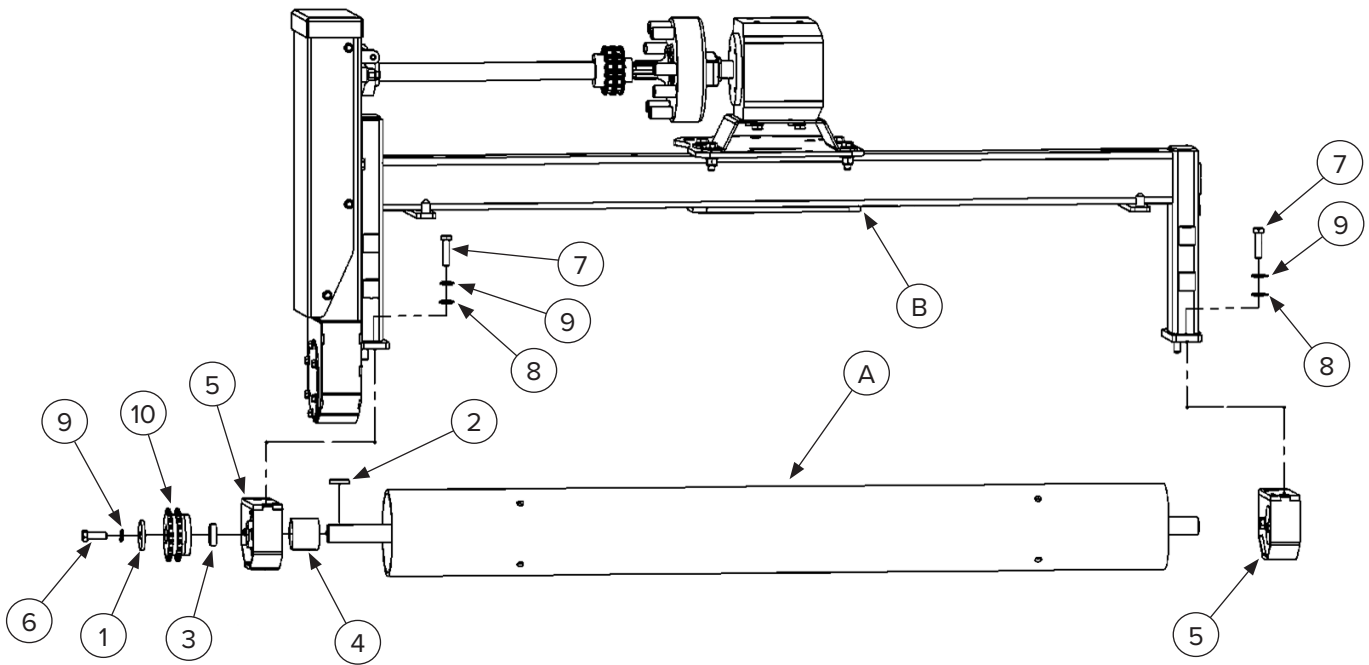
6.3 PTO Mount



ITEM	PART NUMBER	DESCRIPTION	QTY
1	232220	Pivot Bushing, 3/4"	1
2	532104	Mount, 3 Point Cat 1	1
3	232222	Bolt, 5/16-18 x 1/2 Anti Vibe	3
4	232223	Bolt, 3/4" - 10 x 6-1/2" HHCS Gr8	1
5	232224	Nut, 3/4" - 10 Nyloc Gr8	1
6	232225	Washer 3/4" x 1.469" SAE Gr8	2
7	232226	Pin, Drawbar 3/4" x 6-1/4"	1
8	216402	Manual Canister	1

6. Parts

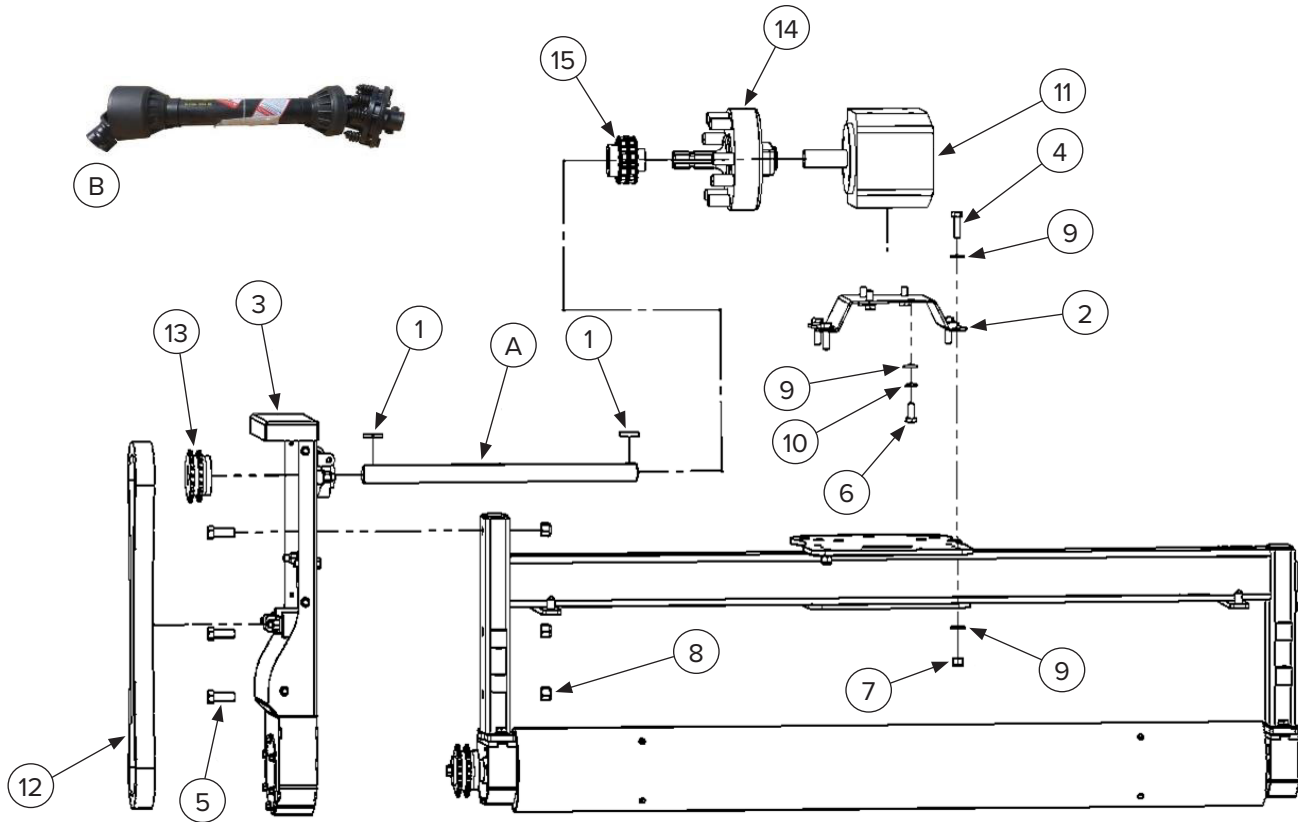
6.4 PTO Lower Driveline



ITEM	PART NUMBER	DESCRIPTION	QTY
A	See Rotor Options Page 37	48"	1
		60"	1
		72"	1
B	232632	Main Frame 48"	1
	232633	Main Frame 60"	1
	232634	Main Frame 72"	1
1	232630	Washer, 0.25" T x 0.530" ID x 2.25" OD	1
2	232028	Key, 5/16" x 1-1/2"	1
3	232033	Spacer, 1-3/8" x 0.438"	1
4	232631	Spacer, 2-1/16" Rotor	1
5	232636	Bearing Guard Assembly	2
6	232638	Bolt, 1/2" - 13 x 1-1/2" HHCS Gr8	1
7	232265	Bolt, 1/2" - 13 x 2.0 HHCS Gr8	4
8	232234	Washer, 1/2" x 1.062" SAE Gr8	4
9	232049	Washer, 1/2" Split Lock Med	5
10	232639	Sprocket, 50-2 BS19T 1-3/8" Bore	1

6. Parts

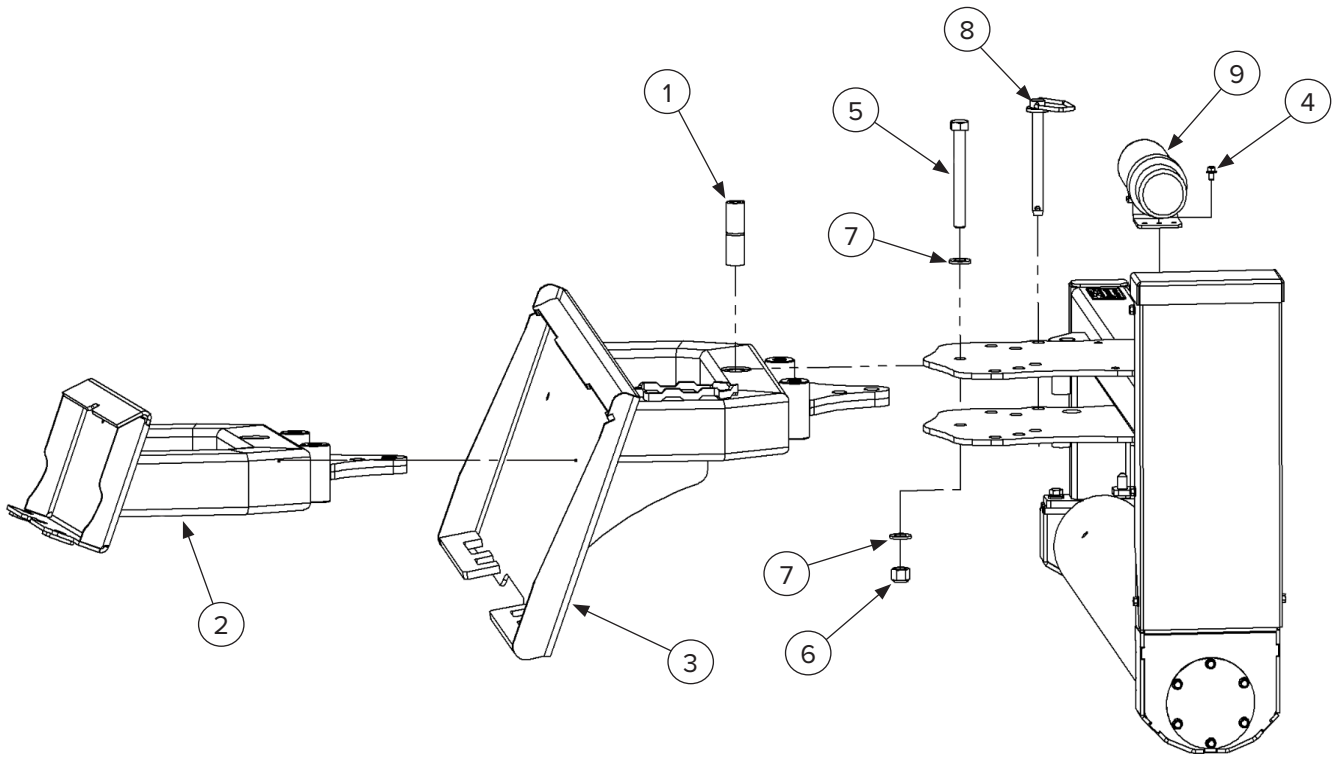
6.5 PTO Upper Driveline



ITEM	PART NUMBER	DESCRIPTION	QTY
A	532105	Drive Shaft, 4'	1
	532106	Drive Shaft, 5'	1
	532006	Drive Shaft, 6'	1
B	532109	PTO Shaft	—
1	232028	Key, 5/16" x 1-1/2"	2
2	532107	Riser Plate, Gear Box	1
3	532108	Chain Case, PTO	1
4	232264	Bolt, 1/2" - 13 x 1-3/4" HHCS Gr8	4
5	232232	Bolt, 5/8" - 11 x 1-3/4" HHCS Gr8	3
6	532012	Bolt, M12 - 1.75 x 30mm HHCS Gr8	4
7	232233	Nut, 1/2" - 13 Nyloc Gr8	4
8	232294	Nut, 5/8" - 11 Nyloc Gr8	3
9	232234	Washer, 1/2" x 1.062" SAE Gr8	12
10	232049	Washer, 1/2" Split Lock Med	4
11	532013	Gearbox, Right Angle 1:1.92	1
12	232019	Chain, No 50 DBL 93 Pitch + CL	1
13	232639	Sprocket, 50-2 BS19T 1-3/8" Bore	1
14	532014	Friction Clutch	1
15	232014	Chain Coupler, 50 Series	1

6. Parts

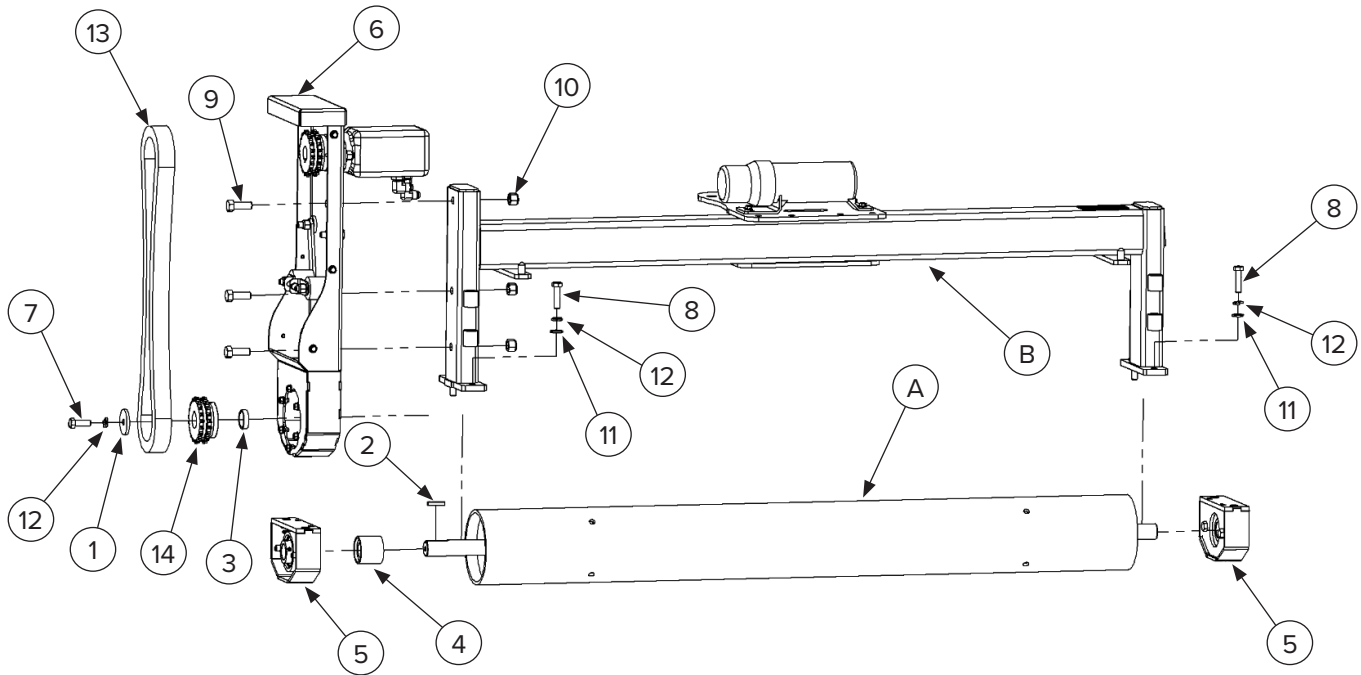
6.6 Hydraulic Mount



ITEM	PART NUMBER	DESCRIPTION	QTY
1	232220	Pivot Bushing, 3/4"	1
2	132403	Mount Assembly, Skid Steer Mini	1
3	132404	Mount Assembly, Skid Steer Standard	1
4	232222	Bolt, 5/16-18 x 1/2 Anti Vibe	2
5	232223	Bolt, 3/4" - 10 x 6-1/2" HHCS Gr8	1
6	232224	Nut, 3/4" - 10 Nyloc Gr8	1
7	232225	Washer, 3/4" x 1.469" SAE Gr8	2
8	232226	Pin, Drawbar 3/4" x 6-1/4"	1
9	216402	Manual Canister	1

6. Parts

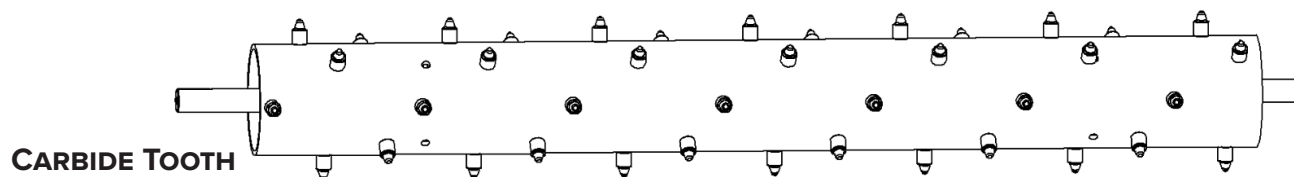
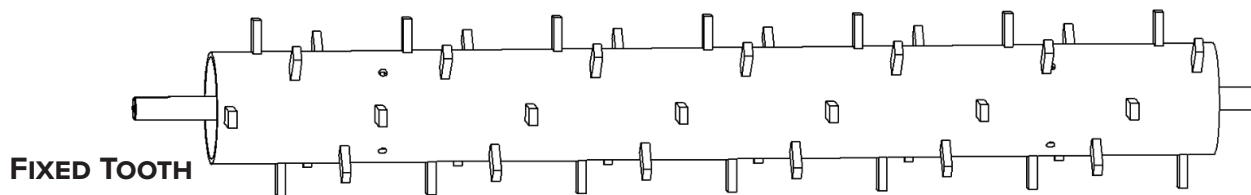
6.7 Hydraulic Drive Line



ITEM	PART NUMBER	DESCRIPTION	QTY
A	See Rotor Options Page 37	48"	1
		60"	1
		72"	1
B	232632	Main Frame 48"	1
	232633	Main Frame 60"	1
	232634	Main Frame 72"	1
1	232630	Washer, 0.25" T x 0.530" ID x 2.25" OD	1
2	232028	Key, 5/16" x 1-1/2"	1
3	232033	Spacer, 1-3/8" x 0.438"	1
4	232631	Spacer, 2-1/16" Rotor	1
5	232636	Bearing Guard Assembly	2
6	232637	Chain Case Hydraulic	1
7	232638	Bolt, 1/2" - 13 x 1-1/2" HHCS Gr8	1
8	232265	Bolt, 1/2" - 13 x 2.0 HHCS Gr8	4
9	232232	Bolt, 5/8" - 11 x 1-3/4" HHCS Gr8	3
10	232294	Nut, 5/8" - 11 Nyloc Gr8	3
11	232234	Washer, 1/2" x 1.062" SAE Gr8	4
12	232049	Washer, 1/2" Split Lock Med	5
13	232019	Chain, No 50 DBL 93 Pitch + CL	1
14	232639	Sprocket, 50-2 BS19T 1-3/8" Bore	1

6. Parts

6.8 Rotor Options

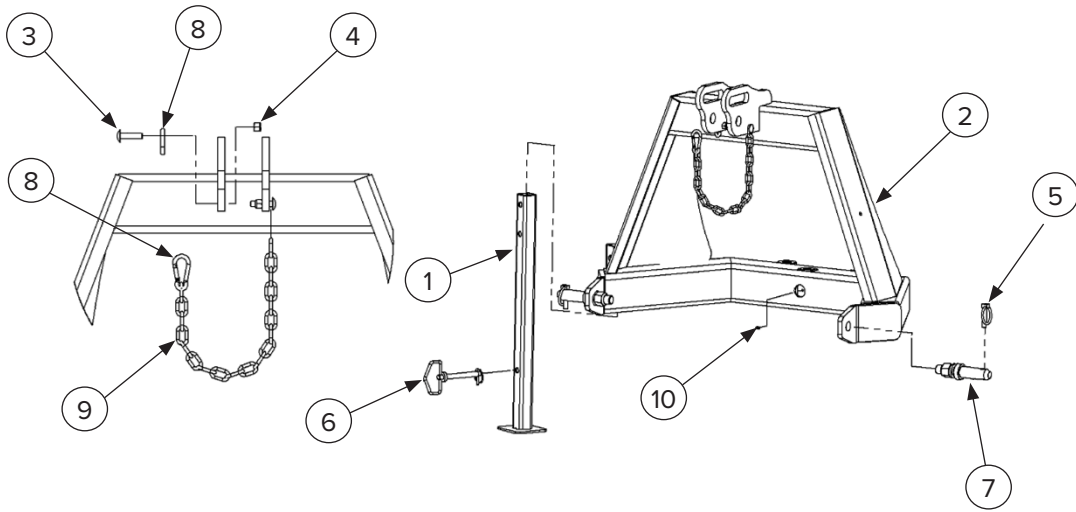


MODEL	PART NUMBER	DESCRIPTION	TOOTH QUANTITY
48"	232640	Fixed Resistant Tooth Drum	42
	232641	Carbide Tooth Drum	
60"	232642	Fixed Resistant Tooth Drum	53
	232643	Carbide Tooth Drum	
72"	232644	Fixed Resistant Tooth Drum	64
	232645	Carbide Tooth Drum	

PART NUMBER	TOOTH	QTY 48"	QTY 60"	QTY 72"
232111	Hardened Steel	42	53	64
232112	Carbide			

7. Main Sub-Assemblies

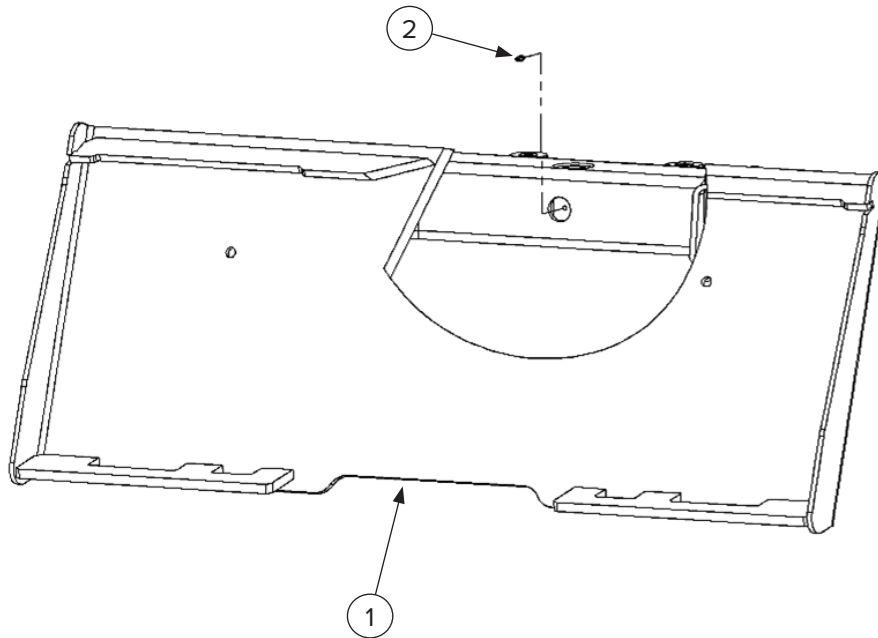
7.1 Mount, 3-Point Cat 1-2



ITEM	PART NUMBER	DESCRIPTION	QTY
1	532028	Stand	1
2	532111	Mount, 3 Point CAT 1-2	1
3	232304	Bolt, 3/8" - 16 x 1-1/2 Carriage	2
4	232279	Nut, 3/8" - 16 Nyloc Gr8	2
5	232296	Pin, Linch 7/16" x 1-5/8"	2
6	532016	Pin, 1/2" Drawbar	1
7	532112	Pin, CAT 1 Lift Arm 7/8" x 7/8"	2
	532017	Pin, CAT 2 Lift Arm 7/8" x 1-1/8"	2
8	532018	Spring Snap, 1/4" x 2-3/8"	1
9	532019	Chain, 3/16" Grade 30, 20 Links Plus 1 Single Link	1
10	232669	Grease Fitting 1/4" - 28 Straight	1

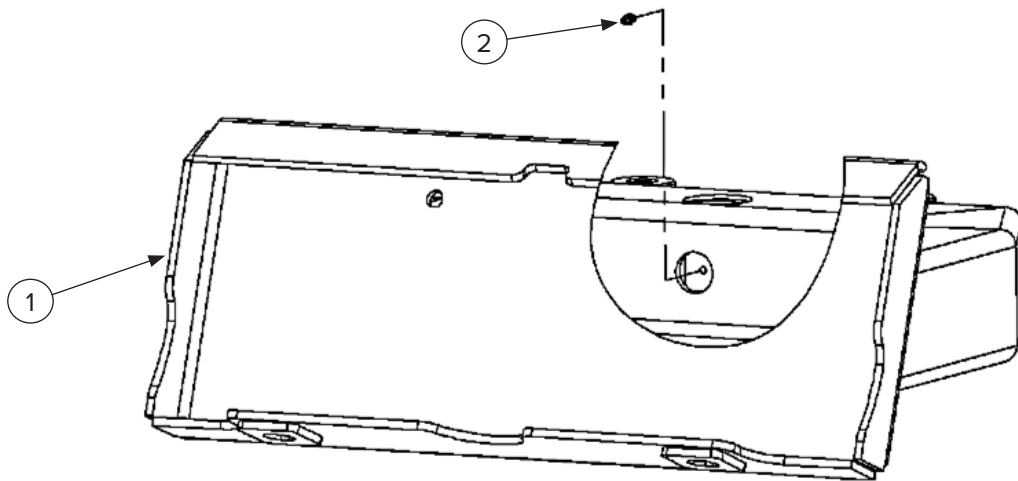
7. Main Sub-Assemblies

7.2 Skid Steer Mount



ITEM	PART NUMBER	DESCRIPTION	QTY
1	132404	Mount, Skid Steer Standard	1
2	232669	Grease Fitting, 1/4" - 28 Straight	1

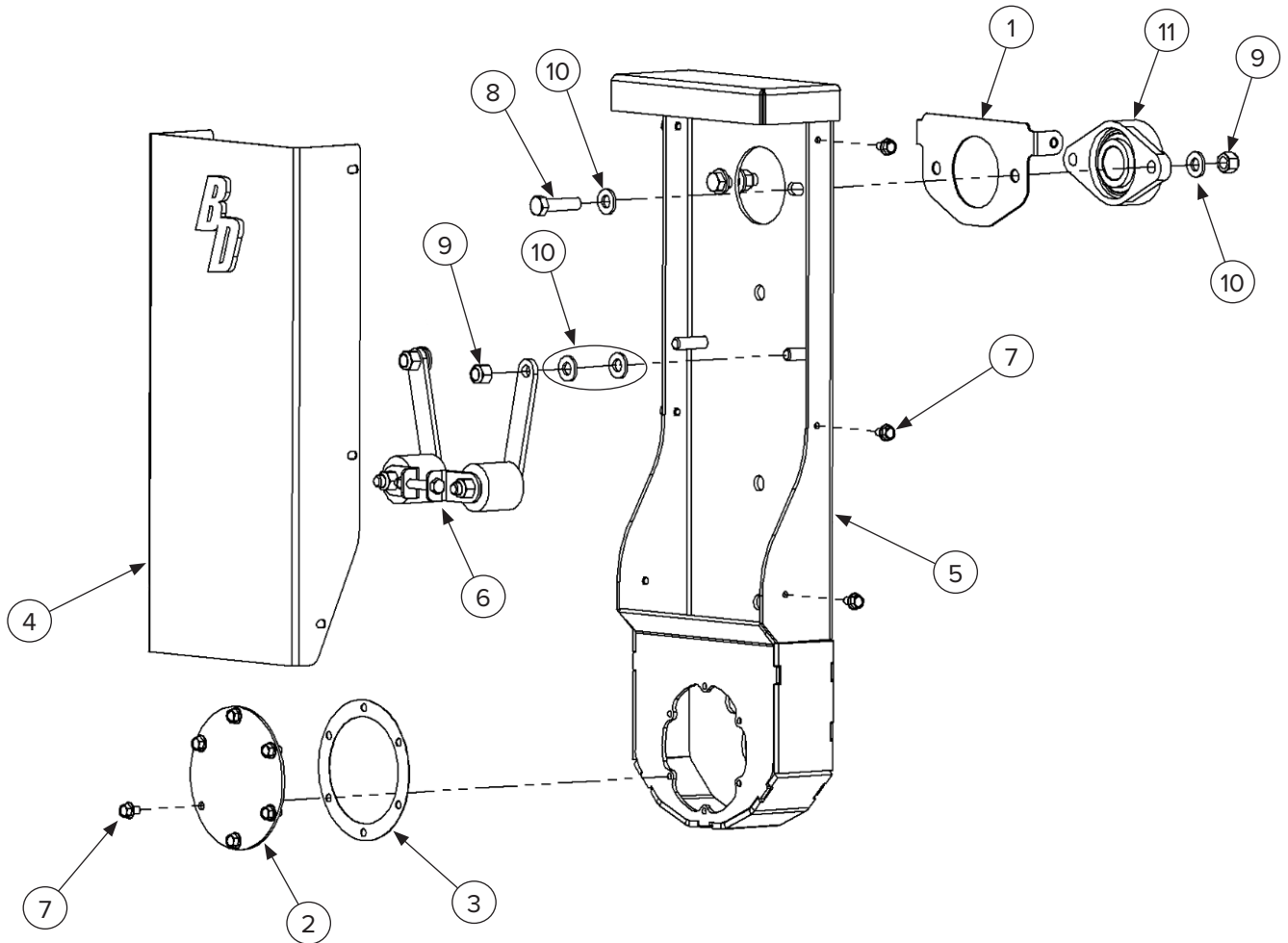
7.3 Skid Steer Mini Mount



ITEM	PART NUMBER	DESCRIPTION	QTY
1	132403	Mount, Skid Steer Mini	1
2	232669	Grease Fitting, 1/4" - 28 Straight	1

7. Main Sub-Assemblies

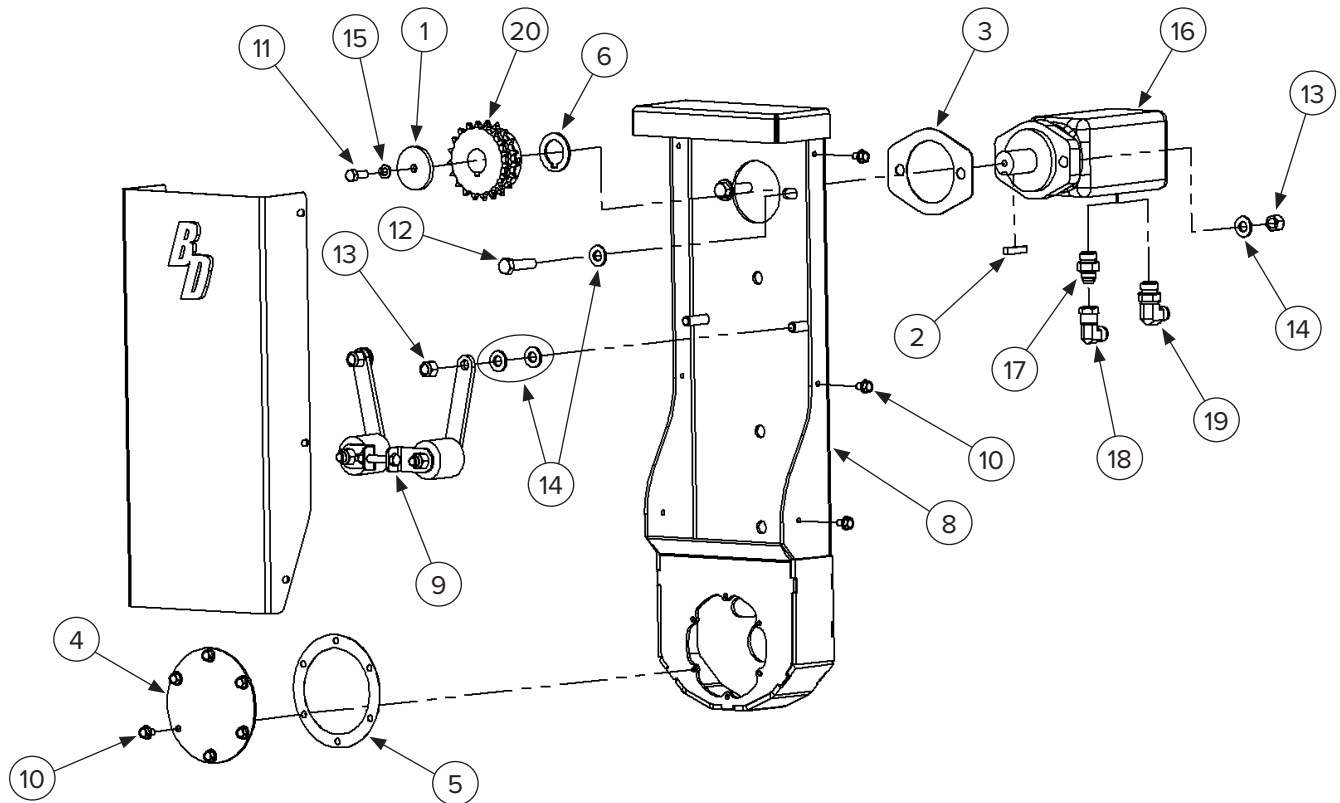
7.4 Chain Case PTO



ITEM	PART NUMBER	DESCRIPTION	QTY
1	532113	Bracket, PTO Guard	1
2	232647	Cover, Chain Case	1
3	232648	Gasket, Chain Case Cover	1
4	232650	Cover, Chain Case	1
5	232651	Chain Case Body	1
6	232007	Chain Tensioner Assembly	1
7	232222	Bolt, 5/16" - 18 x 1/2" Anti Vibe	12
8	232265	Bolt, 1/2" - 13 x 2.0 HHCS Gr8	2
9	232233	Nut, 1/2" - 13 Nyloc Gr8	4
10	232234	Washer, 1/2" x 1.062" SAE Gr8	4
11	232658	Bearing, 1-3/8" 2 Bolt Flange	1

7. Main Sub-Assemblies

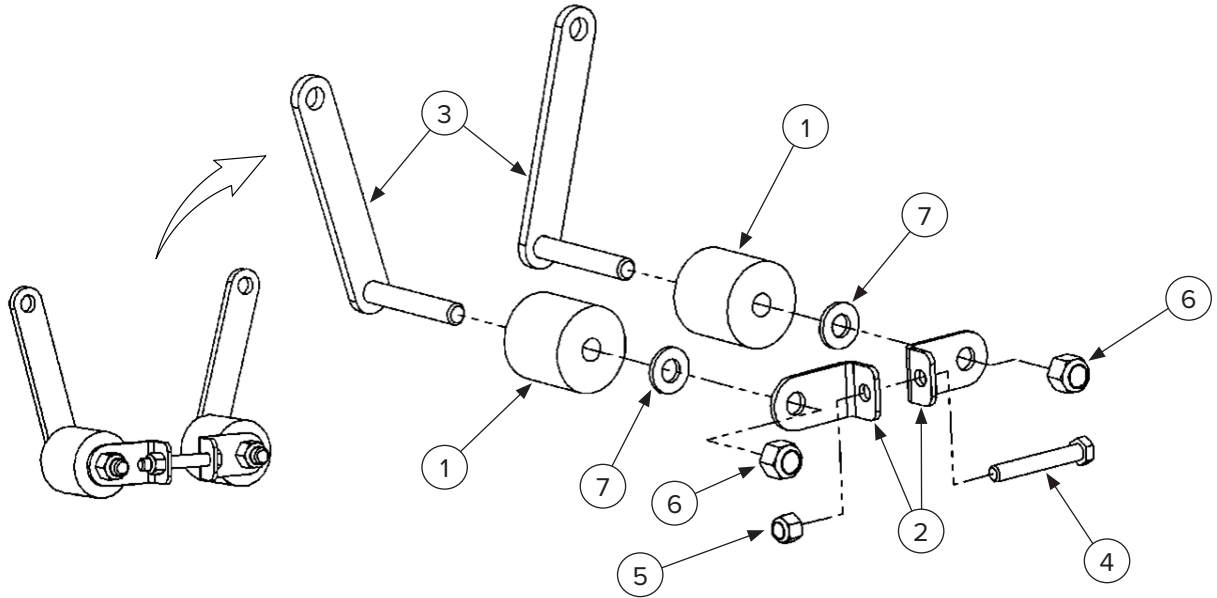
7.5 Chain Case Hydraulic



ITEM	PART NUMBER	DESCRIPTION	QTY
1	232250	Washer, 0.25" T x 0.406" ID X 2.25" OD	1
2	232028	Key, 5/16" x 1-1/2"	1
3	232646	Plate, Hydraulic Motor	1
4	232647	Cover, Chain Case	1
5	232648	Gasket, Chain Case Cover	1
6	232649	Spacer, 1-1/4" x 0.120"	1
7	232650	Cover, Chain Case	1
8	232651	Chain Case Body	1
9	232007	Chain Tensioner Assembly	1
10	232222	Bolt, 5/16" - 18 x 1/2" Anti Vibe	12
11	232263	Bolt, 3/8" - 16 x 1" HHCS Gr8	1
12	232265	Bolt, 1/2" - 13 x 2.0" HHCS Gr8	2
13	232233	Nut, 1/2" - 13 Nyloc Gr8	8
14	232234	Washer, 1/2" x 1.062" SAE Gr8	1
15	232267	Washer, 3/8" Split Lock Med	1
16	232652	Hydraulic Motor, WF104-1027	1
17	232653	Fitting, 8 JICM to 10 ORBM	1
18	232654	Fitting, 8 JICM to 8 JICF 90SW	1
19	232655	Fitting, 8 JICM to 8 ORBM 90 Deg.	1
20	232656	Sprocket, 50-2 BS19T 1-1.14" Bore	1

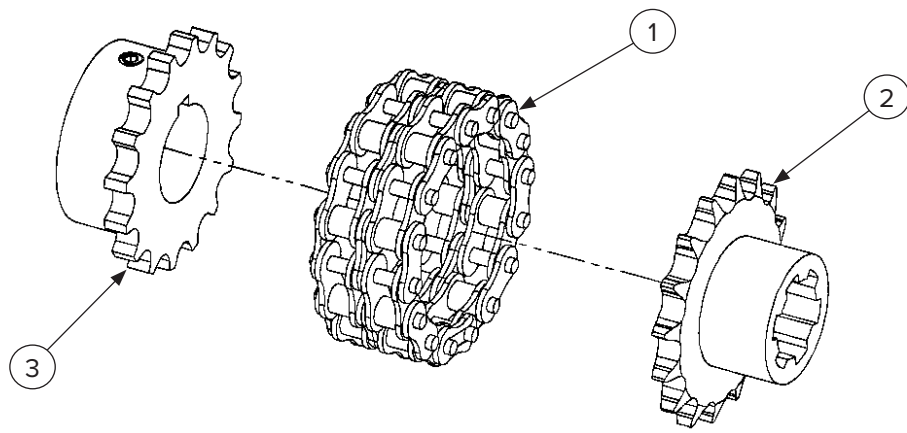
7. Main Sub-Assemblies

7.6 Chain Tensioner



ITEM	PART NUMBER	DESCRIPTION	QTY
1	232275	Roller, Chain Tensioner	2
2	232276	Bracket, Tensioner	2
3	232277	Arm Weldment, Chain Tensioner	2
4	232278	Bolt, 3/8" - 16 x 2-1/2" Gr8	1
5	232279	Nut, 3/8" - 16 Nyloc Gr8	1
6	232233	Nut, 1/2" - 13 Nyloc Gr8	2
7	232234	Washer, 1/2" x 1.062" SAE Gr8	2

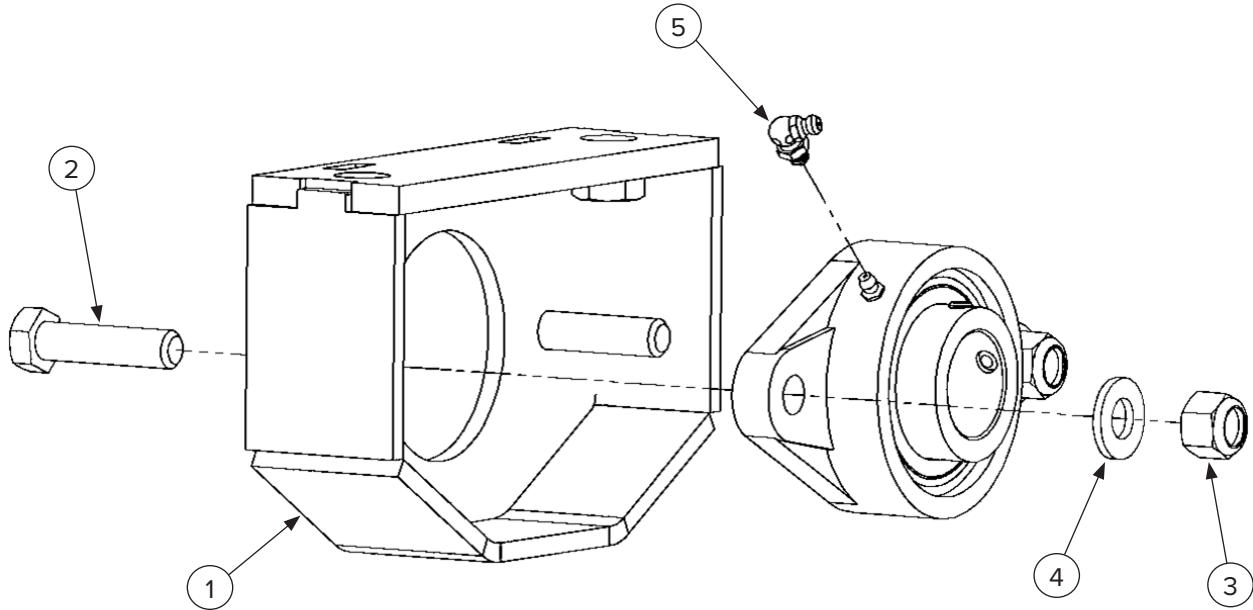
7.7 Chain Coupler, 50 Series



ITEM	PART NUMBER	DESCRIPTION	QTY
1	232280	Chain, No 50-2 15P + CL	1
2	232281	Sprocket, 50A16 w/6 Spline Weld Hub	1
3	232282	Sprocket, 50B16 1-3/8" B Keyway SS	1

7. Main Sub-Assemblies

7.8 Bearing Housing 2 Bolt



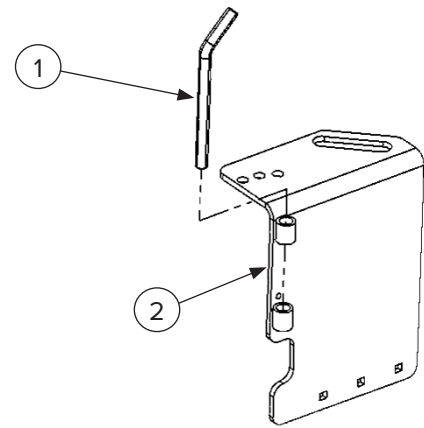
ITEM	PART NUMBER	DESCRIPTION	QTY
1	232657	Bearing Guard	1
2	232265	Bolt, 1/2" - 13 x 2.0" HHCS Gr8	2
3	232233	Nut 1/2" - 13 Nyloc Gr8	2
4	232234	Washer, 1/2" x 1.062" SAE Gr8	2
5	232284	Grease Fitting, 1/4" - 28 90 Deg	1
6	232658	Bearing, 1-3/8" 2 Bolt Flange	1

8. Accessories

8.1 Side Shield Options

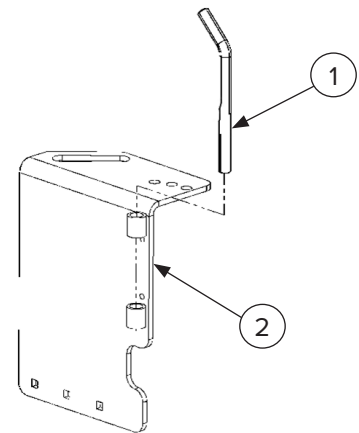
Side Shield Right Assembly

ITEM	PART NUMBER	DESCRIPTION	QTY
1	232106	Pin, Side Shield	1
2	232660	Side Shield, Right	1



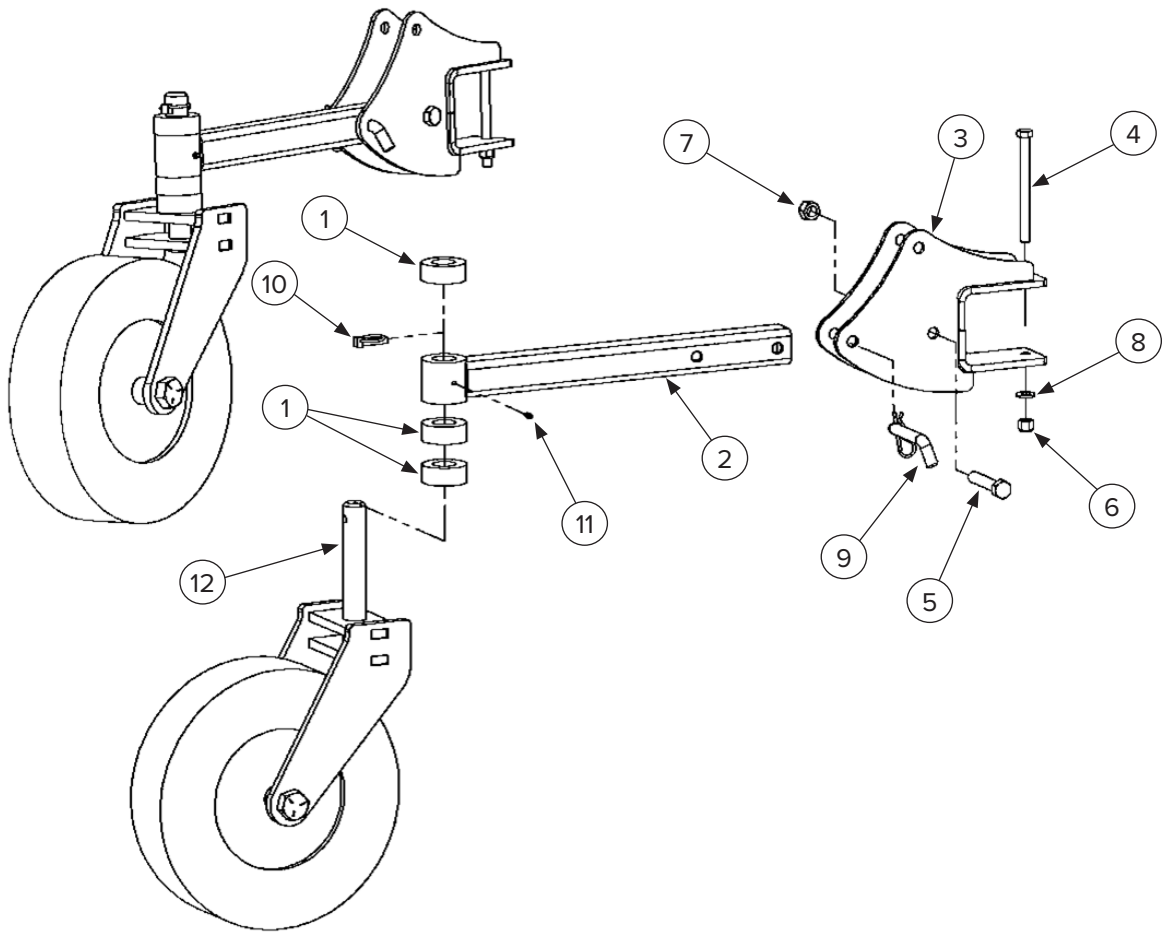
Side Shield Left Assembly

ITEM	PART NUMBER	DESCRIPTION	QTY
1	232659	Pin, Side Shield	1
2	232661	Side Shield, Left	1



8. Accessories

8.2 Gauge Wheel Options with Arm

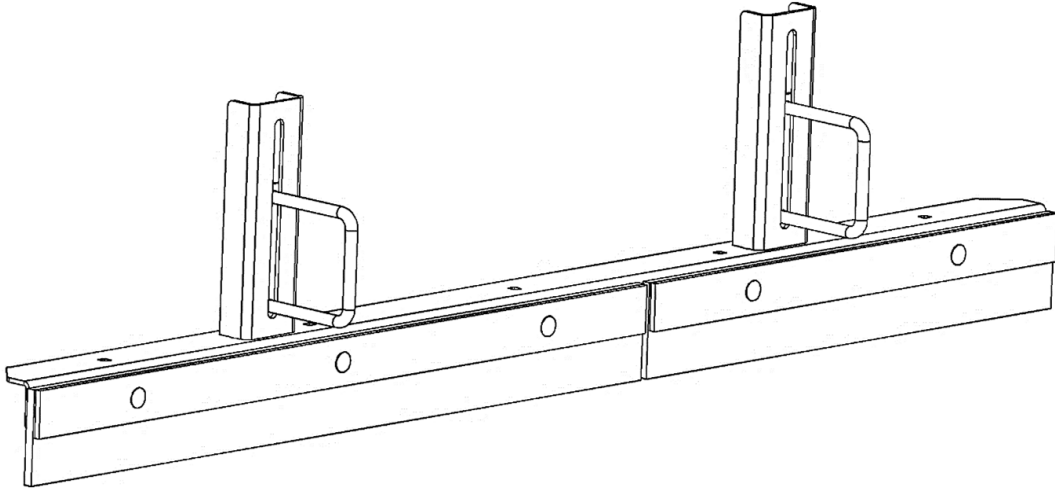


ITEM	PART NUMBER	DESCRIPTION	QTY
1	232662	Spacer, 1-1/4" Gauge Wheel	3
2	232663	Arm, Gauge Wheel	1
3	232664	Mount, Gauge Wheels	1
4	232665	Bolt, 1/2" - 13 x 6.0" HHCS Gr8	1
5	232666	Bolt, 5/8" - 11 x 3-1/2" HHCS Gr8	1
6	232233	Nut, 1/2" - 13 Nyloc Gr8	1
7	232294	Nut, 5/8" - 11 Nyloc Gr8	1
8	232234	Washer, 1/2" x 1.062" SAE Gr8	1
9	232667	Pin, Bent Hitch 5/8" x 3.0"	1
10	232668	Pin, Linch 5/16" x 1-1/4"	1
11	232669	Grease Fitting 1/4" - 28 Straight	1
12	232670	4x8 Tailwheel Complete	1

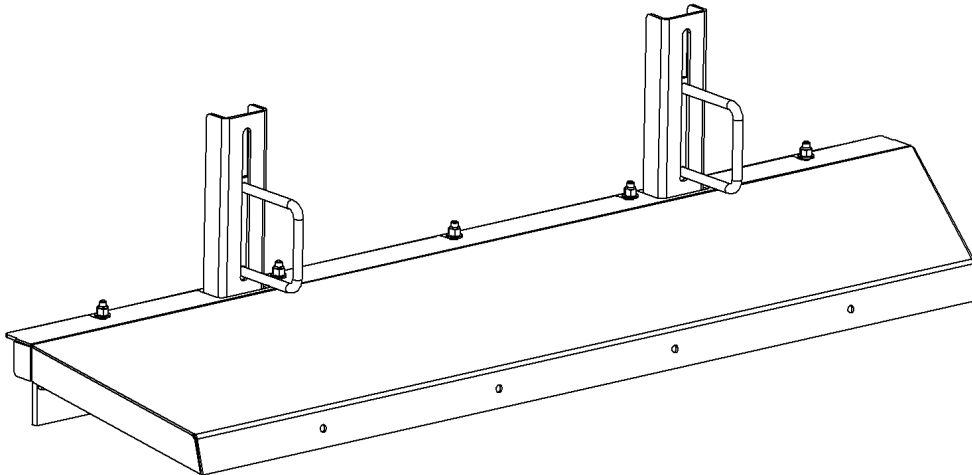
8. Accessories

8.3 Material Bar Options

Material Bar

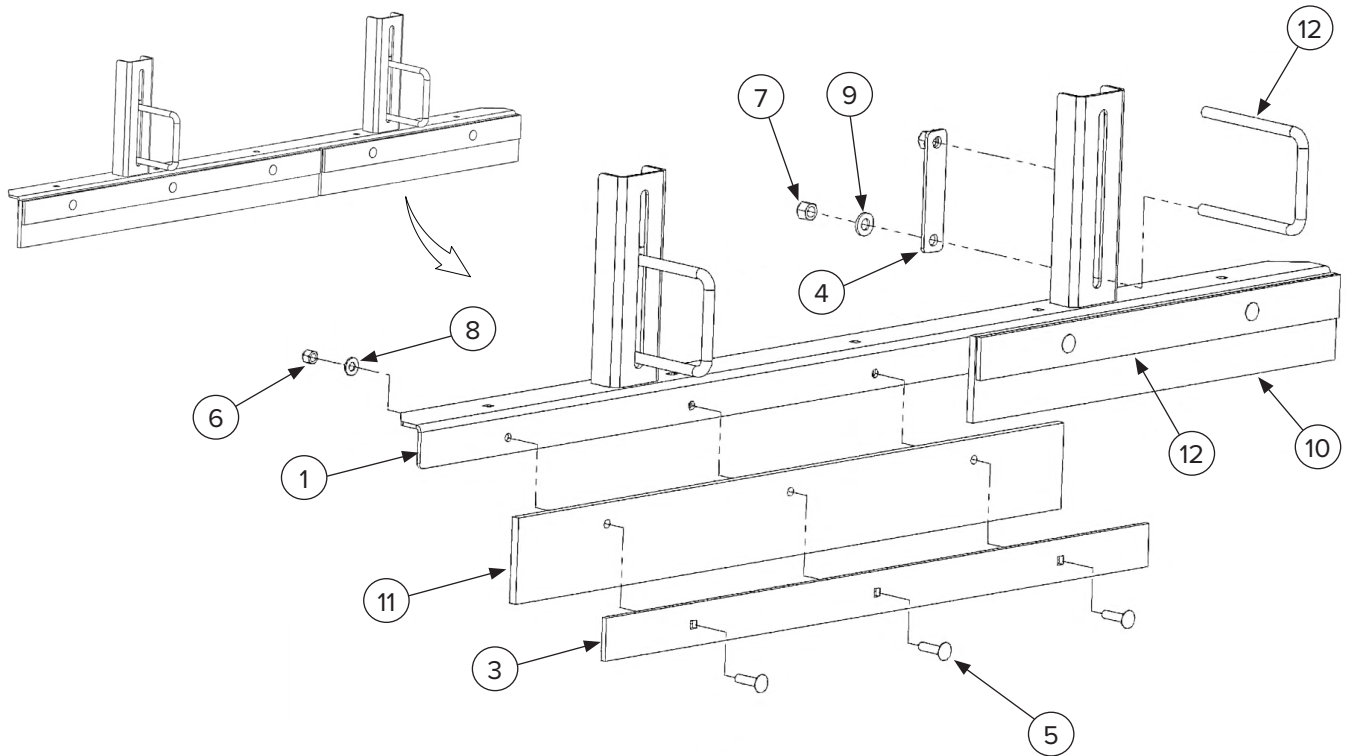


Material Bar with Shield



8. Accessories

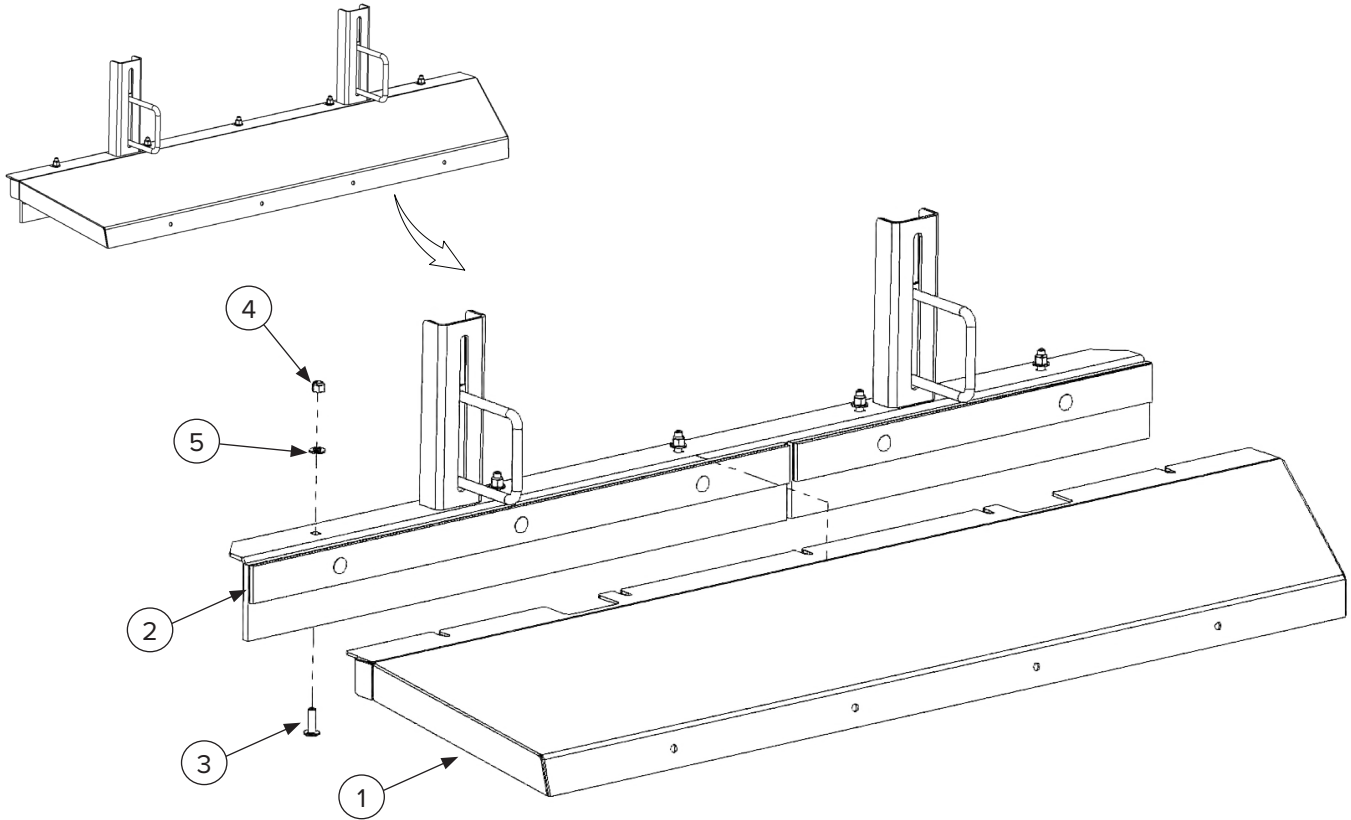
Material Bar Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY 4'	QTY 5'	QTY 6'
—	232675	Complete Assembly 4' (all items shown above)	1	—	—
—	232676	Complete Assembly 5' (all items shown above)	—	1	—
—	232256	Complete Assembly 6' (all items shown above)	—	—	1
1	232672	Bar 4' Material Flat Bar	1	—	—
	232671	Bar 5' Material Flat Bar	—	1	—
	232301	Bar 6' Material Flat Bar	—	—	1
2	232297	Bar, 24" Clamp	2	1	—
3	232298	Bar, 36" Clamp	—	1	2
4	232299	Plate, U-Bolt	2	2	2
5	232304	Bolt, 3/8" - 16 x 1-1/2" Carriage	4	5	6
6	232279	Nut, 3/8" - 16 Nyloc Gr8	4	5	6
7	232233	Nut, 1/2" - 13 Nyloc Gr8	4	4	4
8	232314	Washer, 3/8" SAE Gr8	4	5	6
9	232234	Washer, 1/2" x 1.062" SAE Gr8	4	4	4
10	232306	Flap, 2 Ply 24" Rubber	2	1	—
11	232307	Flap, 2 Ply 36" Rubber	—	1	2
12	232130	U-Bolt 1/2"	2	2	2

8. Accessories

Material Bar and Shield



ITEM	PART NUMBER	DESCRIPTION	QTY 4'	QTY 5'	QTY 6'
1	232673	Shield 4' Rotor	1	—	—
	232674	Shield 5" Rotor	—	1	—
	232309	Shield 6' Rotor	—	—	1
2	232675	4' Material Flat Bar	1	—	—
	232676	5' Material Flat Bar	—	1	—
	232256	6' Material Flat Bar	—	—	1
3	232313	Bolt, 3/8" - 16 x 1-1/4" Carriage	4	5	7
4	232279	Nut 3/8" - 16 Nyloc Gr8	4	5	7
5	232314	Washer 3/8" SAE	4	5	7

9. Specifications

9.1 Torque Specifications

Standard Hardware and Lock Nuts

BOLT TYPE	SAE GRADE 5		SAE GRADE 8		LOCK NUTS			
	Nominal Size	Plated or Unplated Silver	Plated W/ ZnCr Gold	Plated or Unplated Silver	Plated W/ ZnCr Gold	Plated or Unplated Silver	Plated W/ ZnCr Gold	W/ Grade 5 Bolt
1/4	55 in / lb (6.2 N•m)	72 in / lb (8.1 N•m)	86 in / lb (9.7 N•m)	112 in / lb (12.6 N•m)	121 in / lb (13.6 N•m)	157 in / lb (17.7 N•m)	61 in / lb (6.9 N•m)	86 in / lb (9.8 N•m)
5/16	115 in / lb (13 N•m)	149 in / lb (17 N•m)	178 in / lb (20 N•m)	229 in / lb (26 N•m)	250 in / lb (28 N•m)	325 in / lb (37 N•m)	125 in / lb (14 N•m)	176 in / lb (20 N•m)
3/8	17 ft / lb (23 N•m)	22 ft / lb (30 N•m)	26 ft / lb (35 N•m)	34 ft / lb (46 N•m)	37 ft / lb (50 N•m)	48 ft / lb (65 N•m)	19 ft / lb (26 N•m)	26 ft / lb (35 N•m)
7/16	27 ft / lb (37 N•m)	35 ft / lb (47 N•m)	42 ft / lb (57 N•m)	54 ft / lb (73 N•m)	59 ft / lb (80 N•m)	77 ft / lb (104 N•m)	30 ft / lb (41 N•m)	42 ft / lb (57 N•m)
1/2	42 ft / lb (57 N•m)	54 ft / lb (73 N•m)	64 ft / lb (87 N•m)	83 ft / lb (113 N•m)	91 ft / lb (123 N•m)	117 ft / lb (159 N•m)	45 ft / lb (61 N•m)	64 ft / lb (88 N•m)
9/16	60 ft / lb (81 N•m)	77 ft / lb (104 N•m)	92 ft / lb (125 N•m)	120 ft / lb (163 N•m)	130 ft / lb (176 N•m)	169 ft / lb (229 N•m)	65 ft / lb (88 N•m)	92 ft / lb (125 N•m)
5/8	83 ft / lb (112 N•m)	107 ft / lb (145 N•m)	128 ft / lb (174 N•m)	165 ft / lb (224 N•m)	180 ft / lb (244 N•m)	233 ft / lb (316 N•m)	90 ft / lb (122 N•m)	127 ft / lb (172 N•m)
3/4	146 ft / lb (198 N•m)	189 ft / lb (256 N•m)	226 ft / lb (306 N•m)	293 ft / lb (397 N•m)	319 ft / lb (432 N•m)	413 ft / lb (560 N•m)	160 ft / lb (217 N•m)	226 ft / lb (306 N•m)
7/8	142 ft / lb (193 N•m)	183 ft / lb (248 N•m)	365 ft / lb (495 N•m)	473 ft / lb (641 N•m)	515 ft / lb (698 N•m)	667 ft / lb (904 N•m)	258 ft / lb (350 N•m)	364 ft / lb (494 N•m)
1	213 ft / lb (289 N•m)	275 ft / lb (373 N•m)	547 ft / lb (742 N•m)	708 ft / lb (960 N•m)	773 ft / lb (1048 N•m)	1000 ft / lb (1356 N•m)	386 ft / lb (523 N•m)	545 ft / lb (739 N•m)

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MANUFACTURER'S LIMITED WARRANTY

BLUE DIAMOND® ATTACHMENTS, a manufacturer of quality attachments, warrants new BLUE DIAMOND® ATTACHMENTS products and/or attachments at the time of delivery to the original purchaser, to be free from defects in material and workmanship when properly set up and operated in accordance with the recommendations set forth by BLUE DIAMOND® ATTACHMENTS, LLC.

BLUE DIAMOND® ATTACHMENTS liability for any defect with respect to accepted goods shall be limited to repairing the goods at a BLUE DIAMOND® ATTACHMENTS designated location or at an authorized dealer location, or replacing them, as BLUE DIAMOND® ATTACHMENTS shall elect. The above shall be in accordance with BLUE DIAMOND® ATTACHMENTS warranty adjustment policies. BLUE DIAMOND® ATTACHMENTS obligation shall terminate twelve (12) months for the Heavy Duty Series 2 Power Rake after the delivery of the goods to original purchaser.

This warrant shall not apply to any machine or attachment which shall have been repaired or altered outside the BLUE DIAMOND® ATTACHMENTS factory or authorized BLUE DIAMOND® ATTACHMENTS dealership or in any way so as in BLUE DIAMOND® ATTACHMENTS judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident beyond the company recommended machine rated capacity.

WARRANTY CLAIM

To submit a warranty claim, a return authorization from BLUE DIAMOND® ATTACHMENTS must be obtained. The failed part may then be returned. Tampering with the failed part may void the warranty. This warranty does not include freight or delivery charges incurred when returning machinery for servicing. Dealer mileage, service calls, and pickup/delivery charges are the customers' responsibility.

EXCLUSIONS OF WARRANTY

Except as otherwise expressly stated herein, BLUE DIAMOND® ATTACHMENTS makes no representation or warranty of any kind, expressed or implied, AND MAKES NO WARRANTY OF MERCHANTABILITY IN RESPECT TO ITS MACHINERY AND/OR ATTACHMENTS ARE FIT FOR ANY PARTICULAR PURPOSE. BLUE DIAMOND® ATTACHMENTS shall not be liable for incidental or consequential damages for any breach or warranty, including but not limited to inconvenience, rental of replacement equipment, loss of profits or other commercial loss. Upon purchase, the buyer assumes all liability for all personal injury and property resulting from the handling, possession, or use of the goods by the buyer.

No agent, employee, or representative of BLUE DIAMOND® ATTACHMENTS has any authority to bind BLUE DIAMOND® ATTACHMENTS to any affirmation, representation, or warranty concerning its machinery and/or attachments except as specifically set forth herein.

This warranty policy supersedes any previous documents.

NOTE: Blue Diamond® Attachments is a trademark of BLUE DIAMOND® ATTACHMENTS



QUALITY | DEPENDABILITY | INTEGRITY

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