

Rock Rake

Operation and Maintenance Manual



133010



888-376-7027 | BlueDiamondAttachments.com

Register your
WARRANTY
within 30 days
of purchase



BD-092

Introduction: Owner Information

Thank you for your decision to purchase a Blue Diamond® Rock Rake. 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 as shown above.

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

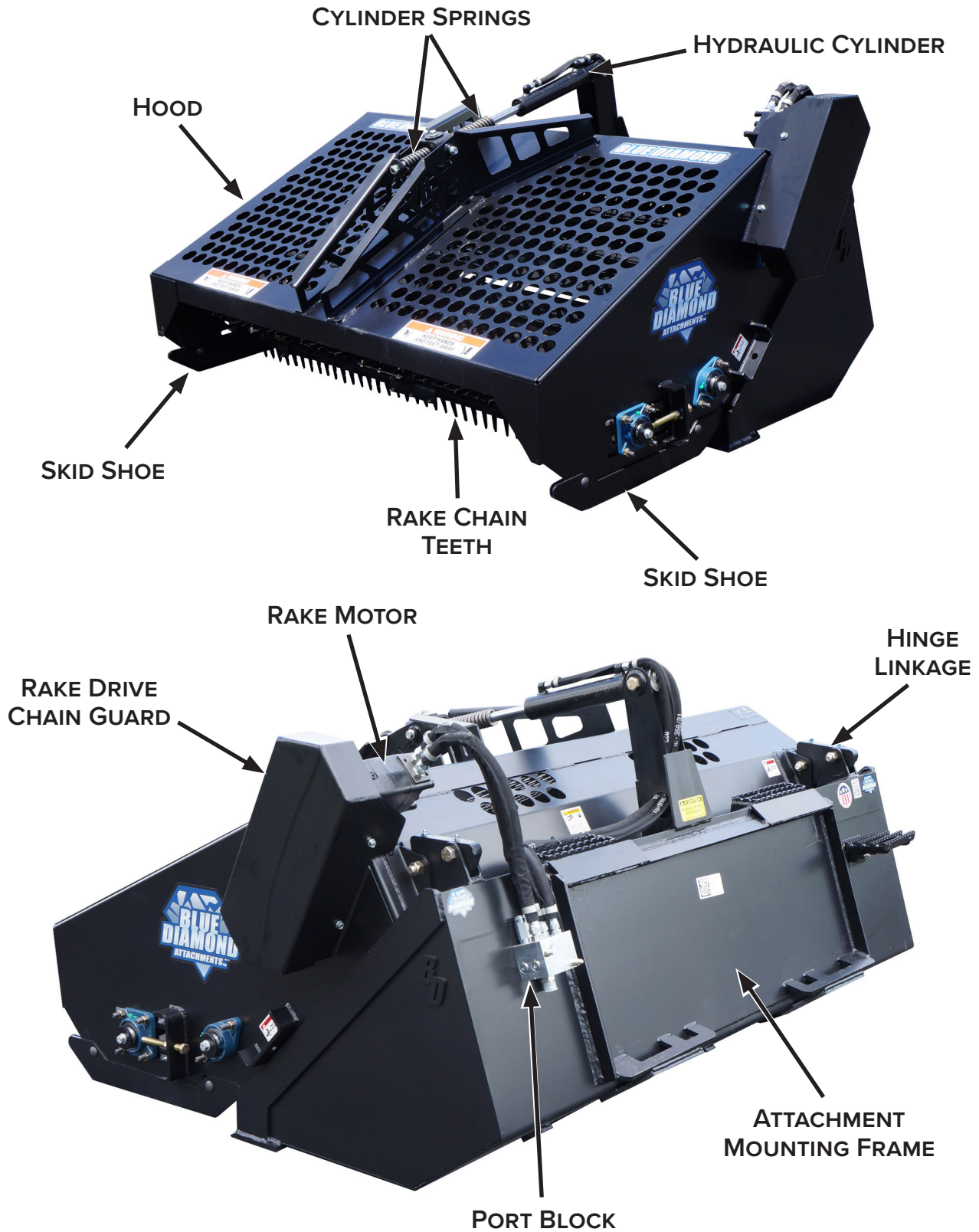
NOTE: The directions left, right, front, and rear, as mentioned throughout this manual, are as viewed from the operator's position.

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1. Introduction

1.1 Attachment Identification



1. Introduction

1.2 *About this Attachment*

Blue Diamond® recommends that you carefully read and understand this manual before putting the Rock Rake into operation. Bear in mind any safety measures and maintenance procedures described herein, in order to ensure proper and efficient use of the machine.

- The Rock Rake picks up small to medium sized rocks as small as 3/4" as well as most rocks up to 8".
- Rakes and collects surface debris while smoothing and leveling the soil.
- Adjustable skid shoes for setting depths.

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.

NOTE: Notes are used to indicate important information. This information may be repeated in other areas of the manual.

Operating Safety

- Read and follow instructions in this manual and the machine's Operator's Manual before operating.
- The manual must always remain with the machine. In case of loss or damage, request a new copy from your dealer or from Blue Diamond®.
- Strictly follow all rules prescribed by the safety pictograms/decals applied to the machine. Ensure that all safety pictograms/decals are legible. If pictograms/decals are worn, they must be replaced with new ones obtained from Blue Diamond® and placed in the position indicated by this manual.
- Before using the machine, make sure that all safety devices are installed and in good working condition. In case of damaged or missing shields, replace them immediately.
- It is absolutely forbidden to remove or alter safety devices and/or safety precautions
- Pay maximum attention to avoid any accidental contact with rotating parts of the machine.
- If the use of the machine is required at night or in conditions of reduced visibility, use the lighting system of the prime mover and an auxiliary lighting system if required.

2. Safety

2.2 Operators

Qualified Operators

The operator is a person suited to the work and who is physically and psychologically able to withstand the demands connected with operating the equipment for its intended use. The operator must not allow anyone to approach the machine while it is working and must not allow external personnel to operate the machine or attachment.

The operator is to follow the given instructions in this manual and the machine operator's manual in order to obtain maximum performance, minimal fuel consumption, and maximum safety for himself and for others.

The operator is responsible for scrupulously observing all the instructions given in this manual.



DANGER



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.

Operator Safety

- Before starting, and during operation of the attachment, make sure there are no people or animals in the operation area; the machine can project material from the back with risks of serious injury or death.
- During operation, adjustment, maintenance, repairing, or transportation of the machine, the operator must always use appropriate Personal Protective Equipment (PPE) including but not limited to safety glasses, working gloves, dust-mask, safety helmet, and hearing protection.
- Do not operate the attachment or machine while wearing loose fitting clothing that can be entangled or caught in parts of the machine.
- Do not operate the implement when tired, not in good condition, or under the influence of alcohol or drugs.

2. Safety

2.3 Safety Guidelines

Operating Safety

- Read and follow instructions in this manual and the machine's Operator's Manual before operating.
- Under no circumstances should young children be allowed to work with this equipment.
- 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, 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 the NEUTRAL before starting the machine.
- Operate the equipment only from the operator's position.
- 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.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and / or safety and could affect the life of the equipment.
- Do not make any adjustments or repairs on the equipment while the machine is running.
- Keep shields and guards in place. Replace if damaged.
- 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 cutter running at optimum cutting 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.
- Keep bystanders clear of moving parts and the work area. Keep children away.
- Do not exceed 3000 psi (206 bar) operating pressure.
- Use caution on slopes and near banks and ditches to prevent overturn.

2. Safety

2.3 Safety Guidelines 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.

Transporting 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.
- Always yield to oncoming traffic and move to the side of the road so any following traffic may pass.
- Never allow riders on either machine or equipment.
- If transporting the equipment on a truck or trailer, make sure the equipment 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.

Personal Protective Equipment



Proper Work Clothes: To help ensure your safety as a designated operator wear proper work clothes including tight fitting clothes, protective gloves, and shoes.



Hand Protection: To help ensure your safety as a designated operator wear protective gloves.



Protective Shoes: To help ensure your safety as a designated operator wear protective shoes.





Safety Helmet: To help ensure your safety as a designated operator wear a safety helmet.



Safety Helmet and Eye/Ear Protection: To help ensure your safety as a designated operator wear a safety helmet and eye/ear protection.

3. Operation

3.1 Entering and Exiting the Prime Mover

 **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, 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.
- Stop the engine and remove the key.
- Wait for all moving parts to stop.

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.

3.2 Attachment Installation with Skid Steer

Connecting Attachment To The Machine

 **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.

Before connecting to the attachment, inspect the machine's mounting plate. (See the machine's Operator's Manual for inspecting the mounting frame).

Enter the operator's position. See "Entering the Operator's Position" on page 10.

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

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 10.

3. Operation

3.2 Attachment Installation with Skid Steer Cont'd

Connecting Attachment to the Machine Cont'd



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).

NOTE: Check that the attachment is securely fastened to the skid steer.

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



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.

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

Disconnect attachment hydraulic hoses from the machine.

Disconnecting Attachment From the Machine

Relieve auxiliary hydraulic pressure. (See the 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 10.

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 10.

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

3.3 Operating the Attachment

Skid Steer Requirements

Description	REQUIRED
Min-Max Flow	13-23 GPM
Max Pressure	3000 PSI

Clearing Work Area

Remove large branches and stones (6 inches [150 mm] diameter or larger) before raking an area.

NOTE: If the ground is extremely compacted, use an attachment such as a tiller or scarifier to loosen the ground at least 4 inches (102 mm) in depth.



IMPORTANT



- DO NOT operate in a work area that has not been cleared of foreign debris and obstacles.
- Rocks, metal, and other objects can damage the Rock Rake.
- Clearly mark any objects that cannot be removed.

3.4 Recommended Raking Procedure

NOTE: Refer to your machine's Operation & Maintenance Manual for the correct function of the controls.



WARNING



AVOID INJURY OR DEATH

Bystanders must stay at least 9 ft. (3 m) away from the rake when operating.
DO NOT leave the loader seat while the engine is running.

With the operator in the seat, seat belt fastened and seat bar lowered, start the engine.

Tilt the attachment back with the loader tilt cylinder and move the attachment to the starting point.

Tilt the attachment forward until the skid shoes are touching the ground.

Engage the auxiliary hydraulics. (Refer to your machine Operator's Manual for the control functions.)

Lower the attachment to the ground and engage the float. While operating, drive **backwards** at a slow rate.

Control ground penetration by removing the skid shoe bolts and reposition the skid shoes in any of the mounting holes as needed.

Use the tilt control cylinder to tilt the attachment up or down as needed during raking.

NOTE: Soil conditions may require multiple passes.



WARNING



Rake Chain Wrapping

Debris such as rope, wire, plastic etc. may wrap around the rake chain. **STOP IMMEDIATELY** and remove foreign material. Spinning of rake chain and throwing of material may cause harm to operator/bystander!

3.5 Dumping the Attachment

When the material begins to bounce out of the bucket and up against the screen, the bucket is full.

Lift the attachment slightly off the ground, carry the load low, and drive to the dump site.

Move the control to retract the cylinder and open the attachment.

Raise the attachment and tilt it forward until all the debris is removed from the bucket.

Extend the cylinder to close the attachment. Tilt the bucket back until the attachment is level with the ground.

Return to the landscaping site, lower the attachment to the ground, and continue raking.

4. Transporting the Attachment

4.1 Lifting the Attachment

NOTE: Use chains that are in good condition and of adequate size to lift or secure the attachment.

Hook each end of the chain to the rear lifting slots (Item 1) [Figure 1] on the Rock Rake. Use a loader or chain hoist to lift the Rock Rake.

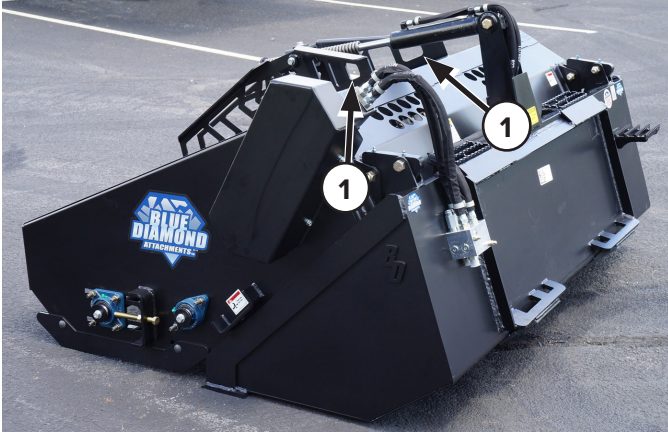


Figure 1

4.2 Chaining the Attachment to the Transport Vehicle

Use a loader or chain hoist to load the Rock Rake onto the transport vehicle.

Route a chain through the eyes on the transport vehicle and hook each end of the chain to the front slots (Item 1) [Figure 2] on the Rock Rake.

Route a chain through the eyes on the transport vehicle and hook each end of the chain to the Rock Rake mounting frame (Item 2) [Figure 2].

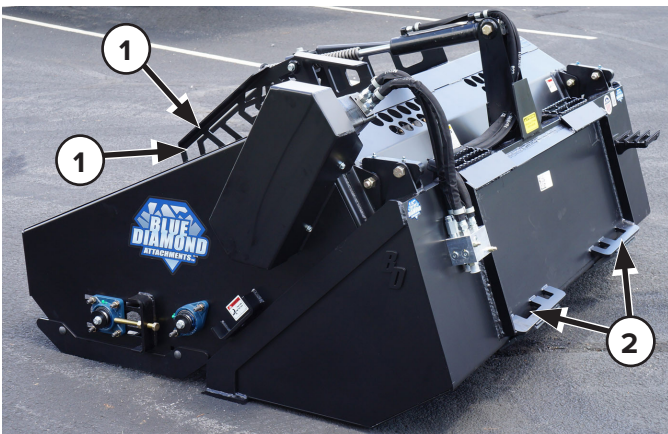


Figure 2

4.3 Loading the Prime Mover/ Attachment onto the Transport Vehicle

NOTE: Refer to your machine Operator's Manual to correctly load and chain the prime mover / attachment onto the transport vehicle.

The rear of the trailer must be properly blocked or supported when loading or unloading the equipment.

With the attachment attached to the prime mover, drive the prime mover onto the transport vehicle in a forward direction (attachment first).

Lower the attachment to the transport vehicle.

Engage the parking brake and stop the engine.

Install tie down chains and binders to prevent the prime mover and attachment from moving during transportation.

Install a chain to the rear of the prime mover.

Use chain binders to secure the chains and prevent the prime mover/attachment from moving during transportation.

5. Maintenance

5.1 Lubrication



DANGER



AVOID SERIOUS INJURY OR DEATH

Before servicing the Rock Rake:

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



WARNING



AVOID SERIOUS INJURY OR DEATH

DO NOT work under the machine lift arms in the raised position without the lift arms being properly locked or blocked (see machine operator manual for more information.)

Every **8 hours** of operation, grease the bearings (Item 1) (both sides) and the hinges (Item 2) [Figure 3] (both sides).

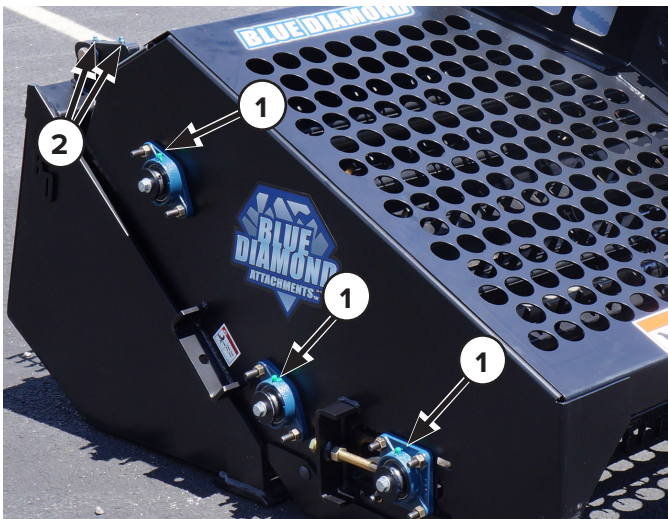


Figure 3

Rake Chain

Every **40 hours** of operation, lubricate the rake chain with a light coat of oil

5. Maintenance

5.2 Drive Chain and Teeth

Drive Chain Adjustment

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

Remove the chain guard. Loosen the idler sprocket bolt and move the idler sprocket to adjust chain tension to 1/2" (12,7 mm) deflection in the center of the chain. Tighten idler sprocket bolt. Re-install chain guard.

Drive Chain Removal

Remove the chain cover.

Remove the master link and remove the chain and install new chain and master link.

Check for proper tension. Re-install chain guard.

Rock Rake Chain Adjustment

Loosen the jam nut (Item 1) (both sides), tighten the bolt (Item 2) [Figure 4] evenly (both sides) until there is 3-4" (25,4-51 mm) of deflection in the center of the chain.



Figure 4

Rake Chain Teeth

NOTE: Rake chain teeth are 3" (76 mm) long when new, if a tooth is worn 1/4" (6,35 mm) or more, the tooth should be resurfaced with a hard surface welding rod.

- If a tooth is damaged or worn and needs to be replaced, cut and remove the damaged tooth and weld on the new tooth.
- If a tooth is bent the tooth can usually be straightened.

NOTE: Do not use heat to straighten a bent tooth, heat will cause the hardened tooth to become soft.

5. Maintenance

5.3 Cleaning the Attachment

- Remove all debris that could be entangled in the Rock Chain and teeth.
- Thoroughly wash the rock rake.

5.4 Storing the Attachment

Storage

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

- Make sure the hydraulic hose couplers are capped or plugged.
- Thoroughly wash the rock rake before storing the rock rake for long periods.
- Lubricate the rock rake.
- Coat the exposed portion of the cylinder rod with grease.
- Check for loose hardware, missing guards, or damaged parts.
- Check for damaged or missing decals. Replace if necessary.
- Replace worn or damaged parts.
- Place the attachment in a dry protected shelter.
- Place the attachment flat on the ground.

NOTE: In muddy conditions or to prevent the attachment from freezing to the ground, put the attachment on planks or blocks before removing the attachment from the machine.

Return to Service

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

- Lubricate the rock rake.
- Install and operate the rock rake and check for correct function.
- Check for leaks. Repair as needed.

5. Maintenance

5.5 Troubleshooting

PROBLEM	CAUSE	SOLUTION
Rock Rake chain does not turn	Faulty drive motor	Repair or replace motor
	Key sheared	Replace key
	Drive chain on hydraulic motor is broken or loose	Replace the chain or adjust as needed
	Drive sprocket is off the shaft	Install the drive sprocket and tighten bolt
	Auxiliary hydraulics are not activated	Activate auxiliary hydraulics
	Faulty loader valve	Repair loader valve
Rock Rake chain comes off	Rock Rake chain is too loose	Adjust the Rock Rake chain tension
Rock Rake chain jumps irregularly	Sprockets worn	Replace socket section of chain
	Stretched rake chain	Replace chain
	Stone is lodged in chain link	Remove the stone
Abnormal noise in drive chain cover	Drive chain and sprockets worn	Replace chain and sprockets
	Broken or stretched chain tensioner spring	Replace spring
	Idler worn	Replace idler

5. Maintenance

5.6 Service Schedule

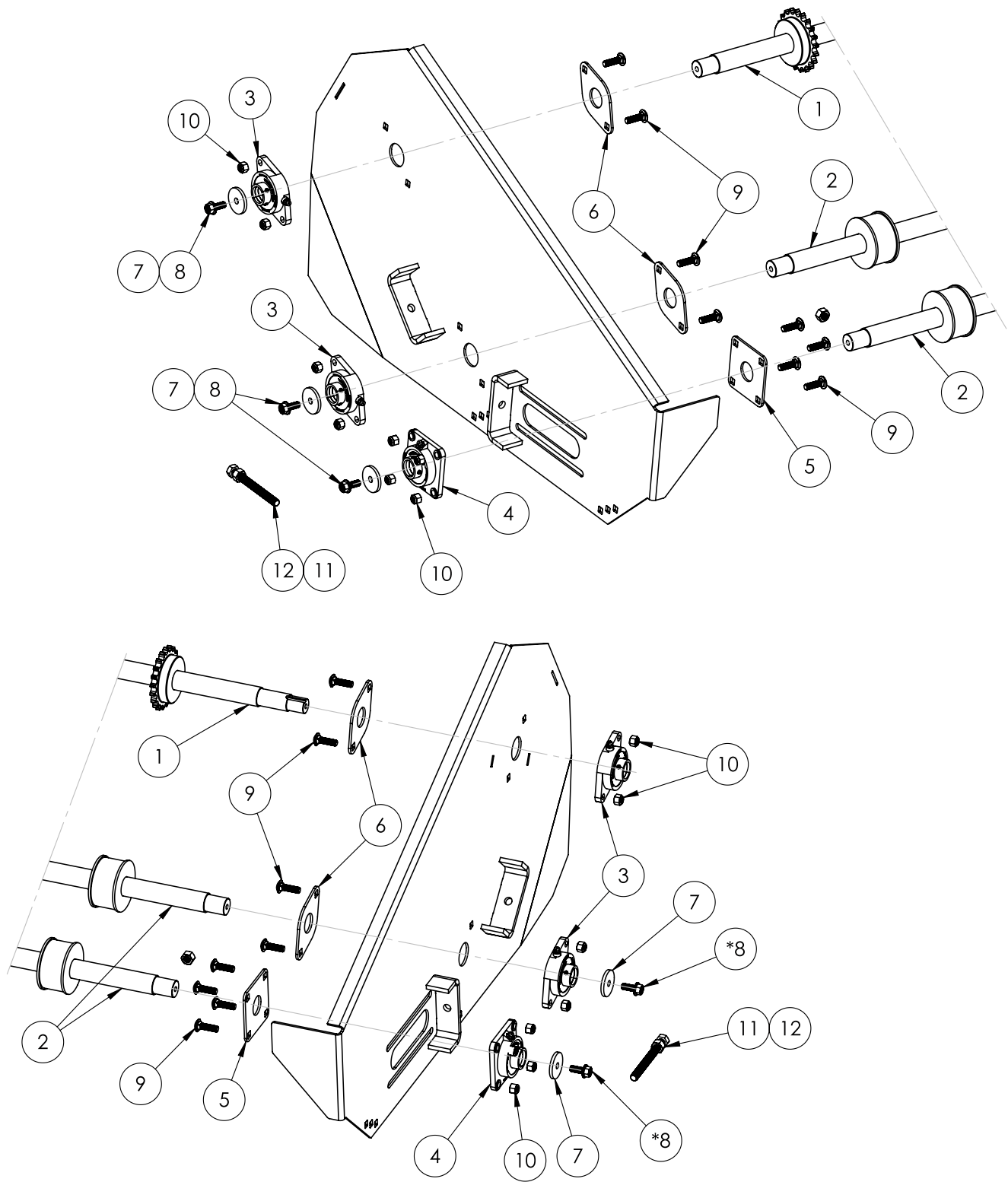
DESCRIPTION	SERVICE PROCEDURES			
	Check	Clean	Lube	Change
Daily Maintenance (or every 8 hours)				
Hydraulic Fittings	•			
Hydraulic Hoses	•			
Hydraulic Motor	•	•		
Rake Chain (wear, damage and loosening)	•	•		
Rake Teeth (wear, damage and loosening) (See page 15)	•	•		
Rake Chain Bearings (See page 14)			•	
Hinges (See page 14)			•	
All Hardware	•			
Rock Rake Frame	•	•		
Weekly Maintenance (or every 40 hours)				
Drive Sprocket Bearing (under chain guard)			•	
Drive Chain			•	
Drive Chain Adjustment (See page 15)	•			
Rake Chain Adjustment (See page 15)	•			



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6. Parts

6.1 Hood Components



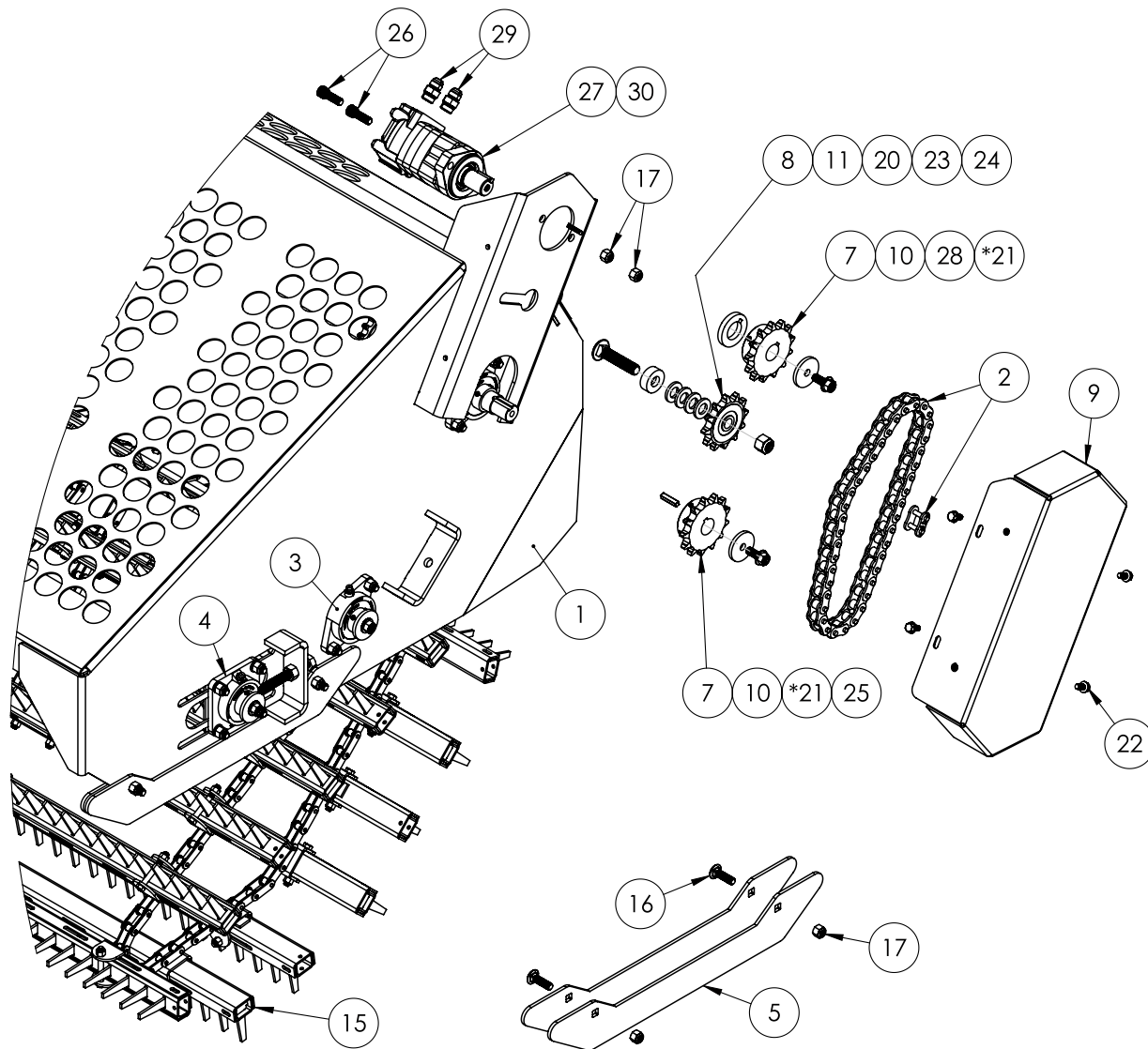
6. Parts

6.1 Hood Components

ITEM	PART NUMBER	DESCRIPTION	QTY
1	233080	REAR IDLER SHAFT W/ SPROCKETS	1
2	233070	FRONT IDLER SHAFT	2
3	233125	1-7/16 FLANGE MOUNTED BALL BEARING 2 BOLT SET SCREW	4
4	233128	1-7/16 FLANGE MOUNTED BALL BEARING 4 BOLT SET SCREW	2
5	233007	FRONT BEARING INSIDE RETAINING PLATE	2
6	233008	SUPPORT PLATE	4
7	233040	WASHER / SPACER	3
8	299334	1/2"-13 x 1-1/4" HEX BOLT SERRATED FLANGE GR 8	5
9	299337	1/2-13 x 1-3/4" CARRIAGE BOLT GR 5	20
10	299618	1/2"-13 NYLON LOCKNUT GR 8	22
11	109177	5/8"-11 HEX NUT GR 8	2
12	299458	5/8"-11 x 6" HEX BOLT GR 8	2

6. Parts

6.2 Hood Components



ITEM	PART NUMBER	DESCRIPTION	QTY
1	233055	HOOD WELDMENT	1
2	233036	MOTOR CHAIN (RS80H) 40 LINKS WITH MASTER LINK	1
3	233125	1-7/16 FLANGE MOUNTED BALL BEARING 2 BOLT SET SCREW	4
4	233128	1-7/16 FLANGE MOUNTED BALL BEARING 4 BOLT SET SCREW	2
5	233085	SKID SHOE	4
6	233007	FRONT BEARING INSIDE RETAINING PLATE	2
7	233030	1-1/4" x 13 H 80 BS DRIVE SPROCKET	2

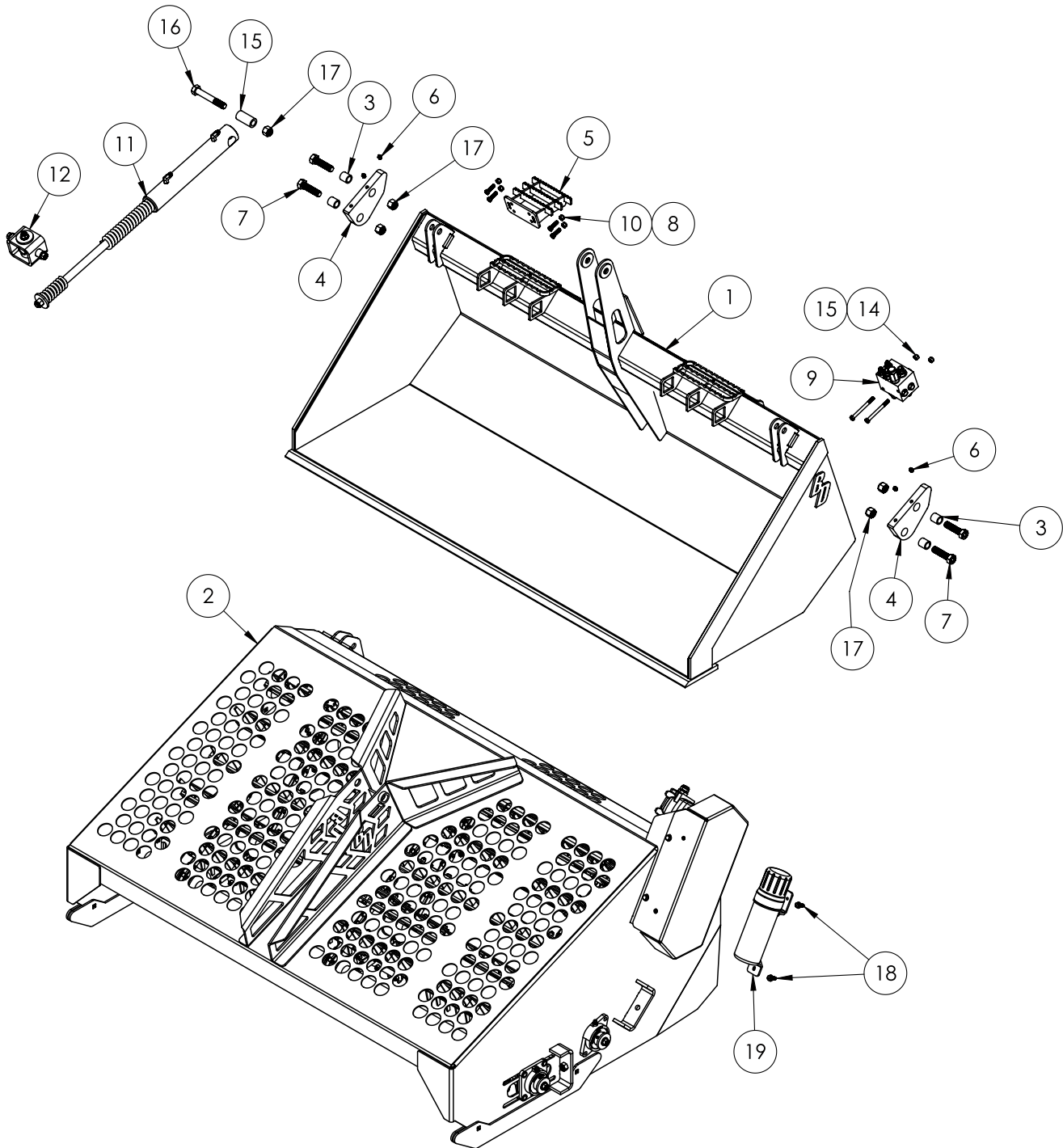
6. Parts

6.2 Hood Components

ITEM	PART NUMBER	DESCRIPTION	QTY
8	233032	12 x 3/4 IDLER SPROCKET ROLLER ANSI CHAIN #80	1
9	233060	CHAIN COVER	1
10	233040	WASHER / SPACER	3
11	233033	CARRIAGE BOLT CAP	1
12	233008	SUPPORT PLATE	4
13	233070	FRONT IDLER SHAFT	2
14	233080	REAR IDLER SHAFT W/ SPROCKETS	1
15	133010	CHAIN RAKE ASSEMBLY	1
16	299337	1/2-13 x 1/3/4" CARRIAGE BOLT GR 5	20
17	299618	1/2"-13 NYLON LOCKNUT GR 8	22
18	109177	5/8-11 HEX NUT GR 8	2
19	299458	5/8"-11 x 6" HEX HEAD BOLT GR 8	2
20	299726	3/4" FLAT WASHER (adj qty as needed)	4
21	299334	1/2"-13 x 1-1/4" HEX BOLT SERRATED FLANGE GR 8	2
22	299327	3/8-16 x 3/4" HEX HEAD BOLT THREAD FORMING	4
23	299338	3/4-10 x 3.00" CARRIAGE BOLT GR 8	1
24	299628	3/4-10 NYLON LOCKNUT GR 8	1
25	233031	STANDARD STEEL KEY STOCK 5/16"	1
26	299331	1/2-13 x 1-1/2" S.H.C.S.	2
27	233110	MOTOR 400CC	1
28	233055-20	GEAR SPACER	1
29	295010-M10ORB-M10JIC	HYDRAULIC STRAIGHT FITTING MALE #10 ORB TO MALE #10 JIC	2
30	233031	5/16" KEY INCLUDED WITH MOTOR	1

6. Parts

6.3 Bucket Components



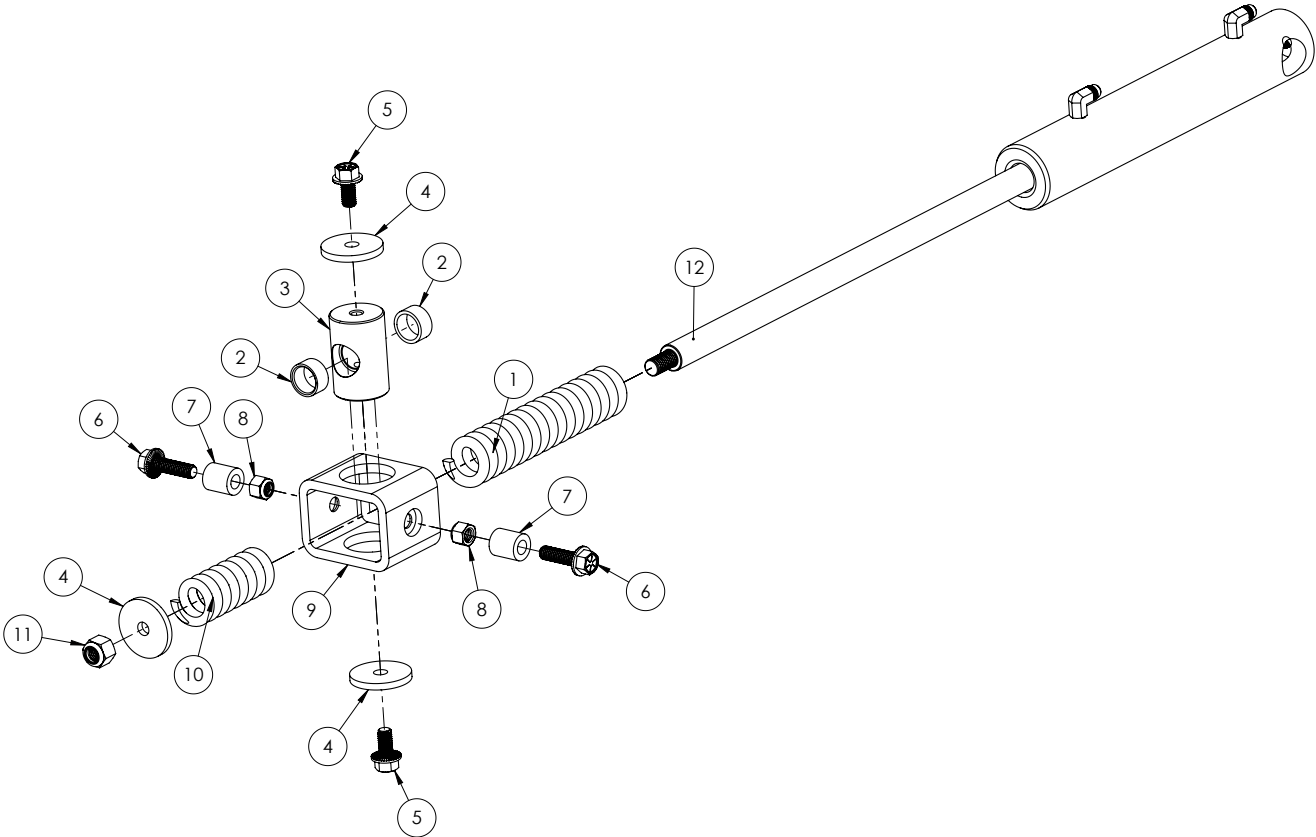
6. Parts

6.3 Bucket Components

ITEM	PART NUMBER	DESCRIPTION	QTY
1	233050	WELDMENT BUCKET	1
2	133010	HOOD ASSEMBLY	1
3	233055:21	HINGE PIN SLEEVE	4
4	233065	HINGE LINKAGE	2
5	233058	STEP	1
6	299016	1/8 PTF MALE STRAIGHT GREASE FITTING	5
7	299456	3/4-10 x 3.00" HEX BOLT GR 8	4
8	299428	3/8"-16 x 1-1/2" HEX BOLT GR 8	4
9	233106	PORT BLOCK ASSEMBLY	1
10	299625	3/8-16 NYLON LOCKNUT GR 8	6
11	See page 26	CYLINDER	1
12	See page 26	CYLINDER MOUNTING FRONT PIVOT	1
13	299627	5/8-11 NYLON LOCKNUT GR 8	1
14	299447	3/8-16 x 4.00" HEX BOLT GR 8	2
15	233090	CYLINDER BACK BUSHING	1
16	299457	3/4-10 x 5.00" HEX BOLT GR 8	1
17	299628	3/4-10 NYLON LOCKNUT GR 8	5
18	299423	3/8-16 x 1.00 HEX BOLT	2
19	216402	STORAGE TUBE FOR MANUAL	1

6. Parts

6.4 Cylinder Components



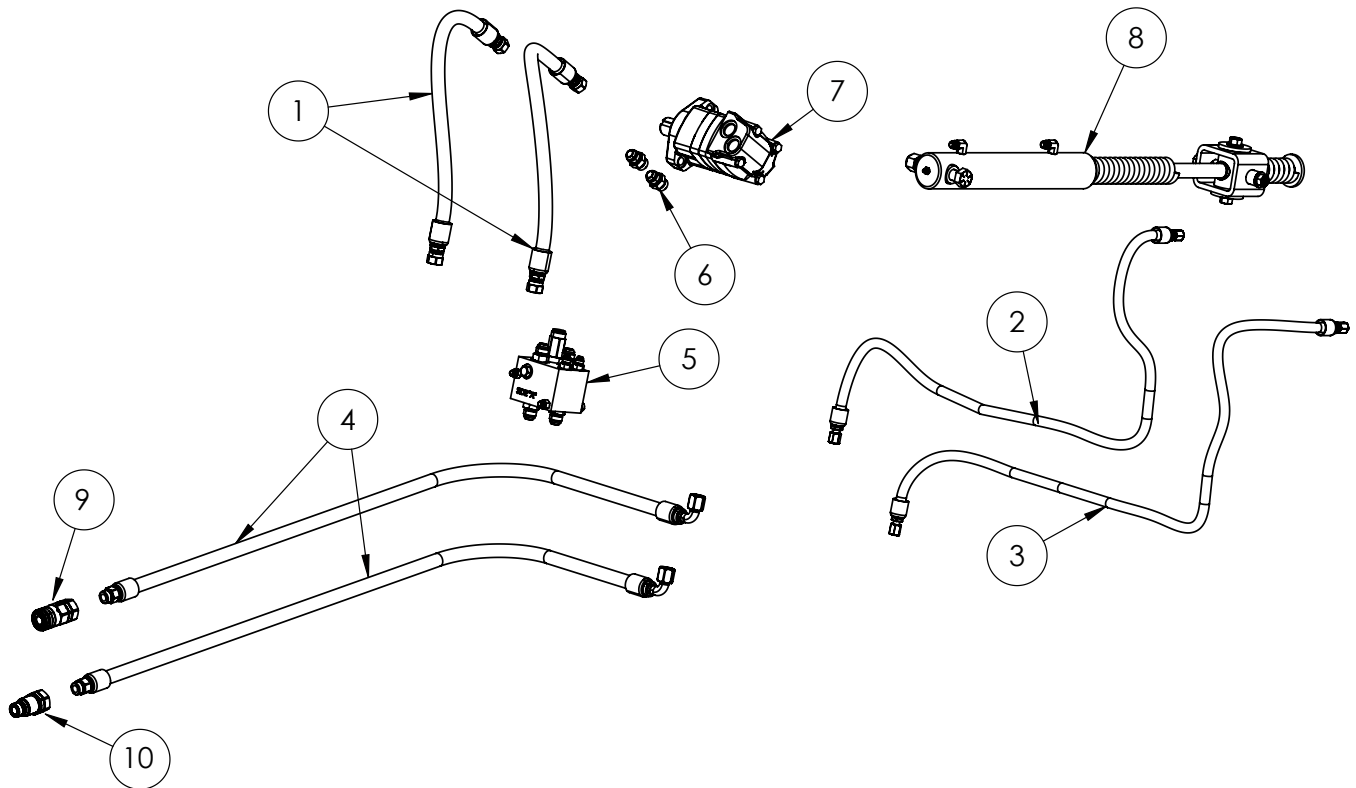
6. Parts

6.4 Cylinder Components

ITEM	PART NUMBER	DESCRIPTION	QTY
1	233017	1.0625 ID x 1.85 OD CYLINDER SPRING LONG	1
2	233108:02	FRONT PIVOT INSERT INNER BUSHING	2
3	233108:01	FRONT PIVOT INSERT	1
4	233040	WASHER / SPACER	3
5	299333	1/2"-13 x 1" HEX BOLT SERRATED FLANGE GR 8	2
6	299339	1/2"-13 x 1-3/4" HEX BOLT SERRATED FLANGE GR 8	2
7	233092	CYLINDER MOUNTING FRONT PIVOT BUSHING	2
8	299618	1/2"-13 NYLON LOCKNUT GR 8	2
9	233104	CYLINDER MOUNTING FRONT PIVOT	1
10	233015	1.0625 ID X 1.75 OD CYLINDER SPRING SHORT	1
11	299627	5/8-11 NYLON LOCKNUT GRADE 8	1
12	233105	CYLINDER	1

6. Parts

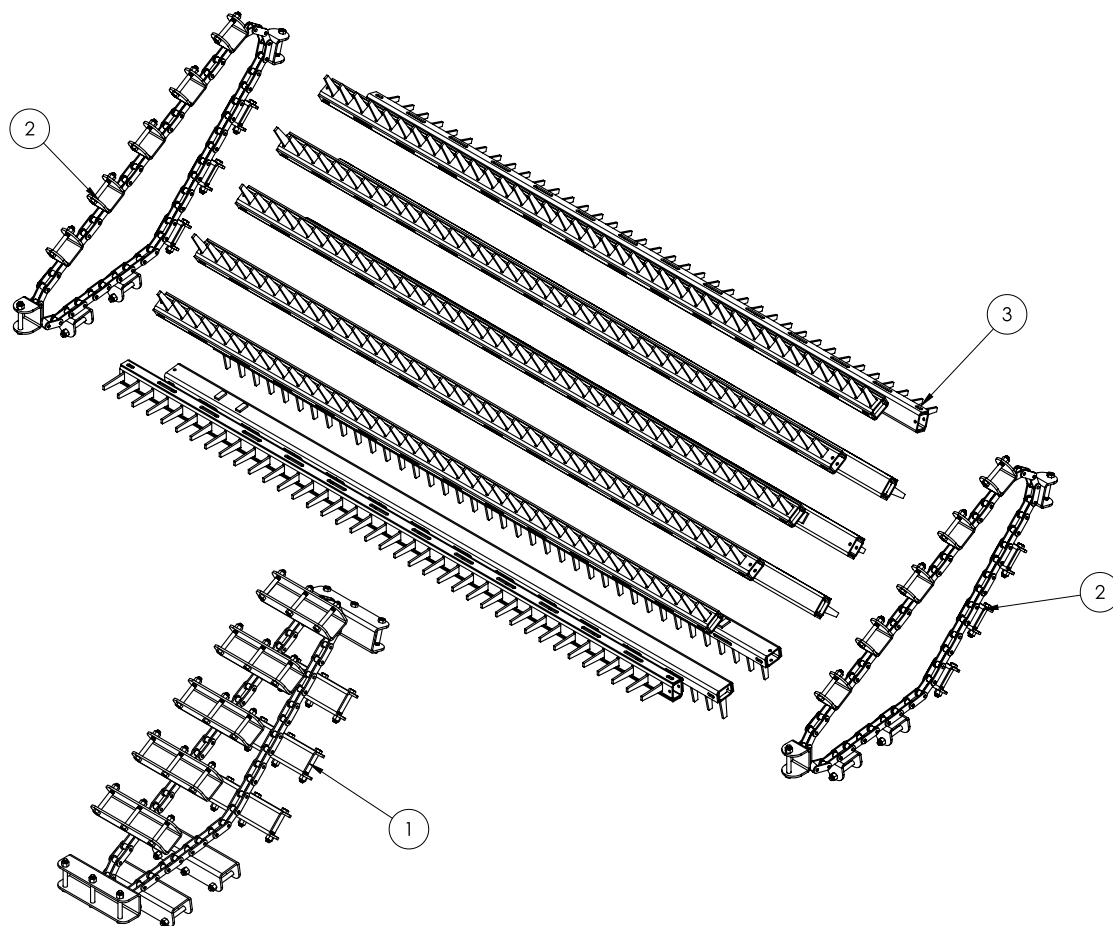
6.5 Hydraulic Components



ITEM	PART NUMBER	DESCRIPTION	QTY
1	233142	MOTOR TO BLOCK HOSES 23" OAL 5/8" ID STRAIGHT FEMALE #10 JIC SWIVEL BOTH ENDS	2
2	233144	BLOCK TO CYLINDER HOSE BODY END 49" OAL 3/8" ID STRAIGHT FEMALE #10 JIC SWIVEL BOTH ENDS	1
3	233146	BLOCK TO CYLINDER HOSE ROD END 59" OAL 3/8" ID STRAIGHT FEMALE #10 JIC SWIVEL BOTH ENDS	1
4	233140	MACHINE HOSE SET 2 HOSES 52" OAL 5/8" ID 90 DEGREE FEMALE SWIVEL #10 JIC TO STRAIGHT #10 ORB (includes couplers)	1 SET
5	233106	PORT BLOCK ASSEMBLY	1
6	295010-M10ORB-M10JIC	HYDRAULIC STRIAIGHT FITTING MALE #10 ORB TO MALE #10 JIC	2
7	233110	MOTOR 400CC	1
8	See page 26	CYLINDER	1
9	224020	FEMALE COUPLER 1/2" BODY #10 ORB (included in #4 233140 hose set)	1
10	224021	MALE COUPLER 1/2" BODY #10 ORB (Included in #4 233140 hose set)	1

6. Parts

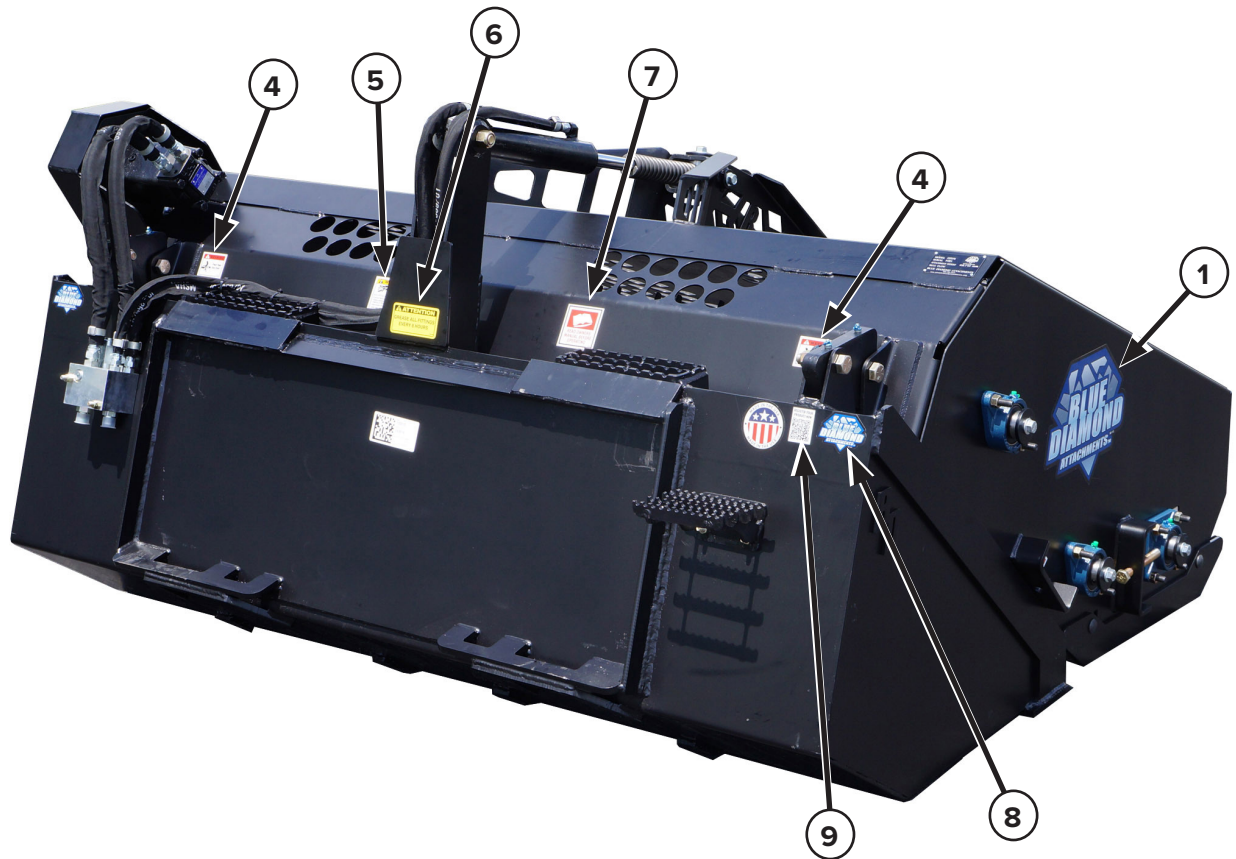
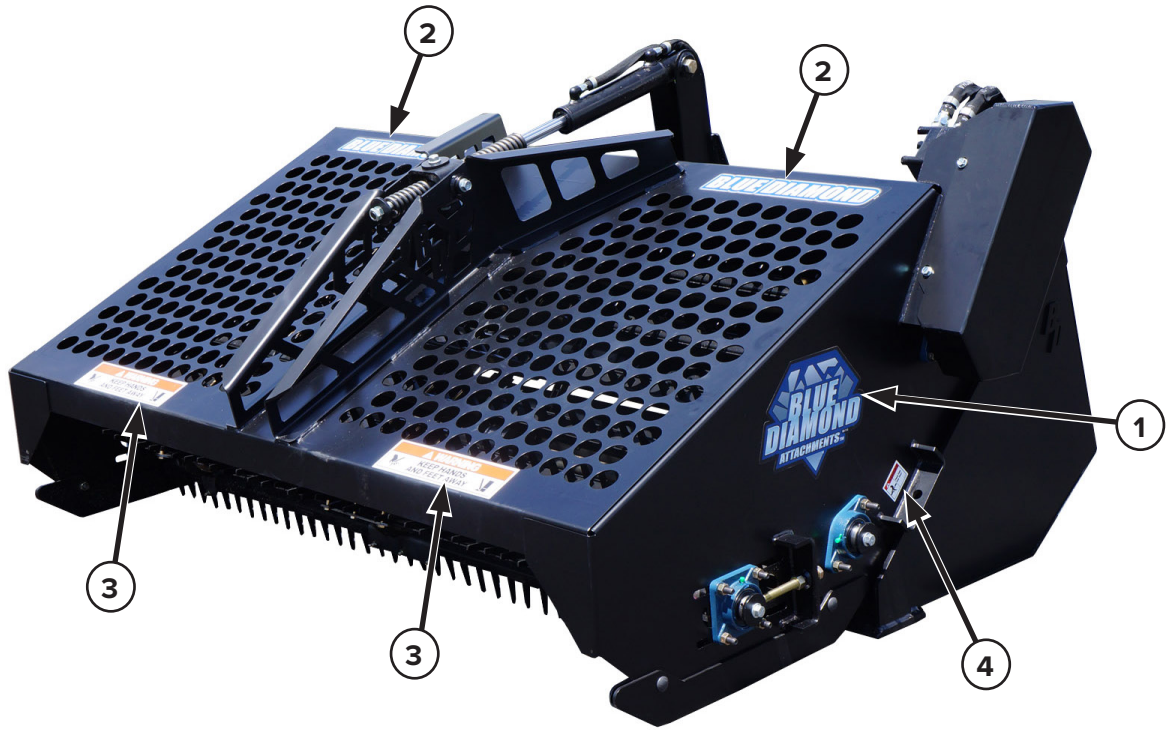
6.6 Chain Components



ITEM	PART NUMBER	DESCRIPTION	QTY
1	233076	RAKE CHAIN - WIDE (CENTER)	1
2	233077	RAKE CHAIN - NARROW (END)	2
3	233075	RAKE BAR WELDMENT	12

6. Parts

6.7 Decal Identification and Location



6. Parts

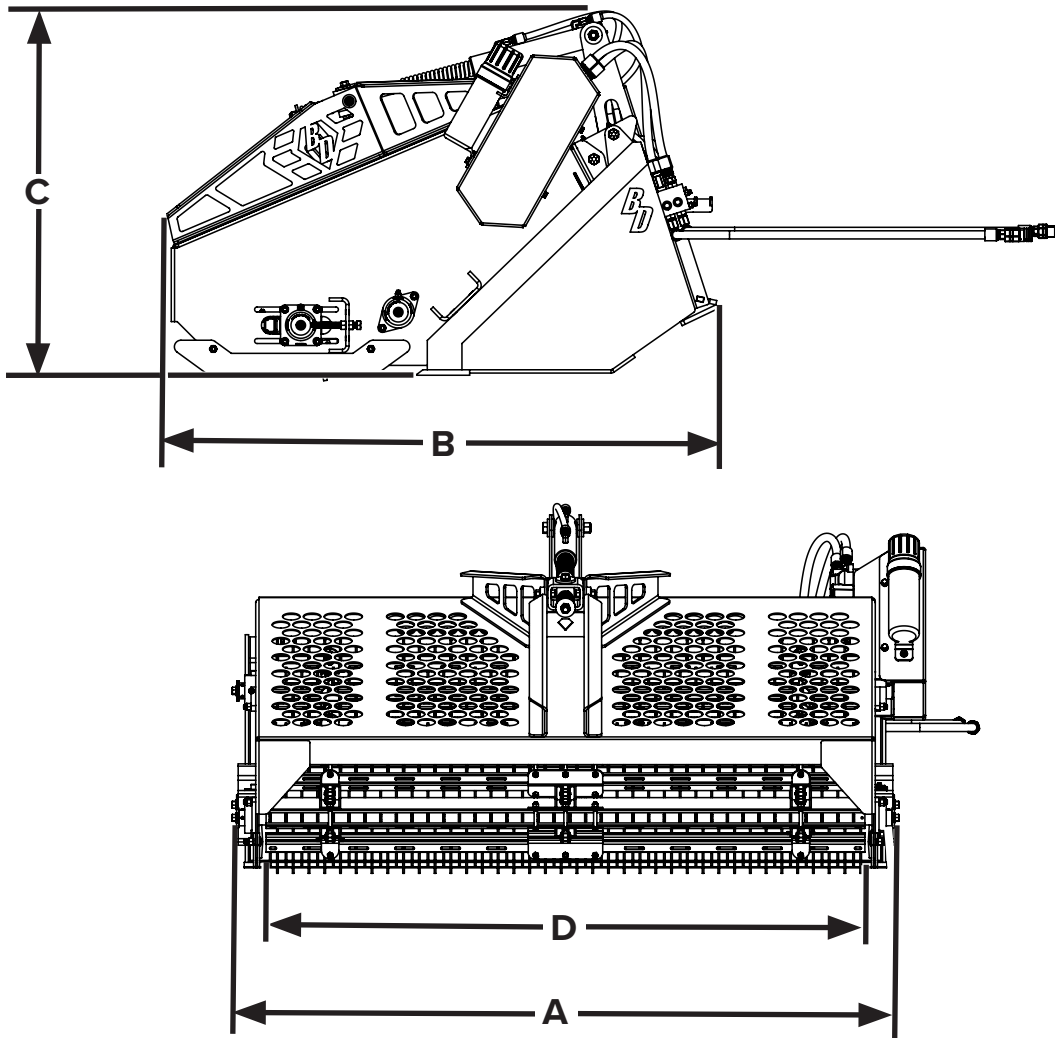
6.7 Decal Identification and Location Cont'd

ITEM	PART NUMBER	DESCRIPTION	QTY
1	BD-113	DECAL BLUE DIAMOND ATTACHMENTS DIAMOND SHAPE 5.0 x 6.35	2
2	BD-057	DECAL BLUE DIAMOND	2
3	BD-081	DECAL WARNING - KEEP HANDS AND FEET AWAY	2
4	BD-002	DECAL WARNING - PINCH POINT STAY CLEAR	4
5	BD-123	DECAL WARNING - HIGH PRESSURE FLUID HAZARD	1
6	BD-004	DECAL ATTENTION - GREASE ALL FITTINGS EVERY 8 HOURS	1
7	BD-001	DECAL READ OWNERS MANUAL	1
8	BD-060	DECAL BLUE DIAMOND ATTACHMENTS DIAMOND SHAPE 2.4375 x 3.375	2
9	BD-092	DECAL WARRANTY REGISTRATION QR CODE 1.5 x 2.0	1



7. Specifications

7.1 Attachment Specifications



DESCRIPTION	123515
OVERALL WIDTH (A)	79 in.
OVERALL LENGTH (B)	63 in.
OVERALL HEIGHT (C)	47 in.
WORKING WIDTH (D)	68 in.
PRESSURE MAX (PSI)	3000
FLOW MIN-MAX (GPM)	13-23
WEIGHT	1638 lb.

7. Specifications

7.2 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)

6. Specifications

7.2 Torque Specifications Cont'd

Standard Hardware and Lock Nuts

BOLT TYPE	CLASS 4.8		CLASS 8.8 OR 9.8		CLASS 10.9		CLASS 12.9	
	Lubricated	Dry	Lubricated	Dry	Lubricated	Dry	Lubricated	Dry
M6	4.8 N•m	6 N•m	9 N•m	11 N•m	13 N•m	17 N•m	15 N•m	19 N•m
	3.5 in / lb	4.5 in / lb	6.5 in / lb	8.5 in / lb	9.5 in / lb	12 in / lb	11.5 in / lb	14.5 in / lb
M8	12 N•m	15 N•m	22 N•m	28 N•m	32 N•m	40 N•m	37 N•m	47 N•m
	8.5 in / lb	11 in / lb	16 in / lb	20 in / lb	24 in / lb	30 in / lb	28 in / lb	35 in / lb
M10	23 N•m	29 N•m	43 N•m	55 N•m	63 N•m	80 N•m	75 N•m	95 N•m
	17 in / lb	21 in / lb	32 in / lb	40 in / lb	47 in / lb	60 in / lb	55 in / lb	70 in / lb
M12	40 N•m	50 N•m	75 N•m	95 N•m	110 N•m	140 N•m	130 N•m	165 N•m
	29 in / lb	37 in / lb	55 in / lb	70 in / lb	80 in / lb	105 in / lb	95 in / lb	120 in / lb
M14	63 N•m	80 N•m	120 N•m	150 N•m	175 N•m	225 N•m	205 N•m	260 N•m
	47 in / lb	60 in / lb	88 in / lb	110 in / lb	130 in / lb	165 in / lb	150 in / lb	190 in / lb
M16	135 N•m	175 N•m	260 N•m	330 N•m	375 N•m	475 N•m	440 N•m	560 N•m
	100 in / lb	125 in / lb	195 in / lb	250 in / lb	275 in / lb	350 in / lb	325 in / lb	410 in / lb
M18	135 N•m	175 N•m	260 N•m	330 N•m	375 N•m	475 N•m	440 N•m	560 N•m
	100 in / lb	125 in / lb	195 in / lb	250 in / lb	275 in / lb	350 in / lb	325 in / lb	410 in / lb
M20	190 N•m	240 N•m	375 N•m	475 N•m	530 N•m	675 N•m	625 N•m	800 N•m
	140 in / lb	180 in / lb	275 in / lb	350 in / lb	400 in / lb	500 in / lb	460 in / lb	580 in / lb
M22	260 N•m	330 N•m	510 N•m	650 N•m	725 N•m	925 N•m	850 N•m	1075 N•m
	190 in / lb	250 in / lb	375 in / lb	475 in / lb	540 in / lb	675 in / lb	625 in / lb	800 in / lb
M24	330 N•m	425 N•m	650 N•m	825 N•m	925 N•m	1150 N•m	1075 N•m	1350 N•m
	250 in / lb	310 in / lb	475 in / lb	600 in / lb	675 in / lb	850 in / lb	800 in / lb	1000 in / lb
M27	490 N•m	625 N•m	950 N•m	1200 N•m	1350 N•m	1700 N•m	1600 N•m	2000 N•m
	360 in / lb	450 in / lb	700 in / lb	875 in / lb	1000 in / lb	1250 in / lb	1150 in / lb	1500 in / lb
M30	675 N•m	850 N•m	1300 N•m	1650 N•m	1850 N•m	2300 N•m	2150 N•m	2700 N•m
	490 in / lb	625 in / lb	950 in / lb	1200 in / lb	1350 in / lb	1700 in / lb	1600 in / lb	2000 in / lb
M33	900 N•m	1150 N•m	1750 N•m	2200 N•m	2500 N•m	3150 N•m	2900 N•m	3700 N•m
	675 in / lb	850 in / lb	1300 in / lb	1650 in / lb	1850 in / lb	2350 in / lb	2150 in / lb	2750 in / lb
M36	1150 N•m	1450 N•m	2250 N•m	2850 N•m	3200 N•m	4050 N•m	3750 N•m	4750 N•m
	850 in / lb	1075 in / lb	1650 in / lb	2100 in / lb	2350 in / lb	3000 in / lb	2750 in / lb	3500 in / lb



Warranty

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 Rock Rake after the delivery of the goods to original purchaser.

This warranty 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 claim must be filed with BLUE DIAMOND® ATTACHMENTS before work is performed. The BLUE DIAMOND® PRODUCT SUPPORT TEAM will advise repairs and applicable parts exchanges. 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. Please see bluediamondattachments.com/warranty-policies for the most up to date warranty information.

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



QUALITY | DEPENDABILITY | INTEGRITY

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