

Extreme Duty High Capacity Root Grapple

Operation and Maintenance Manual



106220, 106230, 106240, 106260

Register your
WARRANTY
within 30 days
of purchase



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BD-092

Introduction: Owner Information

Thank you for your decision to purchase a Blue Diamond® Extreme Duty High Capacity Root Grapple. 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 back of the frame to the right of the mounting plate as shown above.

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

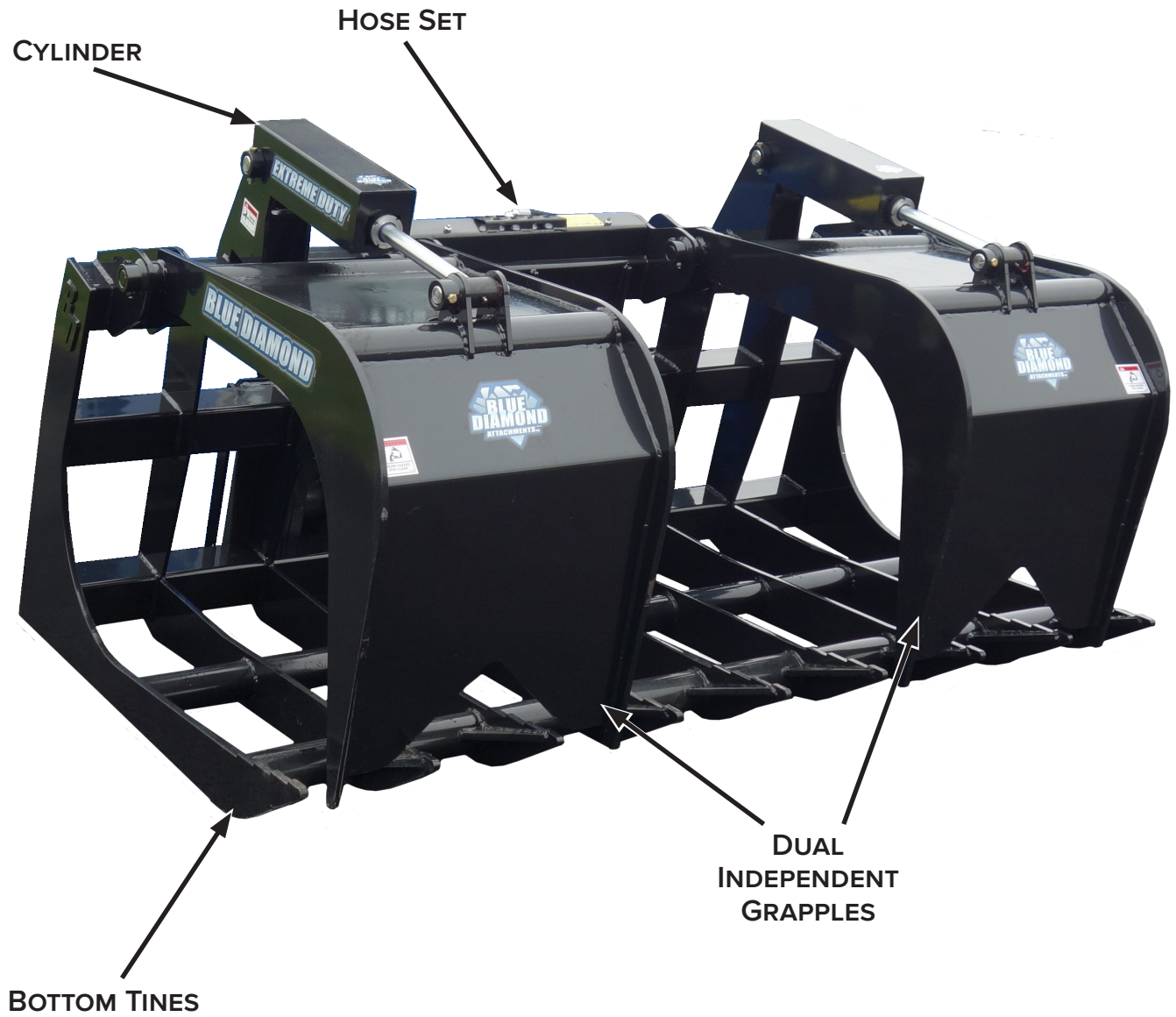
NOTE: The directions left, right, front, and rear, as mentioned throughout this manual, are as viewed from the operator's position.

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1. Introduction

1.1 Attachment Identification



1. Introduction

1.2 About this Attachment

About the Root Grapple Attachment

The root grapple attachment is intended for use in materials handling. The primary use of the root grapple attachment includes land clearing, landscaping, demolition, construction, and grounds maintenance. Use of this equipment in any other manner is considered to be contrary to the intended use of the attachment.

Root Grapple

The root grapple attachment is vital in the tree industry and is quickly becoming a necessity among all contractors today. This unique root grapple is offered in a variety of sizes for a variety of applications.

With the root grapple, you can perform three jobs in one. In a single pass, the root grapple rakes away debris, keeps it in a manageable pile to move around with ease, and the round bottom bar provides the necessary tool for backfill. The wide tine opening makes easy loading of logs, brush, rocks, demolition debris, and many other materials into the large bucket area. It is ideal for separating dirt from rock, lumber, or building materials with ease. The larger capacity means less loading and cost, saving in both time and energy. Hydraulic cylinders operate independently to adjust for uneven loads. Enclosed cylinders and hoses come standard to minimize maintenance. Tines curve upward in order to slide across the land without damaging topsoil or catching utility lines or cables.

1.3 Attachment Model Numbers

MODEL NUMBERS	WIDTH
106220	72"
106230	78"
106240	84"
106260	96"

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.

Terminology

Host Machine, Machine:

- The root grapple can be attached to many different pieces of equipment; therefore, the terms “host machine” and “machine” will be used. Host machine and machine mean any equipment, tractor, or skid steer providing power to the attachment.

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®.
- Only qualified and trained operators should operate, maintain, and service this attachment. See “Qualified Operators” on page 7 to determine a qualified operator.
- 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 host machine 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

- It is the responsibility of the operator to follow all local, state, and federal safety regulations. Improper use of this equipment may result in personal injury, property damage, and/or damage to the equipment.
- Before starting and during operation of the attachment, make sure there are no people or animals in the operation area.
- 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.
NOTE: Additional safety equipment may be required depending on the operating environment and worksite conditions.
- 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.
- 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 3200 psi (220 bar) operating pressure.
- Use caution on slopes and near banks and ditches to prevent overturn.

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.
- 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.

2. Safety

2.3 Safety Guidelines Cont'd

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 Pre–Operation Inspection

Before operating the Extreme Duty High Capacity Root Grapple 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 moving parts are completely stopped before connecting, disconnecting, adjusting, or cleaning equipment.
- Always keep shields and guards in place when using the equipment.
- Disengage machine’s auxiliary hydraulics for road travel.
- Keep hands, feet, and clothing away from rotating parts.

- Lubricate the attachment per the schedule outlined in the Maintenance section. See “4.3 Lubrication Points” on page 15.
- Check the attachment’s 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 all welds on the attachment for wear and damage each time the attachment is removed from the machine.
- Make sure tines are not bent or worn.
- 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.
- Verify that the attachment is properly connected to the machine.



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 the condition of all hydraulic components for leaks. Repair as required.

NOTE: Do not operate with hydraulic leaks.

3. Operation

3.2 Attachment Installation

Connecting Attachment to the Machine

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 / or 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 parking 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.

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 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 frame.

Slowly tilt the machine's mounting plate back until the attachment's 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.

3. Operation

3.2 Attachment Installation 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).

Connecting Hydraulic Hoses



IMPORTANT



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

Verify that all hydraulic couplings are compatible with the host machine.

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 host machine. Pull on each hose to verify full connection is made.

Disconnecting Hydraulic Hoses



WARNING



AVOID SERIOUS INJURY OR DEATH

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 host 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 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's 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

Machine Requirements



WARNING



Never allow riders on the attachment.

Only use the attachment on compatible loaders. Refer to the machine's Owner's Manual for flow and pressure specifications.

Engaging the Attachment for the First Time



IMPORTANT



If this is the initial startup with this attachment on this machine, check the host machine's hydraulic oil level and add oil, if necessary, before and after doing steps 1–2 below.

After starting the machine, lift the attachment 6" off the ground surface:

1. With the machine's engine RPMs just above idle, slowly engage the auxiliary hydraulic to open the grapples. Move the auxiliary control pedal, lever, or switch in the opposite direction to open and close the root grapple. Repeat this three (3) times.
2. Lower the attachment to the ground and shut off the host machine's engine. Leave the operator's position. See "Leaving The Operator's Position" on page 11.
3. Check the machine's hydraulic oil level, and add oil if necessary.
4. Inspect the attachment's hydraulic system for any noticeable leaks. If leaks are present, correct before continuing operation.

Operating the Root Grapple



WARNING



AVOID SERIOUS INJURY OR DEATH

Use extreme caution when moving debris to keep them hitting yourself or bystanders.

Install the attachment onto the host machine. (See "Connecting Attachment to the Machine" on page 11.)

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

Raise the attachment slightly off the ground.

Cycle the Root Grapple's cylinders several times to purge the hydraulic system of air. (See the machine's Operator's Manual for precise instructions in regards to these functions.)

To pick up debris, fully open the grapples and drive forward. The debris should be pushed to the back of the attachment and resting on the bottom tines.

Cycle the cylinder to close the grapples.

Use the machine to adjust the height of the attachment. The machine's tilt cylinders can be used to level the attachment.

When done handling debris, close the root grapple to prevent serious injury or death.

4. Maintenance

4.1 Service Schedule

DESCRIPTION	SERVICE PROCEDURES					
	Check	Clean	Lube	Change	Adjust	Drain
Daily Maintenance (or every 8 hours)						
Hydraulic Fittings	•					
Hydraulic Hoses	•					
Mounting Frame	•					
Shields and Guards	•					
Attachment Welds	•					
Safety Decals	•					
Tines Bent or Worn	•					
Grease Fittings			•			

4. Maintenance

4.2 Before Each Use

Before each use, perform the following:

- Perform the “3.1 Pre–Operation Inspection” on page 10 by walking around the equipment.
- Perform a daily inspection as indicated in “4.1 Service Schedule” on page 14.
- Verify that the proper attachment is being used for the task at hand. Use the Root Grapple for material handling only.

!
DANGER
!

AVOID SERIOUS INJURY OR DEATH

Keep all body parts from the grapple tines when in use. The upper tines may open or close unexpectedly, causing serious injury or death.

Inspect the attachment daily before each use. It is also recommended to inspect the Root Grapple after extreme use or damage. Use the service schedule on page 14 as a guideline.

4.3 Lubrication Points

Grease all pivot points every eight (8) hours of use to prevent excess wear on the pins. The Extreme Duty High Capacity Root Grapple has eight (8) grease points. These points are circled in Figure 1.

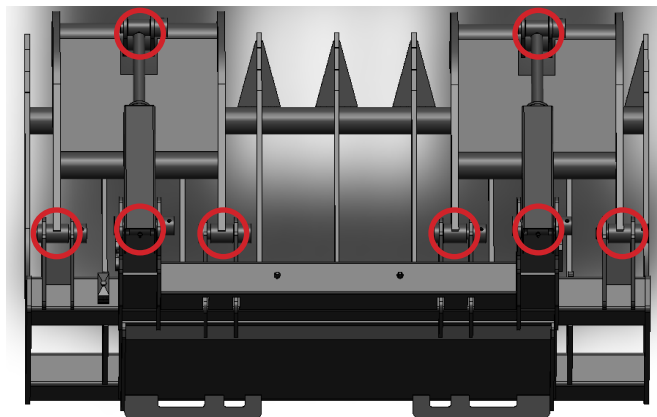


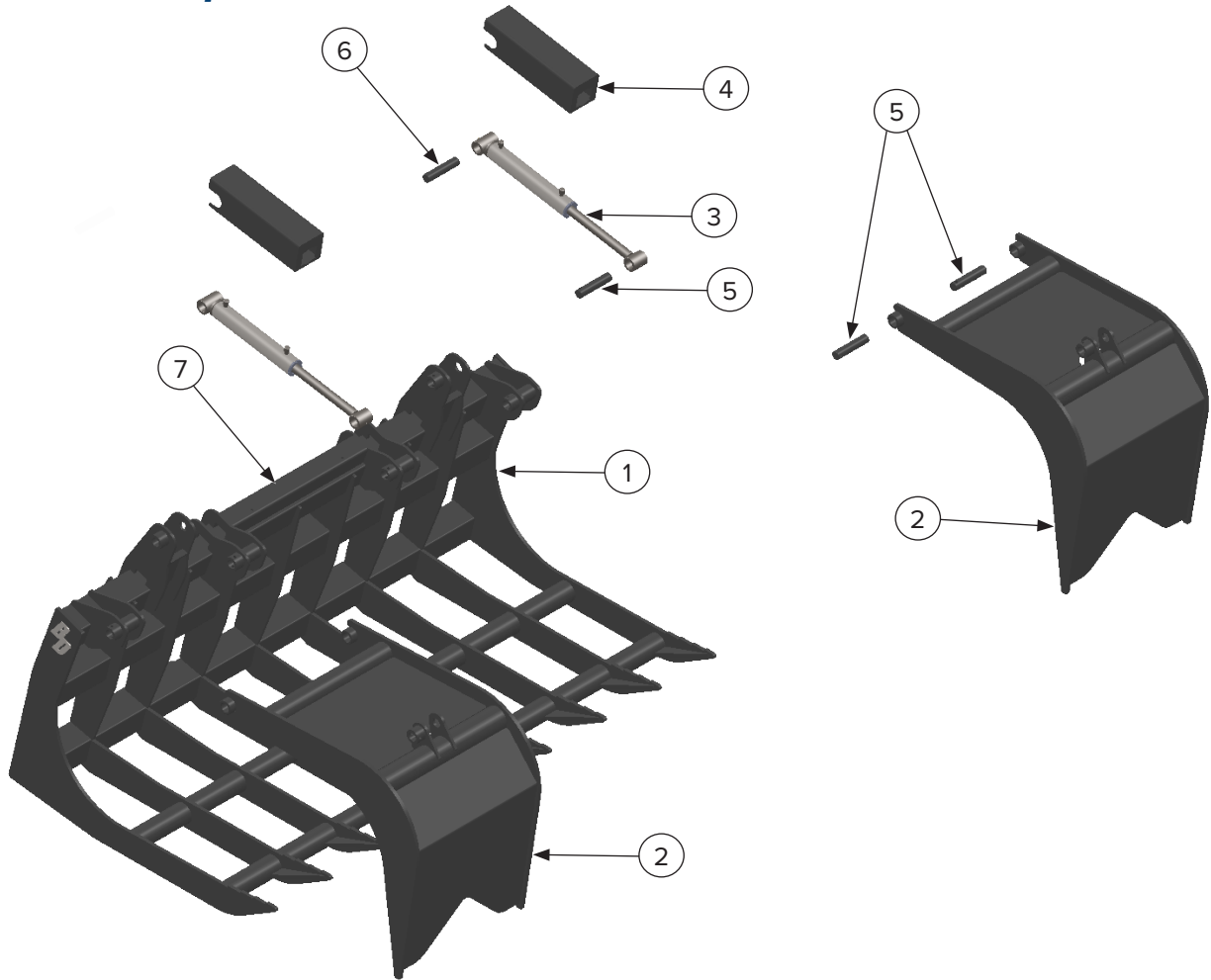
Figure 1

4.4 Troubleshooting

PROBLEM	CAUSE	SOLUTION
Hydraulic oil level goes down during operation.	Leak at hoses on the attachment	Investigate and repair.
	Leak in the host machine's hydraulic system	Investigate and repair.
Grapples do not open or close.	Quick disconnects not connected	Check and recouple quick disconnects.
	Hoses damaged	Check for a smashed or kinked hose. Replace if found.
	Skid steer auxiliary circuit inoperative.	Investigate and repair.
Grapples move abnormally slow.	Restricted hose	Check for damaged hose between skid steer and cylinder. If damaged, replace the hose.
	Bad circuit relief on skid steer	Investigate and repair.
	Auxiliary valve spool on skid steer not shifting properly	Investigate and repair.
	Cylinder seals bypassing	Have cylinder repacked or replaced.

5. Parts

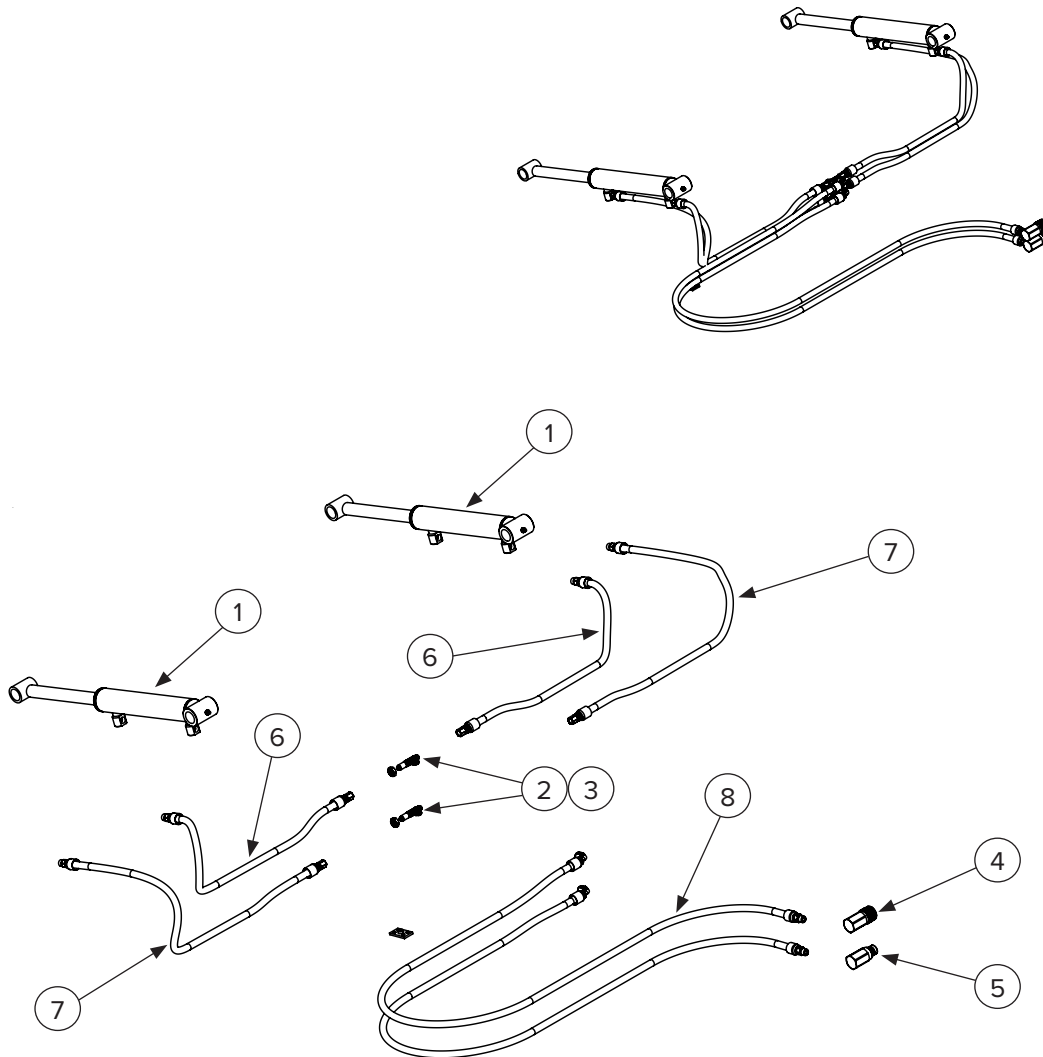
5.1 Main Components



ITEM	PART NUMBER	DESCRIPTION	QTY
1	—	Main Frame	1
2	206600	Top Clamp	2
3	206305-KIT	Cylinder, 2.0" Bore 10" Stroke 1/4" ORB Ports	2
4	206315	Cylinder Cover	2
5	206343	1.25" x 5.25" Pivot Pin	6
6	206342	1.25" x 6.0" Pivot Pin	2
7	206350	Hose Cover / Step	1
NS	203072	1/4"-28 Straight Grease Zerk	8

5. Parts

5.2 Hydraulic Components



ITEM	PART NUMBER	DESCRIPTION	QTY
1	206305-KIT	Cylinder, 2.0" Bore 10" Stroke 1/4" ORB Ports	2
2	206355	Bulkhead Branch Tee Fitting #6 Male JIC (Includes Tee Nut)	2
3	295052	Bulkhead Tee Nut (Included in 206355)	2
4	224007	Coupler, Female Flat Face 90 Degree 1/2" Body Female #6 NPT	1
5	224008	Coupler, Male Flat Face 90 Degree 1/2" Body Female #6 NPT	1
6	206331	Short Cylinder Hose for 72", 30 3/4" OAL 1/4" ID Male #4 ORB to Female #6 JIC	1
	206333	Short Cylinder Hose for 78", 84", 96": 35 1/2" OAL 1/4" ID Male #4 ORB to Female #6 JIC	
7	206332	Long Cylinder Hose for 72": 41 1/4" OAL 1/4" ID Male #4 ORB to Female #6 JIC	1
	206334	Long Cylinder Hose for 78", 84", 96": 46" OAL 1/4" ID Male #4 ORB to Female #6 JIC	
8	206252	Machine Hose Set: 2 Hoses 80" OAL 3/8" ID 90 Degree Female #6 JIC to Straight Male #6 NPT No Couplers	1

5. Parts

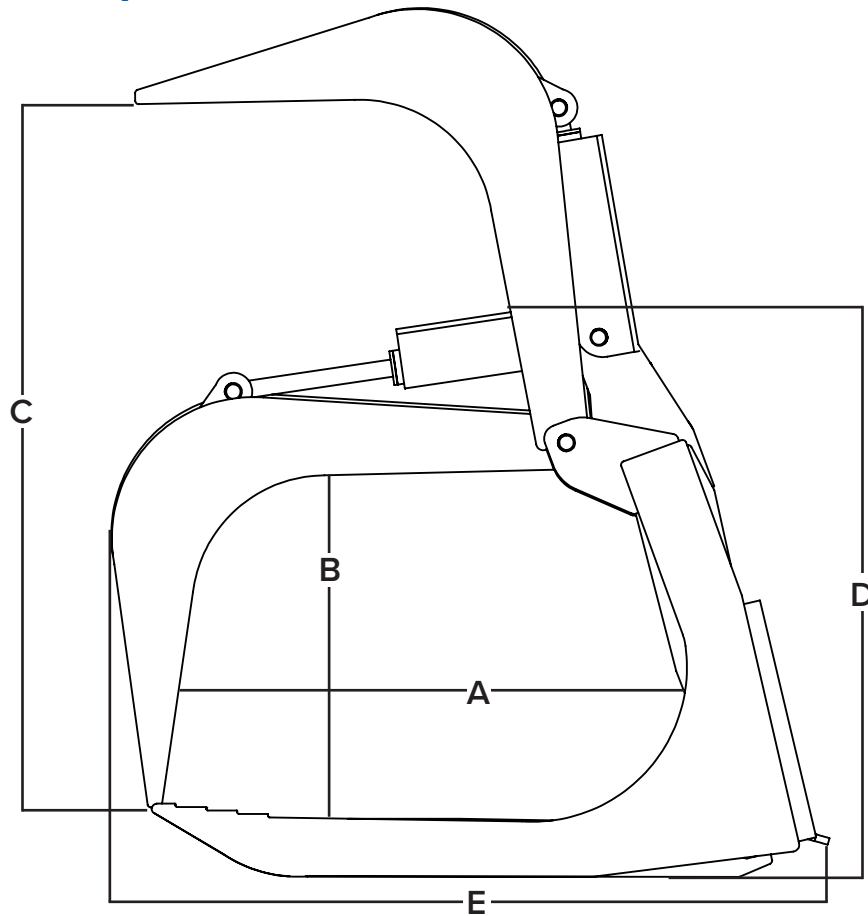
5.3 Safety Decals



ITEM	PART NUMBER	DESCRIPTION	QTY
1	BD-057	2.9" x 17.4" Decal, Blue Diamond	2
2	BD-063	2.0" x 12.0" Decal, Extreme Duty	2
3	BD-111	7.75" x 6.0" Decal, Blue Diamond, Diamond Shape	2
4	BD-060	2.5" x 3.5" Decal, Blue Diamond, Diamond Shape	2
5	BD-003	2.5" x 2.5" Decal, Crush Hazard Stay Clear	2
6	BD-002	2.0" x 2.5" Decal, Pinch Point Stay Clear	2
7	BD-092	1.5" x 2.0" Decal, Warranty Registration QR Code	1
8	BD-004	2.0" x 4.0" Decal, Grease All Fittings Every 8 Hours	1
9	BD-001	3.0" x 3.0" Decal, Read Owner's Manual	1
10	BD-123	3.0" x 3.0" Decal, High Pressure Fluid Hazard	1

6. Specifications

6.1 Attachment Specifications



DESCRIPTION	106220	106230	106240	106260
Width	72"	78"	84"	96"
Inside Depth with Closed Clamp (A)	35"			
Inside Height with Closed Clamp (B)	25"			
Opening Height (C)	50"			
Overall Height with Closed Clamp (D)	42"			
Overall Depth (E)	52"			
Tine Thickness	1/2"			
Top Clamp Thickness	1/2"			
Maximum Pressure	3200 PSI			
Weight	1170 lbs	1194 lbs	1299 lbs	1394 lbs

6. Specifications

6.2 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)



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 Extreme Duty High Capacity Root Grapple 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

Blue Diamond® Attachments
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