

Angle Broom Heavy Duty Series 2

Operation and Maintenance Manual



MINI & FULL SIZE



888-376-7027 | BlueDiamondAttachments.com

Register your
WARRANTY
within 30 days
of purchase



Introduction: Owner Information

Thank you for your decision to purchase a Blue Diamond® Heavy Duty Series 2 Angle Broom. 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 top right side of the Angle Broom's pivot 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. Pre-Delivery Inspection Instructions

Use this checklist to verify safety, function, and readiness prior to delivery.

END USER'S NAME: _____

DATE: _____

ITEM NUMBER & DESCRIPTION: _____

SERIAL NO.: _____

HOST MACHINE MAKE/MODEL: _____

1.1 Safety & Documentation

- ☐ Operation and Maintenance Manual is included.
- ☐ Safety decals are present and legible.
- ☐ Model and serial number plate is present and intact.
- ☐ Verify required hydraulic flow range for customer's host machine.

1.2 Visual Inspection

- ☐ Unit is free of shipping damage, dents, cracked welds, etc.
- ☐ Verify motor and safety covers are in place and secure.
- ☐ Ensure drive system is correctly lubricated.
- ☐ Fasteners are properly torqued.

1.3 Hydraulic System & Operational Test

- ☐ Hydraulic hose routing is appropriate for application.

- ☐ Fittings are properly tightened; verify no leakage.
- ☐ Quick couplers are correct and clean.
- ☐ Smooth operation; no hydraulic leaks or excessive vibration of attachment.
- ☐ Verify attachment has been connected to the host machine that will be used for operation and tested.
- ☐ Verify the host machine's hydraulic flow with a flow meter.

1.4 Final Delivery

- ☐ Maintenance schedule located in Operation and Maintenance Manual has been reviewed.
- ☐ Grease type and intervals were provided.
- ☐ Wafer change procedure and maintenance safety have been explained.
- ☐ Register the attachment for warranty by following the instructions below:
 - ☐ Fill out this form and email it to warranty@battachments.com

TECHNICIAN: _____

CUSTOMER: _____

DATE: _____

2. Introduction

2.1 Attachment Identification



2. Introduction

2.2 About this Attachment

The Blue Diamond® Heavy Duty Series 2 Rotating Angle Broom is built for powerful sweeping performance in the toughest conditions. Designed for skid steers, mini skid steers, and tractor loaders, this broom makes quick work of dirt, snow, gravel, and debris on construction sites, driveways, and parking lots.

Available with manual or hydraulic angle options, the broom's hydraulic version includes an easy-to-use in-cab control for smooth angle adjustments while operating. Choose between poly or poly-steel bristles for maximum durability and sweeping efficiency. When not in use, retractable support legs protect the broom and maintain bristle shape for longer life. Built for heavy-duty cleanup and year-round use, this broom delivers performance, reliability, and control you can count on.

2.3 Attachment Model Numbers

MODEL NUMBER	ACTUATION	WIDTH
116180	Hydraulic	36"
116182	Manual	
116200	Hydraulic	48"
116202	Manual	
116205	Hydraulic	60"
116207	Manual	
116210	Hydraulic	72"
116212	Manual	
116215	Hydraulic	84"
116217	Manual	
116220	Hydraulic	96"
116222	Manual	

3. Safety

3.1 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, Prime Mover:

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

Attachment, Implement, Equipment:

- The Angle Broom is the tool that is being attached to the host machine; therefore, the terms “attachment”, “implement”, and “equipment” will be used. The attachment, implement, and equipment mean any tool that is being used on any vehicle, tractor, or skid steer being used for different applications.

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.

3. Safety

3.2 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.
- It is the skill, care, common sense, and good judgment of the operator that will determine how efficiently and safely the job is performed.
- 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

- Any use of the machine other than the intended use is a non-intended use and is considered to be unauthorized and dangerous. Blue Diamond® is not liable for any damage or injury resulting from non-intended use.
- 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 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.

3. Safety

3.3 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.
- 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 to 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 broom running at sweeping speed.
- The operator is responsible for the safety of all people in the vicinity of the operating area. If any person enters the operating area, the operator must immediately stop the machine and attachment.
- Make sure everyone on site is accounted for and their location is known.
- 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.
- Know the capabilities of your equipment and practice its operation to become familiar with the controls, emergency shut down procedures, and the way it handles your machine.
- 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 3500 psi (241 bar) operating pressure.
- Use caution on slopes and near banks and ditches to prevent overturn.

3. Safety

3.3 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.

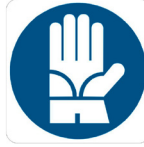
Hydraulic System

- 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.

4. Operation

4.1 Pre–Operation Inspection

Before operating the Heavy Duty Series 2 Angle Broom 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.
-
- Inspect the attachment for shipping damage. If damage does exist, do not operate until the damaged parts have been replaced or repaired.
 - Lubricate the attachment per the schedule outlined in the Maintenance section. See "5.1 Service Schedule" on page 19.
 - Check the attachment mounting frame for damage or cracks.
 - Check that all shields and guards are in place.
 - Check for loose hardware (i.e. nuts, bolts, screws, etc.), and tighten them if necessary.
 - 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.

- 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.
- Check for wear and tear on pins, linkages, cutting edges and replace any damaged and/or excessively worn parts.
 - Use only Blue Diamond® recommended replacement parts. Other parts may be substandard in fit and quality.
 - Ensure any damage or excessively worn parts are replaced.
 - Always wear safety goggles or glasses when inspecting equipment.
 - If equipped with a water kit, remove dirt or debris from the strainer bowl and nozzles.

4. Operation

4.2 Machine Requirements



DANGER



FLYING DEBRIS OR OBJECTS WILL CAUSE SERIOUS INJURY OR DEATH

To protect the operator from any flying debris or objects, it is important that the machine's operator's cab should be equipped with a thermoplastic polycarbonate or similar material front windshield and similar protection on the sides of the operator's cab before operating the attachment.

Blue Diamond® recommends that the machine be equipped with a thermoplastic polycarbonate or similar material front windshield and similar protections on the side of the operator's cab.

Only use the Heavy Duty Series 2 Angle Broom on compatible host machines. Hydraulic flow must not exceed twenty-six gallons per minute (26 GPM) or ninety-eight liters per minute (98 L/min). Do not use high flow hydraulics when operating this attachment.



IMPORTANT



Do not use high flow hydraulics when operating the Heavy Duty Series 2 Angle Broom as this could result in serious damage.

The host machine's relief pressure must not exceed 3500 psi (241 bar). Consult the host machine's Operator's Manual for hydraulic flow and pressure specifications.

See chart below for minimum lift capacity required for each Heavy Duty Series 2 Angle Broom model.

MODEL NUMBER	WIDTH	WEIGHT
116180	36"	580 lbs (263 kg)
116182		
116200	48"	629 lbs (285 kg)
116202		
116205	60"	661 lbs (300 kg)
116207		
116210	72"	716 lbs (325 kg)
116212		
116215	84"	759 lbs (344 kg)
116217		
116220	96"	808 lbs (367 kg)
116222		

4.3 Transporting the Attachment



CAUTION



The operator in charge of the transportation and installation of the attachment must be familiar with the following instructions.

Be sure to pay careful attention to the weight of the Angle Broom.

Lower the support leg so it is engaged.

Disconnect the hydraulics and the wire harness (if applicable) from the host machine. See "Disconnecting Attachment From the Machine" on page 15.

Clear dirt, rocks, and any other debris from the Angle Broom.

Use a minimum of four (4) heavy duty ratchet straps or chains rated for the attachment's weight. See "7.1 Attachment Specifications" on page 44 for more information.

4. Operation

4.3 Transporting the Attachment Cont'd

Hook the ratchet straps to designated anchor points. Do not drape straps over the hood weldment or motor cover as this can dent or crack the weldments.

Make sure the Angle Broom is secured prior to heading towards the next location.

4.4 Entering & Exiting the Prime Mover



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

Entering the Operator's Position

Use the safety treads, handles, and steps on the attachment and machine to enter the operator's position. Always maintain three (3) points of contact.

Skid Steer

When in the operator's position, secure the seatbelt, lower safety seat bar, start the engine, and release the parking brake.

Mini Skid Steer

When in the operator's position, face forward and grip the handles. Place both feet on the rear operator platform to engage the operator presence system, start the engine, and release the parking brake.

Tractor

When in the operator's position, secure the seatbelt, adjust the seat if necessary, 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 parking brake, stop the engine, and wait for all moving parts to stop. Leave the operator's position.

4.5 Attachment Installation

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 13.

4. Operation

4.5 Attachment Installation Cont'd

Connecting Attachment to the Machine Cont'd

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.

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



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.**

Leave the operator's position. See "Leaving the Operator's Position" on page 13.

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 machine.

For the hydraulic hoses, the return hose must be connected before the pressure hose.

Pull on each hose to verify full connection is made.

Connecting the Wire Harness

If the Heavy Duty Series 2 Angle Broom must be angled manually and not equipped with a water kit, a wire harness is not needed.

If the Heavy Duty Series 2 Angle Broom must be angled manually and is equipped with a water kit, a wire harness is needed. A universal wire harness or OEM wire harness can be used. It is sold separately from the water kit.

If the Heavy Duty Series 2 Angle Broom is equipped to hydraulically adjust the angle, a wire harness will be needed. A universal wire harness or OEM wire harness can be used.

If using an OEM wire harness, it will typically plug into the same area as the hydraulic connections. See your host machine's Operator's Manual for additional information.

If using a universal wire harness purchased from Blue Diamond®, it will plug into a 12-volt power socket, otherwise known as a cigarette lighter plug, which tends to be located within the cab of the host machine.

If the Heavy Duty Series 2 Angle Broom is equipped with hydraulic angle adjustment and a water kit, an additional wire harness will need to be purchased. One wire harness must be an OEM and the other wire harness must be a universal (PN 200010).

See "6.5 Hydraulic System Components" on page 36 and "6.8 Water Kit Components" on page 40 for more information.

4. Operation

4.5 Attachment Installation Cont'd

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 machine's Operator's Manual for correct procedure.)

Disconnect attachment hydraulic hoses from the machine. The hoses must be disconnected in the following order: pressure hose then return hose.

The pressure hose must be disconnected before the return hose.

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 13.

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 13.

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.

4.6 Operating the Attachment



WARNING



THROWN OBJECTS OR ROTATING BRISTLES CAN CAUSE SERIOUS INJURY OR DEATH

- Clear work area of all debris, such as rope, wire, cable or other materials that can wrap around the broom core and broom wafers, causing entanglement and attachment damage.
- DO NOT operate the Angle Broom in vicinity of bystanders, animals, or damageable property. Objects can be thrown more than several feet.
- Keep all shields installed. Repair or replace if damaged or missing.
- Check broom core, broom wafers, and mounting hardware. Replace if damaged. Never weld or modify.



WARNING



AVOID SERIOUS INJURY OR DEATH

Never operate the attachment with any guards removed, including the motor cover.



WARNING



Never allow riders on the attachment.

1. Install the Angle Broom onto the host machine. (See "Connecting Attachment to the Machine" on page 13.)
2. Move the support feet into the upper position, so that they are not dragging on the ground or impeding the rotation of the broom drum/wafers.
3. Raise the attachment approximately six (6) inches (152 mm) off the ground.

4. Operation

4.6 Operating the Attachment Cont'd

4. With the machine's engine RPM just above idle, engage the auxiliary hydraulic flow (see the host machine's Operator's Manual) so that the drum begins to slowly rotate.
5. Slowly raise the machine's engine RPM to the desired brush speed, maintaining a safe speed.



IMPORTANT



DO NOT exceed 3500 psi (241 bar) operating pressure and twenty-six gallons per minute (26 GPM) hydraulic flow. Doing so can result in serious damage.

6. Adjust the Angle Broom so the broom pivot pin is perpendicular to the ground. This ensures even sweeping when the attachment is angled. The ends of the attachment will rise or lower when angled if the pivot pin is not perpendicular to the ground. See "How to Angle the Broom" on page 16 for additional information.
7. Limit travel speed to five miles per hour (5 mph) or eight kilometers per hour (8 km/h).
8. Adjust the brush using the host machine's tilt function to give a two – four inch (2 – 4") wide pattern. Excessive downforce will prematurely wear the bristles.
9. Slow down when sweeping heavy material. Allow time for the broom to sweep.

How to Angle the Broom

To angle the broom left or right, perform the following:

Manual Angle

1. Raise the Angle Broom slightly above the ground with the pivot pin vertical.
2. Remove the angle link pin connecting the two (2) angle links.
3. Manually swing the broom all the way left or right.
4. Re-insert the angle link pin.

Hydraulic Angle

1. Ensure the proper wire harness is properly connected. See "Connecting the Wire Harness" on page 14.

NOTE: If using the hydraulic angle without a water tank connected, the wire harness can be OEM or universal.

2. If using the primary function, sweeping, stop and wait for all moving parts to stop.
3. Once the drum has completely stopped rotating, press and HOLD the button to engage the electrical controls so the hydraulic flow is directed towards the cylinder.
4. While still holding the button that engages the electrical controls, use the auxiliary hydraulics, typically in the form of a roller switch on the right joystick, to angle the broom either left or right, the secondary function. Keep the auxiliary hydraulics engaged until the broom reaches the desired angle. (See the host machine's Operator's Manual for more information.)

NOTE: The broom's angle cannot be adjusted while sweeping. If desiring an Angle Broom that can be hydraulically angled and run at the same time, check out the Blue Diamond® Severe Duty Angle Broom.

5. Once at the desired angle, release the button on the left joystick to disengage the electrical controls. This will allow the hydraulic flow to now be used for the primary function of the attachment.

If the angle function is not working, see "5.15 Troubleshooting" on page 28.

4. Operation

4.6 Operating the Attachment Cont'd

Water Kit (Optional)

Blue Diamond® offers a water kit that mounts onto the Angle Broom itself. The water kit dispenses water to control and minimize airborne dust and debris particles.

Water Kit with Manual Angle Broom

In addition to the water kit, if equipped with a manually adjusted Angle Broom, a wire harness will be needed for the water kit to function.

To use the water kit, perform the following:

1. Install the water kit. [See "5.11 Water Kit Installation (Optional)" on page 25.]
2. Install the wire harness, either OEM or universal, onto the installed water kit. See "Connecting the Wire Harness" on page 14.
3. Engage the wire harness to engage the water pump, allowing water to flow out of the nozzles.
4. To turn off the water kit, disengage the wire harness.

Water Kit with Hydraulic Angle Broom

If using a water kit with a hydraulic Angle Broom, an additional wire harness will be needed. One wire harness will need to be OEM, and the other wire harness will need to be universal. This allows the water kit to be independently controlled from the hydraulic adjustment.

NOTE: It is not possible to use two (2) universal wire harnesses or two (2) OEM wire harnesses with this broom.

1. Install the water kit. [See "5.11 Water Kit Installation (Optional)" on page 25.]
2. Install either the OEM wire harness or the universal wire harness onto the water kit, whichever one is NOT already installed on the Angle Broom.
3. Engage the wire harness to turn on the water pump, allowing water to flow out of the nozzles.

4. To turn off the water kit, disengage the wire harness.

4.7 Operating Tips

- To keep the attachment in optimal condition, always follow the maintenance schedule outlined in "5.1 Service Schedule" on page 19.
- Perform "4.1 Pre-Operation Inspection" on page 11 each time you operate the attachment.
- Operate the Angle Broom from inside an enclosed cab or wear a dust mask and eye protection. Flying dust, rocks, and other debris can enter the lungs causing respiratory problems, enter the eyes, causing injury; or can become projectiles, causing injury to bystanders or animals.
- Avoid hitting solid objects with this attachment, as hitting solid objects will result in damage to the attachment or serious injury or death to the operator.
- Always operate the Angle Broom at the slowest rotating speed that will perform the job. This is to keep flying debris to a minimum.
- Avoid traveling at high speeds while operating the Angle Broom as this can result in sudden loss of control, leading to damaged equipment, damaged property, and injury to the operator or bystanders.
- Sweep areas when traffic is low.
- Do not sweep debris towards buildings, bystanders, people, etc. This can result in damage or injury.
- Make sure hydraulic hoses and wire harnesses are properly routed without twists to prevent damage, such as stretching, pinching, crushing, or kinking. A damaged hydraulic hose can burst and leak hydraulic fluid.

4. Operation

4.7 Operating Tips Cont'd

- Avoid exposure to dust containing crystalline silica particles. This dust can cause serious injury to the lungs (silicosis). Because crystalline silica is a basic component of sand and granite, many construction sites produce dust containing crystalline silica.
- Do not use this attachment to lift, carry, push, or tow other equipment or objects. This is not what this attachment is designed for. If you need an attachment to lift, carry, push, or tow, contact your local Blue Diamond® dealer for other attachments to better fit this need.
- Do not use this attachment to lift the front or back of the host machine off the ground. Doing so will result in damage to the host machine and attachment. It can also result in serious injury or death to the operator and/or bystanders.
- Keep bystanders far away from the Angle Broom, as it can throw debris when it is in operation. Shut off the broom's rotating drum if any person enters the discharge area.

5. Maintenance

5.1 Service Schedule

DESCRIPTION	SERVICE PROCEDURES					
	Check	Clean	Lube	Change	Adjust	Drain
Daily Maintenance (or every 8 hours)						
Hydraulic Fittings	•					
Hydraulic Hoses	•					
All Hardware	•					
Safety Decals	•					
Broom Wafers	•					
Strainer (if equipped)	•	•				
Nozzles (if equipped)	•	•				
Weekly Maintenance (or every 40 hours)						
All Hardware	•					
Frame (cracks, bends, or damage)	•					
Angle Vertical Point			•			
Right Side Bearing			•			
Monthly Maintenance						
Broom Wafers	•					
Frame (cracks, bends, or damage)	•					
Safety Decals	•					
All Hardware	•					
Hydraulic Fittings	•					
Hydraulic Hoses	•					
Motor Cover		•				

5. Maintenance

Proper and regular maintenance ensures a long life of the attachment, avoids failures, and saves time and repair costs.

Periodic inspections and maintenance operations described in this section must be performed by an operator in times and terms prescribed. Failure to comply with maintenance prescriptions can compromise the function and lifetime of the attachment, which will result in the warranty becoming void.

Repairs, maintenance, and modifications other than those mentioned in this manual should NOT be performed without consulting Blue Diamond® Product Support.

Wrong or inappropriate repairs or maintenance may generate abnormal operating conditions, equipment damage, and generate risks for the operator.



WARNING



AVOID SERIOUS INJURY OR DEATH

The following must always be performed prior to any adjustment being made:

- 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.
- Set the parking stand.

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



WARNING



AVOID SERIOUS INJURY OR DEATH

Before operating or servicing the unit:

- Read and understand the machine's Operator's Manual.
- Follow the warnings and instructions in this manual when making repairs, adjustments, or servicing.
- Check for correct function after adjustments, repairs, or service.

UNTRAINED OPERATORS AND FAILURE TO FOLLOW INSTRUCTIONS CAN CAUSE SERIOUS INJURY OR DEATH.

5.2 Maintenance Safety



WARNING



AVOID SERIOUS INJURY OR DEATH

Never operate the host machine in a closed building. Proper ventilation is required when operating the machine under all circumstances.

- Always keep the work area clean and dry.
- Always use personal protective equipment (PPE), such as eye, hand, and hearing protection when performing any service or maintenance.
- A fire extinguisher and first aid kit should be readily accessible while performing maintenance on the attachment and machine.
- Before working or doing maintenance on the attachment and machine, shut off the engine and remove the key. Make sure the host machine's wheels are blocked.
- Never work under the machine or attachment unless the machine or attachment is blocked or securely supported.
- Disconnect the battery (both terminals) before welding on any part of the machine. Failure to do so may cause damage to electrical components.

5. Maintenance

5.2 Maintenance Safety Cont'd

- When working around batteries, remember that all exposed metal parts are “live”. Never lay a metal object across the terminals because a spark, short circuit, explosion, or personal injury may result.
- Battery posts, terminals, and related accessories contain lead and lead components. Wash hands after handling.
- Always relieve hydraulic system pressure before repairing, adjusting, or disconnecting. Never search for leaks with your hands. See "Hydraulic System" on page 10 for additional safety information.
- When replacement parts are necessary, genuine factory replacement parts must be used to restore your equipment to original specifications. Blue Diamond® will not be responsible for injuries or damage caused by use of unapproved parts and/or accessories.
- When completing service or maintenance on this attachment, make sure all shields and guards are installed before operating the attachment.

5.3 Daily Maintenance

Inspect the attachment by performing a walkaround daily before and after use. Use the following inspection checklist as a guideline.

Perform the following after every eight (8) hours of operation:

- Verify that the attachment is properly connected to the host machine.
- Check all components and hardware to ensure the equipment is secure and thoroughly tightened.
- Check the frame and all welds for cracks or damage.
- Check the mounting frame for proper operation and signs of damage or unusual wear.
- Check the attachment's mounting hardware for wear or damage. Inspect the pins and mount

on the attachment for wear or damage.

- Check for damaged or missing safety decals. Replace if necessary.
- Check broom wafers for excessive wear or damage.
- Check hydraulic hoses and fittings for wear, damage, or leaks.
- Verify that the attachment is properly connected to the machine.
- Check that all shields and guards are in place.
- If the water kit is equipped, check the strainer bowl daily for dirt and debris. This debris can plug the nozzles.
- If the water kit is equipped, check the nozzles daily for debris. Remove and clean plugged nozzles.

NOTE: Repair or replace any damaged parts.

NOTE: After initial use or repair/replacement of damaged parts, it is important to check the repaired/replaced parts or proper bolt torque and operation.

5.4 Weekly Maintenance

Perform the following after every forty (40) hours of operation:

- Check all bolts, nuts, and other hardware for proper torque.
- Inspect the frame for cracks, bends, or damage.
- Lubricate the attachment. See "5.6 Lubrication" on page 22 for additional information.

5.5 Monthly Maintenance

Perform the following after every thirty (30) days of operation:

- Inspect the broom wafers for excessive wear.
- Check that all bolts are properly torqued.
- Check frame, shields, and guards. Repair if damaged, or replace if necessary.
- Check for damaged or missing decals. Replace if necessary.

5. Maintenance

5.5 Monthly Maintenance Cont'd

- Check for damaged or leaking hydraulic hoses or fittings. Replace if necessary.
- Clean all debris, leaves, grass, and other debris from the motor area and under covers.

5.6 Lubrication



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 correct disposal.

Grease the following every forty (40) hours of operation or once a week, whichever occurs first. Always use a quality lithium-based multi purpose grease when lubricating the attachment.

Broom Angle Vertical Point

This grease zerk is located on the left side of the vertical angle pivot.

Apply three – four (3 – 4) pumps of grease to the grease zerk.

Right Side Bearing

These two (2) grease zerks are located on the bearing, which is on the right side of the Angle Broom. Grease only one (1) of the two (2) zerks. Both zerks do not need to be greased.

Apply three – four (3 – 4) pumps of grease to only one of the grease zerks.

5.7 Broom Core

See "6.2 Main Components" on page 32 for parts diagrams.

To remove the broom core from the attachment, perform the following:

1. Park the machine and attachment on a flat, level surface. Lower the attachment flat on the ground.
2. Leave the operator's position. See "Leaving the Operator's Position" on page 13.
3. Disconnect the attachment's hydraulic hoses from the host machine.
4. Remove the motor guard hardware and motor guard.
5. Remove the motor hardware and the motor. The motor hoses can remain connected.
6. Remove the bearing hardware and the bearing [Figure 1].

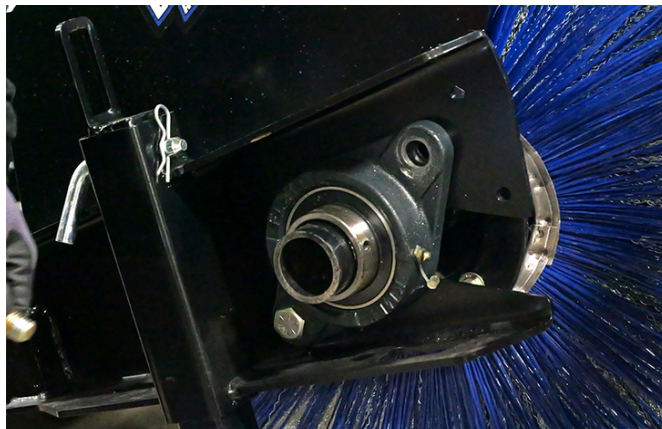


Figure 1

7. Using the host machine's lift arms or a hoist in combination with lifting straps, raise the broom hood off the broom core.

NOTE: A pry bar may need to be used to remove the drum from the core.

8. Roll the broom core away from the hood.

To reinstall the broom core onto the attachment, perform the above steps in reverse order.

5. Maintenance

5.8 Motor

See "6.2 Main Components" on page 32 for parts diagrams.

To remove the broom motor from the attachment, perform the following:

1. Park the machine and attachment on a flat, level surface. Lower the attachment flat on the ground.
2. Leave the operator's position. See "Leaving the Operator's Position" on page 13.
3. Disconnect the attachment's hydraulic hoses from the host machine.
4. Remove the motor guard hardware and motor guard.
5. Remove the motor hardware and the motor.

To reinstall the broom motor onto the attachment, perform the above steps in reverse order.

5.9 Bearing

See "6.2 Main Components" on page 32 for parts diagrams.

To remove the bearing from the attachment, perform the following:

1. Park the machine and attachment on a flat, level surface. Lower the attachment flat on the ground.
2. Leave the operator's position. See "Leaving the Operator's Position" on page 13.
3. Disconnect the attachment's hydraulic hoses from the host machine.
4. Remove the shaft retaining hardware and the bearing hardware.
5. Remove the bearing.

To reinstall the bearing onto the attachment, perform the above steps in reverse order.

NOTE: To tighten the bearing lock collar, use a hammer and drift punch. Clockwise movement tightens the collar.

5.10 Broom Wafer Replacement

Brooms wafers need replaced as soon as a sweeping pattern of two – four inches (2 – 4") (50 – 100 mm) can no longer be achieved when the Angle Broom's frame is one inch (1") (25 mm) off the ground.

The following table lists all the tools needed to completely replace the broom wafers from start to finish.

TOOLS NEEDED	
✓	1/2" Socket & Wrench
✓	9/16" Socket & Wrench
✓	1 1/8" Socket & Wrench
✓	1/2" Impact Drive
✓	3/8" Drive Ratchet
✓	1/2" Drive Ratchet
✓	2 Lifting Straps
✓	Allen Wrenches for Set Screws
✓	Pry Bar
✓	Stand for Broom Assembly

Removal

1. Park the machine and attachment on a flat, level surface. Lower the attachment flat on the ground.
2. Leave the operator's position. See "Leaving the Operator's Position" on page 13.
3. Disconnect the attachment's hydraulic hoses from the host machine.
4. Remove the motor guard hardware and motor guard.
5. Remove the motor hardware and remove the motor. The motor hoses can remain connected.
6. Remove the bearing hardware and the bearing ["Figure 1" on page 22].
7. Using the host machine's lift arms or a hoist in combination with lifting straps, raise the broom hood off the broom core.

5. Maintenance

5.10 Broom Wafer Replacement Cont'd

Removal Cont'd

NOTE: A pry bar may need to be used to remove the drum from the core.

8. Roll the broom core away from the hood.
9. Remove the hardware from the end retainer, and then remove the end retainer [Figure 2].



Figure 2

10. Remove the wafers.

NOTE: If poly/steel combination or steel wafers are used, the steel wires may need cut for the wafers to separate from each other.

Replacement

1. Using a hoist or loader with lift straps attached to the drum, stand the broom drum vertical with the installed end retainer on the bottom.
2. Install a new wafer by making sure the two (2) pins hug one of the drum's bar. See Figure 3.

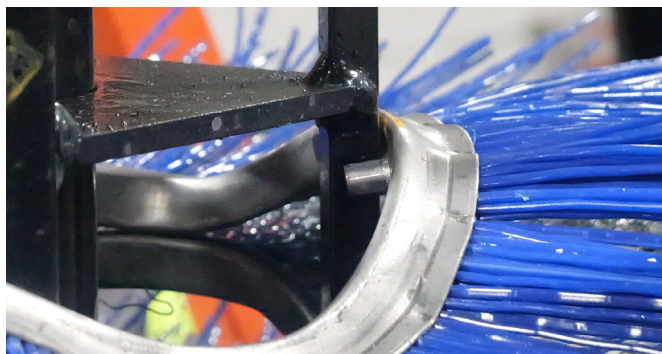


Figure 3

3. Install additional wafers with the convolutions (waves) opposing each other to expand the broom [Figure 4].

NOTE: Poly wafers should alternate with steel wafers if both are being used.

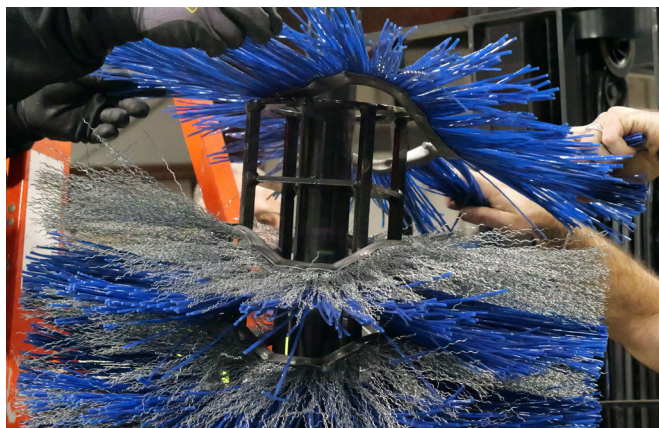


Figure 4

4. After installing the last wafer, install the end retainer plate. Carefully lay the core on its side [Figure 5].



Figure 5

5. Using a hoist or loader, raise the broom core from the ground, and insert it into the broom frame.
NOTE: Make sure the broom core is loaded with the splined end lined up with the motor splines.
6. Reinstall the bearing guard, motor plate, motor subassembly (if removed), and motor guard plate.
7. Be sure everything is properly torqued. Refer to "7.2 Torque Specifications – Imperial" on page 46.

5. Maintenance

5.11 Water Kit Installation (Optional)

Water kits are sold separately from the Angle Broom. Be sure to purchase a wire harness, which is sold separately. The wire harness is needed to operate the water kit.

See "7.7 Water Kit Components" on page 44 for diagrams.

1. Install the support plate (216360) to the top of the mount.
2. Install the mounting bracket (116152) above the pivot point.
3. Install the base weldment for the water tank (255420) to both the support plate (216360) and the mounting bracket (116152).
4. Install the water pump bracket (216673) to the base weldment (255420).
5. Bolt the pump (216540) to the water pump bracket (216673).
6. Crimp the connector pins onto the pump wires.
7. Push the connector pins into the Deutsch connector, black on "1" and red on "2". Pull on the wire to test that they are securely connected.
8. Insert the green connector piece into the Deutsch connector.
9. Secure the water tank (255424) to the base weldment (255420) using the straps (255422) and the J-bolts (216548) and nuts (299620).
10. Thread the fitting (216555) onto the water tank.
11. Thread the filter fitting (216660) onto the water pump.
12. Thread the filter (216542) and the other fitting (216658) into the pump inlet. Ensure the direction of flow through the filter is towards the pump.
13. Attach one end of a section of the 1/2" inner diameter hose (216688) to the pump's fitting (216658). Attach the other end of the hose to the tank's fitting (216555). Secure with hose crimps (216691).
14. Connect the water pump fitting (216662) to the water pump.
15. Attach one end of another section of the 1/2" inner diameter hose (216688) to the water pump fitting (216662).
16. Loop the long hose (216688) around the back of the water tank to where the other end of the hose is on the right side of the broom attachment.
17. Every broom model will have two (2) water nozzles that use a 90 degree fitting for each end of the water hose. To assemble these, perform the following:
 1. Place a water nozzle strainer (216320) inside the water nozzle fitting (216315).
 2. Place a water nozzle (216305) on top of the water nozzle strainer (216320).
 3. Secure the internal pieces inside the water nozzle fitting (216315) with a plastic nut (216693).
 4. Place the assembled nozzle through the nozzle holder plate (216325) so that the hardware end of the plate is facing upwards and the assembled nozzle is pointing downwards.
 5. Repeat the above steps for the second water nozzle that use a 90 degree fitting, 216315.
18. Every broom model will have at least one (1) water nozzle that use a barbed tee fitting (216310). The total number varies per model. To assemble these, perform the following:
 1. Place a water nozzle strainer (216320) inside the water nozzle fitting (216310).
 2. Place a water nozzle (216305) on top of the water nozzle strainer (216320).
 3. Secure the internal pieces inside the water nozzle fitting (216310) with a plastic nut (216693).
 4. Place the assembled nozzle through the nozzle holder plate (216325) so that the hardware end of the plate is facing upwards and the assembled nozzle is pointing downwards.
 5. Repeat the above steps for the second water nozzle that use a barbed tee fitting, 216310.

5. Maintenance

5.11 Water Kit Installation (Optional) Cont'd

19. Set the assembled nozzles aside momentarily, and attach the nozzle tee fitting (216694) to the end of the 1/2" inner diameter hose (216688) that was brought around to the front of the broom. Secure with a hose crimp (216691).
20. Connect the assembled nozzles using 3/8" inner diameter hose (216690). Be sure to use the 90 degree nozzles at the end of the hoses.
NOTE: Be sure to keep the nozzle tee fitting (216694) in the middle of the water system as much as possible.
21. Once all the assembled nozzles are connected to the hoses, secure the nozzle holder plates (216325) to the front of the hood weldment.
22. Connect the wire harness to the Deutsch connector.
23. See "Water Kit (Optional)" on page 17 for instructions on how to operate the water kit.

5.12 Cleaning the Attachment

To maintain safety and quality performance, it is best to clean the Angle Broom after each use.

To clean the attachment, perform the following:

1. Park the machine and attachment on a flat, level surface. Lower the attachment flat on the ground.
2. Leave the operator's position. See "Leaving the Operator's Position" on page 13.
3. Disconnect the attachment hydraulic hoses from the host machine.
4. Lower the support feet.
5. Enter the operator's position. See "Entering the Operator's Position" on page 13.

6. Start the engine and fully lower the machine's lift arms while tilting the Angle Broom forward (down) until the support feet come in contact with the ground.
7. Use water or air pressure to clean debris from the Angle Broom's frame and shields.

Be careful when removing any obstructions that are wrapped around the broom core or broom wafers.

5.13 Spare Parts & Accessories

To maintain safety, performance, and product reliability, Blue Diamond® recommends the use of genuine Blue Diamond® replacement parts for all repairs and service.

Genuine Blue Diamond® parts are specifically designed and tested for your attachment and are identified in parts diagrams by the Blue Diamond® OEM icon. These components include critical items, such as hydraulic motors, cylinders, and structural weldments.

Use of non-genuine parts for components identified as Blue Diamond® OEM may affect product performance and could void applicable warranty coverage.

To obtain replacement parts, contact Blue Diamond® Product Support with the following information:

- Type of attachment
- Serial number
- Part number and/or description of part(s) needed
- Quantity of part(s) needed

5. Maintenance

5.14 Storage

Storage

Sometimes it may be necessary to store your Heavy Duty Series 2 Angle Broom for an extended period of time. Below is a list of items to perform before storage.

- Raise the broom housing so that the broom wafers are two – four inches (2 – 4") (50 – 100 mm) above the ground before lowering the support's feet position so that they are now preventing the broom wafers from touching the ground.
- Make sure the hydraulic hose couplers are capped, plugged, or connected to each other.
- Thoroughly wash the attachment before storing it for long periods.
- Lubricate the attachment.
- Coat the exposed portion of the cylinder with oil, if equipped with hydraulic angle adjustment.
- 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 flat on the ground in a dry, protected shelter.
- Do not store the polypropylene broom wafers in direct sunlight. The material can deteriorate.

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 Angle Broom has been in storage, it is necessary to follow a list of items to return the attachment to service.

- Lubricate the attachment.
- Clean the exposed portion of the cylinder rod and apply a light coating of oil.
- Connect and operate the attachment and check for correct function.
- Check for leaks. Repair as needed.

5. Maintenance

5.15 Troubleshooting

PROBLEM	CAUSE	SOLUTION
Hydraulic angle adjustment does not work.	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.
	Blown fuse caused by electrical overload	Replace fuse, and reduce electrical load to prevent a reoccurrence. Refer to the host machine's Operator's Manual for more information.
	Damaged wire or electrical connections	Repair wire connections. See your local dealer for electrical issues with the host machine.
	Damaged wire harness	Replace wire harness.
	2-way hydraulic function not switching to angle	Continuously hold the power button to keep the solenoid engaged. This is an either-or system. The solenoid switches the hydraulic flow between EITHER the motor OR the angle cylinder. See "How to Angle the Broom" on page 16 for further information.
Hydraulic angle adjustment only angles either left or right.	Solenoid not working	To determine if the solenoid is or is not working properly, follow the instructions stated in "Universal Wire Harness Troubleshooting for 216900" on page 30. If the solenoid is not functioning, replace.
Hydraulic angle moves too fast.	Too much flow being directed towards the cylinder	Install a restrictor orifice on the cylinder to limit flow. Contact Blue Diamond® Product Support for additional information.
Hydraulic angle moves too slow.	Restricted hose	Check for damaged hose between host machine and cylinder. If damaged, replace the hose.
	Bad circuit relief on host machine	Investigate and repair.
	Auxiliary valve spool on host machine not shifting properly	Investigate and repair.
	Cylinder seals bypassing	Have cylinder repacked or replaced.
Hydraulic angle adjustment moves in the wrong direction.	Hydraulic flow going the wrong direction	Reverse the hydraulic flow while the power is engaged.
Hydraulic oil level goes down during operation.	Leak at hoses on the attachment	Investigate and repair.
	Leak in the prime mover hydraulic system	Investigate and repair.
Broom does not rotate or rotates slowly	Auxiliary hydraulics switch for continuous operation not engaged	Engage auxiliary hydraulics switch for continuous operation.
	One or both hydraulic couplers not fully connected	Check and reconnect couplers.
	Failed motor	Separate the motor from the attachment and try to cycle it (test bench). Determine if the motor is the issue. • If the motor is the issue, replace the motor. • If the motor is not the issue, check the spline.
	Stripped spline	Stripped splines can be caused by too much downpressure. If the spline is stripped, replace the entire drum.

5. Maintenance

5.15 Troubleshooting Cont'd

PROBLEM	CAUSE	SOLUTION
Broom wafers wear down too quickly.	Too much downpressure	Raise loader arms to the correct height [2 – 4" (50 – 100 mm)] for a wide sweeping pattern.
Broom wafers wear more on one end than the other.	Broom not level	Make the host machine's mount is positioned to keep the main pin vertical.
Poor sweeping quality	Broom wafers worn	Replace the broom wafers.
	Broom rpm too low	Reduce travel speed and increase engine rpm to increase hydraulic flow.
	Hydraulic flow is restricted with foreign material	Purge hydraulics to remove foreign material. See your local service technician to service the host machine's hydraulic system.

5. Maintenance

5.15 Troubleshooting Cont'd

Universal Wire Harness Troubleshooting for 216900



IMPORTANT



The following instructions can vary depending on the host machine. Be sure to always consult the machine's Operator's Manual for instructions on how to operate the auxiliary functions.

If the hydraulic angle function is not working, perform the following:

1. With a multimeter or a test light, attach the negative lead to the appropriate ground pin (see image and tables below) and the positive pin lead to the appropriate power pin on the host machine's 14-pin outlet. Press the buttons on the left joystick until the voltage is read or the test light illuminates. This will be the button to press and hold to activate the second function.

2. Plug the 14-pin connector into the host machine and test at the flat 2-pin trailer connector.

Put the test light negative lead into the female inlet and the positive lead into the male. Press the button and test for current flow.

If there is no current, the 14-pin connector is pinned incorrectly or there is a short in the connector. Replace the cable.



PIN	COLOR	MODEL'S GROUND PIN	MODEL'S POSITIVE PIN
A	Blue	John Deere	—
		Terex	
B	Orange	All BUT John Deere & Terex	—
D	Red	—	Bobcat
			CASE
			Pre 2019 CAT
			John Deere

If there is current, proceed to the next step.

3. Plug in the wire harness to the 14-pin connector. Press the appropriate joystick button and test for the current at the 2-pin Deutsch plug.

If there is no current, there is a short in the harness. Replace the cable.

If there is current, proceed to the next step.



4. Plug the 2-pin Deutsch plug into the electrical solenoid. Hold a metal screwdriver near the chrome solenoid body and have a second person press the appropriate button on the joystick.

If the screwdriver is not pulled to the solenoid, the solenoid is defective and needs replaced.

If the screwdriver is pulled to the solenoid, then you should have a working attachment. Be sure to check that the wire harness is properly pinned to match that of the host machine.



PIN	COLOR	MODEL'S GROUND PIN	MODEL'S POSITIVE PIN
D	Red	—	Kubota
			New Holland
			Takeuchi
E	Yellow	—	Post 2019 CAT
H	Green	—	JCB
			Luigong
			Sunward
			Volvo

6. Parts

6.1 Wear Parts

Broom Wafer Kits

PART NUMBER	DESCRIPTION	36" QTY	48" QTY	60" QTY	72" QTY	84" QTY	96" QTY
216410-KIT-36	Broom Wafer Kit – 8" x 26" Steel Convuluted for 36" Models	1	—	—	—	—	—
216410-KIT-48	Broom Wafer Kit – 8" x 26" Steel Convuluted for 48" Models	—	1	—	—	—	—
216410-KIT-60	Broom Wafer Kit – 8" x 26" Steel Convuluted for 60" Models	—	—	1	—	—	—
216410-KIT-72	Broom Wafer Kit – 8" x 26" Steel Convuluted for 72" Models	—	—	—	1	—	—
216410-KIT-84	Broom Wafer Kit – 8" x 26" Steel Convuluted for 84" Models	—	—	—	—	1	—
216410-KIT-96	Broom Wafer Kit – 8" x 26" Steel Convuluted for 96" Models	—	—	—	—	—	1
216415-KIT-36	Broom Wafer Kit – 8" x 26" Poly Convuluted for 36" Models	1	—	—	—	—	—
216415-KIT-48	Broom Wafer Kit – 8" x 26" Poly Convuluted for 48" Models	—	1	—	—	—	—
216415-KIT-60	Broom Wafer Kit – 8" x 26" Poly Convuluted for 60" Models	—	—	1	—	—	—
216415-KIT-72	Broom Wafer Kit – 8" x 26" Poly Convuluted for 72" Models	—	—	—	1	—	—
216415-KIT-84	Broom Wafer Kit – 8" x 26" Poly Convuluted for 84" Models	—	—	—	—	1	—
216415-KIT-96	Broom Wafer Kit – 8" x 26" Poly Convuluted for 96" Models	—	—	—	—	—	1
216417-KIT-36	Broom Wafer Kit – 8" x 26" Combo Convuluted for 36" Models	1	—	—	—	—	—
216417-KIT-48	Broom Wafer Kit – 8" x 26" Combo Convuluted for 48" Models	—	1	—	—	—	—
216417-KIT-60	Broom Wafer Kit – 8" x 26" Combo Convuluted for 60" Models	—	—	1	—	—	—
216417-KIT-72	Broom Wafer Kit – 8" x 26" Combo Convuluted for 72" Models	—	—	—	1	—	—
216417-KIT-84	Broom Wafer Kit – 8" x 26" Combo Convuluted for 84" Models	—	—	—	—	1	—
216417-KIT-96	Broom Wafer Kit – 8" x 26" Combo Convuluted for 96" Models	—	—	—	—	—	1

Water Kits – Requires a Wire Harness

PART NUMBER	DESCRIPTION	36" QTY	48" QTY	60" QTY	72" QTY	84" QTY	96" QTY
316150	Water Kit for 36" Models	1	—	—	—	—	—
316152	Water Kit for 48" Models	—	1	—	—	—	—
316154	Water Kit for 60" Models	—	—	1	—	—	—
316156	Water Kit for 72" Models	—	—	—	1	—	—
316158	Water Kit for 84" Models	—	—	—	—	1	—
316160	Water Kit for 96" Models	—	—	—	—	—	1

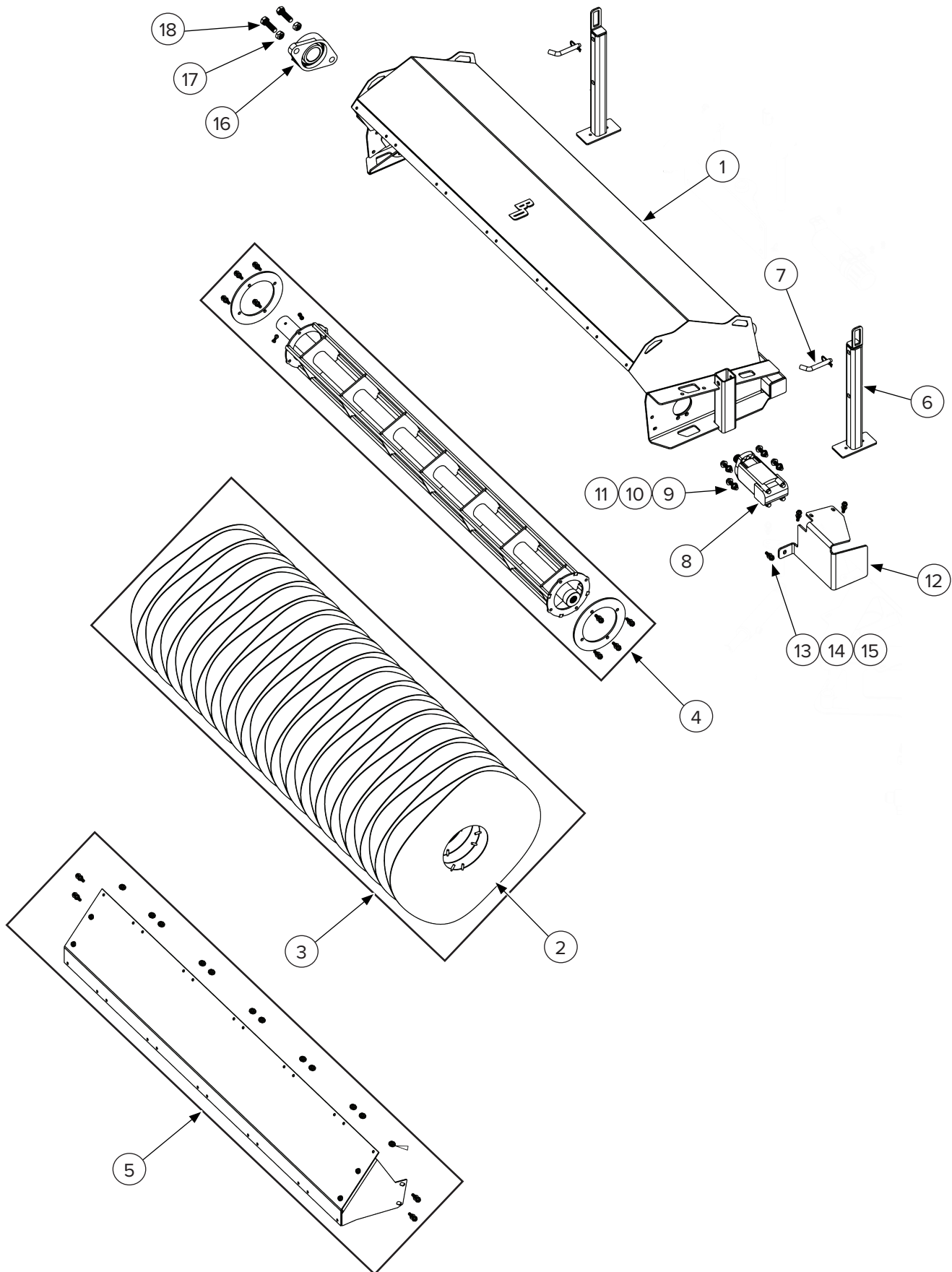
Wire Harnesses for Hydraulic Angle & Water Kits*

PART NUMBER	DESCRIPTION	36" QTY	48" QTY	60" QTY	72" QTY	84" QTY	96" QTY
200010	Universal Wire Harness with Control Switch & 12V Plug	1	1	1	1	1	1
216900	Wire Harness Flat 2 Pin to 14 Pin	1	1	1	1	1	1
216905	Wire Harness Flat 2 Pin to 8 Pin	1	1	1	1	1	1
216951-KIT	Wire Harness Adapter Kit 7 Pin Low Voltage Bobcat to 2 Pin Trailer Plug	1	1	1	1	1	1

*NOTE: If using a water kit with a hydraulic Angle Broom, one universal wire harness and one OEM wire harness must be used.

6. Parts

6.2 Main Components



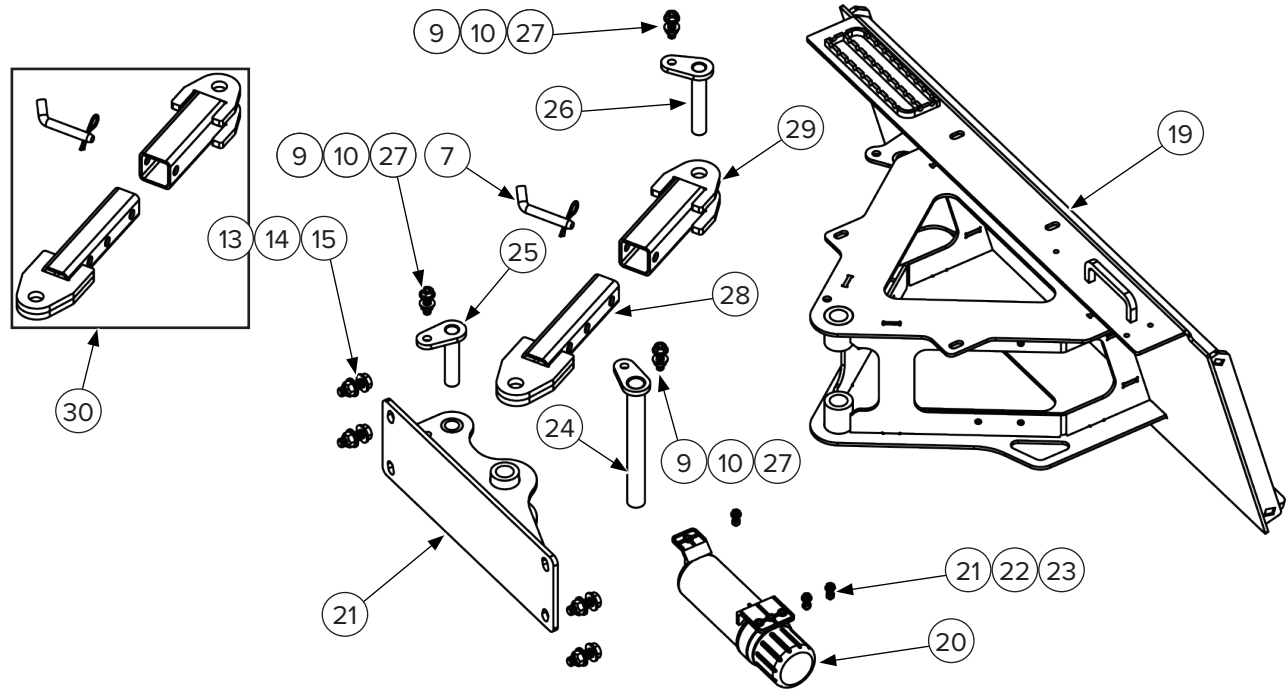
6. Parts

6.2 Main Components Cont'd

ITEM	PART NUMBER	DESCRIPTION	36" QTY	48" QTY	60" QTY	72" QTY	84" QTY	96" QTY
1	216265-36	36" Main Frame & Hood Weldment	1	—	—	—	—	—
	216265-48	48" Main Frame & Hood Weldment	—	1	—	—	—	—
	216265-60	60" Main Frame & Hood Weldment	—	—	1	—	—	—
	216265-72	72" Main Frame & Hood Weldment	—	—	—	1	—	—
	216265-84	84" Main Frame & Hood Weldment	—	—	—	—	1	—
	216265-96	96" Main Frame & Hood Weldment	—	—	—	—	—	1
2	216410	Broom Wafer – 8" x 26" Steel Convolute	19	25	31	37	43	49
	216415	Broom Wafer – 8" x 26" Poly Convolute	19	25	31	37	43	49
	216417	Broom Wafer – 8" x 26" Poly/Steel Combo Convolute	19	25	31	37	43	49
3	See 6.1 Wear Parts	Broom Wafer Kit for Complete Replacement	1	1	1	1	1	1
4	See 6.6 Drum Shaft Components	Drum Shaft Weldment	1	1	1	1	1	1
5	See 6.7 Debris Deflector Hood Extension Components	Debris Deflector Hood Extension Weldment	1	1	1	1	1	1
6	216572	Support Leg Weldment	2	2	2	2	2	2
7	270505	5/8" x 3" Clevis Pin	2	2	2	2	2	2
8	216705	315cc Motor	1	1	1	1	1	1
9	299655	1/2"–13 Stover Locknut Class C	4	4	4	4	4	4
10	299732	1/2" Washer Grade 8	8	8	8	8	8	8
11	299433	1/2"–13 x 2" Hex Head Bolt Grade 8	4	4	4	4	4	4
12	216706	Motor Cover	1	1	1	1	1	1
13	208550	3/8"–16 Stover Locknut	3	3	3	3	3	3
14	299724	0.065" x 3/8" x 0.812 Washer SAE	6	6	6	6	6	6
15	299416	3/8"–16 x 1 1/2" Hex Head Bolt Fully Threaded	3	3	3	3	3	3
16	216156	2–Hole Bearing	1	1	1	1	1	1
17	216571	3/4" Stover Locknut Grade 8	2	2	2	2	2	2
18	299466	3/4"–10 x 2 1/2" Hex Head Bolt Grade 8	2	2	2	2	2	2

6. Parts

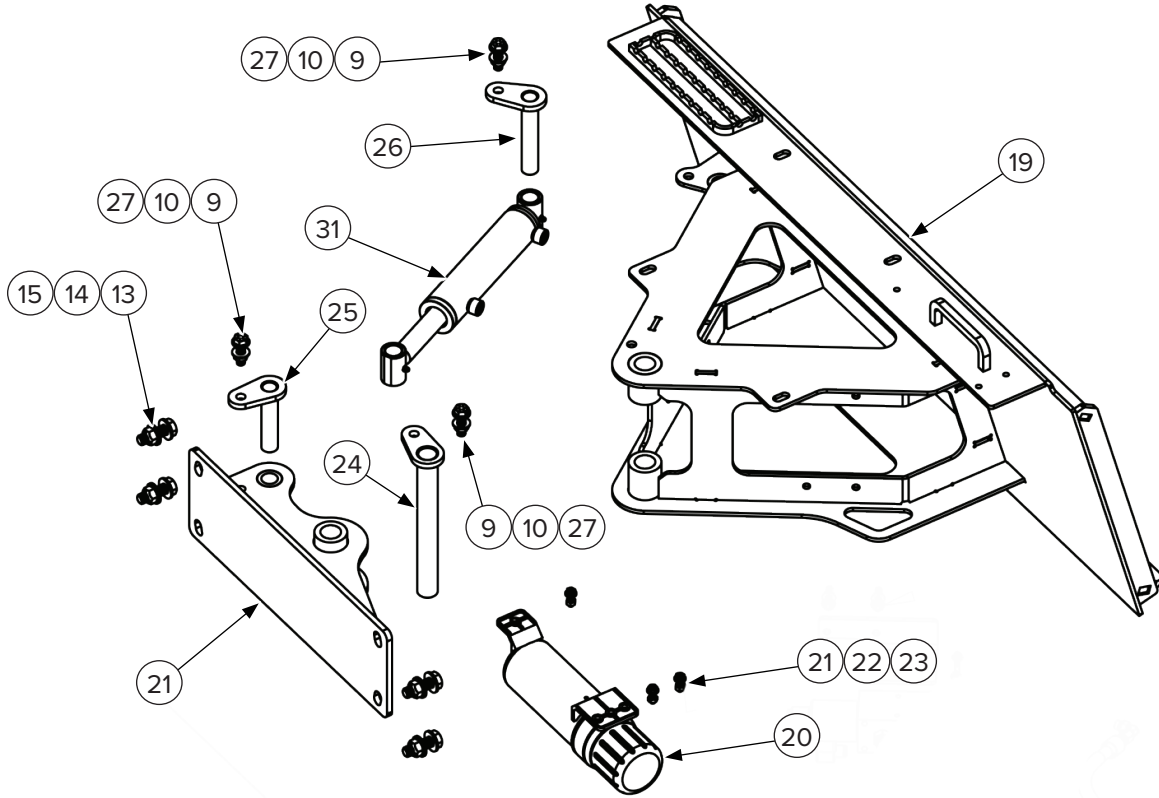
6.3 Manual Angle Mount Components



ITEM	PART NUMBER	DESCRIPTION	ALL QTY
7	270505	5/8" x 3" Usable Length Bent Pull Clevis Pin with Clip	1
9	299655	1/2"–13 Stover Locknut Class C	3
10	299732	1/2" Washer Grade 8	6
13	208550	3/8"–16 Stover Locknut	4
14	299724	0.065" x 3/8" x 0.812 Washer SAE	4
15	299416	3/8"–16 x 1 1/2" Hex Head Bolt Fully Threaded	4
19	216161	Main Frame, Universal Skid Steer Mount	1
	216161-16	Main Frame, Euro Ag Mount	1
	216161-25	Main Frame, Mini Universal Skid Steer Mount	1
	216161-26	Main Frame, Bobcat MT Mount	1
	216161-35	Main Frame, Avant Mount	1
	216161-36	Main Frame, ASV RT30	1
20	216402	Manual Storage Tube	1
21	299654	5/16"–18 Stover Nut Grade C	3
22	299721	0.065" x 5/16" x 0.688 Washer SAE Grade 8	3
23	299317	5/16"–18 x 1" Hex Head Bolt	3
24	216721	1 1/4" x 11 1/4" with Tab Main Pivot Pin	1
25	216722	1" x 4 1/8" with Tab Front Cylinder Pin	1
26	216723	1" x 5 3/8" with Tab Rear Cylinder Pin	1
27	299439	1/2"–13 x 1 3/4" Hex Head Bolt Grade 8	3
28	216783	Inner Lockout Arm	1
29	216785	Outer Lockout Arm	1
30	216784	Complete Lockout Arm with Pin (Includes Item 15, 16, & 17)	1

6. Parts

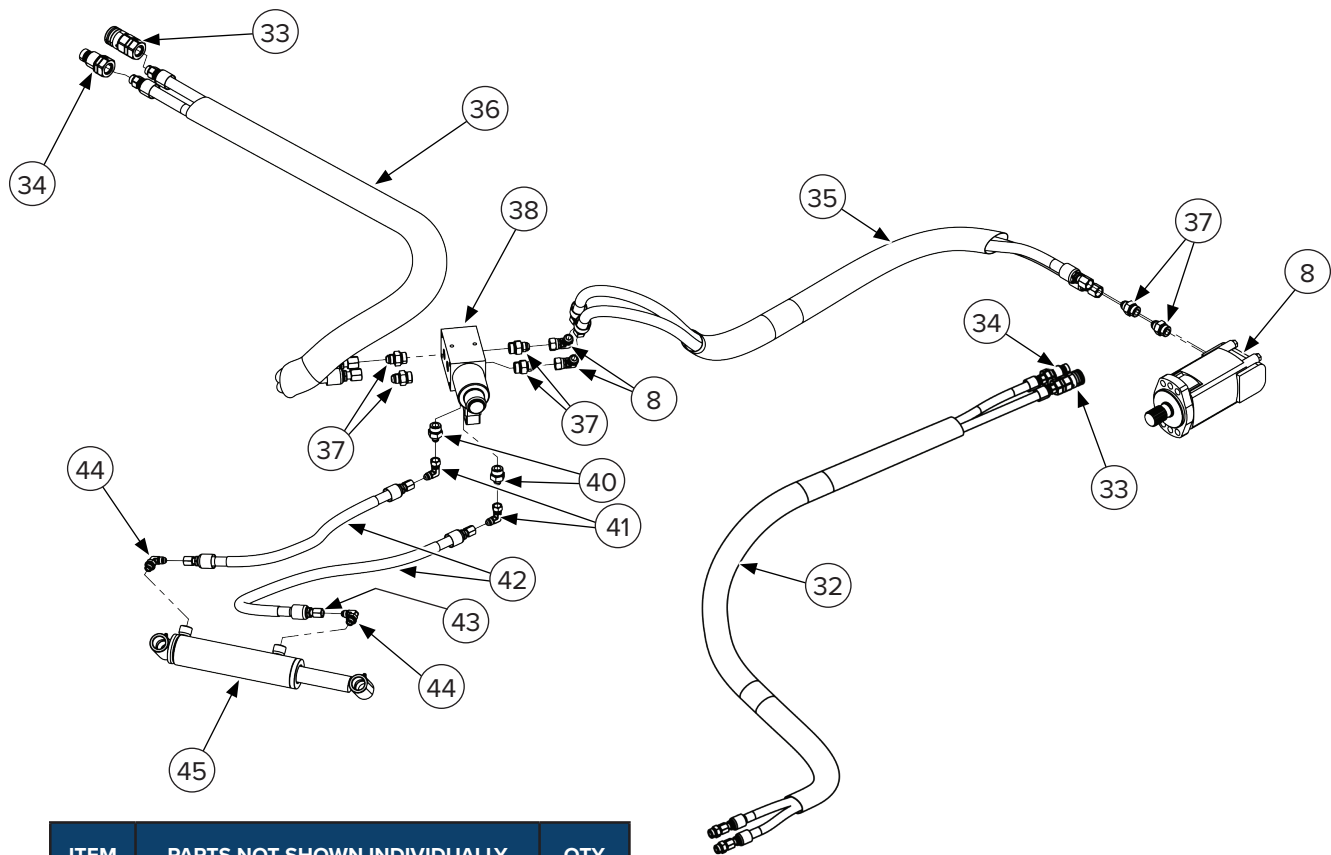
6.4 Hydraulic Angle Mount Components



ITEM	PART NUMBER	DESCRIPTION	ALL QTY
13	208550	3/8"–16 Stover Locknut	4
14	299724	0.065" x 3/8" x 0.812 Washer SAE	4
15	299416	3/8"–16 x 1 1/2" Hex Head Bolt Fully Threaded	4
9	299655	1/2"–13 Stover Locknut Class C	3
10	299732	1/2" Washer Grade 8	6
19	216161	Main Frame, Universal Skid Steer Mount	1
	216161-16	Main Frame, Euro Ag Mount	1
	216161-25	Main Frame, Mini Universal Skid Steer Mount	1
	216161-26	Main Frame, Bobcat MT Mount	1
	216161-35	Main Frame, Avant Mount	1
	216161-36	Main Frame, ASV RT30	1
20	216402	Manual Storage Tube	1
21	299654	5/16"–18 Stover Nut Grade C	3
22	299721	0.065" x 5/16" x 0.688 Washer SAE Grade 8	3
23	299317	5/16"–18 x 1" Hex Head Bolt	3
24	216721	1 1/4" x 11 1/4" with Tab Main Pivot Pin	1
25	216722	1" x 4 1/8" with Tab Front Cylinder Pin	1
26	216723	1" x 5 3/8" with Tab Rear Cylinder Pin	1
27	299439	1/2"–13 x 1 3/4" Hex Head Bolt Grade 8	3
31	See 6.5 Hydraulic System Components	Cylinder	1

6. Parts

6.5 Hydraulic System Components



ITEM	PARTS NOT SHOWN INDIVIDUALLY	QTY
46**	Universal Wire Harness Attachment End Flat 2–Pin to Male 2–Pin Deutsch (Wrapped together in nylon sleeve paired with Item 3, Motor to Machine Hose Set)	1
47**	Universal Wire Harness with Control Switch & 12V Plug	1
	Wire Harness Flat 2 Pin to 14 Pin	
	Wire Harness Flat 2 Pin to 8 Pin	
	Wire Harness Adapter Kit 7 Pin Low Voltage Bobcat to 2 Pin Trailer Plug	

6. Parts

6.5 Hydraulic System Components Cont'd

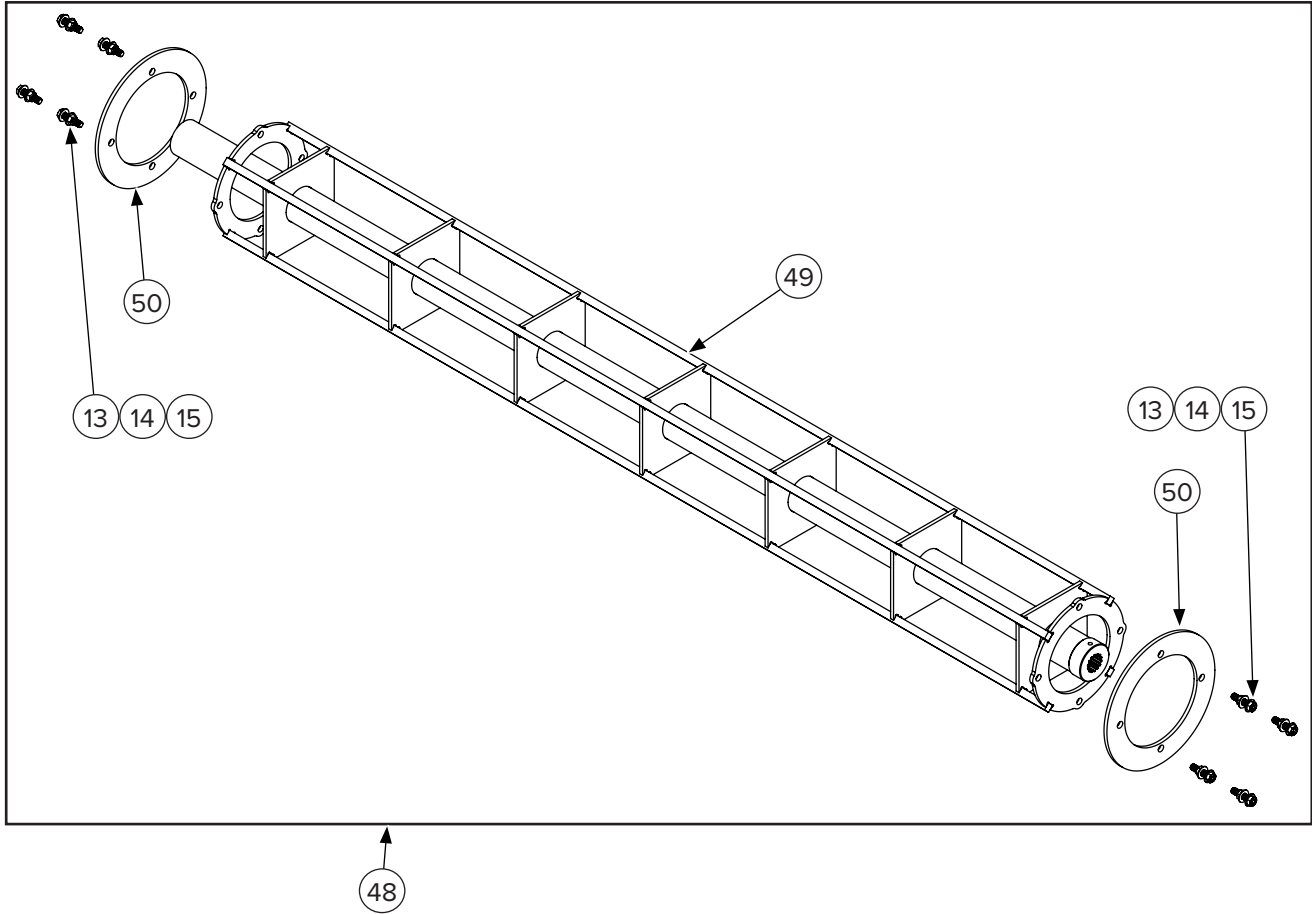
ITEM	PART NUMBER	DESCRIPTION	36" QTY	48" QTY	60" QTY	72" QTY	84" QTY	96" QTY
PARTS FOR MANUAL ANGLE								
8	216705	315cc Motor	1	1	1	1	1	1
32*	216289	Motor to Machine Hose Set, No Couplers	1	1	1	1	1	1
33	224009	Female Coupler Flat Face Straight 1/2" Body Female #8 O-Ring Boss	1	1	1	1	1	1
34	224010	Male Coupler Flat Face Straight 1/2" Body Female #8 O-Ring Boss	1	1	1	1	1	1
PARTS FOR HYDRAULIC ANGLE								
8	216705	315cc Motor	1	1	1	1	1	1
33	224009	Female Coupler Flat Face Straight 1/2" Body Female #8 O-Ring Boss	1	1	1	1	1	1
34	224010	Male Coupler Flat Face Straight 1/2" Body Female #8 O-Ring Boss	1	1	1	1	1	1
35	216293	36" & 48" Motor to Solenoid Valve Block Hose Set, 60" OAL 1/2" ID	1	1	—	—	—	—
	216295	60" & 72" Motor to Solenoid Valve Block Hose Set, 64" OAL 1/2" ID	—	—	1	1	—	—
	216296	84" Motor to Solenoid Valve Block Hose Set, 69" OAL 1/2" ID	—	—	—	—	1	—
	216297	96" Motor to Solenoid Valve Block Hose Set, 74" OAL 1/2" ID	—	—	—	—	—	1
36	216291	Motor to Machine Hose Set for All Hydraulic Angle Models, 78" OAL 1/2" ID, No Couplers	1	1	1	1	1	1
37	295010-M08JIC-M10ORB	Hydraulic Straight Fitting Male #8 JIC to Male #10 O- Ring Boss	6	6	6	6	6	6
38	216702	Solenoid Valve Block	1	1	1	1	1	1
39	295030-M08JIC-F08JIC	Hydraulic 90 Degree Fitting Male #8 JIC to Female #8 JIC	2	2	2	2	2	2
40	295010-M10ORB-M06JIC	Hydraulic Straight Fitting Male #10 O-Ring Boss to Male #6 JIC	2	2	2	2	2	2
41	295030-M06JIC-F06JICS	Hydraulic 90 Degree Fitting Male #6 JIC to Female #6 JIC S	2	2	2	2	2	2
42	216299	Solenoid Valve Block to Cylinder Hose 28" OAL 3/8" ID	2	2	2	2	2	2
43	295010-F06JIC-M06JIC-.031	Hydraulic Straight Fitting Female #6 JIC to Male #6 JIC with 0.031" Orifice	1	1	1	1	1	1
44	295030-M06ORB-M06JIC	Hydraulic 90 Degree Fitting Male #6 O-Ring Boss to Male #6 JIC	2	2	2	2	2	2
45	208993	Cylinder 2" Bore x 6" Stroke x 14" Retracted Length Welded Style 3/8" ORB Flush Ports 1" Cross Tubes	1	1	1	1	1	1
46**	200011	Universal Wire Harness Attachment End Flat 2-Pin to Male 2-Pin Deutsch (Wrapped together in nylon sleeve paired with Item 3, Motor to Machine Hose Set)	1	1	1	1	1	1
47**	200010	Universal Wire Harness with Control Switch & 12V Plug	1	1	1	1	1	1
47**	216900	Wire Harness Flat 2 Pin to 14 Pin	1	1	1	1	1	1
47**	216905	Wire Harness Flat 2 Pin to 8 Pin	1	1	1	1	1	1
47**	216951-KIT	Wire Harness Adapter Kit 7 Pin Low Voltage Bobcat to 2 Pin Trailer Plug	1	1	1	1	1	1

*NOTE: This the only hose set all Manual Angle Brooms need.

**NOTE: Two wire harnesses are needed for the hydraulic adjusting angle to function, Item 16 (200011) and an option from Item 17.

6. Parts

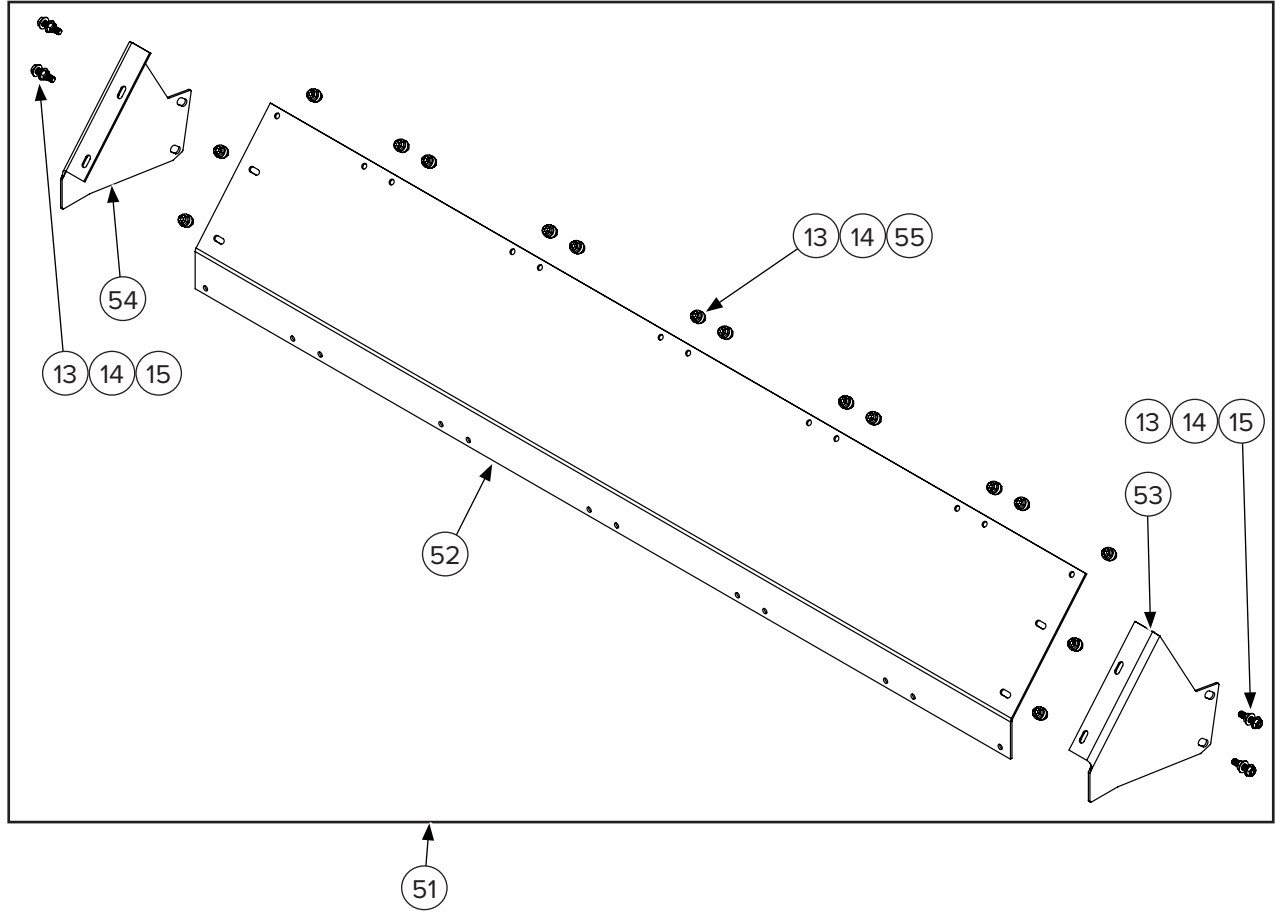
6.6 Drum Shaft Components



ITEM	PART NUMBER	DESCRIPTION	36" QTY	48" QTY	60" QTY	72" QTY	84" QTY	96" QTY
13	208550	3/8"—16 Stover Locknut Grade 8	8	8	8	8	8	8
14	299724	3/8" Washer SAE Grade 8	16	16	16	16	16	16
15	299416	3/8"—16 x 1.5" Hex Head Bolt Grade 8	8	8	8	8	8	8
48	216588	36" Drum Shaft Weldment Assembly	1	—	—	—	—	—
	216589	48" Drum Shaft Weldment Assembly	—	1	—	—	—	—
	216591	60" Drum Shaft Weldment Assembly	—	—	1	—	—	—
	216592	72" Drum Shaft Weldment Assembly	—	—	—	1	—	—
	216596	84" Drum Shaft Weldment Assembly	—	—	—	—	1	—
	216598	96" Drum Shaft Weldment Assembly	—	—	—	—	—	1
49	216581	36" Drum Shaft Weldment Only	1	—	—	—	—	—
	216582	48" Drum Shaft Weldment Only	—	1	—	—	—	—
	216583	60" Drum Shaft Weldment Only	—	—	1	—	—	—
	216584	72" Drum Shaft Weldment Only	—	—	—	1	—	—
	216586	84" Drum Shaft Weldment Only	—	—	—	—	1	—
	216587	96" Drum Shaft Weldment Only	—	—	—	—	—	1
50	216378	Wafer Retaining Ring	2	2	2	2	2	2

6. Parts

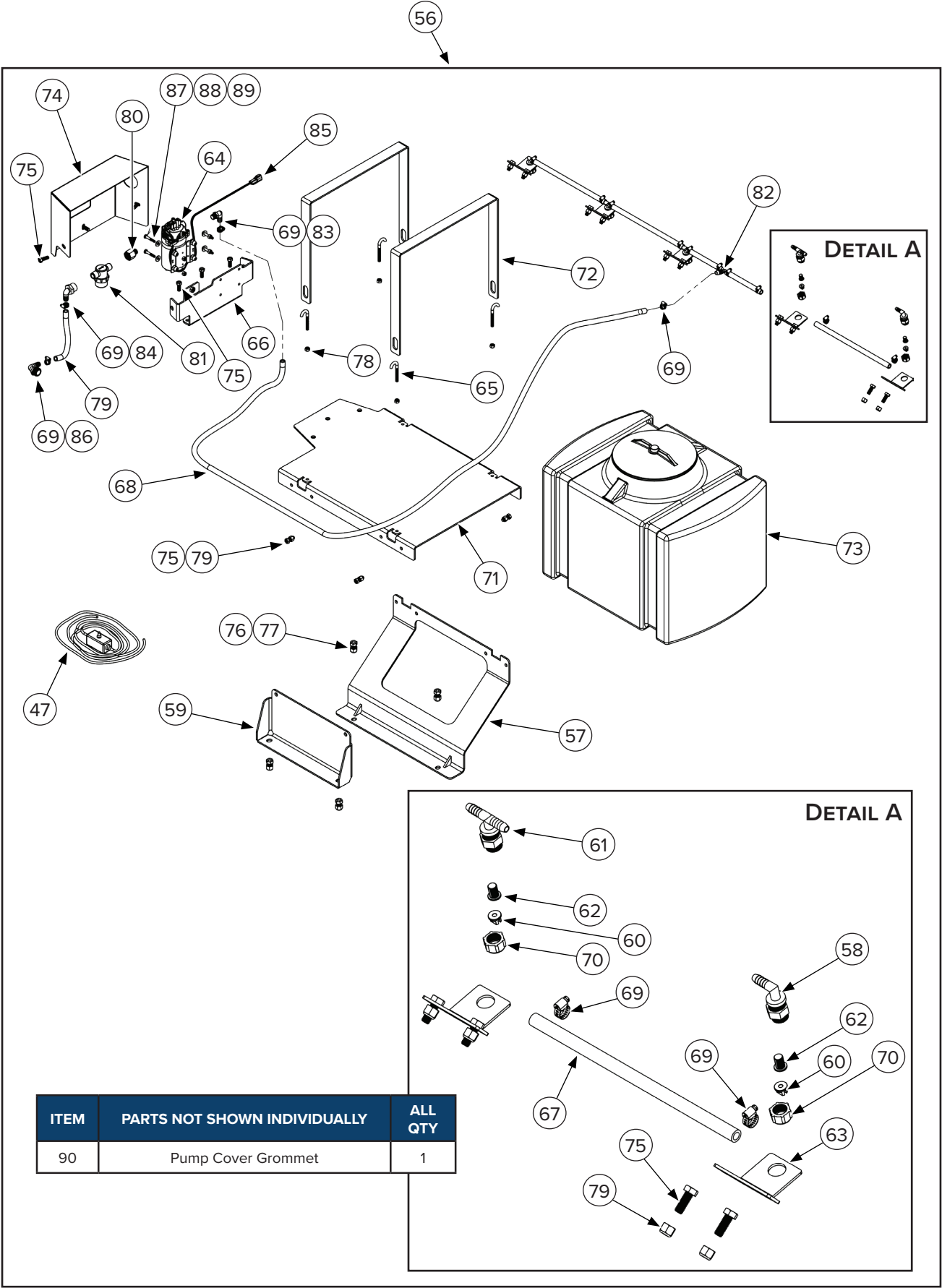
6.7 Debris Deflector Hood Extension Components



ITEM	PART NUMBER	DESCRIPTION	36" QTY	48" QTY	60" QTY	72" QTY	84" QTY	96" QTY
13	208550	3/8"-16 Stover Locknut Grade 8	16	16	18	20	22	24
14	299724	3/8" Washer SAE Grade 8	32	32	36	40	44	48
15	299416	3/8"-16 x 1.5" Hex Head Bolt Grade 8	4	4	4	4	4	4
51	216254-KIT	36" Debris Deflector Assembly	1	—	—	—	—	—
	216255-KIT	48" Debris Deflector Assembly	—	1	—	—	—	—
	216256-KIT	60" Debris Deflector Assembly	—	—	1	—	—	—
	216257-KIT	72" Debris Deflector Assembly	—	—	—	1	—	—
	216258-KIT	84" Debris Deflector Assembly	—	—	—	—	1	—
	216259-KIT	96" Debris Deflector Assembly	—	—	—	—	—	1
52	216254	36" Front Panel	1	—	—	—	—	—
	216255	48" Front Panel	—	1	—	—	—	—
	216256	60" Front Panel	—	—	1	—	—	—
	216257	72" Front Panel	—	—	—	1	—	—
	216258	84" Front Panel	—	—	—	—	1	—
	216259	96" Front Panel	—	—	—	—	—	1
53	216252	Left End	1	1	1	1	1	1
54	216253	Right End	1	1	1	1	1	1
55	299424	3/8"-16 x 3/4" Hex Head Bolt Grade 8	12	12	14	16	18	20

6. Parts

6.8 Water Kit Components



6. Parts

6.8 Water Kit Components Cont'd

ITEM	PART NUMBER	DESCRIPTION	36" QTY	48" QTY	60" QTY	72" QTY	84" QTY	96" QTY
47	200010	Universal Wire Harness with Control Switch & 12V Plug	1	1	1	1	1	1
56	See 6.1 Wear Parts	Water Kit Assembly	1	1	1	1	1	1
57	116151	Mounting Bracket	1	1	1	1	1	1
58	216315	Water Nozzle Elbow with Jam Nut	2	2	2	2	2	2
59	216360	Support Plate	1	1	1	1	1	1
60	216305	80 Degree Water Nozzle	3	3	5	5	5	7
61	216310	Water Nozzle Tee with Jam Nut	1	1	3	3	3	5
62	216320	Strainer for Water Nozzle	3	3	5	5	5	7
63	216325	Holder Plate for Water Nozzle	3	3	5	5	5	7
64	216540	Water Pump	1	1	1	1	1	1
65	216548	5/16"–18 x 3" J–Bolt for Water Tank Mount	4	4	4	4	4	4
66	216673	Water Pump Mount Bracket	1	1	1	1	1	1
67	216690	3/8" ID Hose	3	3	3	5	5	7
68	216688	1/2" ID Hose	7	7	7	7	7	7
69	216691	Hose Crimp	10	10	14	14	14	18
70	216693	Retainer Nut for Nozzle	3	3	5	5	5	7
71	255420	Base Weldment for Water Tank	1	1	1	1	1	1
72	255422	Strap for Water Tank	2	2	2	2	2	2
73	255424	26 Gallon Water Tank	1	1	1	1	1	1
74	255458	Pump Cover Weldment	1	1	1	1	1	1
75	299423	3/8"–16 x 1" Hex Head Bolt Grade 8	16	16	20	20	20	24
76	299431	1/2"–13 x 1" Hex Head Bolt Grade 8	4	4	4	4	4	4
77	299618	1/2"–13 Hex Nylock Nut Grade 8	4	4	4	4	4	4
78	299620	5/16"–18 Hex Nylock Nut Grade 8	4	4	4	4	4	4
79	299625	3/8"–16 Hex Nylock Nut Grade 8	10	10	14	14	14	18
80	216660	Pump to Filter Fitting 3/8" MNPT x 1/2" FNPT Brass	1	1	1	1	1	1
81	216542	Strainer for Water Tank	1	1	1	1	1	1
82	216694	3–Way Barbed Tee Fitting	1	1	1	1	1	1
83	216662	Water Pump 90 Degree Fitting	1	1	1	1	1	1
84	216658	Pump Filter to Hose Fitting 1/2" FNPT x 1/2" Barb	1	1	1	1	1	1
85	298115	Electrical Plug Deutsch DT2 Receptacle (Includes Two 16-14 GA Male Contacts)	1	1	1	1	1	1
86	216555	Water Tank 90 Degree Outlet Fitting 3/4" MNPT x 1/2" Barb	1	1	1	1	1	1
87	299418	1/4"–20 x 1 1/2" Hex Head Bolt Grade 8	4	4	4	4	4	4
88	299715	1/4" Flat Washer Grade 8	8	8	8	8	8	8
89	299615	1/4"–20 Hex Nylock Nut Grade 8	4	4	4	4	4	4
90	216538	Pump Cover Grommet	1	1	1	1	1	1

6. Parts

6.9 Safety Decals

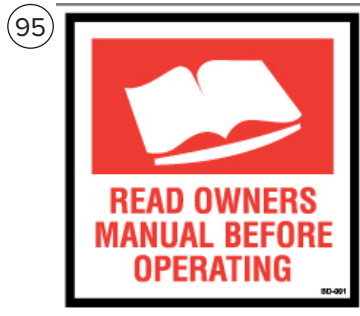


6. Parts

6.9 Safety Decals Cont'd

91 BUILT STRONG. ATTACHED FOR LIFE.

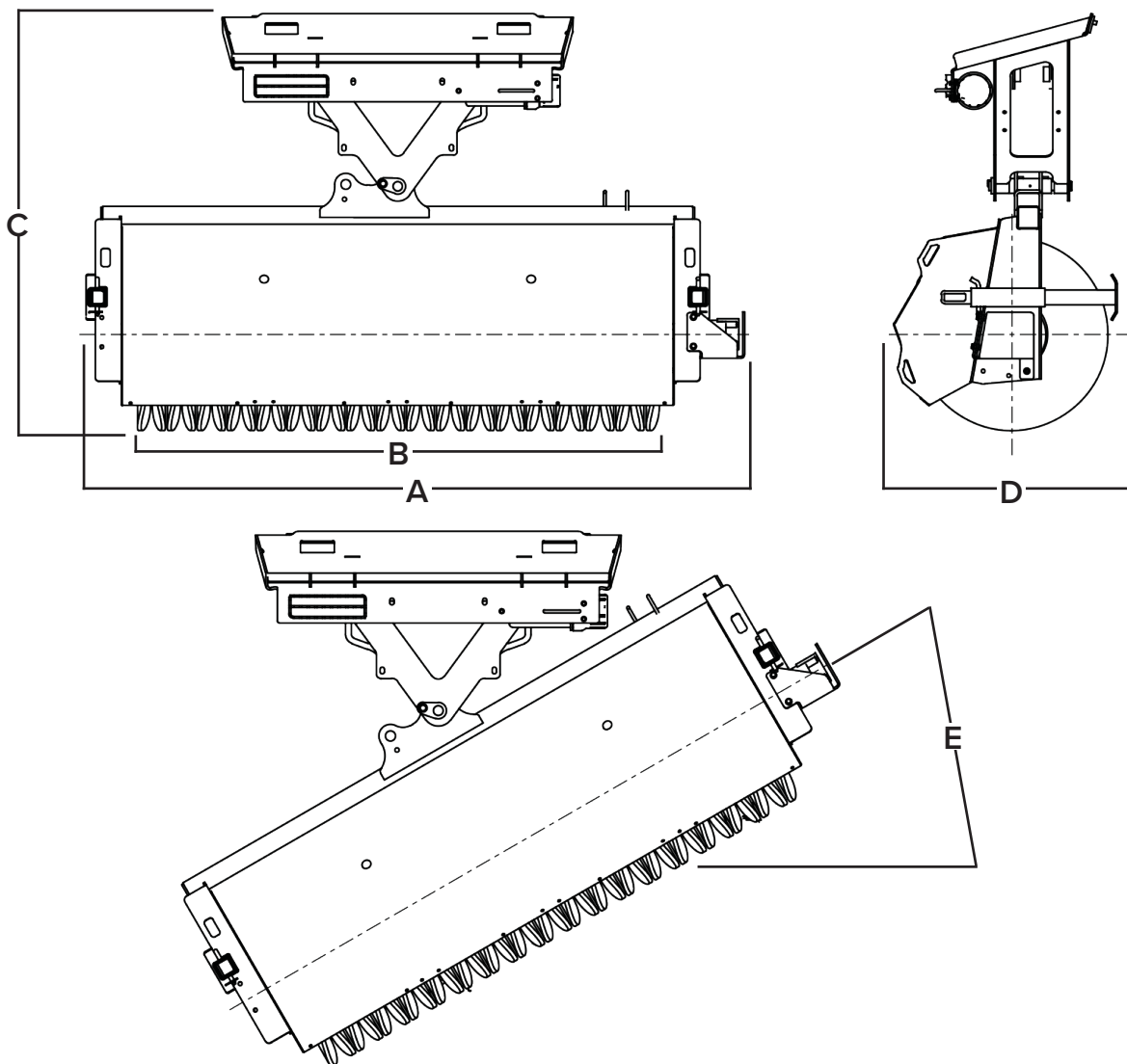
BD-133



ITEM	PART NUMBER	DESCRIPTION	QTY
91	BD-134	2" Tall Decal, Tagline Single Line	1
92	BD-060	2.4375" x 3.375" Decal, Blue Diamond Attachments	2
93	BD-111	7.75" x 6" Decal, Blue Diamond Diamond Shape	2
94	BD-112	12.18" x 9.47" Decal, Blue Diamond Diamond Shape	1
95	BD-001	3.0" x 3.0" Decal, Read Owner's Manual	1
96	BD-123	3.0" x 3.0" Decal, High Pressure Fluid Hazard	1
97	BD-092	1.5" x 2.0" Decal, Warranty Registration QR	1
98	BD-004	2.0" x 4.0" Decal, Grease All Fitting Every 8 Hours	1
99	BD-130	12" x 3.25" Decal, Warning Thrown Debris	2

7. Specifications

7.1 Attachment Specifications



DESCRIPTION	116180 & 116182	116200 & 116202	116205 & 116207
Overall Width (A)	54 in. (1372 mm)	66 in. (1676 mm)	78 in. (1981 mm)
Working Width (B)	36 in. (914 mm)	48 in. (1219 mm)	60 in. (1524 mm)
Length (C)	56.8 in. (1443 mm)		
Height (D)	30.2 in. (767 mm)		
Pivot Angle Left & Right (E)	30 Degrees		
Required Hydraulic Flow (GPM)	10 – 26 GPM (38 – 98 L/min) (Standard Flow)		
Number of Wafers	19	25	31
Maximum Pressure	3500 psi (241 bar)		
Weight*	580 lbs (263 kg)	629 lbs (285 kg)	661 lbs (300 kg)

*Weight may vary depending on the mount being used.

7. Specifications

7.1 Attachment Specifications Cont'd

DESCRIPTION	116210 & 116212	116215 & 116217	116220 & 116222
Overall Width	90 in. (2286 mm)	102 in. (2591 mm)	114 in. (2896 mm)
Working Width	72 in. (1829 mm)	84 in. (2134 mm)	96 in. (2438 mm)
Length	56.8 in. (1443 mm)		
Height	30.2 in. (767 mm)		
Pivot Angle Left & Right	30 Degrees		
Required Hydraulic Flow (GPM)	10 – 26 GPM (22 – 98 L/min) (Standard Flow)		
Number of Wafers	37	43	49
Maximum Pressure	3500 psi (241 bar)		
Weight*	716 lbs (325 kg)	759 lbs (344 kg)	808 lbs (367 kg)

*Weight may vary depending on the mount being used.

7. Specifications

7.2 Torque Specifications – Imperial

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	W/ Grade 8 Bolt
1/4	4.6 lbf•ft	6.0 lbf•ft	7.2 lbf•ft	9.3 lbf•ft	10.0 lbf•ft	13.1 lbf•ft	5.1 lbf•ft	7.2 lbf•ft
	6.2 N•m	8.1 N•m	9.7 N•m	12.6 N•m	13.6 N•m	17.7 N•m	6.9 N•m	9.8 N•m
5/16	9.6 lbf•ft	12.5 lbf•ft	14.8 lbf•ft	19.2 lbf•ft	20.7 lbf•ft	27.3 lbf•ft	10.3 lbf•ft	14.8 lbf•ft
	13 N•m	17 N•m	20 N•m	26 N•m	28 N•m	37 N•m	14 N•m	20 N•m
3/8	17 lbf•ft	22 lbf•ft	26 lbf•ft	34 lbf•ft	37 lbf•ft	48 lbf•ft	19 lbf•ft	26 lbf•ft
	23 N•m	30 N•m	35 N•m	46 N•m	50 N•m	65 N•m	26 N•m	35 N•m
7/16	27 lbf•ft	35 lbf•ft	42 lbf•ft	54 lbf•ft	59 lbf•ft	77 lbf•ft	30 lbf•ft	42 lbf•ft
	37 N•m	47 N•m	57 N•m	73 N•m	80 N•m	104 N•m	41 N•m	57 N•m
1/2	42 lbf•ft	54 lbf•ft	64 lbf•ft	83 lbf•ft	91 lbf•ft	117 lbf•ft	45 lbf•ft	65 lbf•ft
	57 N•m	73 N•m	87 N•m	113 N•m	123 N•m	159 N•m	61 N•m	88 N•m
9/16	60 lbf•ft	77 lbf•ft	92 lbf•ft	120 lbf•ft	130 lbf•ft	169 lbf•ft	65 lbf•ft	92 lbf•ft
	81 N•m	104 N•m	125 N•m	163 N•m	176 N•m	229 N•m	88 N•m	125 N•m
5/8	83 lbf•ft	107 lbf•ft	128 lbf•ft	165 lbf•ft	180 lbf•ft	233 lbf•ft	90 lbf•ft	127 lbf•ft
	112 N•m	145 N•m	174 N•m	224 N•m	244 N•m	316 N•m	122 N•m	172 N•m
3/4	146 lbf•ft	189 lbf•ft	226 lbf•ft	293 lbf•ft	319 lbf•ft	413 lbf•ft	160 lbf•ft	226 lbf•ft
	198 N•m	256 N•m	306 N•m	397 N•m	432 N•m	560 N•m	217 N•m	306 N•m
7/8	142 lbf•ft	183 lbf•ft	365 lbf•ft	473 lbf•ft	515 lbf•ft	667 lbf•ft	258 lbf•ft	364 lbf•ft
	193 N•m	248 N•m	495 N•m	641 N•m	698 N•m	904 N•m	350 N•m	494 N•m
1	213 lbf•ft	275 lbf•ft	547 lbf•ft	708 lbf•ft	773 lbf•ft	1000 lbf•ft	386 lbf•ft	545 lbf•ft
	289 N•m	373 N•m	742 N•m	960 N•m	1048 N•m	1356 N•m	523 N•m	739 N•m

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Warranty Policies

OUR WARRANTY PROMISE

At Blue Diamond® Attachments, we stand by our products. Our warranty ensures you can depend on our attachments for your toughest jobs. We are committed to your satisfaction and peace of mind, offering reliable support for continued productivity.

MANUFACTURER'S LIMITED WARRANTY

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

BDA's liability for any defect with respect to accepted goods shall be limited to repairing the goods at a BDA designated location or at an authorized dealer location, or replacing them, as BDA shall elect. The above shall be in accordance with BDA warranty adjustment policies.

WARRANTY TERM

BDA's warranty obligation is subject to the following terms, whichever occurs first:

- The warranty terminates twelve (12) months after the date of delivery of the attachment from the dealer to the end user (original purchaser); or
- The warranty terminates thirty-six (36) months after the date of BDA's invoice to the dealer, regardless of whether the attachment has been sold to an end user.

For the purposes of this warranty, "delivery" means the date on which the authorized dealer delivers the attachment to the end user.

WARRANTY ELIGIBILITY AND REGISTRATION

BDA warrants its products to the original purchaser only. Warranty coverage is not transferable.

Product registration is strongly encouraged and assists BDA in processing warranty claims efficiently. Registration may be completed at any time prior to filing a warranty claim at bluediamondattachments.com/warranty-registration. If registration has not been completed at the time a claim is filed, BDA may request a valid bill of sale or other proof of original purchase to verify eligibility.

This warranty shall not apply to any machine or attachment which has been repaired or altered in any way outside the BDA factory or an authorized BDA dealership in any way so as to, in BDA's judgment, affect its stability or reliability, nor which has been subject to misuse, negligence, or accident beyond the company-recommended machine rated capacity.

USED AND SECONDARY MARKET EQUIPMENT

Attachments sold through used equipment channels, dealer-to-dealer transactions, auctions, or any source other than the original authorized sale to an end user do not carry BDA warranty coverage unless BDA has explicitly granted warranty coverage for that specific attachment by serial number in writing. No implied warranty coverage applies to used or secondary market purchases.



Warranty Policies Cont'd

HOW TO SUBMIT A WARRANTY CLAIM

At Blue Diamond® Attachments, streamlining your warranty claim is a priority. Contact the Product Support Team at the first sign of equipment issues for efficient management of your claim.

SUBMITTING A WARRANTY CLAIM ONLINE

To file a warranty claim, complete the online form at www.bluediamondattachments.com/warranty-claim. Before starting, gather the information below to ensure your claim can be processed without delay:

- Contact and shipping information, including your name, company, phone, email, and billing and shipping addresses.
- Attachment details, including the model number, attachment type, attachment name, and serial number.
- Purchase information, including the purchase invoice date, invoice number, and the name and city of the selling dealer.
- Failure information, including the failure date, the host machine make and model, and a description of the issue.
- Photos of the failure, including detailed images of the failed component and overall images showing the condition of the attachment.

When completing the form, provide a clear response in each of the following fields:

- Complaint, describing what is not functioning correctly.
- Cause, describing what you believe led to the failure.
- Correction, describing any corrective action taken or proposed.
- Key Part, providing the part number of the components that caused the failure.

Upload all supporting photos, accept the warranty policies, and click Submit. A member of the BDA Product Support Team will follow up to advise on next steps. Do not perform any repairs or disassembly until your claim has been reviewed and approved by BDA.

GENERAL CLAIM TERMS

A claim must be filed with BDA and approved before any work is performed.

BDA will advise on repairs and applicable parts exchanges.

Submit detailed photos of the issue and images of overall condition of the attachment to warranty@bdattachments.com. Photos are required for processing.

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 and delivery charges are the customer's responsibility and will not be paid by BDA.

BDA covers standard Less-Than-Truckload (LTL) freight and UPS ground shipping on warranty parts and attachments sent from the factory to the dealer or end user. Next Day Air (NDA) or any other special freight services are not covered under warranty but can be arranged at the dealer and/or end user's expense.

Labor, where covered, is typically credited to your account at \$105 per hour. When more than four (4) hours are needed for repair, BDA requires an estimate before work is performed.

Coverage of travel time, host machine service and repairs, diagnostics, and business downtime are neither expressed or implied.



Warranty Policies Cont'd

EXCLUSIONS OF WARRANTY

Except as otherwise expressly stated herein, BDA makes no representation or warranty of any kind, expressed or implied, AND MAKES NO WARRANTY MERCHANTABILITY IN RESPECT TO ITS MACHINERY AND/OR ATTACHMENTS OR THAT THEY ARE FIT FOR ANY PARTICULAR PURPOSE.

BDA shall not be liable for incidental or consequential damages for any breach of 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 personal injury and property damage resulting from handling, possession, or use of goods by the buyers.

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

PLEASE NOTE: Replacing genuine OEM parts with aftermarket parts may void the warranty.

HOSES, COUPLERS, HOSE ROUTING, AND CONNECTIONS

BDA supplies attachments with hoses that are universal in length, but hose configuration may vary by machine manufacturer. BDA cannot guarantee that the hose length will be correct on every machine or for every routing.

It is the responsibility of the end user to adjust hose length to fit their specific machine and to ensure that hose routing does not result in hoses becoming tangled, caught, pinched, crushed, or run over during operation.

- It is the end user's responsibility to ensure that hose routing clears pinch points and allows the attachment to move properly.
- BDA will not cover hose or coupler damage due to poor hose routing. Hose extenders and hose keeps are available at additional cost.

BDA supplies most attachments with standard size quick couplers; some attachments may have couplers sold separately. Coupler configuration varies by machine manufacturer, and BDA cannot guarantee that the standard coupler will be correct for every application. Coupler changes can be made before the attachment leaves the BDA facility if noted on the sales order. BDA is not responsible for coupler compatibility after the attachment has left the facility unless a specific configuration was requested at the time of order.

HYDRAULIC MOTORS

Do not disassembly any hydraulic motor. Disassembly of the motor voids the warranty.

BDA products equipped with hydraulic motors or gearbox assemblies carry a one (1) year warranty on parts and labor. A warranty claim must be submitted and reviewed by an authorized BDA representative before any action is taken.

Under no circumstances should a hydraulic motor or gearbox be disassembled by the customer. Disassembled units cannot be returned to the original manufacturer and will void the warranty. BDA will replace motors or gearboxes found to be defective under warranty. There are no user-serviceable internal parts in these components while under warranty.

CYLINDERS

Defective cylinders are covered for one (1) year. Disassembly of the cylinder will void the cylinder warranty. In any event of cylinder, submit a warranty claim prior to disassembly or repair. Cylinders under warranty are exchanged if found to be defective. For a cylinder claim to be granted, the defective cylinder must be returned to BDA.



Warranty Policies Cont'd

FREIGHT DAMAGE AND CONCEALED FREIGHT DAMAGE

Blue Diamond Attachments, LLC ("BDA") is not responsible for damage that occurs during shipment once the product has been released to the carrier. It is the responsibility of the receiving dealer or end user ("Receiver") to inspect all shipments immediately upon delivery, regardless of shipping method, including small package carriers (e.g. UPS, FedEx) and Less-Than-Truckload (LTL) freight.

VISIBLE FREIGHT DAMAGE

All shipments must be inspected at the time of delivery prior to signing the Bill of Lading (BOL) or delivery receipt. Any visible damage, shortage, or indication of mishandling must be clearly noted on the BOL or delivery receipt at the time of delivery and acknowledged by the carrier. The Receiver must retain a copy of the signed BOL with damage notation and submit clear photographic evidence of the damage and packing to BDA.

If the BOL or delivery receipt is signed without notation of damage or shortage, the shipment will be deemed received in good condition. No freight damage claim may be made in such cases, and responsibility for any damage rests solely with the Receiver.

CONCEALED FREIGHT DAMAGE

Concealed damage is damage that is not reasonably apparent at the time of delivery and is discovered only after unpacking. The Receiver must notify BDA of any concealed damage within five (5) business days of receipt. Notification must include written notice and clear photographic documentation of the damage and all original packaging materials.

Failure to notify BDA and provide required documentation within five (5) business days will result in the concealed damage being deemed the responsibility of the Receiver, and BDA will have no obligation or liability for such damage.

GENERAL CONDITIONS

- All original packaging must be retained until any freight damage claim is resolved.
- BDA reserves the right to request additional documentation or inspection as required by the carrier.
- Freight damage claims are separate from and not covered under BDA's product warranty.
- BDA's determination regarding freight damage claims shall be final.

WARRANTY MAY BE VOIDED IF ATTACHMENT IS ALTERED IN ANY WAY.

This warranty policy supersedes any previous documents.

For the most current information, visit bluediamondattachments.com/warranty-policies.

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



QUALITY | DEPENDABILITY | INTEGRITY

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