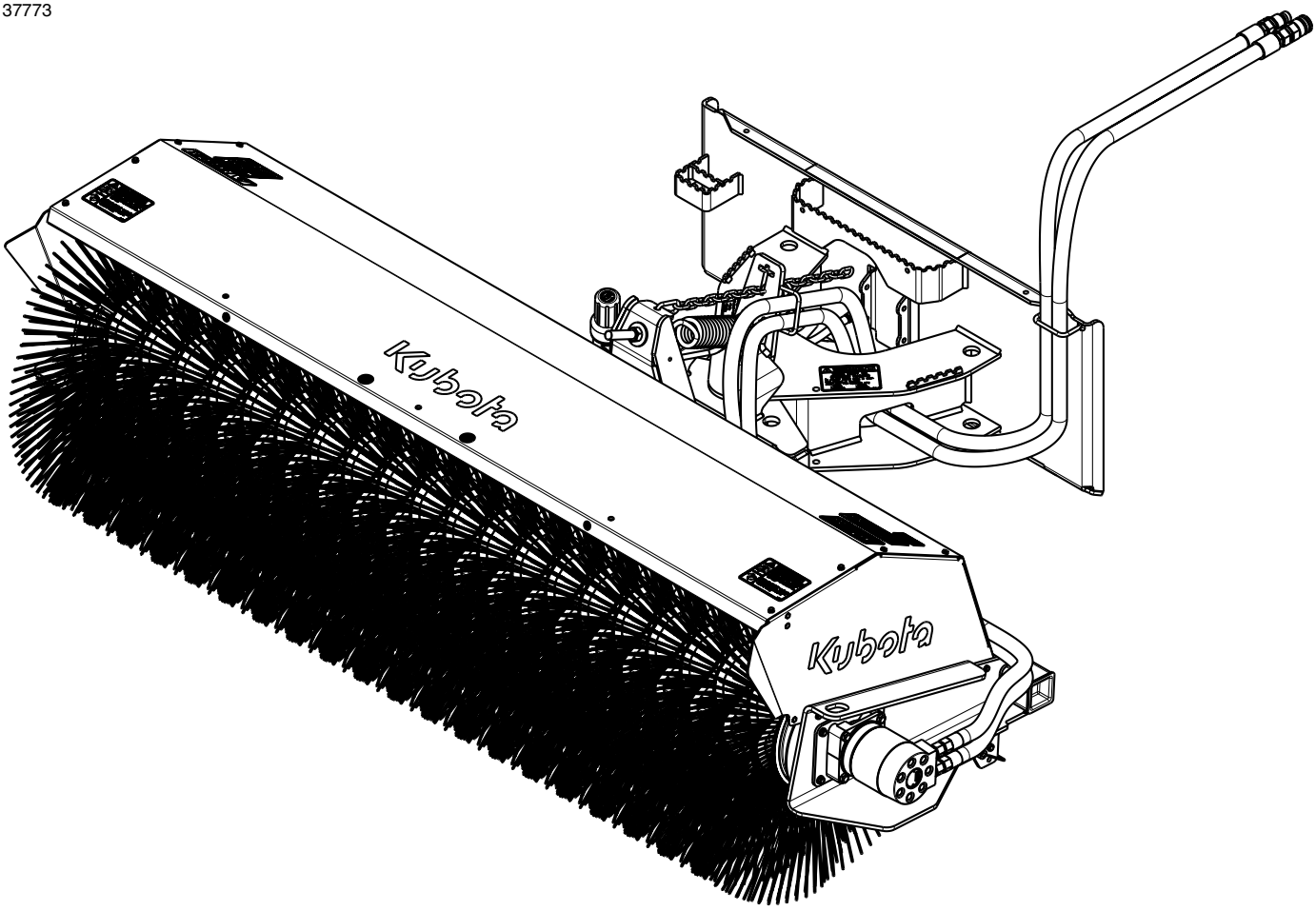
Table of Contents

Angle Broom

AP-AB72, & AP-AB84
For Skid Steers and Tractors With Front Loaders

37773



323-033MK
Operator's Manual

Kubota®

Read the Operator's Manual entirely. When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!

Cover photo may show optional equipment not supplied with standard unit.

For an Operator's Manual and Decal Kit in French Language, please see your Kubota dealer.

Printed 11/11/25

Machine Identification

Record your machine details in the log below. If you replace this manual, be sure to transfer this information to the new manual.

If you, or the dealer, have added Options not originally ordered with the machine, or removed Options that were originally ordered, the weights and measurements are no longer accurate for your machine. Update the record by adding the machine weight and measurements provided in the Specifications & Capacities Section of this manual with the Option(s) weight and measurements.

Model Number	
Serial Number	
Machine Height	
Machine Length	
Machine Width	
Machine Weight	
Delivery Date	
First Operation	
Accessories	

Dealer Contact Information

Name: _____

Street: _____

City/State: _____

Telephone: _____

Email: _____

California Proposition 65

⚠WARNING: Handling passenger or off-highway motor vehicle parts can expose you to chemicals such as phthalates and lead, which can cause cancer and reproductive harm. To minimize exposure, service the vehicle in a well-ventilated area, wear gloves, and wash your hands. For more information see www.P65Warnings.ca.gov/motor-vehicle-parts.

Table of Contents

See previous page for Table of contents.

Parts Manual QR Locator

The QR (Quick Reference) code on the left will take you to the Parts Manual for this equipment. Download the appropriate app on your smart phone. Scan the QR code and take a picture.

Dealer QR Locator

The QR code on the left will link you to available dealers for Kubota products. Refer to Parts Manual QR Locator on this page for detailed instructions.

Listed below are common practices that may or may not be applicable to the products described in this manual.

Safety at All Times

Careful operation is your best assurance against an accident.

All operators, no matter how much experience they may have, should carefully read this manual and other related manuals before operating the power machine and this attachment.

- ▲ Thoroughly read and understand the “Safety Label” section. Read all instructions noted on them.
- ▲ Do not operate the equipment while under the influence of drugs or alcohol, as they impair your ability to safely and properly operate the equipment.
- ▲ Operator should be familiar with all functions of the tractor/skid steer and attachment and be able to handle emergencies quickly.
- ▲ Make sure all guards and shields appropriate for the operation are in place and secured before operating attachment.
- ▲ Keep all bystanders away from equipment and work area.
- ▲ Start tractor/skid steer from the driver’s seat with steering levers and hydraulic controls in neutral.
- ▲ Operate tractor/skid steer and controls from the driver’s seat only.
- ▲ Never dismount from a moving tractor/skid steer or leave machine unattended with engine running.
- ▲ Do not allow anyone to stand between the attachment and tractor/skid steer while connecting to the attachment.
- ▲ Keep hands, feet, and clothing away from power-driven parts.
- ▲ While transporting and operating equipment, watch out for objects overhead and along the sides such as fences, trees, buildings, wires, etc.
- ▲ Store attachment in an area where children normally do not play. When needed, secure attachment against falling with support blocks.

Look for the Safety Alert Symbol

The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety and extra precaution must be taken. When you see this symbol, be alert and carefully read the message that follows it. 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.

Be Aware of Signal Words

A signal word designates a degree or level of hazard seriousness. They are:

DANGER: Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

WARNING: Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION: Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

Be Aware of Special Notices

Special notices are intended to point out important and helpful information that should be followed. They are usually placed inside a box. They are:

IMPORTANT: Indicates that equipment or property damage could result if instructions are not followed.

NOTE: Indicates supplementary explanations that will be helpful when using the equipment.

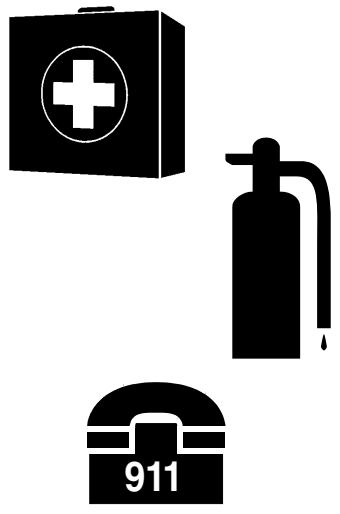
Safety Precautions for Children

Tragedy can occur if the operator is not alert to the presence of children. Children generally are attracted to attachments and their work.

- ▲ Never assume children will remain where you last saw them.
- ▲ Keep children out of the work area and under the watchful eye of a responsible adult.
- ▲ Be alert and shut the attachment and skid steer/track loader down if children enter the work area.
- ▲ Never carry children on the power machine or attachment. There is not a safe place for them to ride. They may fall off and be run over or interfere with the control of the power machine.
- ▲ Never allow children to operate the power machine, even under adult supervision.
- ▲ Never allow children to play on the power machine or attachment.
- ▲ Use extra caution when backing up. Before the power machine starts to move, look down and behind to make sure the area is clear.

Prepare for Emergencies

- ▲ Be prepared if a fire starts.
- ▲ Keep a first aid kit and fire extinguisher handy.
- ▲ Keep emergency numbers for doctor, ambulance, hospital, and fire department near the phone.



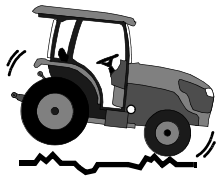
Listed below are common practices that may or may not be applicable to the products described in this manual.

Dig Safe - Avoid Underground Utilities

- ▲ USA: Call 811
  CAN:
  http://www.clickbeforeyoudig.com
- ▲ Always contact your local utility companies (electrical, telephone, gas, water, sewer, and others) before digging so that they may mark the location of any underground services in the area.
- ▲ Be sure to ask how close you can work to the marks they positioned.

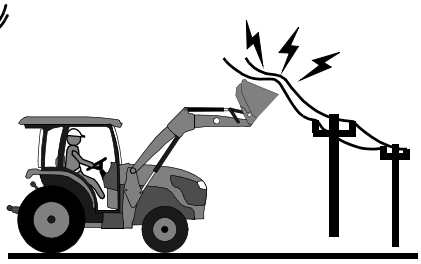
Towing Safely

- ▲ Comply with federal, state, and local laws.
- ▲ Use towing vehicle and trailer of adequate size and capacity. Secure equipment towed on a trailer with chocks, tie downs, and chains.
- ▲ **IMPORTANT:** Do not tow a load that is more than double the weight of the vehicle towing the load.
- ▲ Sudden braking can cause a towed trailer to swerve unexpectedly. Reduce speed if trailer is not equipped with brakes.



Transport Safely

- ▲ Comply with federal, state, and local laws.
- ▲ Avoid contact with any overhead utility lines or electrically charged conductors.
- ▲ Always drive with attachment on the end of the loader arms low to the ground.
- ▲ Follow recommendations in the power machine Operator's Manual when driving uphill or downhill and when parking on an incline.
- ▲ Never travel at a speed which does not allow adequate control of the load, steering, and stopping. Some rough terrains require a slower speed.

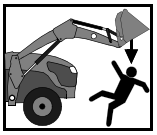


Tire Safety

- ▲ Tire changing can be dangerous and must be performed by trained personnel using the correct tools and equipment.
- ▲ Always properly match the wheel size to the properly sized tire.
- ▲ Always maintain correct tire pressure. Do not inflate tires above recommended pressures shown in the Operator's Manual.
- ▲ When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.
- ▲ Securely support the attachment when changing a wheel.
- ▲ When removing and installing wheels, use wheel handling equipment adequate for the weight involved.
- ▲ Make sure wheel bolts have been tightened to the specified torque.

Practice Safe Maintenance

- ▲ Understand procedure before doing work. Refer to the Operator's Manual for additional information.
- ▲ Work on a level surface in a clean, dry area that is well-lit.
- ▲ Lower attachment to the ground and follow all shutdown procedures before leaving the operator's seat to perform maintenance.
- ▲ Do not work under any hydraulically supported equipment. It can settle, suddenly leak down, or be lowered accidentally. If it is necessary to work under the equipment, securely support it with stands or suitable blocking beforehand.
- ▲ Use properly grounded electrical outlets and tools.
- ▲ Use correct tools and equipment for the job that are in good condition.
- ▲ Allow equipment to cool before working on it.
- ▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on equipment.
- ▲ Inspect all parts. Make certain that parts are in good condition & installed properly.
- ▲ Replace parts on this attachment with genuine Kubota parts only. Do not alter this attachment in a way which will adversely affect its performance.
- ▲ Do not grease or oil attachment while it is in operation.
- ▲ Remove buildup of grease, oil, or debris.
- ▲ Always make sure any material and waste products from the repair and maintenance of the attachment are properly collected and disposed of.
- ▲ Remove all tools and unused parts before operation.



Listed below are common practices that may or may not be applicable to the products described in this manual.

Handle Chemicals Properly

- ▲ Protective clothing should be worn.
- ▲ Handle all chemicals with care.
- ▲ Follow instructions on container label.
- ▲ Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil, and property.
- ▲ Inhaling smoke from any type of chemical fire can be a serious health hazard.
- ▲ Store or dispose of unused chemicals as specified by the chemical manufacturer.

Wear Personal Protective Equipment (PPE)

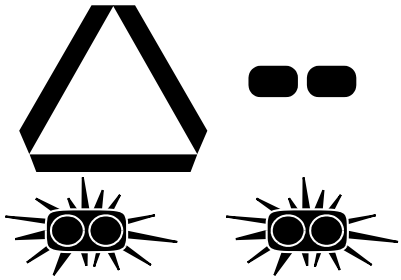
- ▲ Wear protective clothing and equipment appropriate for the job such as safety shoes, safety, glasses, hard hat, dust mask, and ear plugs.
- ▲ Clothing should fit snug without fringes and pull strings to avoid entanglement with moving parts.
- ▲ Prolonged exposure to loud noise can cause hearing impairment or hearing loss. Wear suitable hearing protection such as earmuffs or earplugs.
- ▲ Operating a machine safely requires the operator's full attention. Avoid wearing headphones while operating equipment.

Avoid High Pressure Fluids

- ▲ Escaping fluid under pressure will penetrate the skin or eyes causing serious injury.
- ▲ Relieve all residual pressure before disconnecting hydraulic lines or performing work on the hydraulic system.
- ▲ Make sure all hydraulic fluid connections are properly tightened/torqued and all hydraulic hoses and lines are in good condition before applying pressure to the system.
- ▲ Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks.
- ▲ Wear protective gloves and safety glasses or goggles when working with hydraulic systems.
- ▲ **DO NOT DELAY.** If an accident occurs, seek immediate emergency medical care or gangrene may result.

Use Safety Lights and Devices

- ▲ A slow moving power machine can create a hazard when driven on public roads. They are difficult to see, especially at night.
- ▲ Flashing warning lights and turn signals are recommended whenever driving on public roads.
- ▲ For tractors and other agriculture equipment, a Slow Moving Vehicle (SMV) sign is required when traveling on public roads.

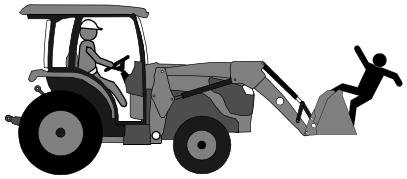


Use Seat Belt and ROPS

- ▲ Land Pride recommends the use of a CAB or roll-over-protective-structures (ROPS) and seat belt in almost all power machines. Combination of a CAB or ROPS and seat belt will reduce the risk of serious injury or death if the power machine should be upset.
- ▲ If ROPS is in the locked-up position, fasten seat belt snugly and securely to help protect the operator against serious injury or death from falling and/or machine overturn.

Keep Riders Off Machinery

- ▲ Never carry riders on the power machine or attachment.
- ▲ Riders obstruct operator's view and interfere with the control of the power machine.
- ▲ Riders can be struck by objects or thrown from the equipment.
- ▲ Never use the power machine or attachment to lift or transport riders.

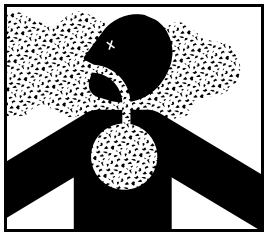


These are common practices that may or may not be applicable to the products described in this manual.

Avoid Crystalline Silica (Quartz) Dust

Because crystalline silica is a basic component of sand and granite, many activities at construction sites produce dust containing crystalline silica. Trenching, sawing, and boring of material containing crystalline silica can produce dust containing crystalline silica particles. This dust can cause serious injury to the lungs (silicosis).

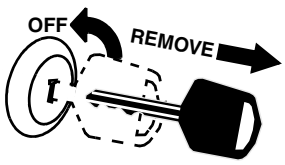
There are guidelines which should be followed if crystalline silica (quartz) is present in the dust.



- ▲ Be aware of and follow OSHA (or other local, State, or Federal) guidelines for exposure to airborne crystalline silica.
- ▲ Know the work operations where exposure to crystalline silica may occur.
- ▲ Participate in air monitoring or training programs offered by the employer.
- ▲ Be aware of and use optional equipment controls such as water sprays, local exhaust ventilation, and enclosed cabs with positive pressure air conditioning if the machine has such equipment. Otherwise respirators shall be worn.
- ▲ Where respirators are required, wear a respirator approved for protection against crystalline silica containing dust. Do not alter respirator in any way. Workers who use tight-fitting respirators can not have beards/ mustaches which interfere with the respirator seal to the face.
- ▲ If possible, change into disposable or washable work clothes at the work site; shower and change into clean clothing before leaving the work site.
- ▲ Do not eat, drink, use tobacco products, or apply cosmetics in areas where there is dust containing crystalline silica.
- ▲ Store food, drink, and personal belongings away from the work area.
- ▲ Wash hands and face before eating, drinking, smoking, or applying cosmetics after leaving the exposure area.

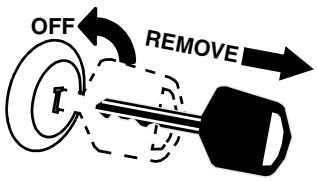
Tractor Shutdown & Storage

- ▲ Reduce engine speed and shut-off all power to the attachment.
- ▲ Park on solid, level ground and lower attachment until it is flat on the ground or on non-concrete support blocks.
- ▲ Put tractor in park or set park brake.
- ▲ Turn off engine and remove ignition key to prevent unauthorized starting.
- ▲ Relieve all hydraulic pressures.
- ▲ Wait for all components to stop before leaving operator's seat.
- ▲ Use steps, grab-handles and anti-slip surfaces when stepping on and off the tractor.



Skid Steer / Track Loader Shutdown And Storage

- ▲ Reduce engine speed and shut-off all power to the attachment.
- ▲ Park on solid, level ground and lower attachment until it is flat on the ground or on non-concrete support blocks.
- ▲ Turn-off engine using the power-off switch or turn ignition key to stop. Do not remove key at this time.
- ▲ Relieve all hydraulic pressures.
  - If using a power-off switch, follow your machine Operator's Manual for instructions on how to release hydraulic pressure in the lines.
  - If using an ignition key, turn key to "RUN" and move joysticks to release hydraulic pressure in the lines. Finish by turning ignition key to off and removing it to prevent unauthorized starting.
- ▲ If included, raise seat bar and move controls until both lock.
- ▲ Wait for all components to stop before leaving operator's seat.
- ▲ Use steps, grab-handles and anti-slip surfaces when stepping on and off the skid steer or track loader.



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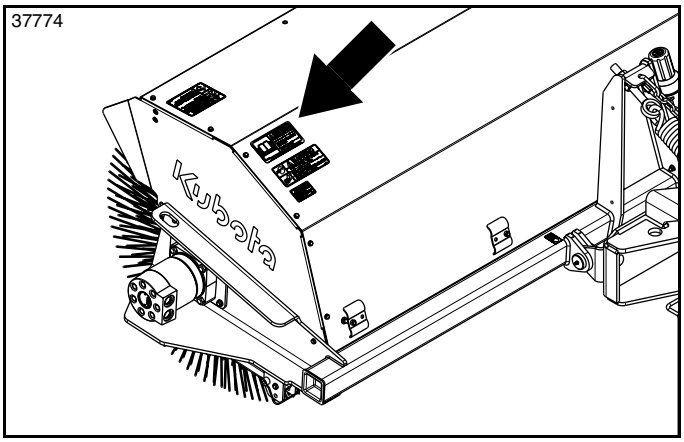
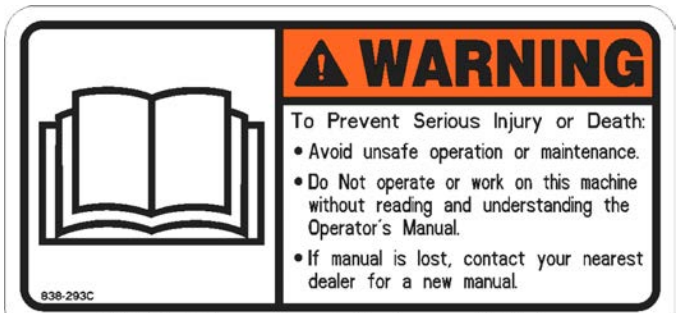
Safety Labels

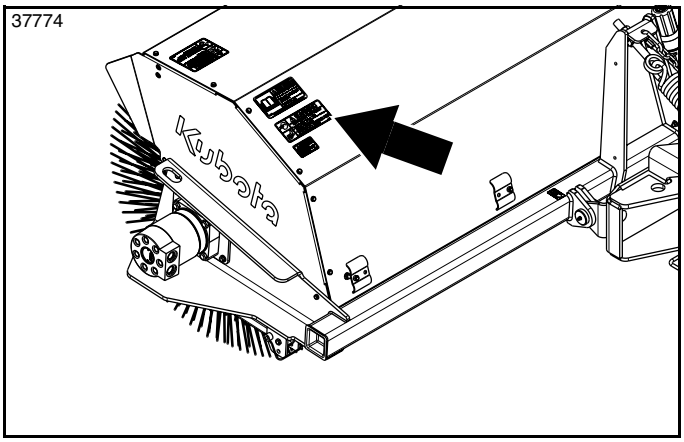
Your Angle Broom comes equipped with all safety labels in place. They are designed to help you safely operate your attachment. Read and follow their directions.

1. *Keep all safety labels clean and legible.*
2. *Refer to this section for proper label placement. Replace all damaged or missing labels. Order new labels from your nearest Kubota dealer. To find your nearest dealer, visit our dealer locator at www.landpride.com.*
3. *Some new equipment installed during repair requires safety labels to be affixed to the replaced component as specified by Kubota. When ordering new components make sure the correct safety labels are included in the request.*
4. *Refer to this section for proper label placement.*
   To install new labels:
   a. *Clean surface area where label is to be placed.*
   b. *Spray soapy water onto the cleaned area.*
   c. *Peel backing from label and press label firmly onto the surface.*
   d. *Squeeze out air bubbles with edge of a credit card or a similar type of straight edge.*

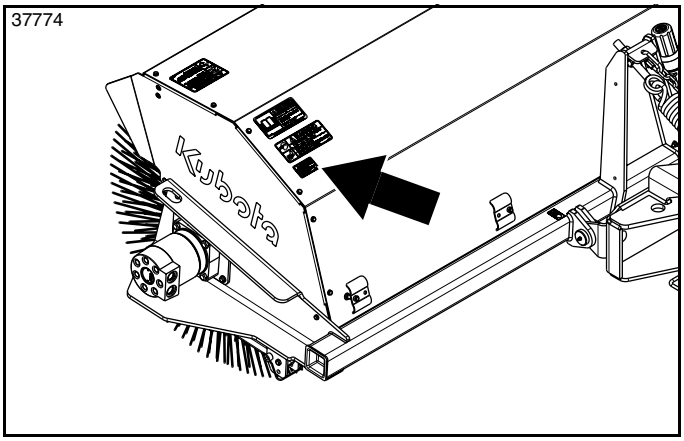




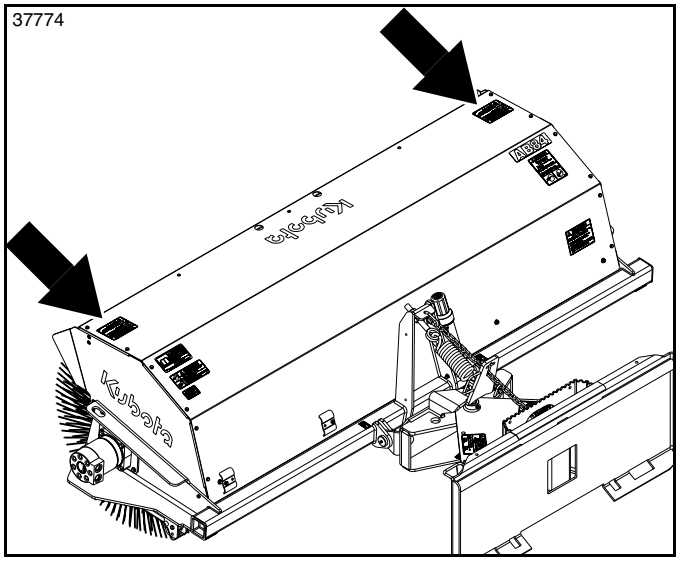
838-293C
Warning: Read Operator's Manual
1 Place



838-094C
Warning: High Pressure Fluid Hazard
1 Place:

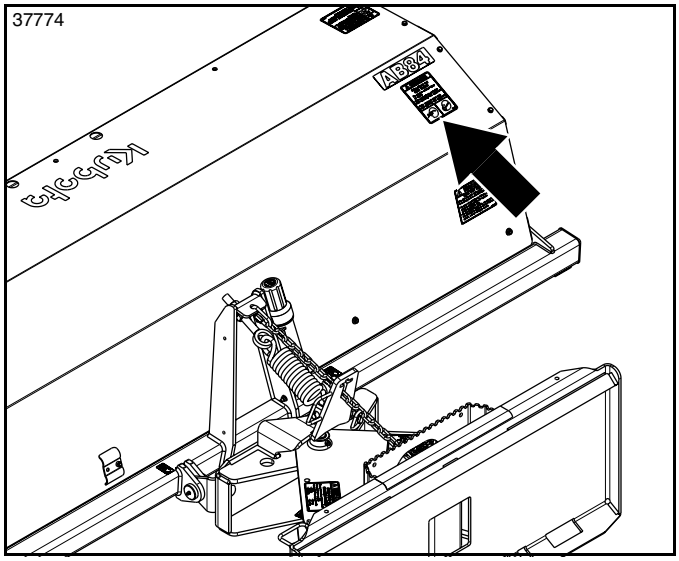


858-235C
Caution: Rotation Hazard
1 Place



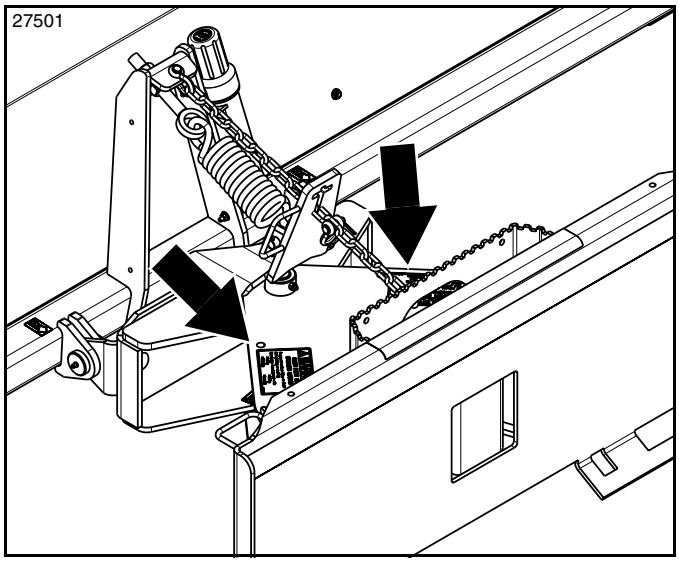
70983

848-372C
Warning: Flying Object and Entanglement Hazards
2 Places



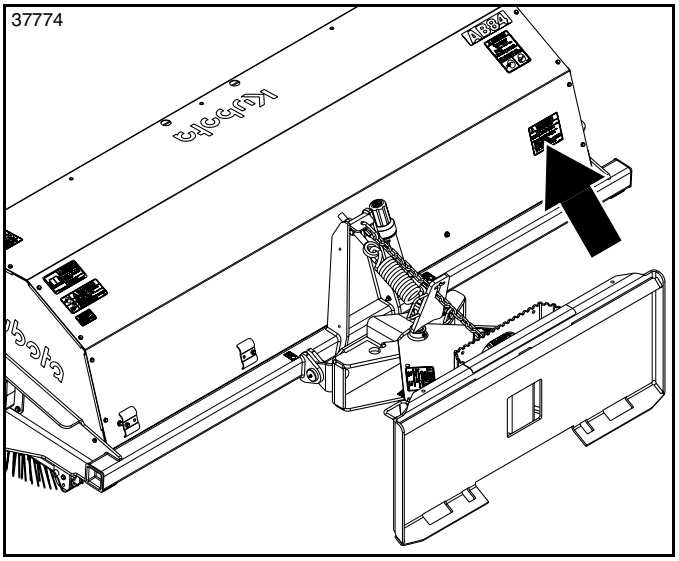
70985

848-392C
Warning: Flying Object and Dust Hazards
Wear eye protection and dust mask
1 Place:



70312

818-045C
Warning: Pinch Point or Crushing Hazard
2 Places



72454

844-124C
Warning: Silica Dust Hazard
1 Place:

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Kubota welcomes you to the growing family of new product owners. This Angle Broom has been designed with care and built by skilled workers using quality materials. Proper assembly, maintenance, and safe operating practices will help you get years of satisfactory use from this product.

Application

The Kubota AB72, and AB84 Angle Brooms are designed for mounting on skid steer hitch plates and tractor loaders equipped with skid steer adapter hitch plates. The companion tractor or skid steer must have at least a minimum hydraulic flow capability of 12 gallons (45 L) per minute and maximum capacity of 24 gallons (91 L) per minute. The Angle Brooms are intended for applications in construction site cleanup, road maintenance, light snow removal on paved surfaces, cart path maintenance, and turf scalping operations prior to overseeding operations. An optional dust control curtain or optional spray system is available for areas where dust control is desired or mandated.

See **"Specifications & Capacities"** on page 43 and **"Features & Benefits"** on page 44 for additional information and performance enhancing options.

Using This Manual

- This Operator's Manual is designed to help familiarize you with safety, assembly, operation, adjustments, troubleshooting, and maintenance. Read this manual and follow the recommendations to help ensure safe and efficient operation.
- The information contained within this manual was current at the time of printing. Some parts may change slightly to assure you of the best performance.
- To order a new Operator's or Parts Manual, contact your authorized dealer. Manuals can also be downloaded, free-of-charge, from our website at www.landpride.com

Terminology

"Right" or "Left" as used in this manual is determined by the direction the operator faces while sitting in the operator's seat looking forward unless otherwise stated.

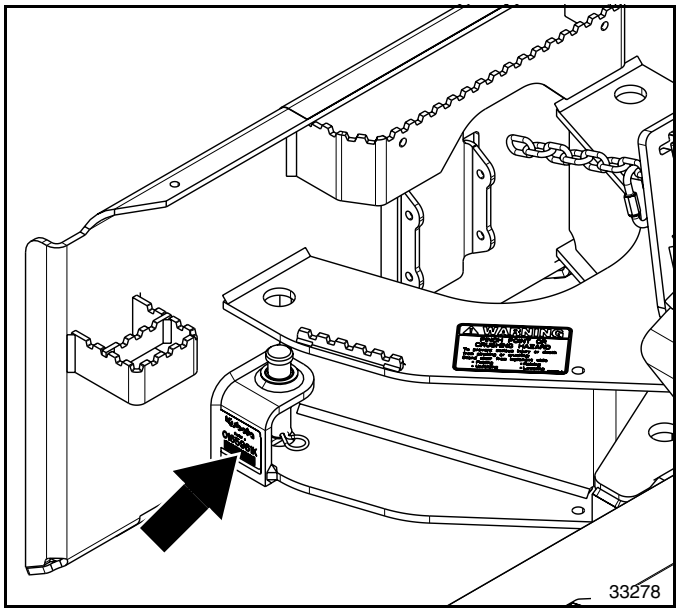
Owner Assistance

The dealer should complete the Online Warranty Registration at the time of purchase. This information is necessary to provide you with quality customer service.

The parts on your Angle Broom have been specially designed by Kubota/Land Pride and should only be replaced with genuine Kubota parts. Contact a Kubota dealer if customer service or repair parts are required. Your Kubota dealer has trained personnel, repair parts, and equipment needed to service the attachment.

Serial Number

For quick reference and prompt service, record model and serial number on the inside cover page and again on the warranty page. Always provide model number and serial number when ordering parts and in all correspondence with your Kubota dealer. For location of your serial number plate, see Figure 1.



Serial Number Plate Location
Figure 1

Further Assistance

Your dealer wants you to be satisfied with your new Angle Broom. If for any reason you do not understand any part of this manual or are not satisfied with the service received, the following actions are suggested:

1. Discuss any problems you have with your attachment with your dealership service personnel so they can address the problem.
2. If you are still not satisfied, seek out the owner or general manager of the dealership, explain the question/problem, and request assistance.
3. For further assistance write to:

Kubota by Land Pride
Service Department

1525 East North Street
P.O. Box 5060
Salina, Ks. 67402-5060

E-mail address
lpservicedept@landpride.com

Tractor & Skid Steer Requirements

The Angle Broom is designed to attach to skid steer Loaders and Tractor Loaders equipped with a skid steer adapter hitch with the following minimum requirements:

SAE Lift Capacity . . . . . 2,000 lbs (907 kgs)
Hydraulic Flow Range . . . . 12 - 24 gpm (45 - 91 lpm)
Hydraulic Flow Rate . . . . . .12 gpm @ 2,000 PSI
. . . . . .(45.4 lpm @ 13.8 mPa)
Hydraulic Connections . . . . . 1 - Duplex outlet

⚠ WARNING

To avoid serious injury or death:

Lightweight power machines may need weight added to the rear to maintain steering control and prevent forward and/or side tipping. Consult your power machine Operator's Manual to determine proper weight requirements and maximum limitations.

Torque Requirements

Refer to **"Torque Values Chart for Common Bolt Sizes"** on page 46 to determine correct torque values when tightening hardware.

Before You Start

Make sure the intended tractor/skid steer conforms to the requirements stated above. Also, read and understand the Operator's Manual for your Angle Broom. An understanding of how it works will aid in its assembly and set-up.

Go through the **"Pre-Assembly Checklist"** below before assembling the Angle Broom. To speed up your assembly task and make the job safer, have all needed parts and equipment readily at hand.

Pre-Assembly Checklist

✔	Check	Ref.
☐	Have a fork lift or loader with properly sized chains and safety stands capable of lifting and supporting equipment on hand.	
☐	Have a minimum of two people available during assembly.	
☐	Make sure all major components and loose parts are shipped with the attachment.	Assembly and Set-up
☐	Double check to make sure all parts, fasteners, and pins are installed in the correct location. Refer to the Parts Manual if unsure. By double checking, you will lessen the chance of incorrectly using a bolt that may be needed later. **NOTE:** All assembled hardware from the factory has been installed in the correct location. Remember location of a part or fastener if removed. Keep parts separated.	Operator's Manual 323-033MK Parts Manual 323-033PK
☐	Make sure working parts move freely, bolts are tight and cotter pins are spread.	Operator's Manual
☐	Make sure all grease fittings are in place and lubricated.	Page 42
☐	Make sure all safety labels are correctly located and legible. Replace if damaged.	Page 4

Dealer Set-up

Refer to Figure 1-1:

The angle broom is shipped mostly assembled. Spring (#4) is shipped unhooked from eye bolt (#5). Welded chain (#2) is shipped with quick link (#1) attached to the eye bolt mount and to chain (#2).

1. Cut top half of crate off and remove. Cut off lumber in front of the hitch plate and remove.
2. Tilt top of broom hitch plate forward and hook spring (#4) to eye bolt (#5). There are several ways to do this:

   Using The Loader Hitch Plate

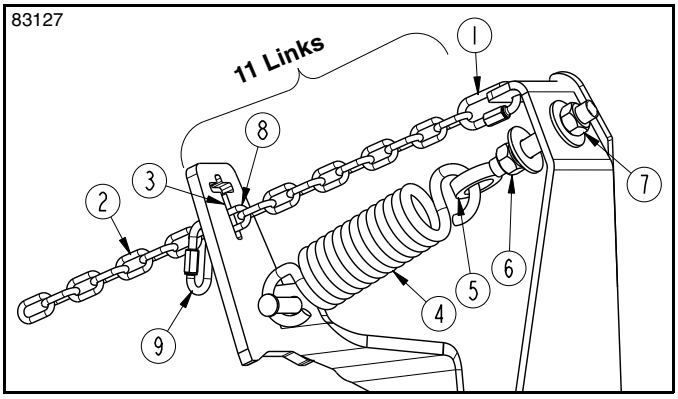
   a. Attach angle broom hitch plate to loader hitch plate. Refer to **"Angle Broom Hook-Up"** on page 12 for hook-up instructions.

   b. Raise hitch plate up several inches until top of hitch plate can be tilted forward towards the broom shroud.

   Using a Chain Hoist

   a. Attach a chain hoist to the hitch plate.

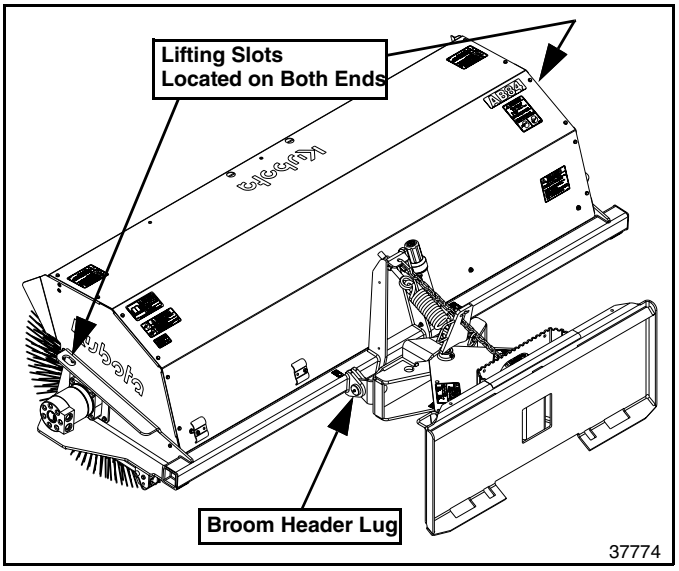
   b. Raise hitch plate up several inches until top of hitch plate can be manually tilted forward towards the broom shroud.
3. Hook 8th link of welded chain (#2) in T-slot (#3) for safety.
4. Loosen nut (#7) to extend eye bolt (#5) towards spring (#4). Do not move nut (#6) on the eye bolt.
5. Hook spring (#4) in eye bolt (#5). Make sure hook opening is facing down to keep the spring from coming unhooked.
6. Without moving nut (#6), re-tighten nut (#7). When completed, there should be 3" (7.6 cm) of bolt extending pass nut (#7). See **"Spring Eye Bolt Adjustment"** on page 24 for additional adjustment instructions.
7. Rotate chain (#2) until the 11th link (#8) is vertical and then hook that link in T-slot (#3).
8. Attach quick link (#9) in the 12th link from quick link (#1). Tighten thumb nut to secure the quick link.



Dealer Spring & Chain Set-up
Figure 1-1

Remove Angle Broom From Crate

The Angle Broom can be removed from the crate with either a chain hoist or by attaching it to a front loader hitch.



Chain Hoist Lifting Points
Figure 1-2

Remove Angle Broom With A Loader

1. If not already done, remove lumber in front of hitch plate.
2. Attach Angle Broom hitch plate to loader hitch plate. Refer to **"Angle Broom Hook-Up"** on this page detailed instructions.
3. Raise Angle Broom up. Be careful not to catch any components on the crate while raising broom up.
4. Back loader away from crate.
5. Skip to **"Hydraulic Hose Hook-up"** on page 13.

Remove Angle Broom With A chain Hoist

Refer to Figure 1-2:

Three strands of chain are required with a spreader bar positioned between two of the three strands. The spreader bar should be a little longer than the width of the hood to keep the chains from damaging the hood.

1. Attach two of the three strands to the lifting slots on each end of the broom header frame.
2. Position the spreader bar above the hood and between the two strands hooked to the lifting slots.
3. Attach the third strand around the broom header lug.
4. Lift Angle Broom off of the crate floor while being careful not to catch any components on the crate while lifting and removing the broom.
5. Continue with ""**Angle Broom Hook-Up"** on this page.

Angle Broom Hook-Up

Refer to Figure 1-3:

DANGER

To avoid serious injury or death:

A crushing hazard exists when connecting and disconnecting the attachment. Do not allow anyone to stand between attachment and power machine while approaching or backing away from the attachment. Do not operate hydraulic controls while someone is near the power machine and/or attachment.

WARNING

To avoid serious injury or death:

Check hitch fit-up frequently. An improper fit-up can result in the attachment falling from the loader hitch plate.

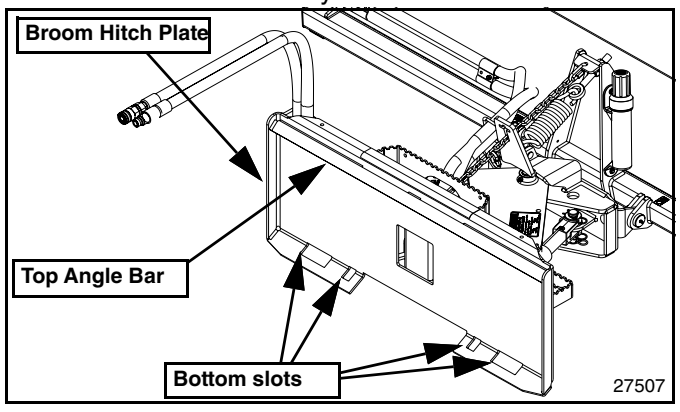
1. Make sure hydraulic hoses do not interfere with hitch hook-up.
2. Drive tractor/skid steer slowly to the Angle Broom hitch plate. Make sure the tractor/skid steer hitch plate is parallel with the broom hitch plate.
3. Rotate top of tractor/skid steer tilt arms slightly forward.
4. Place top of tractor/skid steer hitch plate under the top angled bar on the broom's hitch plate.
5. Slowly lift tractor/skid steer hitch up until the hitch plate has seated into the top angle bar.
6. Continue to raise tractor/skid steer hitch up until Angle Broom is slightly off the ground.

WARNING

To avoid serious injury or death:

If proceeding alone, confirm unit is properly shut down before performing additional work to prevent serious injury or death. Refer to **"Skid Steer Shutdown And Storage"** *on page 1.*

7. Push lock handles on the tractor/skid steer hitch down to extend the lock pins through the bottom slots in the broom hitch plate.
8. Continue to push the lock handles down until the handles are locked fully down.



Angle Broom Hitch Plate
Figure 1-3

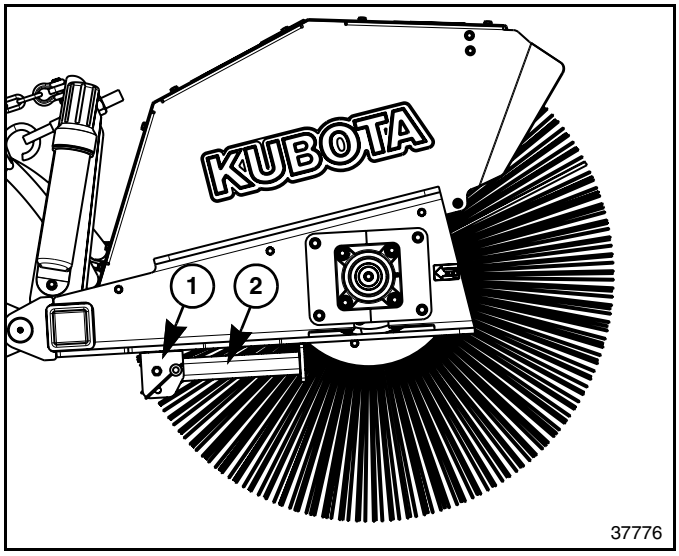
⚠ CAUTION

To avoid serious injury:

Wear gloves when working around or near the bristles. Poly and especially wire bristles can suddenly poke the hands causing injuries that can become infected.

Refer to Figure 1-4:

9. With Angle Broom raised slightly off the ground and gloves on, remove wire snap pins (#1) on both sides of the broom and rotate support stands (#2) up.
10. Replace wire snap pins in the location shown. Make sure wire snaps are securely caught over end of pins to keep pins from falling out.



End Measurements
Figure 1-4

Hydraulic Hose Hook-up

⚠ WARNING

To avoid serious injury or death:

- *Hydraulic fluid under high pressure will penetrate the skin or eyes causing serious injury. Wear protective gloves and safety glasses or goggles when working with hydraulics. Use a piece of cardboard or wood, rather than hands, when searching for leaks. If an accident occurs, seek immediate emergency medical care or gangrene may result. DO NOT DELAY.*
- *Make sure hydraulic flow to the Angle Broom does not exceed maximum rated flow listed in the skid steer requirements on "Tractor & Skid Steer Requirements" on page 11. Exceeding maximum flow will over-speed the motor.*

IMPORTANT: Collect and dispose of all oil spills and leaks in a safe manner that meets the local environmental regulations.

IMPORTANT: Make sure coupler fittings on the hydraulic hoses and power machine are clean before connecting them together.

IMPORTANT: Make sure hydraulic hoses are routed properly so they will not become pinched or kinked while operating. If necessary, loosen hoses at the fittings to relieve twisting and kinking. Tighten all connections before starting power equipment.

1. Route hydraulic hoses through the most convenient path to access your tractor/skid steer couplings.

NOTE: Refer to Figure 1-5 below for correct hose routing when attaching Angle Broom to a Kubota compact track loader or skid steer loader. Do not use Kubota's SVL or SSV Hose Stay (Not Shown).

Kubota Hose Hook-up (SVL Shown)
Figure 1-5

2. Clean quick connect couplers of dirt and then connect male (#1) and female (#2) couplers to the tractor/skid steer high pressure outlets. Make sure quick connect couplers have fully engaged. If they have not, check the following:
   a. Make sure couplers are same size and type.
   b. Make sure hydraulic pressure has been released.
3. Operate tractor/skid steer to check brush rotation. The brush should rotate to throw debris away from the front of the unit. If brush does not rotate, switch male and female couplers on hydraulic hoses and then reconnect hoses to the outlets. Also, see Hydraulic Hook-up instructions in your tractor/skid steer Operator's Manual.

Electrical Control Harness Options

Kubota offers five electrical control harness. If not purchased with the broom, one may be purchased from your nearest Kubota dealer. Additional instructions are provided on the page noted in the list below.

- Kubota Part No. 323-094A - - - - - - - - - - 73" Long wire harness with Deutsch 14 pin power plug.
  - Refer to **"Control Harness with Deutsch 14 Pin Plug"** below.
- Kubota Part No. 323-095A - - - - - - - - - - 10' Long wire harness with Deutsch 14 pin power plug.
  - Refer to **"Control Harness with Deutsch 14 Pin Plug"** below.
- Kubota Part No. 323-096A - - - - - - - - - - Switch & wire harness with Deutsch 2 pin power plug.
  - Refer to **"Control Harness With Deutsch 2 Pin Plug"** on page 15.
- Kubota Part No. 323-097A - - - - - - - - - - Skid steer switch & wire harness connects direct to a 2V power source.
  - Refer to **"Skid Steer Control Harness W/ 2 Eyelets"** on page 16.
- Kubota Part No. 323-098A - - - - - - - - - - Tractor switch & wire harness connects direct to a 12V power source.
  - Refer to **"Tractor Control Harness W/ 2 Eyelets"** on page 16.

Kubota offers two controllers for operating the Powered Rake attached to a Kubota compact track loader or skid steer loader. See your nearest Kubota dealer to purchase one of their controllers.

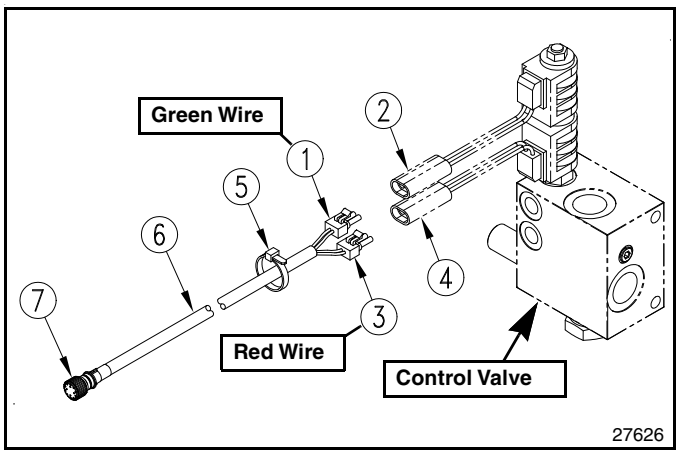
- Kubota Part No. V0511-97010 - - - - - - - - SVL Electrical connector (2 functions)
- Kubota Part No. W/G S6699 - - - - - - - - - SVL Multifunction handle (7 functions.)

Control Harness with Deutsch 14 Pin Plug

323-094A . . . . . DEUTSCH HD30 14 PIN PLUG 73"
323-095A . . . . . DEUTSCH HD30 14 PIN PLUG 10'
Refer to Figure 1-6:

If Skid Steer Loader is equipped with a Deutsch 14 Pin male connector, then push button control box can be eliminated and a 73 inch (185 cm) or 10 foot (305 cm) long Deutsch 14 pin plug and cable (#6) can be purchased to connect the solenoid directly to the Skid Steer Loader controls. Purchase the one that is the right length for your skid steer from your nearest Kubota dealer.

1. Connect green and black wire plug (#1) to top solenoid wire (#2).
2. Connect red and white wire plug (#3) to bottom solenoid wire (#4).
3. Attach Deutsch 14 pin plug (#7) to the skid steer's Deutsch 14 pin male plug.
4. Skip to **"Operational Check"** on page 17.



Deutsch 14 Pin Plug & Cable
Figure 1-6

Control Harness With Deutsch 2 Pin Plug

323-096A . . . SWITCH & WIRE HARNESS DTP PLUG

Refer to Figure 1-7:

This switch and wire harness is designed for attaching the Angle Broom to a Kubota CTL when a 14 pin Deutsch plug is not available and 2 pin Deutsch plug located behind the driver's seat is available. The 2 push button control switch can be placed approximately 9 ft. from the control valve.

Refer to Figure 1-8:

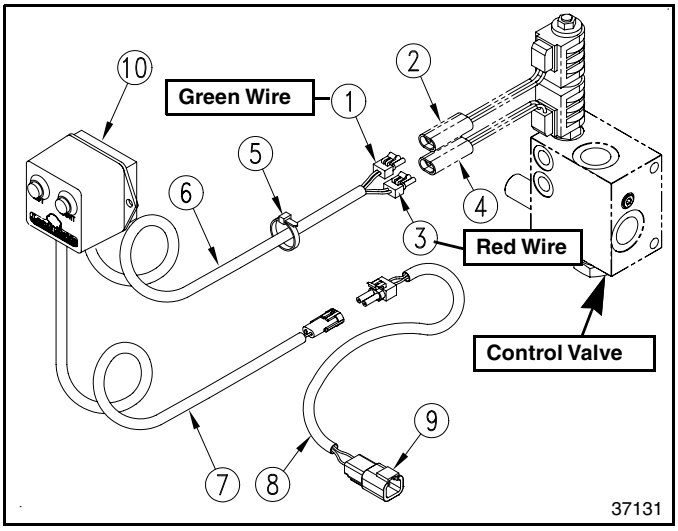
1. Attach Deutsch 2 pin plug (#9) to the Kubota CTL male plug (#11) located behind the driver's seat.

Refer to Figure 1-9:

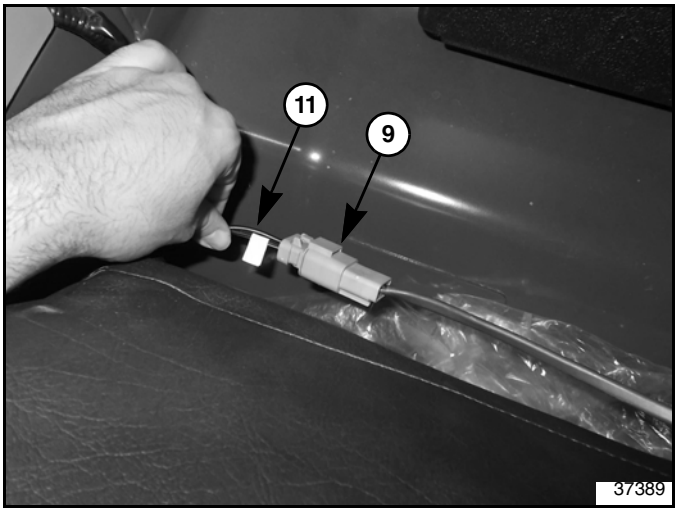
2. Fuse (#12) is supplied by customer.Install 10 amp fuse (#12) in Kubota's fuse box slot #17 labeled "Electrical Outlet-2".

Refer to Figure 1-7:

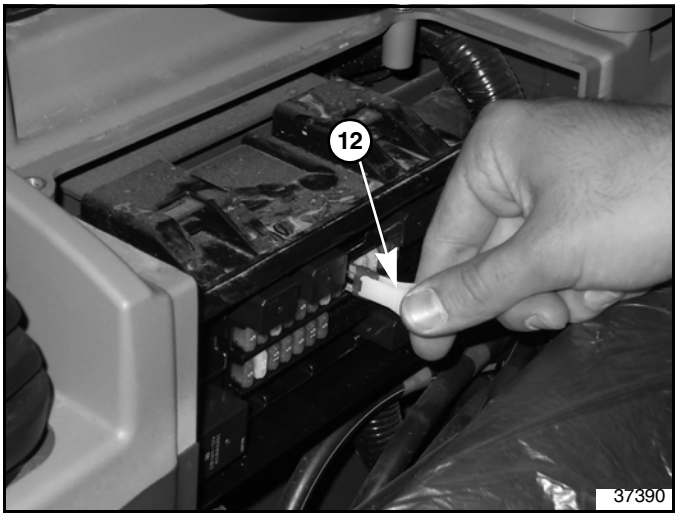
3. The push button control switch (#10) is mounted with magnets on the back. Locate and mount this switch in a convenient easy to reach location.
4. Connect power cord (#8) to control switch wire (#7).
5. Connect green and black wire connector (#1) to top solenoid wire (#2).
6. Connect red and white wire connector (#3) to bottom solenoid wire (#4).
7. Skip to **"Operational Check"** on page 17.



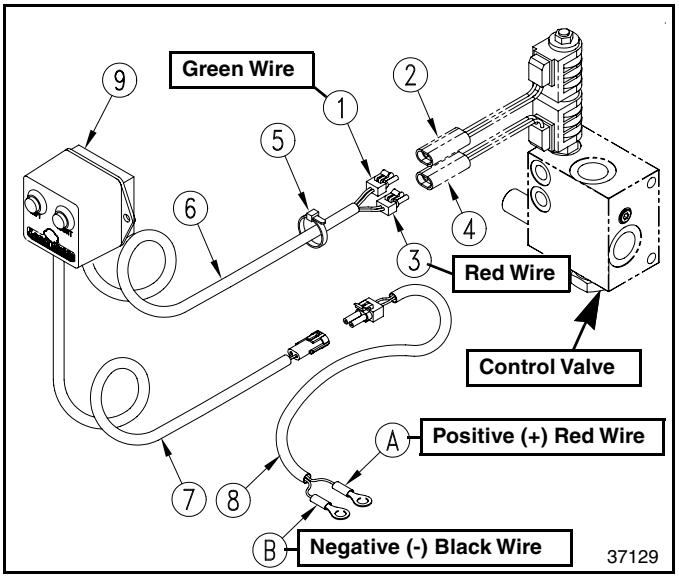
Switch & Wire Harness For Kubota CTL Skid Steer
Figure 1-7



Kubota Power Connection (Located Behind Drive Seat)
Figure 1-8



Installation of 10 amp Fuse
Figure 1-9



Switch & Wire Harness For Skid Steers
Figure 1-10

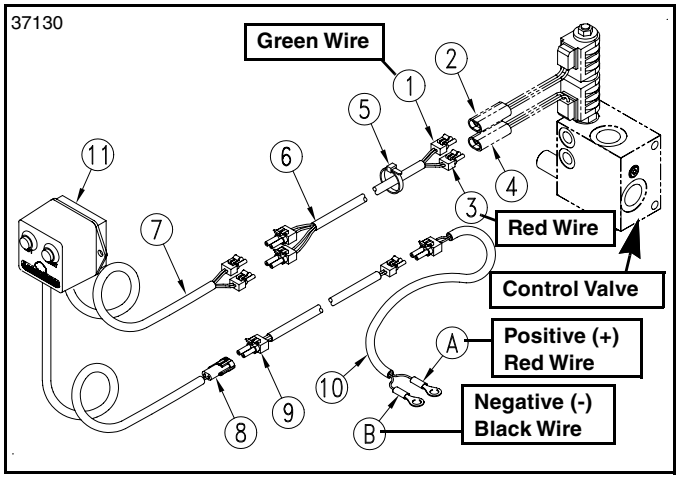
Skid Steer Control Harness W/ 2 Eyelets

323-097ASWITCH & WIRE HARNESS

Refer to Figure 1-10:

This switch and wire harness is designed for attaching the Angle Broom to a Skid steer without a 2 pin or 14 pin Deutsch plug. The 2 push button control switch can be placed approximately 9 ft. from the controlvValve.

1. Disconnect negative (-) black ground wire from the skid steer's battery post (Not shown).
2. Attach positive (+) red wire eyelet (A) to a 12 volt power source. Tighten fastener hardware.
3. Attach negative (-) black wire eyelet (B) to ground. Tighten fastener hardware.
4. Reconnect negative (-) black ground wire to the skid steer's battery. Tighten fastener hardware.
5. The push button control switch (#9) is mounted with magnets on the back. Locate and mount this switch in a convenient easy to reach location.
6. Connect power cord (#8) to control switch wire (#7).
7. Connect green and black wire connector (#1) to the top solenoid wire (#2).
8. Connect red and white wire connector (#3) to the bottom solenoid wire (#4).
9. Skip to **"Operational Check"** on page 17.



Switch & Wire Harness For Tractor Loaders
Figure 1-11

Tractor Control Harness W/ 2 Eyelets

323-098A. . . . SWITCH & WIRE HARNESS TRACTOR

Refer to Figure 1-11:

This switch and wire harness is designed for attaching the Angle Broom to a tractor loader. The 2 push button control switch can be placed approximately 18 ft (5.5 m) from the control valve.

1. Disconnect negative (-) black ground wire from the skid steer's battery post (Not shown).
2. Attach positive (+) red wire eyelet (A) to a 12 volt power source. Tighten fastener hardware.
3. Attach negative (-) black wire eyelet (B) to ground. Tighten fastener hardware.
4. Reconnect negative (-) black ground wire to the skid steer's battery. Tighten fastener hardware.
5. The push button control switch (#11) is mounted with magnets on the back. Locate and mount this switch in a convenient easy to reach location.
6. Connect power cord (#10) to extension cable (#9).
7. Connect extension cable (#9) to control switch cable (#8).
8. Connect dual end extension cable (#6) to control switch cable (#7). Be sure to match wire colors.
9. Connect green and black wire connector (#1) to the top solenoid wire (#2).
10. Connect red and white wire connector (#3) to the bottom solenoid wire (#4).
11. Continue with **"Operational Check"** on page 17**.**

Operational Check

Refer to page 15, Figure 1-7 or page 16, Figure 1-10:

1. With hydraulics hooked-up, start tractor/skid steer and press buttons to angle broom to sweep material to the right and left.

WARNING

To avoid serious injury or death:

If proceeding alone, confirm unit is properly shut down before performing additional work to prevent serious injury or death. Refer to ***"Skid Steer Shutdown And Storage"*** *on page 1.*

2. If broom angles in opposite direction desired, switch plugs (#1 & #3) with solenoid wires (#2 & #4).
3. If everything is working correctly, secure harness (#6) near the solenoid valve with zip tie (#5).
4. Make certain hydraulic hoses from tractor/skid steer to broom are kept away from all pinch points.
5. Tie hydraulic hoses and electrical cables together 12" (30 cm) and 29" (74 cm) away from quick release couplers with zip ties (#5).

NOTE: Additional zip ties may be needed to properly secure all wiring harness. Customer to supply and locate all additional zip ties.

Purging Hydraulic Angling System

Refer to Figure 2-4 on page 22:

IMPORTANT: Purge hydraulic cylinders and attached hoses of air before putting the equipment into service. Not purging the system can cause uneven cylinder movement and positioning.

IMPORTANT: The hydraulic motor is self purging and requires no further action.

1. With Angle Broom raised off the ground about 12" (30 cm), cycle hydraulic cylinder several times from fully extended to fully retracted.

WARNING

To avoid serious injury or death:

If proceeding alone, confirm unit is properly shut down before performing additional work to prevent serious injury or death. Refer to ***"Skid Steer Shutdown And Storage"*** *on page 1.*

2. If angle cylinder operates unevenly after cycling it several times, then purge system as follows:
   a. Loosen hydraulic hose fitting (#1A) at the rod end of the hydraulic cylinder (#16).
   b. Slowly retract and extend cylinder to purge any trapped air from the system.
   c. Tighten fitting (#1A) when trapped air is removed.

Check Equipment Clearances

It is important to check clearance before putting unit into operation.

1. Visually inspect hydraulic hoses to make sure they are long enough and won't become pinched or entangled in the equipment. Make hose adjustments before ever starting the tractor/skid steer.
2. Start tractor/skid steer and lower broom until it is in its sweeping position. If necessary, rotate loader tilt cylinders to realign hitch plate vertical.

NOTE: Do not change position of loader tilt cylinders while raising and lowering loader arms. Doing so will require realigning the hitch plate vertically before beginning to sweep.

3. Make sure Angle Broom does not come in contact with power equipment and tires by carefully going through its full range of motions. If necessary, have someone stand nearby that can motion to the operator to stop if a problem develops.
   a. Angle broom head fully left. Raise loader arms up and down while watching for interferences with the hoses and Angle Broom.
   b. Angle broom head fully right. Raise loader arms up and down while watching for interferences with hydraulic hoses and Angle Broom.

Unhooking Angle Broom

Refer to Figure 1-12:

1. Park tractor/skid steer with Angle Broom on a flat level surface. Lower loader arms until Angle Broom is slightly off the ground.

⚠ WARNING

To avoid serious injury or death:

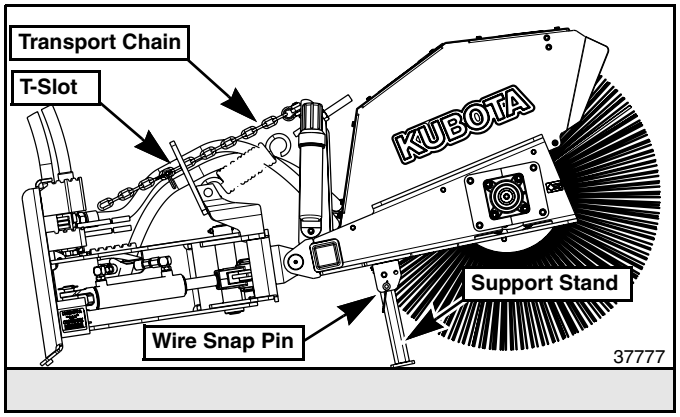
If proceeding alone, confirm unit is properly shut down before performing additional work to prevent serious injury or death. Refer to ***"Skid Steer Shutdown And Storage"*** *on page 1.*

2. With gloves on for protection from bristles poking, remove wire snap pins on both sides and rotate support stands down to storage position as shown.
3. Replace wire snap pins in the location shown. Make sure wire snaps are securely caught over end of pins so that they cannot fall out.
4. Rotate top of tilt arms back and lower tractor/skid steer lift arms down until the Angle Broom support stand and hitch plate are resting on the ground.
5. Stop engine, engage parking brake, raise seat bar, move controls until both are locked, and remove key to prevent unauthorized starting. Use steps, grab-handles, and skid-resistant surfaces when getting on or off the loader.

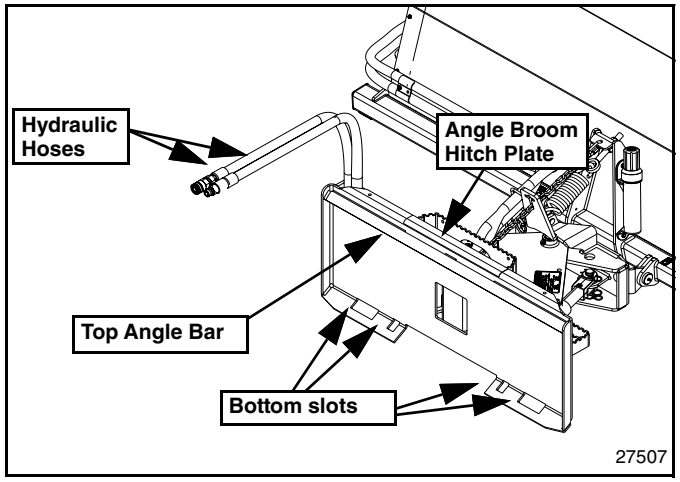
IMPORTANT: Angle Broom should be resting on its hitch plate and support stands with the broom bristles off the ground as shown. Resting the broom on its bristles for an extended period will deform the bristles. If needed, tighten transport chain in the T-slot to raise the broom up.

Refer to Figure 1-13:

6. Disconnect hydraulic hoses. It may be necessary to release hydraulic pressure in the lines before hoses will disconnect from the tractor/skid steer.
7. Release hitch plate locking levers or pins. Verify locking pins are out of the hitch plate bottom slots.
8. Restart tractor/skid steer and slowly lower loader arms while rotating top of tilt arms forward and backing-up until loader hitch plate clears top angle bar on the Angle Broom hitch plate.
9. Back away from the Angle Broom and then raise tractor/skid steer loader arms up.



Angle Broom Storage Position
Figure 1-12



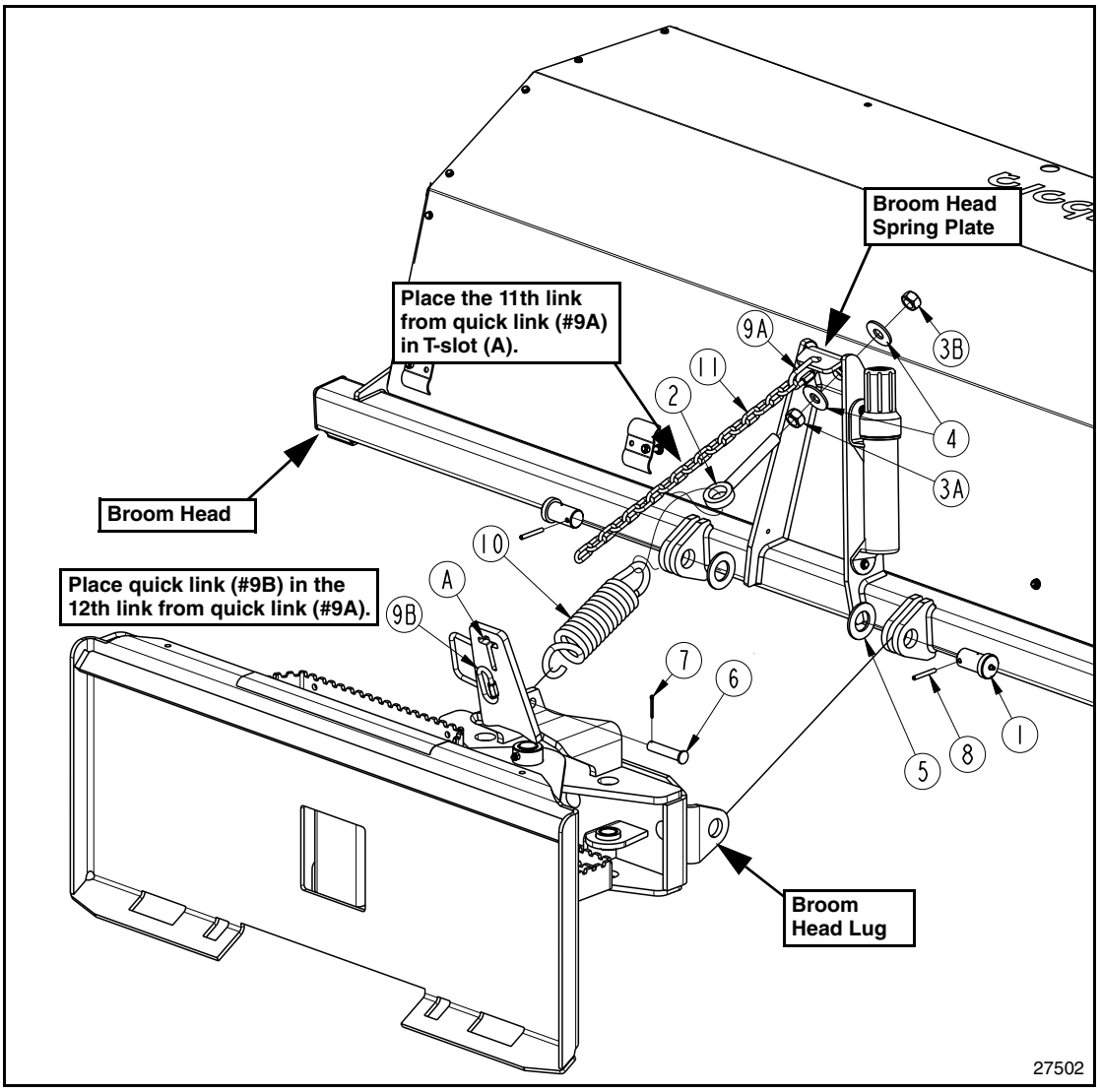
Angle Broom Hitch Plate
Figure 1-13

NOTE: The following **"Hitch Assembly"** is for future reference. Skip to **"Section 3: Adjustments"** on page 24 for continuation of dealer set-up.

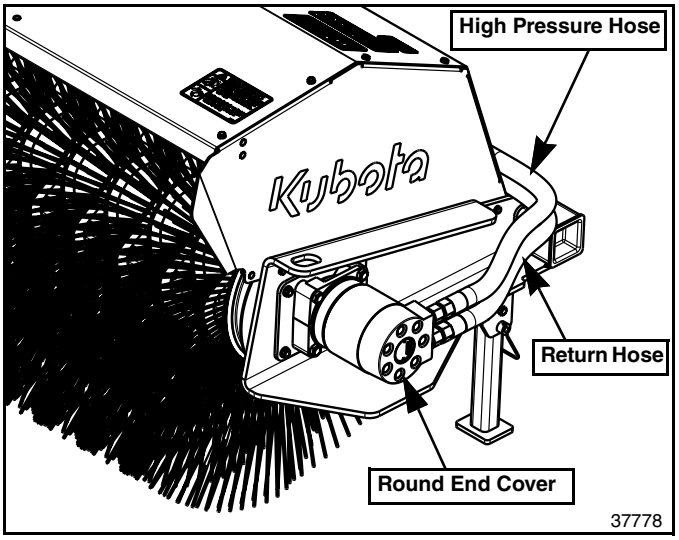
Hitch Assembly

Refer to Figure 2-1:

1. Use a lifting device to carefully align hitch assembly with broom head.
2. Attach hitch assembly to clevises on broom head with pivot pins (#1) and 1 1/4" flat washers (#5). Secure pivot pins with 1/4" x 2" roll pins (#8).
3. Screw 3/4" hex nut (#3A) fully onto eye bolt (#2).
4. Insert 3/4" eye bolt (#2) through 3/4" flat washer (#4) and hole in broom head spring plate.
5. Install 3/4" flat washer (#4) and 3/4" hex nut (#3B) on end of eye bolt (#2) to retain eye bolt.
6. Attach extension spring (#10) to the hitch plate with 5/8" clevis pin (#6) and 1/8" cotter pin (#7). Bend one or more legs of the cotter pin to secure it in place.
7. Hook other end of spring to eye bolt (#2). Make sure hook opening is facing down to keep spring from coming unhooked.
8. While holding nut (#3A) from turning, draw hex nut (#3B) up against broom head spring plate.
9. Attach one end of welded chain (#11) to the broom head spring plate with quick link (#9A). Tighten thumb screw to secure it in place.
10. Insert the eleventh link in chain (#11) through T-slot (A). Secure chain in slot (A) by attach quick link (#9B) to the twelveth link in the chain. Tighten quick link thumb nut.
11. Adjust eye bolt (#2) to the proper length. See **"Spring Eye Bolt Adjustment"** on page 24.



Hitch Assembly
Figure 2-1



3500 PSI Motor & Plumbing
Figure 2-2

Hydraulic Motor Plumbing

Refer to Figure 2-2:

Before continuing, it is important to understand that the 3500 PSI (24.1 MPa) motor is plumbed with the pressure line connected to the top motor port and return line connected to the bottom motor port. The motor can be identified by its round end cover.

Broom Angle Options

⚠ WARNING

To avoid serious injury or death:

Hydraulic fluid under high pressure will penetrate the skin or eyes causing serious injury. Wear protective gloves and safety glasses or goggles when working with hydraulics. Use a piece of cardboard or wood, rather than hands, when searching for leaks. If an accident occurs, seek immediate emergency medical care or gangrene may result. DO NOT DELAY.

IMPORTANT: Make sure inside of hoses and fittings and their external threads are clean.

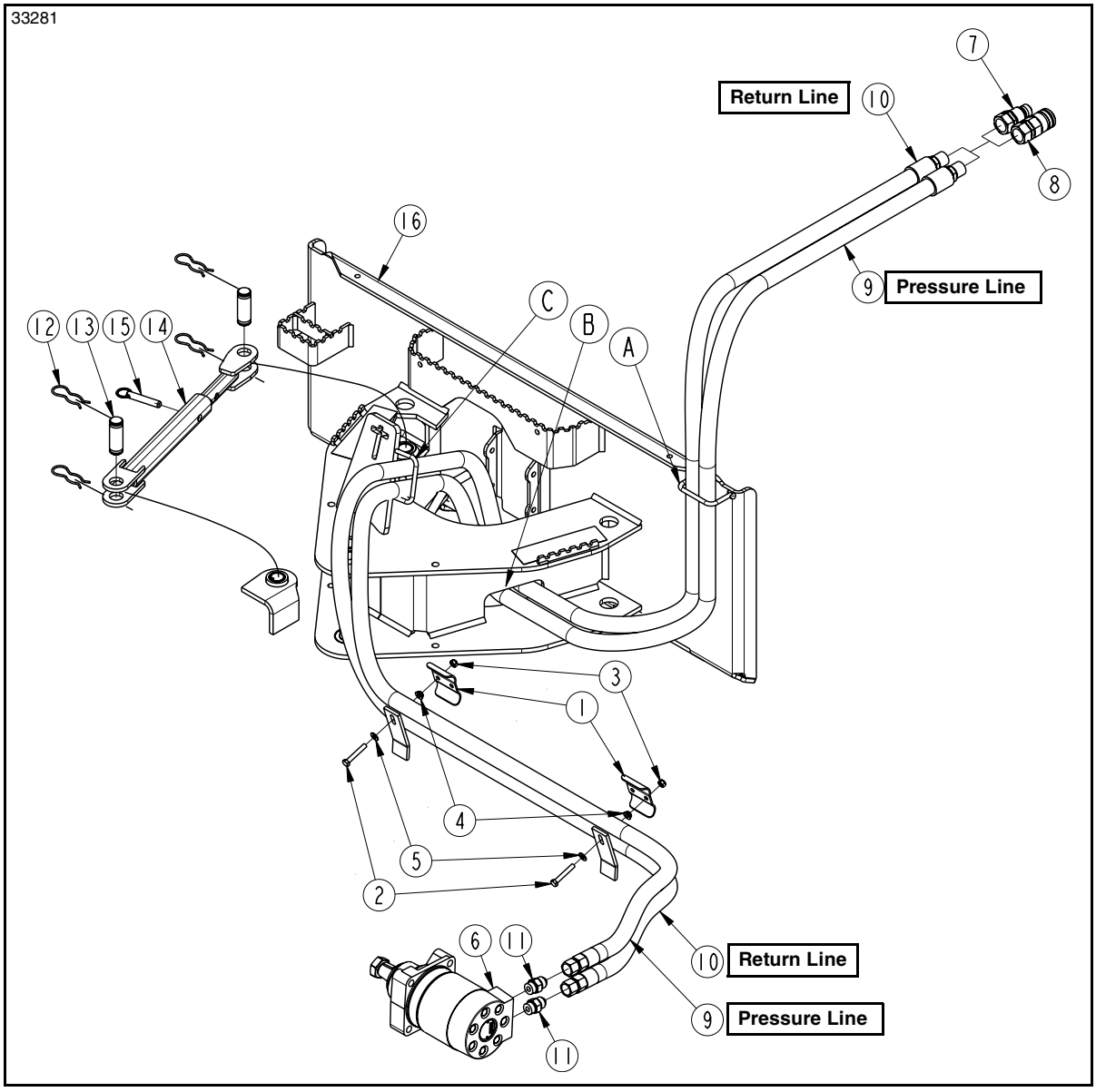
The broom can be angled manually with a manual telescoping adjuster or hydraulically with a hydraulic cylinder.

- For manual set-up instructions, refer to **"Manual Angle Option"** below.
- For hydraulic set-up instructions, skip to **"Hydraulic Angle Option"** on page 22.

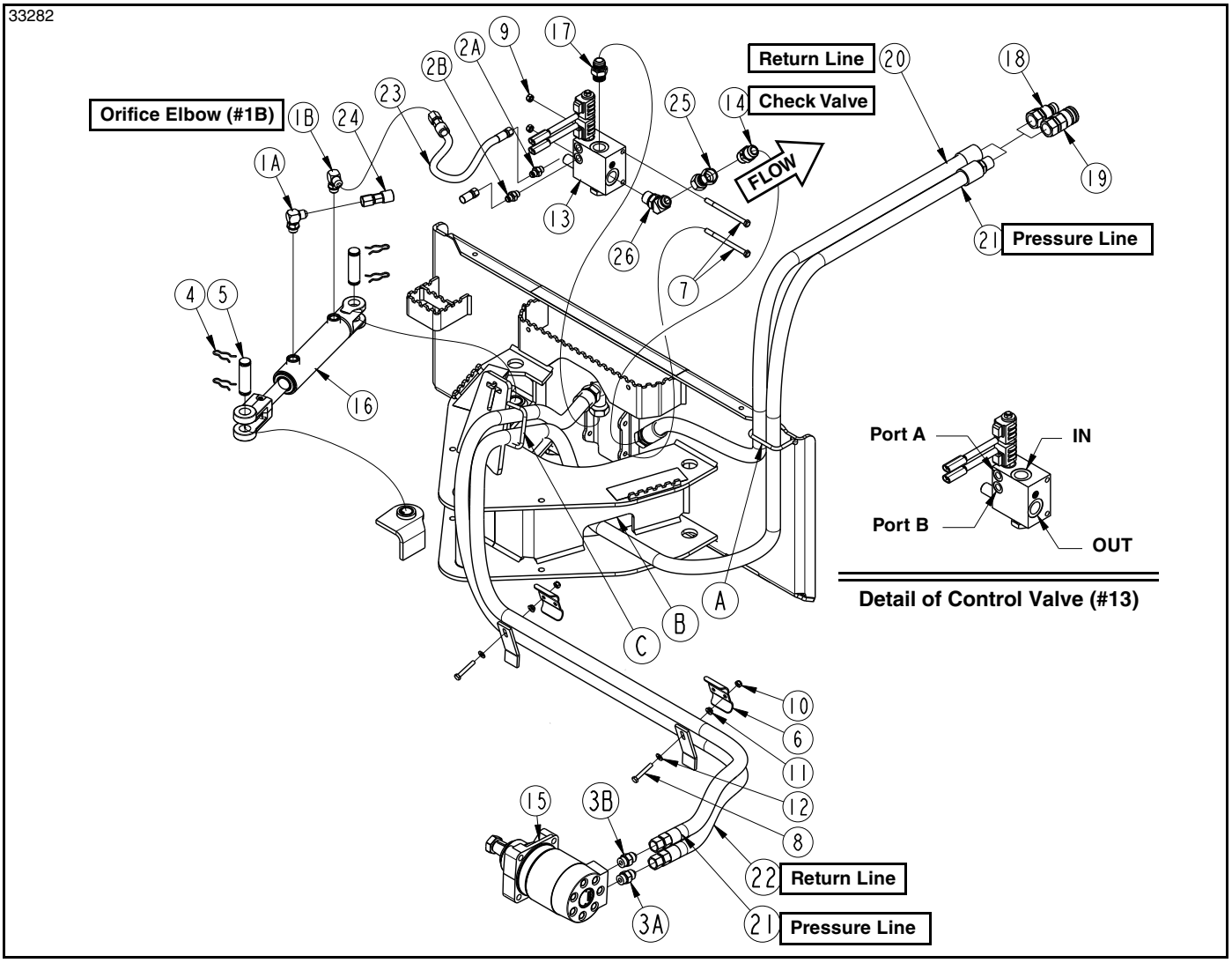
Manual Angle Option

Refer to Figure 2-3:

1. Remove ball retaining hitch pin (#15) and attach telescoping angler (#14) to the right-hand side with cylinder pins (#13). Secure pins with hairpins (#12).
2. Manually rotate hitch plate (#16) to align holes in telescoping angler (#14).
3. Reinsert ball retaining hitch pin (#15). Make sure the pin has been fully inserted and the spring loaded ball is visible on the far side.
4. Tighten straight fittings (#11) to hydraulic motor (#6).
5. Attach 5/8" x 136" (345 cm) hydraulic hoses (pressure line #9 & return line #10) to fittings (#11) and tighten.
6. Route hydraulic hoses (#9 & #10) along the back side of broom shroud, through loop (C), down through opening in top of A-frame, out through opening (B), and up through loop (A) as shown.
7. Consult your tractor/skid steer Operator's Manual to determine which hydraulic line on your machine is under pressure. Select coupling (#7 or #8) that will mate with your machine's pressure line coupling.
8. Connect selected coupling to pressure line (#9). Connect remaining coupling to return line (#10).
9. Insert two 5/16"-18 x 2" full threaded bolts (#2) through flat washer (#5) and through holes in back of broom shroud. Secure cap screws with locknuts (#4) and tighten locknuts to the correct torque.
10. Attach hydraulic hoses (#9 & #10) to back of broom shroud with hose clamps (#1). Secure clamps to cap screws (#2) with 5/16" nylock nuts (#3). Tighten nylock nuts as needed to secure hoses in place.



Component Assembly with Manual Angling
Figure 2-3



Component Assembly of Hydraulic Angling
Figure 2-4

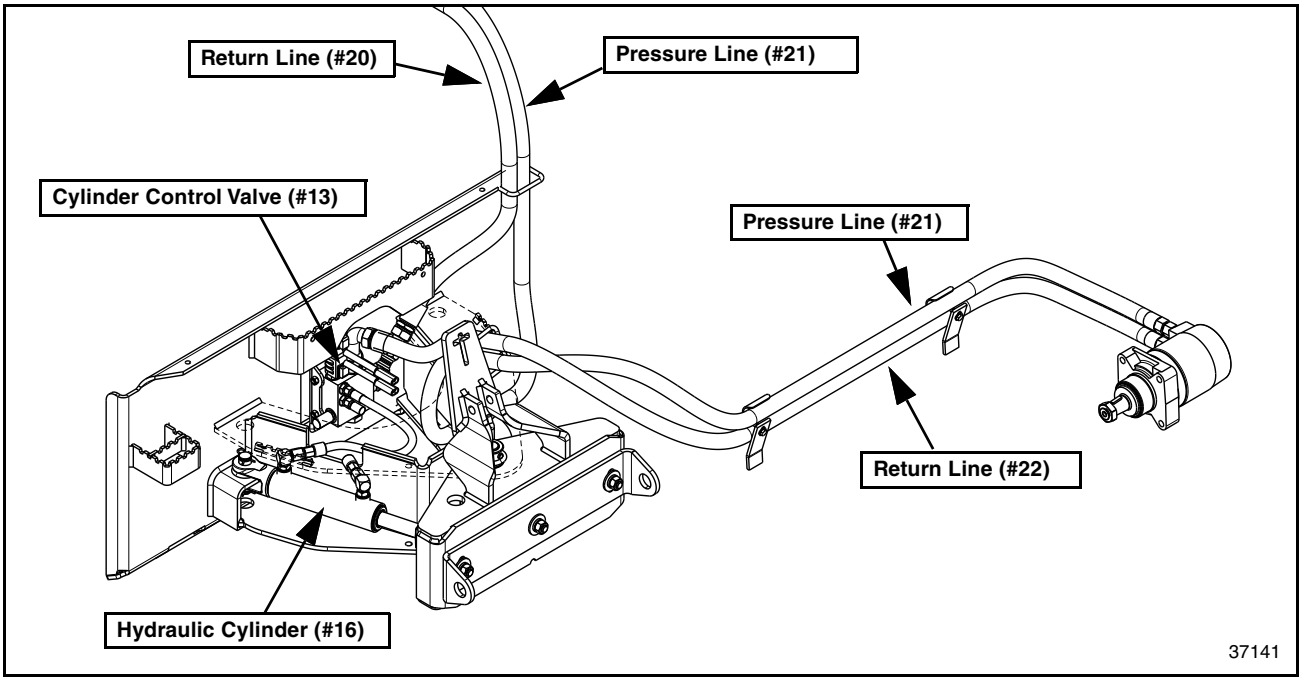
Hydraulic Angle Option

IMPORTANT: Make sure inside of hoses and fittings and their external threads are clean.

Hydraulic Cylinder & Cylinder Control Valve

Refer to Figure 2-4 & Figure 2-5 on page 23:

1. Attach 9/16" straight fittings (#2A & 2B) to ports (A & B) on control valve (#13) and 1 1/6" straight fitting (#17) to the IN port on top. Tighten fittings.
2. Attach check valve (#14) to union (#25) with flow arrow pointing away from the union.
3. Attach union (#25) to 45^{o} elbow (#26). Tighten union to the check valve and elbow.
4. Attach elbow (#26) to the OUT port in control valve (#13). Do not tighten elbow at this time.
5. Attach cylinder control valve (#13) to hitch mounting lugs with 3/8"-16 x 5" GR5 cap screws (#7) and hex locknuts (#9). Tighten locknuts to the correct torque.
6. Attach 3/4" orifice elbow (#1B) to the port on the base end of hydraulic cylinder (#16). Do not tighten.
7. Attach 3/4" elbow (#1A) to the port on the rod end of hydraulic cylinder (#16). Do not tighten.
8. Connect 3/8" x 20" (51 cm) hydraulic hoses (#23 & #24) to elbows (#1A & #1B). Tighten hoses to elbow fittings.
9. Route hydraulic hoses (#23 & #24) through opening on right side of A-frame hitch. Attach hydraulic cylinder (#16) to hitch mounting lugs with cylinder pins (#5) and hairpin cotters (#4).
10. Connect hydraulic hose (#24) to lower fitting (#2B) and hydraulic hose (#23) to upper fitting (#2A).
11. Tighten hydraulic hoses (#23 & #24) to straight fittings (#2A & #2B) and elbow fittings (#1A & #1B) to hydraulic cylinder (#16).



Completed Assembly of Hydraulic Angling
Figure 2-5

Hydraulic Motor

Refer to Figure 2-4 on page 22 & Figure 2-5:

1. Attach straight fittings (#3A & #3B) to hydraulic motor (#15). Tighten fittings to motor.
2. Connect 5/8" x 136" (345 cm) hydraulic hose (pressure line #21) to fitting (#3B) and tighten.
3. Route pressure line (#21) along the back side of broom shroud, through loop (C), down through opening in top of hitch A-frame, out through opening (B), and up through loop (A).
4. Connect return line (#22) to fitting (#3A). Tighten hoses to fitting.
5. Route return line (#22) along back side of broom shroud, through loop (C).
6. Connect return line (#22) to adapter fitting (#17) and tighten hose to fitting.
7. Route 5/8" x 74" (188 cm) hydraulic hose (return line #20) down through loop (A).
8. Connect return hose (#20) to in-line check valve (#14) and tighten hose to valve.
9. Tighten 45^{o} elbow (#26) to control valve (#13).
10. Insert two 5/16"-18 x 2" full threaded cap screws (#8) through flat washer (#12) and then through holes in back of broom shroud. Secure cap screws with hex locknuts (#11) and tighten nuts to the correct torque.
11. Connect hydraulic hoses (#21 & #22) to back of broom shroud with hose clamps (#6). Secure clamps with hex nylock nuts (#10). Tighten nylock nuts as needed to secure hoses in place.
12. Consult your tractor/skid steer Operator's Manual to determine which hydraulic line on your tractor/skid steer is under pressure. Select coupling (#18 or #19) that will mate with your machine's pressure line coupling.
13. Connect selected coupling to pressure line (#21). Connect remaining coupling to return line (#20).

Broom Adjustments

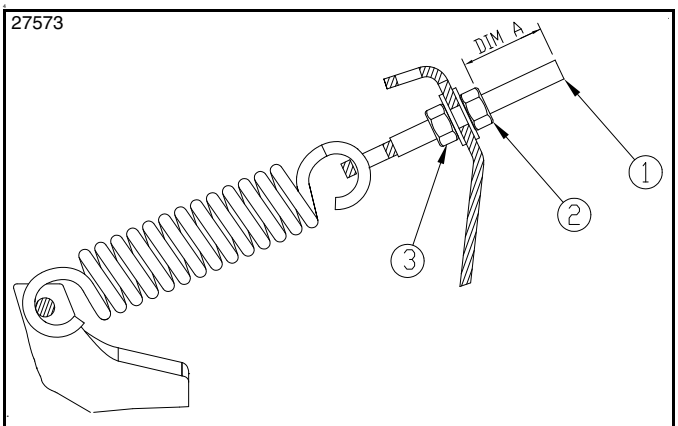
IMPORTANT: When adjusting the broom, adjust eye bolt length first, chain length second, and broom leveling last. Following this procedure will make adjusting the broom easier and safer.

Spring Eye Bolt Adjustment

Refer to Figure 3-1:

Do not lower loader arms down as the bristles wear. This will eventually force the frame and support legs into the ground. Instead, adjust spring eye bolt length to lower the broom down.

1. **Refer to Figure 3-5 on page 25:** Measure bristle length. New bristles are 10" (25.4 cm) long. Wafers with bristles shorter than 4" (10 cm) should be replaced. See **""Wafer Removal and Installation"** on page 40 for instructions on how to replace worn bristles.
2. Match measured bristle length with length of spring eye bolt (#1) in chart below. Adjust eye bolt length to dimension (A).
   a. Loosen hex nut (#2) until the distance from face of nut to end of eye bolt is equal to dimension (A) provided in the eye bolt chart below.
   b. Hold nut (#2) still and tighten 3/4"-10 hex nut (#3).



Eye Bolt Chart

Bristle Length (See "Figure 3-5" on page 25)	Eye Bolt Length (A)
10" (254 mm) New	3" (76 mm)
9" (229 mm)	2 9/16" (65 mm)
8" (203 mm)	2 1/16" (52 mm)
7" (178 mm)	1 9/16" (40 mm)
6" (152 mm)	1 1/8" (29 mm)
5" (127 mm)	11/16" (18 mm)
4" (102 mm)	Replace Wafer Brushes

Eye Bolt Length Adjustment
Figure 3-1

Chain Adjustment

Refer to Figure 3-2:

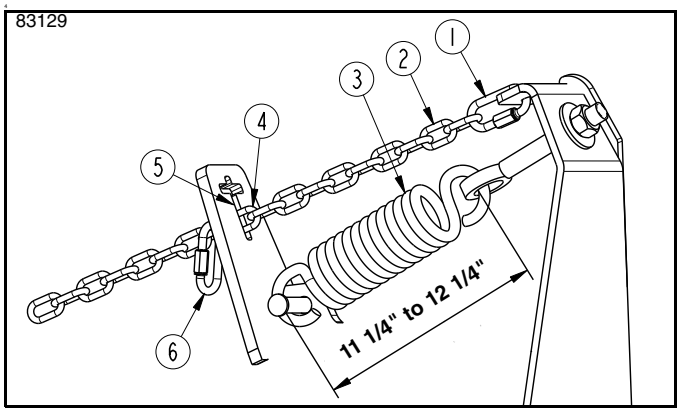
The purpose of chain (#2) is to protect spring (#7) from becoming overextended and damaged. The spring's purpose is to float the broom over uneven surfaces.

IMPORTANT: Never allow spring (#7) to stretch beyond the 12 1/4" shown in Figure 3-2. The spring can be damaged if stretched too far. Use chain (#2) and utility clevis (#4) to protect the spring.

New 10" Bristles

Refer to Figure 3-2:

1. Place the 11th link from quick link (#1) in T-slot (#3) to support the broom approximately 6" (15 cm) off the ground.
2. Push down on broom shroud to tighten chain (#2). Measure distance from inside of spring hook to inside of spring hook. This distance should be between 11 1/4" and 12 1/4" (28.6 cm and 31.1 cm).
3. If chain #2 is tight and spring (#3) is stretched beyond 12 1/4" (5.7 cm), readjust chain in T-slot (#5) until spring stretch is inside the recommended range.
4. Attach connecting link (#6) to the first link behind T-slot (#5) and tighten thumb nut.



Chain Length Adjustment
Figure 3-2

Worn Bristles

Refer to Figure 3-1:

Check spring length each time the spring eye bolt is adjusted. See "Spring Eye Bolt Adjustment" this page.

1. Raise Angle Broom approximately 6" (15 cm) off the ground and measure spring length from inside of spring hook to inside of spring hook.
2. If spring is stretching beyond 12" (30.5 cm), readjust chain link in T-slot in plate (#3) until spring stretch is between 11 1/4" (28.6 cm) and 12 1/4" (31.1 cm).
3. Move connecting link (#6) to the first link just behind slot (#5) and tighten its thumb nut.

Broom Leveling

Refer to Figure 3-3:

It is important that the broom is level and at the proper operating height to prevent improper wearing of the bristles. A properly adjusted broom should produce a sweeping pattern on the ground that is 2"-4" (5-10 cm) wide. A broom that is not adjusted level will produce a tapered sweeping pattern.

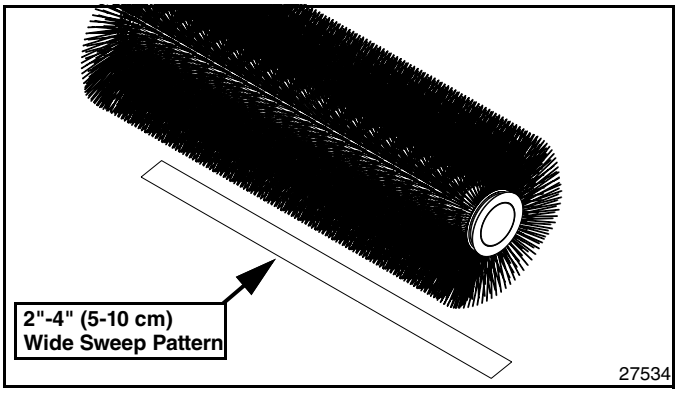
IMPORTANT: Broom leveling procedures must be made with the tractor/skid steer and Angle Broom parked on a flat level surface.

1. Park tractor/skid steer with Angle Broom on a dusty flat level surface.
2. Lower loader arms until bristles on the rotary broom are slightly bent against the surface to be swept.

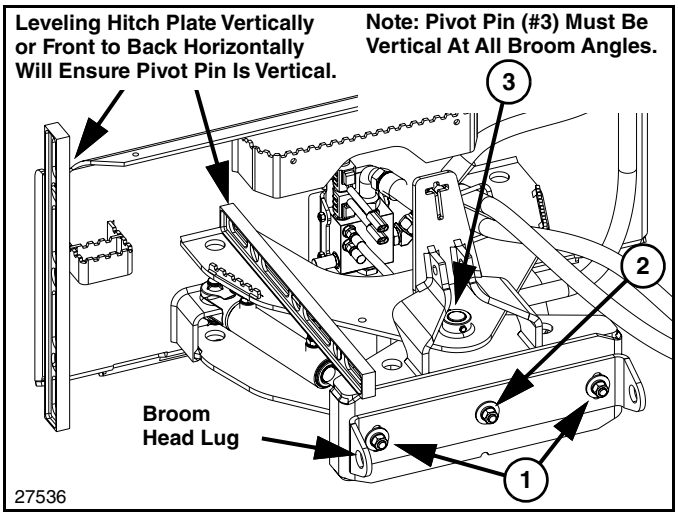
Refer to Figure 3-4:

IMPORTANT: The Angle Broom operates best if pivot pin (#3) is vertical when broom is sweeping. If pivot pin is not vertical, the broom will make a tapered sweeping pattern when angled and wear the bristles out faster on one end.

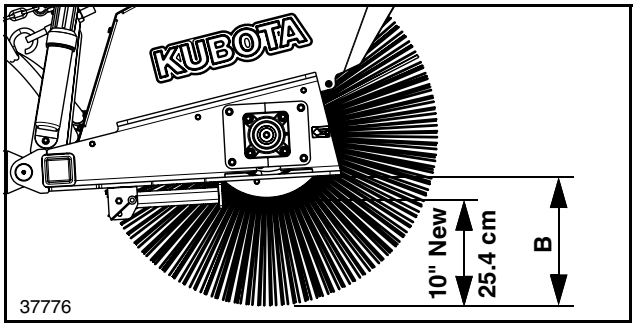
3. The pivot pin (#3) and hitch plate are designed to be parallel with each other. Align pivot pin vertically by rotating loader tilt arms until hitch plate is vertical.
4. With broom straight across (not angled) and pivot pin vertical, check broom ends to make sure they are the same dimension B (See Figure 3-5) off the ground. If not, make the following adjustments to the broom head lug.
   a. Loosening broom leveling bolts (#1) 1/2 of a turn and center bolt (#2) 1/4 of a turn.
   b. Rotate broom head lug about the center bolt until both ends of the broom are at an equal distance (dim. B) off the ground.
   c. Re-tighten 5/8"-11 GR5 broom leveling bolts (#1) and center pivot bolt (#2) to the correct torque.
5. Start broom at a slow speed and then lower brush until bristles are making a pattern approximately 2"-4" (5-10 cm) in width along the full length of the broom.
6. Stop brush rotation and recheck hitch plate to make sure it is vertical. Make final adjustments to the tilt arms if required.
7. After everything is adjusted (brush height, pivot pin and broom head lug), set detent on the hydraulic control lever to lower the loader arms to the same sweeping position every time. If there is no detent, then use spacers on the cylinder rods (customer to supply spacers) or make a mark on the loader that will indicate when the arms are lowered to the correct sweeping position.
8. Raise brush up several feet. Do not change position of loader tilt cylinders when raising and lowering loader arms.
9. Verify brush pattern to make sure it is 2"-4" (5-10 cm) wide. If brush pattern is tapered, repeat steps 1 to 9.
10. If brush pattern is correct, angle brush 30° to the right, and lower brush down to sweep another 2"-4" (5-10 cm) pattern. Stop brush rotation and raise brush up to check patter width.
11. If brush pattern is tapered, recheck hitch plate to make sure it is still vertical when in the sweeping position. If hitch plate is vertical, recheck broom ends to make sure they are equal distance off the ground.



Sweep Pattern
Figure 3-3



Level Adjustment
Figure 3-4



Bristle Length & End Height
Figure 3-5

Pre-Start Checklist

Hazard control and accident prevention are dependent upon awareness, concern, prudence and proper training involved in the operation, transport, maintenance, and storage of the Angle Broom. Therefore, it is absolutely essential that no one operates the Angle Broom unless they have read, fully understood, and are totally familiar with the Operator's Manual.

Perform the following inspections before using your Angle Broom.

Operating Checklist

✔	Check	Page
	Read and follow all safety rules and decals carefully. Refer to "Important Safety Information".	1
	Read and follow hook-up and preparation instructions. Refer to "Section 1: Assembly & Set-up"	11
	Read and make all required adjustments. Refer to "Section 3: Adjustments".	24
	Read and follow all operating procedures. Refer to "Section 4: Operating Procedures"	26
	Read and follow all maintenance instructions. Refer to "Section 6: Maintenance & Lubrication"	38
	Read and follow all lubrication Instructions. Refer to "Lubrication Points".	42
	Check Angle Broom initially and periodically for loose bolts and pins. Refer to "Torque Values Chart for Common Bolt Sizes".	46

General Safety Information

Safety Before Operating the Angle Broom

DANGER

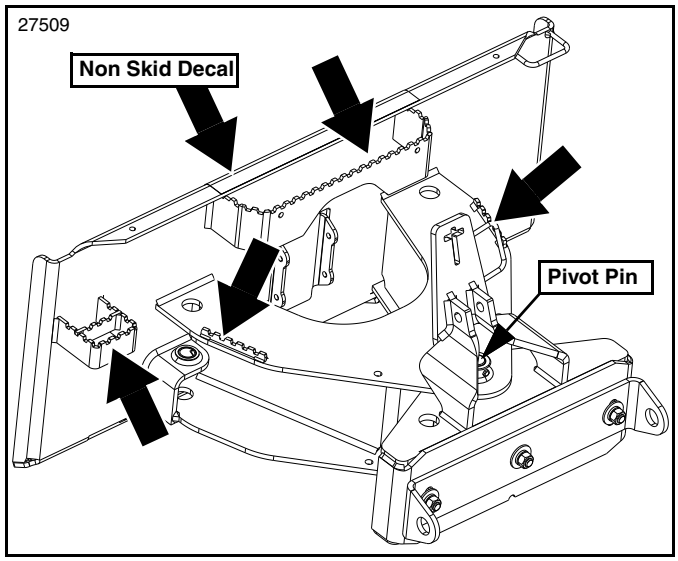
To avoid serious injury or death:

- *Do not let children play on or around the attachment including when stored. Children and/or attachment can fall.*
- *Always secure equipment with solid, non-concrete supports before working under it. Never go under equipment supported by concrete blocks or hydraulics. Concrete can break, hydraulic lines can burst, and/or hydraulic controls can be actuated even when power to the hydraulics is off.*
- *All guards and shields must be installed and in good working condition while operating this attachment.*
- *Do not allow bystanders or animals to be near the attachment, loader arms, or power machine during operation. Stop operation if bystanders are too close. They can be hit by thrown or falling objects, become entangled, crushed, ran over, etc.*

WARNING

To avoid serious injury or death:

- *Never carry riders on the attachment or power machine. Riders can obstruct the operator's view, interfere with controls, be pinched by moving components, become entangled in rotating components, struck by objects, thrown about, fall off and be run over, etc.*
- *Allow only persons to operate this attachment who have fully read and comprehended this manual, and who have been properly trained in the safe operation of this attachment. Serious injury or death can result from the inability to read, understand, and follow instructions provided in this manual.*
- *Make sure controls are all in neutral position or park before starting the power machine.*



Hitch Plate Stepping Pads
Figure 4-1

- **Refer to Figure 4-1:** *Use stepping pads on the hitch plate and hand holds on the skid steer when climbing into the skid steer cab. Never step on smooth surfaces or on the broom shroud. Feet can slip on smooth surfaces especially if wet or icy.*
- *Operate only power machines equipped with a certified Roll-Over Protective Structure (ROPS) and seat belt. Fasten seat belt snugly and securely to help protect against serious injury or death from machine overturn.*
- *Always shut power machine down using the "Shutdown Procedure" provided in this manual before servicing, adjusting, cleaning, or maintaining the attachment.*
- *Always operate attachment while seated with seat belt properly fastened around the operator. When equipped, always lower seat/lap bar(s). This will help protect the operator against rollovers and sudden stops.*

- *Operate broom from inside an enclosed cab or wear a dust mask and eye protection. Flying dust, debris and bristles can enter the lungs causing respiratory problems, enter the eyes causing eye injury and /or cause bodily injury to the body of people or animals.*
- *Avoid hitting solid objects with this attachment. Solid objects can damage equipment and throw the operator forward causing loss of control, bodily injury, or death.*
- *The Hopper Broom is designed primarily for picking up light dirt and small aggregate such as pea gravel. Do not use the broom to remove soil, heavy materials, rocks, or similar items.*
- *Keep flying debris to a minimum. Always operate broom at slowest rotating speed that will do the job.*
- *Sweep areas with traffic during low-traffic hours.*
- *Do not sweep debris towards people, animals, buildings, or other objects that can be hurt or damaged by thrown projectiles.*
- *Be aware of the extra weight and width the Hopper Broom adds to the skid steer. Reduce speed accordingly. Avoid traveling too fast over rough terrain that will bounce the broom causing loss of control.*
- *Do not travel at high speeds while sweeping. High speeds can result in sudden loss of control leading to damaged property, equipment, and bodily harm.*
- *Perform scheduled maintenance. Check for loose hardware, missing parts, broken parts, structural cracks, and excessive wear. Make repairs before putting the attachment back into service.*
- *Never adjust skid steer relief valve for a pressure rating higher than what is recommended by the skid steer manufacturer.*
- *Make sure hydraulic hoses are properly routed without twists to prevent them from becoming stretched, pinched, or kinked. A damaged hydraulic hose can burst and leak hydraulic fluid.*
- *Hydraulic fluid can become hot as it flows through components such as hydraulic couplers, hoses, lines, fittings, motors, etc. Wear gloves when working with hydraulic components including while connecting and disconnecting couplers. It is best to allow hydraulic components to cool before touching them.*
- *Hydraulic fluid under high pressure will penetrate the skin or eyes causing serious injury. Wear protective gloves and safety glasses or goggles when working with hydraulics. Use a piece of cardboard or wood, rather than hands, when searching for leaks. If an accident occurs, seek immediate emergency medical care or gangrene may result. DO NOT DELAY.*
- *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 activities at construction sites produce dust containing crystalline silica. Trenching, sawing, and boring of material containing crystalline silica can produce dust containing crystalline silica.*
- *Dress properly for the job. Do not wear loose fitting clothing or clothing with pull strings. Keep long hair tucked in. Clothing and hair can become entangled in rotating components. Wear footwear that will improve footing on slippery surfaces.*
- *Keep body, body extremities, loose clothing, pull strings, etc. away from pinch points such as rotating, extending, and/or retracting components. Secure pinch point areas to ensure they will not move before working on or near them.*
- *Always dress to stay warm in cold weather. Never allow body or extremities to become too cold. Go inside to warm-up before continuing when getting too cold.*
- *Wear eye protection and gloves while inspecting, removing, replacing and working around the wafers. Poly and especially wire bristles can suddenly poke the hands or eyes.*
- *Do not use this attachment to lift, carry, push or tow other equipment or objects. It is not properly designed or guarded for this use. The operator could lose control resulting in equipment damage and/or tipping hazard.*
- *Do not use this attachment as a lifting device for people or as a work platform. It is not properly designed or guarded for this use.*
- *Do not use this attachment to lift the front or back of the power machine off the ground. Doing so can damage the attachment, power machine, and/or cause serious injury or death.*
- *Check hitch fit-up frequently. An improper fit-up can result in the attachment falling from the loader hitch plate.*
- *Make sure safety labels are in their proper location and are in good condition before operating the attached implement. Read and obey all instructions on the labels.*

IMPORTANT: Mark locations of all curbs, hydrants, stumps, and other obstructions in the area that can damage the equipment and property when hit. Do not hit solid objects with the brush.

IMPORTANT: Remove all property from the area that can be damaged by flying debris and bristles.

IMPORTANT: Collect and dispose all oil spills and leaks in an environmentally safe manner.

IMPORTANT: Check tire ratings. Make sure they are capable of supporting the equipment. Check air pressure in the tires. Make sure air pressure is equal in all tires.

Safety While Operating the Angle Broom

DANGER

To avoid serious injury or death:

- *Never raise brush more than a few feet off of the ground. The tractor/skid steer could tip over if raised too high.*
- *Keep all persons away from the Angle Broom a distance in excess of its throwing capabilities when broom is rotating. Shut broom rotation off if anyone comes near the discharge area. A person can become entangled in rotating equipment or hit by flying debris.*
- *Do not allow anyone to stand close to the broom while angling, raising or lowering the broom. A person can become pinched, entangled and/or crushed.*

WARNING

To avoid serious injury or death:

- *Make sure controls are all in neutral position or park before starting the power machine.*
- *Keep hands, feet, hair, and clothing away from moving parts and pinch points.*
- *Keep all shields and safety equipment in place while operating the broom.*
- *Never allow passengers on the tractor/skid steer or carry a rider on the attachment.*
- *Be aware of the extra weight and width the Angle Broom adds to the tractor or skid steer. Reduce speed accordingly. Avoid traveling too fast over rough terrain that will bounce the broom causing loss of control.*
- *Do not travel at high speeds while sweeping. High speeds can result in sudden loss of control leading to damaged property, equipment, and bodily harm.*
- *Do not rotate front loader hitch plate fully down. Doing so, can damage hydraulic hoses and cause a high pressure fluid leaks. Fluid under pressure can penetrate the body.*
- *The Angle Broom is designed primarily for moving light dust and snow. Do not use the brush to move aggregate materials such as pea gravel, grain, loose soil, undisturbed soil, heavy materials, gravel, rocks, or similar items.*
- *Keep flying debris to a minimum. Always operate broom at slowest rotating speed that will do the job.*

CAUTION

To avoid minor or moderate injury:

- *Always exercise safety, courtesy, and common sense. Be aware of pedestrian and vehicle traffic. Never sweep towards people, buildings, vehicles, or other objects that can be damaged from flying debris. Check blind spots before moving equipment. It is best to move debris during low-traffic hours.*
- *Keep brush properly attached to the power equipment when in use.*
- *Use Angle Broom for its intended purpose only. Do not use it for pulling, pushing, or lifting objects.*

Safety While Transporting the Angle Broom

DANGER

To avoid serious injury or death:

Keep attachment and/or loader arms away from overhead electrical power lines. Place an orange warning sign under overhead lines indicating type of danger above.

WARNING

To avoid serious injury or death:

- *Always exercise safety, courtesy, and common sense. Be aware of pedestrian and vehicle traffic. Check blind spots before moving equipment.*
- *When traveling on public roadways, travel in such a way that faster moving vehicles may pass safely. Use hazard lights, clean reflectors, and a slow moving vehicle sign that is visible from the back to warn operators in other vehicles of your presence. Always comply with all federal, state, and local laws.*
- *Always transport with attachment carried low to protect against rollover, hitting overhead objects, power lines, and loss of control.*
- *Select a safe ground speed that will allow adequate control of steering and stopping. Never exceed 20 mph (32 km/h) with attached equipment. Rough terrain requires a slower speed.*
- *Reduce ground speed when turning and leave enough clearance to avoid making contact with obstacles such as buildings, trees, fences, etc.*
- *Select a safe ground speed that will allow adequate control of steering and stopping. Never exceed 20 mph (32 km/h) with attached equipment. Rough terrain requires a slower speed.*
- *When transporting a skid steer on a trailer, use towing vehicle and trailer of adequate size and capacity. Always drive up a ramp with heavy end uphill. Engage skid steer park brake and remove ignition key once it is loaded. Secure Skid Steer and attachment using tie downs and chains.*

Pre-Operation Inspection

1. Park tractor/skid steer with Angle Broom on a flat level surface. Place transmission in park, set park brake, and lower brush onto the level surface.
2. Shut tractor/skid steer off, remove ignition key, relieve all pressure in hydraulic lines, and wait for all moving parts to come to a complete stop before dismounting from tractor or skid steer.
3. Visually check for excessive wear, worn, damaged, cracked, or loose parts. Replace parts with genuine Kubota parts.
4. With tractor/skid steer shut off and all hydraulic pressure removed, inspect hydraulic connections for leaks. Tighten any connection that is loose.

5. Start tractor/skid steer and check hydraulic oil leaks with a piece of paper or cardboard. **Do not** use your hands as invisible thin streams of high pressure oil can be injected into your skin. See **"Avoid High Pressure Fluids Hazard"** on page 3.
6. Inspect hydraulic hose for pinch points that can damage the hose during operation and for sufficient length and equipment clearances. See **"Check Equipment Clearances"** on page 17.
7. Check all controls and operating functions of the tractor/skid steer.

Angle Broom Functions

Leveling

With broom in sweeping position, extend or retract tilt cylinders at front of loader to rotate hitch plate forward or backward until it is vertical. Do not use tilt cylinders to apply down pressure on the brush. This will cause uneven bristle wear especially when sweeping at an angle. See **"Broom Leveling"** on page 25 for more details.

Angling Manually

The broom can be angled 30° left and right with a ratchet jack. Set ratchet lock on jack and pump lever back and forth to angle broom in one direction. Reposition ratchet lock and pump lever back and forth again to angle broom in the opposite direction.

Angling Hydraulically (Optional)

The broom can be angled 30° left and right with an optional hydraulic cylinder. Press and hold right button on the electrical box to angle broom to the left and left button to angle broom to the right. Release button when broom is at preferred angle. See **"Electrical Control Harness Options"** on page 14 for detailed wiring instructions.

Raising & Lowering

Use only loader arms to raise and lower the broom. If control lever for raising and lowering loader arms has a detent, set detent to lower loader arms to the same sweeping position every time. If there is no detent, use spacers on cylinder rods (customer to supply spacers) or make a mark on loader arms that will indicate when arms are lowered to correct sweeping position.

General Operating Instructions

Once you have read the Angle Broom Operator's Manual, properly installed the unit on your skid steer or tractor loader, leveled unit to the intended sweeping height, and reviewed operating checklist, it is time to put your new brush attachment to work.

Ratchet Jack Angling: With brush above ground level and power to the broom **OFF**, rotate broom with ratchet jack to the desired angle you want to direct debris.
Hydraulic Angling: With brush above ground level and power to the broom **ON**, rotate broom with push button switch to the desired angle you want to direct debris.

Engage power to the broom motor and slowly lower broom to the ground until you make appropriate contact with the surface without heavy down pressure that will result in excessive brush wear.

Begin moving forward until you achieve an approximate ground speed of 5 mph (8 km/h) or less. Reduce ground speed if necessary to avoid hitting immovable objects. The optional Marker Kit can provide a keener indication of exactly where your front corners are located with respect to curbs and obstacles. Do not ram into accumulated debris piles or brush damage could result. Vary brush, engine, and travel speeds to match sweeping conditions.

IMPORTANT: Remember, the broom frame extends beyond the markers by several inches. Always allow room for the frame to clear objects.

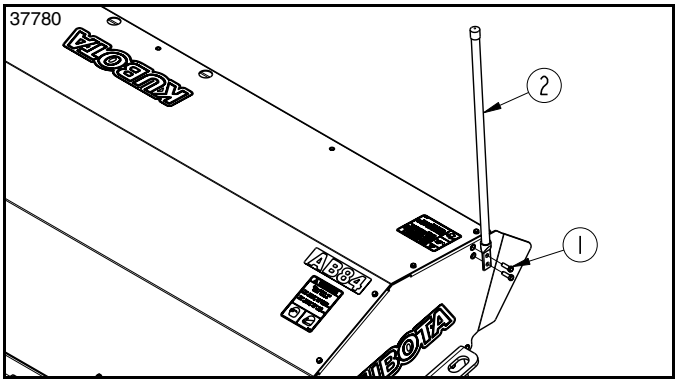
Make a pass down the middle when sweeping large areas such as parking lots. Work progressively from the center out to both sides of the lot. This will reduce the amount of debris that the broom must move to each side. Low brush speeds and moderate travel speeds will work best when cleaning debris from hard surfaces. Excessive brush speeds tend to raise too much dust. Use optional sprayer-type Dust Suppression System or optional Dust Deflector Kit to keep dust to a minimum.

When operating in deep snow, you may need to make multiple passes to get down to a clean paved surface. You will want to keep the wind to your back to keep snow from blowing back on you and on the area you have just cleaned. Fast brush speeds and slow travel speeds are required to sweep snow effectively. Operate in the lowest gear possible for best results. For wet and deep snow, you may need to speed up a bit to keep snow from packing up inside of brush shroud.

If you are using your broom to assist in turf scalping operations prior to overseeding Rye grass with warm season Bermuda grass, it is best to cut grass as low as possible, vacuum up clippings and then run the broom over scalped area to provide maximum soil exposure for overseeding. This practice is frequently used by superintendents on Southern golf courses to promote rapid green growth for winter operations.

If attachment is to be operated in reverse, make sure visibility to the rear of the power unit is appropriate for the attachment.

With a little practice, you should become very skillful at operating your new Kubota Angle Broom. See **"AB72 & AB84 Specifications & Capacities"** on page 43 and **"AB72 & AB84 Features & Benefits"** on page 44.



Orange Marker Assembly
Figure 5-1

Orange Marker Package

323-026A . . . . . MARKER ASSY

Refer to Figure 5-1:

Kubota offers 28" (71 cm) tall orange markers that can be bolted to the sides of the broom shroud. These assist in locating the outer ends of the Angle Broom when approaching buildings, trees, poles, and other obstacles that could damage the unit and other obstacles.

NOTE: The 5/16" hex nylock nuts included with Orange Marker Package are not used.

1. Attach 28" (71 cm) orange marker (#2) to the right side with two 5/16"-18 x 1" GR5 hex head cap screws (#1). Tighten cap screws to the correct torque.
2. Repeat step 1 for the left side.

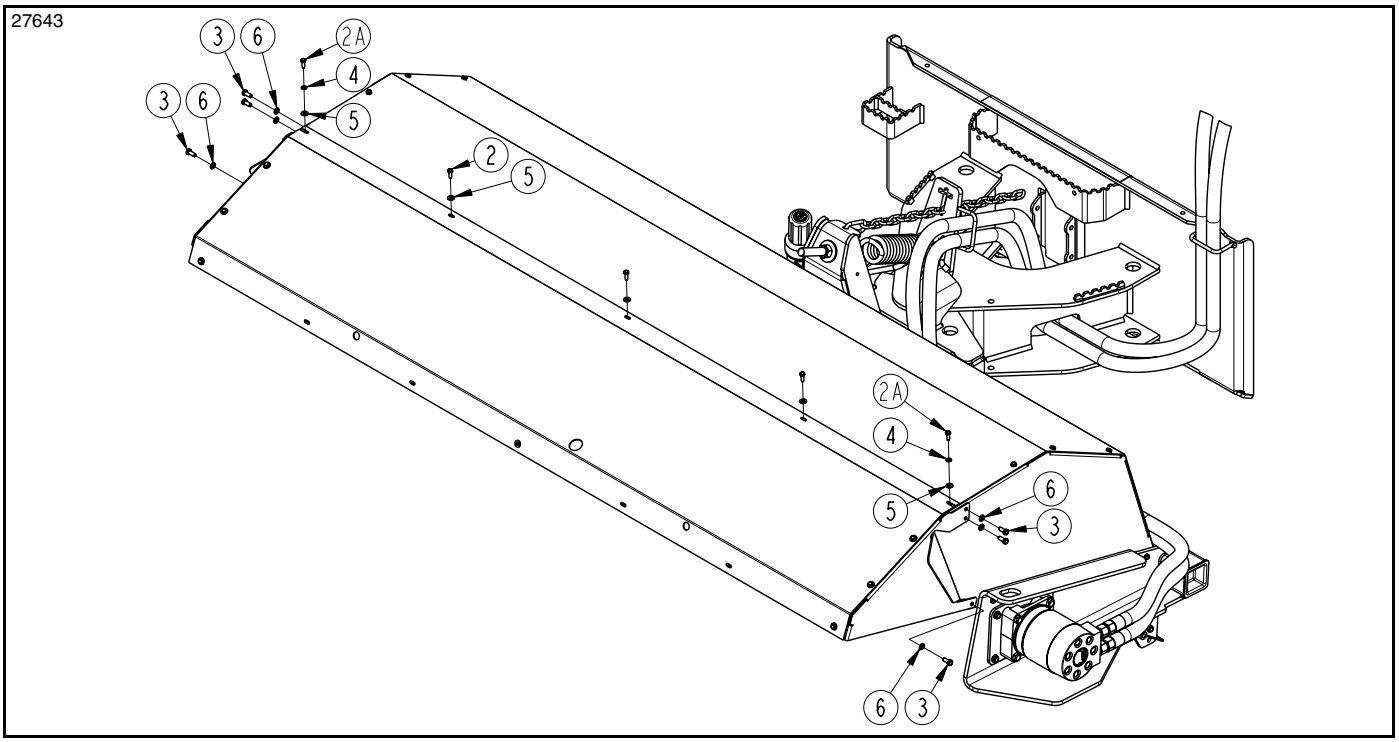
Metal Shroud Extension

Model AB72 . . . . . Part No. 323-072A
Model AB84 . . . . . Part No. 323-037A

Refer to Figure 5-2:

The metal shroud extension is recommended to help contain dust. A rubber dust deflector flap or water spray nozzles can be mounted to increase dust suppression. See **"Dust Deflector & Shroud Extension"** on page 31 and **"Dust Suppression Kit"** on page 32 for additional information.

1. Remove existing 1/4" cap screws (#2A) and lock washers (#4) from both ends of the broom shroud. Save caps screws and locks washer for reuse.
2. Attach both ends of the metal shroud extension (#1) to the broom shroud with three 5/16"-18 x 3/4" GR5 cap screws (#3) and spring lock washer (#6). Do not tighten cap screws.
3. Attach top side of metal shroud extension at both ends with existing 1/4"-20 GR5 cap screws (#2A), existing lock washers (#4) and new flat washers (#5). Do not tighten cap screws.
4. Attach center of metal shroud extension (#1) to broom shroud with 1/4"-20 x 3/4" GR5 cap screws (#2) and flat washers (#5).
5. Tighten all cap screws to the correct torque.



Assembly of Metal Shroud Extension to Broom Shroud
Figure 5-2

Dust Deflector & Shroud Extension

Model AB72 . . . . . Part No. 323-074A
Model AB84 . . . . . Part No. 323-021A

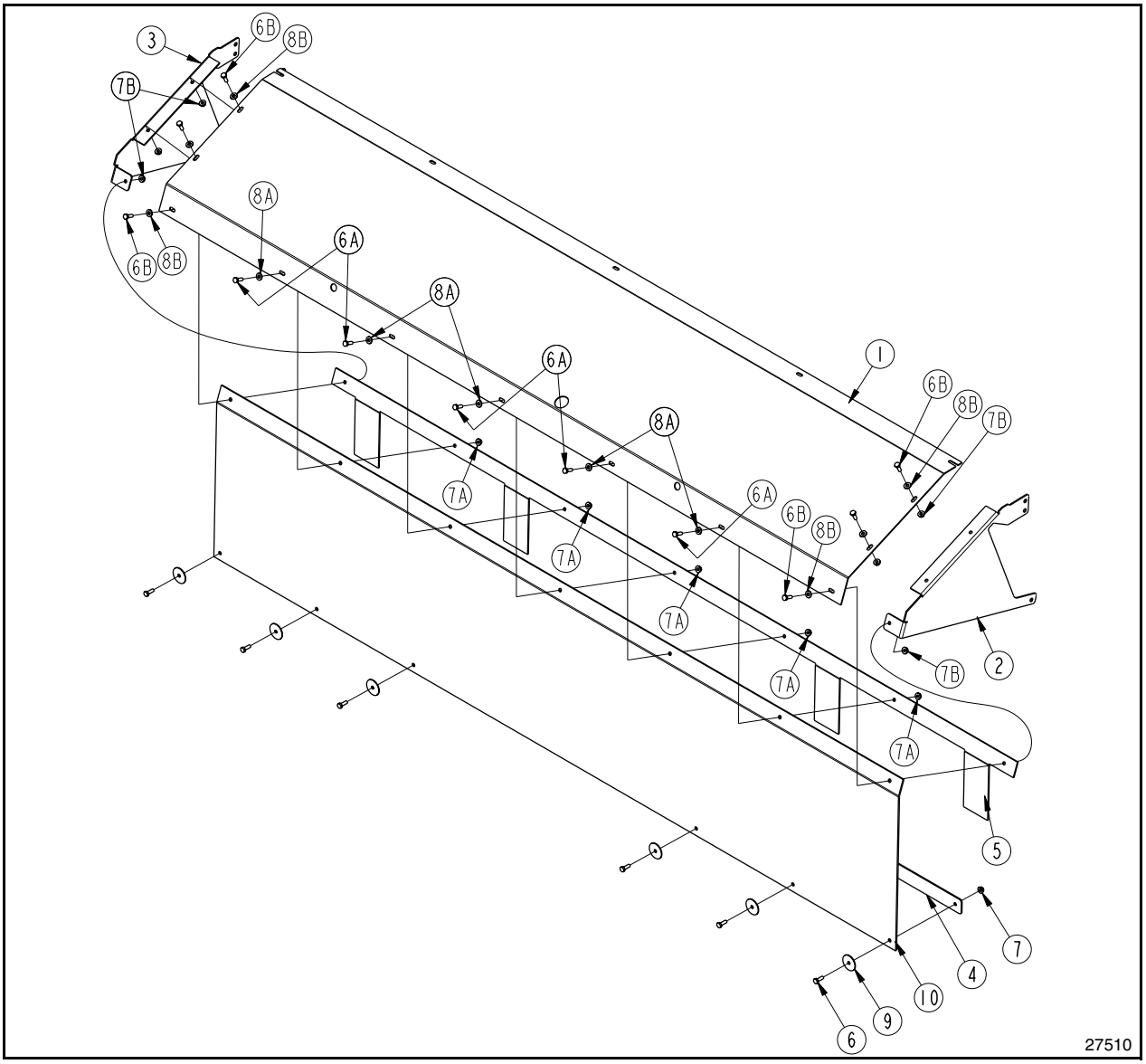
Refer to Figure 5-3:

Kubota offers a dust deflector flap with shroud extension that can be mounted on the front of the broom shroud to help keep debris from flying around in the air and into the operator cab.

1. Attach two dust deflector stiffener bars (#4) to the bottom of the rubber dust deflector flap (#10) with 1/4"-20 x 3/4" GR5 cap screws (#6), 1/4" fender washers (#9) and whiz nuts (#7). Tighten nuts to the correct torque.

NOTE: Do not install end cap screws (#6B) until instructed in steps 3 & 14.

2. Attach rubber dust deflector flap (#10) to shroud extension (#1) with 1/4"-20 x 3/4" GR5 cap screws (#6A), flat washers (#8A) and deflector support (#5) as shown. Secure with whiz nuts (#7A). Draw whiz nuts up snug, do not tighten.
3. Attach right-hand dust deflector bracket (#3) to shroud extension (#1) with 1/4"-20 x 3/4" GR5 cap screws (#6B), flat washers (#8B) and whiz nuts (#7B).
4. Attach left-hand dust deflector bracket (#2) to shroud extension (#1) with 1/4"-20 x 3/4" GR5 cap screws (#6B), flat washers (#8B) and whiz nuts (#7B).
5. Tighten whiz nuts (#7A & #7B) to the correct torque.
6. See **"Metal Shroud Extension"** on page 30 for detailed assembly instructions.



Dust Deflector Flap with Metal Shroud Extension
Figure 5-3

Dust Suppression Kit

Part No. 323-030A

Refer to Figure 5-4 on page 33:

Kubota offers a shroud mounted spray boom and nozzles to dispense a fine spray mist to control and minimize airborne dust particles. Included with the Dust Suppression Kit is a hitch mounted water tank with pump, pvc hoses, fittings, and control switch.

The spray nozzles are mounted directly to the optional shroud extension with or without optional dust deflector flap. An optional metal shroud extension or dust deflector with metal shroud extension can be purchased from your nearest Kubota dealer if needed. See pages 32 & 33 for part numbers and detail descriptions of metal shroud and dust deflector flap.

IMPORTANT: Use only clean fresh water in the Dust Suppression System. Do not use dirty water, salt water or chemicals. Dirty water can plug the system. Salt water and chemicals will corrode the system. Chemicals can cause serious injury to persons, animals, plants, soil and property.

NOTE: Five zip ties (#33) are provided to secure the pvc hoses. Customer may install these as needed.

Water Tank Assembly

Refer to Figure 5-4 on page 33:

1. Attach support brackets (#1 & #2) to water tank (#20) with 5/16"-18 x 3/4" GR5 cap screws (#13), lock washers (#15), and flat washers (#16). Draw cap screws up snug, do not tighten.
2. Attach rear support bracket (#2) to center serrated step with 3/8"-16 x 1" GR5 cap screws (#11) and nylock locknuts (#14). Draw cap screws up snug, do not tighten.
3. Attach the front support bracket (#1) to pivot plate with two 3/8"-16 x 1 1/4" GR5 cap screws (#12), four flat washers (#17), and two nylock locknuts (#14).
4. Tighten 5/16" cap screws (#13) to 60 in lbs or 5 ft lbs (6.8 Nm) maximum.
5. Tighten 3/8" nylock nuts (#14) to the correct torque.

IMPORTANT: Apply teflon tape or an approved pipe sealant to all male national pipe threads (MNPT) before connecting male threads to female threads.

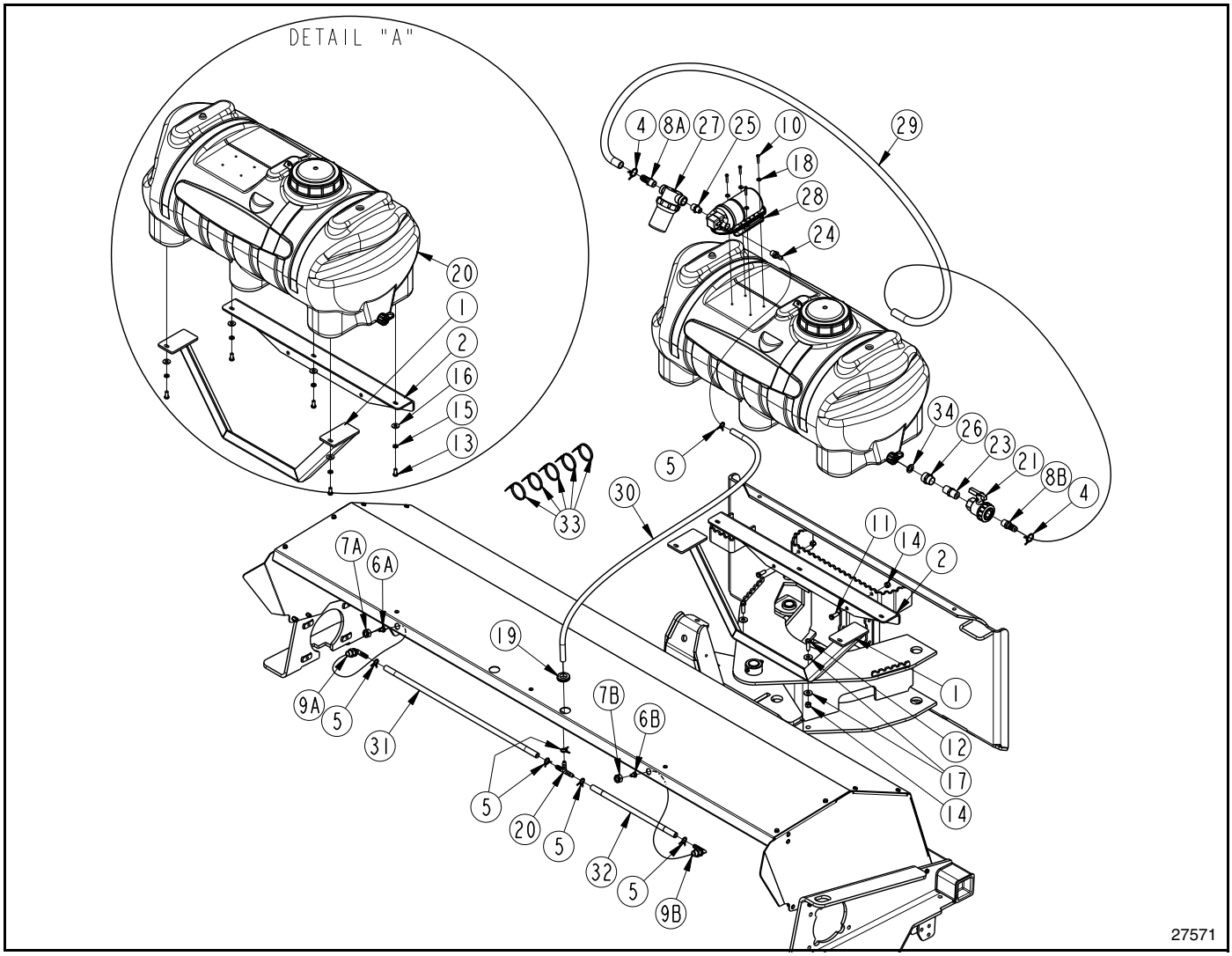
6. Connect 3/8" MNPT x 3/8 hose barb adapter (#24) to **OUT** port of water pump (#28). Screw on tight.
7. Connect 1/2" MNPT x 3/8" MNPT adapter (#25) to **IN** port of water pump (#28). Screw on tight.
8. Connect **OUT** port of line filter (#27) to adapter (#25). Tighten filter tilted out as shown.
9. Connect 1/2" MNPT x 5/8" hose barb adapter (#8A) to **IN** port of line filter (#27). Screw on tight.
10. Attach pump (#28) to tank (#3) with 24 x 1" cap screws (#10) and flat washers (#18). Tighten cap crews to the correct torque.
11. Insert garden hose washer (#34) into garden hose adapter (#26).
12. Connect 1/2" FNPT x 3/4" garden hose adapter (#26) to water tank outlet. Screw on tight.
13. Connect 1/2" MNPT x 1/2" MNPT adapter (#23) to adapter (#26). Screw on tight.
14. Connect 1/2" FNPT single ball valve (#21) to adapter (#23). Screw on tight with lever on top.
15. Connect 1/2" MNPT x 5/8" ID hose push lock adapter (#8B) to ball valve (#21). Screw on tight.
16. Attach 5/8" PVC hose (#29) to hose barb adapters (#8A & 8B). Secure hose ends with wire hose clamps (#4).

Spray Nozzle Assembly To Broom Shroud

Refer to Figure 5-4 on page 33:

IMPORTANT: 3/8" ID x 1/8" wall clear PVC hoses (#30, #31 & #32) are provided in one length that will need to be cut into three lengths in field assembly.

1. Insert threaded end of elbow (#9A) through hole in broom shroud in the location shown.
2. Insert brass nozzle tip (#6A) into elbow (#9A) and secure with nozzle cap (#7A). Rotate notch in nozzle down to direct spray onto the ground and then screw cap on tight.
3. Connect one end of PVC hose (#31) to elbow (#9A) with wire hose clamp (#5).
4. With tee (#22) inserted through center hole in broom shroud, route PVC hose (#31) to tee (#22) and cut to length.
5. Attach PVC hose (#31) to tee (#22) with wire hose clamp (#5).
6. Insert threaded end of elbow (#9B) through hole in broom shroud in the location shown.
7. Insert brass nozzle tip (#6B) into elbow (#9B) and secure with nozzle cap (#7B). Rotate notch in nozzle down to direct spray onto the ground and then screw cap on tight.
8. Connect one end of PVC hose (#32) to elbow (#9B) and secure with wire hose clamp (#5).
9. Route PVC hose (#32) to tee (#22) and cut to length.
10. Attach PVC hose (#32) to tee (#22) with wire hose clamp (#5).
11. Insert grommet (#19) into broom shroud center hole.
12. Insert PVC hose (#30) through grommet (#19) and connect to tee (#22) with wire hose clamp (#5).
13. Route PVC hose (#30) to adapter (#24) and cut to length.
14. Connect hose (#30) to adapter (#24) with wire hose clamp (#5).

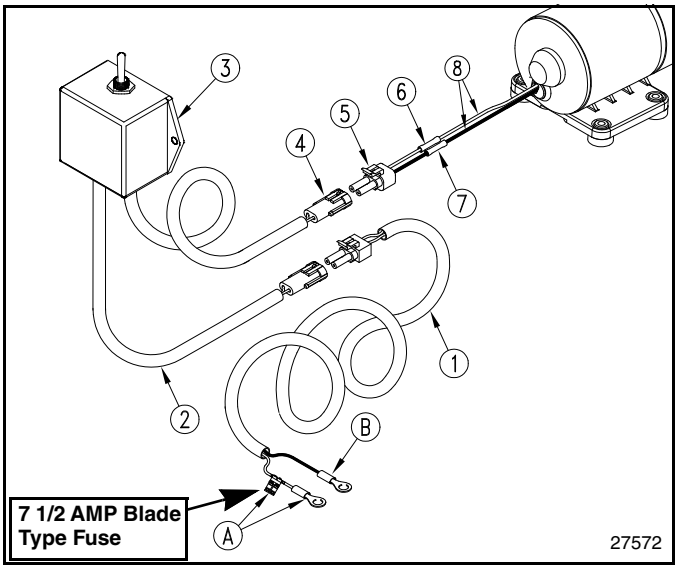


Dust Suppression Kit
Figure 5-4

Dust Suppression Electrical Hook-Up

Refer to Figure 5-5:

1. Install 18 ft. power cord (#1) by connecting eye (A) with a red wire to the 12 volt power source and eye (B) with a black wire to ground.
2. Mount control switch (#3) in a convenient, easy to reach location. Back of control switch is magnetized for easy mounting.
3. Connect power cord (#1) to control switch wire (#2).
4. Connect red wire of jumper (#5) to red wire of pump harness (#8) with butt splice (#6).
5. Connect black wire of jumper (#5) to black wire of pump harness (#8) with butt splice (#7).
6. Connect jumper wire (#5) to 18'-0" (5.5m) power cord (#4).
7. Make sure all wiring is routed safely so that no wires will be pinched, kinked, or pulled apart while operating the Angle Broom. Tie or tape wiring to secure it in its routed location.



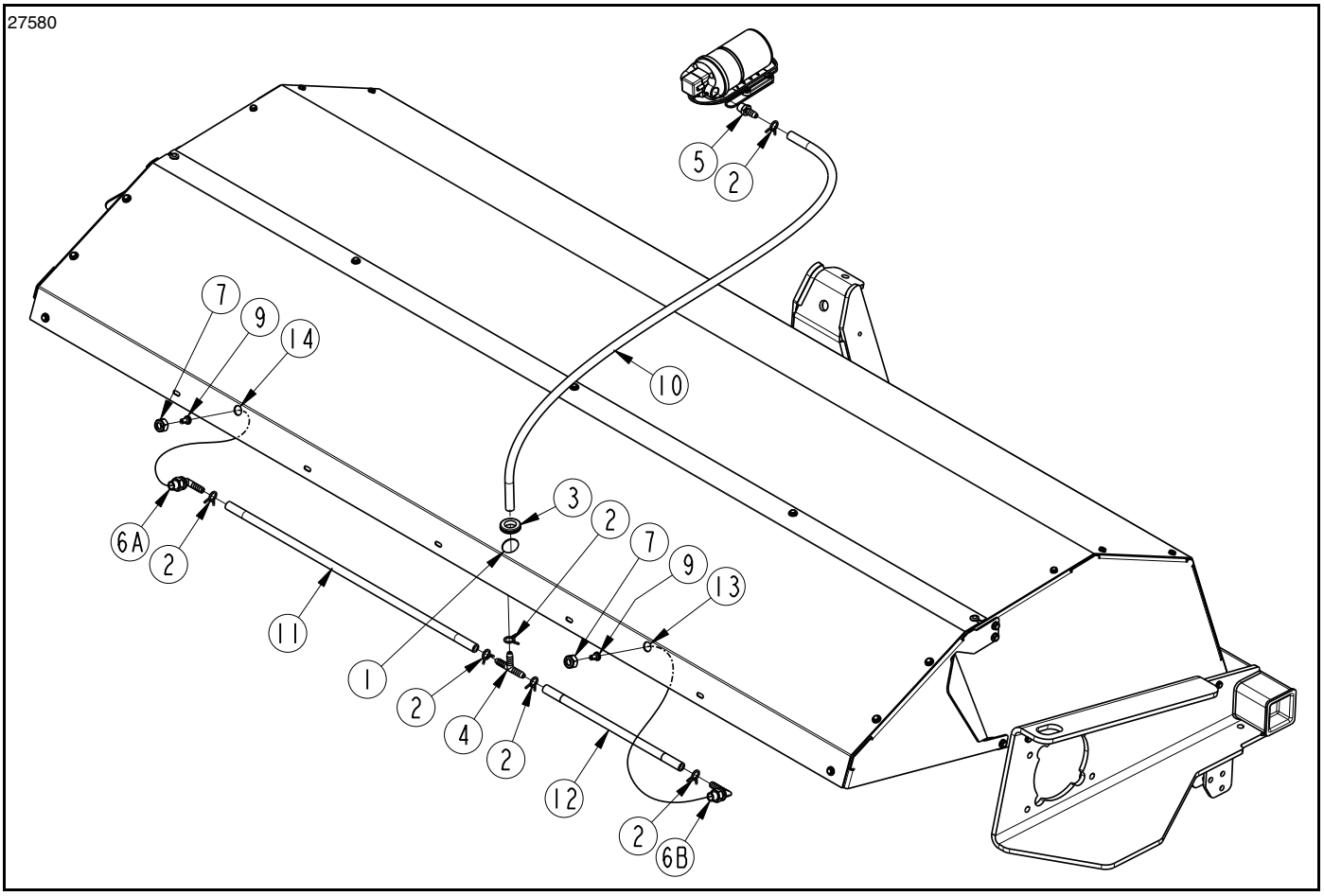
Dust Suppression Wiring Hook-Up
Figure 5-5

Spray Nozzle Assembly To Shroud Extension

Refer to Figure 5-6:

IMPORTANT: 3/8" ID x 1/8" wall clear PVC hoses (#8, #9 & #10) are provided in one length that will need to be cut into three lengths in field assembly.

1. Insert threaded end of elbow (#6A) through nozzle hole (#14) in the location shown.
2. Insert brass nozzle tip (#9) into elbow (#6A) and secure with nozzle cap (#7). Rotate notch in nozzle down to direct spray onto the ground and then screw cap on tight.
3. Connect one end of PVC hose (#11) to elbow (#6A) with wire hose clamp (#2).
4. With tee (#4) inserted through center hole (#1), route PVC hose (#11) to tee (#4) and cut to length.
5. Attach PVC hose (#11) to tee (#4) with wire hose clamp (#2).
6. Insert threaded end of elbow (#6B) through nozzle hole (#13) in the location shown.
7. Insert brass nozzle tip (#9) into elbow (#6B) and secure with nozzle cap (#7). Rotate notch in nozzle down to direct spray onto the ground and then screw cap on tight.
8. Connect one end of PVC hose (#12) to elbow (#6B) and secure with wire hose clamp (#2).
9. Route PVC hose (#12) to tee (#4) and cut to length.
10. Attach PVC hose (#12) to tee (#4) with wire hose clamp (#2).
11. Insert grommet (#3) into the center hole (#1) in the broom shroud.
12. Insert PVC hose (#10) through grommet (#3) and connect to tee (#4) with wire hose clamp (#2).
13. Route PVC hose (#10) to adapter (#5) and cut to length.
14. Connect hose (#10) to adapter (#5) with wire hose clamp (#2).



Spray Nozzle Assembly to Shroud Extension
Figure 5-6

Hose And Spray Kit Accessory

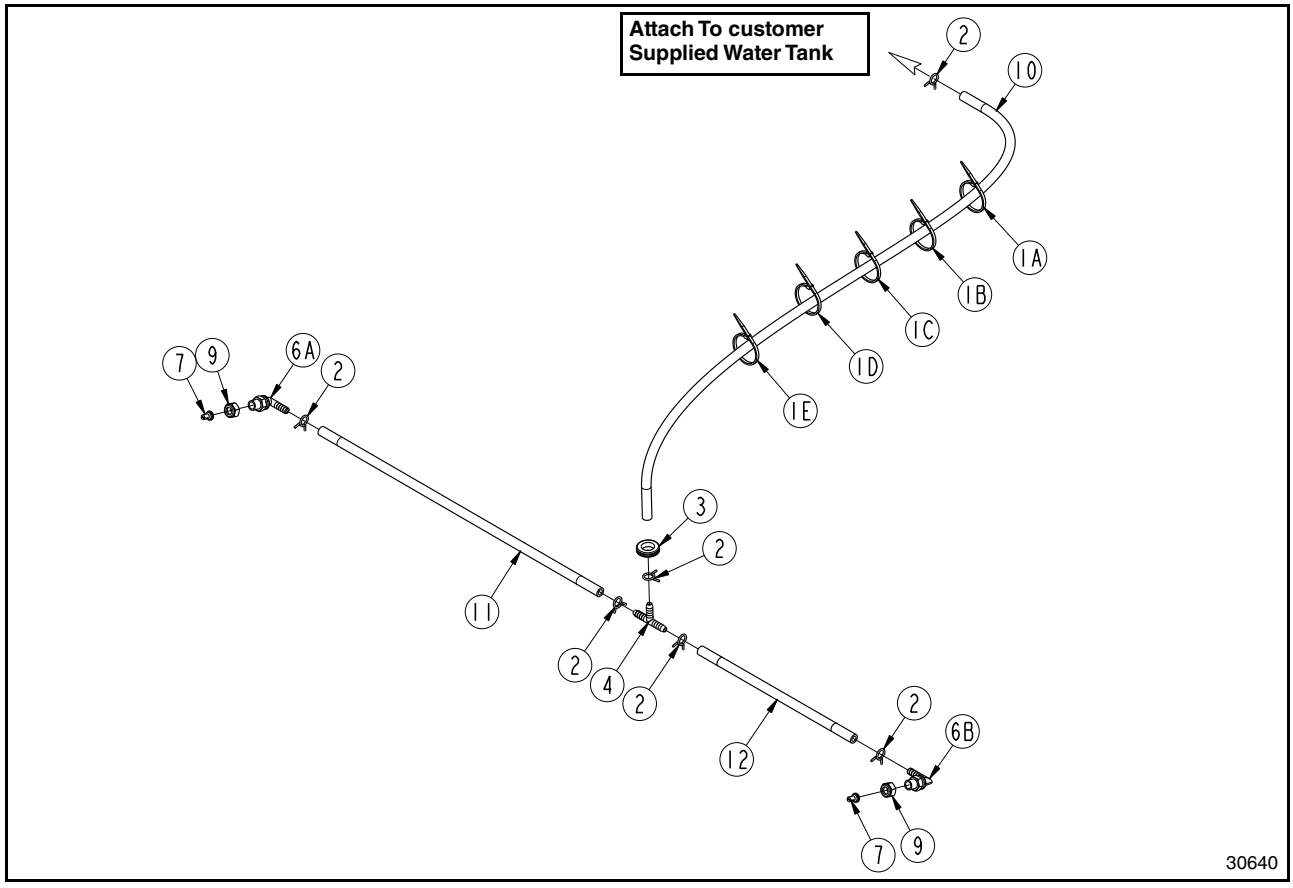
Part No. 323-043A

Refer to Figure 5-7:

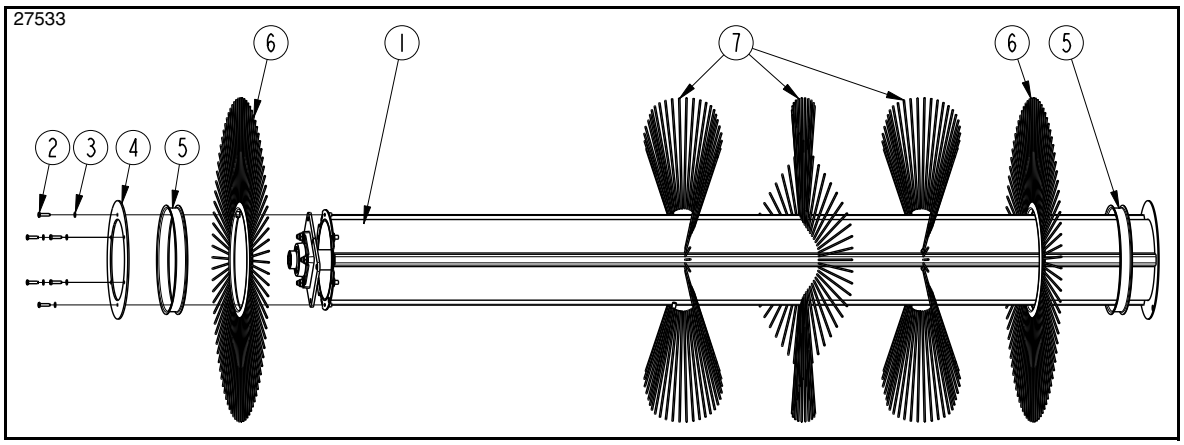
This kit may be purchased when customer is supplying the water tank and pump. An additional 6 feet of 3/8" ID x 1/8" wall clear pvc hose is provided with this kit for reaching to customer supplied water tank.

IMPORTANT: 3/8" ID x 1/8" wall clear PVC hoses (#10, #11 & #12) are provided in one length that will need to be cut into three lengths in field assembly.

1. Insert threaded elbow (#6A) through hole in broom shroud shown in Figure 5-6 on page 34.
2. Insert brass nozzle tip (#9) into elbow (#6A) and secure with nozzle cap (#7). Rotate notch in nozzle down to direct spray onto the ground and then screw cap on tight.
3. Connect one end of PVC hose (#11) to elbow (#6A) and secure with wire hose clamp (#2).
4. With tee inserted through center hole in broom shroud shown in Figure 5-6 on page 34, route hose (#11) to tee (#4) and cut to length.
5. Connect hose to tee with wire hose clamp (#2).
6. Insert threaded end of elbow (#6B) through hole in broom shroud as shown in Figure 5-6 on page 34.
7. Insert brass nozzle tip (#9) into elbow (#6B) and secure with nozzle cap (#7). Rotate notch in nozzle down to direct spray onto the ground and then screw cap on tight.
8. Connect one end of PVC hose (#12) to elbow (#6B) and secure with wire hose clamp (#2).
9. Route PVC hose (#12) to tee (#4) and cut to length.
10. Attach PVC hose (#12) to tee (#4) with wire hose clamp (#2).
11. Insert grommet (#3) into center hole in broom shroud as shown in Figure 5-6 on page 34.
12. Insert PVC hose (#10) through the grommet (#3) and connect to tee (#4) with wire hose clamp (#2).
13. Route PVC hose (#10) to customer supplied pump and cut to length. Connect hose to customer supplied pump with wire hose clamp (#2).
14. Secure water hose to hydraulic hoses with zip ties (#1A, #1B, #1C, #1D & #1E) as follows:
    - Attach zip tie (#1A) 8" (20 cm) from quick couplers.
    - Attach zip tie (#1B) 20" (51 cm) from zip tie (#1A).
    - Attach zip tie (#1C) 48" (121 cm) from zip tie (#1B).
    - Attach zip tie (#1D) 48" (121 cm) from zip tie (#1C).
    - Attach zip tie (#1E) 22" (56 cm) from zip tie (#1D).



Hose And Spray Kit
Figure 5-7



Individual Broom Wafers
Figure 5-8

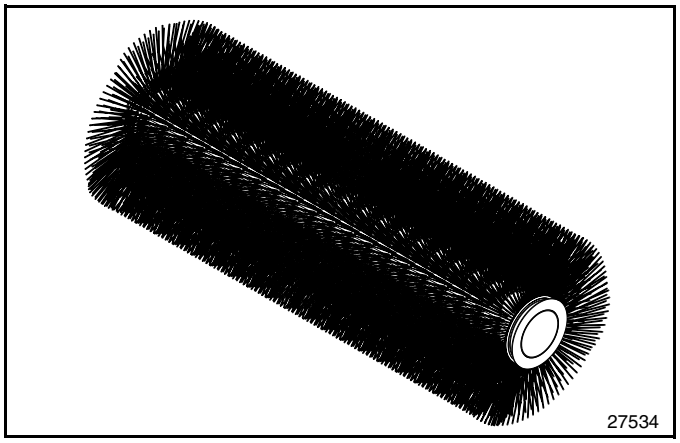
Brooms & Individual Wafers

Refer to Figure 5-9:

Kubota offers broom construction of three different bristle materials: Poly bristles, steel bristles or combination wafers constructed of poly and steel bristles. Poly bristles are more gentle on the surface being brushed while steel bristles will loosen stubborn caked on areas.

Refer to Figure 5-8:

Individual straight wafers (#6) and convoluted wafers (#7) are replaceable. See **"Wafer Removal and Installation"** on page 40 for additional information.



Broom Assembly
Figure 5-9

Part Number & Description

Poly Brushes (See Note Below Figure 5-9)

323-001A	Poly Broom Assembly for 3000 PSI Motor
323-047A	Poly Broom Assembly for 3500 PSI Motor
890-999C	Polypropylene Convoluted Wafer
890-998C	Polypropylene Straight Wafer
891-163C	Wafer Spacer Ring

Wire Brushes (See Note Below Figure 5-9)

323-009A	Wire Broom Assembly for 3000 PSI Motor
323-048A	Wire Broom Assembly for 3500 PSI Motor
891-114C	Wire Convoluted Wafer
891-132C	Wire Straight Wafer
891-163C	Wafer Spacer Ring

Combination Poly & Wire Brushes (See Note Below Figure 5-9)

323-010A	Comb. Broom Assembly for 3000 PSI Motor
323-049A	Comb. Broom Assembly for 3500 PSI Motor
890-999C	Polypropylene Convoluted Wafer
891-114C	Wire Convoluted Wafer
890-998C	Polypropylene Straight Wafer
891-163C	Wafer Spacer Ring

NOTE: Refer to Figure 5-8:
Each Broom Assembly includes one roller drum (#1), six 1/4"-20 x 1" cap screws (#2), six lock washers (#3), one drum plate (#4), two wafer spacer rings (#5) two straight wafers (#6) and convoluted wafers (#7) as follows:

AB72

Poly Broom- - 34 Polypropylene Convoluted Wafers
Wire Broom - 34 Wire Convoluted Wafers
Comb. Broom 17 Poly & 17 Wire Convoluted Wafers

AB84

Poly Broom- - 40 Polypropylene Convoluted Wafers
Wire Broom - 40 Wire Convoluted Wafers

Intell-Attach System™

The Intell-Attach System allows the Kubota power unit with a closed cab, hydraulic hitch, high-flow, and Telematics to intelligently recognize a Kubota by Land Pride Attachment when equipped with an Intell-Attach receiver and tag. Real time feedback between the attachment and SVL 97-3 helps the operator maximize performance and speed machine set-up.

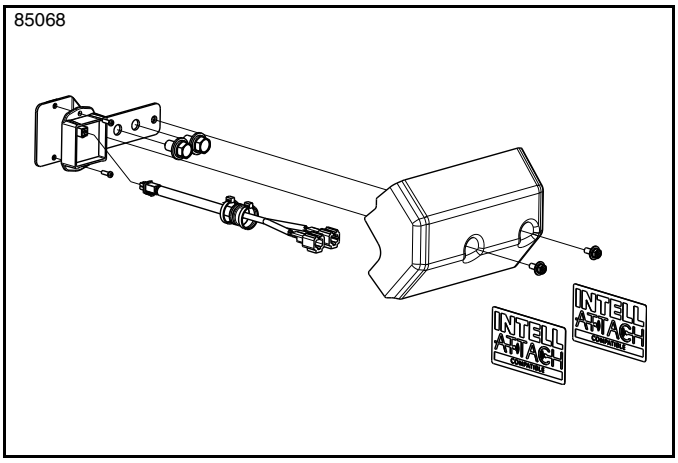
The Intell-Attach System automatically adjusts the AUX flow. This auto adjust feature prohibits high-flow when connecting to an attachment requiring standard flow.

Receiver/Cover Assembly

Refer to Figure 5-10:

The receiver is mounted on the track loader and once programmed, the communication between the receiver and tag automatically recognizes the capabilities of the attachment and adjusts the power unit to match.

RECEIVER/COVER ASM 701-256A



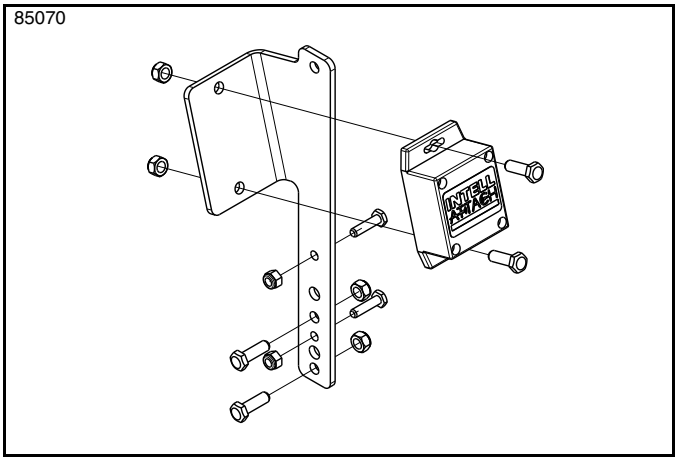
Receiver/Cover Assembly
Figure 5-10

Tag/Bracket Assembly

Refer to Figure 5-11:

The tag is mounted on the attachment and communicates using Bluetooth® wireless technology to communicate with the receiver on the track loader.

TAG/BRACKET ASM #1 . . . . . .701-253A



Tag/Bracket Assembly
Figure 5-11

General Maintenance Information

Proper servicing and adjustment are key to the long life of any attachment. With careful inspection and routine maintenance, you can avoid costly downtime and repair.

Check all bolts after using the unit for several hours to be sure they are tight. Replace any worn, damaged, or illegible safety labels by obtaining new labels from your Kubota dealer.

Safety While Servicing and Repairing

DANGER

To avoid serious injury or death:

- *Do not go near or under raised loader arms without first securing loader arms in the raised position with an approved lift-arm support.*
- *Always secure equipment with solid, non-concrete supports before working under it. Never go under equipment supported by concrete blocks or hydraulics. Concrete can break, hydraulic lines can burst, and/or hydraulic controls can be actuated even when power to the hydraulics is off.*
- *Keep body, body extremities, clothing, pull strings, etc. away from rotating/moving parts. Always shut off hydraulics to the attachment and shutdown the power machine before adjusting or servicing the equipment.*

WARNING

To avoid serious injury or death:

- *Make sure controls are all in the neutral position or park before starting the power machine.*
- *Place tractor or skid steer in park, shut engine off and release all hydraulic pressure at the controls before servicing the Angle Broom.*
- *Perform scheduled maintenance. Check for loose hardware, missing parts, broken parts, structural cracks, and excessive wear. Make repairs before putting the implement back into service.*
- *Protect against equipment falling unexpectedly. Pin support stands in the down position and then lower brush to ground or securely block brush up with support blocks before servicing or working under and around the unit.*
- *Do not alter attachment or replace parts on the attachment with other brands. Other brands may not fit properly or meet OEM (Original Equipment Manufacturer) specifications. They can weaken the integrity and impair the safety, function, performance, and life of the attachment. Replace parts only with genuine OEM parts.*
- *Allow only persons to perform maintenance on this attachment who have been properly trained in the safe operation of this attachment.*
- *Always shut power machine down using the "Shutdown Procedure" provided in this manual before servicing, adjusting, cleaning, or maintaining the attachment.*
- *Lubricate, make adjustments and repairs in a safe area away from traffic and other hazards.*
- *Hydraulic fluid under high pressure will penetrate the skin or eyes causing serious injury. Wear protective gloves and safety glasses or goggles when working with hydraulics. Use a piece of cardboard or wood, rather than hands, when searching for leaks. If an accident occurs, seek immediate emergency medical care or gangrene may result. DO NOT DELAY.*
- *Make sure all connections are tight and in good working condition. Replace damaged or fatigued fittings and hoses.*
- *Hydraulic fluid can become hot as it flows through components such as hydraulic couplers, hoses, lines, fittings, motors, etc. Wear gloves when working with hydraulic components including while connecting and disconnecting couplers. It is best to allow hydraulic components to cool before touching them.*
- *Avoid electrical shock. Disconnect water pump electrical terminals from the battery before servicing the water pump, electrical wiring for the pump, and its switch box.*
- *Check hitch fit-up frequently. An improper fit-up can result in the attachment falling from the loader hitch plate.*

Broom Removal

The bristles will need replacing as they wear. The brush is designed for easy removal from under the hood. Once the brush is removed, individual wafers can be slid on and off for easy replacement.

Refer to Figure 6-1 & Figure 6-2:

1. For safety, support both ends of the broom shroud main frame so that the bottom of the frame is 22" (56 cm) off the ground. Make sure supports are secure before continuing. The 22" (56 cm) clearance between the main frame and ground is necessary when replacing the broom with new bristles that are 10" (25.4 cm) long.

Refer to Figure 5-8 on page 36:

2. Support rotary drum (#1) at both ends to keep the rotary broom from falling while unbolting it from the main frame. Make sure supports are secure before continuing.

Refer to Figure 6-1:

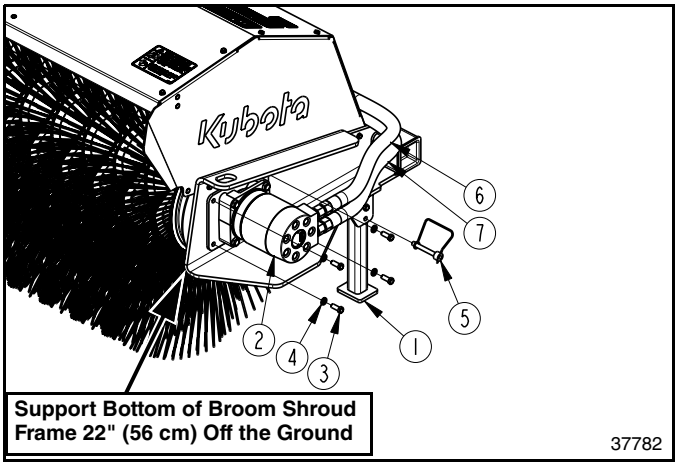
3. Remove cap screws (#3) and lock washers (#4) securing the motor to the main frame.
4. Pull hydraulic motor and mounting plate assembly (#2) out 3"-4" (76-102 cm) from mounting frame. If hydraulic hoses (#6 & #7) will not allow proper motor movement, loosen dual hose clamps on back of shroud to free-up hose movement.

Refer to Figure 6-2:

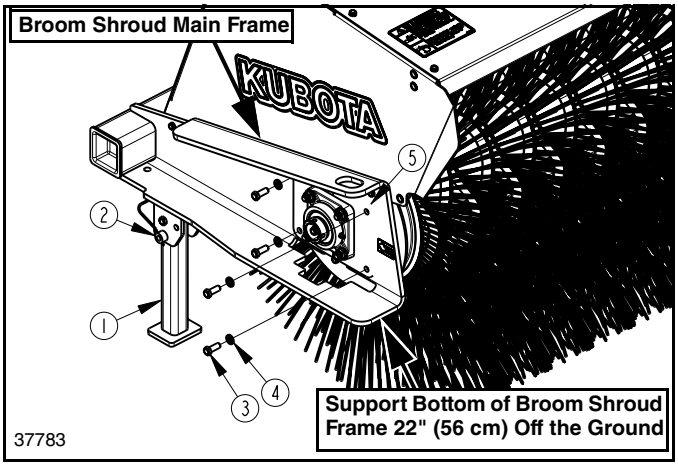
5. Remove cap screws (#3) and lock washers (#4) securing flange bearing to the main frame. **Do not** remove flange bearing and mounting plate (#5) from end of brush.

Refer to Figure 6-3:

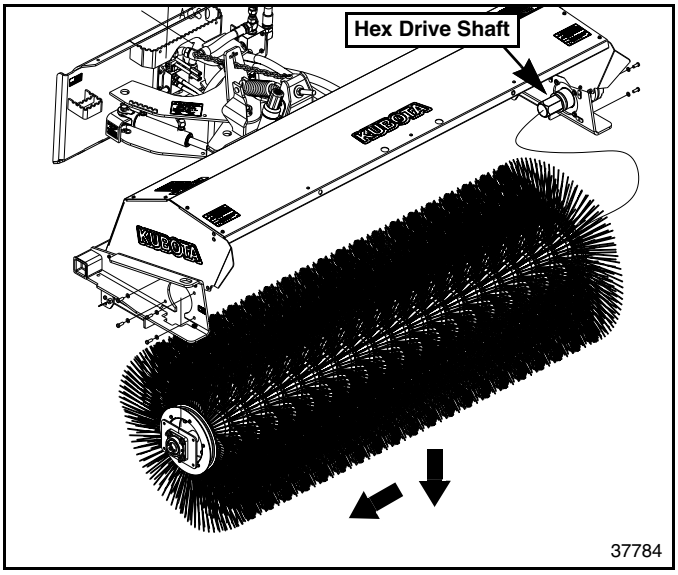
6. Carefully lower broom assembly straight down until bearing assembly has passed through slot in the main frame.
7. Once bearing assembly is below the slot, pull brush from the hex drive shaft and continue to safely lower assembly to the ground.
8. See ***""Wafer Removal and Installation"*** on page 40 for removal and installation instructions of wafers.



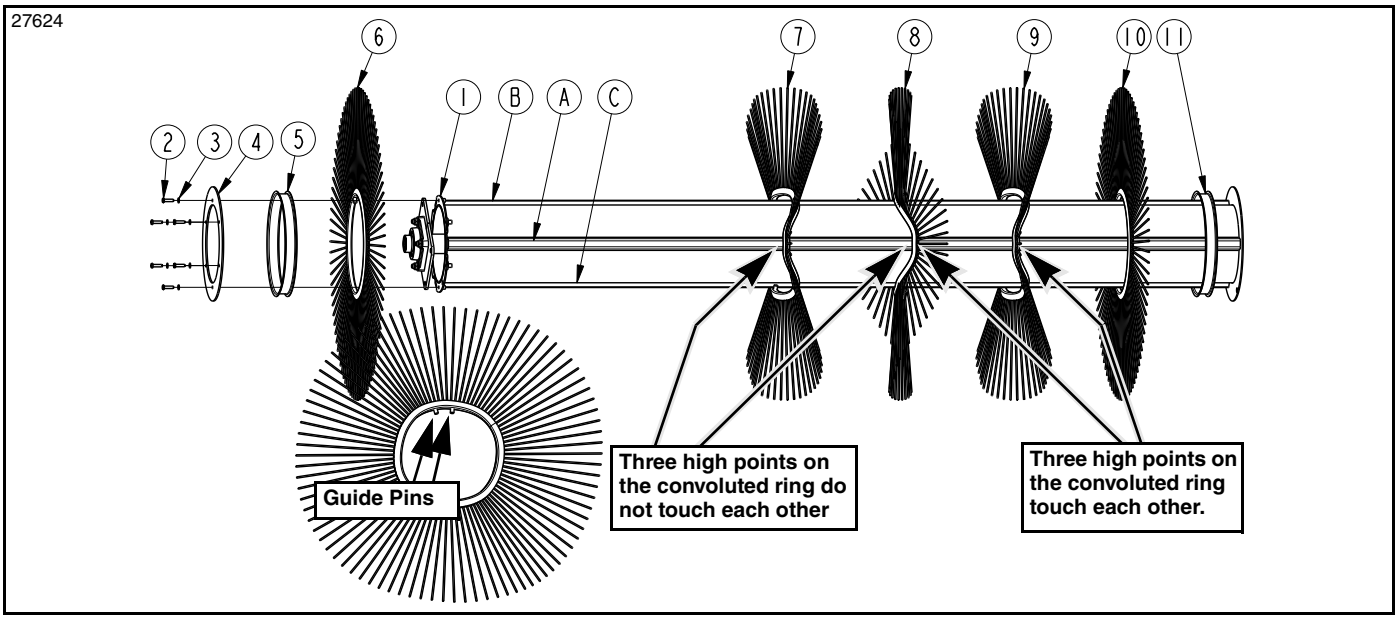
Brush Removal, Motor End (3500 PSI Motor Shown)
Figure 6-1



Brush Removal, Bearing End
Figure 6-2



Removing Brush From Angle Broom
Figure 6-3



Wafer Removal and Installation
Figure 6-4

Wafer Removal and Installation

Refer to Figure 6-4:

The polypropylene and wire broom consists of (2) wafer spacer rings, (2) straight wafers, and (34 or 40 each) convoluted wafers in the middle.

The combination broom consists of (2) wafer spacer rings, (2) straight wafers, and alternating (17 or 20 each) poly convoluted wafers and (17 or 20 each) wire convoluted wafers.

See **"Broom Removal"** on page 39.

For ordering information, see **"Brooms & Individual Wafers"** on page 36.

1. Remove cap screws (#2), lock washers (#3) and drum plate (#4) from bearing end of brush. Keep components for reassembly. Do not remove flange bearing.

IMPORTANT: Do not install wafers with drum (#1) positioned vertical. Installing wafers one on top of the other causes the convoluted rings to flatten and may cause the customer to purchase additional wafers to completely fill the drum.

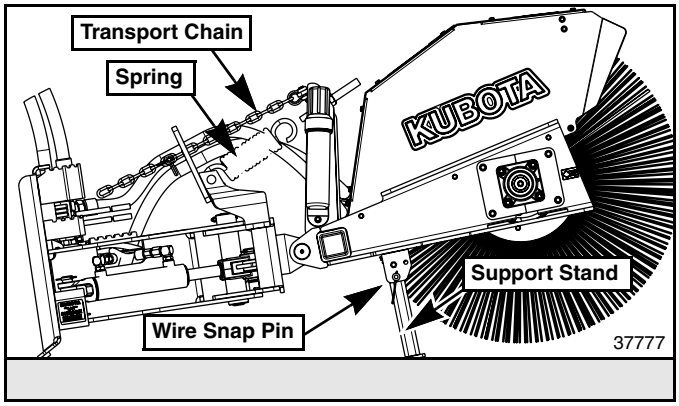
2. Lay roller drum (#1) horizontal on support stands while removing and installing the wafers.
3. Slide wafer spacer rings (#5 & #11) and worn wafers (#6, #7, #8, #9, & #10) off end of rotary drum.
4. With rotary drum empty, slide on new wafer spacer ring (#11).
5. Position guide pin on straight wafer (#10) between guide bar (A) and guide bar (C). Slide straight wafer onto the drum.
6. Align guide pins on convoluted wafer (#9) with guide bar (A) and then slide wafer onto the drum.
7. Align guide pins on convoluted wafer (#8) with guide bar (B). Make sure three high points on wafer (#8) touch three high points on wafer (#9). If wafer rings make continuous contact, turn wafer (#8) around and reinstall on guide bar (B).
8. Align guide pins on convoluted wafer (#7) with guide bar (C). Make sure three high points on wafer (#7) touch three high points on wafer (#8). If wafer rings make continuous contact with each other, turn wafer (#7) around and reinstall on guide bar (C).
9. Continue to install convoluted wafers (#7 & #8) on rotary drum (#1) alternating from guide bar (A) to guide bar (B) to guide bar (C) until rotary drum is full of wafers. Make sure three high points are touching and three low points are not touching as each wafer is installed.
10. Once all convoluted wafers are on, install remaining straight wafer (#6) and new wafer spacer ring (#5).
11. Install existing drum plate (#4) and secure with lock washers (#3) and 1/4"-20 x 1" GR5 cap screws (#2). Tighten cap screws to the correct torque.
12. Reassemble brush to the Angle Broom in reverse order it was removed. See **"Broom Removal"** on page 39.

Long-Term Storage

Refer to Figure 6-5:

Clean, inspect, service, and make necessary repairs to the attachment when storing it for long periods and at the end of the season. This will help ensure the unit is ready for field use the next time you hook-up to it.

1. Store unit on a level surface in a clean, dry place. Be sure unit is properly supported on its support stands and hitch plate. When supported properly, the brush will be off the ground to protect its bristles from becoming deformed.
2. Tighten transport chain to relieve tension on the spring and to protect it from becoming deformed.



Brush Removal, Bearing End
Figure 6-5

3. Clean off any dirt and grease that may have accumulated on the unit and moving parts. Scrape off compacted dirt and then wash surfaces thoroughly with a garden hose.
4. Inspect unit for loose, damaged or worn parts and adjust or replace as needed.
5. Repaint parts where paint is worn or scratched to prevent rust. Ask your Kubota dealer for touch-up paint. Paint is available in aerosol can, quarts, and gallon sizes. See chart below.

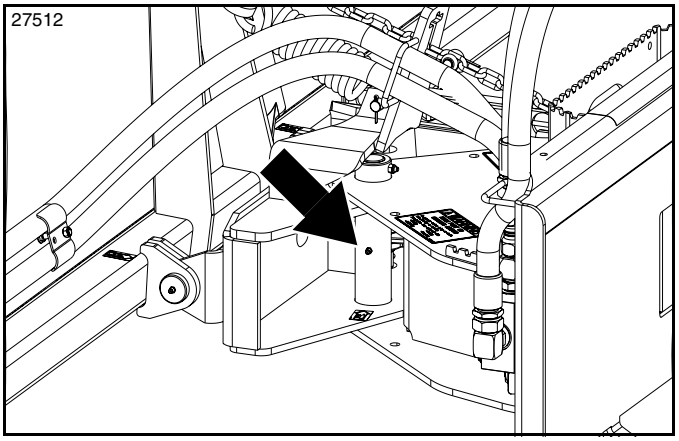
Kubota Touch-up Paint

Part No.	Part Description
821-070C	Gloss black enamel spray can
821-070CTU	Gloss black enamel bottle with brush
821-070CQT	Gloss black enamel quart
821-070CGL	Gloss black enamel gallon

6. Replace all damaged or missing decals.
7. A coating of oil may also be applied to the underside of the hood to minimize oxidation.
8. Lubricate unit as noted on page 42.

Lubrication Points

Lubrication Legend	Multi-purpose spray lube	Multi-purpose grease lube	Multi-purpose oil lube	50 Hrs	Intervals in hours at which lubrication is required

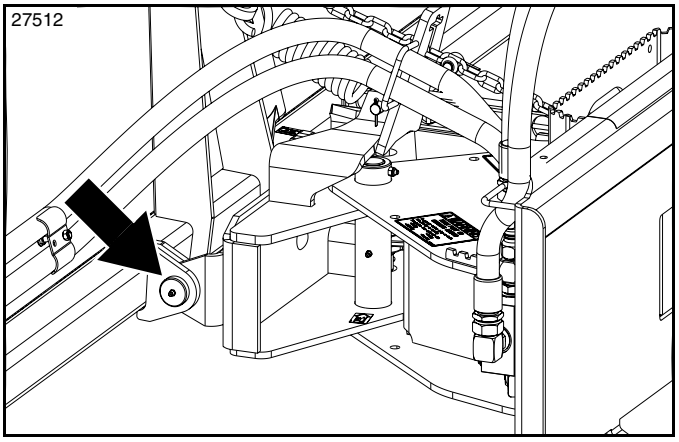


25 Hours

Broom Angle Pivot

1 - Zerk

Type of Lubrication: Multi-purpose Grease

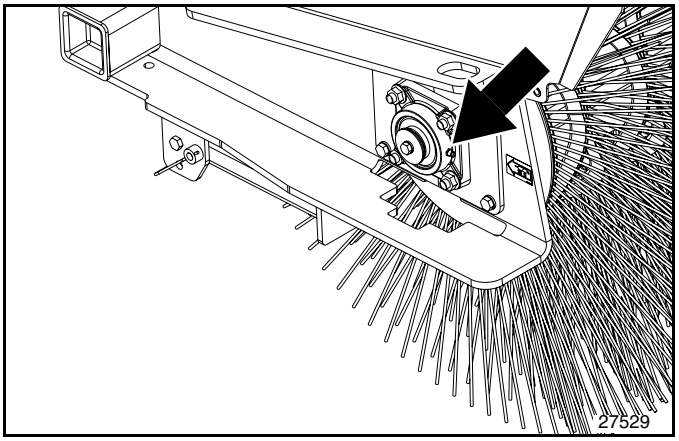


25 Hours

Broom Head Pivot

2 - Zerks: Left Side Shown

Type of Lubrication: Multi-purpose Grease



25 Hours

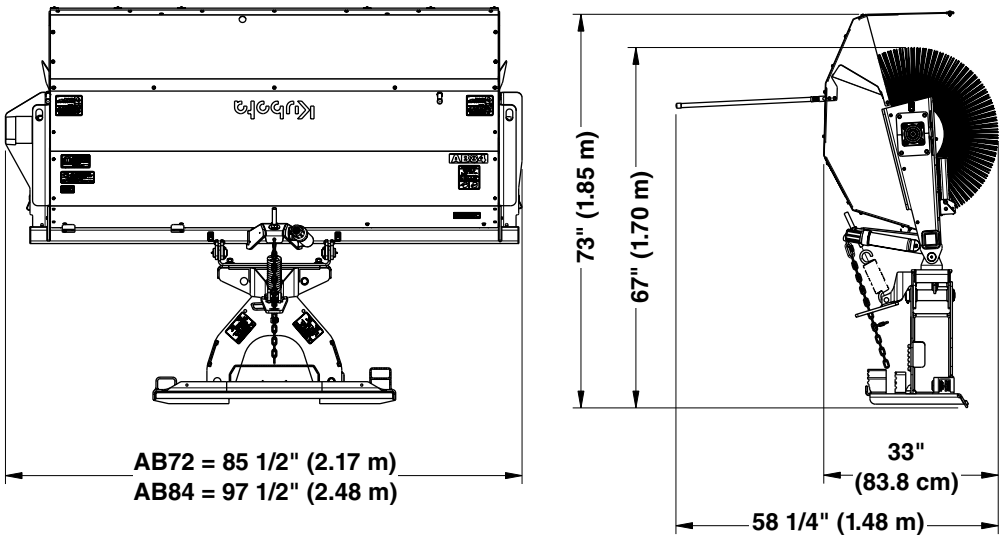
Broom Rotary Bearing

1 - Zerk

Type of Lubrication: Multi-purpose Grease

AB72 & AB84 Specifications & Capacities

Model Number	AB72	AB84
Hitch	Skid steer quick attach, meets ISO 24410	
Weight with hydraulic angling jack and combination broom	854 lbs (387.4 kg)	930 lbs (421.8 kg)
Overall width	85 1/2" (2.17 m)	97 1/2" (2.348m)
Overall height	33" (83.8 cm)	33" (83.8 cm)
Wafer quantities, poly or wire	2 Straight Poly Wafers 34 Convoluted Wafers	2 Straight Poly Wafers 40 Convoluted Wafers
Wafer quantities, combination poly and wire	2 Straight Poly Wafers 34 Convoluted Wafers	2 Straight Poly Wafers 40 Convoluted Wafers
Sweeping width	72" (1.83 m)	84" (2.13 m)
Sweeping width @ 30° max angle	65" (1.65 m)	76" (1.93 m)
Maximum angle	Manual Angling: 30 Degrees left or right Optional Hydraulic Angling: 30 Degrees left or right	
Brush diameter	32" (81.3 m)	
Brush rotor shaft	Quick change broom core with no hydraulic breakage in changeover	
Hex drive system	Replaceable	
Brush bristle type	100% Poly or 100% Metallic or 50% Poly and 50% Metallic	
Hood	Sheet Metal	
Jack stands	Standard	
Float Control	Spring Loaded with adjustable down pressure and stops	
Hydraulic gpm range	12-24 gpm (45.4-90.8 pm)	
Motor Rated Hydraulic flow 18.9 CID motor	18 gpm (68.1 lpm) @ 2500 psi (172 Bar) = 188 rpm rotor speed	
Minimum hydraulic flow required	12 gpm (45.4 lpm) @ 2000 PSI (13.79 MPa)	
Maximum hydraulic pressure rating	3500 PSI (24.13 MPa)	
Brush speed range	130 - 235 Rpm	
Hydraulic rotor drive motor	Single motor drive standard	
Hydraulic hoses	Standard for drive motor hook-up Optional with angling cylinder	
Hydraulic couplers	Standard	



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AB72 & AB84 Features & Benefits

Features	Benefits
32" Bristle diameter	Provides for long service life.
Available in 72" (183 cm) and 84" (213 cm) working widths	Provides for excellent productivity and ideal sizes for most skid steers and compact utility tractors.
Choice of poly or combination poly/wire bristles	Allows owner/operators to meet operational needs. Poly/wire combinations provide more wear life and more aggressive sweeping action.
Faceted hood design	Provides for a higher level of overall structural integrity.
Easily removable brush drive	Allows for quick and easy change out of brushes without motor removal or opening hydraulic lines.
Choice of manual or hydraulic angling	Allows owner/operators to meet budgetary and operational needs.
Brush angles 30 degrees to the left or right	Provides for excellent material control and puts sweepings where the operator wants them.
Compatible with 12 to 24 gpm (45 to 91 lpm) with hydraulic flow at 2,000 psi (13.8 mPa) to 3,500 psi (24.1 mPa	Allows attachment to a wide range of skid steers and compatible compact utility tractors equipped with loader arms and skid steer adapter plates.
Integral float control design	Spring loaded adjustable down pressure control and stops prevent premature brush wear while providing appropriate surface contact with the rotary brush.
130 to 235 rpm brush rotation	Provides for good sweeping action and material control.
Integral storage stands	Enables easy dismount and storage and keeps bristle ends from becoming deformed by supporting weight of the unit.
Options	
Rubber dust deflector flap	Helps keep dust levels under control and down and under the hood cowling and out of the operators field of vision.
Dust suppression system	Hood mounted spray boom and nozzles dispense a fine spray mist in front of the broom to control and minimize airborne dust particles.
Metal shroud extension	Extends the broom shroud further forward to help control dust. Spray nozzles can be mounted on the extension to help minimize airborne dust particles.
Marker indicators	Aids operator in knowing exact position of extreme left and right edges of the unit for safer and unencumbered operation.
A large number of electrical control harnesses	Provides a way to connect the solenoid for broom angling hydraulically to many skid steers and compact tractors. Refer to **"Electrical Control Harness Options"** on page 14.

AB72 & AB84 Troubleshooting Chart

Problem	Cause	Solution
Not able to change broom angle	Blown fuse caused by an electrical overload.	Replace fuse. Refer to the tractor/skid steer Operator's Manual for size and location.
	Damaged wiring or electrical connections.	Repair wiring and/or connections. See your tractor/skid steer dealer for electrical problems with the tractor or skid steer.
	Switch box is damaged	Replace switch box.
	Solenoids are not working.	Replace solenoids.
	Auxiliary hydraulics switch for continuous operation is not engaged.	Engage auxiliary hydraulics switch for continuous operation.
Broom angles wrong direction	Wiring harness incorrectly connected to the control valve solenoid.	Switch plugs on the wire harness with solenoid plugs.
Broom does not rotate	Auxiliary hydraulics switch for continuous operation is not engaged.	Engage auxiliary hydraulics switch for continuous operation.
	One or both of the hydraulic couplers are not fully connected.	Reconnect couplers to front auxiliary hydraulics outlets.
	Male and female hydraulic coupling are connected in reverse order.	Switch male and female couplers on hydraulic hoses and then reconnect hoses to auxiliary hydraulic outlets.
Broom bristles are wearing down too quick	Broom spring eyebolt is adjusted incorrectly causing too much broom pressure against the ground.	Readjust spring eye bolt and transport chain. See "Spring Eye Bolt Adjustment" and "Chain Adjustment" on page 24
	The loader arms are too low causing too much broom pressure against the ground.	Raise loader arms to the correct height for a 2"-4" (5-10 cm) wide sweeping pattern.
Broom bristles are wearing more on one end than the other	Hitch plate pivot pin is not vertical.	Adjust hitch plate pivot pin to be vertical. See "Broom Leveling" on page 25.
	Broom head lug is not adjusted properly.	Adjust broom head lug. See "Broom Leveling" on page 25
Broom is not doing an effective job of cleaning	Broom bristles are 4" (10 cm) or shorter in length.	Replace wafers on broom rotary drum. See "Broom Removal" on page 39
	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. Have a qualified technician service the hydraulic system.

Torque Values Chart for Common Bolt Sizes

Bolt Size (inches)	Bolt Head Identification Grade 2		Grade 5		Grade 8	
in-tpi [1]	N · m [2]	ft-lb [3]	N · m	ft-lb	N · m	ft-lb
1/4" - 20	7.4	5.6	11	8	16	12
1/4" - 28	8.5	6	13	10	18	14
5/16" - 18	15	11	24	17	33	25
5/16" - 24	17	13	26	19	37	27
3/8" - 16	27	20	42	31	59	44
3/8" - 24	31	22	47	35	67	49
7/16" - 14	43	32	67	49	95	70
7/16" - 20	49	36	75	55	105	78
1/2" - 13	66	49	105	76	145	105
1/2" - 20	75	55	115	85	165	120
9/16" - 12	95	70	150	110	210	155
9/16" - 18	105	79	165	120	235	170
5/8" - 11	130	97	205	150	285	210
5/8" - 18	150	110	230	170	325	240
3/4" - 10	235	170	360	265	510	375
3/4" - 16	260	190	405	295	570	420
7/8" - 9	225	165	585	430	820	605
7/8" - 14	250	185	640	475	905	670
1" - 8	340	250	875	645	1230	910
1" - 12	370	275	955	705	1350	995
1-1/8" - 7	480	355	1080	795	1750	1290
1-1/8" - 12	540	395	1210	890	1960	1440
1-1/4" - 7	680	500	1520	1120	2460	1820
1-1/4" - 12	750	555	1680	1240	2730	2010
1-3/8" - 6	890	655	1990	1470	3230	2380
1-3/8" - 12	1010	745	2270	1670	3680	2710
1-1/2" - 6	1180	870	2640	1950	4290	3160
1-1/2" - 12	1330	980	2970	2190	4820	3560

Bolt Size (Metric)	Bolt Head Identification 5.8 Class 5.8		8.8 Class 8.8		10.9 Class 10.9	
mm x pitch [4]	N · m	ft-lb	N · m	ft-lb	N · m	ft-lb
M 5 X 0.8	4	3	6	5	9	7
M 6 X 1	7	5	11	8	15	11
M 8 X 1.25	17	12	26	19	36	27
M 8 X 1	18	13	28	21	39	29
M10 X 1.5	33	24	52	38	72	53
M10 X 1.25	35	26	53	39	76	56
M12 X 1.75	58	42	91	67	125	93
M12 X 1.5	60	44	95	70	130	97
M12 X 1	90	66	105	77	145	105
M14 X 2	92	68	145	105	200	150
M14 X 1.5	99	73	155	115	215	160
M16 X 2	145	105	225	165	315	230
M16 X 1.5	155	115	240	180	335	245
M18 X 2.5	195	145	310	230	405	300
M18 X 1.5	220	165	350	260	485	355
M20 X 2.5	280	205	440	325	610	450
M20 X 1.5	310	230	650	480	900	665
M24 X 3	480	355	760	560	1050	780
M24 X 2	525	390	830	610	1150	845
M30 X 3.5	960	705	1510	1120	2100	1550
M30 X 2	1060	785	1680	1240	2320	1710
M36 X 3.5	1730	1270	2650	1950	3660	2700
M36 X 2	1880	1380	2960	2190	4100	3220

[1] in-tpi = nominal thread diameter in inches-threads per inch

[2] N· m = newton-meters

[3] ft-lb= foot pounds

[4] mm x pitch = nominal thread diameter in millimeters x thread pitch

Torque tolerance + 0%, -15% of torquing values. Unless otherwise specified use torque values listed above.
All locknuts or lubricated fasteners: Use 75% of torque value. (i.e. 1/2"-13 GR5 = 76 ft-lb; 75% of 76 or .75 x 76 = 57 ft-lb)

Additional Torque Values

Tank mounting bolts 5/16"-18 Gr. 5	60 in lbs or 5 ft-lbs (6.8 Nm) maximum

Warranty

Land Pride warrants to the original purchaser that this Land Pride product will be free from defects in material and workmanship beginning on the date of purchase by the end user according to the following schedule when used as intended and under normal service and conditions for personal use.

Overall Unit: One year Parts and Labor

Hydraulic Cylinder: One year Parts and Labor.

Hydraulic Motor: Two years Parts and Labor.

Solenoid Controlled Valves: One year Parts and Labor.

This Warranty is limited to the repair or replacement of any defective part by Land Pride and the installation by the dealer of any such replacement part, and does not cover common wear items. Land Pride reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

This Warranty does not apply to any part or product which in Land Pride's judgment shall have been misused or damaged by accident or lack of normal maintenance or care, or which has been repaired or altered in a way which adversely affects its performance or reliability, or which has been used for a purpose for which the product is not designed. Misuse also specifically includes failure to properly maintain oil levels, grease points, and driveline shafts.

Claims under this Warranty should be made to the dealer which originally sold the product and all warranty adjustments must be made through an authorized Land Pride dealer. Land Pride reserves the right to make changes in materials or design of the product at any time without notice.

This Warranty shall not be interpreted to render Land Pride liable for damages of any kind, direct, consequential, or contingent to property. Furthermore, Land Pride shall not be liable for damages resulting from any cause beyond its reasonable control. This Warranty does not extend to loss of crops, any expense or loss for labor, supplies, rental machinery or for any other reason.

No other warranty of any kind whatsoever, express or implied, is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale.

This Warranty is not valid unless registered with Land Pride within 30 days from the date of original purchase.

IMPORTANT: The Online Warranty Registration should be completed by the dealer at the time of purchase. This information is necessary to provide you with quality customer service.

Model Number _____ **Serial Number** _____

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