Grading Box Blade AP-BB3072, AP-BB3084, & AP-BB3096



Kubota

301-635MK Operator's Manual

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.

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.

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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 to 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 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 the attachment.
- ▲ Keep all bystanders away from equipment and work area.
- ▲ Start skid steer from the driver's seat with steering levers and hydraulic controls in neutral.
- ▲ Operate skid steer and controls from the driver's seat only.
- Never dismount from a moving skid steer or leave the skid steer unattended with the engine running.
- ▲ Do not allow anyone to stand between the attachment and 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.
- **A** WARNING: Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

A 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.

Skid Steer 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. Do not remove ignition key at this time.
- ▲ Turn ignition key to the "RUN" position. Relieve all hydraulic pressure by moving both joysticks.
- ▲ Turn ignition key to Off and remove 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.



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.

811

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 person



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

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- ▲ 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.
- Remove all tools and unused parts from the equipment before operation.





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

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 phone.



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 cardboard or wood, 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-protectivestructures (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 against serious injury or death from falling and 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.



Listed below 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.

Handle Chemicals Properly

- Protective clothing should be worn.
- A 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.



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Safety Labels

Your Grading Box Blade 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 with a similar type of straight edge.



838-293C

Warning: Read Operator's Manual - General Warning 1 Place





858-765C Warning: Pinch Point Hazard 4 Places

70589

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838-112C Danger: Pinch Point Hazard 3 Places





844-033C Crushing Hazard - Automatic Machinery Hazard 2 Places





818-339C Warning: High Pressure Fluid Hazard 1 Place 70372

Kubota welcomes you to the growing family of new product owners. This Grading Box Blade 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 AP-BB30 Series Grading Box Blades come in three working widths: 72" (1.83 m), 84" (2.13 m), and 96" (2.44 m). They are designed for attaching to Kubota's 65-95 hp skid steers and track loaders.

Kubota's BB30 Series Grading Box Blades allows users the option of rough or precision grading finishes. Basic grading work can be done in applications requiring a rough grade such as landscaping and initial surface preparation. Precision grading can be accomplished with the addition of a laser system to accurately control site preparation and flat-work operations. This dual-plane grader will automatically lift and tilt as it moves over the ground for precision grading.

See "**Specifications & Capacities**" on page 32 and "**Features & Benefits**" on page 33 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 looking forward in the operator's seat unless otherwise stated.

Owner Assistance

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.

The parts on your Grading Box Blade 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 this implement.

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 correspondences with your Kubota dealer. For location of your serial number plate, see Figure 1.



BB30 Series Serial Number Plate Figure 1

Further Assistance

Your dealer wants you to be satisfied with your new attachment. 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 lpservice@landpride.com

Power Machine Requirements

The Grading Box Blade is designed to attach to skid steers and track loaders within the following requirements:

To avoid serious injury or death:

- Consult your power machine Operator's Manual for operating capacity, lifting capacity, and operating specifications. Exceeding rated capacities and specifications can result in loss of control, roll-over or other serious hazard.
- Power machines outside the listed horsepower range must not be used. Higher horsepower machines can damage the attachment. Under horsepower machines make the job more difficult.
- 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**" on page 35 to determine correct torque values when tightening hardware.

Before You Start

AWARNING

To avoid serious injury or death:

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 failure to read, understand, and follow instructions provided in this manual.

Make sure the intended skid steer or track loader conforms to the "**Power Machine Requirements**" stated above. Read and understand the Operator's Manual for your Grading Box Blade. An understanding of how it works will aid in the assembly and setup of your grading blade.

Go through the "**Pre-Assembly Checklist**" on this page before assembling the Grading Box Blade. Speed up your assembly task and make the job safer by having all needed parts and equipment readily at hand.

Pre-Assembly Checklist

~	Check	Reference								
	Have a forklift or loader with properly sized chain stands capable of lifting and supporting the equi	ns and safety pment on hand.								
	Have a minimum of two people available during	assembly.								
	Make sure all major components and looseOperator'sparts are shipped with the attachment.Manual									
	Double check to make sure all parts, fasteners and pins are installed in the correct location to lessen the chance of using a bolt incorrectly, Refer to the Parts Manual if unsure.	Operator's Manual 301-635MK								
	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.	Parts Manual 301-635PK								
	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 29								
	Make sure all safety labels are correctly located and legible. Replace any label that is damaged or missing.	Page 6								
	Make sure all wheel bolts and axle nuts are tightened to the specified torque.	Page 35								



Sling Brackets Figure 1-1

Sling Brackets

Refer to Figure 1-1:

The sling brackets shown in Figure 1-1 provides chain hook attachment locations when lifting the box blade with an overhead hoist or lifting device. Be sure to use a spreader bar on the chain to keep the chain near vertical and to prevent bending of the sling brackets.



Wire Harness Connections Figure 1-2

Electro-hydraulic Conversion Kit Installation

Refer to Figure 1-2 through Figure 1-4:

The instructions below are for assembling and/or retrofitting the electro-hydraulic conversion kit to your AP-BB30. If your AP-BB30 is equipped with a manualcontrol wire harness, installing this electro-hydraulic conversion kit will simplify the process of connecting an auto-grating system to your Grading Box Blade.



Valve Controller Mount & Valve Controller Assembly Figure 1-3

1. If applicable, disconnect and remove pre-existing wire harness from proportional valve (#9).

IMPORTANT: When installing valve controller (#5), orient so its connector ports are facing downward and protruding tabs are against bracket (#1).

- Refer to Figure 1-3: Secure valve controller (#5) to front side of controller bracket (#1) with two 1/4-20 x 2 1/2 GR5 bolts (#6), two flat washers (#7), and two nylock hex nuts (#8). Tighten hardware to 20 in-lbs (2.3 Nm).
- Secure valve controller bracket (#1) to underside of mounting plate (#2) with two 5/16-18 x 1 GR5 bolts (#3) and lock washers (#4). Tighten bolts to the correct torque.
- 4. **Refer to Figure 1-2:** Connect the four wire harness connectors (#10) to ports (A, B, C, & D) on the lift and tilt solenoids of proportional valve (#9).

NOTE: Identify each wire harness connector (#10) by its colored wire, or by its taped function label.

- 5. Connect gray connector (#12) to port (E) on valve controller (#5).
- 6. Connect black connector (#13) to port (F) on valve controller (#5).

Wire Harness (W/H) Connection Details										
Connector Reference	Function Label	Wire Color	Connector Color	Connect to Port						
(#10)	V UP	Blue	-	А						
	V DOWN	Orange	-	В						
	V CW	Gray	-	С						
	V CCW	Pink	-	D						
(#12)	(#12) -		Gray	E						
(#13)	-	-	Black	F						

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Wire Harness Connections & Routing Figure 1-4

- 7. **Refer to Figure 1-4:** Route main connector (#14) and wire harness (#11) through opening below valve block mount (#19).
- 8. **Refer to Figure 1-5:** Continue routing main connector (#14) and wire harness (#11) through hose loop (#8).
- 9. **Refer to Figure 1-4:** Attach one magnetic cable tie mount (#18) in front of valve controller bracket (#1). Attach the second magnetic mount (#18) to the inside of Grading Box Blade frame. Secure wire harness (#11) to the magnetic cable tie mounts (#18) using the cable-ties provided with this kit.
- Refer to Figure 1-2 on page 10: If needed, this conversion kit includes two terminating resistor connectors (#17) that can be installed to connectors (#15). If they are not needed, store them for safe keeping.
- 11. If an auto-grading system is being used, remove dust cap from connector (#16), then plug connector (#16) into the auto-grading system.
- 12. If connector's (#15 & #16) are not being used, ensure dust caps are properly attached to each connector.



Assembling Couplers to Hydraulic Hoses Figure 1-5

Hydraulic Hoses & Couplings Refer to Figure 1-5:

NOTE: Small flat face couplers (#6 & #7) are standard and come with the kit. Large flat face couplers (#6 & #7) and adapters (#5) must be purchased separately. Refer to the Parts Manual.

NOTE: Hydraulic hose (#1) is attached to the T-port and hose (#2) to the P-port.

- 1. Thread hydraulic hoses (#1, #2, & #10) through hose loop (#8) as shown.
- If shipped loose, screw 1 1/16" MJIC end of in-line check valve (#4) to hydraulic hose (#1) until tight. Flow arrow on check valve should point away from the hydraulic hose.
- 3. Screw 1 1/16" MJIC end of straight adapter (#3) to hydraulic hose (#2) until tight.
- If attaching large flat face couplers, screw adapters (#5) to straight adapter (#3) and check valve (#4) until tight.
- 5. Screw male coupler (#7) to hydraulic hose (#1) and female coupler (#6) to hydraulic hose (#2) until tight.

NOTE: A 3/8" quick disconnect coupler (#9) is included with case drain line (#10). If the power machine is not equipped to receive this coupler, the customer will need to supply any fittings required to complete the connection between the 3/8" MNPT threads on case drain line (#10) and the power machine's sump.

 If using case drain coupler (#9), wrap Teflon tape around the pipe threads on end of hydraulic hose (#10) and screw coupler (#9) to hose (#10) until tight. If coupler (#9) is not used, customer must supply all fittings to complete the connection between the power machine sump and hydraulic hose (#10).



Hitch Hook-up Figure 1-6

Hitch Hook-up

Refer to Figure 1-6:



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.

To avoid serious injury or death:

- Use steps, grab-handles, and anti-slip surfaces on the power machine and attachment to get on and off the power machine. Using unapproved stepping surfaces and/or handholds can result in a falling hazard.
- Check hitch fit-up frequently. An improper fit-up can cause the attachment to come loose from the loader hitch plate and fall.
- Lightweight power machines with a front loader attachment may need weight added to the rear to maintain steering control and prevent forward/side tipping. Consult your power machine Operator's Manual to determine proper weight requirements and maximum limitations.

The Grading Box Blade is designed for attaching to a power machine with a quick attach hitch that meets ISO 24410 standards.

- Check power machine and grading blade hitch plates before hooking-up the grading blade. Make sure all hitch components are in good working condition before putting them into service:
 - a. Check for and remove any debris in the loader and grading blade hitch plates.
 - b. Check for structural cracks in the hitch plates. Repair or replace hitch plates as needed.
 - c. Check hitch components. Repair or replace any part that is excessively worn, bent, broken, or missing.
 - d. Check operation of lock pins in the loader hitch plate. Lock pins must move freely and extend fully into the bottom slots in the grading blade hitch plate.
- 2. If lock mechanism is mechanical, raise lock handles on the loader quick hitch fully up.
- 3. Use anti-slip steps on the grading blade when stepping on and off the power machine.
- 4. Start power machine.
- 5. If lock mechanism is hydraulic, use auxiliary hydraulic controls to raise the lock pins fully up.
- 6. Drive slowly to the grading blade hitch plate making sure the quick attach hitch is parallel with the grading blade's top angle bar.
- 7. Tilt top of loader hitch plate slightly forward.
- 8. Place top of loader's hitch plate under the top angled bar on the grading blade and slowly raise the loader hitch plate up until the loader hitch plate is seated under the top angle bar.
- 9. Tilt top of loader hitch plate back until the grading blade hitch plate makes full contact with the face of the loader hitch plate and the grading blade is slightly off the ground.
- 10. Engage lock mechanism:

Hydraulic Lock Mechanism:

- a. Engage quick hitch locking mechanism hydraulically.
- b. Shut power machine down before dismounting. Follow "Power Machine Shutdown Procedure" on page 21.

Mechanical Lock Mechanism:

- a. Shut power machine down before dismounting. Follow "Power Machine Shutdown Procedure" on page 21.
- b. Push lock handles down to drive lock pins through bottom slots in the hitch plate. Make sure handles lock down.
- 11. Check hitch hook-up to verify it is locked properly.

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Hydraulic Hose Hook-up Figure 1-7

Hydraulic Hook-up

Refer to Figure 1-7:



To avoid serious injury or death:

Make sure the skid steer has been properly shut down and pressure to the hydraulics has been relieved.

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 hydraulic systems. 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.
- Shut power machine down and release all hydraulic pressure to the equipment before connecting or disconnecting hydraulic hoses to or from the power machine.
- Make sure hydraulic hoses are properly routed without twists to prevent 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.

IMPORTANT: Hose routing is the responsibility of the owner/operator. Pinched and/or stretched hoses are not covered under the warranty.

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



Kubota Hose Stay Figure 1-8

NOTE: If attaching to a Kubota skid steer or track loader, route hydraulic hoses through Kubota's Hose Stay as shown in Figure 1-8. Purchase **Hose Stay #S6763** through your nearest Kubota dealer. Refer to your power machine Operator's Manual for more instructions.

- 1. Relieve all hydraulic pressure to auxiliary hydraulic lines.
- 2. Thread hydraulic hoses through hose holder (#8) on the left-hand side of the hitch plate.
- 3. If attaching the grading blade to a Kubota skid steer or track loader, see note under Figure 1-8. Route hoses through hose stay.
- 4. Clean quick disconnect couplers of dirt and connect male and female couplers (#6 & #7) to the power machine high-pressure outlets. Make sure they have fully engaged. If they have not, check the following:
 - Couplers are same size and type.
 - Auxiliary hydraulic pressure to the loader couplers has been released.
- 5. Connect case drain coupler (#9) to the power machine pump outlet. Make sure it is fully engaged.
- 6. Position hydraulic hoses where they do not become stretched, kinked, or pinched. If needed, add zip ties to the hoses to protect them from possible damage.
- 7. For additional help, refer to Hydraulic Hook-up in your power machine Operator's Manual.

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Wire Harness Hook-up to Power Machine Figure 1-9

Wire Harness Hook-up

Refer to Figure 1-9:

Instructions below are for connecting the wire harness to the power machine in use. Refer to the instructions included with the self-leveling mast if hooking-up its electric system.

- If attaching the Grading Box Blade to a Kubota skid steer or track loader, route wire harness (#11) through hose stay shown in Figure 1-8 on page 13.
- 2. Connect wire harness main connector (#14) to the power machine's external 14 pin plug (not shown).



Self-Leveling Mast Mounts Figure 1-10

Laser/2D Mast Mounts (Optional)

Refer to Figure 1-10:

A third party self-leveling laser/2D control system can be attached to the optional masts (#1). Read and follow all instructions included with the laser control system when attaching it and hooking it up.

- 1. Attach mast mounts (#2) to grading blade frame (#4) with 1 1/2"-13 x 1 1/2" GR5 hex flange bolts (#3) and whiz nuts (#5). Tighten bolts to the correct torque.
- 2. Insert masts (#1) into mast mounts (#2). Secure mast with lock washers (#6), wing nuts (#7), and round knobs (#8).
- 3. Hand tighten knobs (#8).
- 4. Hand tighten wing nuts (#7).

GPS/3D Mast Mount

Refer to Figure 1-10:

A third party self-leveling GPS/3D control system can be attached to center mount (#9). Read and follow all instructions included with the system when attaching it and hooking it up.

Check Equipment Clearances

It is important to check clearance before putting the grading blade into operation. Make sure hydraulic hoses and wire harness are long enough and won't become pinched or entangled in the equipment. Make sure the attachment does not come in contact with power machine and tires/tracks by carefully going through its full range of motions.



To avoid serious injury or death:

- Use steps, grab-handles, and anti-slip surfaces on the power machine and attachment to get on and off the power machine. Using unapproved stepping surfaces and/or handholds can result in a falling hazard.
- Check hitch fit-up frequently. An improper fit-up can cause the attachment to come loose from the loader hitch plate and fall.
- 1. Before starting the power machine, check hitch hook-up. The attachment can fall from the loader hitch plate if not properly connected. Make sure:
 - Loader hitch is fully seated under the attachment's top angle bar.
 - Lock handles or hydraulic locks are locked with lock pins fully seated in the bottom slots.
 - There are no structural cracks in the hitch plates. Structural cracks weaken the hitch plate and can result in dropping the attachment.
 - There are no bent plates preventing full and complete hook-up to the loader hitch plate.
- 2. Visually inspect hydraulic hoses for possible pinch points and shortness. If needed, make hose adjustments before putting the attachment into service.
- 3. Visually inspect wire harness for possible pinch points and shortness. If needed, make adjustments to the wire harness before putting the attachment into service.
- 4. If necessary, have someone stand nearby that can motion for the operator to stop if a problem develops while completing steps 5-9 below.

IMPORTANT: Make sure hydraulic hoses and wire harness are long enough and properly secured so that they do not become stretched or pinched through their full range of motions.

5. With the grading blade on the ground, start the power machine and carefully rotate the top of the loader hitch plate fully back while watching hydraulic hoses to make sure they do not become pinched or kinked.

- 6. Carefully raise loader arms up while tilting the top of the hitch fully forward to rotate the front of the grading blade down. Watch hydraulic hoses to make sure they do not stretch, pinch, or kink.
- 7. Continue to raise loader arms fully up and tilting the loader hitch fully forward while watching hydraulic hoses to make sure they do not stretch, pinch, or kink.
- 8. Rotate top of hitch plate back and lower loader arms until the grading blade is resting on the ground.
- Shut power machine down before dismounting. Follow "Power Machine Shutdown Procedure" on page 21.
- 10. Recheck hydraulic hoses. If needed, add zip ties to the hoses to protect them from possible damage.

Section 2: Adjustments





Blade Locks Figure 2-1

Blade Locks

Refer to Figure 2-1:

Blade locks are bolted to center gussets (#6). They prevent the grader blades from rotating up while the blade is traveling backward. Make sure grader blades are locked before adjusting side cutters (#11 & #13).

To avoid serious injury or death:

Make adjustments to the attachment after it has been properly attached to a power machine and secured with solid supports in the up position. Never work around or under equipment supported by hydraulics. Hydraulics can drop equipment instantly if controls are actuated or if hydraulic lines burst even when power to hydraulics is shut off.

Unlocking Blade locks

- 1. Park power machine with attached grader blade on a flat, level surface.
- 2. Raise loader arms up and tilt top of hitch plate forward until grading blade is hanging straight down as shown in Figure 2-1.

- Lower loader arms until grading blade and loader arms are supported against the ground on pivot pin (#1). It may be necessary to slightly turn to the left or right while lowering the grader blade to cause gauge wheels (#2) to flip onto their sides as shown.
- 4. Adjust stroke length of depth cylinder (#10) until parallel arms (#9) are hanging straight down as shown.
- 5. Without changing loader arm height, shut power machine down before dismounting. Follow "**Power Machine Shutdown Procedure**" on page 21.
- 6. Remove flange nuts (#7) and bolts (#4). Blade locks (#5) are welded to mainframe tube (#4).
- Attach removed hardware (#4 & #7) to gussets (#8) for safe keeping or attach flange nuts (#7) to bolts (#4) and store them in an alternate location for safe keeping.
- 8. If storing removed hardware (#4 & #7) attached to gussets (#8), torque flange nuts (#7) to the correct torque for 3/8"-16 GR5 bolts.
- 9. Raise loader arms slightly.

- 10. Fully retract depth cylinder (#10).
- 11. Tilt top of grading blade hitch plate back and lower loader arms until grading blade is resting on its gauge wheels (#10) and loader arms are fully down.
- 12. Shut power machine down before dismounting. Follow "Power Machine Shutdown Procedure" on page 21

Locking Blade locks

Refer to Figure 2-1 on page 16:

- 1. Complete steps 1-5 on page 16.
- 2. Attach blade locks (#5) to center gussets (#6) with existing 3/8"-16 x 4 1/2" GR5 bolts (#4) and flange nuts (#7).
- 3. Tighten flange nuts (#7) to the correct torque.
- 4. Complete steps 9-12 above.



Adjust Side Cutters Figure 2-2

Side Cutters

Refer to Figure 2-2 & Figure 2-3:

- 1. Park power machine with grading blade attached on a level, hard surface.
- 2. Verify blade locks (#5) are locked. Refer to "**Blade** Locks" on page 16.
- 3. Fully retract depth cylinder (#10) to raise grader blades (#15 & #16).
- 4. Lower loader arms until they are against their stops. It may be necessary to tilt top of hitch plate (#17) back to get the loader arms fully down.
- 5. Tilt top of hitch plate (#17) forward until gauge wheels (#2) are resting on the ground. Level (#20) should indicate the unit is level from front to back. If needed, slowly raise loader arms and tilt top of hitch plate forward until gauge wheels are resting on the ground and level (#20) indicates the unit is level.
- 6. Operate tilt cylinders (#18) to level grading blade left to right while using level (#19) to verify unit is level.
- 7. Extend depth cylinder (#10) until the front and rear grader blades (#15 & #16) are touching the hard surface. If needed, adjust loader arms up or down and tilt top of hitch plate forward or backward until both blades are touching the ground and gauge wheels (#2) are resting on the ground.
- 8. Without changing the tilt hitch plate angle or height of loader arms, shut power machine down before dismounting. Follow "**Power Machine Shutdown Procedure**" on page 21.



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Level Grading Box Blade Figure 2-3

- Check side cutters (#11 & #13) to make sure they are resting against the hard surface as shown. Loosen bolts (#12 and/or #14) as needed to raise/lower side cutters. Side cutters (#11 & #13) should not be lower than grader blades (#15 & #16).
- 10. Once all side cutters (#15 & #16) are adjusted to be even with the bottom of grader blades (#15 & #16), tighten bolts (#12 & #14) to the correct torque.

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Parabolic Mirror

Refer to Figure 2-4:

The parabolic mirror (#21) allows the operator to see product collecting and being distributed by the front grader blade. Have a second person adjust the mirror with the operator seated in the power machine to verify when the mirror is adjusted correctly.

- 1. Park power machine with grading blade attached on a level, flat surface.
- 2. Lower loader arms fully down and tilt top of hitch plate forward until gauge wheels (#2) are resting on the ground.
- 3. Extend depth cylinder(#10) shown in Figure 2-2 on page 18 until the blade assembly is resting on the ground.
- 4. Shut power machine down. Follow "**Power Machine Shutdown Procedure**" on page 21.
- 5. Have a second person loosen hand knob (#22) and adjust mirror (#21) up or down as needed for the operator to see product in front the grader blade.
- 6. Hand tighten knob (#22) once the mirror is adjusted.



Parabolic Mirror Figure 2-4

Operating Checklist

Hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training involved in the operation, transport, storage, and maintenance of the Grading Box Blade. Therefore, it is absolutely essential that no one operates the grading blade without first having read, fully understood, and become totally familiar with the Operator's Manual. Make sure the operator has paid particular attention to:

- Important Safety Information, page 1
- Section 1: Assembly & Set-up, page 9
- Section 2: Adjustments, page 16
- Section 3: Operating Instructions, page 20
- Section 4: Maintenance & Lubrication, page 24

Perform the following inspections before using your Grading Box Blade.

Operating Checklist

~	Check	Page
	Make sure all guards and shields are secured in place and in good working condition.	None
	Inspect hydraulic hoses for wear, damage and hydraulic leaks. Replace damaged and worn hoses with genuine Kubota parts.	3
	Check hitch hook-up. Refer to "Hitch Hook-up"	12
	Preform required maintenance. See "Section 4: Maintenance & Lubrication".	24
	Check all grease fittings. to make sure they have been properly lubricated. Refer to "Lubrication".	27
	Check initially and periodically for loose bolts and pins. Refer to "Torque Values Chart".	34

Safety Information

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.
- Make adjustments to the attachment after it has been properly attached to a power machine and secured with solid supports in the up position. Never work around or under equipment supported by hydraulics. Hydraulics can drop equipment instantly if controls are actuated or if hydraulic lines burst even when power to hydraulics is shut off.
- 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.
- 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.

WARNING

To avoid serious injury or death:

- 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 failure to read, understand, and follow instructions provided in this manual.
- Use steps, grab-handles, and anti-slip surfaces on the power machine and attachment to get on and off the power machine. Using unapproved stepping surfaces and/or handholds can result in a falling hazard.
- Make sure controls are all in neutral position or park before starting the power machine.
- This attachment is automated and can move without instructions from the operator. Keep away from the attachment until after the power machine has been shutdown and automatic mode for the guidance system turned off.
- 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.

Section 3: Operating Instructions

- Never make contact with underground utilities such as electrical power lines, gas lines, phone lines, etc. They can cause serious injury or death from electrocution, explosion, or fire. Always call 811 (USA) or local utility companies before digging so that they can mark the location of underground services in the area. For contact information, see Dig Safe in the "Important Safety Information" starting on page 1.
- 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.
- 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.
- 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.
- Check hitch fit-up frequently. An improper fit-up can cause the attachment to come loose from the loader hitch plate and fall.
- 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 hydraulic systems. 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.
- 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.
- Make sure safety labels are installed in their proper location and are in good condition before operating the attachment. Read and obey all instructions on the labels.
- Do not abuse equipment. Incorrect use of the attachment can damage equipment structurally and cause serious injury or death.
- 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, 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.

IMPORTANT: Use grading blade for light grading and leveling only. Do not use unit to move hard surfaces such as rocks, concrete, asphalt, etc.

Power Machine Shutdown Procedure

The following are basic skid steer/track loader shutdown procedures. Follow these procedures and any additional shutdown procedures provided in your power machine Operator's Manual before leaving the operator's seat.

- 1. Reduce engine speed and shut-off all power to the attachment.
- 2. Park on solid, level ground and lower attachment until it is flat on the ground or on non-concrete support blocks.
- 3. Turn off engine. Do not remove ignition key at this time.
- 4. Turn ignition key to the "RUN" position. Relieve all hydraulic pressure by moving both joysticks.
- 5. Turn ignition key off and remove to prevent unauthorized starting.
- 6. If included, raise seat bar and move controls until both lock.
- 7. Wait for all components to come to a complete stop before leaving the operator's seat.
- 8. Use steps, grab-handles and anti-slip surfaces when stepping on and off the skid steer or attachment.

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Transporting



To avoid serious injury or death:

- 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.
- 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.
- Always transport loads low to the ground to maintain stability of the skid steer/tractor.
- 1. Raise grading blade to a safe, low, traveling height that does not block your view.
- 2. Select a safe ground speed when transporting.
- 3. Be sure to reduce ground speed when turning. Leave enough clearance to keep the attachment from making contact with obstacles such as buildings, trees or fences.
- 4. Avoid contacting the ground with the grader blade while transporting.
- 5. Stop power unit before adjusting loader arms or hitch plate tilt.
- 6. Slow down when traveling over rough or hilly terrain.
- 7. When traveling on public roadways, transport in such a way that faster moving vehicles may pass you safely. A slow moving vehicle sign should always be properly displayed when traveling on public roads or right-of ways.
- 8. When transporting the power machine on a trailer:

Refer to Figure 3-1:

- If masts (#1) are installed:
 - 1. Loosen wing nuts (#4) and round knobs (#3).
 - 2. Remove masts (#1) from mast mounts (#2).
 - 3. Tighten wing nuts (#4) against mast mounts (#2) to secure knobs (#3) for transportation.
 - 4. Secure removed mast (#1) for transporting.
- If included, remove 3rd party lasers/GPS system and store for transportation.
- Use towing vehicle and trailer of adequate capacity.
- Always drive up a ramp with heavy end uphill.
- Shut power machine down before dismounting. Follow "**Power Machine Shutdown Procedure**" on page 21.
- Secure power machine and attachment using tie downs and chains.



Remove Lasers and Masts Figure 3-1



Unhook Grading Box Blade Figure 3-2

Unhook Grading Box Blade

Refer to Figure 3-2:

- 1. Park power machine with attachment on a level surface.
- Shut power machine down before dismounting. Follow "Power Machine Shutdown Procedure" on page 21.
- 3. Disconnect hydraulic hoses (#6, #7, & #9). It will be necessary to release hydraulic pressure in the lines before hoses will disconnect from the power machine. Coil hydraulic hoses and store them on the grading blade with hose ends out of the dirt.
- Disconnect main connector (#14) of wire harness (#11) from the power machine. Coil wire harness up and store it on the grading blade with the plug end hanging down to keep moisture and dirt out.
- 5. If lock handles are mechanical, pull lock handles up on the loader hitch plate to remove lock pins from the bottom slots in the attachment's hitch plate.
- 6. Return to the seat and fasten the seat belt.
- 7. Start power machine.
- 8. If lock pins are hydraulic, raise lock pins hydraulically to remove them from the hitch plate slots.
- 9. Tilt loader hitch plate slightly forward until the bottom of the loader hitch plate has separated away from the bottom of the grading blade hitch plate.
- 10. Slowly lower loader arms until the loader hitch plate has separated from the attachment's top angle bars.
- 11. Back power machine slowly away from the grading blade making sure the power machine does not interfere with the attachment's hitch plate, hydraulic hoses, or wire harness.

General Operating Instructions

Once you have familiarized yourself with the Operator's Manual, completed the operations checklist, properly attached your Grading Box Blade to your power machine, and removed the blade locks to allow the trailing grader blade to hinge up, you are almost ready to begin work.

Before you begin work, you should check your work site for any buried utility cables, pipelines, or other obstacles that you would not want to damage or encounter.

The grading blade's primary purpose is light grading and leveling only. Do not use the grading blade to move hard surfaces. This function is best done at an approximate 2 to 4 mph ground speed. Simply lower the grader blade to the ground and proceed forward. The grader blade should immediately begin shaving the soil surface and accumulating dirt or aggregate material in the box. You can transfer this material by dragging it to a nearby location and then raising the grader blade to deposit your load. You can also achieve uniform distribution and leveling of scraped material by setting the grader blade to shave off high spots allowing accumulated material to flow out under the grader blade in the low spots.

The Grading Box Scraper is ideal for leveling, and finish grading applications for contractors, rental houses, landscapers, and maintenance operations on lanes and private roadways. With the addition of a third party laser/2D or GPS/3D attachment control system, operators can achieve level grade in a fraction of the time eliminating operator fatigue and saving money on fill and concrete. Whether hooking up the laser leveling system to the optional mast or attaching the GPS leveling system to the center mast mount, be sure to read and follow all instructions included with the system.

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 a very good operator and consistently achieve the desired results you expect with your Kubota Grading Box Blade.

See **"Specifications & Capacities"** on page 32 and **"Features & Benefits"** on page 33 for additional information and performance enhancing options.

Maintenance

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

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.
- *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.*
- 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.

WARNING

To avoid serious injury or death:

- Make sure controls are all in neutral position or park before starting the power machine.
- Always shut power machine down using the "Shutdown Procedure" provided in this manual before servicing, adjusting, cleaning, or maintaining the attachment.
- Allow only persons to perform maintenance on this attachment who have been properly trained in the safe operation of this attachment.
- 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.
- 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.
- Check hitch fit-up frequently. An improper fit-up can cause the attachment to come loose from the loader hitch plate and fall.
- Frequently check all hardware to make certain it is tight and not broke or missing. Operating with loose pins, bolts, or nuts can cause attachment to not perform properly and may result in a serious breakdown that can cause bodily injury or death.
- Check hydraulic hoses and fittings frequently for leaks or damage. Fluid escaping under pressure can penetrate skin. Large leaks can drop the attachment.

- Lubricate, make adjustments and repairs in a safe area away from traffic and other hazards.
- 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.

Grader Blade Maintenance

Refer to Figure 4-1 on page 25:

The grader blades (#2) have two cutting edges. When the bottom cutting edge wears even with blade holder (#3), rotate the blade upside down to extend its life. Replace grader blades when both edges are wore out.

- 1. Park power machine with grading blade attached on a level, hard surface.
- 2. Fully retract depth cylinder (#8) shown in Figure 2-2 on page 18 to raise grader blades (#2) fully up.
- Shut power machine down before dismounting. Follow "Power Machine Shutdown Procedure" on page 21.
- 4. Place a jack stand (#5) under the blade assembly to prevent the assembly from falling.
- 5. Select front or rear grader blade (#2) to remove. Remove all whiz nuts (#4) and plow bolts (#1) from that blade except for the nut and bolt on both ends of the blade.
- 6. At one end, loosen whiz nut (#4). At the opposite end, remove whiz nut (#4), plow bolt (#1), and lower that end of the blade to the ground.
- 7. At the opposite end, remove remaining nut (#4), plow bolt (#1), and lower that end of the blade to the ground.
- 8. Inspect whiz nuts (#4) and plow bolts (#1). Replace hardware as needed.
- 9. If the top edge of the blade is good, rotate the top edge to the bottom. Replace the grader blade if both cutting edges are worn even with blade holder (#3).
- 10. At one end, attach rotated or new grader blade (#2) to blade holder (#3) as shown with plow bolt (#1) and whiz nut (#4). Draw whiz nut up snug, do not tighten.
- 11. Attach opposite end of blade (#2) to blade holder (#3) with whiz nut (#4) and plow bolt (#1). Draw whiz nut up snug, do not tighten.
- 12. Add remaining whiz nuts (#4) and plow bolts (#1) to grader blade (#2).
- 13. Tighten all whiz nuts (#4) to the correct torque for a 5/8"-11 GR5 bolt.
- 14. If needed, repeat steps 5-13 for the remaining grader blade (#2).
- 15. Remove jack stand (#5).



Grader Blade Maintenance Figure 4-1

- Start power machine and extend depth cylinder (#8) shown in Figure 2-2 on page 18 until grader blades (#2) are resting on the ground.
- 17. Shut power machine down before dismounting. Follow "**Power Machine Shutdown Procedure**" on page 21.



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Side Cutter Maintenance Figure 4-2

Side Cutter Maintenance

Refer to Figure 4-2:

Side cutters (#1 & #2) have two cutting edges. When the cutting edge can not be adjusted down rotate side cutter upside down to extend its life. Replace side cutters when both edges are wore out.

- 1. Park power machine with grading blade attached on a level, hard surface.
- 2. Fully retract depth cylinder(#8) shown in Figure 2-2 on page 18 to raise grader assembly fully up.
- Shut power machine down before dismounting. Follow "Power Machine Shutdown Procedure" on page 21.
- 4. Place a jack stand (#6) under the blade assembly to prevent the assembly from falling.
- 5. Remove flange nuts (#4), plow bolts (#3), and side cutters (#1 & #2).
- 6. Inspect flange nuts (#4) and plow bolts (#3). Replace hardware as needed.
- 7. If the top edge of the side cutter is good, rotate the top edge to the bottom. Replace the side cutter if both edges cannot be adjusted down.
- 8. Attach rotated or new side cutters (#1 & #2) to side plate (#5) as shown with plow bolts (#3) and flange nuts (#4). Draw flange nuts up snug, do not tighten.
- 9. Remove jack stand (#6).
- 10. Adjust side cutters to the correct height. Refer to "Side Cutters" on page 18.

Section 4: Maintenance & Lubrication

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End Panel Maintenance

Refer to Figure 4-3:

End panels (#1) can be replaced easily if worn or damaged. If replacing end panels, be sure to replace and install danger decal (#5), part #838-112c.

To avoid minor or moderate injury: The end panel can fall once all the locknuts are removed. Place support blocks or jack stands under both ends of the panel. Have a second person help remove and install the panel.

- 1. Park power machine with grading blade attached on a level, hard surface.
- 2. Fully retract depth cylinder(#8) shown in Figure 2-2 on page 18 to raise grader assembly fully up.
- Shut power machine down before dismounting. Follow "Power Machine Shutdown Procedure" on page 21.
- 4. Place a jack stand (#6) under the blade assembly mainframe (#4) to prevent the assembly from falling.
- 5. Remove side cutters from the end panels. Refer to "Side Cutter Maintenance" on page 25.
- 6. Place support blocks under both ends of end panel (#1).
- 7. Have a second person hold the panel in an upright position while the first person removes locknuts (#3) and bolts (#2).
- 8. With the help of the second person, lift the panel off the support blocks and place it in a location where it cannot fall on children.
- 9. Have the second person help set the new end panel (#1) on the support blocks and steady the panel in the upright position while the first person attaches the panel to grader frame (#4) with bolts (#2) and locknuts (#3).
- 10. Tighten locknuts (#3) to the correct torque for a 3/8"-16 GR5 bolt.
- 11. Remove support blocks from under the end panel and jack stand (#6) from under the blade assembly mainframe (#4).
- Start power machine and extend depth cylinder (#8 shown in Figure 2-2 on page 18) until grader blades are resting on the ground.
- Shut power machine down before dismounting. Follow "Power Machine Shutdown Procedure" on page 21.



End Panel Figure 4-3

Section 4: Maintenance & Lubrication

New Nylon Wear Pad Figure 4-4

Nylon Wear Pads

Refer to Figure 4-4:

The Grading Box Blade hitch plate (#6) has two nylon wear pads (#4) bolted to it that contain lubricating properties. The pads will wear over time and shims will need to be removed so that the pads remain in contact with tilt plate (#5).

- 1. On the right-hand side, remove all six flanged bolts (#1) and set them aside.
- 2. Remove clamp (#2) with nylon pad (#4) attached to it and set aside.
- 3. Remove shim or shims (#3) so that when clamp (#2) is re-assembled, nylon pad (#4) is in contact with tilt plate (#5) without play.

Refer to Figure 4-5:

NOTE: Removing too many shims (#3) may create too much clamp force and prevent tilt plate (#5) from rotating. Repeat steps 1-7 until rotating the tilt plate can be easily accomplished using tilt cylinders (#8) shown in Figure 1-9 on page 14. A good rule of thumb is, measure the amount of wear on the nylon pad and add shims (#3A) to the front of clamp (#2) equal to the measured thickness.

- 4. Assemble the removed shim or shims (#3A) in front of clamp (#2). All shims must be used or flanged bolts (#2) will bottom out.
- 5. Re-assemble clamp (#2) and shims (#3 & #3A) to hitch plate (#6) with six 5/8"-18 GR5 bolts (#1).
- 6. Tighten bolts (#1) to the correct torque.
- 7. Repeat steps 1-6 on the left-hand side of hitch plate (#6).



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Used Nylon Wear Pad Figure 4-5

Long-Term Storage

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.

To avoid serious injury or death:

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.

WARNING

To avoid serious injury or death:

- Always shut power machine down following the "Shutdown Procedure" provided in this manual before leaving the operator's station.
- 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.
- 1. Clean off any dirt and grease that may have accumulated on the attachment and then wash surface thoroughly with a garden hose.
- 2. Check side cutters, grader blades, end panels, and nylon wear pads for wear. Reverse or replace side cutters and grader blades as needed. Replace end panels when needed. Adjust shims if nylon pads have a gap.
- 3. Inspect the Grading Box Blade for parts out of adjustment, loose, worn, or damaged.
 - Make required adjustments.
 - Tighten all loose hardware.
 - Replace damaged and worn parts as needed.
- 4. 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.

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

- 5. Replace all damaged or missing decals.
- 6. Lubricate as noted in "Lubrication Points" on page 29.
- 7. A light coat of oil or grease may be applied to the exposed grader blades, side cutters, end panels, and any exposed hydraulic cylinder rods to minimize oxidation.
- 8. Store Grading Box Blade on a level surface in a clean, dry place. Inside storage will reduce maintenance and make for a longer Grading Box Blade life.



Lubrication Points







Gauge Wheel Axles

2- Zerks (One zerk per gauge wheel.)

Type of Lubrication: Multi-Purpose Grease Quantity: Add grease until grease begins to emerge.





Gauge Wheel Spindle

2- Zerks (One zerk per gauge wheel.)Type of Lubrication: Multi-Purpose GreaseQuantity: Add grease until grease begins to emerge.





Gauge Wheel Axle Pivot Pin

1- Zerk

Type of Lubrication: Multi-Purpose Grease Quantity: Add grease until grease begins to emerge.

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Base End of Lift Cylinder



Rod End of Lift Cylinder



Blade Lift Pins

8- Zerks (Four zerks per side. Right side shown.)

Type of Lubrication: Multi-Purpose Grease Quantity: Add grease until grease begins to emerge.



Lift Cylinder Pivot Pins

2 - Zerks (One at each end of the cylinder.)

Type of Lubrication: Multi-Purpose Grease Quantity: Add grease until grease begins to emerge.

Section 4: Maintenance & Lubrication







Tilt Cylinder Pivot Pins (Base End)

2 - Zerks (One at the base end of each cylinder.)

Type of Lubrication: Multi-Purpose Grease Quantity: Add grease until grease begins to emerge.



Tilt Cylinder Pivot Pins (Rod End)

2 - Zerks (One at the rod end of each cylinder.)

Type of Lubrication: Multi-Purpose Grease Quantity: Add grease until grease begins to emerge.







Blade Tilt Pin

2 - Zerks

Type of Lubrication: Multi-Purpose Grease Quantity: Add grease until grease begins to emerge.



Blade Pivot Rods

10 - Zerks

Type of Lubrication: Multi-Purpose Grease Quantity: Add grease until grease begins to emerge.

Section 5: Specifications & Capacities



BB30 Series Grading Box Blade

Specifications & Capacities										
Model Numbers	Units	BB3072	BB3084	BB3096						
Working width	inches (cm)	72 (183)	84 (213)	96 (244)						
Weight without mast	lbs (kg)	1,755 (796)	1,755 (796) 1,836 (833) 1,917 (870)							
Weight of mast	lbs (kg)	64 (29) 64 (29) 64 (29)								
Upper frame cross tube	inches (cm)	4 x 6 (10 x 15)								
Lower frame cross tube	inches (cm)		2 x 4 (5 x 10)							
A-frame tubes	inches (cm)		4 x 4 (10 x 10)							
Blade lift pin diameter	inches (cm)	1 (2.5)								
Blade tilt pin diameter	inches (cm)	3 (7.6)								
Blade tilt angle adjustment		Tilts up to 15 degrees down left and 15 degrees down right.								
Blade height adjustment		Adjusts from 5" (13.	7 cm) above grade to 3"	(7.6 cm) below grade						
Grader blade	inches (cm)	Reversible	and replaceable, 1/2 x 6	(1.3 x 15.2)						
Reversible side cutters	inches (cm)		1/2 (1.3) thick							
Tires	inches	F	Foam-filled turf 18 x 8.5 x	10						
Hydraulic Maximum flow Maximum pressure	gpm (Lpm) psi (mPa)	25 (94.6) 3500 (24.1)								
Cylinder control valve			Pilot controlled							
Floating blades			Front and rear							





BB30 Series Grading Box Blade

Features	Benefits
Bi-directional with hinged cutting edges	Allows the operator to grade while traveling forward or backward. Hinged cutting edges allow the trailing cutting edge to ride on top of the soil and not dig into the ground.
Floating front axle	Allows both gauge wheels to be in contact with the ground at all times keeping the load distributed equally between the two wheels.
Reversible and replaceable side cutters.	Side cutters are constructed of abrasion-resistant AR400 steel, can be reversed to increase their wear life, and are replaceable when worn out. They protect the end panels from high wear.
Bolt-on and adjustable side cutters	Side cutters can be adjusted down as they wear.
Replaceable end panels	End panels are made of grade 50 material and can be replaced should they become damaged or worn out.
Optional masts for receiving third party laser technology	See "Supports third part laser/2D" below
Plug and play valve controller	Simplifies the process of connecting an auto-grating system to the AP-BB30.
Supports third party laser/2D or GPS/3D control system	Tilt and height control can be automated resulting in precision accuracy. Level grade can be achieved in a fraction of the time eliminating operator fatigue and saving money in fill and concrete.
Lift/tilt motions kept constant with parallel links	Parallel links keep the blade angle to the soil consistent throughout the blade's range of motion.
Foam-filled turf tires	Tires won't go flat.



Troubleshooting Chart

Problem	Cause	Solution			
Attachment's hitch plate moves on the loader hitch plate.	Hitch plate is not properly hooked to the loader's hitch plate.	Reattach Grading Box Blade to the loader's hitch plate. Always make certain the attachment is properly hooked before lifting the unit off the ground.			
Cut into electrical, gas, water, and/or cable lines.	Not locating utility lines before grading.	Call Dig Safe (811). Have utility companies flag location of underground utilities before grading.			
Grader blade does not cut into the ground.	Cutting edge has worn even with bottom of blade mount.	Turn existing grader blade upside down or replace with a new grader blade.			
Hydraulic hoses are stretched and/or damaged.	Hydraulic hoses are catching on tree limbs, debris, or other solid objects.	Replace hydraulic fittings. Stay away from objects that can catch hydraulic hoses. Stop immediately if hoses are being caught and remove object catching the hoses.			
	Hoses are too short.	Make longer hoses.			
Hydraulic fittings are damaged.	Hydraulic hoses are catching on tree limbs, debris, or other solid objects causing fittings to be damaged.	Replace hydraulic fittings. Stay away from objects that can catch hydraulic hoses. Stop immediately if hoses are being caught and remove object catching the hoses.			
Hydraulic lift and tilt cylinders	Wire harness connections are loose.	Reconnect all wire harness connections. Refer to Figure 1-2and its corresponding wire harness table on page 10 for guidance.			
	Wires in wire harness are broken or chewed through by rodents.	Replace or repair broken or damaged wire harness.			
Hydraulic lift cylinder operates backwards.	Connectors at the lift solenoid are hooked up backwards.	Refer to Figure 1-2, and its corresponding			
Hydraulic tilt cylinder operates backwards.	Connectors at the tilt solenoid are hooked up backwards.	wire harness connections for proper hook-up.			
Side cutters do not cut into the ground.	Bottom of cutting edge has worn and need adjusted down.	Adjust side cutters down. If out of adjustment, turn side cutters upside down or replace with a new side cutters.			
	Wire harness is not hooked up correctly.				
Third party laser or GPS control	Third party control system is not adjusted correctly.	Refer to the laser or GPS Operator's Manual Seek help from the dealer supplying the lase			
system is not operating	Third party control system is damaged.	-			
correctly.	Variance in the ground elevation is too great causing the receivers to go below or above the laser beam.	Rough-out the area being worked without the lasers. Switch to the lasers to finish the job.			

Torque Values Chart for Common Bolt Sizes														
Bolt Head Identification										Boli	t Head I	dentific	ation	
		\neg									\frown \frown			
)	4	$\mathbf{\cdot}$. ₹,	(プロ)			5	.8	8 🖌	.8	10	0.9
Bolt Size	Gra	de 2	Gra	_Y de 5	Gra	V de 8		Bolt Size (Metric)	Clas	 /	Clas		Clas	 s 10 9
in-tni ¹	N . m ²	ft-lh ³	N.m	ft-lh	N.m	ft-lb	Ī	mm x pitch ⁴	N.m	ft-lh	N.m	ft-lh	N.m	ft-lb
1/4" - 20	74	5.6	11	8	16	12	ŀ	M5X08	4	3	6	5	9	7
1/4" - 28	8.5	6	13	10	18	14	ŀ	M 6 X 1	7	5	11	8	15	11
5/16" - 18	15	11	24	17	33	25	F	M 8 X 1 25	17	12	26	19	36	27
5/16" - 24	17	13	26	19	37	27	ŀ	M 8 X 1	18	13	28	21	39	29
3/8" - 16	27	20	42	31	59	44	Ē	M10 X 1 5	33	24	52	39	72	53
3/8" - 24	31	22	47	35	67	49		M10 X 0.75	39	29	61	45	85	62
7/16" - 14	43	32	67	49	95	70	Ī	M12 X 1.75	58	42	91	67	125	93
7/16" - 20	49	36	75	55	105	78	Ī	M12 X 1.5	60	44	95	70	130	97
1/2" - 13	66	49	105	76	145	105	Ī	M12 X 1	90	66	105	77	145	105
1/2" - 20	75	55	115	85	165	120	Ī	M14 X 2	92	68	145	105	200	150
9/16" - 12	95	70	150	110	210	155	Ī	M14 X 1.5	99	73	155	115	215	160
9/16" - 18	105	79	165	120	235	170	Ī	M16 X 2	145	105	225	165	315	230
5/8" - 11	130	97	205	150	285	210	Ī	M16 X 1.5	155	115	240	180	335	245
5/8" - 18	150	110	230	170	325	240	Ī	M18 X 2.5	195	145	310	230	405	300
3/4" - 10	235	170	360	265	510	375	Ī	M18 X 1.5	220	165	350	260	485	355
3/4" - 16	260	190	405	295	570	420	Ī	M20 X 2.5	280	205	440	325	610	450
7/8" - 9	225	165	585	430	820	605	Ī	M20 X 1.5	310	230	650	480	900	665
7/8" - 14	250	185	640	475	905	670		M24 X 3	480	355	760	560	1050	780
1" - 8	340	250	875	645	1230	910	ſ	M24 X 2	525	390	830	610	1150	845
1" - 12	370	275	955	705	1350	995		M30 X 3.5	960	705	1510	1120	2100	1550
1-1/8" - 7	480	355	1080	795	1750	1290		M30 X 2	1060	785	1680	1240	2320	1710
1-1/8" - 12	540	395	1210	890	1960	1440		M36 X 3.5	1730	1270	2650	1950	3660	2700
1-1/4" - 7	680	500	1520	1120	2460	1820		M36 X 2	1880	1380	2960	2190	4100	3220
1-1/4" - 12	750	555	1680	1240	2730	2010		¹ in-tpi = nomir	nal threa	d diame	eter in in	ches-thr	eads pe	r inch
1-3/8" - 6	890	655	1990	1470	3230	2380		² N· m = newto	n-meters	5				
1-3/8" - 12	1010	745	2270	1670	3680	2710		³ ft-lb= foot pou	unds					
1-1/2" - 6	1180	870	2640	1950	4290	3160		4 mm x pitch =	nomina	thread	diamete	r in milli	meters x	thread
1-1/2" - 12	1330	980	2970	2190	4820	3560		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)														



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.

Grader Blades, Side Cutters, End Panels, & Wear Pads: Considered wear items.

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 such as blades, belts, tines, etc. 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 Kubota dealer. Kubota 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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