

OPERATOR'S MANUAL

Bedknife Grinder

BG1500



FRONTIER EQUIPMENT™

This book consists of three manuals:

The OPERATORS MANUAL in ENGLISH which contains all the information on operating and doing routine daily maintenance on this equipment.

The ASSEMBLY and SERVICE MANUAL which is used by the maintenance department to install the equipment and to do all maintenance except routine daily maintenance.

The OPERATORS MANUAL in SPANISH which is the same as the English version only translated into Spanish.

DEALER PREPARATION/INSTALLATION CHECK LIST

Frontier BG1500 Bedknife Grinder

THIS CHECKLIST IS TO REMAIN IN OWNER'S MANUAL

It is the responsibility of the dealer to complete the procedures listed below, then review this checklist with the customer upon the delivery or the sale of this equipment. The installation training goes over the basic operational functions of the equipment. To ensure adequate training, we require that the following items are reviewed by your John Deere Dealer. Please check off to ensure that you understand the following items before the installation training is complete:

- | | |
|--|--|
| <input type="checkbox"/> 1. Equipment is completely assembled | <input type="checkbox"/> 7. Review proper positioning of bedknife |
| <input type="checkbox"/> 2. All shields are in place and in good condition. | <input type="checkbox"/> 8. Review traverse proximity switch positioning |
| <input type="checkbox"/> 3. All decals in place and readable. | <input type="checkbox"/> 9. Explain use of setup flags |
| <input type="checkbox"/> 4. Overall condition good (i.e. paint, welds, electrical) | <input type="checkbox"/> 10. Explain grinding wheel height adjustment. |
| <input type="checkbox"/> 5. Verify there is sufficient electrical power to operate the machine. | <input type="checkbox"/> 11. Discuss grinder flood coolant system. |
| <input type="checkbox"/> 6. Review Operators, Assembly & Service Manuals, and any additional training material if available. | <input type="checkbox"/> 12. Review cleaning/dressing the wheel |
| | <input type="checkbox"/> 13. Review General Maintenance |

Dealer's Signature _____

Purchaser's Signature _____

Safety



IMPORTANT SAFETY MESSAGE FOR OWNERS/OPERATORS OF BEDKNIFE GRINDERS



Safety is a primary concern in the design, manufacture, sale, and use of bedknife grinders. As manufacturer of bedknife grinders, we want to confirm to you, our customers, our concern for safety. We also want to remind you about the simple, basic, and common sense rules of safety when using a bedknife grinder. Failure to follow these rules can result in severe injury or death to operators or bystanders.

It is essential that everyone involved in the assembly, operation, transport, maintenance, and storage of this equipment be aware, concerned, prudent, and properly trained in safety. Always use proper shielding as specified by the manufacturer.

Our current production machines include, as standard equipment, guards or shields for the grinding wheel, safety signs and an operators manuals. Never bypass or operate the machine with any of the guards or safety device removed.

Read and fully understand all the safety practices discussed on pages 4 and 5 of this manual. All safety rules must be understood and followed by anyone who works with bedknife grinders.

Before operating a bedknife grinder, an operator must read and understand all of the information in the owner's manual and in the safety signs attached to the product. A person who has not read or understood the owner's manual and safety signs is not qualified to operate the unit. Accidents occur often on machines that are used by someone who has not read the owner's manual and is not familiar with the equipment. If you do not have an owner's manual or current production safety signs, contact the manufacturer or your dealer immediately.

Bedknife grinders are designed for one-man operation. Never operate the grinder with anyone near, or in contact with, any part of the grinder. Be sure no one else, including bystanders, are near you when you operate this product.

Following these simple, basic safety rules, as well as others identified in the owner's manual and in product safety signs, will help minimize the possibility of accidents and increase your productivity in using this product. Be careful and make sure that everyone who operates the grinder knows and understands that it is a very powerful piece of machinery, and if used improperly, serious injury or death may result. The final responsibility for safety rests with the operator of this machine.

TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the John Deere dealer. Read manual instructions and safety rules. Make sure all items on the Preparation Check List in the Operator's Manual are completed before releasing equipment to the owner.

TO THE OWNER:

Read this manual before operating your Frontier equipment. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all adjustments and operating procedures before attempting to operate the equipment. Replacement manuals can be obtained from your selling dealer.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Please observe all safety information in this manual and safety decals on the equipment.

For service, your authorized John Deere dealer has trained mechanics, genuine Frontier service parts, and the necessary tools and equipment to handle all of your service needs.

Use only genuine Frontier service parts.

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The full manual is available for immediate download.

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SAFETY INSTRUCTIONS



Safety Awareness Symbols are inserted into this manual to alert you to possible **Safety Hazards**. Whenever you see these symbols, follow their instructions.



The **Warning Symbol** identifies special instructions or procedures which, if not correctly followed, could result in personal injury.

The **Caution Symbol** identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

1. **KEEP GUARDS IN PLACE** and in working order.
2. **REMOVE WRENCHES AND OTHER TOOLS.**
3. **KEEP WORK AREA CLEAN.**
4. **DON'T USE IN DANGEROUS ENVIRONMENT.** Don't use Grinder in damp or wet locations. Machine is for indoor use only. Keep work area well lit.
5. **KEEP ALL VISITORS AWAY.** All visitors should be kept a safe distance from work area.
6. **MAKE WORK AREA CHILD-PROOF** with padlocks or master switches.
7. **DON'T FORCE THE GRINDER.** It will do the job better and safer if used as specified in this manual.
8. **USE THE RIGHT TOOL.** Don't force the Grinder or an attachment to do a job for which it was not designed.
9. **WEAR PROPER APPAREL.** Wear no loose clothing, gloves, neckties, or jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.
10. **ALWAYS USE SAFETY GLASSES.**
11. **SECURE YOUR WORK.** Make certain that the bedknife is securely fastened with the mounts provided before operating.
12. **DON'T OVERREACH.** Keep proper footing and balance at all times.
13. **MAINTAIN GRINDER WITH CARE.** Follow instructions in service section of the Manual for lubrication and preventive maintenance.
14. **DISCONNECT POWER BEFORE SERVICING,** or when changing the grinding wheel.
15. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure all switches are OFF before plugging in the Grinder.
16. **USE RECOMMENDED ACCESSORIES.** Consult the manual for recommended accessories. Using improper accessories may cause risk of personal injury.
17. **CHECK DAMAGED PARTS.** A guard or other part that is damaged or will not perform its intended function should be properly repaired or replaced.
18. **NEVER LEAVE GRINDER RUNNING UNATTENDED. TURN POWER OFF.** Do not leave grinder until it comes to a complete stop.
19. **KNOW YOUR EQUIPMENT.** Read this manual carefully. Learn its application and limitations as well as specific potential hazards.
20. **KEEP ALL SAFETY DECALS CLEAN AND LEGIBLE.** If safety decals become damaged or illegible for any reason, replace immediately. Refer to replacement parts illustrations in this Manual for the proper location and part numbers of safety decals.
21. **DO NOT OPERATE THE GRINDER WHEN UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION.**

SAFETY INSTRUCTIONS



IMPROPER USE OF GRINDING WHEEL MAY CAUSE BREAKAGE AND SERIOUS INJURY.



Grinding is a safe operation if the few basic rules listed below are followed. These rules are based on material contained in the ANSI B7.1 Safety Code for "Use, Care and Protection of Abrasive Wheels". For your safety, we suggest you benefit from the experience of others and carefully follow these rules.

DO

1. **DO** always **HANDLE AND STORE** wheels in a **CAREFUL** manner.
2. **DO VISUALLY INSPECT** all wheels before mounting for possible damage.
3. **DO CHECK MACHINE SPEED** against the established maximum safe operating speed marked on wheel.
4. **DO CHECK MOUNTING FLANGES** for equal and correct diameter.
5. **DO USE MOUNTING BLOTTERS** when supplied with wheels.
6. **DO** be sure **WORK REST** is properly adjusted.
7. **DO** always **USE A SAFETY GUARD COVERING** at least one-half of the grinding wheel.
8. **DO** allow **NEWLY MOUNTED WHEELS** to run at operating speed, with guard in place, for at least one minute before grinding.
9. **DO** always **WEAR SAFETY GLASSES** or some type of eye protection when grinding.
10. **DO TURN OFF COOLANT** before stopping to avoid creating an out of balance condition.

DON'T

1. **DON'T** use a cracked wheel or one that **HAS BEEN DROPPED** or has become damaged.
2. **DON'T FORCE** a wheel onto the machine **OR ALTER** the size of the mounting hole - if the wheel won't fit the machine, get one that will.
3. **DON'T** ever **EXCEED MAXIMUM OPERATING SPEED** established for the wheel.
4. **DON'T** use mounting flanges on which the bearing surfaces **ARE NOT CLEAN, FLAT AND FREE OF BURNS**.
5. **DON'T TIGHTEN** the mounting nut excessively.
6. **DON'T** grind on the **SIDE OF THE WHEEL** (see Safety Code B7.2 for exception).
7. **DON'T** start the machine until the **WHEEL GUARD IS IN PLACE**.
8. **DON'T JAM** work into the wheel.
9. **DON'T STAND DIRECTLY IN FRONT** of a grinding wheel whenever a grinder is started.
10. **DON'T FORCE GRINDING** so that motor slows noticeably or work gets hot.



AVOID INHALATION OF DUST generated by grinding and cutting operations. Exposure to dust may cause respiratory ailments. Use approved NIOSH or MSHA respirators, safety glasses or face shields, and protective clothing. Provide adequate ventilation to eliminate dust, or to maintain dust level below the Threshold Limit Value for nuisance dust as classified by OSHA.

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This machine is intended for reel mower bedknife grinding **ONLY**. Any use other than this may cause personal injury and void the warranty.



To assure the quality and safety of your machine and to maintain the warranty, you **MUST** use original equipment manufacturer's replacement parts and have any repair work done by a qualified professional.



ALL operators of this equipment must be thoroughly trained **BEFORE** operating the equipment.

Do not use compressed air to clean grinding dust from the machine. This dust can cause personal injury as well as damage to the grinder. Machine is for indoor use only. Do not use a power washer to clean the machine.



Low Voltage Relay

The grinder is equipped with a high-low voltage relay which is factory preset at 100-140 VAC. If the power supply line does not deliver 100-140 VAC power under load, the relay will open and trip out the starter. If this occurs, your power supply line is incorrect and must be correct before proceeding further with the grinder.

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DAILY MAINTENANCE BY THE OPERATOR

- On a daily basis, clean the machine by wiping it off.
- On a daily basis, remove all grinding grit from the traverse shafts and tooling bar area.
- On a daily basis, check coolant tray fluid level. Fluid must be above the sump.
- On a daily basis, inspect the machine for loose fasteners or components.
- Contact your company's Maintenance Department if damaged or defective parts are found.



DO NOT USE COMPRESSED AIR TO CLEAN GRINDING DUST FROM GRINDER.

SAFETY INSTRUCTIONS

PLEASE TAKE SPECIAL NOTE OF THE FOLLOWING WARNING DECALS LOCATED ON THE FRONT AND SIDES OF THE GRINDER.

GRINDING WHEEL RPM

⚠ CAUTION	⚠ ATENCIÓN
To Avoid Injury: -Do not exceed grinding wheel maximum operating speed of 3600 revolutions per minute.	Para evitar lesiones: -No exceda la velocidad de funcionamiento máxima, de 3600 revoluciones por minuto, de la rueda rectificadora.

SHARP OBJECTS

⚠ CAUTION		⚠ ATENCIÓN
To Avoid Injury: -Keep hands away from rotating objects		Para evitar lesiones: -Mantenga las manos alejadas de los objetos giratorios

ELECTRICITY

⚠ CAUTION

To Avoid Injury: -Make sure all electrical power to this machine has been disconnected before removing any electrical panels or covers for maintenance.
⚠ ATENCIÓN
Para evitar lesiones: -Asegúrese de que se haya desconectado por completo el suministro eléctrico de esta máquina antes de retirar los paneles eléctricos o las cubiertas para el mantenimiento.

GENERAL INFORMATION

⚠ CAUTION
To Avoid Injury: -Read Operator's Manual before operating, servicing, or repairing equipment. Follow all safety rules and instructions. (Manuals are available from your selling dealer.) -Keep bystanders away from equipment during operation. Keep all shields in place and in good condition. -Wear all of the appropriate safety equipment specified in the Operator's Manual while operating this machine. -Always make sure machine is off and all machine movement has stopped before leaving machine. -Never allow children or untrained persons to operate equipment.
⚠ ATENCIÓN
Para evitar lesiones: -Lea el manual del operador antes de la puesta en funcionamiento, del mantenimiento o de la reparación del equipo. Siga todas las reglas e instrucciones de seguridad. (Los manuales se encuentran disponibles a través de su distribuidor.) -Mantenga al personal ajeno alejado del equipo durante el funcionamiento. Mantenga todos los protectores en su lugar y en buenas condiciones. -Durante el funcionamiento de esta máquina, utilice todos los equipos de seguridad correspondientes especificados en el manual del operador. -Asegúrese siempre de que la máquina se encuentre apagada y haya dejado de moverse antes de abandonarla. -Nunca permita que un niño o una persona sin capacitación pongan la máquina en funcionamiento.



BG1500

Label Sheet
(English and Spanish)
Part Number 5NT127300
(English and French)
Part Number 5NT127301

GETTING TO KNOW YOUR GRINDER



SPECIFICATIONS

Traversing Switches	Solid state, non-contacting proximity switches.
Overall Width	61" [155 cm]
Overall Height	58" [148 cm] with door closed, 81" [206 cm] with door open
Overall Depth	32" [82 cm]
Weight	750 lbs. [340 kg] shipping weight 935 lbs. [424 kg]
Base Construction	Precision heavy duty reinforced welded steel base
Carriage Rails	Precision Ground, Hardened Steel - 1.000 Dia. [25.4 mm]
Grind Head Motor	3/4HP AC Motor, 3450 RPM
Sound Level	Less than 75 Dba,
Auto Traverse	Belt driven with easy to engage clamp system
Tooling	Magnetic Mount for Bed Knife with addition center supports
Coolant	Built in flood coolant system.
Control System	*Safety grind motor with door interrupt switches *Variable speed traverse control.

GETTING TO KNOW YOUR GRINDER

CONTROL PANEL COMPONENT IDENTIFICATION FOR THE BG1500

Learn the function of each switch and knob on the control panel. As you read and learn about each knob you are encouraged to turn that knob on and view that particular operation. See FIG. 1.



ALWAYS WEAR PROPER SAFETY EYEWEAR WHEN OPERATING YOUR GRINDER. NEVER TURN ON YOUR GRINDER WITHOUT FIRST PUTTING ON SAFETY EYEWEAR.

EMERGENCY STOP PUSHBUTTON

Push in to cut all power to the control panel functions. This removes power from all motors, including the grinding motor, coolant pump, traverse motor, etc. To restore power, pull up on button and press the Start button. The large button design allows a quick stop of all power in an emergency situation.

SYSTEM START PUSHBUTTON

The green pushbutton is the system start switch. Pushing it will engage the magnetic starter and power the control panel. The magnetic starter will not engage unless the emergency stop pushbutton is pulled out and the grinding motor switch is turned off.

GRIND MOTOR SWITCH

The grind motor switch turns the Grinding Wheel Motor on and off.

COOLANT PUMP SWITCH

The coolant pump switch turns the coolant pump on and off. There is also a valve on the side of the grinding head to control the amount of the flow.

TRAVERSE MOTOR SWITCH

The travel motor switch turns the traverse motor on and off. It controls the side to side movement of the carriage and grinding head.

TRAVERSE SPEED CONTROL POTENTIOMETER

This control knob sets the speed of traverse for the grinding carriage. When turned on to minimum, the carriage will stop. When turned to the maximum, the carriage moves back and forth at full speed. When learning to use this machine, it is a good idea to set this speed at minimum, start the other functions, then slowly increase the speed to observe that your operation and set up are correct.

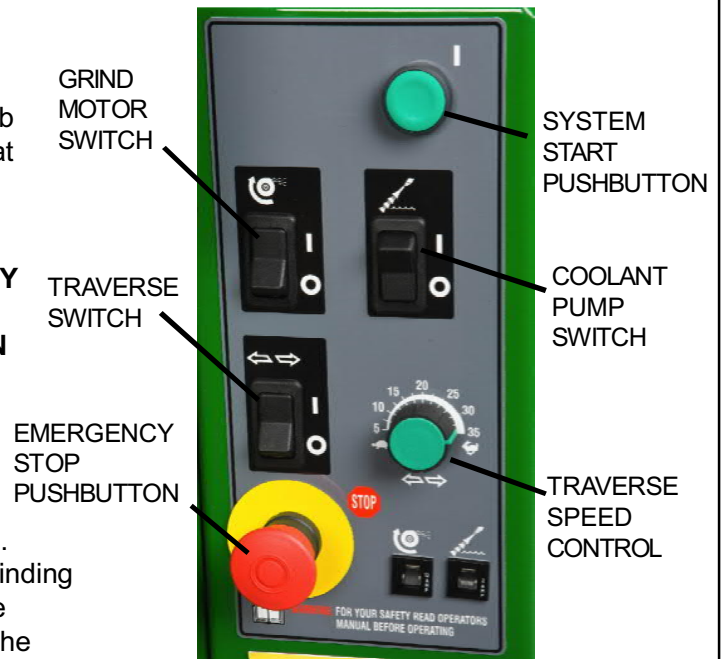


FIG. 1

GETTING TO KNOW YOUR GRINDER (CONTINUED)

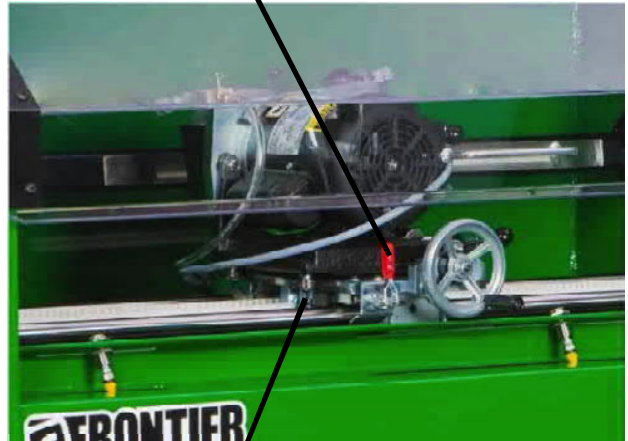
TRAVERSE ENGAGEMENT AND RELEASE

The belt that drives the carriage left and right can be engaged and released by rotating the red clamp handle located on the front, left of the carriage. Moving the lever to the up position will engage the belt and rotating it down will disengage the belt. The clamp tip can be adjusted if necessary to increase or decrease the tension on the belt. See adjustments in the service manual for more details.



IF NECESSARY, THE BELT CLAMP TIP MUST BE ADJUSTED AS SPECIFIED IN THE SERVICE MANUAL. IF THE CLAMP IS OVERTIGHTENED, THE BELT MAY NOT SLIP WHICH MAY CAUSE DAMAGE TO THE MACHINE OR BEDKIFE.

TRAVERSE ENGAGEMENT LEVER
(UP TO ENGAGE BELT, DOWN TO DISENGAGE)

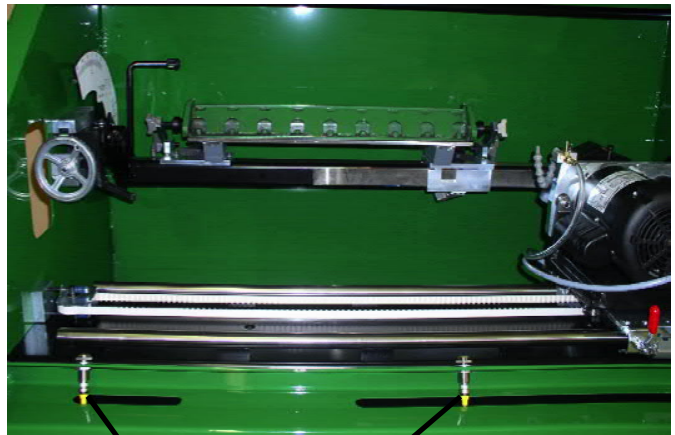


BELT CLAMP TIP

FIG. 2

TRAVERSE PROXIMITY SWITCHES

Two movable switches determine the left and right limits of carriage traverse. See FIG 3. An LED on the switch lights when the switch actuator bracket on the bottom of the carriage gets close to the head of the switch. Note, there should be a 3/16 gap between the proximity switch head and the traverse actuator bracket.



TRAVERSE PROXIMITY SWITCHES

FIG. 3

COOLANT SYSTEM

Coolant Nozzle

Directs a stream of coolant onto the bedknife and grinding wheel. For precise aiming, the nozzle and connecting tubing are completely flexible.

NOTE: The connecting tube can be shortened by removing segments as desired

Coolant Flow Valve

Controls the volume of coolant flowing to the nozzle. Use only enough flow to cool the bedknife. Excess flow will cause excess splashing - and **won't** improve performance.

FLEXIBLE TUBE AND NOZZLE

FLOW VALVE



FIG. 4

GETTING TO KNOW YOUR GRINDER (CONTINUED)

GRINDING HEAD

Vertical Eccentric Adjustment and Lock
 Moves the grinding head up and down.

Horizontal Handwheel
 Moves the grinding head infeed in and out.

Horizontal Adjustment Scale
 Calibrated in .002 in [.05mm] increments, so you can accurately move the grinding wheel in for each pass across the face of the bedknife.

Wheel Guard Lock Screws
 A T-knob holds the guard in position. Loosen it to pivot the guard when the guard interferes with the bedbar.

Diamond Wheel Dresser
 Allows you to dress the grinding wheel. Cleaning and dressing the grinding wheel improves the quality of the grind.

WHEEL GUARD LOCK SCREW VERTICAL CAM LEVER

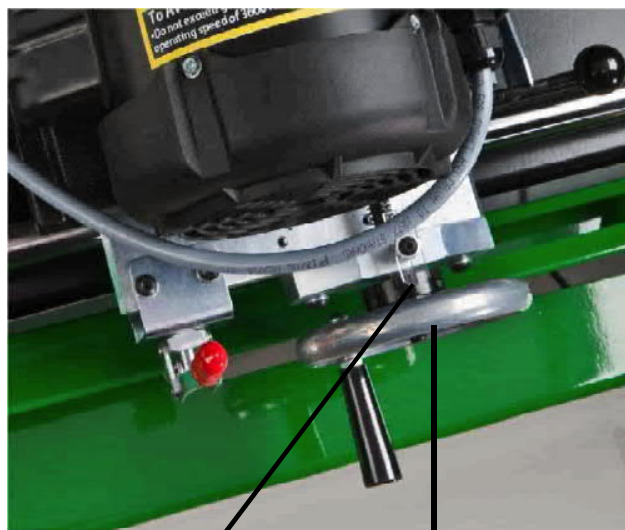


VERTICAL ADJUSTMENT
 LOCK LEVER

FIG. 5
 DIAMOND DRESSER



THE DIAMOND DRESSER SHOULD ONLY BE USED WITH A VITRIFIED GRINDING WHEELS. THIS GRINDER IS SHIPPED WITH A BORAZON GRINDING WHEEL AND A CLEANING BRICK. DO NOT USE THE BUILT IN DIAMOND DRESSER ON THE BORAZON WHEEL!



HORIZONTAL ADJUSTMENT
 SCALE

HANDWHEEL
 HORIZONTAL ADJUSTMENT

FIG. 6

GETTING TO KNOW YOUR GRINDER (CONTINUED)

FIXED BEDKNIFE SUPPORT (LEFT SIDE)

The bedknife and bedbar is held in position by two magnets and centers. The left side magnet and center position is fixed. See Fig 7.

ADJUSTABLE BEDKNIFE SUPPORT (RIGHT SIDE)

The right side magnet and center is adjustable to match the width of the bedknife. See Fig 8

LOCK KNOB (ON BACK OF RIGHT HAD ADJUSTABLE SUPPORT)

Locks the right magnet and center assembly in position on the tooling bar slide. See Fig 8

- ! **WHEN TIGHTENING THE ADJUSTABLE BEDKNIFE SUPPORT, CHECK TO SEE THAT IT IS TIGHT TO THE MACHINED SURFACES OF THE TOOLING BAR.**

BEDKNIFE SETUP GAUGE

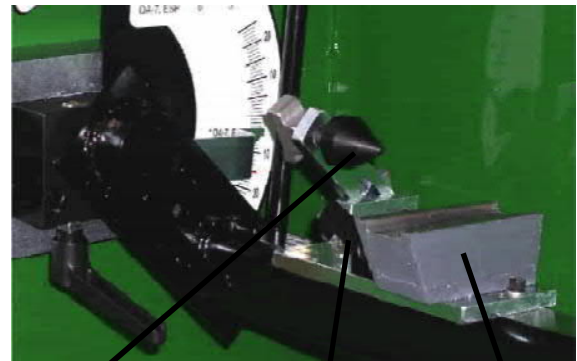
On the outside of each magnet is a retractable bedknife setup gauge. These gauges are used to help align the bedknife to the grinding wheel carriage travel. Operation of the gauges will be explained in the operations section of this manual. See Fig 7 & 8

TOOLING BAR ADJUSTMENT HANDWHEEL

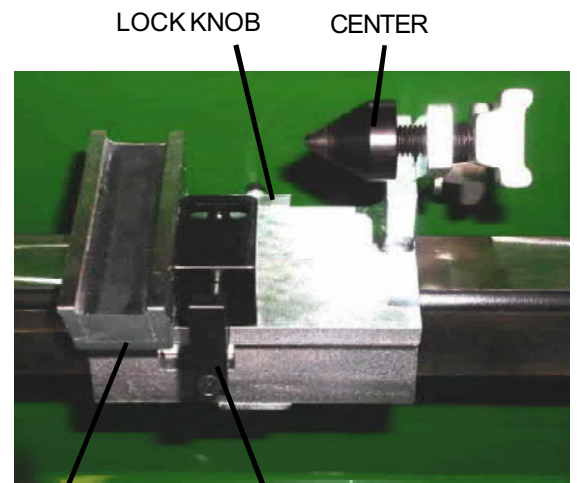
The tooling bar adjustment handwheel moves the tooling bar horizontally. The handwheel is used to align the the tooling assembly and bedknife to the grinding head. This will ensures maximum life of the bedknife. See Fig 9

TOOLING ROTATION

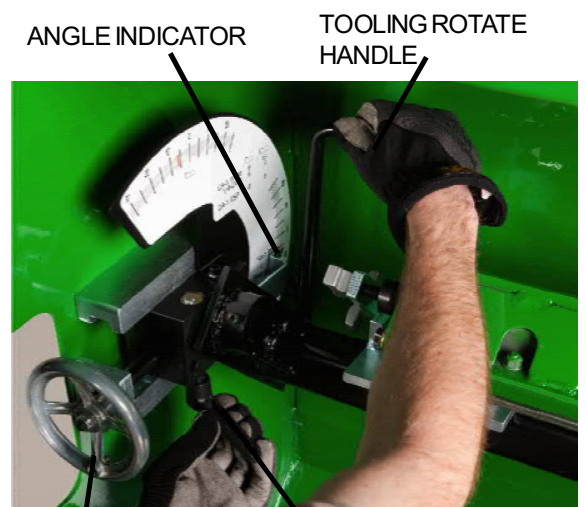
To achieve the recommended bedknife angles, the BG1500 bedknife grinder has a rotatable tooling bar with an angle indicator and lock handle. See Fig. 9 To rotate to a new angle or to rotate from the front face to top face, grasp the tooling rotate handle and then loosen the tooling bar rotate lock handle. Manually rotate to the desired angle as indicated on the decal and tighten the lock handle.



CENTERS
BEDKNIFE SETUP GAUGE (RETRACTED)
MAGNET
FIG. 7



MAGNET
BEDKNIFE SETUP GAUGE (UP POSITION)
FIG. 8



ANGLE INDICATOR
TOOLING ROTATE HANDLE
TOOLING BAR ADJUSTMENT HANDWHEEL
TOOLING BAR ROTATE LOCK HANDLE
FIG. 9

OPERATING INSTRUCTIONS

WHEN TO SHARPEN THE BEDKNIFE

When the grass is not being cut cleanly, or the cut ends of the grass appear torn or ragged, the edges of the reel blade and bedknife have become rounded and need sharpening. See FIG. 10A. The purpose of sharpening is to restore the sharp edges to the reel and bedknife.

IMPORTANT: To fully sharpen a reel mower, you need to grind the reel blades (using a Reel Grinder) **and** reshape the cutting edge of the bedknife.

NOTE: New bedknives should be ground before being put into use. New bedknives deform and move to match the shape of the bedbar at the time of installation and therefore **MUST** be ground to a straight surface after installation.

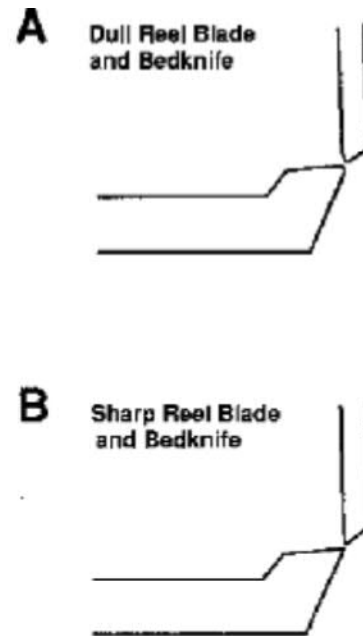


FIG. 10

BEDKNIFE GRINDING ANGLES

The bedknife has two faces that normally need to be ground, the top face and the front face (on some models, the front face may be curved and may not need grinding).

The proper grinding angles for the two faces will vary depending on the model. **Always follow the manufacturer's recommended specifications for bedknife angles.**

Typical Bedknife angles:

- There will be a +4 to -10 degrees clearance angle ground on the top face. The angle is **usually** measured relative to the bedknife mounting surface. See FIG. 11A.
- There will be a 0-30 degrees clearance angle ground on the front face. The angle is **usually** measured relative to a line **perpendicular** to the bedknife mounting surface. See FIG. 11B.

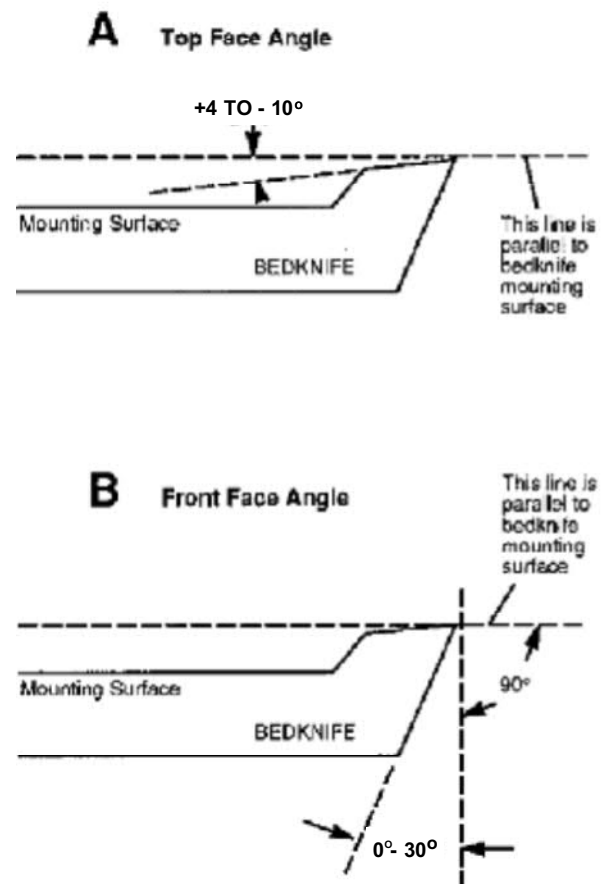


FIG. 11

TERMS:

Bedknife - the stationary blade in a reel mower.

Bedknife Support or bedbar - the bedknife is mounted to this frame member with screws or rivets.

Top Face - the horizontal, ground surface of the bedknife.

Front Relief Angle - the angle between vertical and the manufacturer's recommended sharpening angle.

Top Relief Angle - the angle between horizontal and the manufacturer's recommended sharpening angle.

Recommended Face & Top Angles

If your model is not listed, consult your John Deere manual for the recommended sharpening angles.

John Deere Bedknife Grind Angles

Used on	Description	Part Number	Standard On	Front Face Grind Angle	Top Grind Angle
220A/B/C WGM All 22" QA5 All 22" Standard/Medium	22" Standard	ET17533	2500B 11-blade; 2500E 11-blade; 220C; 220 E-Cut; 7500 11-blade; 7500 E-Cut 11-blade; 8500 11-blade; 8500 E-Cut 11-blade	15	6
	22" Tournament	ET17534		15	6
	22" Fairway, Lo-Cut	ET17532		15	6
	22" Fairway, Hi-Cut	ET17767	2500B 7-blade; 2500E 7-blade; 7500 7-blade; 7500 E-Cut 7-blade; 8500 7-blade; 8500 E-Cut 7-blade	5	6
	22" Low Cut	MT7351		15	6
	3.0 mm w/ Hardened Insert	ET11066		15	6
180A/B/C WGM All 18" QA5	2.5 mm Tournament	MT4846	180C	15	6
	18" Low Cut	MT7350	8000 E-Cut 11-blade	15	6
	18" Fairway	TCU25299	8000 E-Cut 7-blade	15	6
260B/C WGM	26" Standard	MT6947	260C	15	6
	26" Fairway	MT6946		15	6
All 22" QA7 All 22" ESP	22" Standard	ET17751	7700 8-blade; 8700 8-blade	5	6
	22" Tournament/Low-Cut Fairway	MT1928	7700 10-blade; 8700 10-blade	5	6
	22" Tournament/ Ultra Low-Cut	MT3983		5	6
All 26" QA7 All 26" ESP	26" Standard	ET17752	2653B, 7200	5	6
	26" Tournament	MT6949		5	6
All 30" QA7 and ESP	30" Standard	MT1973	2653B; 7200	5	6
30" ESP for 365 30" ESP for 1905	10 mm	ET16755		5	6
	13 mm	ET16756		5	6
MKI/MK2 BEAVER UNITS	10 mm	MT1117		5	6
	13 mm	MT1118		5	6

OPERATING INSTRUCTIONS (CONTINUED)

MOUNTING A GRINDING WHEEL

To replace the grinding wheel: See FIG. 12.

1. First, turn the power off by pushing in the Emergency Stop button.
2. Use the grinding wheel wrench supplied with the grinder to unscrew the mounting flange that holds the grinding wheel,.

! THE LOCK FLANGE HAS A LEFT HANDED THREAD, HOLD THE WHEEL AND TURN THE WRENCH CLOCKWISE WHILE LOOKING AT THE LOCK FLANGE TO LOOSEN.

3. Remove the old wheel and install the new one.
4. Screw on the flange finger tight, then tighten approximately 1/8 turn further with the wrench. The flange will self-tighten when motor is turned on.



FIG. 12



**(VITRIFIED GRINDING WHEELS)
IF THE WHEEL FLANGE IS OVERTIGHTENED, THE GRINDING WHEEL MAY CRACK AND FLY APART.**

5. (VITRIFIED GRINDING WHEELS)
After you install a new or different wheel, it is recommended that you dress it before grinding. Dressing trues the grinding surface of the wheel and removes the hard glaze sometime remaining from the manufacturing process. Dressing the wheel properly prepares the wheel for grinding.

GRINDING WHEELS AVAILABLE FOR BG1500 BEDKNIFE GRINDER

WHEEL PART NO.	COLOR/DESCRIPTION/SIZE	GRIT	
5NT3700060	White/red (ruby) flare-cup wheel 6/3-1/4 x 2 0.627 inch bore, vitrified ruby	60	
5NT3700062	White flare-cup wheel, 6/ 3-1/4 x 2 0.627 inch bore, vitrified	46	
5NT3700268	White/red (ruby) straight-cup wheel, 6 x 2 x 0.627 inch bore, vitrified ruby	60	
5NT3700411	White straight-cup wheel, 6 x 2 x 1.25 inch bore, vitrified	46	
5NT3700670	Borazon straight - cup wheel, 6 x 1-1/2 x 0.625 inch bore	60	
5NT3700696	Borazon straight-cup wheel, 6 x 1-1/2 x 0.625 inch bore	120	Standard Grinding Wheel

OPERATING INSTRUCTIONS (CONTINUED)

DRESSING/CLEANING THE GRINDING WHEEL

Clean or dress the grinding wheel whenever there is any glazing. Glazing is the buildup of stone dust, grinding grit, and coolant on the face of the wheel. For best results with a vitrified wheel, also dress the wheel before making the final grind.



REFER ALSO TO THE "SAFETY RULES WHEN GRINDING" ON PAGE 3.

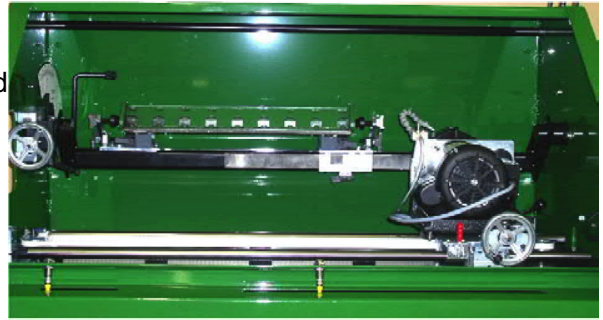


FIG. 13

For cleaning or dressing, always move the grinding head to the right hand side of the machine (FIG. 13) so you are clear of the bedknife.

CLEANING A BORAZON GRINDING WHEEL

Do not use the built in diamond dresser on the Borazon grinding wheel. If the Borazon wheel is not grinding effectively use the cleaning stick to recondition the wheel. To use the cleaning stick, thoroughly soak the stick in water. Turn on the grinding motor if not already on. Once the motor is at full speed, turn off the motor. As soon as the power is turned off, press the cleaning stick STRAIGHT into the grinding surface of the wheel until the wheel skids to a stop. Repeat this procedure if necessary until the wheel is grinding effectively.



DO NOT MOVE THE CLEANING STICK SIDWAYS. MOVING THE CLEANING STICK SIDWAYS WILL ERRODE THE BONDING MATERIAL ON THE SIDES OF THE GRINDING PARTICALS. THIS WILL GREATLY DRECREASE THE LIFE OF THE WHEEL.

DRESSING A VITRIFIED GRINDING WHEEL

With the wheel turning, lift the dresser movement arm off its holder and push it forward. Swing the dresser around to the grinding face of the wheel and turn the adjuster ring until the diamond point **JUST** touches the wheel. See FIG. 16. If the dresser is adjusted too far into the wheel, the area supporting the diamond will be ground and the diamond may come loose. Rotate the diamond tip dresser across the full width of the wheel two times. When done, rotate the handle clockwise against the lock bracket before pulling back and replace the dresser movement arm in the holder. See FIG. 15.



NOTE: Excessive dressing will shorten the life of the wheel. Too little dressing will inhibit proper grinding.

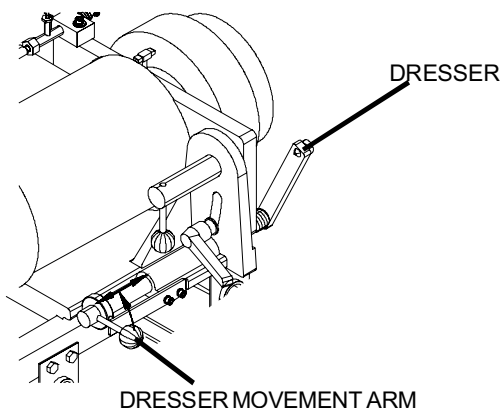


FIG. 15 Dresser locked

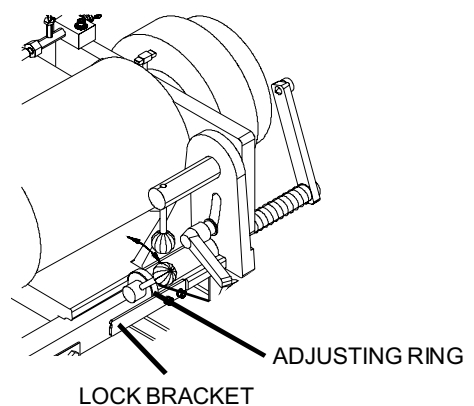


FIG. 16 Dresser unlocked

Replacing the Wheel

BORAZON WHEEL - There is approximately 1/8 " [3.2 mm] of grinding material on the end of the wheel. When there is minimal grinding material remaining the wheel should be replaced.

VITRIFIED WHEEL - A new vitrified grinding wheel is 2" [51 mm] deep. When it wears down to a depth of 0.75" [19 mm], it should be replaced. See FIG. 17.

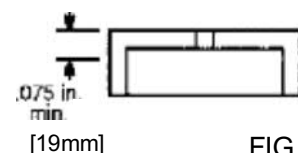


FIG. 17

OPERATING INSTRUCTIONS (CONTINUED)

USING FLOOD COOLANT

For quality grinding, we highly recommend using flood coolant to prevent heat buildup on the knife edge.

! IF YOU DRY-GRIND, NEVER ALLOW THE BEDKNIFE EDGE TO CHANGE COLOR OR YOU MAY LOSE THE TEMPER IN THE KNIFE EDGE.

ALWAYS READ THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THE COOLANT YOU ARE USING. BELOW ARE WARNINGS THAT APPLY TO MOST COOLANTS.

AVOID CONTACT OF COOLANT WITH EYES: IT WILL CAUSE EYE IRRITATION. WEAR FACE SHIELD OR GOGGLES WHEN HANDLING CONCENTRATE. IN CASE OF CONTACT, FLUSH EYES WITH WATER FOR 15 MINUTES AND CONTACT A PHYSICIAN.

AVOID BREATHING MIST. PROVIDE LOCAL VENTILATION. KEEP CONCENTRATED BOTTLE CLOSED WHEN NOT IN USE.

CONTINUED CONTACT OF CONCENTRATE ON SKIN MAY CAUSE IRRITATION. WASH WITH SOAP AND WATER AFTER CONTACT.

DO NOT TAKE INTERNALLY. IF INGESTED, CONSULT PHYSICIAN AND DO NOT INDUCE VOMITING.

(HAZARD POTENTIAL APPLIES TO CONCENTRATE, AND IS LESS AT NORMAL USE DILUTION.)

Mixing the Coolant

Mix Part No. 5NTBG1509002 coolant at a ratio of 50 parts water to 1 part concentrate. Refer also to the label on the coolant container. If the coolant tray is empty, this will take about 6.5 gallons of water and one pint of concentrate [24.6 liters of water, and 0.5 liter of concentrate].

! THE COOLANT RATIO AS SPECIFIED MUST BE USED. TOO HIGH A CONCENTRATION OR LOW A CONCENTRATION WILL CAUSE CORROSION AND PERFORMANCE PROBLEMS.

• USE OF COOLANT OTHER THAN FACTORY SUPPLIED COOLANT CONCENTRATE IS NOT RECOMMENDED. ALTERNATIVE COOLANT CONCENTRATES MAY CAUSE CORROSION, GUMMING, OR GRINDING PROBLEMS.

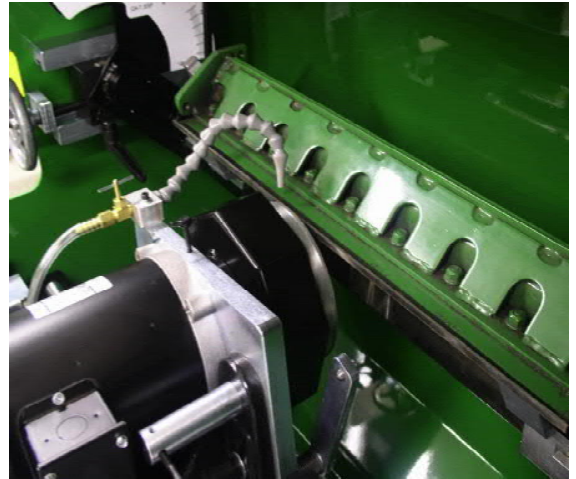


FIG. 18



FIG. 19

Using the Coolant

Direct the nozzle so the coolant sprays onto the bedknife face being ground. FIG. 18 or 19. Some coolant will then also be deflected onto the grinding wheel. Adjust the flow valve so there is a steady stream of coolant. Avoid a stronger flow than needed, excessive coolant doesn't cool more, and increases splattering.

Fluid Level in Coolant Tank

Check the fluid level in the Coolant tray daily to avoid running out while grinding. Keep the coolant level between .25 - .50 inches [6-12 mm] above the top of the coolant sump. The pump inlet must **always** be completely submerged in water. Never add plain water to the coolant when the level is low. Always add water and concentrate in the correct proportions. It is recommended to pre-mix coolant and water in a separate container for this purpose.



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OPERATING INSTRUCTIONS (CONTINUED)

MOUNTING A BEDKNIFE FOR GRINDING

Inspect and Clean the Bedknife

Inspect the bedknife for damage (cracks, warping, bushing wear, excessive bedknife wear). Replace or repair if necessary, see the mowing unit manufacturer's manual. Thoroughly clean the bedknife, especially on the bottom where the magnets will attach.

It is recommended that you thoroughly wire brush the bottom of the bedknife before mounting.

Prepare the Machine for Mounting the Bedknife

Position the grinding head all the way to the right, then move the grinding wheel back (away from the magnets) to gain clearance for the bedknife. Pivot the tooling assembly to the horizontal position (Front face grinding position) and set the bedknife angle to 0 front face angle. Always wipe any grindings, dirt, etc. from the magnets and the tooling bar right side slide area before mounting the bedknife.

USING A FLARE CUP WHEEL FOR ADDED CLEARANCE

The shape of some bed bars requires using an **optional** flare-cup grinding wheel to clear the end supports. See FIG. 20.

Flare-cup wheels can be ordered in several 6" [150 mm] diameter versions. For most applications, the 6" borazon straight cupped wheel is used. However, if the end mounting flanges of the bedknife are more than 2" [50 mm] high or near the front face of the knife, you may need the optional 6" flared cup wheel.

For Part Numbers and descriptions of available grinding wheels, refer to the Grinding Wheels list on Page 15.

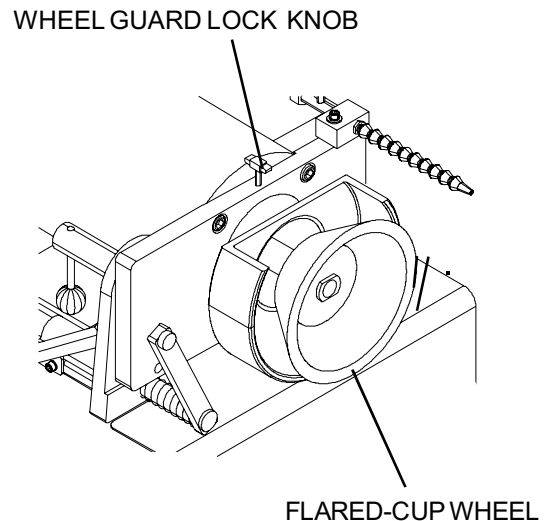


FIG. 20

ROTATING THE WHEEL GUARD

Some bedknives and bedbars have mounting ears so close to the bedknife top face that there is no clearance for the wheel guard. For these applications, generally a flared cup grinding wheel should be used and the grinding wheel guard can be loosened and rotated so the clearance area of the guard allows the bedknife to be ground without interference. When completed, **ALWAYS** reposition the guard to its normal position with the clearance notch down. See FIG. 20



FOR OPERATOR SAFETY, THE GRINDING WHEEL GUARD MUST BE USED WITH THE CLEARANCE AREA UP ONLY WHEN REQUIRED FOR BEDBAR CLEARANCE.

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