FOLEY COMPANY

661AT BEDKNIFE GRINDER

THIS BOOK CONSISTS OF TWO MANUALS:

The OPERATOR'S MANUAL, which contains all the information to install, operate, and perform daily maintenance on this equipment.

The SERVICE MANUAL, which is used by the maintenance department to do all maintenance except routine daily maintenance.

FOLEY COMPANY

We are committed to:

Providing superior customer support, training, and service.

Manufacturing the highest quality products at an unequaled value.

Setting the industry standard by investing in technological product innovation.

Manufacturing products specifically designed to maintain original equipment manufacturers' specifications.

Interacting with and supporting all original equipment manufacturers.

FOLEY COMPANY

661AT BEDKNIFE GRINDER

OPERATOR'S MANUAL

⚠ WARNING

You must thoroughly read and understand all manuals before operating the equipment, paying particular attention to the Warning & Safety instructions.

27551 (02-22)

IMPORTANT SAFETY MESSAGE

This manual will cover the installation and operation of this Bedknife Grinder, there is an additional manual that addresses the service of this equipment. As manufacturers of 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 reel 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 and personal protective equipment as specified by the manufacturer.

Our current production machines include, as standard equipment, guards or shields for the grinding wheel, safety signs and operators and service manuals. Never bypass or operate the machine with any of the guards or safety devices removed or without the proper personal safety equipment.

Read and fully understand all the safety practices discussed in this manual. All safety rules must be understood and followed by anyone who works with this grinders.

Before operating this grinder, the operator must read and understand all of the information in the operators manual and understand all the safety signs attached to the product. A person who has not read or understood the operators 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 operators manual and is not familiar with the equipment. If you do not have an operators 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:
Find and understand all safety signs in the operators manual and on the equipment. This 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.

THROUGHOUT THIS MANUAL, THE FOLLOWING SAFETY SYMBOLS WILL BE USED TO INDICATE THE DEGREE OF CERTAIN HAZARDS.

This symbol is used throughout this manaul to call attention to the safety procedures.

⚠ DANGER

The word DANGER indicates an immediate hazardous situation, which if not avoided, will result in death or serious injury.

⚠ WARNING

The word WARNING indicates a potential hazardous situation, which if not avoided, could result in death or serious injury.

⚠ CAUTION

The word CAUTION preceeded with a safety alert symbol indicates a potential hazardous situation which, if not avoided, may result in minor or moderate injury.

TABLE OF CONTENTS

Read this manual before operating this 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 or the manufacturer.

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 and clean the unit as specified. Please observe all safety information in this manual and safety decals on the equipment.

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 manufactures 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.

SAFETY INSTRUCTIONS

- ORIGINAL INSTRUCTIONS -

SPECIFICATIONS

POWER REQUIREMENT:
115 Volts, 50/60 Hz, 15 Amps
DIMENSIONS:
61” (155 cm) wide x 32” (82 cm) deep x 81” (206 cm) high, 750 lbs. (340 kg)
SHIPPING DIMENSIONS:
74” (188 cm) wide x 41” (104 cm) deep x 68” (173 cm) high, 935 lbs. (424 kg) 119.4 cubic feet (3.4 cubic meters)

<u>OPERATING CONDITIONS:</u>	THIS MACHINE IS INTENDED FOR INDOOR USE ONLY.
AMBIENT TEMPERATURE:	+5°C/ 40°F to +40°C/ 100°F
RELATIVE HUMIDITY:	50% RH, +40°C / 100°F.
	Higher RH may be allowed at lower temperatures.
	- no condensation must be present.
ALTITUDE:	up to 1000m/ 3280 ft. above mean sea level.
TRANSPORTATION AND STORAGE:	-25°C/-15°F to +55°C / 130°F

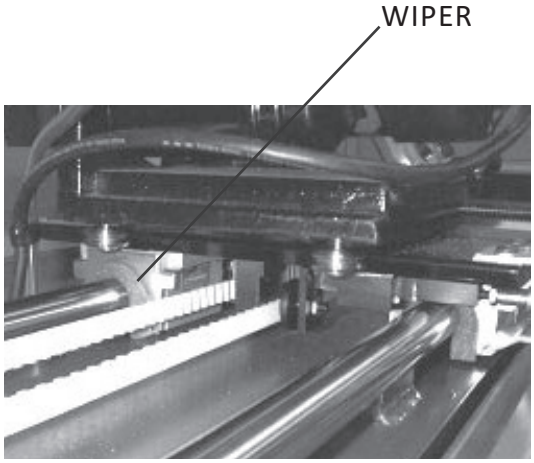
Means must be provided to prevent damage from humidity, vibration and shock.

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.

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

⚠ CAUTION



OPERATOR MAINTENANCE

Daily:

- Clean the grinder by wiping all areas down.

- Check coolant tray fluid level

- Inspect all guarding and warning labels to ensure they are in good working condition.

- Inspect the grinder for loose fasteners or components and tighten.

Weekly:

- loosen the right hand moveable magnet and move the magnet through its full range of travel.

Periodically:

- Clean the Traverse Rails by wiping down with CRC 3-36 or equivalent on a weekly basis.

- Replace the four foam rail wipers every 6 months of operation.

- Clean the interior of the Coolant Tray as necessary (every 6 months to a year).

- Check the brushes on the auto traverse drive motor once every 36 months. Replace as necessary.

Contact your company's Maintenance Department if damaged or defective parts are found.

SAFETY INSTRUCTIONS

- ORIGINAL INSTRUCTIONS -

⚠ WARNING **TO AVOID INJURY, READ AND UNDERSTAND THE SAFETY ITEMS LISTED BELOW. IF YOU DO NOT UNDERSTAND ANY PART OF THIS MANUAL AND NEED ASSISTANCE, CONTACT YOUR LOCAL DEALER OR THE MANUFACTURER.**

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 the Grinder in damp or wet locations. Machine is for indoor use only. Keep the work area well lit.

5. **KEEP ALL VISITORS AWAY.** All visitors should be kept a safe distance from the work area.

6. **MAKE THE 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. Wear respirator or filter mask where appropriate. Wear protective gloves.

10. **ALWAYS USE SAFETY GLASSES.**

11. **SECURE YOUR WORK.** Make certain that the cutting unit is securely fastened with the clamps provided before operating.

12. **DON'T OVERREACH.** Keep proper footing and balance at all times.

13. **MAINTAIN GRINDER WITH CARE.** Follow instructions in the Operators and Service 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 that all switches are OFF and the E-stop is pressed in before plugging in the Grinder.

16. **USE RECOMMENDED ACCESSORIES.** Consult the manual for recommended accessories. Using improper accessories may cause risk of personal injury or damage to the equipment.

17. **CHECK FOR 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 THE GRINDER RUNNING UNATTENDED. TURN THE 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 the 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 Service Manual for the proper location and part numbers of safety decals.

21. **DO NOT OPERATE GRINDER WHEN UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION.**

SAFETY INSTRUCTIONS

- ORIGINAL INSTRUCTIONS -

⚠ WARNING **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.

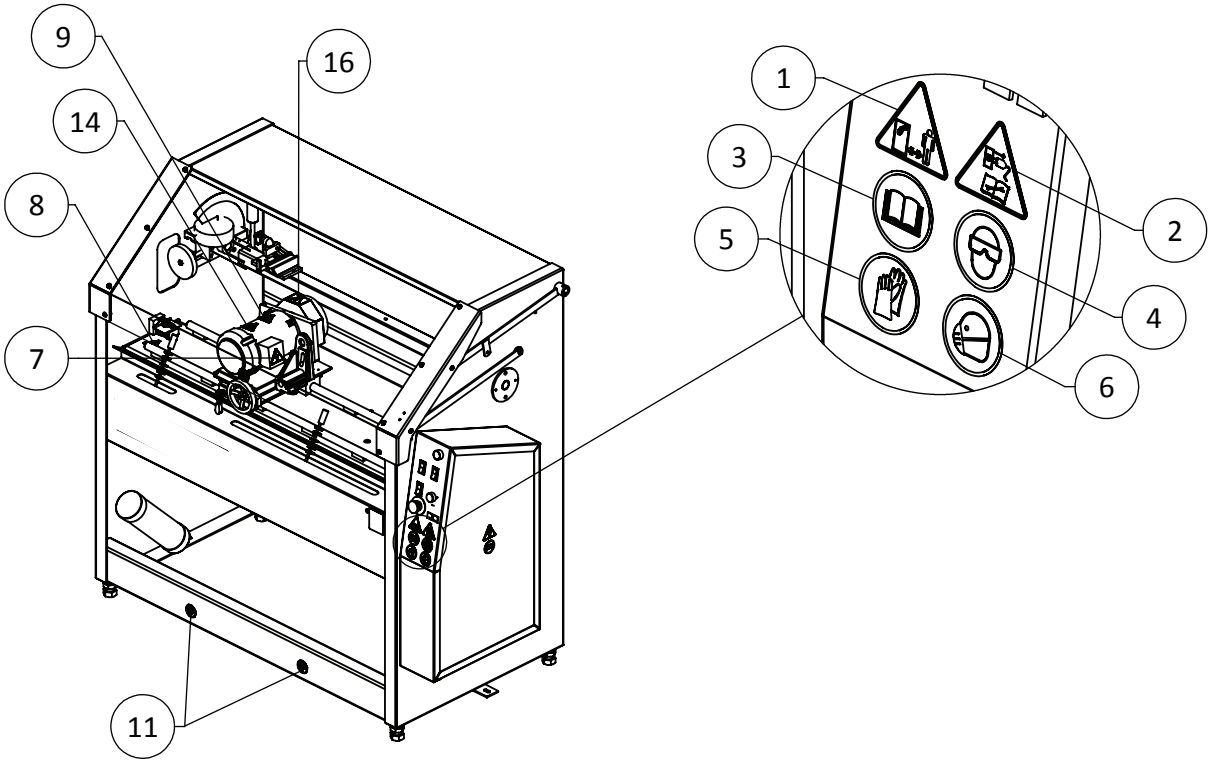
DON'T

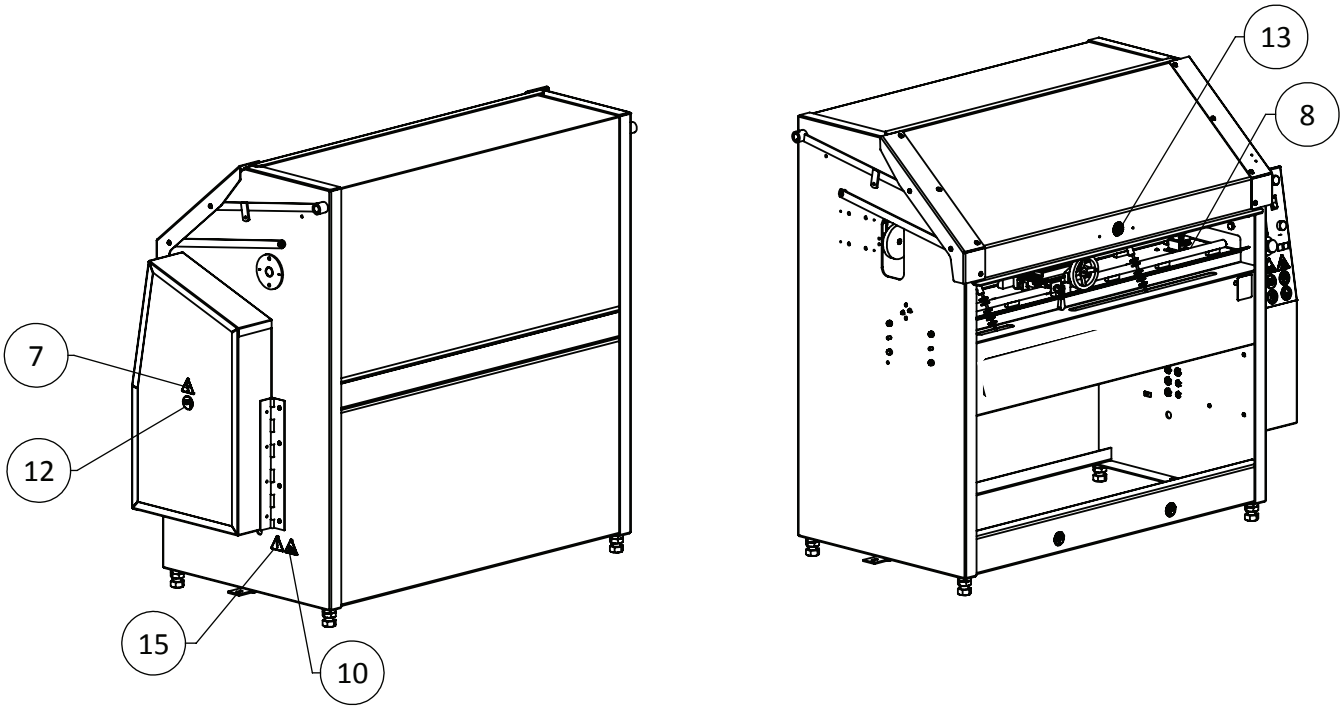
1. **DON'T** use a cracked wheel or one that **HAS BEEN DROPPED** or has become damaged.
2. **DON'T FORCE** a wheel onto the machine **OR ALTER** the size of the mounting hole - if wheel won't fit the machine, get one that will.
3. **DON'T** ever **EXCEED MAXIMUM OPERATING SPEED** established for the 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.

⚠ WARNING

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.

SAFETY DECALS - LOCATION.
If any decals are damaged, replace them immediately!
See next page for explanation of symbols and decals.





SAFETY INSTRUCTIONS

- ORIGINAL INSTRUCTIONS -

READ AND UNDERSTAND AND LOCATE ALL DECALS ON THIS MACHINE BEFORE OPERATING THIS EQUIPMENT.

1 

Keep visitors at a safe distance away from the equipment.

2 

Read Service manual and disconnect power before servicing.

3 

<u>**Refer to manual**</u>– after installation, read the user's guide carefully before operating. Follow all operating and other instructions carefully.

4 

WARNING! Use of proper eyewear is mandatory when operating this equipment.

5 

WARNING! Gloves or other **hand protection is required** when operating this equipment.

6 

WARNING! Operators and people in close proximity **must wear respirators or have adequate ventilation systems.**

7 

This is the electrical hazard symbol. It indicates that there are **DANGEROUS HIGH VOLTAGES PRESENT** inside the enclosure of this product. TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, do not attempt to open the enclosure or gain access to areas where you are not instructed to do so. **REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.**

8 

Entanglement Hazard. Keep clear of belt.

9 

Sharp object in the vicinity which may cause injury. **Keep hands clear of sharp edges!**

10 

Power cord may be a trip hazard. Secure the power cord in a manner that removes it as a trip hazard.

11 

Use a Fork Lift with a minimum of 48" [122cm] long forks to move this Equipment. Lift only where indicated on the machine. Failure to use proper lifting equipment may result in personal injury or damage to the equipment.

12 

Unplug the machine when servicing or storing for an extended period of time.

13 

WARNING! Do Not Operate Without Guards and Covers in Place. There are moving parts located behind guard.

14 

Shows the minimum speed [3600 RPM] that the grinding wheel must be rated for to use on this equipment.

15 

<u>**POWER CORD PROTECTION**</u> – The power supply cord for this product acts as the main-disconnect. It should be routed or installed in such a manner to protect it from being walked on or pinched. The unit should be powered down completely before connecting or disconnecting the power cable. The power cord should be removed before moving the unit. **The power cord must be placed near an easily accessible unobstructed socket outlet.**

16 

<u>**GRINDING WHEEL GUARD**</u> – Wheel guard should be positioned to cover the top of the wheel. If the wheelguard is rotated to provide clearance, always rotate back immediately after.

17

ASSEMBLY INSTRUCTIONS

UNPACK CARTONS

Remove the wood board structure and plastic wrap around the unit. Remove the box (carton assembly).
If any problems occur, refer to the shipping and receiving instructions that were attached to the front of the machine. Double check the carton for any miscellaneous items or other manuals before disposing of carton.

REMOVE GRINDER FROM WOOD PALLET

To remove the grinder base from the wood pallet, unbolt the four brackets that hold the frame to the wood pallet.
Use a fork lift to lift the machine from the pallet. Decals on the machine indicate proper location for lifting.

THE UNIT WEIGHS 750 LBS. [340 KG]. USE POWER EQUIPMENT TO LIFT THE UNIT

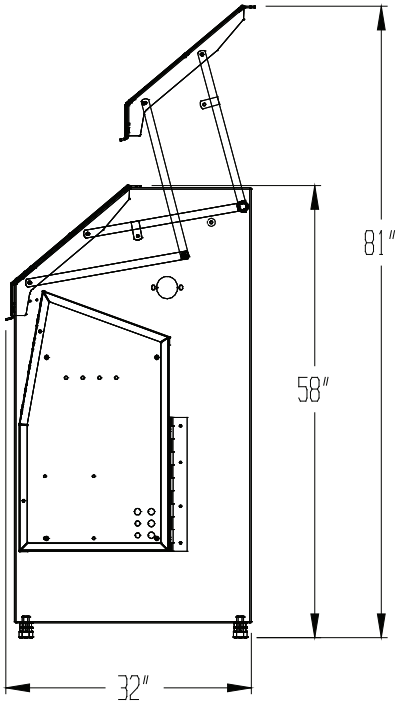


FIG. 1

POSITION BASE

⚠ WARNING

The 661AT Bedknife Grinder will require an operating area of about 91” W x 72” D x 87” H (231 x 183 x 221 cm). The machine operator will operate the unit from the front of the machine. Position the base to allow sufficient operating room in front of and to the right side of the machine. See FIG. 1 and 2.

MACHINE MUST BE POSITIONED TO ALLOW EASY ACCESS TO THE MAIN POWER CORD PLUG FOR USE AS THE MAIN DISCONNECT. SEE POWER INSTALLATION SECTION FOR ADDITIONAL INFORMATION.

The base should be placed on a relatively level concrete floor, with ample ceiling height to allow for the installation of the unit. Do not place the unit across two concrete slab seams or across a large crack.

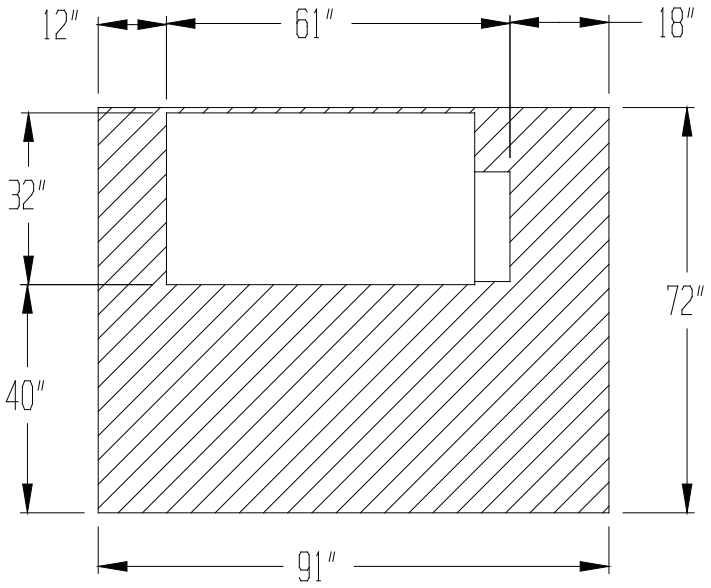


FIG. 2

PLACING THE GRINDER ON FLOORING THAT IS BADLY OUT OF LEVEL OR BROKEN WILL AFFECT GRINDING QUALITY.

⚠ WARNING

THE EQUIPMENT SHOULD NEVER BE LEFT UNATTENDED WHEN RUNNING.

It is recommended that this machine is installed in a separate area of the facility, such as a dedicated grinding room where access to the equipment can be restricted and proper ventilation can be provided.

PREPARATION/INSTALLATION CHECK LIST

Before using this equipment refer to the list below. Verfy that all of the listed items are completed before powering up the equipment:

- ☐ 1. Equipment is completely assembled
- ☐ 2. All shields are in place and in good condition.
- ☐ 3. All decals are in place and readable.
- ☐ 4. Overall condition good (i.e. paint, welds, electrical)
- ☐ 5. Verify there is sufficient electrical power to operate the machine.
- ☐ 6. Read and understand all areas of the Operators manual, and review the Service Manual, and any additional training material if available.
- ☐ 7. Check grinder flood coolant system.
- ☐ 8. Understand cleaning/dressing of the wheel
- ☐ 9. Understand general maintenance

LEVEL BASE

Place level on the top of the table and check the unit for level side to side. Adjust the leveling feet as necessary until the machine is level.

Place a level across the table from front to rear. Adjust the leveling feet as necessary until the machine is level.

When both front to back and side to side leveling procedures have been completed, thread the hex jam nuts up against the nut that is welded to the bottom until they lock into place. Be careful not to move the leveling feet during this process. See FIG. 3. Make certain that all four leveling feet are firmly contacting the floor.

Recheck with level after locking nuts are firmly tightened.

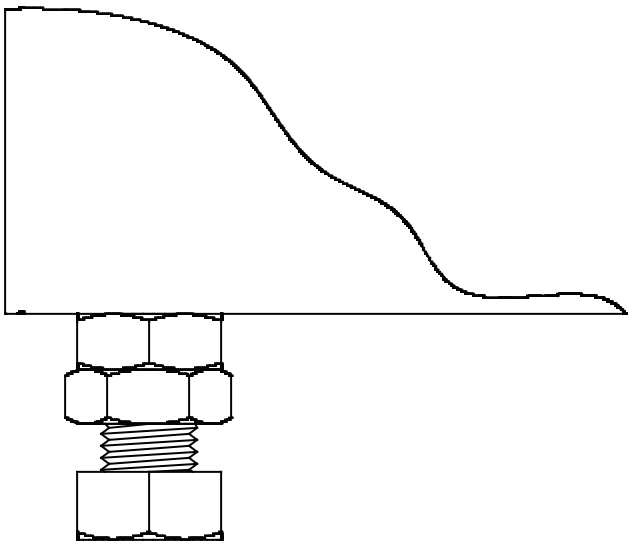


FIG. 3

INSTALLATION INSTRUCTIONS

POWER INSTALLATION

⚠ WARNING

IF THE MACHINE DOES NOT HAVE A PLUG ON THE END OF THE MAIN POWER CORD, A PLUG OR CONNECTOR THAT COMPLIES TO THE LOCAL LAWS AND REGULATIONS SHOULD BE INSTALLED BY A QUALIFIED ELECTRICIAN. THE PLUG IS CLASSIFIED AS A CATAGORY 0 MAIN DISCONNECT. DO NOT WIRE THIS MACHINE DIRECTLY TO A POWER SOURCE WITHOUT A PLUG OR CONNECTOR UNLESS A DEVICE THAT MEETS THIS CATEGORY 0 MAIN DISCONNECT REQUIREMENT IS USED TO PROVIDE POWER TO THE MACHINE.

IMPORTANT GROUNDING INSTRUCTIONS

In case of a malfunction or breakdown, grounding reduces the risk of electrical shock by providing a path of least resistance for electrical current.

This Grinder has an electrical cord with an equipment grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded according to all local or other appropriate electrical codes and ordinances.

Before plugging in the Grinder, make sure it will be connected to a supply circuit protected by a properly-sized circuit breaker or fuse. SEE SERIAL NUMBER PLATE FOR FULL LOAD AMP RATING OF YOUR MACHINE.

Never modify the plug provided with the machine--if it won't fit the outlet, have a proper outlet and circuit installed by a qualified electrician.

⚠ WARNING

Always provide a proper electrical ground for your machine. An improper connection can cause a dangerous electrical shock. If you are unsure of the proper electrical grounding procedure, contact a qualified electrician.

⚠ **IT IS RECOMMENDED THAT GRINDER HAS ITS OWN PERMANENT POWER CONNECTION FROM THE POWER DISTRIBUTION PANEL, WITH NO OTHER MAJOR POWER DRAW EQUIPMENT ON THE SAME LINE.**

⚠ **THE GRINDER IS EQUIPPED WITH A HIGH-LOW VOLTAGE RELAY WHICH IS FACTORY PRESET AT 100-140 VAC. IF THE VOLTAGE INSIDE THE CONTROL PANEL FALLS OUTSIDE OF THIS RANGE, THE RELAY WILL OPEN, SHUTTING DOWN THE MACHINE. IF THIS OCCURS YOUR POWER SUPPLY LINE IS INADEQUATE TO RUN THIS MACHINE AND MUST BE CORRECTED BEFORE PROCEEDING FURTHER WITH THE GRINDER. IF THE OPTIONAL TRANSFORMER IS INSTALLED ON THE OUTSIDE OF THE MACHINE, THE POWER DELIVERED TO THE MACHINE WILL BE 230VAC, BUT THE POWER IN THE MACHINE MUST BE 100-140VAC UNDER LOAD AS STATED ABOVE.**

DO NOT OPERATE THIS GRINDER WITH AN EXTENSION CORD.

DO NOT OPERATE THIS GRINDER ON A GROUND FAULT INTERRUPTER (GFI) CIRCUIT, NUISANCE TRIPPING OF THE (GFI) MAY OCCUR.

⚠ **PROPER GROUNDING OF THE RECEPTACLE GROUND IN YOUR BUILDING MUST BE VERIFIED. IMPROPER GROUNDING IN YOUR BUILDING MAY CAUSE THE GRINDER TO MALFUNCTION.**

INSTALLATION INSTRUCTIONS

- ORIGINAL INSTRUCTIONS -

120 VOLT MODEL ONLY. Plug the control box power cord into a standard 120VAC 15-amp grounded receptacle. See FIG. 4.

120 VAC 15A STANDARD PLUG FOR NORTH AMERICA.

FIG. 4

When installing the grinder, the following guidelines should be used to establish the wire size between the power panel in your building and the grinder receptacle. Note that the wiring in your building must be per code between the main power panel and sub panels.

FOR 15 AMP RATED LARGE MACHINES BUILDING WIRING

For 0 to 30 Feet (0 to 9 m) from panel to receptacle = Use 14 Ga. (2.5 mm) Wire.
For 30 to 50 Feet (9 to 15 m) from panel to receptacle = Use 12 Ga. (4.0mm) Wire.
For 50 to 80 Feet (15 to 24 m) from panel to receptacle = Use 10 Ga. (6.0 mm) Wire.
For 80 to 140 Feet (24 to 42 m) from panel to receptacle = Use 8 Ga. (10.0 mm) Wire.

230 V 50/60Hz MODEL

230 V machines are installed with a 3KVA 230 Volt Step Down transformer which is used to convert the power delivered to the electrical control to 120 VAC.

The transformer wiring diagram is shown in FIG. 5.

A connector, which is appropriate for your locality and 230 volt, 8 amp application should be installed if there is not one already on the end of the main power cord.

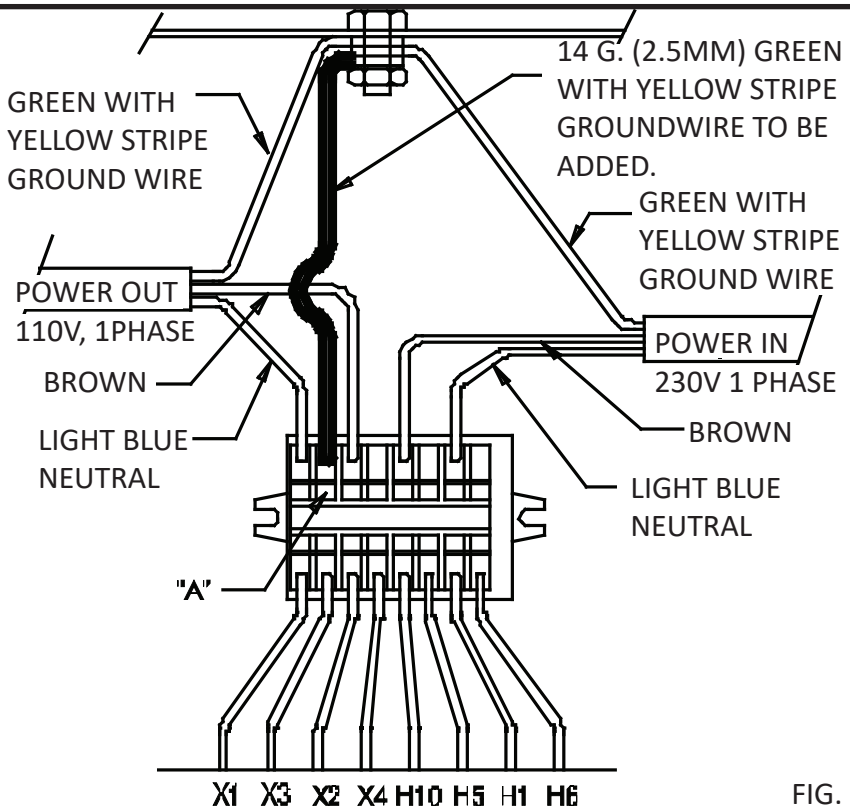


FIG. 5

INDIVIDUALLY WIRE NUT TRANSFORMER LEADS H2, H3, H4, H7, H8 AND H9.

USE ONLY A QUALIFIED ELECTRICIAN TO COMPLETE THE INSTALLATION.

INSTALL THE GREEN WITH YELLOW STRIPE WIRE SUPPLIED INTO THE TERMINAL BLOCK IN THE HOLE OPPOSITE WIRE X3 AS SHOWN. TO INSTALL THE WIRE INSERT A SMALL SCREWDRIVER INTO THE CAVITY MARKED "A" TO OPEN THE WIRE HOLE.

ATTACH THE OTHER END OF THE GREEN WITH YELLOW STRIPE WIRE SUPPLIED TO THE GROUND STUD ON THE TRANSFORMER.

GETTING TO KNOW YOUR GRINDER

OPERATION

The Controls for the Model 661AT:
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. 6.

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

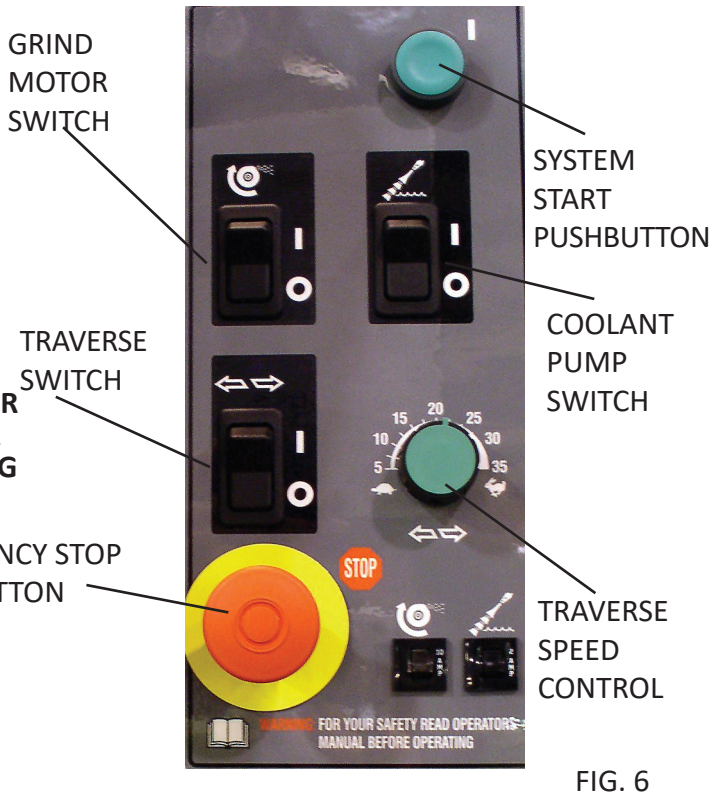


FIG. 6

EMERGENCY STOP PUSHBUTTON
The red pushbutton is the power off, emergency stop switch. Pulling out will allow the main power to be turned on and pushing in will turn all power off. The large button type 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 guard door safety switch is engaged.

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 POWER SWITCH
The traverse power 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.

GETTING TO KNOW YOUR GRINDER (CONTINUED)

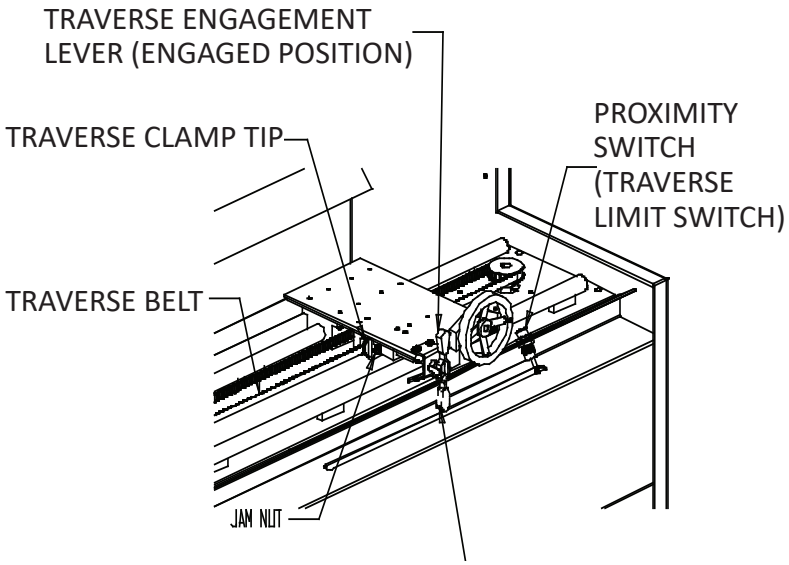


FIG. 7

TRAVEL MECHANISM RELEASE (FIG. 7)

To move the grinding head from side to side manually, there is a release located on the front, bottom of the carriage. To disengage the carriage drive system, rotate the red handle engagement lever to the down position. To engage the carriage drive system, rotate the red handle engagement lever to the up position. See FIG 7.

PROXIMITY SWITCHES (FIG. 8)

The bedknife grinder has PROXIMITY SWITCHES to stop the carriage travel and reverse direction which are adjustable by sliding the assembly along the rail.

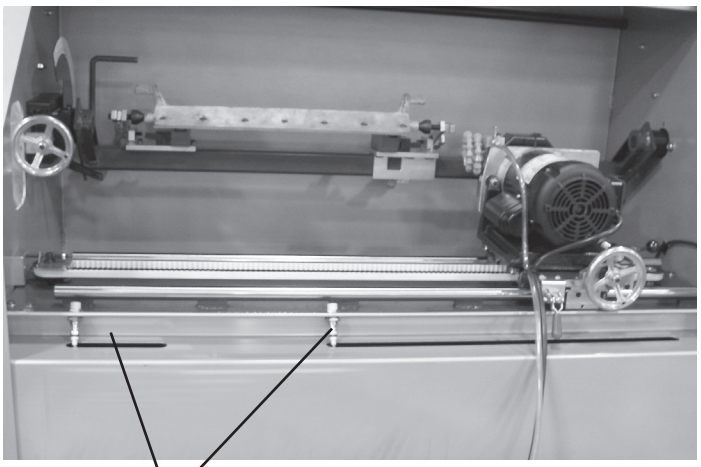


FIG. 8

GETTING TO KNOW YOUR GRINDER (CONTINUED)

BEDKNIFE SUPPORTS

Fixed BEDKNIFE Support (FIG. 9)
The bedknife and bedbar is held in position by two magnets and centers. The left side magnet and center position is fixed.

Adjustable BEDKNIFE support (FIG. 10)
The right side magnet and center is adjustable to match bedknife width.

Right Hand Adjustable Support Lock Knob
Locks the right magnet and center assembly in position on the tooling bar slide. See FIG. 0

Bedknife Gauge (FIG. 9)
On the outside of each magnet is a retractable bedknife gauge. These gauges are used to align the bedknife to the grinding wheel carriage travel.

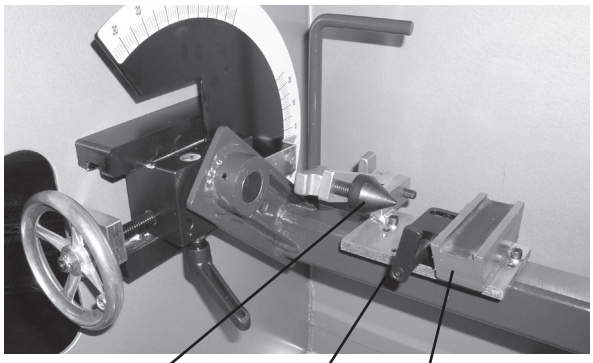


FIG. 9

TOOLING ALIGNMENT ADJUSTER (FIG. 11)

Adjusts the left side of the tooling assembly, allowing the tooling assembly and bedknife to be aligned to the grinding head. This ensures maximum life from the bedknives.

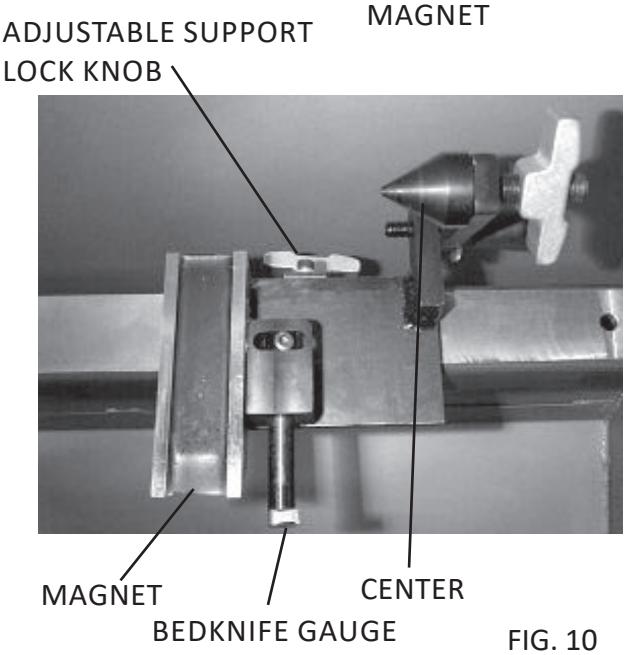


FIG. 10

TOOLING BAR ROTATION (FIG. 11)

The Foley United 661AT Bedknife grinder has a movable tooling bar with an angle indicator and lock. FIG. 11 shows the angle pointer and decal. The tooling bar is moved from front face to top face with a lever and lock handle on the left inside of the grinder.

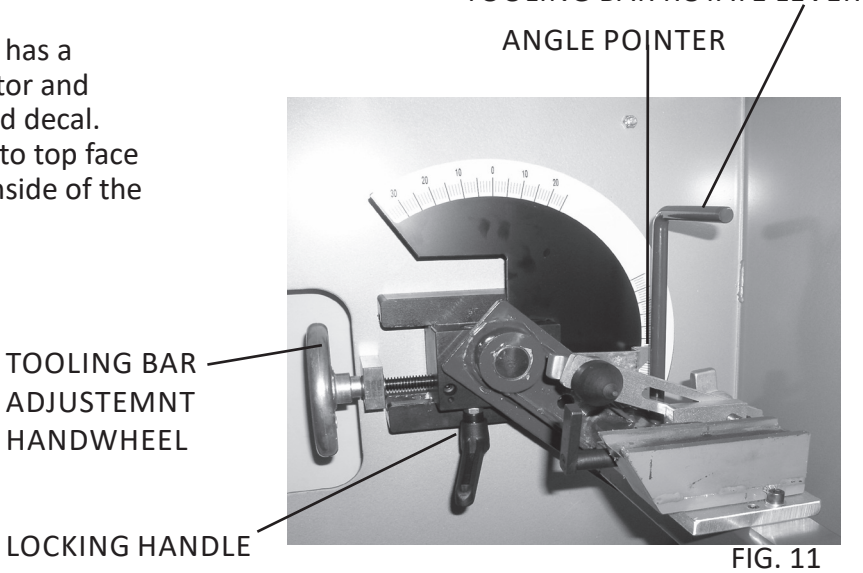


FIG. 11

GETTING TO KNOW YOUR GRINDER (CONTINUED)

DRIVE CARRIAGE (FIG. 12)
Vertical Eccentric Adjuster and Lock
Moves the grinding head up and down.

Horizontal Infeed Handwheel
Moves the grinding head infeed in and out.

Horizontal Infeed 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.

GRINDING HEAD (FIG. 12)
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.

COOLANT SYSTEM (FIG. 12)
Coolant Nozzle
Directs a stream of coolant onto the bedknife and grinding wheel. For precise aiming, the nozzle and connecting tubing are flexible.

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 **will not** improve performance.

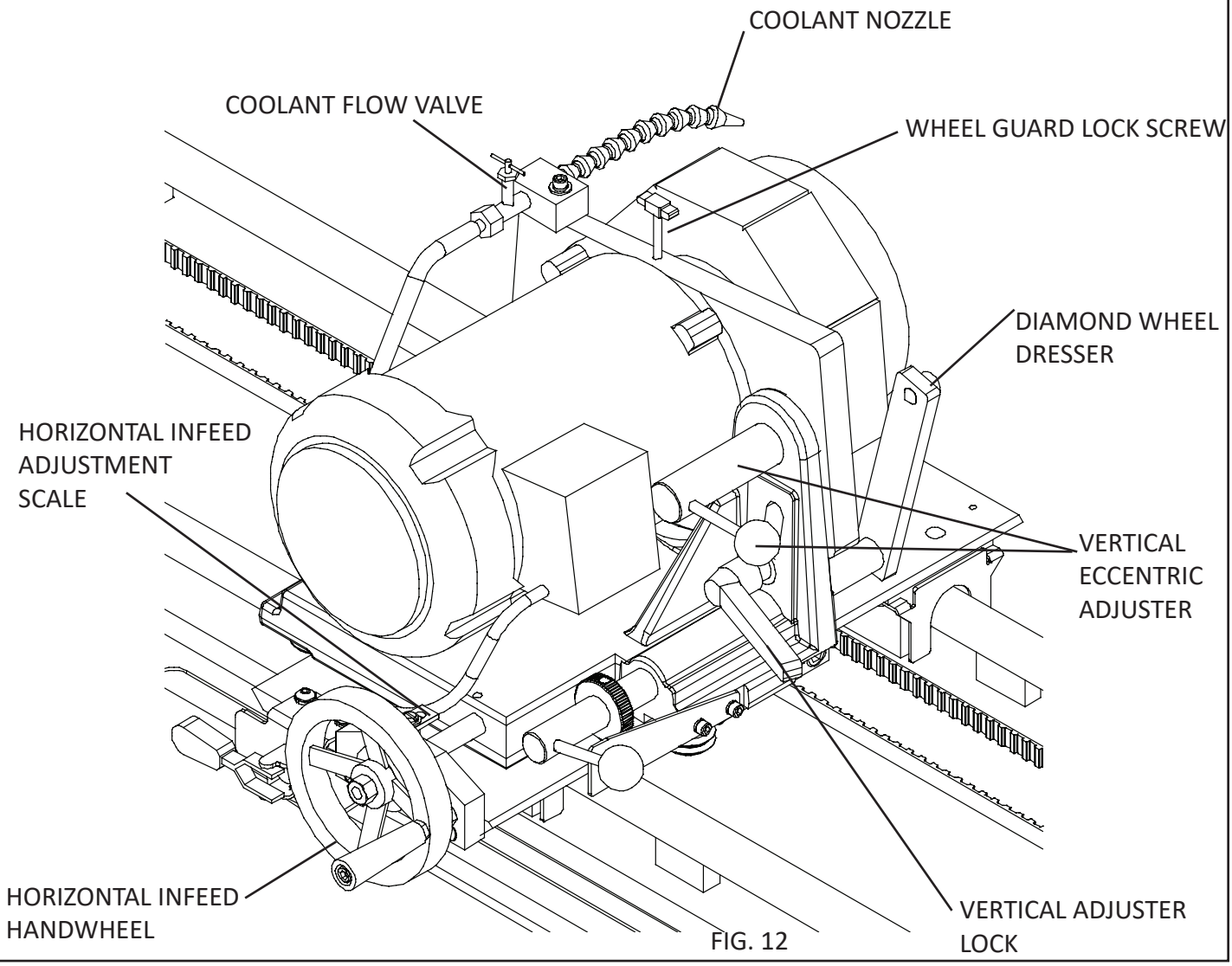


FIG. 12

GETTING TO KNOW YOUR GRINDER (Continued)

REPLACING THE 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. 13.

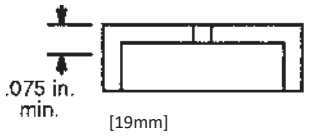


FIG. 13

MOUNTING A GRINDING WHEEL

To replace the grinding wheel: See FIG. 14.

1. Turn the GRINDING WHEEL switch **OFF**.
2. Unscrew the mounting flange that holds the grinding wheel, using a special wrench provided.

NOTE: ***The flange has a left hand thread.***

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. It will self-tighten when the motor is turned on. If the wheel flange is overtightened, the grinding wheel may crack and fly apart.
5. 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 sometimes remaining from the manufacturing process. This dressing properly prepares the wheel for grinding.

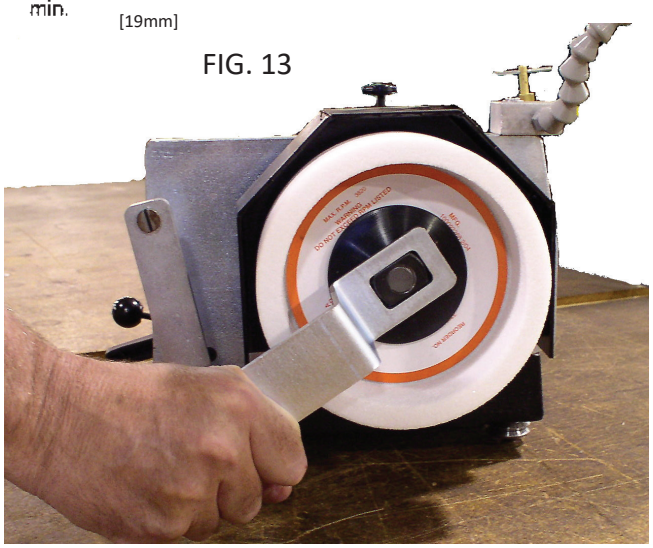


FIG. 14

GRINDING WHEELS AVAILABLE FOR 672 BEDKNIFE GRINDER		
WHEEL PART NO.	COLOR DESCRIPTION	SIZE/GRIT
3700060	White/red flare-cup wheel, 6/3-1/4 x 2 0.627 inch bore, vitrified ruby	60
3700062	White flare cup wheel, 6/3-1/4 x 2 0.627 inche bore, vitrified	45
3700268	White/red straight-cup wheel, 6 x 2 x 0.627 inch bore, vitrified ruby	60
3700411	White straight-cup wheel 6 x 2 1.25 inch bore, vitrified	46 STANDARD
3700696	Borazon straight-cup wheel, 6 x 1-1/2 x 0.625 inch bore	120 For normal or extra hardened bedknife

ROTATING THE WHEEL GUARD

Some bedknives and bedbars have mounting ears located close to the bedknife top face so there is no clearance for the wheel guard. For these applications, 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. 15 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 OPERATOR SAFETY, THE GRINDING WHEEL GUARD MUST BE USED WITH THE CLEARANCE AREA UP <u>ONLY</u> WHEN REQUIRED FOR BEDBAR CLEARANCE.

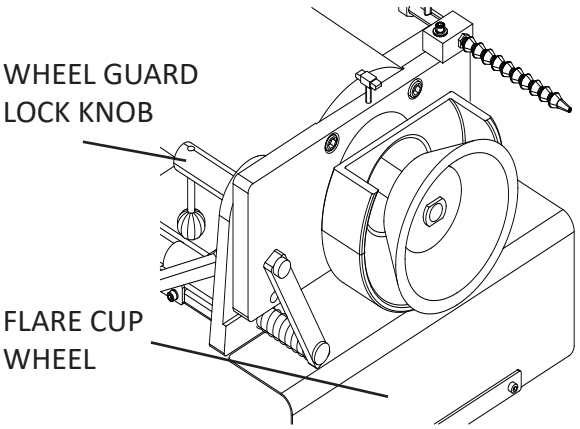


FIG. 15

DRESSING THE GRINDING WHEEL

Dress the grinding wheel whenever there is glazing ("glazing" is the buildup of stone dust, grinding grit, and coolant on the face of the wheel). For best results, also dress the wheel before making the final grind.

REFER ALSO TO THE "SAFETY RULES WHEN GRINDING" ON PAGE 8.

For dressing, always move the grinding head to the right hand side of the machine as shown in FIG. 16, so you are clear of the bedknife.

With the wheel turning, lift the dresser movement arm off its lock bracket, push it forward and swing the dresser around to the grinding face of the wheel. Turn the adjuster ring until the diamond point just touches the wheel. See FIG. 17 or 18.
Now rotate the handle at a medium pace so the diamond goes over the wheel counter-clockwise and then rotate it back clockwise. The wheel is now dressed, you only need to run the diamond back and forth once, additional passes will actually decrease the performance of the wheel. When completed, rotate the handle clockwise against the lock bracket before pulling back and replacing the dresser movement arm in the lock bracket.

NOTE: *Excessive dressing will shorten the life of the wheel and may cause the diamond to be dislodged from the dresser tip, and too little dressing will inhibit proper grinding.*

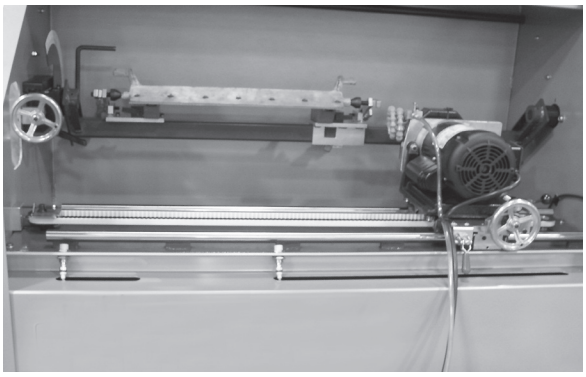


FIG.16

DRESSER IN LOCKED POSITION

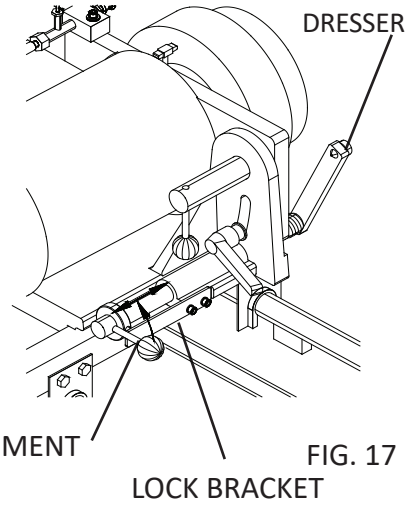


FIG. 17

DRESSER UNLOCKED & READY TO USE

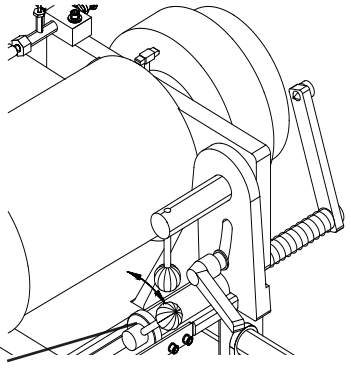


FIG. 18

USING FLOOD COOLANT

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

IF YOU DO 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 MISTS. 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. 80340 coolant in the COOLANT TANK, at a ratio of 50 parts water to 1 part concentrate. Refer also to the label on the coolant container. If the tank is empty, this will take about 6.5 gallons of water and 1 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.

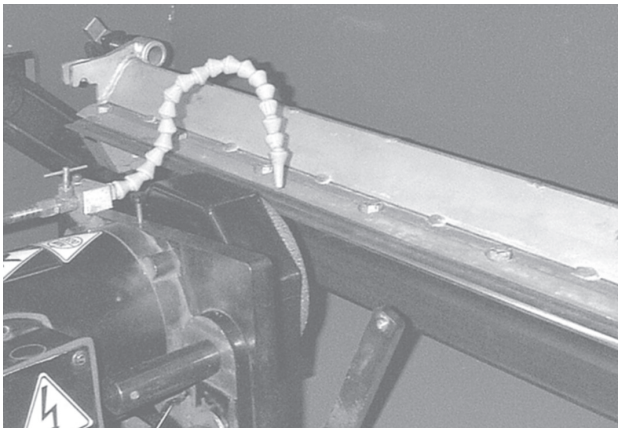


FIG. 19

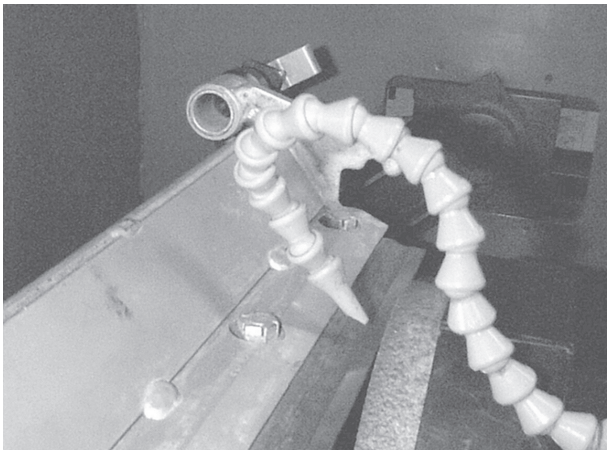


FIG. 20

Using the Coolant

Direct the nozzle so the coolant sprays onto the bedknife face being ground. See FIG. 19 or 20. 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 splashing.

Fluid Level in Coolant Tank

Check the fluid level in the Coolant Tank daily to avoid running out while grinding. Keep the coolant .25 - .50 inches [6-12 mm] above the top of the coolant sump. **The pump must <u>always</u> 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 premix coolant and water in a separate container for this purpose.

GENERAL OPERATING INFORMATION

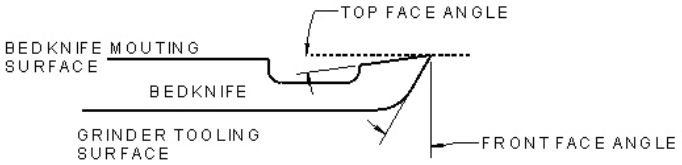


FIG. 21

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 not need grinding.)

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

Prepare the Machine for Mounting the Bedknife
Pivot the tooling assembly to the horizontal position (front face grinding position). Move the grinding head all the way to the right, then back the grinding head away from the tooling bar

NOTE: *Always wipe any grindings, dirt, etc. from the magnets before mounting the bedknife.*

Mounting a Bedknife for Grinding
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 to thoroughly wire brush these areas.**

OPERATING INSTRUCTIONS

MOUNTING A BEDKNIFE FOR GRINDING (Continued)

Mount the Bedknife

1. Pull both gauge tips forward and rotate to lock into position. Loosen the magnet knob on the right side magnet assembly. See FIG. 22. Set the bedknife / bedbar assembly to be ground on the magnets. Move the right side magnet assembly until the alignment gauge tips are at both ends of the bedknife. Tighten the right side magnet lock knob to secure the magnet in place.

2.Position the bedknife so the unworn tips on a used bedknives or the ends of a new bedknife are on the gage tips. See FIG. 24 Pull the bedknife forward firmly against the gauge tip. See FIG. 25.

3. Position the Center cone on each magnet assembly into a hole in the side of the bedknife. Lock the center in place to secure the bedknife from moving.

OVER TIGHTENING THE CENTER CONE MAY DISTORT THE BEFKNIFE RESULTING IN A POOR GRIND.

BEDKNIVES WITH DUAL CUTTING EDGES

Some mowing unit manufacturers and some after market bedknife manufacturers make a bedknife with Dual Cutting Edges as shown in FIG. 26.

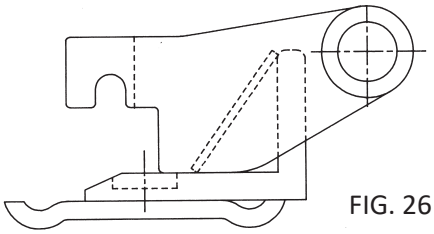


FIG. 26

Because of the two radiused surfaces that these bedknives present to the magnets there is minimal holding force. Therefore, to achieve a solid hold with the magnets, you must file the bottom side of the bedknife with a flat bastard file as shown in Fig 27. You must file with a uniform stroke across both radius: File until you have developed flats on the radius that are a minimum of 3/32(.09) [2.3mm] wide and uniform in width for the length of the magnet on each end of the bedknife.

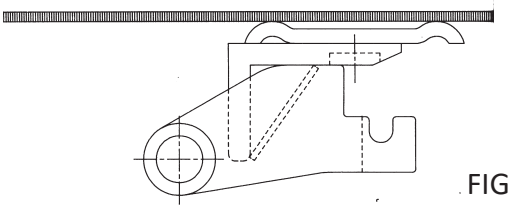
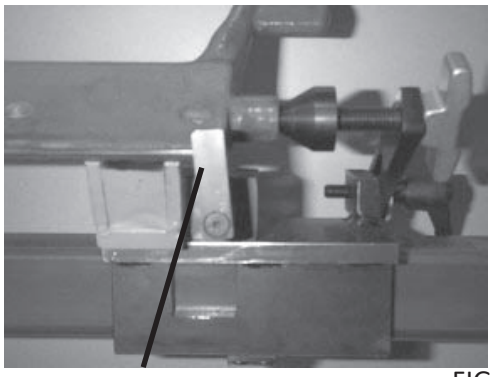


FIG. 27

RIGHT HAND ADJUSTABLE SUPPORT LOCK KNOB

MAKE SURE TIGHT, TOP AND FRONT

FIG. 22



GAUGE TIP FORWARD AND LOCKED

FIG. 23

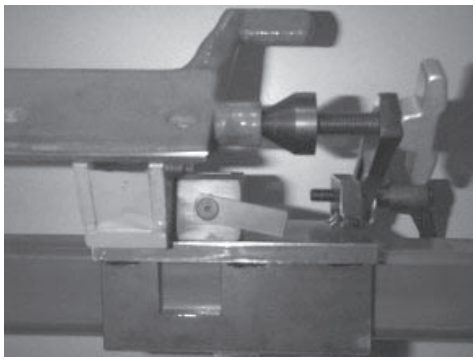


FIG. 24

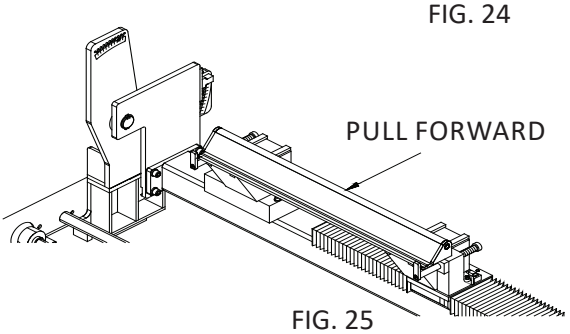


FIG. 25

OPERATING INSTRUCTIONS (Continued)

MACHINE SETUP

NOTE: *On some mower bedknives, the front face is curved and therefore may not have to be sharpened.*

Position the Head for Front-Face Grinding (See Fig. 28)

Loosen the left side tooling rotate lock handle. Rotate the tooling assembly to the front face position (down) and set the front face angle to the mower manufacturers factory specification, tighten the tooling rotate lock handle.

Check Clearances and Set Traverse Limits

Position the grinding head so that the grinding wheel barely touches the front face of the bedknife. With the vertical cam and lock lever, adjust the grinding head so the grinding wheel rim extends 1/2" [12mm] or as much as possible above the front face to be ground. See FIG. 29. If the grinding wheel rim does not extend over the bedknife face, it will wear unevenly and cause grooves across the surface of the bedknife.

NOTE: *The area of the grinding wheel which contacts the bedknife is on the left side of the wheel. When grinding the left end of the bedknife, the area of the wheel which doesn't contact the bedknife will still be over the bedknife. When you go to the right end of the grinder, the wheel traverses completely off the bedknife.*

Check for Interference:

1. Back out the grinding head so the wheel no longer touches the front face of the bedknife.
2. Slide the left and right proximity switches to the far ends of the slot.
3. Set the TRAVERSE knob at 4 - 5 FT./MIN. Set the CARRIAGE TRAVERSE switch ON. Traverse the carriage to the left until the contact area of the grinding wheel is about 1" beyond the area to be ground on the bedknife, then turn the traverse potentiometer to zero. Be prepared to STOP the traverse earlier if there is any interference between the grinding wheel and the bedknife/bedbar.

With the carriage still in the position determined in Step 3 above, slide the left proximity switch in until the LED lights.

Traverse back to the right until the grinding wheel reaches the point where it covers the entire area to be ground and goes past that point by 1" [25 mm] or more if possible. Then set the right proximity switch in the same manner.

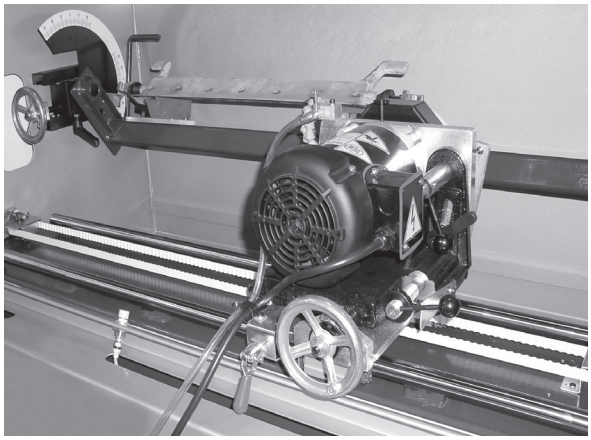


FIG. 28

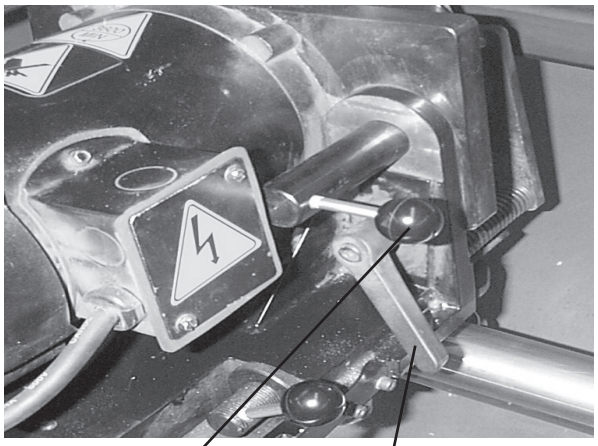


FIG. 29

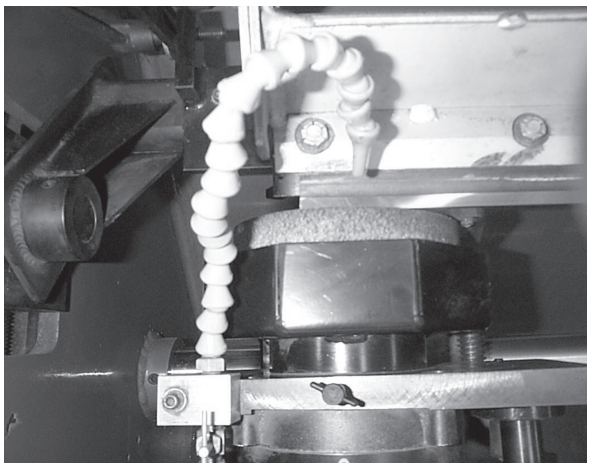


FIG. 30

OPERATING INSTRUCTIONS (Continued)

ALIGNING TO A BEDKNIFE

This is accomplished by touching the grinding wheel to the worn bedknife.

TAKE CARE WHEN TOUCHING THE WHEEL TO THE BEDKNIFE. THE BEDKNIFE MAY SLIDE ON THE MAGNETS IF YOU INFEED THE GRINDING WHEEL EXCESSIVELY.

With the bedknife / bedbar mounted to the tooling bar and set at the manufacturers specifed angles:

1. Move the grinding head to the right end of the bedknife. Now adjust the carriage infeed handwheel until the wheel *barely* touches the bedknife at the end nib. See FIG. 31.
2. Move the grinding head to the left end of the bedknife.
3. Without moving the grinding head infeed, loosen the lock tee knob and adjust the tooling bar left side adjuster until the grinding wheel ***barely*** touches the bedknife at the unworn end nib. See FIG. 32.

NOTE: *When adjusting the left side, the right side also moves a small amount, move the grinding head right and left sides several times to verify that you barely contact the knife at both ends.*

4. Lock the tee knob on the left side adjuster.

5. Proceed to Grind the Bedknife.

GRINDING WHEEL AT RIGHT END OF BEDKNIFE

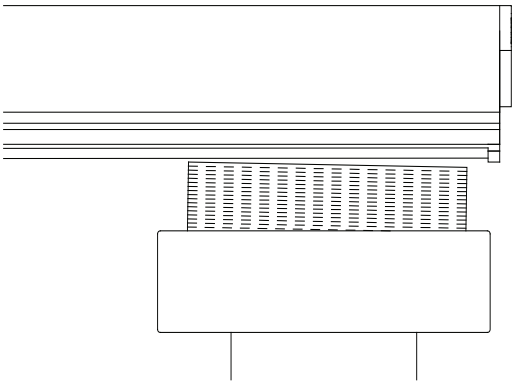


FIG. 31

GRINDING WHEEL AT LEFT END OF BEDKNIFE

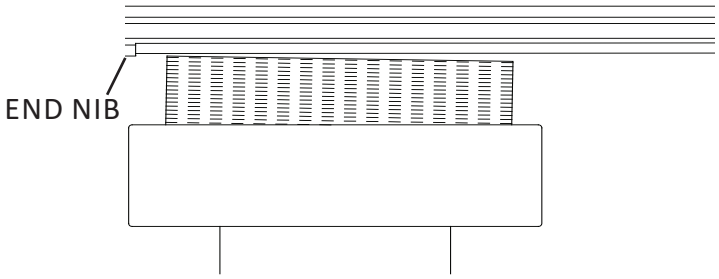


FIG. 32

NOTE: *Some bedknives are worn unevenly. To get the maximum life from these bed knives and remove the least amount of stock, you may want to grind them using the established surfaces for alignment. In steps 1 and 3 above go just inside the end nib when doing the touch off.*

SOME REEL ASSEMBLIES, ESPECIALLY ON GREENS MOWERS, HAVE A MINIMAL ADJUSTMENT RANGE. BE SURE THE MISALIGNMENT YOU USE IS WITHIN THE RANGE OF THE REEL ASSEMBLY SO YOU CAN ACHIEVE PROPER REEL TO BEDKNIFE ADJUSTMENT.

OPERATING INSTRUCTIONS (Continued)

GRINDING THE FRONT FACE (CONTINUED)

GRIND THE BEDKNIFE

When you are satisfied with the grinder head travel, begin grinding:

REFER TO THE "SAFETY RULES HEN GRINDING" ON PAGE 8.

NOTE: *During the grinding process, watch the spark pattern for the full length of grind, the sparks should look equal for the full length of grind.*

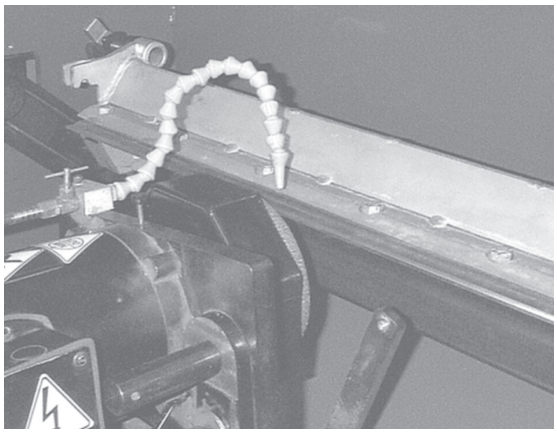


FIG. 33

1. With the guard door closed, turn the GRINDING WHEEL switch ON.
2. Turn the COOLANT PUMP switch ON, and check that the nozzle is directing coolant onto the bedknife.
3. Set the TRAVERSE knob to 12 FT/MIN.

4. Turn the carriage traverse switch ON. Turn the horizontal infeed handwheel. (clockwise) until the wheel is removing metal lightly from the bedknife, removing about .002 to .003" [.05 to .075mm] per pass.

NOTE: *The horizontal adjustment dial is calibrated in .002" [.05 mm] increments. If an excessive amount of metal stock will have to be removed on one end of the bedknife, recheck your setup first and then the straightness of the bedknife. If the bedknife is bowed or twisted, replace it.*

5. Continue grinding the bedknife in this manner until you are satisfied with the front face grind. Dress the wheel when necessary. (see "Dressing the Grinding Wheel")
6. Dress the wheel before the final **spark out** grind.

By partially grinding both surfaces, the top face and the front face, as shown, you will resharpen a used bedknife with the least metal removal. FIG. 34 also shows how much stock would be removed if you ground the top face surface until sharp. Partially grinding both surfaces is the preferred method for life utilization of the bedknife.

FIG. 34

SHUT OFF THE COOLANT PUMP SWITCH BEFORE YOU SHUT OFF THE GRINDING WHEEL, TO ALLOW THE WHEEL TO SPIN DRY. IF THE WHEEL RETAINS TOO MUCH COOLANT, IT WILL BE UNBALANCED WHEN YOU AGAIN TURN ON THE GRINDING MOTOR.

OPERATING INSTRUCTIONS (Continued)

GRINDING THE TOP FACE

Position the Head for Top-Face Grinding (See Fig. 35)

When rotating from front face grinding to top face grinding, the grinding head must be backed out two full turns. If you have not preset the top face angle, do so at this time. Rotate the tooling assembly to the manufacturers specified top face position (up).

Check Clearances and Set Traverse Limits

Position the grinding head so that the grinding wheel ***barely*** touches the top face of the bedknife. Check to see if the rim of the grinding wheel is extended 1/2" [50mm] above the top face of the grinding wheel. If you have previously ground the front face it most often will be correct. If not, with the vertical cam and lock lever, adjust the grinding head. If the shape of the bedbar interferes with the wheel guard or grinding wheel you will need to make adjustments. If the grinding wheel rim does not extend over the bedknife face, it will wear unevenly and cause grooves across the surface of the bedknife.

NOTE: *The area of the grinding wheel which contacts the bedknife is on the left side of the wheel. When grinding the left end of the bedknife, the area of the wheel which doesn't contact the bedknife will still be over the bedknife. See FIG. 37. When you go to the right end of the Grinder, the wheel traverses completely off the bedknife.*

Check for interference:

1. Back out the grinding head so the wheel no longer touches the top face of the bedknife.
2. If you have just ground the front face the travel limit should still be correct, but you should still verify no interferences as described below. If you did not grind the front face, follow the full procedure listed below. Slide the left and right proximity switches to the far ends of the slot.
3. Set the TRAVERSE knob at 4 - 5 FT/MIN. Set the CARRIAGE TRAVERSE switch ON. Traverse the carriage to the left until the contact area of the grinding wheel is about 1" beyond the area to be ground on the bedknife, then turn the traverse potentiometer to zero. Be prepared to STOP the traverse earlier if there is any interference between the grinding wheel and the bedbar.
4. With the carriage still in the position determined in Step 3 above, slide the left proximity switch in until its LED lights.

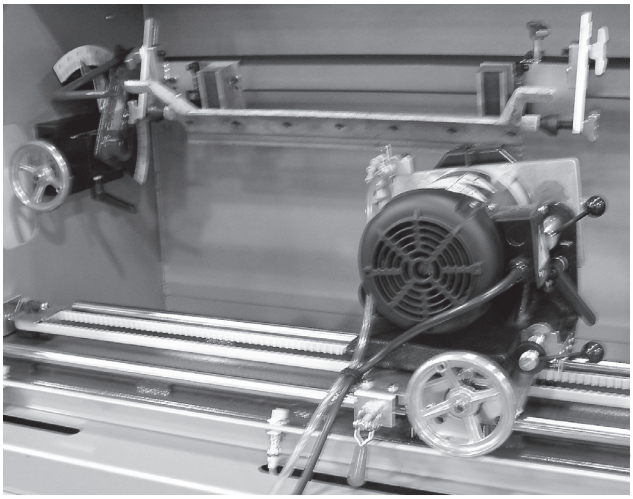


FIG. 36

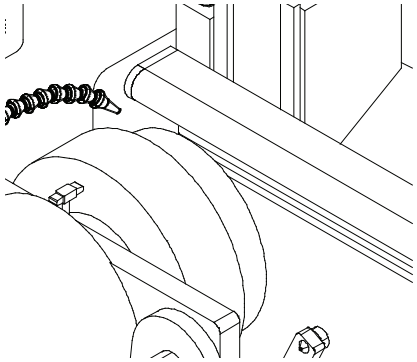


FIG. 37

OPERATING INSTRUCTIONS (Continued)

GRINDING THE TOP FACE (CONTINUED)

5. Traverse back to the right until the grinding wheel reaches the point where it covers the entire area to be ground and goes past that point by 1" [25 mm] or more if possible. Then set the right proximity switch in the same manner.

6. Infeed the grinding wheel until it very lightly touches the bedknife on the left side. Now traverse to the right end of the bedknife to assure that the right side is not closer to the grinding wheel. Back the wheel out if necessary until you can traverse full length with a very light touch at the closest point.

NOTE: *Top Face alignment is fully independent of the Front Face alignment and MUST be done. When you are satisfied with the grinding head travel and alignment begin grinding*

Grind the Bedknife
Align the bedknife per the procedure on page 26

REFER ALSO TO THE "SAFETY RULES WHEN GRINDING" ON PAGE 9.

NOTE: *At this point you won't know the condition of the grinding wheel after the previous job. Always dress the wheel before grinding.*

1. With the guard door closed, turn the GRINDING WHEEL switch at ON.
2. Turn the COOLANT PUMP switch at ON, and check that the nozzle is directing coolant onto the bedknife. See FIG. 36.
3. Set the TRAVERSE knob at about 12 FT/MIN.

NOTE: *If an excessive amount of metal stock will have to be removed on one end, recheck your setup first and then check the straightness of the bedknife. If it is bowed or twisted, replace it.*

4. Turn the carriage traverse switch ON. With the horizontal infeed handwheel, infeed the head in (clockwise) until the grinding wheel is removing metal lightly from the bedknife. It is recommended to take off about .002 to .003" [.05 to .075 mm] per pass during the rough grind.

NOTE: *The horizontal adjustment dial is calibrated in .002" [.05 mm] increments.*

5. Continue grinding the bedknife in this manner until you are satisfied with the top face grind. Dress the wheel when necessary. (See "Dressing the Grinding Wheel").
During the grinding process, watch the spark pattern for the full length of grind, the sparks should look equal for the full length of grind.

6. Dress the wheel before making the final **spark out** grind.

OPERATING INSTRUCTIONS (Continued)

GRINDING THE TOP FACE (CONTINUED)

For spark out passes, move the grinding head in (clockwise) only about .001" [.025 mm] and then let the grinding wheel spark out. For sparking out, always traverse the grinding head 10 - 20 passes without cranking the grinding head in further. To get the finest top-face grind, set the TRAVERSE knob at slow speed (about 5 FT/MIN) for this final grinding sparkout. This process improves the surface finish of the grind and improves the grind quality.

NOTE: *What you are looking for is a "near sparkout", about a 90% reduction in grinding spark from a normal grind. Don't continue sparking out until you have no sparks, because this could be an extremely long time.*

SHUT OFF THE COOLANT PUMP SWITCH BEFORE YOU SHUT OFF THE GRINDING WHEEL, TO ALLOW THE WHEELTO SPIN DRY. IF THE WHEEL RETAINS TOO MUCH COOLANT, IT WILL BE UNBALANCED WHEN YOU AGAIN TURN ON THE GRINDING MOTOR.

REMOVING THE BEDKNIFE

To remove the bedknife, rotate the tooling assembly to the front face grinding position (down). Remove the right hand center from the bedbar by backing the center back as far as necessary. DO NOT loosen the arm lock; grasp the bedknife and pull it off the magnets. If the next bedknife to be ground is the same type and size as the previous, simply mount it and proceed with verifying mounting and proceed with new alignment. If the next bedknife to be ground is a different type or size, follow the full installation procedure.