



**653 ACCU-Master
633 ACCU-Pro with
ACCU-Touch 3
AUTO-INDEX
SPIN/RELIEF
REEL 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.



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.



653/633
AUTO - INDEX
SPIN / RELIEF
REEL MOWER GRINDER

Patent No. 5,321,912
6,010,394 & 6,290,581
6,685,544 & 6,699,103
Additional Patents Pending

OPERATOR'S MANUAL



**YOU MUST THOROUGHLY READ AND UNDERSTAND ALL MANUALS BEFORE
OPERATING THE EQUIPMENT, PAYING PARTICULAR ATTENTION TO THE WARNING
AND SAFETY INSTRUCTIONS.**

IMPORTANT SAFETY MESSAGE

This manual covers the installation and operation of this reel grinder, there is an additional manual that addresses the service of this equipment. As manufacturers of reel grinders, we want to confirm to you, 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, guards or shields for the grinding wheel, safety signs, and both operators and service manuals. Never bypass or operate the machine with any of the guards or safety devices removed, or without the proper personal protective 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 REEL GRINDERS.

Before operating a reel grinder, an operator must read and understand all of the information in the operator's 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.

Reel 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 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 HAZARDS.



This symbol is used throughout this manual 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** preceded with a safety alert symbol indicates a potential hazardous situation which, if not avoided, may result in minor or moderate injury.

TABLE OF CONTENTS

Safety Message	4
Safety Instructions	5-13
Installation Instructions	14-17
Getting to Know your Grinder	17-22
Operating Instructions	23-50

Keep this manual handy for quick 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 DESIGNED FOR SHARPENING REEL TYPE MOWER BLADES 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.

PREPARATION/INSTALLATION CHECK LIST

BEFORE USING THIS EQUIPMENT REFER TO THE LIST BELOW. VERIFY 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, and electrical)
5. Verify there is sufficient electrical power to operate the machine.
6. Read and understand all areas of the Operator's Manual, and review the Service Manual, and any additional training material if available.
7. Understand positioning of reel.
8. Understand the use of the relief mechanism
9. Understand travel limit positioning
10. Understand use of the reel positioning gauge
11. Understand spin speed vs. quality
12. Understand general maintenance

SAFETY INSTRUCTIONS



FIG. 1

653 ACCU-MASTER SPECIFICATIONS

OPERATING CONDITIONS: 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
Sound Level: Less than 75 Dba
Means must be provided to prevent damage from humidity, vibration and shock.



FIG. 2

633 ACCU-PRO SPECIFICATIONS

OPERATING CONDITIONS: 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
Sound Level: More than 75 Dba, Less than 95 Dba

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

SAFETY INSTRUCTIONS

LOW VOLTAGE RELAY

The grinder is equipped with a high-low voltage monitor which is factory preset at 100-140 VAC. If the voltage inside the control panel falls outside of the range of 100-140 VAC under load, the relay will open and trip out the magnetic starter. If this occurs, your power supply line is inadequate to run this machine and must be corrected before proceeding further with the grinder.

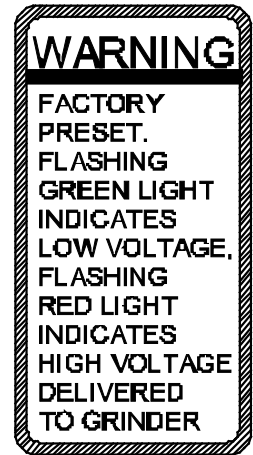


FIG. 3

DAILY INSPECTION



THE DAILY INSPECTION SHOULD BE PERFORMED ONLY WHEN THE MACHINE IS OFF AND ALL MOTORS HAVE STOPPED.

1. Perform a visual inspection of the entire unit. Look for signs of wear, loose hardware, and missing or damaged components. Ensure connections are tight and hoses and tubes are in good condition.
2. Clean the machine by wiping it off.
3. Remove all grinding grit from the grinding head and bellows area.
4. Contact your company's maintenance department if damaged for defective parts are found

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

INTERLOCK SYSTEM

The interlock system prevents the grinding motor and spin motor from running unless the door safety switches are engaged.



NEVER OPERATE EQUIPMENT WITH THE INTERLOCK SYSTEM DISCONNECTED OR MALFUNCTIONING. NEVER DISCONNECT OR BYPASS ANY SWITCH OR GUARDING.

To verify the interlock system is working correctly, perform the following test procedure:

1. Remove the grinding wheel.
2. Close all doors and start the grinding motor.
3. With the grinding motor running, open the doors.
4. If the grinding motor continues to run, shut off and unplug the machine. Contact a qualified technician to service the machine.
5. With the spin motor not connected to a cutting unit, close all doors.
6. Start the spin motor.
7. With the spin motor running, open the door.
8. If the spin motor continues to run, shut off and unplug the machine. Contact a qualified technician to service the machine.

SAFETY INSTRUCTIONS



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 Emergency-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



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 the wheel.
4. **DO CHECK MOUNTING FLANGES** for equal and correct diameter.
5. **DO USE MOUNTING BLOTTERS** that are supplied with the 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 approved eye protection when grinding.

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 THE 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 BURRS**.
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** the work into the wheel.
9. **DON'T STAND DIRECTLY IN FRONT** of a grinding wheel whenever a grinder is started.
10. **DON'T FORCE THE GRINDING** so that motor slows noticeably or that the work piece 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 local safety codes.

SAFETY INSTRUCTIONS

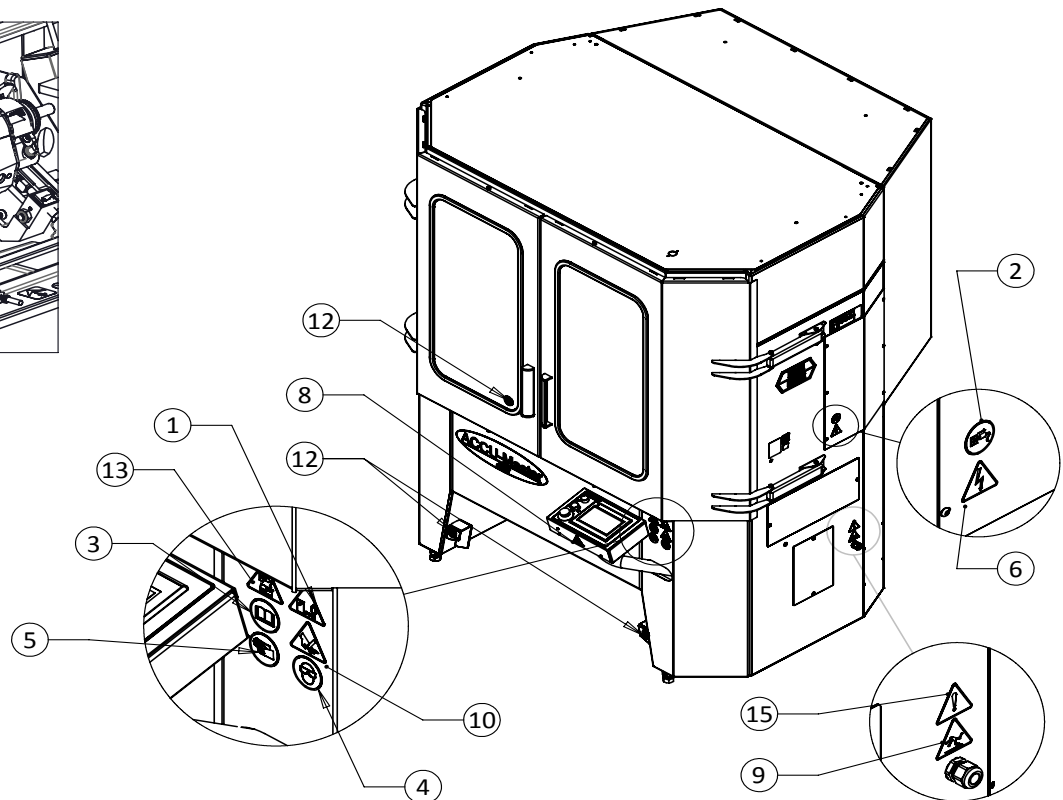
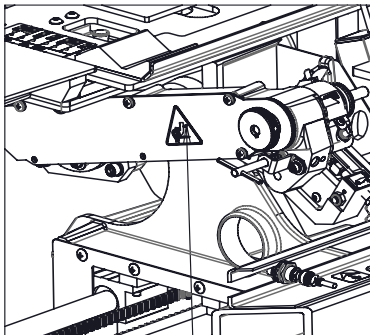
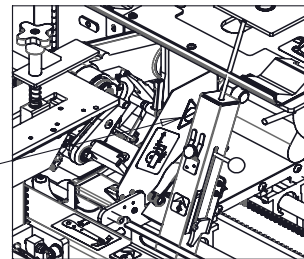
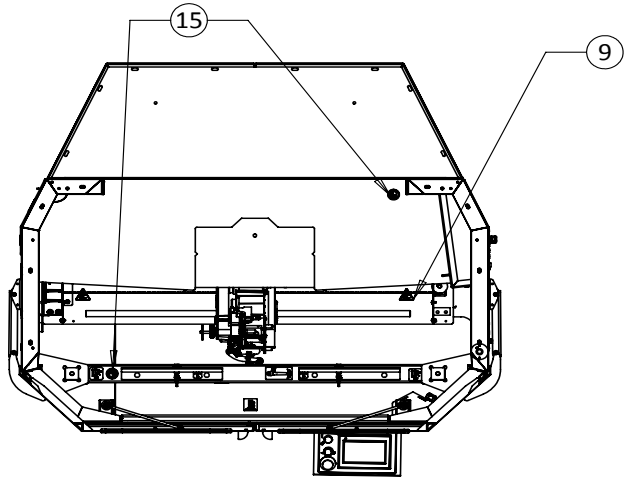
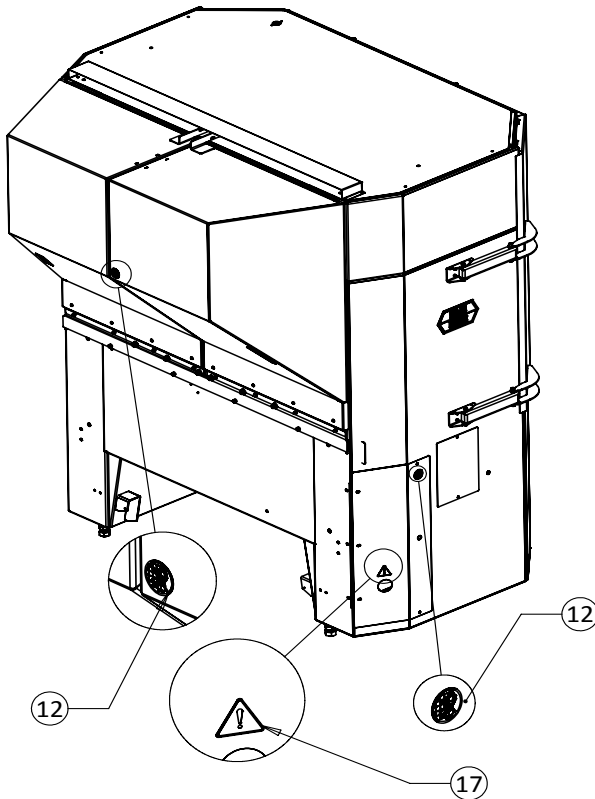


SAFETY DECALS - LOCATION.

IF ANY DECALS ARE DAMAGED, REPLACE THEM IMMEDIATELY!
See next page for explanation of symbols and decals.











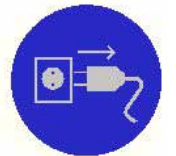








653



SAFETY 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  **REFER TO MANUAL**— 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  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.**
- 7  Entanglement Hazard. Keep clear of belt.
- 8  Sharp object in the vicinity which may cause injury. **Keep hands clear of sharp edges!**
- 9  Power cord may be a trip hazard. Secure the power cord in a manner that removes it as a trip hazard.
- 10  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.
- 11  Unplug the machine when servicing or storing for an extended period of time.
- 12  **WARNING!** Do Not Operate Without Guards and Covers in Place. There are moving parts located behind guard.
- 13  **WARNING!** Keep exposed gasoline or flammables away from the grinder because it operates with a large amount of sparks.
- 14  Shows the minimum speed [3600 RPM] that the grinding wheel must be rated for to use on this equipment.
- 15  **POWER CORD PROTECTION** – 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  **WINCH AND BOOM CAPACITY IS A MAXIMUM OF 180Kg OR 400 LBS.** Exceeding the capacity may result in personal injury or damage to the equipment. (Optional Equipment)
- 17  **VACUUM** - Do not block or plug vacuum bypass hole. Empty vacuum weekly as per daily maintenance see page ?? to prevent overheating or fire

SAFETY INSTRUCTIONS

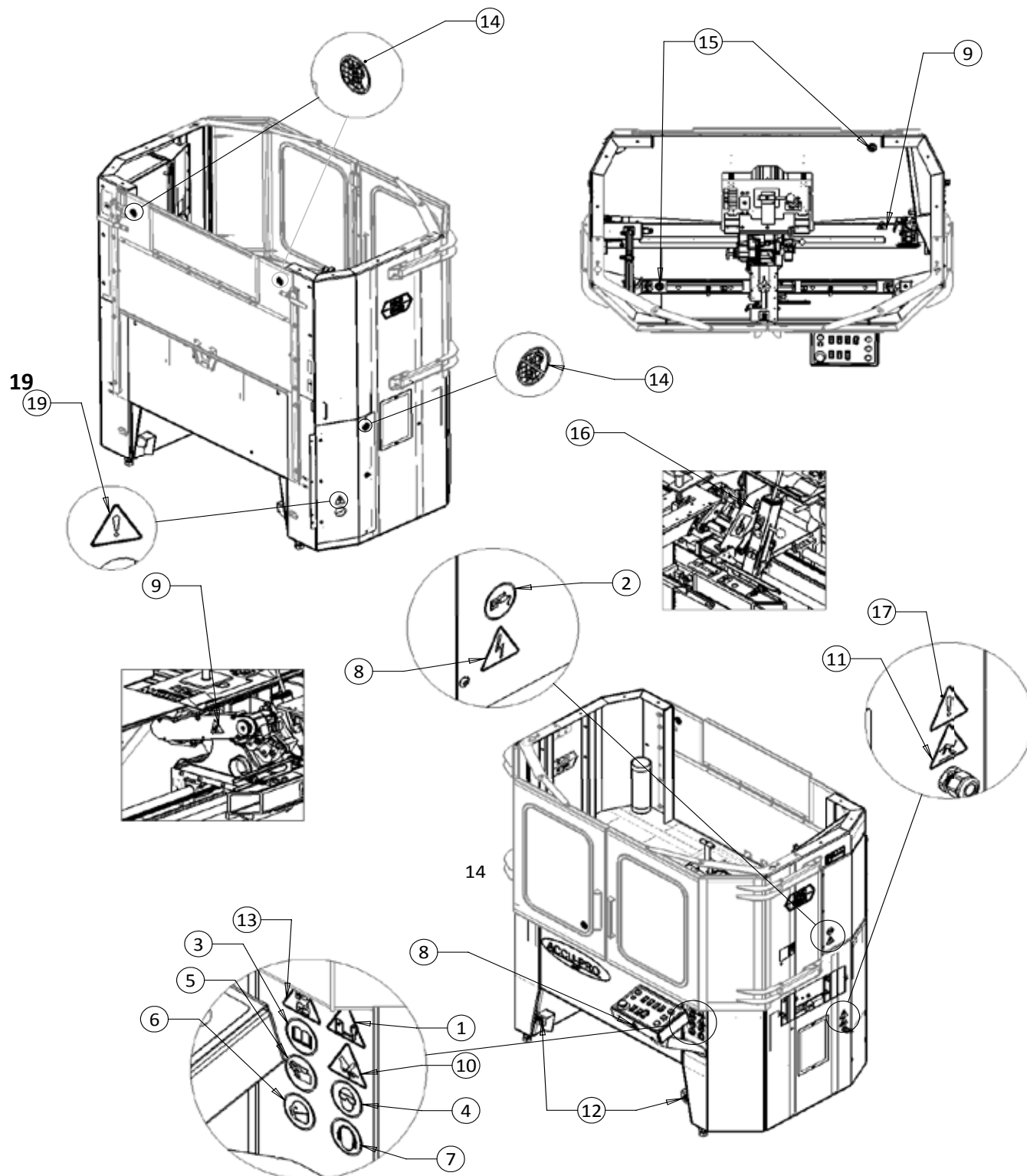
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633



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- 3  **Refer to manual**— 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  **WARNING! Hearing protection required** when operating this equipment.
- 8  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.**
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- 19  **VACUUM** - Do not block or plug vacuum bypass hole. Empty vacuum weekly as per daily maintenance see page ?? to prevent overheating or fire

INSTALLATION INSTRUCTIONS

REMOVE GRINDER FROM WOOD PALLET

To remove the grinder from the wood pallet, unbolt the brackets that hold the frame to the wood pallet. Use a fork lift to lift the machine from the pallet. See FIG. 7 on page 15. **THE 633 UNIT WEIGHS 1450-1600LBS. [725 KG]. THE 653 UNIT WEIGHS 1720-1900LBS [861 KG]. CRATED WEIGHTS MAY BE AS MUCH AS 400LBS ADDITIONAL [181KG] DEPENDING ON OPTIONS AND ACCESSORIES INCLUDED. USE POWER EQUIPMENT TO LIFT THE UNIT**

POSITION BASE

This machine must be positioned in an area that allows for sufficient access to all sides of the machine for operation and service. It is suggested to have an operating area of about 125" [318cm] x 97" [247cm]D x 90"H [229 cm] when loading from the front of machine, or 125" [318cm] x 165" [419cm]D x 90"H [229 cm] when loading from the back of the machine, . Position the base to allow sufficient operating room in both front and behind the machine. See Figures 5 and 6.

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.

PLACING THE GRINDER ON FLOORING THAT IS NOT LEVEL OR BROKEN WILL AFFECT GRINDING QUALITY.

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.

⚠ WARNING

ELECTRICAL REQUIREMENTS:

- ALWAYS USE A PROPERLY GROUNDED OUTLET!

- It is recommended that this reel mower 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 (LVR) 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 inadequate and must be corrected before proceeding further with the grinder.
- TO AVOID ISSUES FOLLOW THE WIRE SIZE RECOMMENDATION BELOW.

FOR 20 AMP RATED LARGE MACHINES

For 0 to 40 Feet (0 to 12 M) from panel to receptacle = Use 12 Ga. (4.0 mm) Wire.

For 40 to 60 Feet (12 to 18 M) from panel to receptacle = Use 10 Ga. (6.0 mm) Wire.

For 60 to 100 Feet (18 to 30 M) from panel to receptacle = Use 8 Ga. (10.0 mm) Wire.

For 100 to 160 Feet (30 to 48 M) from panel to receptacle = Use 6 Ga. (16.0 mm) Wire.

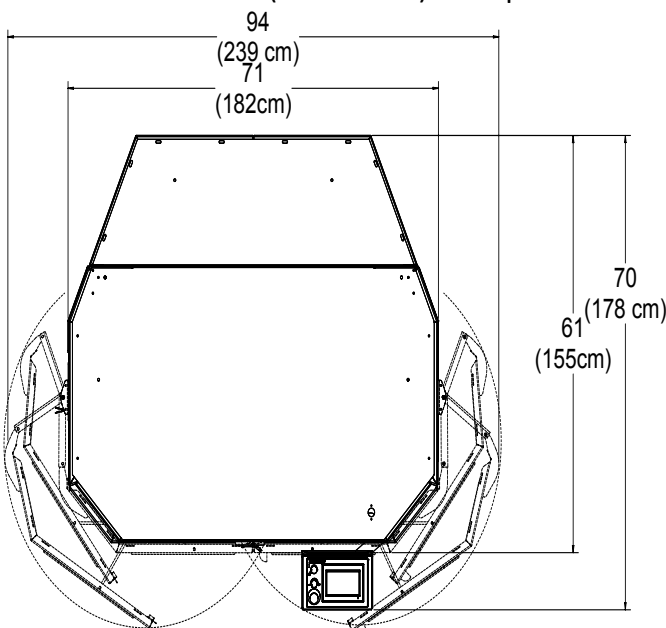


FIG. 4 14

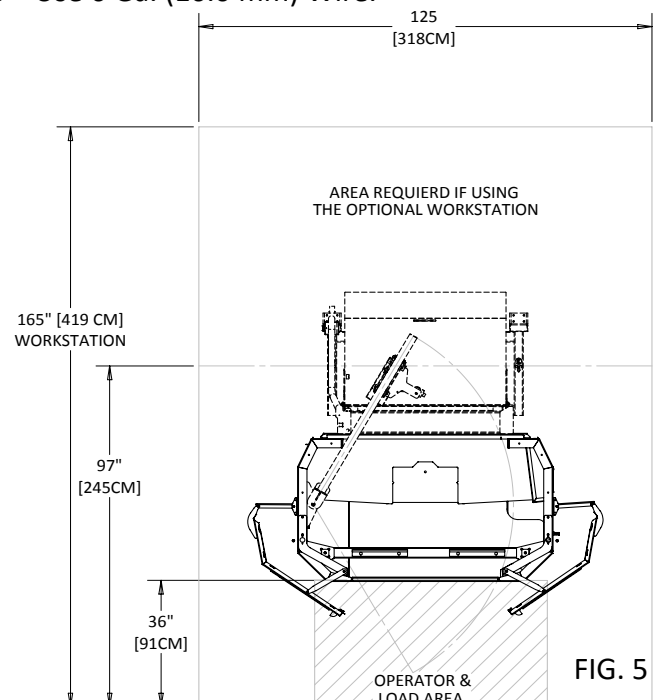


FIG. 5

INSTALLATION INSTRUCTIONS

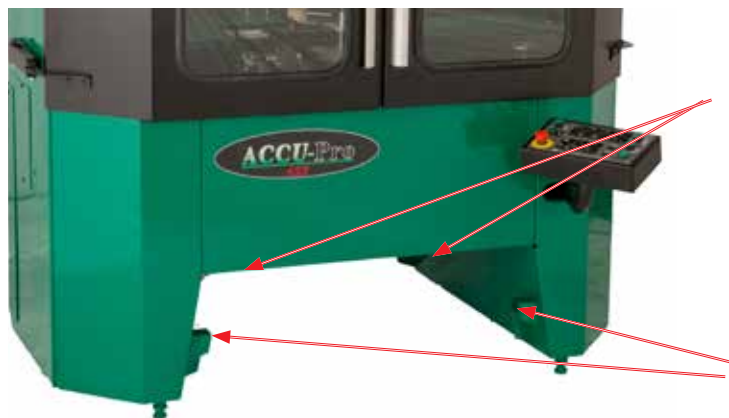


FIG. 6

LIFTING LOCATION

A forklift or pallet jack can be used to move or position this equipment. The forklift must have forks that are a minimum of 48" [122cm] long. When using a forklift lift in the center of the machine and be sure the forks extend all the way from the front to the back of the machine.

Once the machine removed from the pallet, it can be moved using a pallet jack by cutting the pre-marked boards (2"x 6"x 43.5") from the shipping pallet and placing them into the slots shown in FIG 6.

LEVEL BASE

Place a 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. See FIG. 9.

Place a level across the table from front to rear. Adjust the leveling feet as necessary until the machine is level. See FIG. 8.

After machine has been leveled front to back and side to side, thread the hex jam nuts up against the fixed nut. Be careful not to move the leveling feet during this process. See FIG. 7. Ensure that all four leveling feet are firmly contacting the floor.

Recheck with level after locking nuts are firmly tightened.

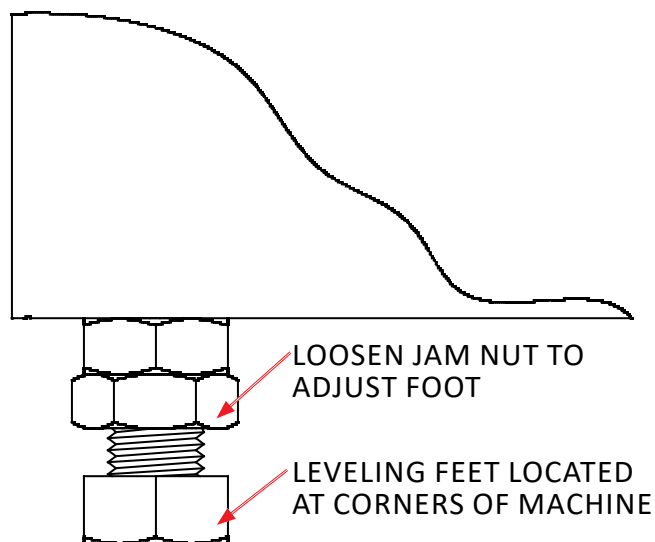


FIG. 7



FIG. 8



FIG. 9

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.



INSTALLATION INSTRUCTIONS

POWER INSTALLATION



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 CATEGORY 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 doesn't fit the outlet, have a proper outlet installed by a qualified electrician.



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 THIS 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 THE RANGE OF 100-140 VAC POWER UNDER LOAD, THE RELAY WILL OPEN AND TRIP OUT THE STARTER. 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

120 VOLT MODEL ONLY. Plug the control box power cord into a standard 120VAC 20-amp grounded receptacle. See FIG. 10.

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.

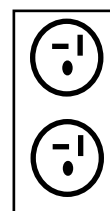


FIG.10

120 VAC 20 AMP
STANDARD PLUG FOR
NORTH AMERICA.

FOR 20 AMP RATED LARGE MACHINES

For 0 to 40 feet (0 to 12 m) from panel to receptacle = Use 12 Ga. (4.0 mm) Wire.

For 40 to 60 feet (12 to 18 m) from panel to receptacle = Use 10 Ga. (6.0 mm) Wire.

For 60 to 100 feet (18 to 30 m) from panel to receptacle = Use 8 Ga. (10.0 mm) Wire.

For 100 to 160 feet (30 to 48 m) from panel to receptacle = Use 6 Ga. (16.0 mm) Wire.

230V 50/60Hz MODEL

230V machines are installed with a 3 KVA 230V step down transformer which is used to convert the power delivered to the electrical control to 110V.

The transformer wiring diagram is shown in FIG. 11.

A connector, that complies with code for your location and a 230V, 10A application should be installed if there is not one already on the end of the main power cord.

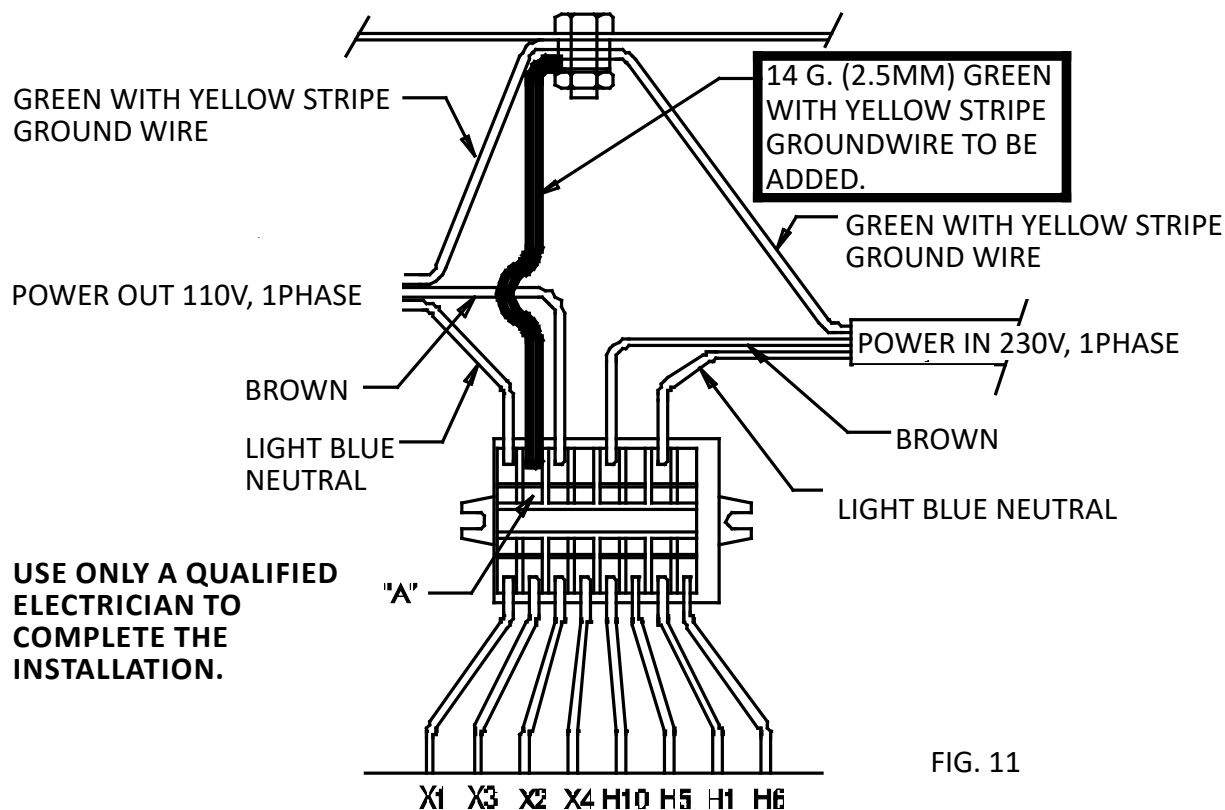


FIG. 11

Individually wire nut transformer leads H2, H3, H4, H7, H8 and H9.

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 SYSTEMS



1. ACCU-POSITIONING GAUGE AND CYLINDER STOP



3. FRONT CLAMP WITH HEIGHT ADJUSTER



2. ACCU-REEL SELECTOR



4. SPIN DRIVE



5. ACCU-TOUCH 3 CONTROL

1. ACCU-POSITIONING GAUGE AND CYLINDER STOP- Used in conjunction with the ACCU-Touch 3 Controller to position the cutting unit vertically and horizontally into the grinder.

2. ACCU-REEL SELECTOR - Allows for easy adjustment of the rear roller V-mounts and automatically positions the cutting unit based on make, diameter , and number of blades. The clamp is installed to secure the rear roller.

3. FRONT CLAMP WITH HEIGHT ADJUSTER - Adjusts to accommodate various rollers and groomers and moves up and down to set the height of the cutting unit using a ratcheting system.

4. SPIN DRIVE - Counter balance spin drive connects directly to the reel shaft and can be positioned on both sides of the cutting unit.

5. ACCU-Touch 3 Control - Provides a step by step tutorial for new technicians and guides the operator through the Spin and Relief grind processes.

GETTING TO KNOW YOUR GRINDER CONTROLS

2. RESET BUTTON

ACCU-TOUCH 3 CONTROL

ACCU-TOUCH 3 SCREEN

3. TRAVERSE SPEED KNOB



FIG. 12

1. EMERGENCY STOP BUTTON

1. EMERGENCY STOP BUTTON or E-STOP

Pressing will stop the flow of power to all motors. To restore power, pull up out on the red button and press the RESET SWITCH.

2. RESET BUTTON

Press to reset the control and remove from Emergency Stop mode.

3. TRAVERSE SPEED KNOB

Turn the knob to increase or decrease the speed of the grinding head movement left and right, measured in feet per second (FPS)



FIG. 13

4. POWER SWITCH AND FUSES (RIGHT SIDE OF MACHINE).

POWER SWITCH turns OFF and ON the ACCU-TOUCH 3 control. Turn to off when machine is not being used. FUSES - Interrupts excessive current (blows) so that further damage by overheating or fire is prevented.



THE POWER SWITCH IS NOT A MAIN DISCONNECT! Disconnect the cord at the wall outlet before performing service.

GETTING TO KNOW YOUR GRINDER

TOUCH DISPLAY SCREEN EXPLANATIONS

Review the following touch screen descriptions before proceeding with the instructions.

EMERGENCY STOP SCREEN

This screen is displayed when the EMERGENCY STOP BUTTON is pressed or the doors are opened while the machine is running. To reset, pull the EMERGENCY STOP BUTTON up and press the RESET BUTTON down.



FIG. 14

START SCREEN



FIG. 15

TRAINER MODE
SELECTION

LANGUAGE

TOOLS

VACUUM START

OUTFEED

ALARM SCREEN
Press to display the
ALARMS SCREEN. A
message describing
the problem will be
displayed. If there is
more than one problem,
they will also be
displayed.

GETTING TO KNOW YOUR GRINDER

ALARMS SCREEN

A message describing the problem will be displayed. If there is more than one problem they all will be displayed.

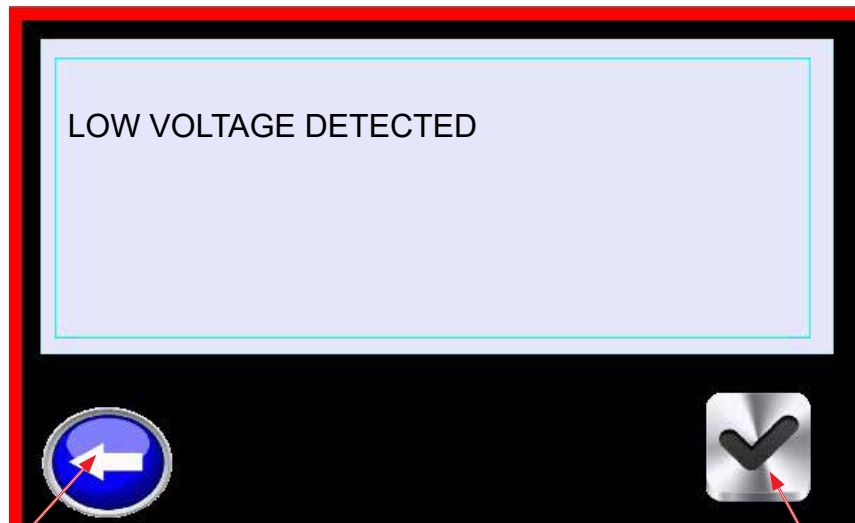


FIG. 16

BACK/PREVIOUS

CHECK
Press CHECK to acknowledge the alarm and clear it from the list.

POPUP ALARM SCREEN

Indicates a process error with a visual description of how to correct the error.

1. Press screen to clear the error.
2. Press screen again to close the alarm screen.

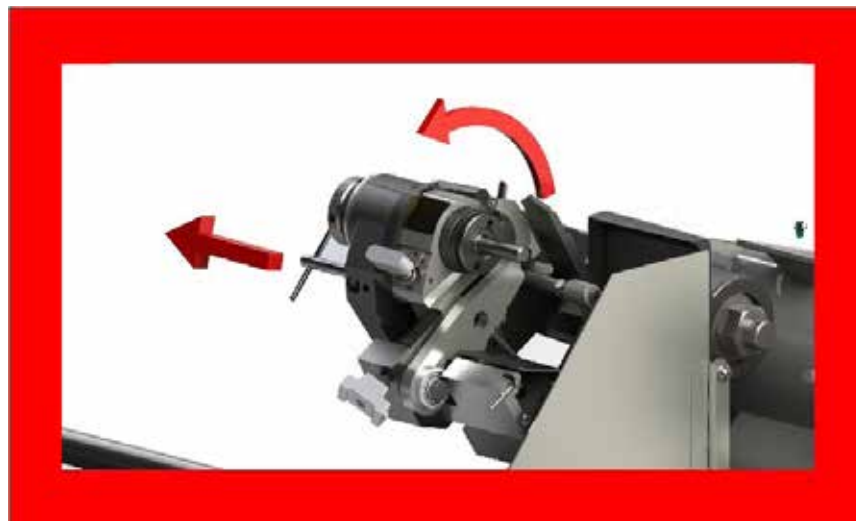


FIG. 17

GETTING TO KNOW YOUR GRINDER

TOUCHSCREEN NAVIGATION



HOME

Press to go to the START/REEL SETUP SCREEN.



QUICK SPIN

Press to go to the SPIN setup screen.



QUICK RELIEF

Press to go to the RELIEF setup screen.



QUICK POSITIONING

Press to go to the POSITIONING setup screen.



FORWARD

Press to go one screen forward.



BACK

Press to go one screen back.



HELP

Press to go to a screen with additional information.

OPERATION

The Four Basic Steps to grind the reel of a cutting unit include:

1. Place the Cutting Unit
2. Position the Grinding Head Carriage
3. Spin Grind
4. Relief Grind

PREPARE THE CUTTING UNIT FOR SHARPENING

Follow the cutting unit manufacturers recommendations for proper maintenance when preparing the cutting unit for sharpening. It is recommended that the reel to be sharpened is thoroughly cleaned. Remove wheels and bed bar, if possible, from the reel. Inspect, adjust and/or replace any worn or damaged bearings. Make sure reel bearings are adjusted properly so the reel turns easily by hand. Because this grinder mounts the reel using the rear roller and front roller if applicable, the bearings must be in good repair with no freeplay. The front and rear rollers must be properly aligned parallel to the reel prior to grinding.

STEP 1: PLACE THE CUTTING UNIT



FIG. 18

Turn on the machine by pressing the POWER SWITCH on the right side of the machine.



FIG. 19

Pull out the Red EMERGENCY STOP Button and press the Green RESET button.

SELECT LANGUAGE



FIG. 20



Press TRAINER MODE "ON"

NOTE: With the TRAINER MODE set to "ON" the ACCU-Touch 3 controller will guide the operator through the entire grinding process. The prompts on the screen will guide the operator through the steps required to grind the reel. Having the TRAINER MODE set to "OFF" will require a more experienced operator to complete the grinding process.

OPERATION

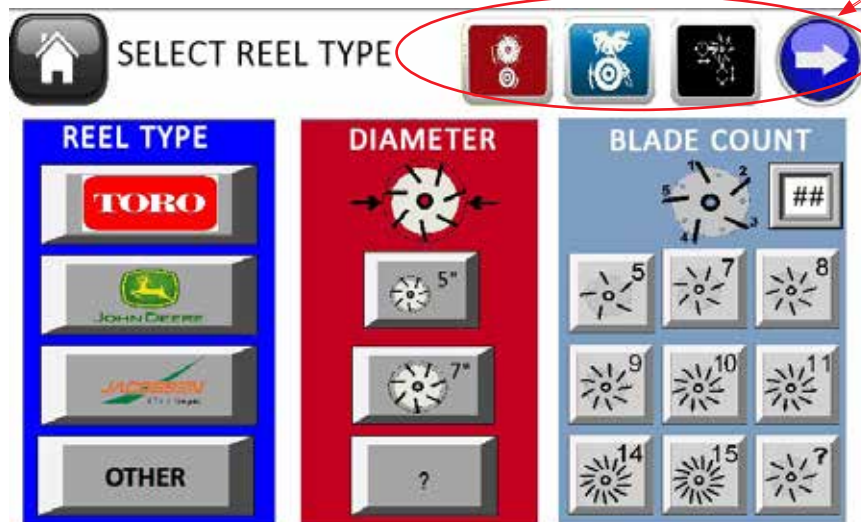
PRESS START BUTTON



FIG. 21

UNIT SELECTION SCREEN

1. Select the **REEL TYPE** by manufacturer to be ground.
2. Select the **DIAMETER** of the reel to be ground.
3. Select the **BLADE COUNT** of the reel to be ground.



These icons will not appear until the operator has selected the reel manufacturer, diameter, and blade count

FIG. 22

OPERATION

SELECT REEL MANUFACTURER AND DIAMETER



FIG. 23

V-BLOCK LOCK PIN

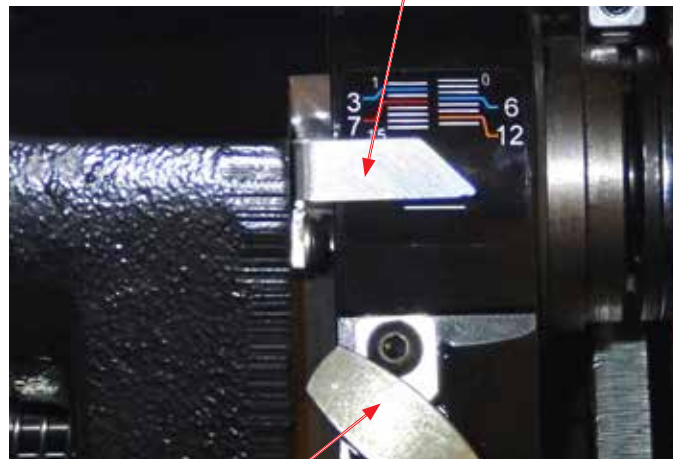


FIG. 24

RELIEF ANGLE ADJUSTER

Place the ACCU-REEL POSITIONER to the correct position based on manufacturer and reel diameter. To move the ACCU-REEL POSITIONER pull up on the lock pin and move the assembly to the desired position. To lock the assembly in the correct position release the lock pin and move the assembly until the lock pin locks into position.

Set your relief angle to the preset angle using the RELIEF ANGLE ADJUSTER. *SEE PAGE 41.* To move the RELIEF ANGLE POSITIONER turn the knob clockwise or counter clockwise until you reach the desired relief angle. NOTE: Grinding head must be in RELIEF position and the angle is set from the bottom edge of the FLAG. See FIG. 26.

Example: On a 7" Jacobsen reel you will set the ACCU-REEL POSITIONER (as shown in FIG. 25) and then set the relief to the corresponding 12° angle (as shown in FIG. 26). If the reel you are grinding does not fit these parameters see the "GRINDING OTHER CUTTING UNITS" section on page 50.

Select a 7" reel then change RELIEF ANGLE ADJUSTER to the corresponding 12° relief angle



FIG. 25

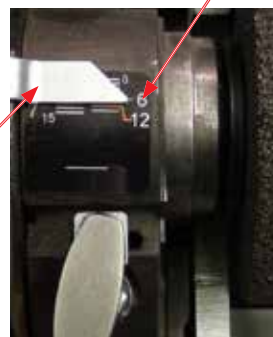


FIG. 26

OPERATION

There are 2 optional pieces of equipment that can be purchased to load a cutting unit. Before starting, read and understand all safety information in this manual and the manual that came with your equipment. Safety information for loading and operational instructions have been included on the following pages.

OPTIONAL BOOM WITH ELECTRIC WINCH

The cutting unit can be loaded from the front or rear of the machine with the optional boom attachment. (653 must have Rear Door Option in order to load from the rear).

1. Position the reel on the floor so the front of the mower faces in the same direction as the front of the machine.
2. Hook the winch spreader bar onto the reel (the clamps on the spreader bar should be spaced evenly along the mower, so they do not slide as the mower is being raised).
3. Use the control connected to the winch to raise or lower the cutting unit. To lower press the "DOWN" button. To raise press the "UP" button.

OPTIONAL WORKSTATION

The Workstation can be used to load from the rear on both the ACCU-Master and the ACCU-Pro.

For detailed information on the OPTIONAL WORKSTATION, see the manual included with the Workstation.



FIG. 27

FRONT ELECTRIC BOOM LOADING



FIG. 28

ELECTRIC BOOM OPTION WITH
OPTIONAL REAR DOORS



OPTIONAL WORKSTATION FIG. 29

OPERATION

READ CAREFULLY BEFORE ATTEMPTING TO OPERATE OR SERVICE YOUR OPTIONAL ELECTRIC WINCH OR OPTIONAL WORKSTATION! FAILURE TO COMPLY WITH INSTRUCTIONS COULD RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE!

FOR YOUR OWN SAFETY AND THAT OF OTHERS, THIS EQUIPMENT MUST BE USED AS RECOMMENDED BY THE MANUFACTURER. FAILURE TO HEED THE FOLLOWING RECOMMENDATIONS COULD ENDANGER YOUR LIFE.

1. Maximum lifting capacity is 400 pounds (180 kg.) in single line winch operation. **DO NOT ATTEMPT TO MOVE LOADS GREATER THAN THIS RATINGS.**
2. **NEVER CARRY** personnel on the hook/ramp or the load.
3. **NEVER MOVE A LOAD** with this winch/workstation until all personnel are clear.
4. **DO NOT ALLOW** unqualified personnel to operate this unit.
5. **KEEP CLEAR OF RAMP OR WINCH WIRE ROPE AND HOOK WHEN OPERATING. DO NOT ATTEMPT** to guide wire rope by hand as it rewinds.
6. **AVOID** excessive inching and quick reversals of load.
7. **BE SURE** that the power supply is disconnected before performing maintenance and repair procedure.
8. **DO NOT OPERATE** this unit if it is not functioning properly.
9. **KEEP WORKSTATION/WINCHING AREA CLEAR.** Do not allow people to remain in the workstation/winch area. Do not stand between the winch and load.
11. **ALLOW WORKSTATION/WINCH TO COOL DOWN FREQUENTLY**, as the motor is designed for intermittent duty only. When the metal motor housing is hot to touch, it is time to let the winch cool down.
12. **DO NOT OPERATE WORKSTATION/WINCH WHEN UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION.**
13. **DO NOT USE WORKSTATION/WINCH TO HOLD LOADS IN PLACE.** Use other means of securing loads, such as tie down straps.

14. USE ONLY FACTORY APPROVED SWITCHES, REMOTE CONTROLS AND ACCESSORIES. Use of non-factory approved components may cause injury or property damage and could void your warranty.

15. DO NOT MACHINE OR WELD ANY PART OF THE WORKSTATION/WINCH. Such alterations may weaken the structural integrity of the workstation/winch and could void your warranty.

16. DO NOT OPERATE THIS WORKSTATION/WINCH OUT DOORS OR IN A CORROSIVE OR EXPLOSIVE ENVIRONMENT.

NOTE: THE FOLLOWING APPLY TO OPERATION OF THE WINCH ONLY.

1. **MAINTAIN A MINIMUM OF 4 TURNS OF WIRE ROPE** around the winch drum to prevent the wire rope from pulling off under load.
2. **WHEN SPREADER BAR ASSEMBLY IS USED** be sure it is properly seated in the saddle of the hook.
3. **NEVER HOOK THE WIRE ROPE BACK ON ITSELF. USE THE SPREADER BAR ASSEMBLY.** Hooking the wire rope back on itself creates an unacceptable strain on the wire rope.
4. **DO NOT** use the wire rope as a ground for welding.
5. **NEVER TOUCH** a welding electrode to the wire rope.
6. **INSPECT WIRE ROPE FREQUENTLY.** A frayed wire rope with broken strands should be replaced immediately. Never replace the wire rope with rope of any kind or with wire rope other than the type and size specified in the repair parts section of this manual.
7. **USE HEAVY LEATHER GLOVES** when handling the wire rope to eliminate the possibility of cuts or scratches from burrs and slivers from broken strands.

OPERATION

The winch is designed to pull 400 lbs (180 KG) for 20 seconds on the wire rope layer closest to the drum. Attempts to pull more than this weight or exceed the duty cycle (on time) may cause damage to the winch or wire rope. It may also cause the circuit breaker to trip and the winch to not operate. Maintain a minimum of four wraps of wire rope around the winch drum before attempting any pulls.



- DO NOT PUT ANGULAR LOADS ON THE WINCH. PULL SHOULD ALWAYS BE PERPENDICULAR TO WINCH.
- KEEP WIRE ROPE TIGHT AND EVEN ON THE SPOOL.
- REPLACE WIRE ROPE WHEN FRAYED.
- KEEP WIRE ROPE UNDER TENSION WHEN OPERATING WINCH. WIRE ROPE WILL "STACK UP" LOOSELY ON SPOOL IF NOT KEPT UNDER TENSION.

The wire rope will require periodic attention and eventual replacement. Inspect the wire rope frequently. If any fraying exists, replace the wire rope at once. Your winch uses a galvanized aircraft type 1/8" DIA. [3 mm] 7 x 19 cable. Always replace the wire rope with the replacement rope specified in the parts section of this manual. Because all rope is subject to wear, it is excluded from our warranty.

LUBRICATION

Your new winch has lifetime lubrication. Grease leakage out of the winch, especially during the first few operations is normal. It is not necessary to grease or oil any part of the winch at any time. If grease leakage continues beyond a short period of time, the winch should be inspected for cause, and replaced if necessary.

OPTIONAL WORKSTATION

This OPTIONAL WORKSTATION has been designed to lift a maximum of 400 lbs (180 KG) once every 10 minutes. Attempts to lift more than this weight or exceed the duty cycle (on time) may cause the circuit breaker to trip, and the lift to not operate.

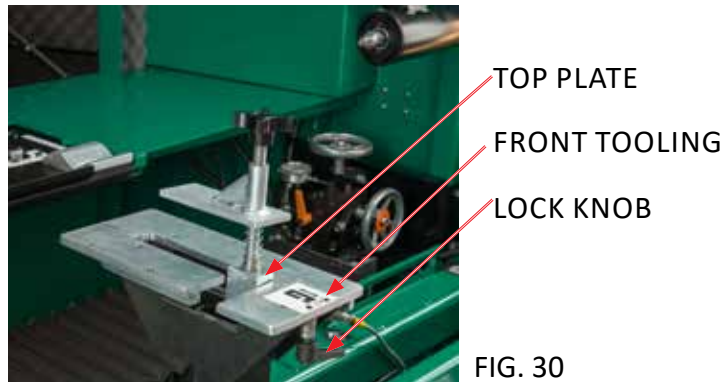
For detailed information on the OPTIONAL WORKSTATION see the manual included with the Workstation.

NEVER USE THE WORKSTATION WITH A PERSON ON THE RAMP.

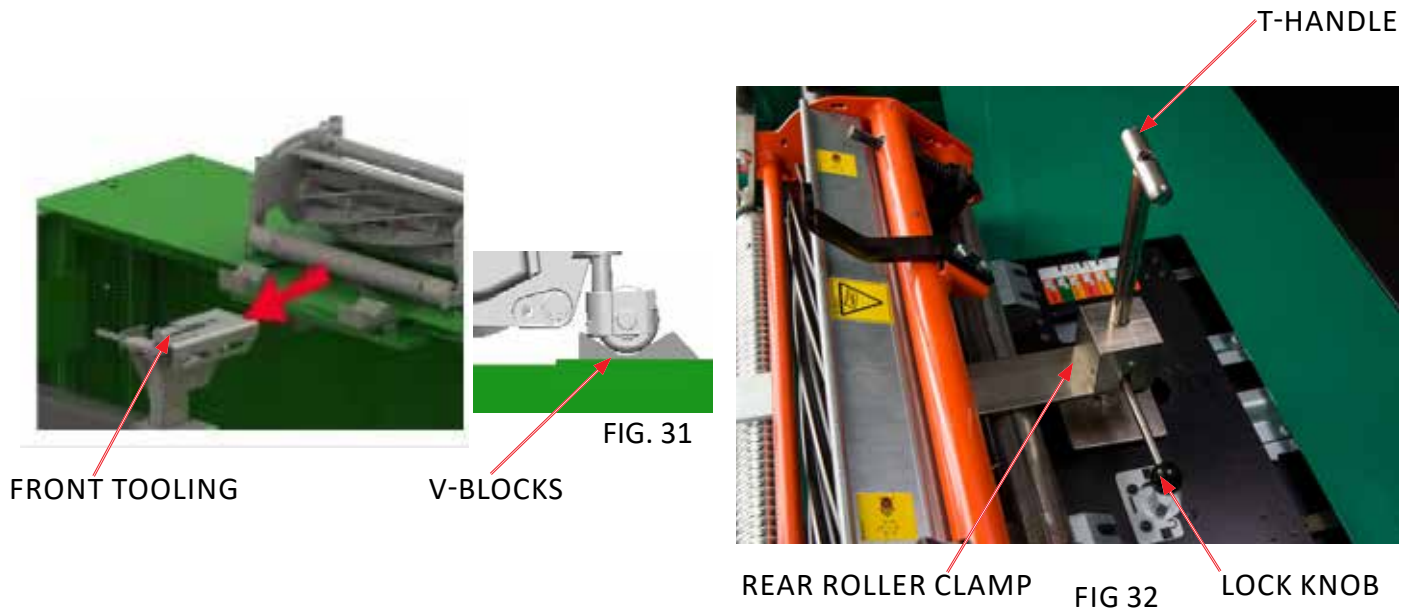
OPERATION

PLACE THE CUTTING UNIT

If loading from the rear of the machine it may be necessary to remove the REAR ROLLER CLAMP. To remove the REAR ROLLER CLAMP, turn the clamp 90 degrees so that the top T-HANDLE is pointing front to back and lift up on the clamp. See FIG. 32 below.



On smaller reels it may be necessary to move the FRONT HEIGHT ADJUSTER top plate forward to receive the front roller. To move the top plate unlock the lock handle and slide the FRONT HEIGHT ADJUSTER top plate in or out. If the plate has been moved forward always check for clearance with the grinding head.



With the ACCU-REEL POSITIONER and FRONT HEIGHT ADJUSTER set, place the rear roller of the cutting unit into the V-Blocks (as in FIG. 31). The front roller should rest on the FRONT HEIGHT ADJUSTER top plate. The cutting unit should be centered on the machine.

When the front and rear rollers are in position clamp the rear roller with the REAR ROLLER CLAMP. To clamp the rear roller place the REAR ROLLER CLAMP on top of the rear roller. Then rotate the LOCK KNOB down toward the table to clamp and lock the rear roller into position.

OPERATION

SET THE HEIGHT



FIG. 33

ACCU-POSITIONING GAUGE STORAGE

To set the height of the cutting unit use the ACCU-POSITIONING GAUGE which is stored in the cabinet on the right handside of the inside of the machine. See FIG. 33.

1. Place the ACCU-POSITIONING GAUGE on the LOWER PIN on the right side of the grinding head. See FIG. 33.
2. Press the LOCKING TAB to release the GAUGE ROD.
3. Rotate the ACCU-POSITIONING GAUGE on the PIN until the GAUGE ROD meets the center shaft of the cutting unit. See FIG. 34.
4. Secure the GAUGE in place with the LOCK HANDLE then retract the GAUGE ROD until it locks into the TAB.

IF NECESSARY- Lower the grinding head to avoid contact between the reel and grinding head.

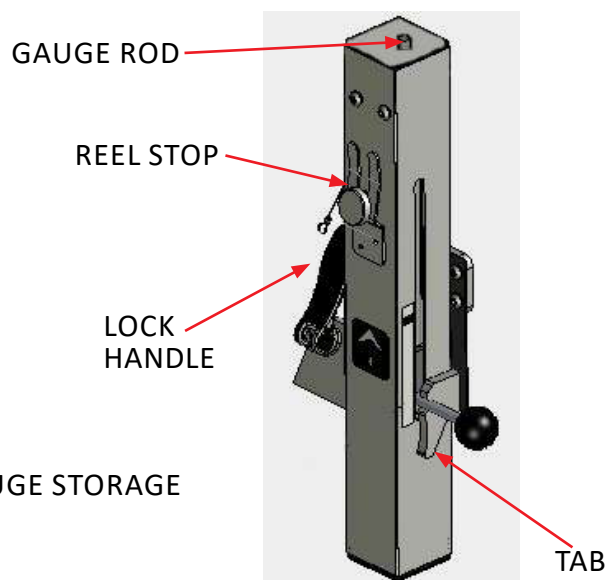
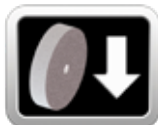
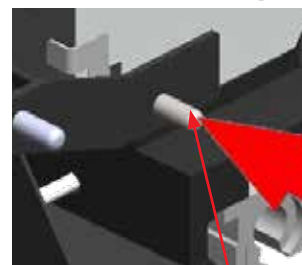
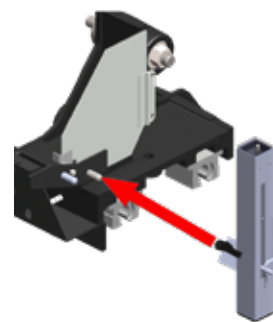


FIG. 34



LOWER PIN

OPERATION

REEL STOP



FIG. 35



LOWEST BLADE OF CUTTING UNIT

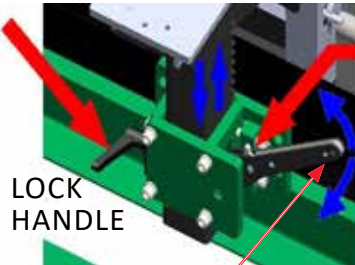
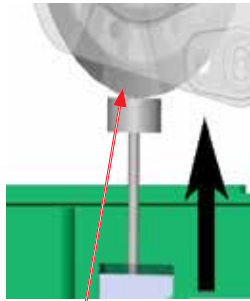
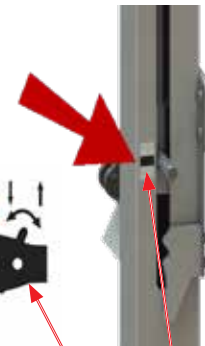


FIG. 36

HEIGHT ADJUSTER



ALIGNMENT INDICATOR

DIRECTIONAL TOGGLE

To set the height of the cutting unit:

1. Place the round REEL STOP on top of the GAUGE ROD on the ACCU-POSITIONING GAUGE.
2. Press the TAB on the right side of the ACCU-POSITIONING GAUGE to release the GAUGE ROD with REEL STOP and allow the STOP to contact the lowest reel blade on the cutting unit. See FIG. 35.
3. Unlock the LOCK HANDLE on the left side of the HEIGHT ADJUSTER See FIG. 36
4. Select the DIRECTIONAL TOGGLE on the ratchet see FIG. 36.
5. Press down or pull up on the ratchet handle to move the cutting unit up or down until the handle on the ACCU-POSITIONING GAUGE aligns with the ALIGNMENT INDICATOR on the side of the ACCU-POSITIONING GAUGE. See FIG. 36.
6. Re-lock the LOCK HANDLE. See FIG. 36.



FRONT ROLLER CLAMP

FIG. 37

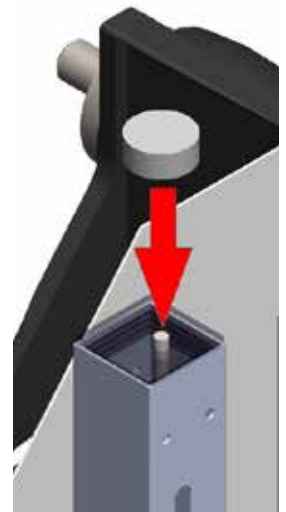


FIG. 38

7. Clamp the front roller with the FRONT ROLLER CLAMP (see FIG. 37).
8. Retract the GAUGE ROD to the down position.
9. Remove and store the REEL STOP on the side of the ACCU-POSITIONING GAUGE (see FIG. 38).

IMPORTANT! Check for clearance between the grinding head and the front tooling. Check with the FINGER ASSEMBLY in the SPIN position and the RELIEF position. Adjust the position of the TOP PLATE if necessary.

OPERATION

STEP 2: POSITION THE GRINDING HEAD CARRIAGE

Before you align the GRINDING HEAD CARRIAGE to the reel of the cutting unit, true the GRINDING HEAD CARRIAGE parallel to the ACCU-REEL POSITIONER V-BLOCKS SUPPORT by adjusting the CROSS SLIDE ASSEMBLY. Unlock the ORANGE LOCK HANDLE on the CROSS SLIDE ASSEMBLY and rotate the ORANGE HANDWHEEL until the DIAL INDICATOR on the CROSS SLIDE ASSEMBLY reads "0" with the long hand and "3" with the short hand (see FIG 39).



FIG. 39

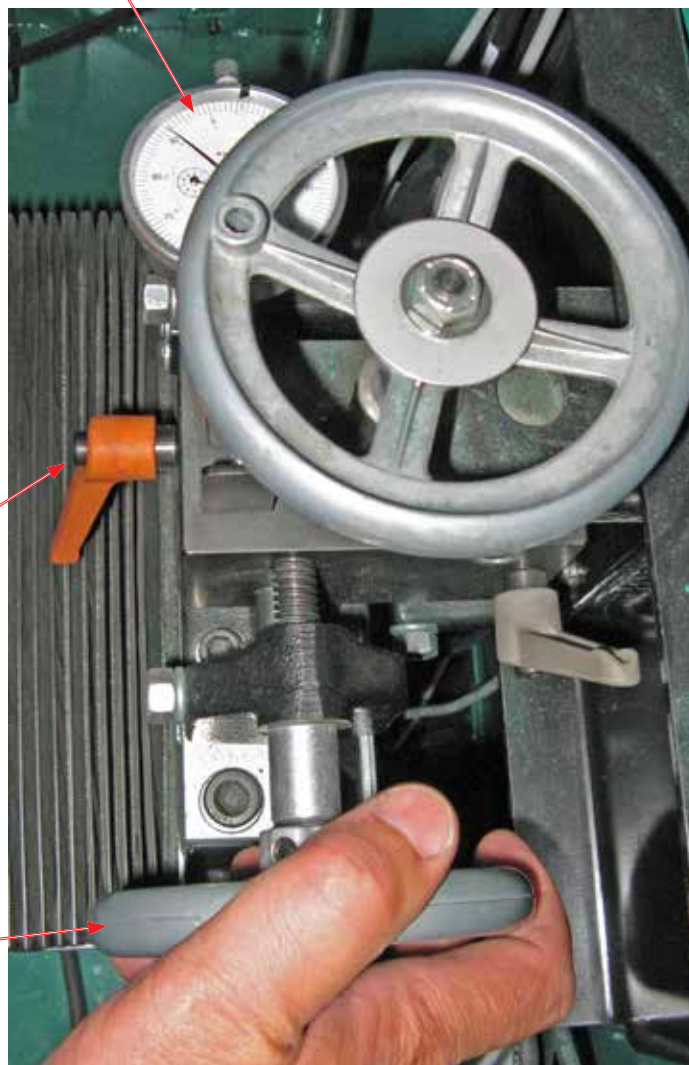
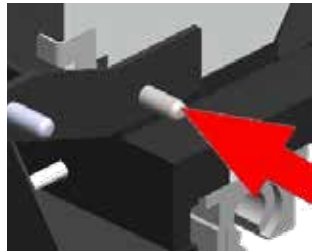
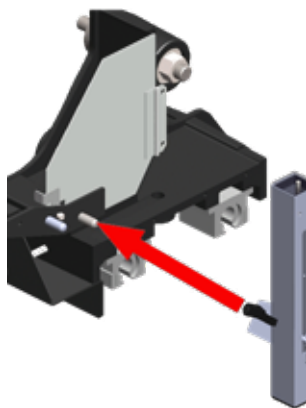


FIG. 16

OPERATION

VERTICAL POSITIONING



CROSS SLIDE GREY HANDWHEEL



GREY LOCK HANDLE

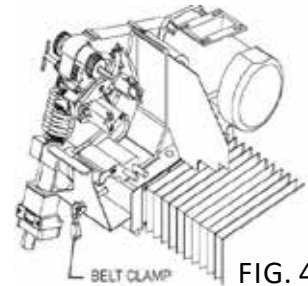


FIG. 41

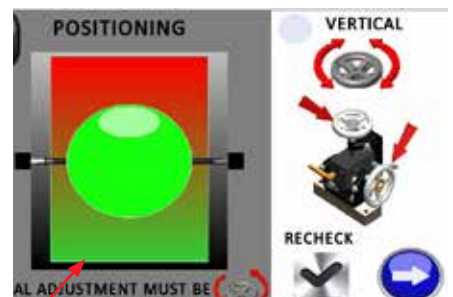
To position the GRINDING HEAD CARRIAGE vertically, place the ACCU-POSITIONING GAUGE on the lower pin. Next, unlock the GREY LOCK HANDLE on the CROSS SLIDE ASSEMBLY. Then release the BELT CLAMP handle. The clamp release arm is located at the front of the carriage (see FIG. 41). Rotate the release arm up to release and down to engage.

Steps for positioning the GRINDING HEAD CARRIAGE to the cutting unit:

1. Move the GRINDING HEAD CARRIAGE to the left of the reel until the alignment indicator on the ACCU-POSITIONING GAUGE aligns with the ALIGNMENT INDICATOR on the tooling bar. See FIG. 42.
2. Press the LOCKING TAB on the side of the ACCU-POSITIONING GAUGE to release the GAUGE ROD. The end of the rod should go between the reel blades. Rotate the ACCU-POSITION GAUGE assembly until the rod end touches the center of the reel center shaft.
3. Press CHECK on the left side of the ACCU-TOUCH 3 CONTROL.
4. Retract the GAUGE ROD and move the GRINDING HEAD CARRIAGE to the right side of the cutting unit until the ALIGNMENT INDICATOR on the ACCU-POSITIONING GAUGE aligns with the ALIGNMENT INDICATOR on the tooling bar. See Fig 42.
5. Press the LOCKING TAB on the side of the ACCU-POSITIONING GAUGE to release the GAUGE ROD. You may have to rotate the REEL slightly to allow the indicator rod to travel between the reel blades. *NOTE: It is important to NOT move or rotate the ACCU-POSITIONING GAUGE. Moving the gauge will result in an incorrect reading.*
6. Press CHECK on the right side of the ACCU-TOUCH 3 CONTROL.
7. Use the GREY HANDWHEEL to raise or lower the GRINDING HEAD CARRIAGE until the green light appears in the center. The HANDWHEEL icon in the upper right of the screen will indicate which direction to rotate the HANDWHEEL.
8. Retract the GAUGE ROD and move back to the left side of the cutting unit until the ALIGNMENT INDICATOR on the ACCU-POSITIONING GAUGE aligns with the ALIGNMENT INDICATOR on the tooling bar. (Same position as step 1).



FIG. 42



GREEN LIGHT

OPERATION

9. Press LOCKING TAB on the side of the ACCU- POSITION GAUGE to release the GAUGE ROD. You may have to rotate the reel slightly to allow the GAUGE ROD to travel between the reel blades. *NOTE: It is important to NOT move or rotate the gauge. Moving the gauge will result in an incorrect reading.*
10. If the GREEN LIGHT appears the GRINDING HEAD CARRIAGE is positioned correctly. Relock the GREY LOCK HANDLE and retract the GAUGE ROD. If the GREEN LIGHT does not appear, press RECHECK and repeat steps 1-10.

NOTE: It may be necessary to recheck the positioning, if so, press RECHECK and move the head back to the left.

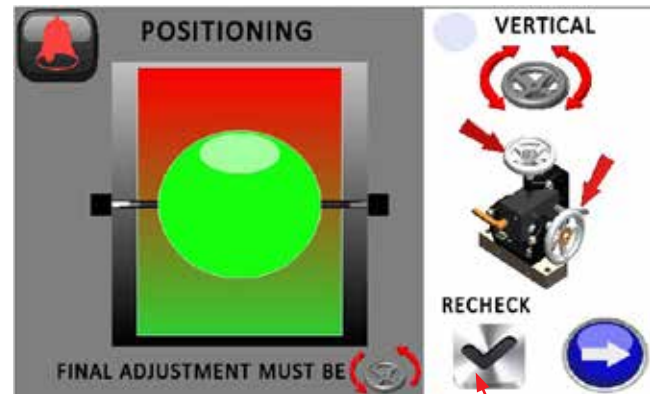


FIG. 43

RECHECK

HORIZONTAL POSITIONING

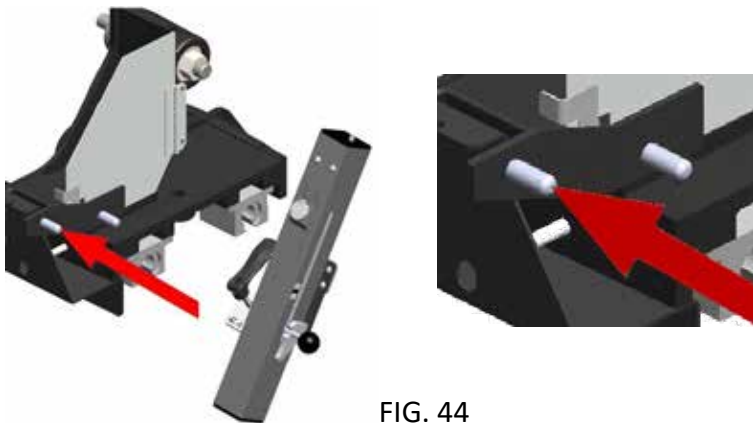
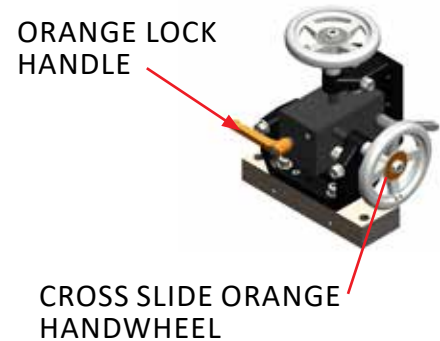


FIG. 44



To position the GRINDING HEAD CARRIAGE horizontally, place the ACCU-POSITIONING GAUGE on the upper pin. Unlock the ORANGE LOCK HANDLE on the CROSS SLIDE ASSEMBLY.

Follow the same Steps 1-10 used for vertical positioning except adjust the ORANGE HANDWHEEL. When complete relock the ORANGE LOCK HANDLE.

After positioning the GRINDING HEAD CARRIAGE parallel to the cutting unit in both the vertical and horizontal positions, remove and store the ACCU-POSITIONING GAUGE. See FIG. 45.

Verify that all LOCK HANDLES ON THE FRONT TOOLING AND CROSS SLIDE ASSEMBLY are tight. Your reel is now ready for grinding.



FIRMLY HAND TIGHTEN ALL LOCKING KNOBS BEFORE GRINDING. ANY LOOSENESS WILL ADVERSELY AFFECT GRINDING QUALITY.

ACCU-POSITIONING GAUGE STORAGE



FIG. 45

OPERATION

STEP 3: SPIN GRINDING

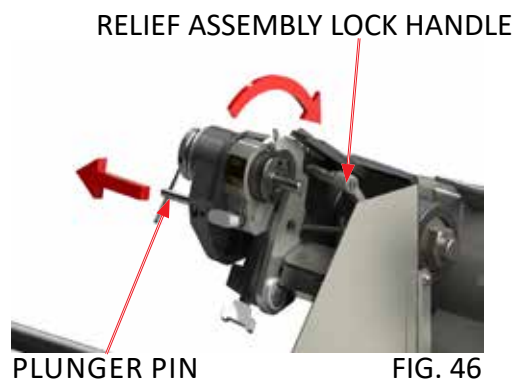
~~PRESS SPIN GRIND~~
TO CONTINUE.



GRINDING HEAD POSITIONS SPIN/RELIEF

The FINGER AND BODY ASSEMBLY of the GRINDING HEAD rotates on the GRINDING HEAD HOUSING to change positions between spin grinding and relief grinding. To change the position of the FINGER AND BODY ASSEMBLY, pull out the PLUNGER PIN on the left side of the GRINDING HEAD HOUSING. When spin grinding, the FINGER AND BODY ASSEMBLY must be rotated clockwise (looking at it from the right). This rotates the FINGERS out of the reel blade path. When relief grinding, the FINGER AND BODY ASSEMBLY must be rotated counter-clockwise. This rotates the FINGERS into position to touch and control the reel blades. The PLUNGER PIN engages the RELIEF ADJUSTER ASSEMBLY. If the PLUNGER PIN does not fully engage into the RELIEF ADJUSTER, rotate the ASSEMBLY slightly until the PIN fully engages.

1. Pull the left-side PLUNGER PIN and rotate the FINGER AND BODY ASSEMBLY down (clockwise looking from the right side) to the spin position until the left-side PLUNGER PIN locks into position. See FIG. 46.
2. Release the RELIEF ASSEMBLY LOCK HANDLE to move the RELIEF FINGER ASSEMBLY. Install the 5" [127 mm] x 1" [25 mm] SPIN GRINDING WHEEL. Adjust the position of the RELIEF FINGER ASSEMBLY until it clears the grinding wheel by about 1/16" [1.6 mm].
3. *NOTE: Use the 3.5" x 1" [89 mm x 25 mm] grinding wheel to achieve the necessary clearance on smaller reels, such as 5" [127 mm] diameter greensmowers.*



1/16" [1.6MM] GAP FIXED FINGER



FIG. 48

LOCK HANDLE



FIG. 47

NOTE: Unlock LOCK HANDLE to raise or lower FIXED FINGER to match grinding wheel wear.

OPERATION

CONNECT SPIN DRIVE

The SPIN DRIVE attaches to the end of the reel shaft or a drive system component. Consult the cutting unit manufacturer for proper spin drive placement and attachment.

The SPIN DRIVE has a 1/2" male square end. To spin the reel you will need an adapter to connect the SPIN DRIVE to the cutting unit. The machine was shipped with 8, 9, and 11 spline adapters (Part # 3706130). See FIG. 50.

Use one of these adapters to connect the SPIN DRIVE to the cutting unit. See FIG. 51. If the cutting unit cannot be connected with one of these adapters contact the reel manufacturer for additional information.



FIG. 48

To move the SPIN DRIVE to the other side of the machine, unlock the LOCK HANDLE, rotate the assembly back, and lift straight up. Once moved to the other side, drop the PIN on the bottom of the SPIN DRIVE assembly into the block on the end of the tooling bar. See FIG. 51.

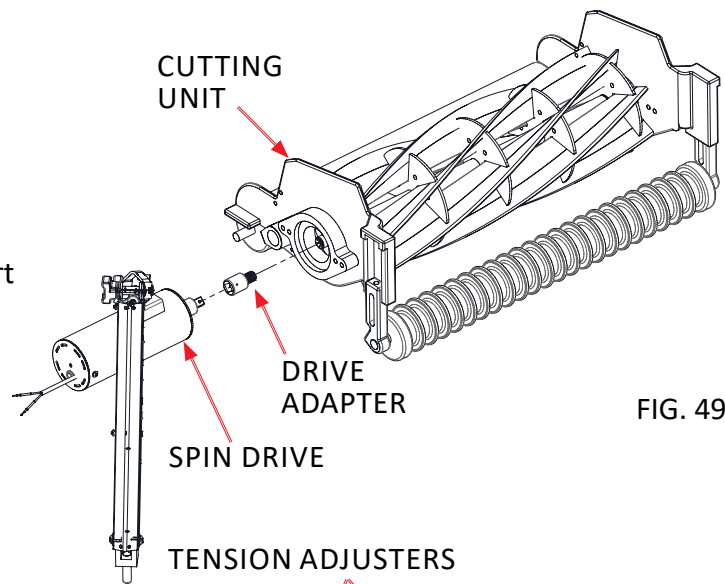


FIG. 49

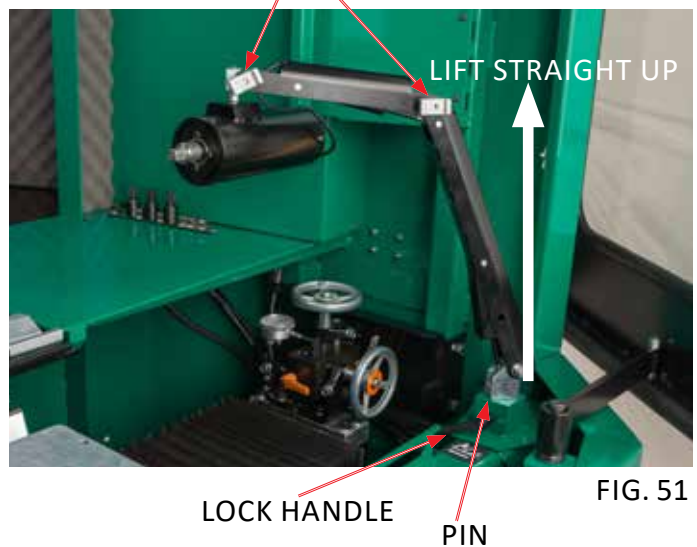


FIG. 51

After the SPIN DRIVE is connected to the cutting unit, press the MOTOR POSITION on the ACCU-TOUCH 3 CONTROL to select the direction the motor will rotate. Example: If the SPIN DRIVE is on right side, press the RIGHT SIDE MOTOR POSITION icon on the screen.

NOTE: The spin rotation is the same as the grinding wheel - clockwise looking from right end.

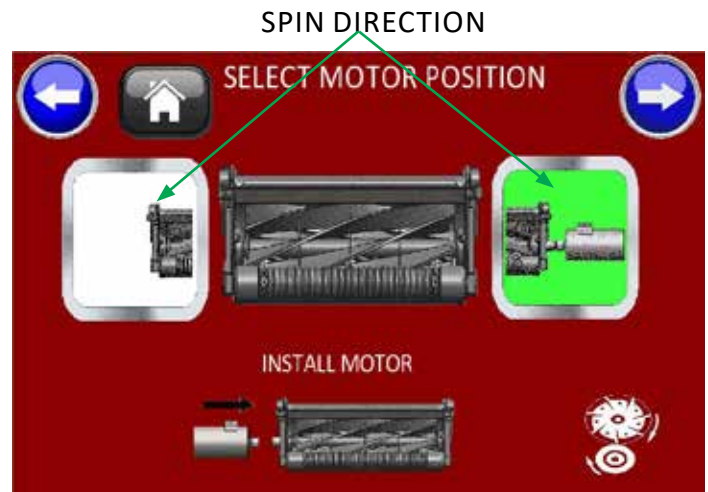


FIG. 52

OPERATION

SET TRAVEL LIMITS

Move the grinding wheel up to within an 1/8" [3 mm] of reel by pressing INFEED.



Set the TRAVEL LIMITS of the grinding head by either manually moving the GRINDING HEAD CARRIAGE or pressing the TRAVERSE icons on the screen. See FIG. 53.

Move the TRAVEL LIMIT SENSORS out to allow the GRINDING WHEEL to reach the end of the reel. Move the GRINDING HEAD CARRIAGE OUT UNTIL THE GRINDING WHEEL has cleared the end of the reel (if clearance to the frame allows). See FIG. 54. When the GRINDING WHEEL is in position, move the TRAVEL LIMIT SENSOR in until the light on the SENSOR illuminates. The TRAVEL LIMIT SENSOR can be moved by sliding it left or right.

Check the setting of the TRAVEL LIMIT SENSOR by moving the GRINDING WHEEL in a couple of inches from the TRAVEL LIMIT SENSOR and then back out. Repeat the process for the opposite TRAVEL LIMIT SENSOR.

NOTE: IF THE REEL FRAME EXTENDS PAST THE REEL ITSELF, MAKE SURE THE TRAVEL LIMITS ARE SET SO THAT THE GRINDING WHEEL WILL NOT RUN INTO FRAME WHEN GRINDING.

Move the GRINDING HEAD CARRIAGE to the right side TRAVEL LIMIT and lock the BELT CLAMP.

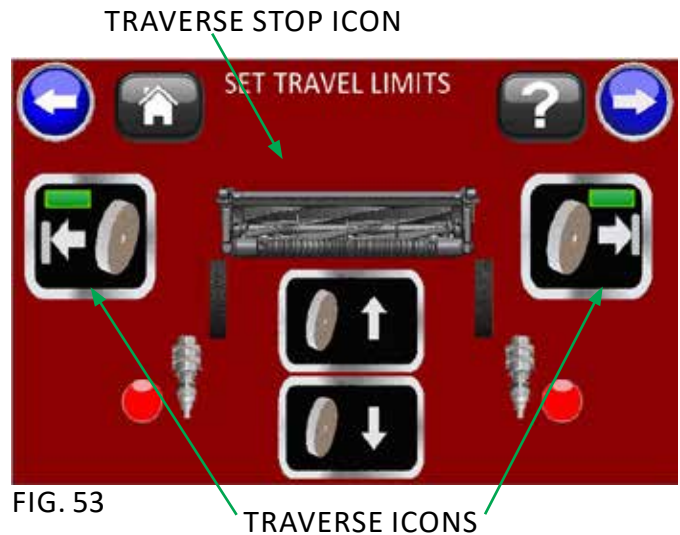


FIG. 53



FIG. 54

NOTE: Grinding wheel must be positioned off of the reel if frame allows.



FIG. 55

TRAVEL LIMIT SENSOR

OPERATION

TEST GRIND

1. Close the doors (the grinding wheel motor and spin drive will not operate with the doors open).

2. Press START. This will turn on the GRINDING WHEEL MOTOR, VACUUM, and the SPIN DRIVE MOTOR.



NOTE: When the reel turns in the same rotation as the grinding wheel, the point of contact where they meet is in opposite directions. See FIG. 57. If this is not correct turn off grinder and go back to the spin motor position screen.

3. With the grinding wheel under the reel, press the INFEEED icon on the ACCU-TOUCH 3 CONTROL until there is light sparking on the reel.



4. Press THE TRAVERSE icon on the ACCU-TOUCH 3 CONTROL to traverse across the reel to find the high areas and test the travel limits.

NOTE: If the grind starts getting heavier, lower the grinding head until you can travel the full length of the reel without heavy grinding.

5. Traverse to the HOME POSITION.

NOTE: The Home position is when the grinding head is on the right side travel limit and the right side travel limit sensor is illuminated.

NOTE: if there is excessive differences from one side to the other (more than 1/16" [1.5mm] you may want to verify alignment before going further.

6. With the wheel in the home position press STOP, then press FORWARD to continue on to the next screen to select a program.



FIG. 56

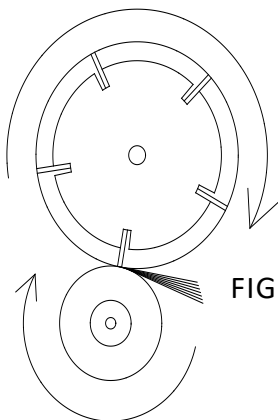
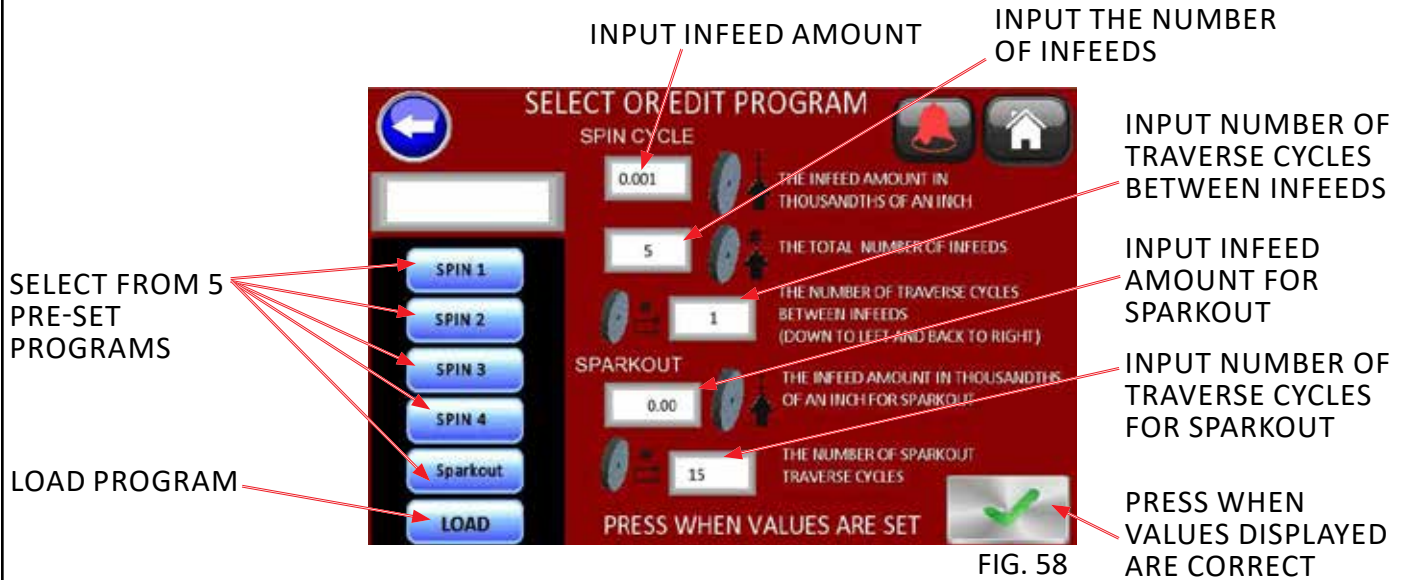


FIG. 57

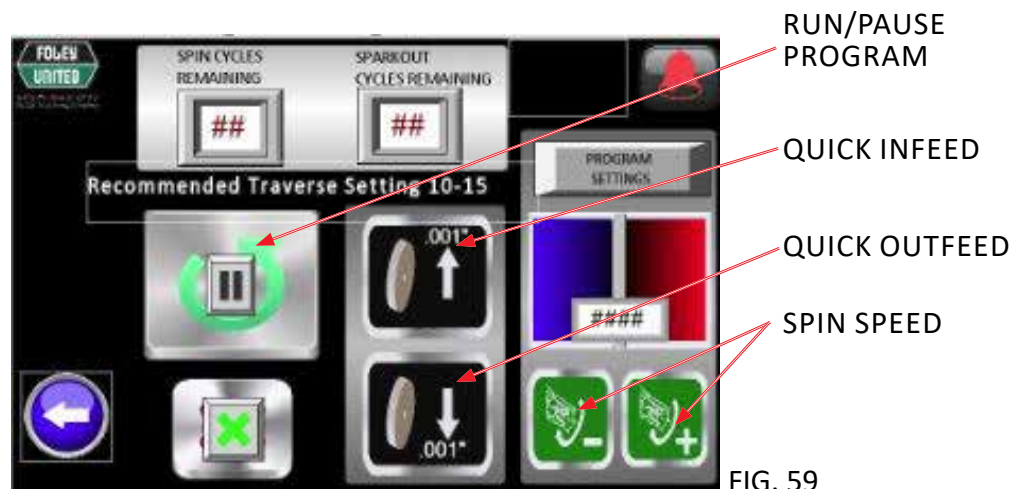
OPERATION

RUN A SPIN GRIND PROGRAM

Select a program from the 5 preset programs or, if there are programs that were previously saved, press **LOAD** to access the **PROGRAM LOAD SCREEN**. You may edit the values by pressing on the value. A screen will appear that will allow you to type in a new value. Press **ENTER** to load the new value into the control. When the values displayed are correct press the **GREEN CHECK** in the lower right corner of the screen.



To start the SPIN GRIND PROGRAM press **RUN PROGRAM**. The PLC will turn on all necessary functions. You should watch the grinder to ensure that it is cycling properly.



If the grind is too light, touch the **QUICK INFEEED .001"** to infeed the wheel .001" [.0254 mm] while the program is running. The grinding wheel will infeed .001" each time you touch **QUICK INFEEED**. You must remove your finger and press again to infeed another .001" [.0254 mm]. Press the **QUICK OUTFEED .001"** to move the **GRINDING WHEEL** away from the reel.

TRAVERSE DRIVE RPM

The **TRAVERSE SPEED** of the **GRINDING HEAD CARRIAGE** is adjustable from approximately 5 feet per minute [1.5 meters per minute] to 20 feet per minute [6 meters per minute]. It is recommended to grind around 15 feet per minute [4 meters per minute]. Grinding at a slower traverse speed, 10 feet per minute [3 meters per minute] will give a better finish but will extend the grind cycle time. Traverse drive speed is solely controlled by the operator and not by any PROGRAM.



OPERATION

SPIN SPEED ADJUSTMENT

NOTE: SPIN DRIVE RPM in spin grinding is very important to achieving a quality grind. The Accu-Touch 3 Control initially establishes a spin speed based on the reel manufacture and cutting unit information that was input. Generally, the SPIN DRIVE RPM for spin grinding will be between 180 RPM and 380 RPM. However, for all reels, there is an optimum SPIN SPEED where there is an AGGRESSIVE, yet SMOOTH grind.

It is recommended to start grinding each reel at the spin speed determined by the CONTROL and then evaluate the quality of the grind and adjust the RPM higher or lower to optimize the SPIN SPEED for that reel. If the SPIN SPEED is incorrectly set, you can experience two problems: grinding wheel dressing and grinding wheel resonance.

For some reels, especially small diameter high blade count reels, if the SPIN SPEED RPM is set too high, the reel can actually dress the grinding wheel. There can develop what appears to be a very aggressive grind (as if the grinding wheel has self infed) and then a sudden stop of grinding with no grinding wheel to reel contact. If this occurs, your SPIN SPEED was set too high and you have dressed your grinding wheel.

Some reels have a resonant RPM where the reel goes into harmonics with the grinding wheel and the resonance vibrates the grinder which results in a poor quality grind. By changing the SPIN SPEED to a higher or lower RPM you will move out of the resonant range.

After determining the best SPIN SPEED RPM for a particular reel, you can save this value to a custom program.

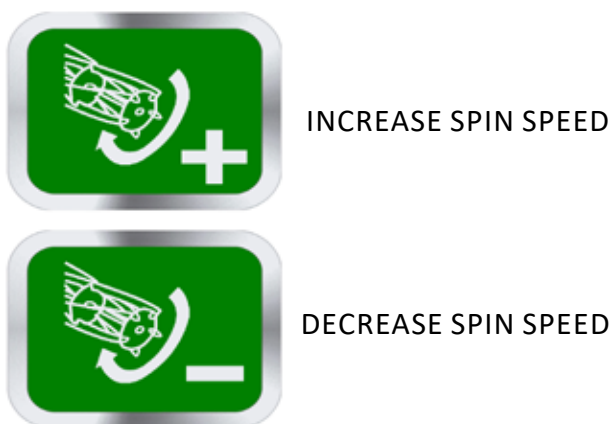
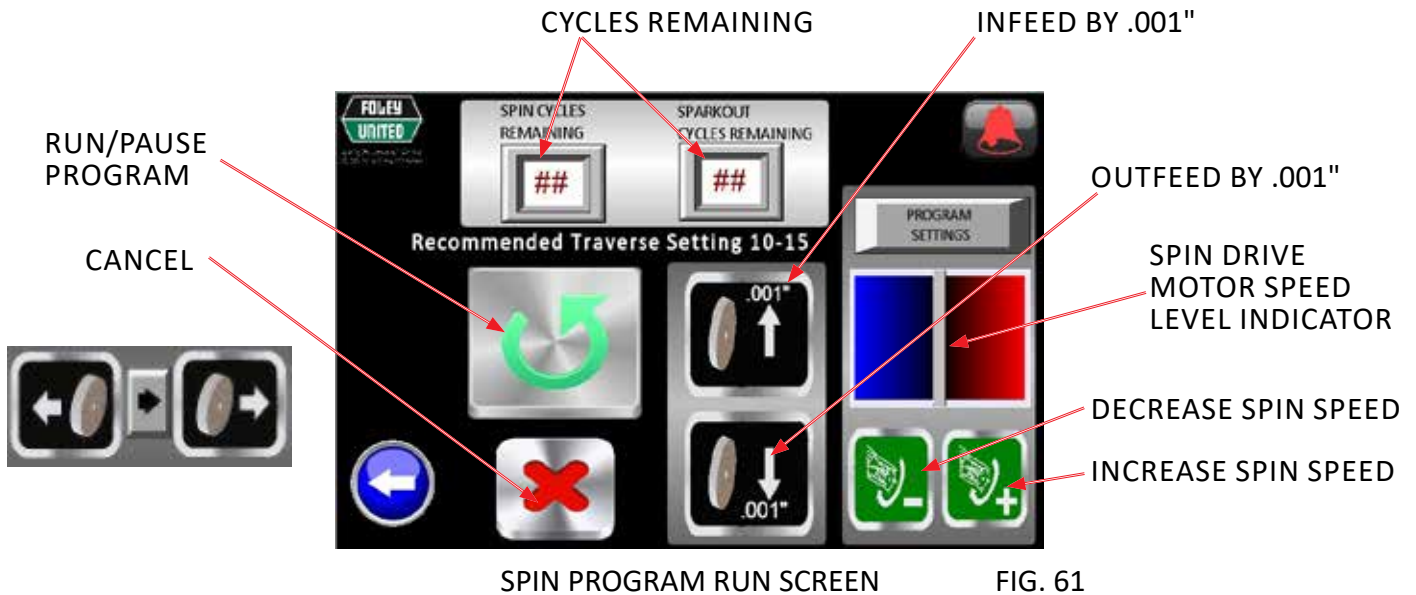


FIG. 60

OPERATION



If you wish to inspect the reel in the middle of a grind program, press PAUSE PROGRAM. The program will finish the traverse cycle it is currently on and then stop at the HOME position. You can then open the doors and check the reel. If you wish to continue press RUN or press the CANCEL button to end the program. When the program is complete the dust collector, spin motor, traverse motor, and grinding motor will turn off. The blue light on top of the grinder will flash to signal that the program is complete. Open the doors and inspect the reel.

NOTE: At this point the reel has been sharpened with the SPIN GRIND process. If you do not want to RELIEF GRIND, simply remove the reel and SPIN GRIND the next reel. If you want to RELIEF GRIND the reel, proceed to the RELIEF GRIND process on the next page. If you wish to save the settings that were just run as a custom program then press SAVE.



OPERATION

STEP 4: RELIEF GRIND



PRESS THE RELIEF GRIND ICON TO CONTINUE. FIG. 63



Pull the left side PLUNGER PIN and rotate the FINGER AND BODY ASSEMBLY up (counter clockwise looking from the right side) to the RELIEF position until the left side PLUNGER PIN locks into position. *NOTE: The plunger pin must be fully engaged with the RELIEF ADJUSTER KNOB for proper function.*

Replace the 1" wide [25mm] grinding wheel with a 3/8" [10 mm] wide relief wheel for relief grinding. As the reel diameter gets smaller and the number of blades increases, a smaller diameter wheel tends to work better. A 3.5" Dia. [89 mm] x 3/8" [10 mm] wide wheel is furnished with the grinder for these smaller reels. As a general rule, use the largest grinding wheel practical to relief grind. (A larger 5" Dia. [127 mm] x 3/8" [10 mm] wide is also furnished with the grinder and should be used on the larger reels).

THE HIGH POINT OF THE RELIEF FINGER SHOULD ALWAYS BE AT THE CORNER OF THE GRINDING WHEEL THAT IS MAKING CONTACT WITH THE REEL. ON THIS GRINDER, THAT IS ALWAYS THE RIGHT HAND SIDE OF THE GRINDING WHEEL. SEE FIG. 64.

REEL SPIRAL Check to see if your mowing unit is a normal or reverse helix.

NORMAL REEL HELIX.

If the wheel has a taper, place the high side of the wheel to the left side for a normal helix reel. Most mowing units are normal helix. This will allow the wheel to grind to the end of the blade.

REVERSE REEL HELIX.

If the wheel has a taper, place the high side of the wheel to the right side for a reverse helix reel.

If you do not use a pre-shaped wheel so the right side contacts the blade, the last 3/8" [10mm] of the blade may not be ground.

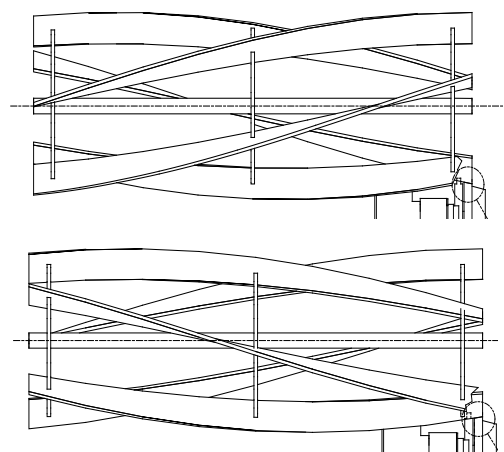


FIG. 64

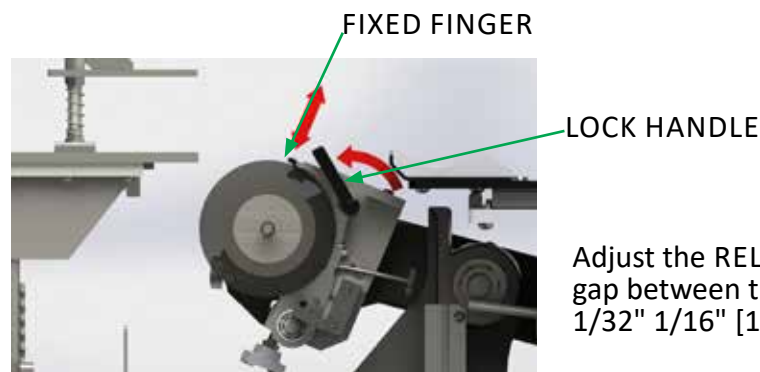


FIG. 65

Adjust the RELIEF FIXED FINGER so there is a small gap between the FIXED FINGER and the wheel (about 1/32" 1/16" [1-1.5 mm]).

OPERATION

SET RELIEF GRIND ANGLE

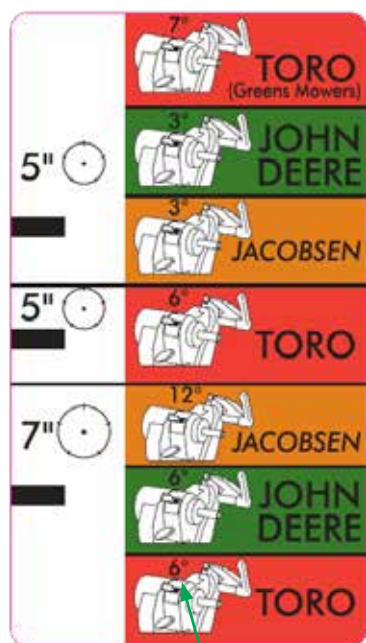


FIG. 66

CORRESPONDING ANGLE



Use ADJUSTER KNOB to set RELIEF ANGLE.

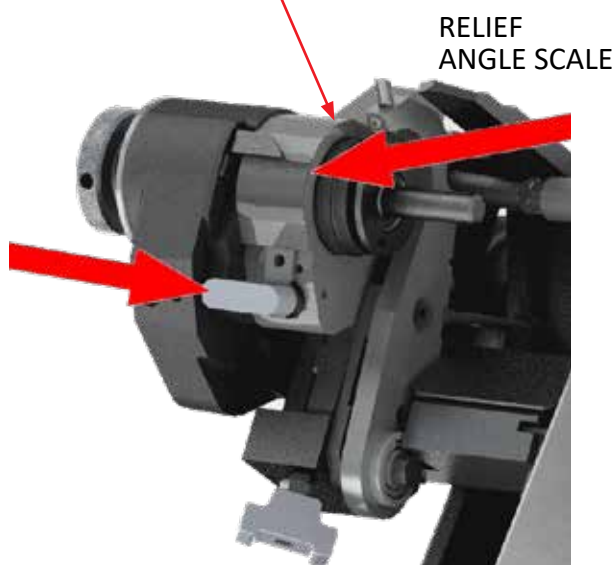


FIG. 67

RELIEF ANGLE ADJUSTMENT

To adjust the RELIEF ANGLE ADJUSTER, turn the ADJUSTER KNOB clockwise for more clearance or counter-clockwise for less clearance until you have reached the desired angle that corresponds with the number on the menu on the ACCU-REEL POSITIONER.

NOTE: The relief angle may have been already set when the ACCU-REEL POSITIONER was initially set up to receive the cutting unit. This is a starting point that will set the relief angle close to factory specifications, if you desire more or less relief simply adjust the angle using the RELIEF ADJUSTER KNOB.



OPERATION

INDEX STOP FINGER ADJUSTMENTS

The FINGER AND BODY ASSEMBLY has two fingers. See FIG. 68 & 69. When relief grinding, the movable INDEX STOP FINGER moves from the RELIEF FINGER SIDE (back side) of the reel blade when traversing from right to left, to the grinding wheel side (front side) of the reel blade when traversing from left to right. This feature provides the fully Automatic Relief function. When performing relief grinding operations, it is important to have the INDEX STOP FINGER adjusted properly.

STEP 1: Once you have the grinding head positioned with a reel blade resting on the FIXED RELIEF FINGER high point, set the INDEX STOP FINGER to give $1/32"$ [.8 mm) to $1/16"$ [1.5 mm) of free play behind the reel blade. The INDEX STOP FINGER is spring loaded to the up position.

To check free play, push down on the INDEX STOP FINGER. Use the INDEX STOP KNOB to adjust the stop position of the index finger. If there is no free play of the INDEX STOP FINGER, rotate the INDEX STOP KNOB clockwise. If there is more than $1/16"$ [1.5 mm] free play, rotate the INDEX STOP KNOB counter-clockwise. See FIG. 69.

NOTE: The reason for the $1/32"$ (1 mm) clearance is so the high point of the RELIEF FINGER is acting as the guide during the relief grind cycle. The INDEX STOP FINGER acts as a guide onto the tapered ramp of the RELIEF FINGER.

The INDEX STOP PIN is height adjustable. It should be adjusted to catch the reel blade and still leave enough clearance to the reel spider after the relief is ground to the depth required. See FIG. 69.

STEP 2: With the down limit of the INDEX STOP FINGER properly set you may have to adjust the UP TRAVEL LIMIT of the Index Finger for 5" (127 mm) diameter reels with reverse helix blades.

The UP TRAVEL LIMIT is restricted to keep the INDEX STOP FINGER in the reel blade index path. This allows the INDEX STOP FINGER to properly catch the next blade when indexing or to allow clearance between the back side of the INDEX STOP FINGER and the front side of the blade when the grinding carriage is making its return trip to the home position. If the INDEX STOP FINGER has problems catching the next blade turn the INDEX FINGER UP TRAVEL LIMIT KNOB counterclockwise. If there isn't enough clearance between the back side of the Index Stop Finger and the front side of the reel blade turn the T-knob clockwise. See FIG. 70.



FIG. 68

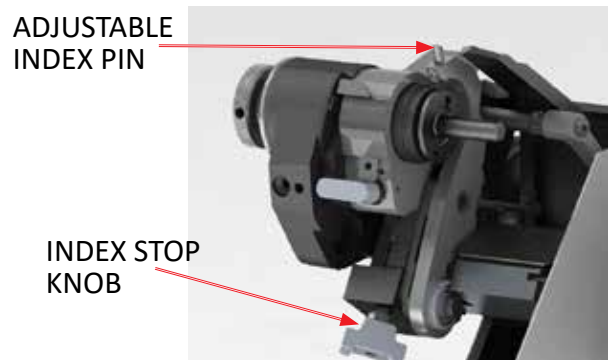


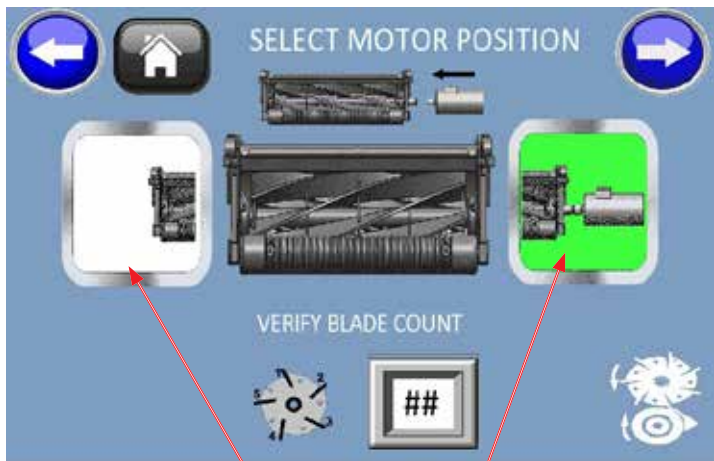
FIG. 69



FIG. 70

OPERATION

SELECT SPIN DRIVE POSITION



CHOOSE SPIN MOTOR LOCATION

FIG. 71

Verify the SPIN DRIVE MOTOR position and the number of blades on the reel.

SET TRAVEL LIMITS



INFEED the GRINDING HEAD up until there is minimal clearance between the reel blade and the GRINDING WHEEL.

Reset the TRAVERSE TRAVEL LIMITS so the GRINDING WHEEL clears the reel at both ends by approximately 1/16" [1.5 mm]. Move the GRINDING HEAD to the right side TRAVEL LIMIT and lock the BELT CLAMP.

FIG. 72



INDEX FINGER

EDGE OF BLADE

FIXED FINGER

WHEEL

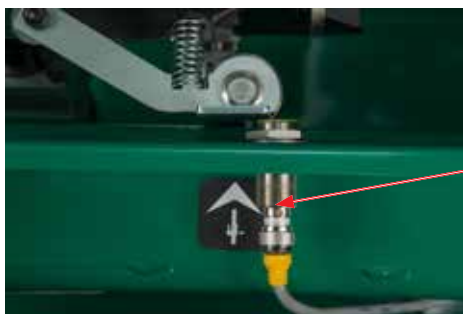


FIG. 73

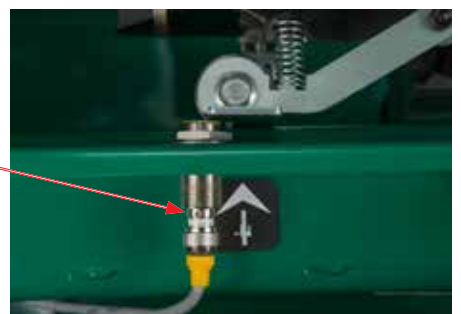


FIG. 74

OPERATION

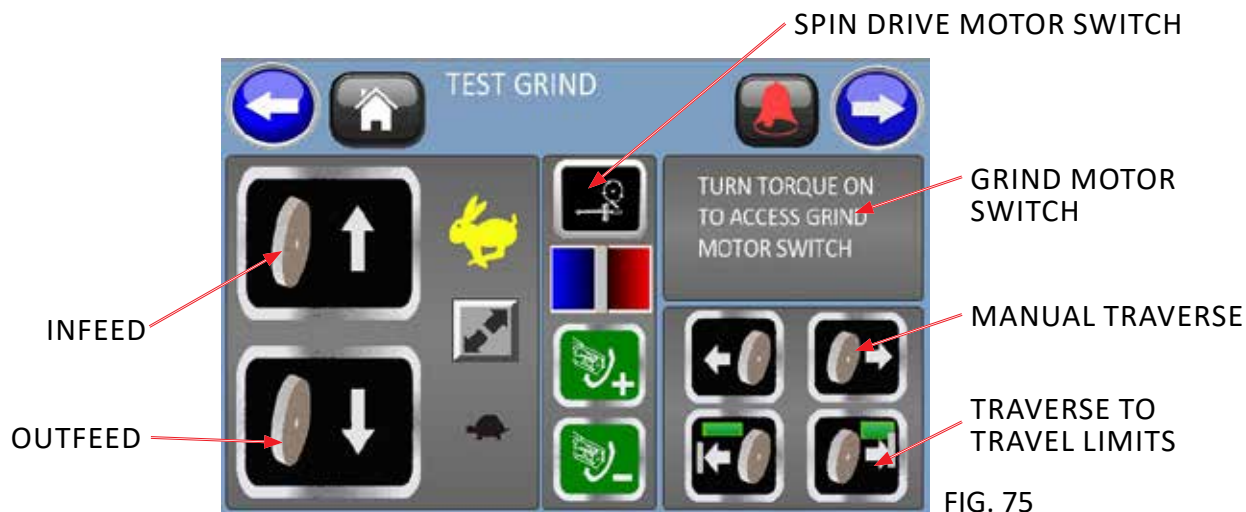


FIG. 75

TEST GRIND

1. Close all the doors, the GRINDING WHEEL MOTOR or SPIN DRIVE will not operate with the doors open.
2. Press the SPIN DRIVE. *NOTE: The SPIN DRIVE will apply a torque load against the fingers. The RELIEF TORQUE POTENTIOMETER is preset based on cutting unit input. NOTE: Free turning reels may need to be adjusted lower. Stiff reels or reels with a drive train may need a higher setting.*
3. Press the GRIND MOTOR SWITCH.
4. Manually move the GRINDING HEAD CARRIAGE all the way to the left watching for proper clearance between the GRINDING WHEEL and the blade. Check for proper clearance between the INDEX FINGER (after releasing from blade at far left position) and the front side of the blade on the return trip to the HOME position. Also verify clearance with the reel blade support spiders.
5. Stop the traverse in HOME position and check for a proper blade index (the automatic index will catch the next blade to be ground).
6. Turn off the GRINDING MOTOR and torque. Press FORWARD.



OPERATION

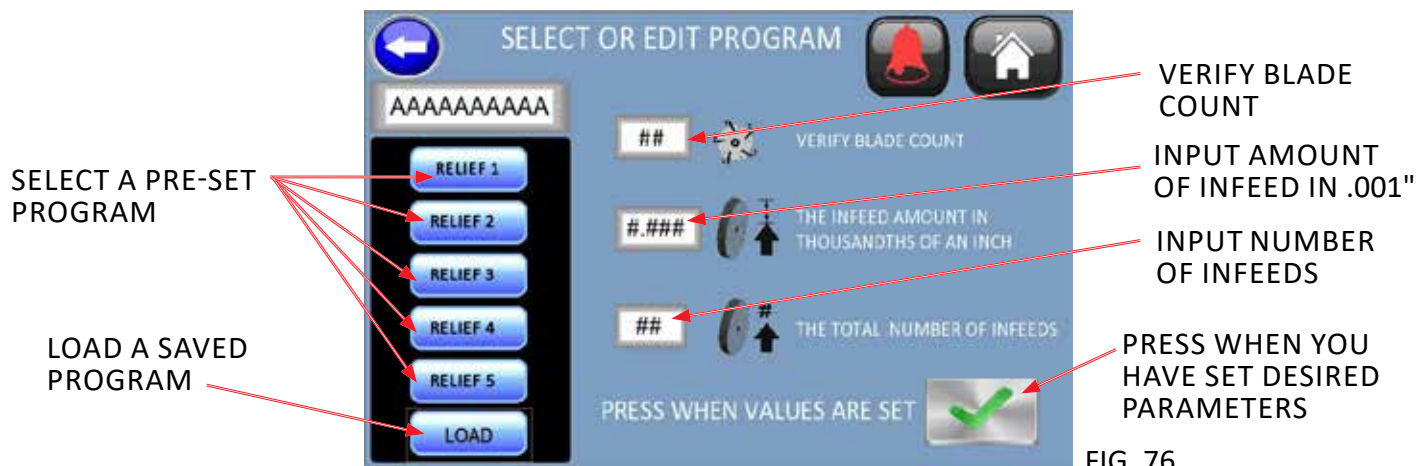


FIG. 76

RELIEF GRIND PROGRAM

1. Select a program from the 5 PRESET PROGRAMS or, if there are programs that were previously saved, press LOAD to access the Program Load Screen. You may edit the values by pressing on the value. A screen will appear that will allow you to type in a new value. Press ENTER to load the new value into the control.
2. When the values displayed are correct, press the GREEN CHECK in the lower right corner of the screen.
3. To start the RELIEF GRIND PROGRAM press RUN PROGRAM. The CONTROL will turn on all necessary functions. You should watch the grinder to ensure that it is cycling properly.
4. If the grind is too light touch the QUICK INFEEED .001" to infeed the wheel .001" while the program is running. The wheel will infeed .001" each time you touch the button. Touch QUICK OUTFEED .001" to lower the GRINDING HEAD CARRIAGE and move the GRINDING WHEEL away from the reel.
5. If you wish to inspect the reel in the middle of a grind program, press PAUSE. The program will finish the traverse cycle it is currently on and then stop at the HOME position. You can then open the doors and check the reel. If you wish to continue press RUN.

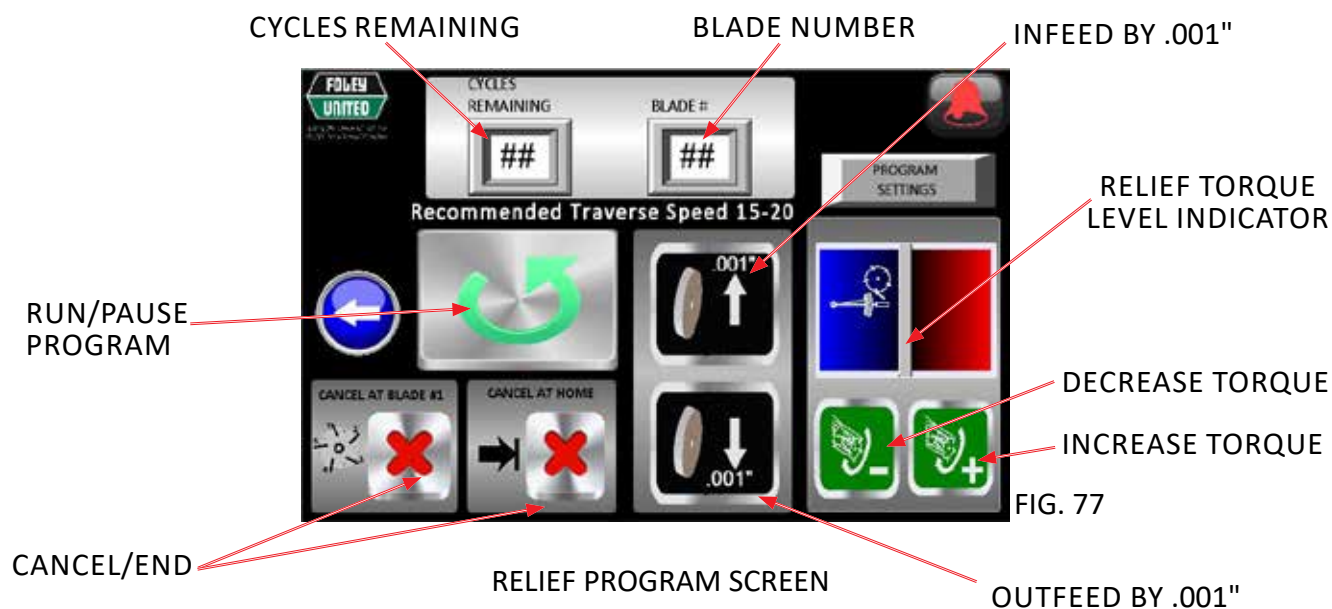


FIG. 77

OPERATION

TRAVERSE DRIVE RPM

It is recommended to relief grind between around 15-20 feet per minute [4 meters per minute]. Grinding at a slower traverse speed, 10 feet per minute [3 meters per minute] as an example, will give a better finish but will extend the grind cycle time.

3. TRAVERSE
SPEED KNOB



FIG. 78

END OF PROGRAM

When the program is finished, the VACUUM, SPIN MOTOR, TRAVERSE MOTOR, and GRINDING MOTOR will turn off. The BLUE LIGHT on top of the grinder will flash to signal that the program is complete.

Open the doors and inspect the relief grind. Repeat the relief grind if needed. The flashing light will turn off if the doors are opened or an icon is pressed on the Cycle Complete screen.

To end the program at the HOME position, press CANCEL AT HOME.

To cancel any additional infeeds and end the program at the first blade, press CANCEL AT BLADE #1. At the end of the program, the CYCLE COMPLETE screen will appear. Select one of the options on the screen.



FIG. 79

RELIEF GRIND

Press to go to the RELIEF PROGRAM screen to select another program and continue to grind this reel.

SAVE

Press to go to the SAVE PROGRAM SCREEN. The values used can be saved into a new program. SEE PAGE 49.

HOME

Press to go to the START screen.

OPERATION

LOADING A PROGRAM

To load a program go to the LOAD PROGRAM Screen. You can access this screen by pressing LOAD from the Spin or Relief Program Screen.

The LOAD PROGRAM screen will display the 15 custom programs available. The program will be blank until one is saved to that position. To load a program simply press the program you wish to load. The values for that program will be displayed on the left after you select it. Press BACK to return to the Spin or Relief Program screen. The program selected will now appear on this screen.

SAVING/CREATING A PROGRAM

After a Spin or Relief grind is completed, the operator can save the settings used to a program to be used at a later date. To save or create a program go to the SAVE PROGRAM Screen by pressing SAVE at the end of a program.

The program setting are displayed on the left. Press the value to edit it, if desired.

NOTE: The spin speed or relief torque setting is saved as part of the program. In addition, if the right side tooling is used, then this value can be edited and saved as well.

Once the values on the Programs Screen are correct press the NAME area. Use the display to type in a name and press ENTER. To save the program press one of the 15 buttons to save the program to that position. A confirmation screen will appear. Press YES to save the program. The program is saved and the button will now have the program name displayed. This program will now be available on the LOAD PROGRAM screen.

Note: If a button with a saved program is selected, the new program will replace the old program.

To delete a program select DELETE and then select the program to be deleted. Press YES to confirm that this program should be deleted.

TRAINER MODE OFF PROGRAM SCREEN

When trainer mode is set to off the LOAD and SAVE screens are combined. Press LOAD to load a program or press SAVE to save a program.



FIG. 80



FIG. 81



FIG. 82

GRINDING OTHER REELS

PLACE A CUTTING UNIT NOT LISTED ON THE ACCU-REEL POSITIONER

If the cutting unit is not listed on the menu on the left side of the ACCU-REEL POSITIONER you will need to use the POSITION LOCK on the right side of the ACCU-REEL POSITIONER.

INSTALL CUTTING UNIT

1. Pull up on the POSITION LOCK PIN and turn it 90° to lock it in the UP position (see FIG. 83).
2. Move the right side KNOB to the UNLOCK position See FIG. 83.
3. Move the cutting unit to the approximate grinding position by placing the rear roller into the V-blocks on the ACCU-REEL POSITIONER. Move the cutting unit on the ACCU-REEL POSITIONER forward or backward until the center shaft of the reel is positioned so that it is at a one o'clock, or 30° angle, (looking from the right side) position in reference to the GRINDING WHEEL. See FIG 84. Turn the RIGHT SIDE KNOB to the LOCK position.
4. Continue with the setup process as shown on Page 31.

MAKE SURE THE GRINDING WHEEL IS LOW ENOUGH TO CLEAR THE REEL. YOU CAN LOWER THE GRINDING WHEEL BY PRESSING THE OUTFEED BUTTON.



NOTE: To adjust the RELIEF ANGLE ADJUSTER turn the knob clockwise for more clearance or counter clockwise for less clearance until you have reached the desired angle See page 44 for details.

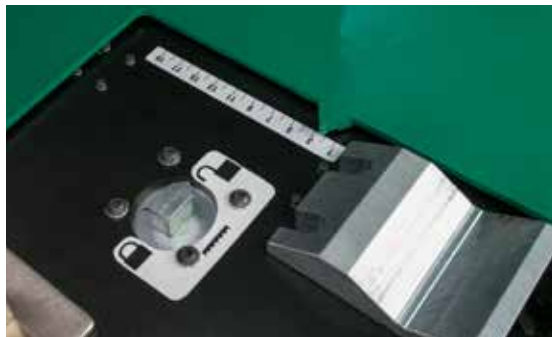


FIG. 83

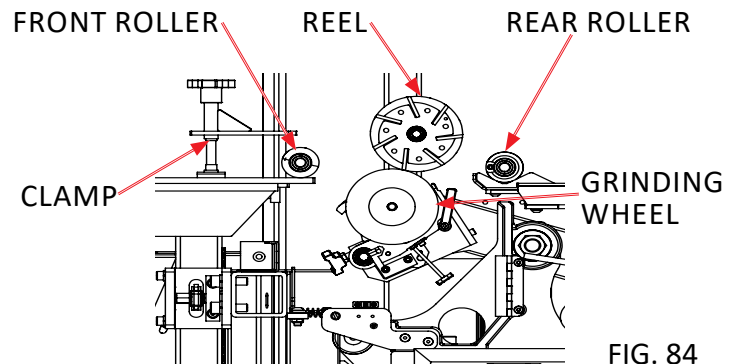
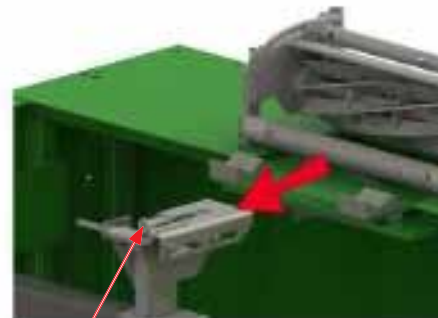
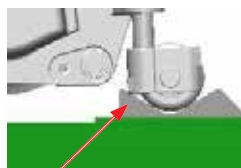


FIG. 84



FRONT TOOLING



V-BLOCKS

FIG. 85

Place the rear roller of the cutting unit into the V-Blocks on the ACCU-REEL POSITIONER ensuring the FRONT HEIGHT ADJUSTER is in a position to receive the front roller. Clamp the rear roller



REAR ROLLER CLAMP

LOCK KNOB

FIG. 86