



*Setting the Standard with the
Worlds Most Valued Grinders*

633

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.



*Setting the Standard with the
World's Most Valued Grinders*

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.



*Setting the Standard with the
World's Most Valued Grinders*

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

 **WARNING**

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

IMPORTANT SAFETY MESSAGE

This manual covers the installation and operation of this reel grinder. There is an additional Service 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 person protective equipment as specified by the manufacturer.

Our current production machines include, guards or shields for the grinding wheel, safety signs, and an Operator's Manual and a Service Manual. 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 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 Operator's Manual and safety signs is not qualified to operate the unit. Accidents occur often on machines that are used by someone who has not read the Operator's Manual and is not familiar with the equipment. If you do not have an Operator's Manual or current production safety signs, contact the manufacturer or your dealer immediately.

Reel grinders are designed for one-person 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 Operator's 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.

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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 the 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:

- Equipment is completely assembled.
- All shields are in place and in good condition.
- All decals are in place and readable.
- Overall condition is good (i.e. paint, welds, and electrical).
- Verify there is sufficient electrical power to operate the machine.
- Read and understand all areas of the Operator's Manual, and review the Service Manual, and any additional training material if available.
- Understand the placement of the cutting unit and positioning of the grinding carriage to the cutting unit.
- Understand the use of the relief mechanism.
- Understand travel limit sensor positioning.
- Understand use of the reel positioning gauge.
- Understand spin speed vs. quality.
- Understand general maintenance.



FIG. 1

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% Relative Humidity, +40°C / 100°F. Higher Relative Humidity may be allowed at lower temperatures. (There must not be condensation 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.

LOW VOLTAGE RELAY

The grinder is equipped with a high-low voltage monitor which is factory preset at 100-140 V ac. If the voltage inside the control panel falls outside of the range of 100-140 V ac 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.



DAILY INSPECTION

CAUTION

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 or 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 if unless the door safety switches are engaged.

WARNING

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

Remove the grinding wheel if one is installed on the machine. Close all doors and start the grinding motor. With the grinding motor running, open the doors. If the grinding motor continues to run, shut off and unplug the machine. Contact a qualified technician to service the machine.

With the spin motor not connected to a cutting unit, close all doors and start the spin motor. With the spin motor running, open the door. If the spin motor continues to run, shut off and unplug the machine. Contact a qualified technician to service the machine.

 **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. Non-slip 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.**

 **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 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.

 **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.

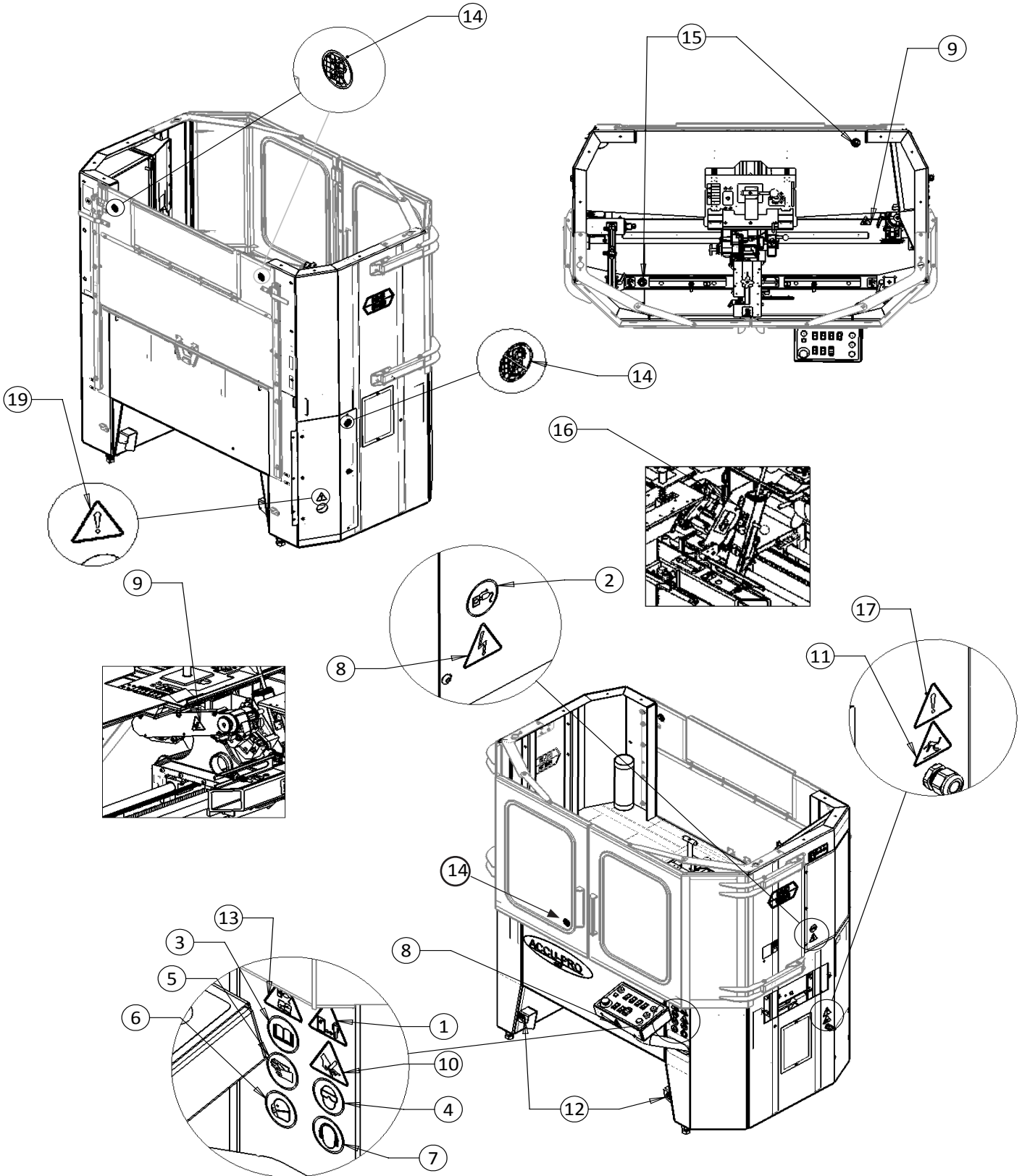


SAFETY DECALS - LOCATION.



IF ANY DECALS ARE DAMAGED, REPLACE THEM IMMEDIATELY!



See next page for explanation of symbols and decals.



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**  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.**
- 9**  Entanglement Hazard. Keep clear of belt.
- 10**  Sharp object in the vicinity which may cause injury. **Keep hands clear of sharp edges!**
- 11**  Power cord may be a trip hazard. Secure the power cord in a manner that removes it as a trip hazard.
- 12**  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.
- 13**  Unplug the machine when servicing or storing for an extended period of time.
- 14**  WARNING! Do Not Operate Without Guards and Covers in Place. There are moving parts located behind the guards.
- 15**  WARNING! Keep exposed gasoline or flammables away from the grinder because it operates with a large amount of sparks.
- 16**  Shows the minimum speed [3600 RPM] that the grinding wheel must be rated for to use on this equipment.
- 17**  **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.
- 18**  **180Kg / 400 LBS**
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.
- 19**  **VACUUM** - Do not block or plug vacuum bypass hole. Empty vacuum weekly as per daily maintenance to prevent overheating or fire.

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 forklift to lift the machine from the pallet. **THE UNIT WEIGHS 1450 LBS. [658 KG]. USE POWER EQUIPMENT TO LIFT THE UNIT.** See FIG. 3 on Page 13.

POSITION THE BASE

This machine must be positioned in an area that allows for sufficient access to all sides of the machine for operation and service. We suggest 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 Figure 2.

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.

WARNING

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.

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.

FOR 20 AMP-RATED LARGE MACHINE			
Distance from Electrical Panel to the Electrical Outlet Receptacle		Size of Wire Required	
English (feet)	Metric (meters)	English (Gauge)	Metric (mm)
0-40	0-12	12	4.0
40-60	12-18	10	6.0
60-100	18-30	8	10.0
100-160	30-48	6	16.0

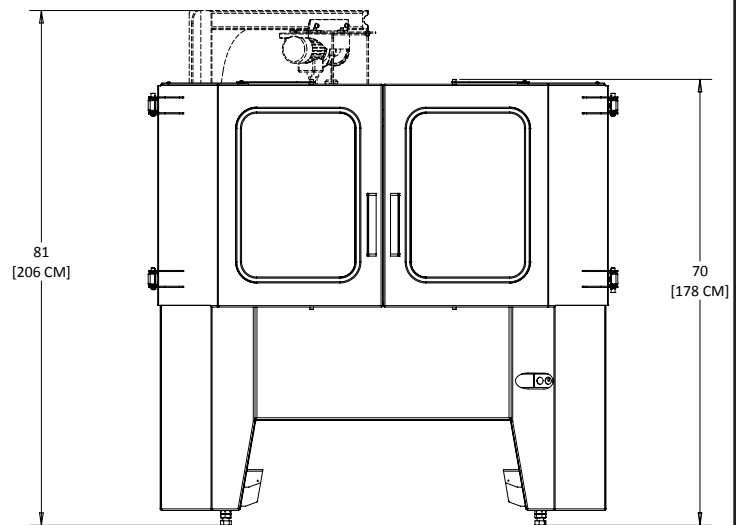
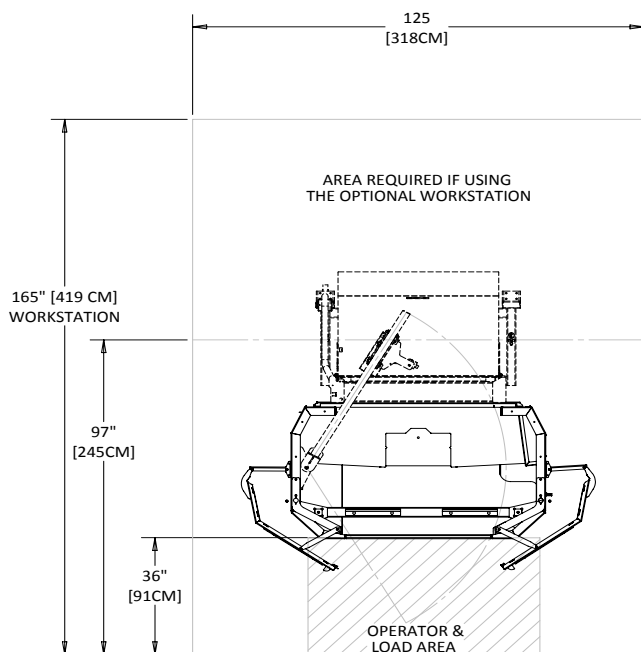


FIG. 2

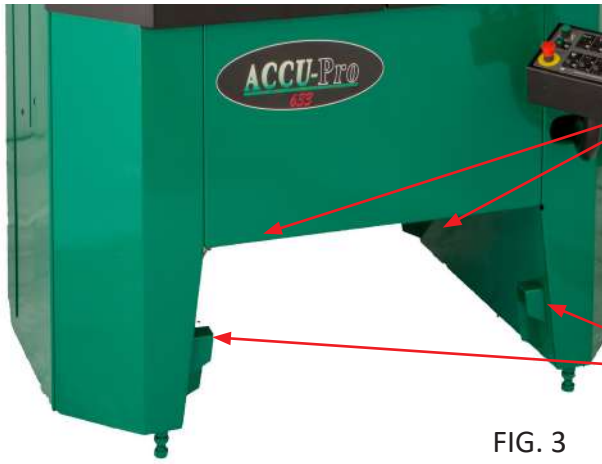


FIG. 3

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 is 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 3.

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. See FIG. 6

Place a level across the table from front to rear. Adjust the leveling feet as necessary until the machine is level. See FIG. 5.

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. 4. Ensure that all four leveling feet are firmly contacting the floor.

Recheck with level after locking nuts are firmly tightened.

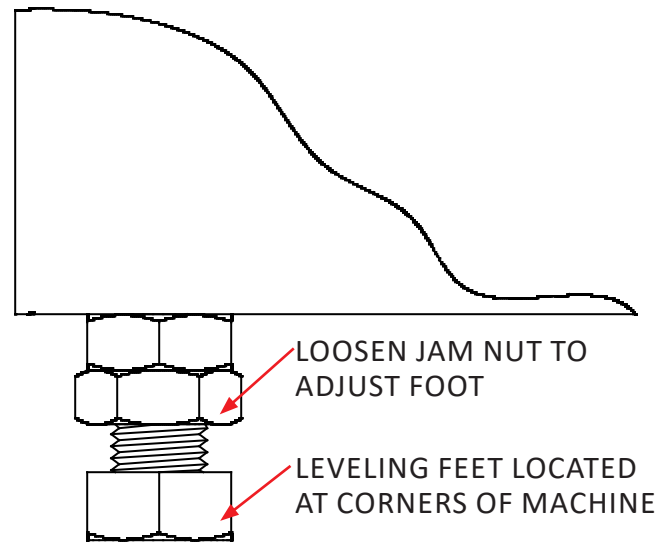


FIG. 4



FIG. 5



FIG. 6

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.



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 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 does not 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 (LVR) which is factory preset at 100-140 V ac. If the VOLTAGE INSIDE THE CONTROL PANEL FALLS OUTSIDE OF THE RANGE OF 100-140 V ac 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 any further with the grinder. If the optional transformer is installed on the outside of the machine, the power delivered to the machine will be 230 V ac, but the power in the machine must be 100-140 V ac 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.

120 VOLT MODEL ONLY. Plug the control box power cord into a standard 120 V ac 20-amp, grounded receptacle. See FIG. 7. 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.

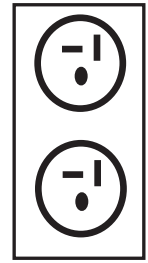


FIG.7

120 V ac 20 AMP
STANDARD PLUG FOR
NORTH AMERICA.

FOR 20 AMP-RATED LARGE MACHINE			
Distance from Electrical Panel to the Electrical Outlet Receptacle		Size of Wire Required	
English (feet)	Metric (meters)	English (Gauge)	Metric (mm)
0-40	0-12	12	4.0
40-60	12-18	10	6.0
60-100	18-30	8	10.0
100-160	30-48	6	16.0

230 V 50/60Hz MODEL

230 V machines are installed with a 3 KVA 230 V step-down transformer which is used to convert the power delivered to the electrical control to 110 V. The transformer wiring diagram is shown in FIG. 8. A connector, that complies with code for your location and a 230 V, 10 A application, should be installed if there is not one already on the end of the main power cord.

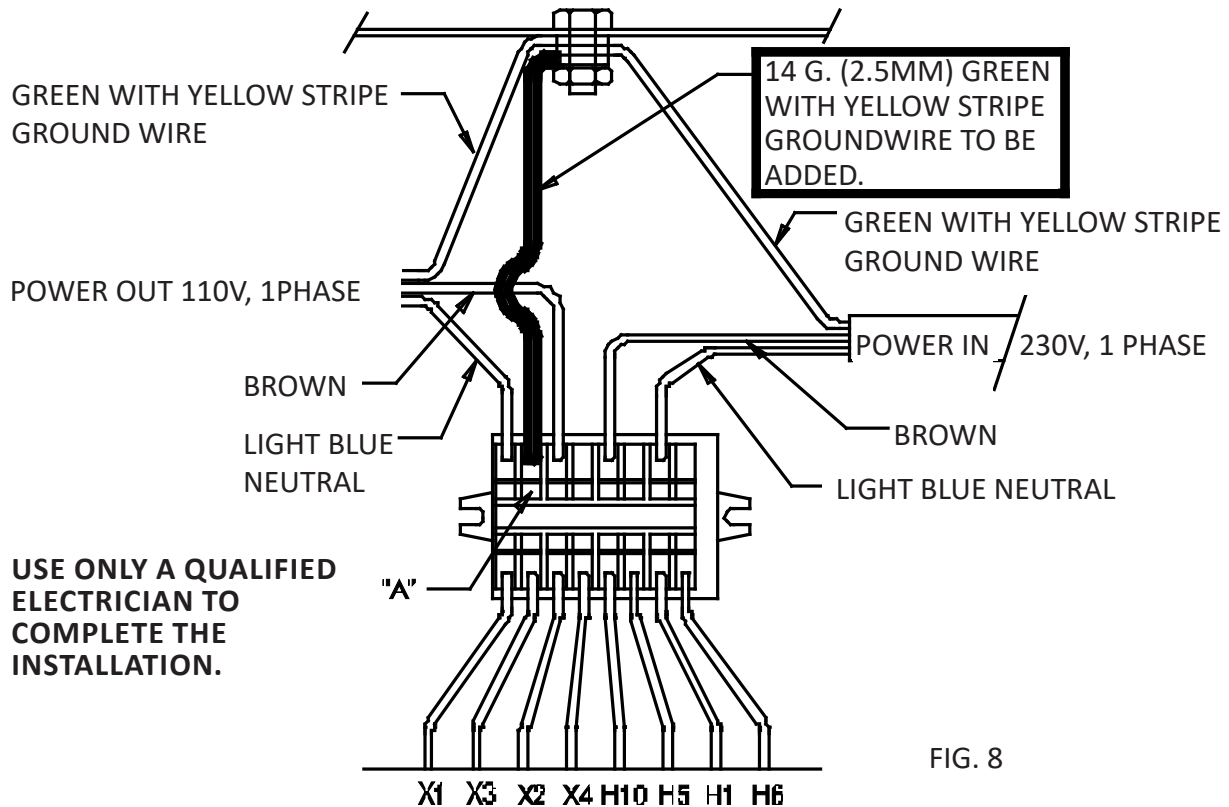
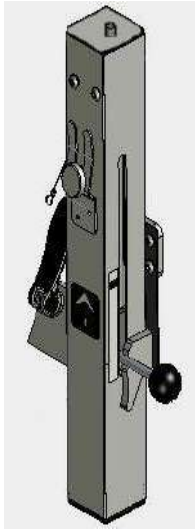


FIG. 8

USE ONLY A QUALIFIED ELECTRICIAN TO COMPLETE THE INSTALLATION.

1. Individually wire nut Transformer Leads H2, H3, H4, H7, H8 and H9.
2. 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.
3. Attach the other end of the Green with Yellow Stripe wire supplied to the ground stud on the transformer.

SYSTEMS



1. ACCU-POSITIONING GAUGE AND CYLINDER STOP



3. FRONT CLAMP WITH HEIGHT ADJUSTER



2. ACCU-REEL SELECTOR



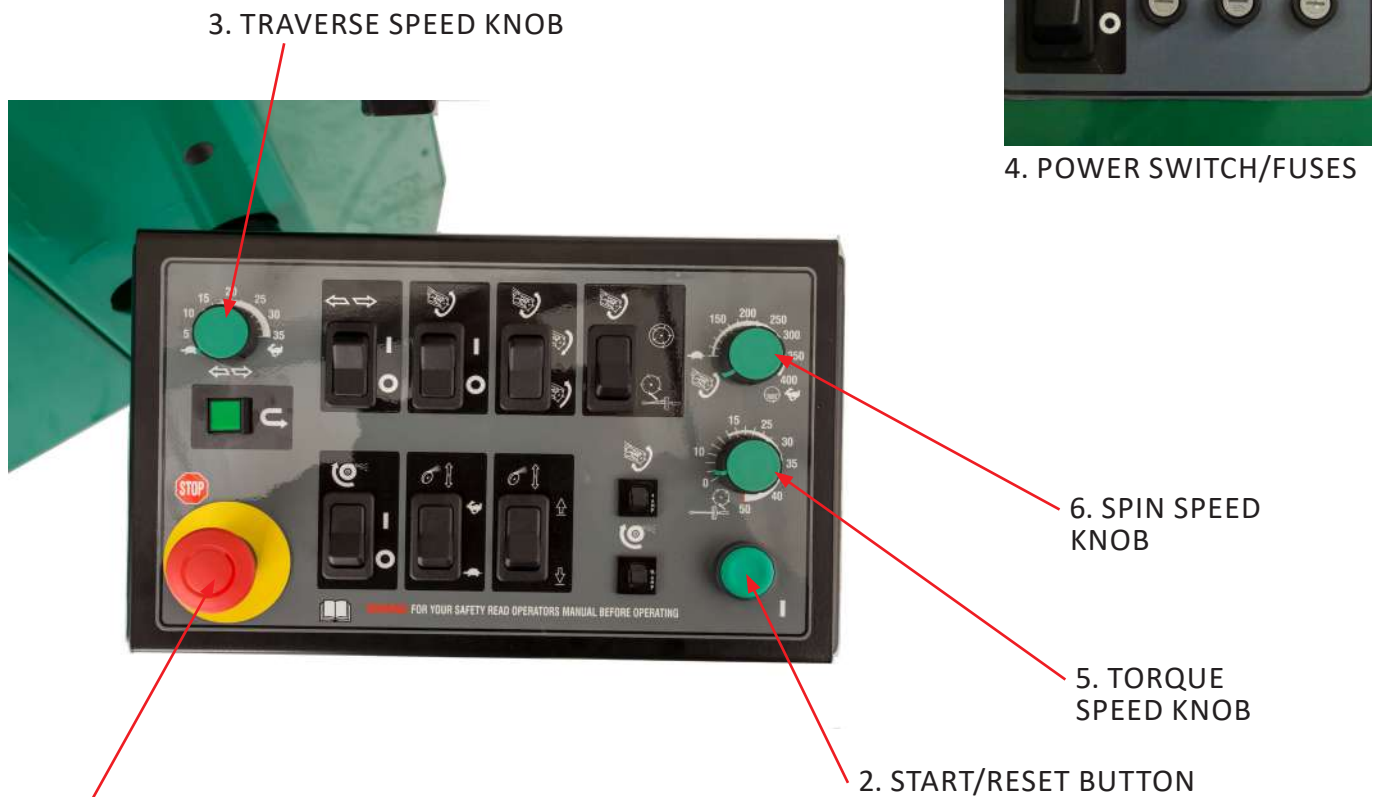
4. SPIN DRIVE



5. CONTROL

1. ACCU-POSITIONING GAUGE AND CYLINDER STOP- Used in conjunction with the Control 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 rear 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 - Counterbalanced spin drive connects directly to the reel shaft and can be positioned on both sides of the cutting unit.
5. CONTROL - Contains the switches and knobs for the operator to use through the Spin and Relief grind processes.

CONTROLS



1. EMERGENCY STOP BUTTON OR E-STOP

1. EMERGENCY STOP BUTTON or E-STOP
Push to remove all power to motor. To restore power, pull up out and press the START/RESET SWITCH.

2. START/RESET BUTTON
Resets the control which allow the operator to control motors.

3. TRAVERSE SPEED KNOB
Increases or decreases the speed of the grinding head traversing left and right, measured in feet per second (ft/s).

4. POWER SWITCH AND FUSES (RIGHT SIDE OF MACHINE).
Turns OFF and ON the control and related components. Disconnect the cord at the wall outlet before performing service. FUSES - Interrupts excessive current (blows) so that further damage by overheating or fire is prevented.

THIS IS NOT A MAIN DISCONNECT!



5. TORQUE SPEED KNOB
Increases or decreases the torque required to index the reel during the RELIEF GRIND cycle.

6. SPIN SPEED KNOB
Increases or decreases the spin speed during the SPIN GRIND cycle.

STEP 1: PLACING THE CUTTING UNIT

PREPARE CUTTING UNIT FOR SHARPENING

1. Follow the cutting unit manufacturers' recommendations for proper maintenance when preparing the cutting unit for sharpening.
2. The reel to be sharpened should be thoroughly cleaned.
3. If possible, remove the wheels and bed bar.
4. 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.

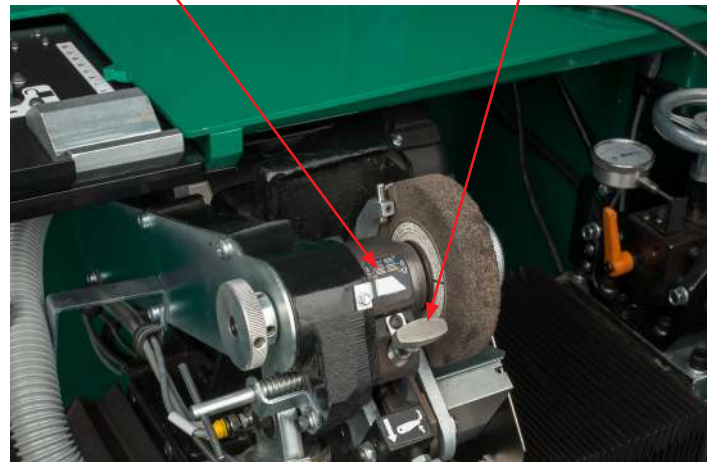
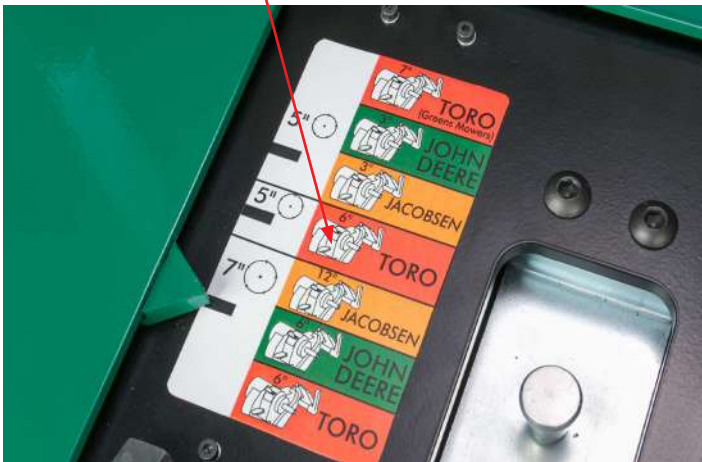


Switch on the machine by pressing the POWER SWITCH on the side panel. Pull out the E-STOP BUTTON and press the START/RESET BUTTON.

ACCU-REEL POSITIONER

RELIEF ANGLE DECAL

RELIEF ANGLE ADJUSTER



Place the ACCU-REEL POSITIONER to the correct position based on manufacturer and reel diameter. Set your relief angle to the pre-set angle using the RELIEF ANGLE ADJUSTER. *NOTE: The pre-positioned settings do not work for walking greens mowers with a rear drum only. SEE PAGE 38.* To move the ACCU-REEL POSITIONER, pull up on the LOCK PIN and move the assembly to the desired position. To lock the assembly, release the pin and move the assembly until it locks into position. To move the RELIEF ANGLE POSITIONER, turn the RELIEF ANGLE ADJUSTER knob left or right until you reach the desired RELIEF ANGLE.

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



Example: If your reel is a 7" Jacobsen reel you will set the ACCU-REEL POSITIONER as shown above and the relief will be set to the corresponding 12° angle as shown in the picture to the right. If the reel you are grinding does not fit these parameters see Page 38.

LIFTING OPTIONS

LIFTING A REEL INTO POSITION

OPTIONAL BOOM WITH ELECTRIC WINCH

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 the clamps do not slide as the mower is being raised.

OPTIONAL ELECTRIC WINCH

Use the WINCH 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 - Can be used to load from the rear on both the ACCU-Master and the ACCU-Pro Grinders.

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



FRONT ELECTRIC BOOM LOADING



REAR ELECTRIC BOOM OPTION WITH OPTIONAL REAR DOORS



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 winching 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.

ELECTRIC WINCH (OPTIONAL)

This unit is activated via the switch at the end of the one foot cord. To remove wire rope from the winch, depress the "CABLE OUT" button. The load will stop without coasting when the button is released. To pull a load or spool wire rope onto the drum, depress the "CABLE IN" button.

This winch is designed to pull 400 lbs (180 KG) for 20 second 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 and replaced, if necessary.

TROUBLESHOOTING

If the winch fails to operate, the circuit breaker on the end of the winch motor should be checked. If the circuit breaker has tripped, this will be indicated by the center portion of the breaker protruding from the main body. To reset the breaker, press the center portion back into the assembly.

OPTIONAL WORKSTATION

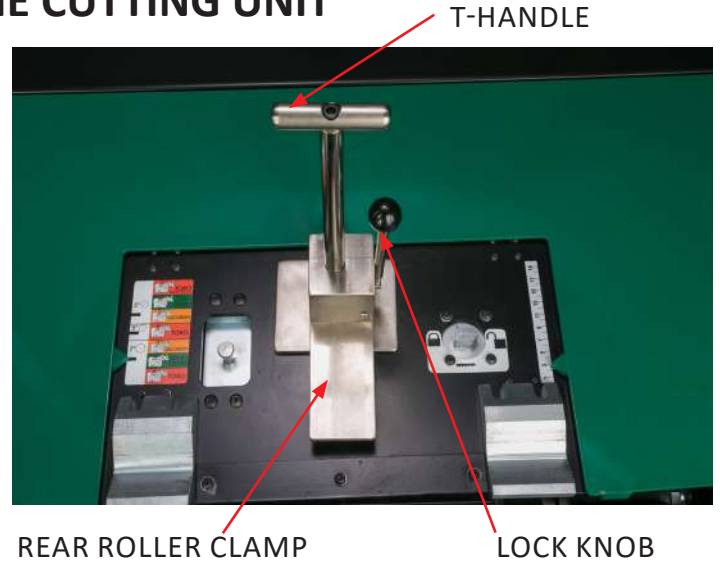
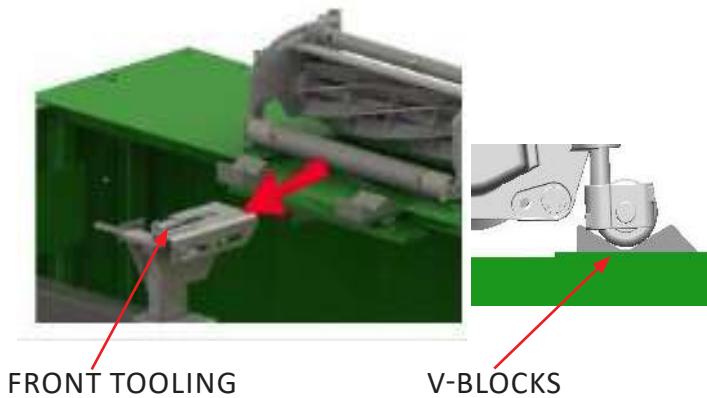
This OPTIONAL WORKSTATION has been designed to lift a maximum of 400 lbs (180 KG) once every 10 minutes. Attempts to lift more than this weight or exceed the duty cycle (on time) may cause the circuit breaker to trip and the lift to not operate.

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

NOTE: Repeated tripping of the breaker indicates an overload condition. Overloading will shorten the life of your winch.

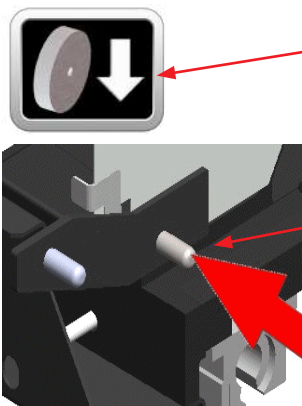
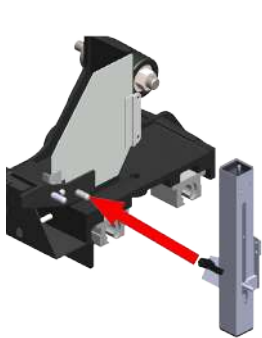
NEVER USE THE WORKSTATION WITH A PERSON ON THE RAMP.

STEP 1: PLACE THE CUTTING UNIT



1. Place the rear roller of the cutting unit into the V-BLOCKS (as shown above) on the ACCU-REEL POSITIONER. It may be necessary to move the FRONT HEIGHT ADJUSTER into a position to receive the front roller. This is done by unlocking the LOCK HANDLE and sliding the FRONT HEIGHT ADJUSTER in or out in order for the front roller of the cutting unit to be placed on the FRONT HEIGHT ADJUSTER.
2. When the front and rear rollers are in position, clamp the rear roller with the REAR ROLLER CLAMP. The REAR ROLLER CLAMP rotates 90° (by turning the T-Handle) when placed on the ACCU-REEL POSITIONER. Once placed, lock the LOCK KNOB by pushing down towards the table.

SET THE HEIGHT



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

FIG. 9

1. Place the ACCU-POSITIONING GAUGE on the lower pin on the right side of the grinding head. See FIG. 9.
2. Adjust the ACCU-POSITIONING GAUGE so the pin of the GAUGE meets the center shaft of the cutting unit. This is done by releasing the TAB (see FIG. 10) and allowing the pin to travel to the center of the cutting unit shaft while rotating the ACCU-POSITIONING GAUGE front and back until it aligns with the center shaft of the cutting unit.
3. Secure in place with the LOCK HANDLE.
4. Lower the GAUGE PIN back into the TAB.

LOWER PIN

GAUGE PIN

REEL STOP

LOCK HANDLE



FIG. 10

TAB

SET HEIGHT OF THE REEL

REEL STOP

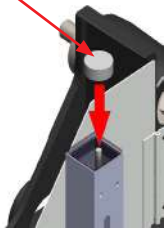
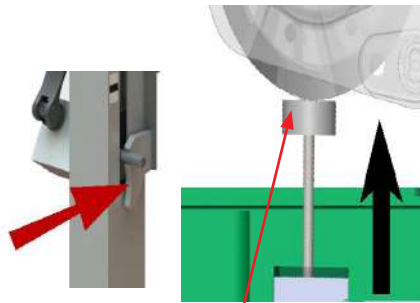


FIG. 11

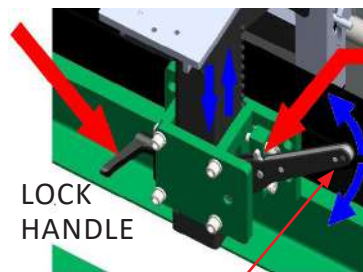


LOWEST BLADE OF CUTTING UNIT

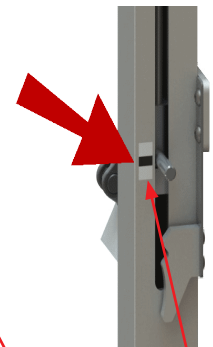


LOCK HANDLE

FIG. 12



HEIGHT ADJUSTER

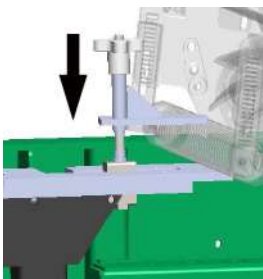


DECAL

DIRECTIONAL PIN

1. Place the round REEL STOP on top of the shaft on the ACCU-POSITIONING GAUGE.
2. Press the TAB on the right side of the ACCU-POSITIONING GAUGE to release the GAUGE PIN and allow the STOP to travel up to the lowest reel blade on the cutting unit. See FIG. 11.
3. Unlock the LOCK HANDLE on the left side of the HEIGHT ADJUSTER (see FIG. 12).
4. Select the DIRECTIONAL PIN setting on the ratchet (see FIG. 12).
5. Adjust the HEIGHT ADJUSTER up or down until the the decal on the ACCU-POSITIONING GAUGE aligns with the GAUGE PIN HANDLE on the ACCU-POSITIONING GAUGE (see FIG. 12).
6. Re-lock the LOCK HANDLE on the HEIGHT ADJUSTER (see FIG. 12).

CLAMP FRONT ROLLER



REMOVE AND STORE STOP BLOCK

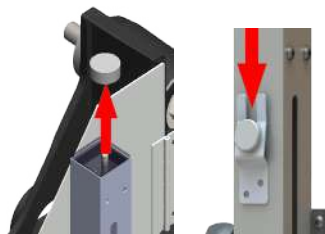


FIG. 13

VERIFY ALL CLAMPS AND LOCK HANDLES ARE TIGHT



FIG. 14

FRONT ROLLER CLAMP

7. Clamp the front roller (see FIG. 13).
8. Retract the GAUGE PIN into the locking TAB.
9. Remove and store the REEL STOP on the side of the ACCU-POSITIONING GAUGE (see FIG. 13).

NOTE: The FRONT CLAMP and FRONT TOOLING may need to be adjusted in or out in order to avoid interference with the grinding head. The FRONT TOOLING slides in or out by unlocking the LOCK HANDLE and pushing or pulling on it.

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 15).



FIG. 15

DIAL INDICATOR IN FACTORY "0" POSITION

DIAL INDICATOR

ORANGE LOCK HANDLE

ORANGE HANDWHEEL

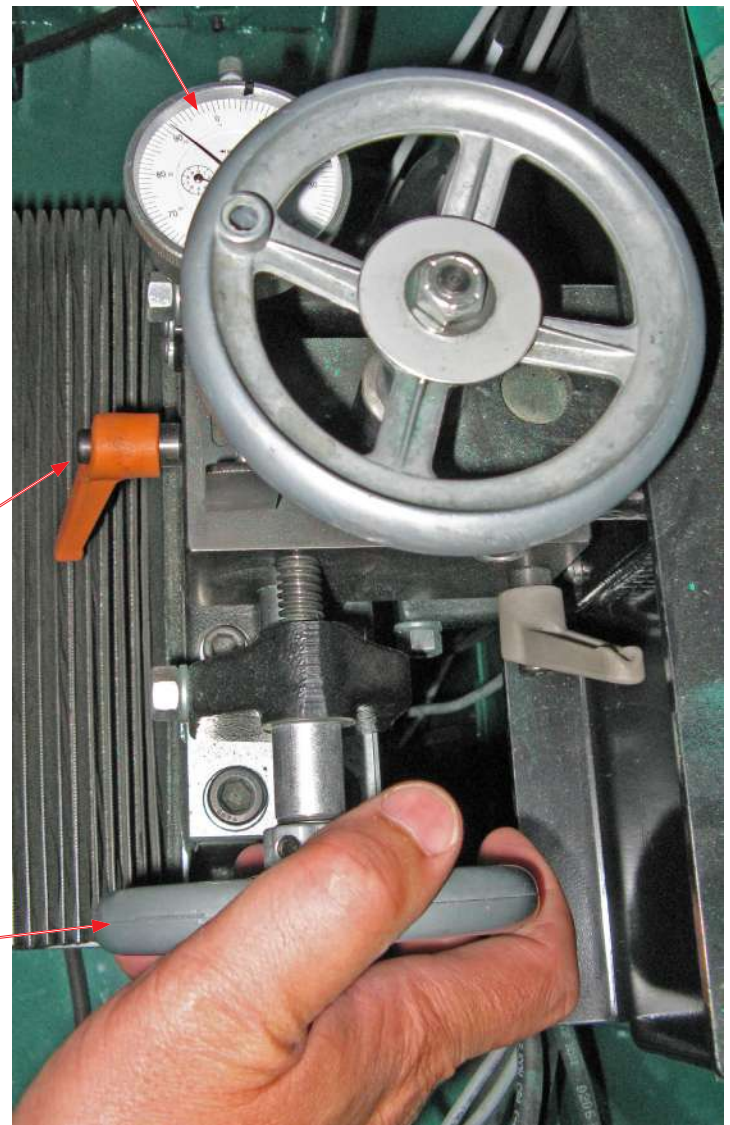


FIG. 16

POSITION THE GRINDING HEAD CARRIAGE TO THE CUTTING UNIT

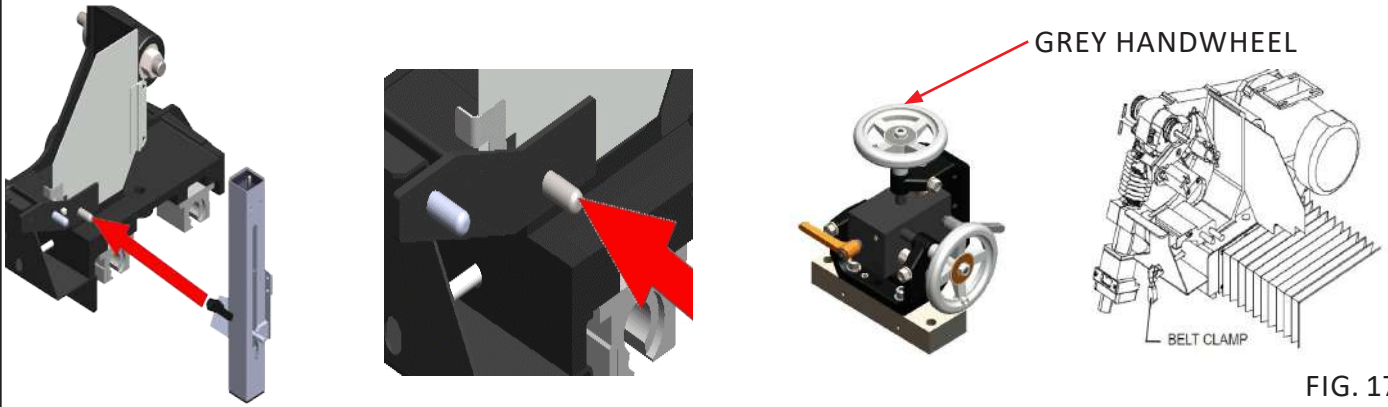


FIG. 17

Make sure that the ACCU-POSITIONING GAUGE is on the lower pin position and unlock the GREY HANDLE on the CROSS SLIDE ASSEMBLY.

VERTICAL POSITIONING

GAUGING DECAL

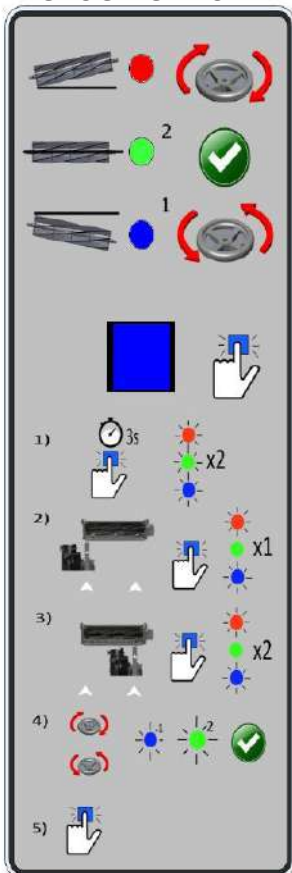


FIG. 18

LED INDICATORS

Indicates "Turn GREY HAND-WHEEL clockwise" to lower the right side of the GRINDING CARRIAGE.

Indicates that the GRINDING CARRIAGE is aligned.

Indicates "Turn the GREY HAND-WHEEL counter-clockwise" to raise the right side of the GRINDING CARRIAGE.

RESET/CHECK button.

GAUGING STEPS

Step 1-Press and hold the RESET button for 3 seconds.

Step 2-Move the grinding head to the left side of the cutting unit, gauge, then press the CHECK button.

Step 3-Move the grinding head to the right side of the cutting unit, gauge, then press the CHECK button.

The green LED lit indicates the cutting unit is aligned.

Press the RESET button after the GRINDING CARRIAGE is aligned to reset the ACCU-POSITIONING GAUGE.



FIG. 19



FIG. 20

1. Release the TRAVERSE LOCK handle (FIG. 17) and move the GRINDING CARRIAGE to the left side of the cutting unit until the decal on the ACCU-POSITIONING GAUGE aligns with the decal on the tooling bar (see FIG. 19). The TRAVERSE LOCK RELEASE ARM is located at the front of the carriage under the TRAVEL LIMITS BRACKET. Rotate the release arm UP to release and DOWN to engage (see FIG. 17).
2. Press the RELEASE TAB and allow the GAUGE PIN to travel to the center of the cutting unit shaft.
3. Press the RESET/CHECK BUTTON and hold for three seconds to reset the ACCU-POSITIONING GAUGE to zero on the fixed side of the traverse base. All three LEDs will blink twice to indicate that the GAUGE is reset.

4. Press the RESET/CHECK BUTTON again to take the first reading on the left side. The BLUE LED and RED LED will flash once.
5. Retract the GAUGE PIN and move the GRINDING CARRIAGE to the right until the decal on the ACCU-POSITIONING GAUGE aligns with the decal on the TOOLING BAR. (see FIG.21).

Release the TAB and allow the GAUGE PIN to travel up to the the center shaft of the cutting unit.

NOTE: It is important to NOT move the gauge forward or back, if this occurs your readings will be skewed.

6. Press the RESET/CHECK BUTTON to take the second reading. The BLUE LED and RED LED will blink twice and then either the BLUE **or** the RED LED will continue to flash to indicate which direction to turn the GREY HANDWHEEL: BLUE for COUNTER-CLOCKWISE and RED for CLOCKWISE.
7. Use the GREY HAND-WHEEL to adjust the CARRIAGE vertically until the GREEN LED illuminates. Your final VERTICAL ADJUSTMENT on the CROSS-SLIDE ASSEMBLY should always be COUNTER-CLOCKWISE.
8. At this point you can choose to recheck the adjustment by retracting the GAUGE PIN and moving back to the right side. Release the TAB and allow the GAUGE PIN to travel up to the the center shaft of the cutting unit. If the LED is still GREEN, then proceed with the HORIZONTAL POSITIONING. If not, repeat the entire VERTICAL POSITIONING process.

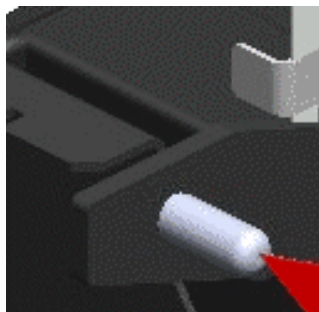
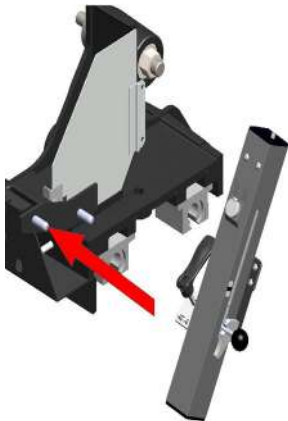


FIG. 21

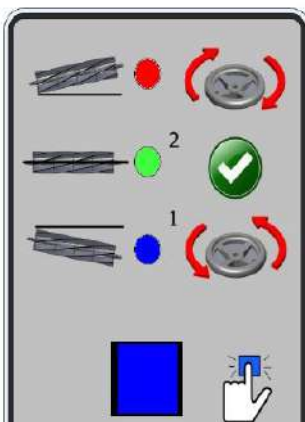


FIG. 22

HORIZONTAL POSITIONING



ORANGE CROSS SLIDE



Indicates "Turn the ORANGE HAND-WHEEL clockwise" to move the right side of the GRINDING CARRIAGE towards the operator.

Indicates the GRINDING CARRIAGE is aligned.

Indicates "Turn the ORANGE HAND-WHEEL counter-clockwise" to move the right side of the GRINDING CARRIAGE away from the operator.

RESET/CHECK BUTTON.

1. Move the ACCU-POSITIONING GAUGE to the UPPER PIN for HORIZONTAL POSITIONING.
2. Unlock the ORANGE HANDLE on the CROSS SLIDE ASSEMBLY.
3. Release the TRAVERSE LOCK HANDLE (see FIG. 15) and move the GRINDING CARRIAGE to the left side of the cutting unit (see FIG. 23) until the decal on the ACCU-POSITIONING GAUGE aligns with the decal on the tooling bar (see FIG. 19).
4. Press the RELEASE TAB and allow the GAUGE PIN to travel up to the center of the cutting unit shaft.
5. Press the RESET/CHECK and hold until all three LEDs blink twice to reset the ACCU-POSITIONING GAUGE to zero.
6. Press the RESET/CHECK BUTTON again to take the first reading on the left side. The RED and BLUE LEDs will flash once.
7. Retract the GAUGE and move the GRINDING CARRIAGE to the right side of the cutting unit (see FIG. 24) until the decal on the ACCU-POSITIONING GAUGE aligns with the decal on the tooling bar (see FIG. 19).
8. Release the tab and allow the GAUGE PIN to travel up to the the center shaft of the cutting unit. *NOTE: It is important to NOT move the gauge forward or back, if this occurs your readings will be skewed.*
9. Press the RESET/CHECK button to take the right side reading. The RED and BLUE LEDs will flash twice and then either the BLUE *or* the RED LED will continue to flash to indicate which direction to turn the GREY HANDWHEEL: BLUE for COUNTER-CLOCKWISE and RED for CLOCKWISE.
10. Use the ORANGE HAND-WHEEL to adjust the GRINDING CARRIAGE until the green LED illuminates. *NOTE: If you wish to recheck the positioning, retract the GAUGE PIN and move the head back to the left. Release the TAB and allow the GAUGE PIN to travel up to the reel shaft. If the LED is green, the positioning is complete. If not, reset the gauge and redo the entire gauging process.*
11. Remove and store the ACCU-POSITIONING GAUGE (see FIG. 25) and verify that all lock handles are tight. Your reel is now ready for SPIN grinding

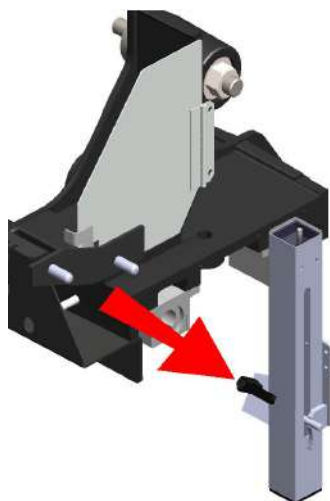


FIG. 23



FIG. 24

ACCU-POSITIONING GAUGE STORAGE



REMOVE AND STORE ACCU-POSITIONING GAUGE



FIG. 25

WARNING

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

STEP 3: SPIN GRINDING

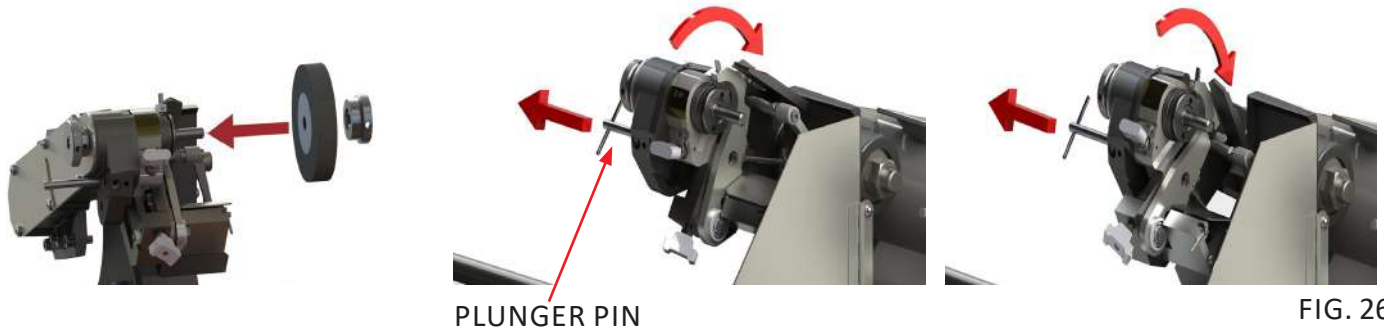


FIG. 26

VERIFY GRINDING WHEEL TO REEL END FRAME CLEARANCE

1. Install the 5" [127 mm] x 1" [25 mm] SPIN grinding wheel.

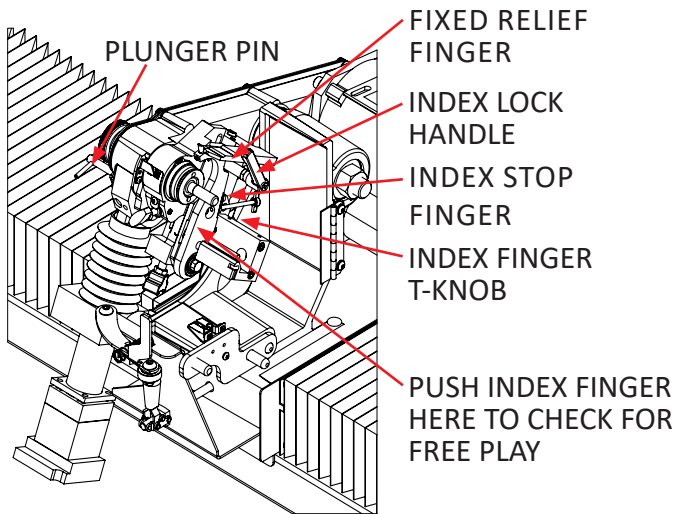
NOTE: The 3.5" x 1" [89 mm x 25 mm] grinding wheel may be used on smaller reels, such as 5" [127 mm] diameter greensmowers, if clearance is required.

2. 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 PLUNGER PIN locks into position. See FIG. 26.

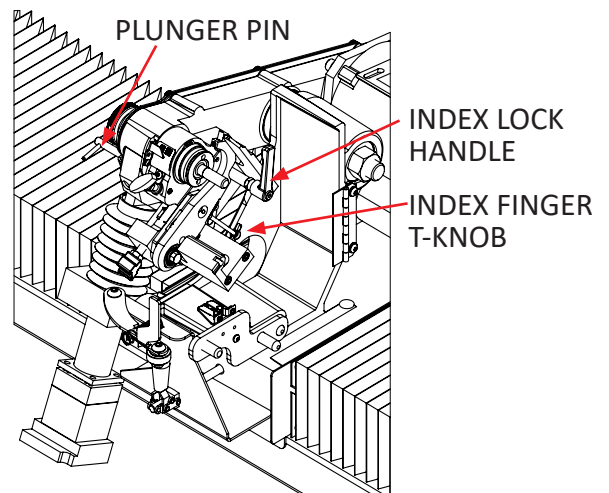
3. Move the grinding wheel up to within an 1/8" [3 mm] of the reel by using the INFEED SWITCH.

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

NOTE: When you go into the Spin Mode, the Finger and Body Assembly must be down, If this is not done, the spin drive and infeed will not function.



Detail shows Finger and Bed Assembly rotated counterclockwise into relief grinding position (shown without grinding wheel for clarity).



Detail shows Finger and Body Assembly rotated (clockwise) into the spin grinding position (shown without grinding wheel for clarity).

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. Before 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 control the reel blades. The PLUNGER PIN engages into the RELIEF ADJUSTER. You may need to wiggle the PLUNGER PIN and FINGER AND BODY ASSEMBLY to fully engage the pin into the RELIEF ADJUSTER.

CONNECT SPIN DRIVE



Choose which side of the reel you want to spin from and install the SPIN DRIVE MOTOR with the correct adapter. This will generally be the same drive system component used for backlapping see FIG. 28.

The SPIN DRIVE MOTOR 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.

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

SPIN MOTOR SWITCH

SPIN MOTOR DIRECTION SWITCH

SPIN/TORQUE SELECTOR SWITCH

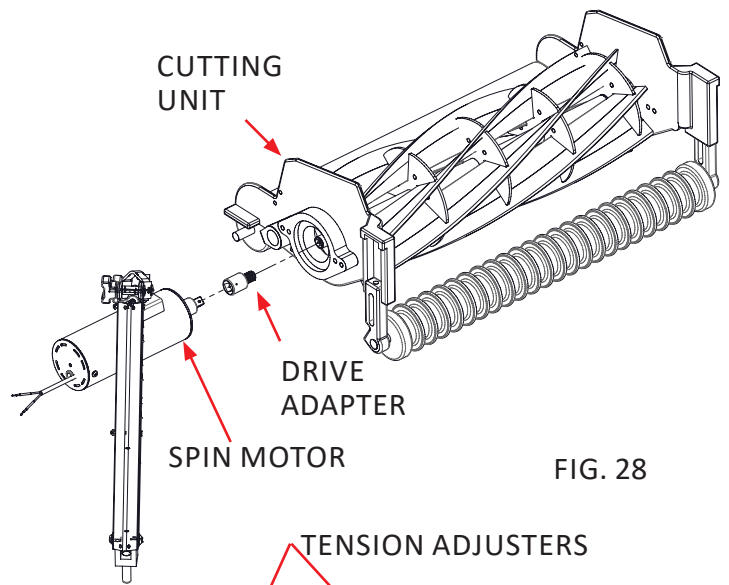


FIG. 28



FIG. 27

All new machines come equipped with 8-9-11 spline adapters (part # 3706130) (See FIG. 27). Use one of these adapters to connect the SPIN DRIVE MOTOR to the cutting unit (see FIG. 28). If you need a different adapter, contact the reel manufacturer.



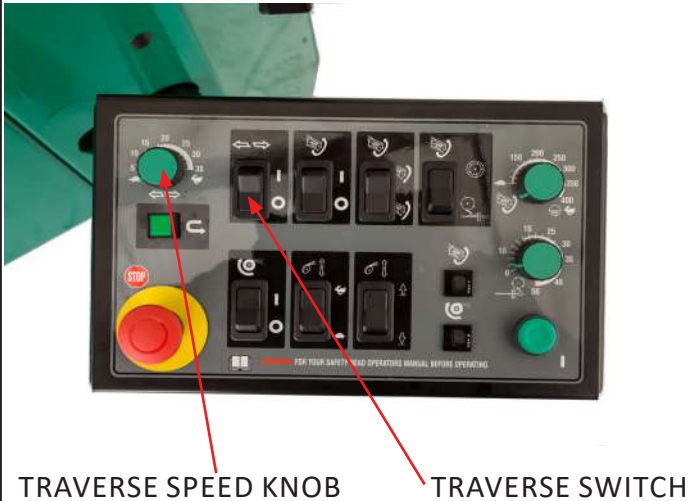
LOCK HANDLE

PIN

SET TRAVEL LIMITS

Set the TRAVEL LIMITS of the grinding head by either manually moving the grinding carriage or pressing the TRAVERSE SWITCH to ON and turning up the TRAVERSE SPEED KNOB.

1. Move the TRAVEL LIMIT SENSORS out to allow the grinding wheel to travel past the ends of the reel.
2. Move the GRINDING CARRIAGE until the grinding wheel has cleared the end of the reel (if clearance to the frame allows) (see FIG. 29).
3. When the GRINDING CARRIAGE is in position, move the TRAVEL LIMIT SENSORS in until the light on the SENSOR illuminates.
4. Test the TRAVEL LIMIT SENSORS by moving the GRINDING CARRIAGE in a couple of inches and then back out to verify that the sensor properly stops the carriage.
5. Repeat the process on the opposite TRAVEL LIMIT SENSOR.



TRAVERSE SPEED KNOB

TRAVERSE SWITCH

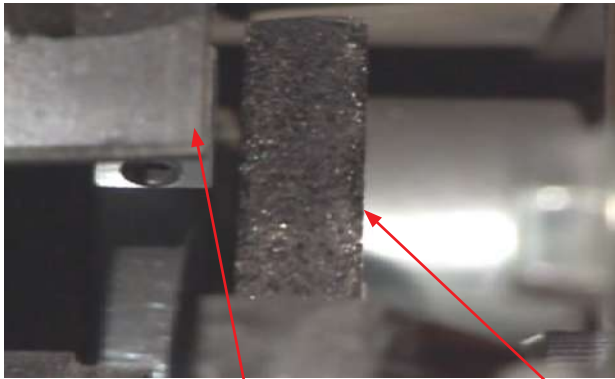


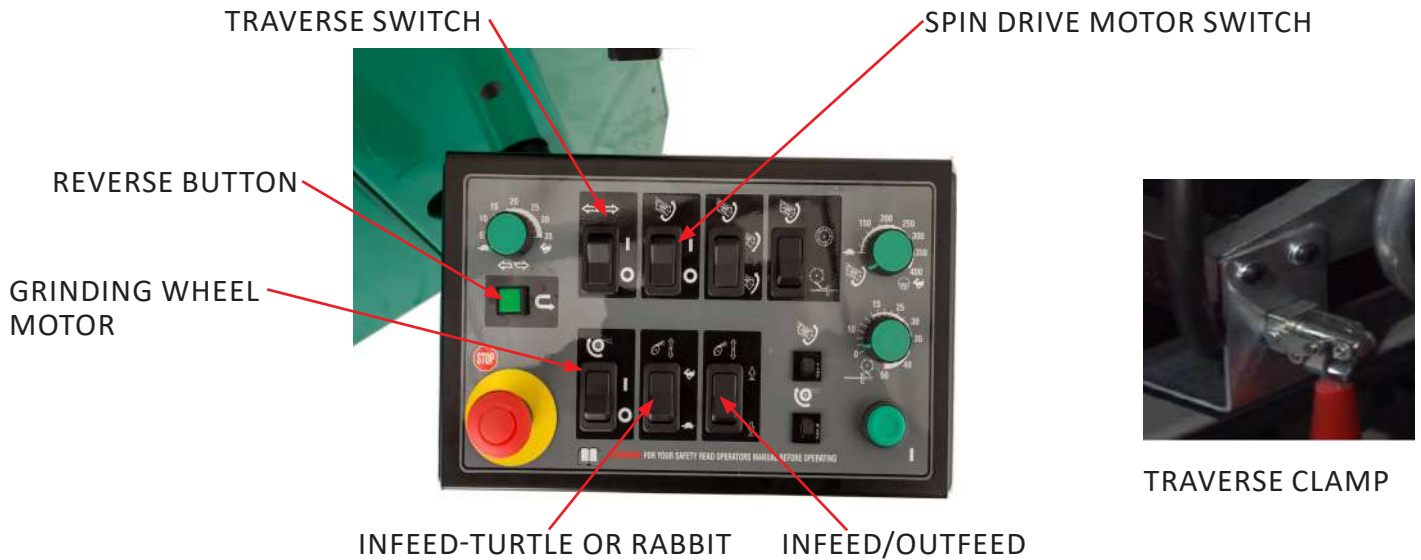
FIG. 29

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



TRAVEL LIMIT SENSOR

SPIN GRIND



1. Before spin grinding, lock the TRVERSE CLAMP and check that all LOCK HANDLES are tightened.
2. Close the doors. The grinding wheel motor and spin drive will not operate with the doors open.
3. Depress the GRINDING WHEEL MOTOR SWITCH and the SPIN DRIVE MOTOR SWITCHES to ON.
NOTE: The reel should rotate in the same direction as the grinding wheel, like tandem wheels on a truck. The actual point of contact where they meet is in opposite directions. See FIG. 30.
4. Depress the TRVERSE SWITCH to ON and use the TRVERSE SPEED KNOB to traverse the GRINDING CARRIAGE until the GRINDING WHEEL is positioned below the reel.
5. Press the INFEED SWITCH to INFEED the GRINDING WHEEL until there is some light sparking on the reel.
6. Use the TRVERSE SWITCH and TRVERSE SPEED KNOB to traverse across the reel to find any high areas on the reel. *NOTE: If the grind starts getting too heavy, use the INFEED/DOWNFEEED SWITCH to jog the GRINDING CARRIAGE down until you can travel the full length of the reel without heavy grinding. You can change the back-and-forth direction of the GRINDING CARRIAGE at any time by pressing the REVERSE BUTTON. This can help speed up the time required to grind a reel that is cone-shaped (the reel is larger on one end compared to the other). When you are able to travel the full distance of the reel without any problems proceed with grinding the reel.*
7. Infeed the GRINDING WHEEL approximately .005" at a time, allowing the grinding wheel to travel back and forth across the reel 2 to 3 times before infeeding again.

TRVERSE DRIVE RPM

The TRVERSE SPEED KNOB 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] as an example, will give a better finish but will extend the grind cycle time. Grind finish versus grind cycle time is controlled by the operator.



TRVERSE SPEED KNOB

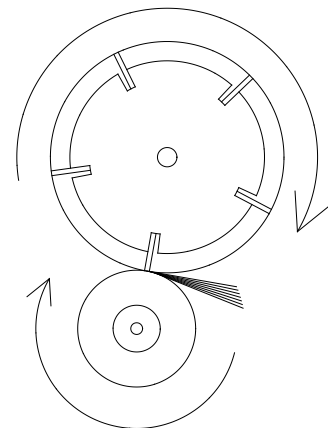


FIG. 30

NOTE: SETUP PROCEDURE FOR SPIN DRIVE RPM

SPIN DRIVE RPM DURING SPIN GRINDING IS VERY IMPORTANT IN ACHIEVING A QUALITY GRIND. THE DIAMETER OF THE REEL AND THE NUMBER OF BLADES ON THE CUTTING UNIT YOU ARE GRINDING DETERMINE THE INITIAL SPIN SPEED.

Generally, the SPIN DRIVE RPM for spin grinding will be between 180 RPM and 380 RPM. 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 of 180 RPM and then evaluating the RPM by adjusting higher and lower to optimize the SPIN SPEED for that reel.

INCORRECT SPIN SPEED can cause two problems: grinding wheel dressing or 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 act as a dresser to the grinding wheel. There can develop what appears to be a very aggressive grind (as if the infeed 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 very bad 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 reel, write the setting in the REEL SETUP CHART.

Spin grinding is complete when enough material has been removed and full contact is made across the entire length of the reel and the entire width of all blades. Spark-out the reel to complete grinding the outside diameter to a true diameter. To Spark-out the reel, infeed the grinding head approximately .002" and let the grinding wheel continue to traverse for at least 20 passes or until there is a 99% reduction in grinding sparks compared to normal spin grinding.

NOTE: Set traverse at slow speed on the TRAVERSE SPEED KNOB. The slower the traverse speed, the better the finish. Approximately 8 feet per minute or slower is recommended, but adjust the speed to your finish requirements for final grinding sparkout. After sparkout, adjust the TRAVERSE SPEED KNOB to 0 and then switch all motors to OFF.

Open the doors and inspect the reel. If it is sharp, go to the relief grind process. If not, repeat the spin process, as required. If you wish to inspect the reel in the middle of a grind program, turn off all switches when the grinding head is in the HOME position. You can then open the doors and check the reel. If you wish to continue, close the doors and turn all the motor switches back to ON.

NOTE: At this point your 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 your reel, go to the RELIEF GRINDING section of this manual on the next page.

STEP 4: RELIEF GRINDING



Pull on 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 for proper function.*

Replace the 1" wide [25mm] grinding wheel with a 3/8" [10 mm] wide relief wheel for relief grinding. A smaller diameter wheel tends to work better on smaller diameter reels and reels with more blades. A 3.5" Diameter [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.

NOTE: Check the Proximity Sensor on the Index Finger (right side proximity switch under the spark shield) to insure that it makes contact (the proximity switch light comes ON) when the index finger catches a reel blade.

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. 31.

REEL SPIRAL

Check to see if your cutting unit is a normal or reverse helix.

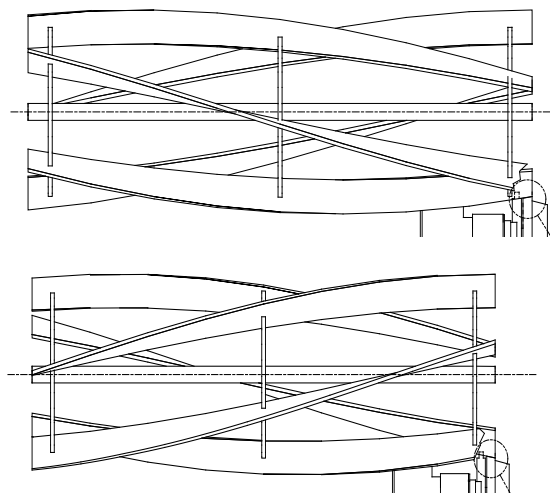
NORMAL REEL HELIX.

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

REVERSE REEL HELIX.

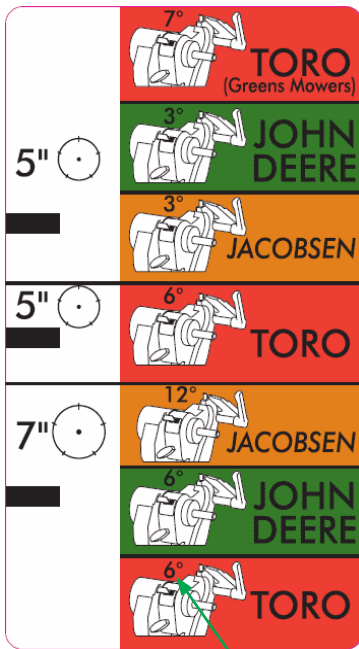
If the wheel has a taper, place the high side of the wheel to the left side for a normal helix reel. Most mowing units are normal helix.

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



Adjust the relief guide finger so there is a small gap between the guide finger and the wheel (about 1/16" [1.5 mm]. See page 35.

FIG. 31



Use ADJUSTER KNOB to set RELIEF ANGLE.

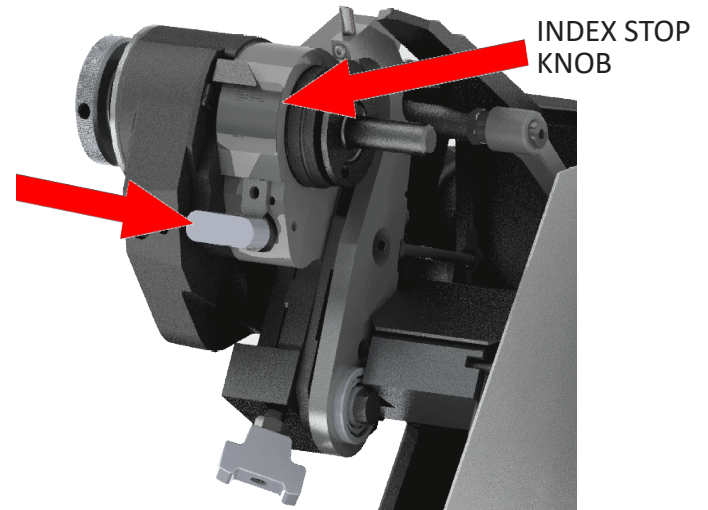


FIG. 32 CORRESPONDING ANGLE

RELIEF ANGLE ADJUSTMENT

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 which corresponds with the decal on the ACCU-REEL POSITIONER (see FIG. 32).

NOTE: 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.

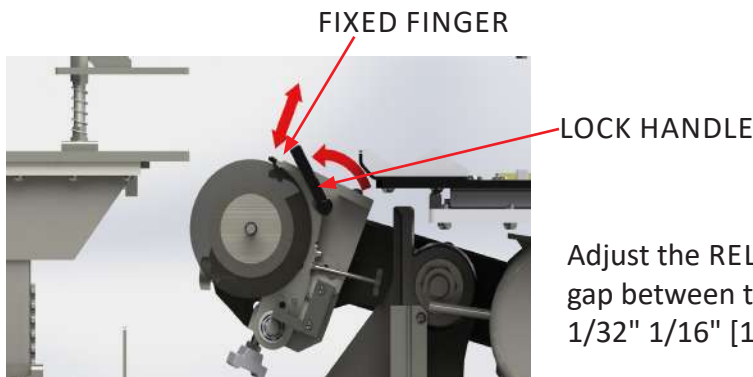


FIG. 33

INDEX STOP FINGER ADJUSTMENTS

The FINGER AND BODY ASSEMBLY includes two fingers. See FIG. 36. 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 allows the reel to index to the next blade, automating the grinding process. It is important to have the INDEX STOP FINGER adjusted properly.

STEP 1: When the grinding head is positioned with a reel blade resting on the FIXED RELIEF FINGER high point, the INDEX FINGER should have about 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 for 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 too little free play, rotate the INDEX STOP KNOB counter-clockwise. If there is more than 1/16" [1.5 mm] free play, rotate the INDEX STOP KNOB clockwise.

The INDEX STOP PIN on the end of the INDEX FINGER is 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. *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.*

STEP 2: With the down limit of the INDEX STOP FINGER properly set, you may have to adjust the up 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 FINGER in the reel blade index path to properly catch the next blade when indexing and 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 T-KNOB counter-clockwise. 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 INDEX STOP FINGER T-KNOB clockwise. See FIG. 36.

Adjust the T-knob in by 1/8" (3 mm) into the hole opening so the up travel is restricted. Check the up and down swing of the INDEX FINGER for clearance on both sides of the reel blade for the relief grind.

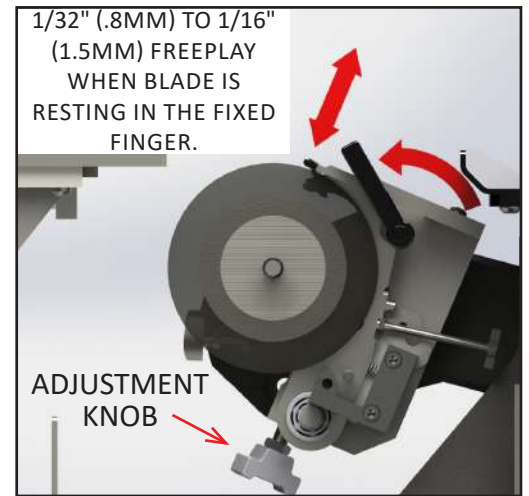
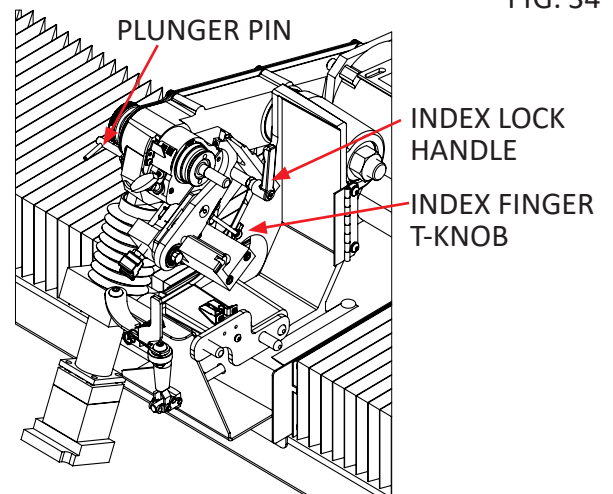
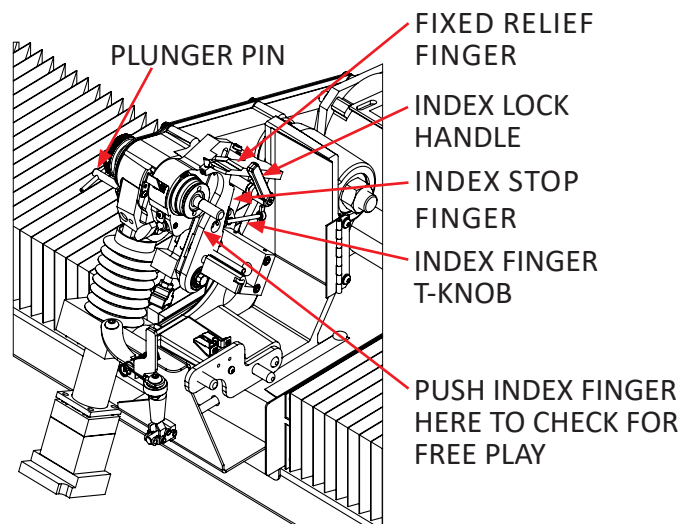


FIG. 34



Detail shows FINGER AND BODY ASSEMBLY rotated (clockwise) into the spin grinding position (shown without grinding wheel for clarity).

FIG. 35



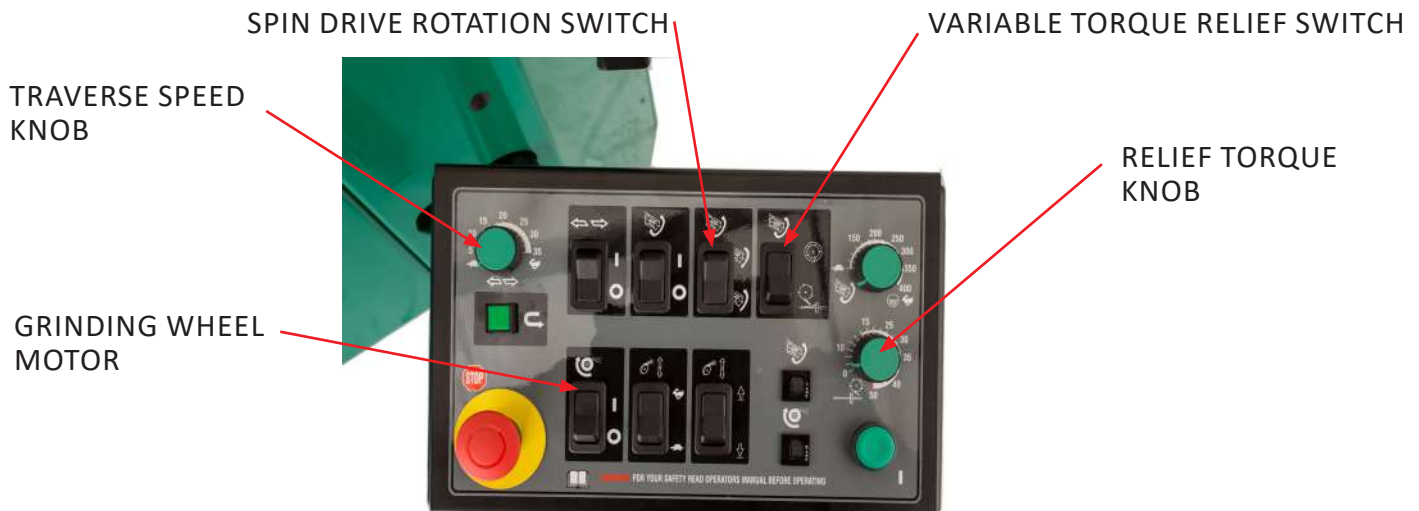
Detail shows FINGER AND BODY ASSEMBLY rotated counterclockwise into relief grinding position (shown without grinding wheel for clarity).

FIG. 36

Reset the TRAVERSE TRAVEL LIMITS so the grinding wheel clears the reel at both ends by approximately 1/16" [1.5 mm]. See page 30.



TEST GRIND



1. Set grind selector to VARIABLE TORQUE RELIEF.
2. Set spin DRIVE ROTATION SWITCH to rotate the reel into the FIXED FINGER, counter-clockwise when looking from the right. *NOTE: relief torque reel rotation is always opposite spin rotation.*
3. With the grinding head above the right-side TRAVEL LIMIT SENSOR, jog the grinding head up while manually rotating the reel until the INDEX FINGER touches the blade. *NOTE: The INDEX FINGER position must be set to stop the reel blade and allow traversing to the left without the blade hitting the side of the relief finger.*
4. Turn the TRAVERSE SPEED KNOB to zero, then depress the TRAVERSE DRIVE MOTOR SWITCH to ON. Using the TRAVERSE SPEED KNOB to slowly jog left until the reel blade is on the RELIEF FINGER. *NOTE: When the GRIND SELECTOR is set to VARIABLE TORQUE, the traverse will wait on the right TRAVEL LIMIT SWITCH until the indexing finger proximity switch is activated. It will then start traversing to the left.*
5. Depress the GRIND MOTOR SWITCH to ON.
6. Manually jog the traverse all the way to the left, watching for proper clearance between the grinding wheel and the reel 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.
7. Stop the traverse over the right-side Travel Limit Sensor and check for a proper blade index (the automatic index feature will catch the next blade to be ground). Turn OFF the GRINDING MOTOR and TORQUE SWITCHES.

RELIEF GRIND



1. Close and latch the doors.
2. Turn the SPIN DRIVE MOTOR SWITCH to ON. *NOTE: The spin drive will apply a torque load against the FINGERS.*
3. Set the RELIEF TORQUE KNOB at approximately 15. *NOTE: Free turning reels may need a lower value than 15. Stiff reels or reels with a drive train may need a higher torque than 15. Do not exceed 45 on the RELIEF TORQUE KNOB SETTING.*
4. Traverse the grinding head all the way to the left watching for proper clearance between the grinding wheel and the reel 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 to the reel blade support spiders.
5. Stop the traverse in HOME position and check for a proper blade index (the machine will wait here until the blade indexes). THE FINGER PROXIMITY SENSOR will send a signal when the blade has indexed to start moving to the left. If the machine does not traverse to the left, check that the FINGER PROXIMITY SENSOR is activated when the INDEXING FINGER is behind the reel blade.
6. Turn the GRINDING WHEEL MOTOR SWITCH to ON.
7. Turn the TRAVERSE SPEED KNOB to a proper grinding speed. Slowly infeed the grinding wheel until you are able to grind the full length of reel evenly. You can infeed between .005" to .012" at a time. Be sure you have ground all the blades before infeeding further.
NOTE: Traverse speed should be approximately 15 fpm. If you are removing a small amount of stock on initial infeeds, faster traverse speeds are suggested. If you are removing a large amount of stock on later infeeds, slower traverse speed may be required.

At this point your reel has been sharpened and shaped by the SPIN GRIND and RELIEF GRIND processes. Simply remove the reel and SPIN GRIND the next reel.

PLACING A CUTTING UNIT NOT LISTED ON THE ACCU-REEL POSITIONER.

FIG. 37

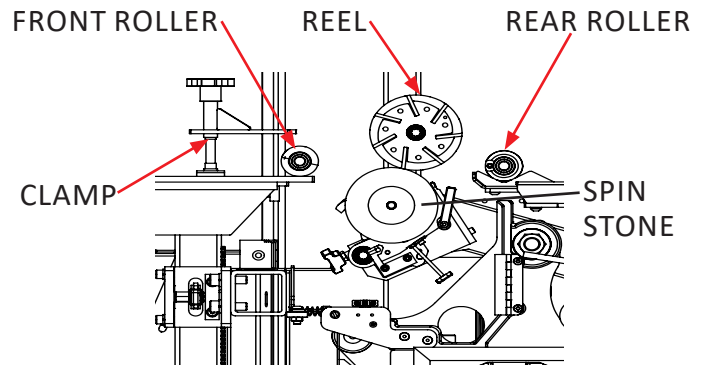


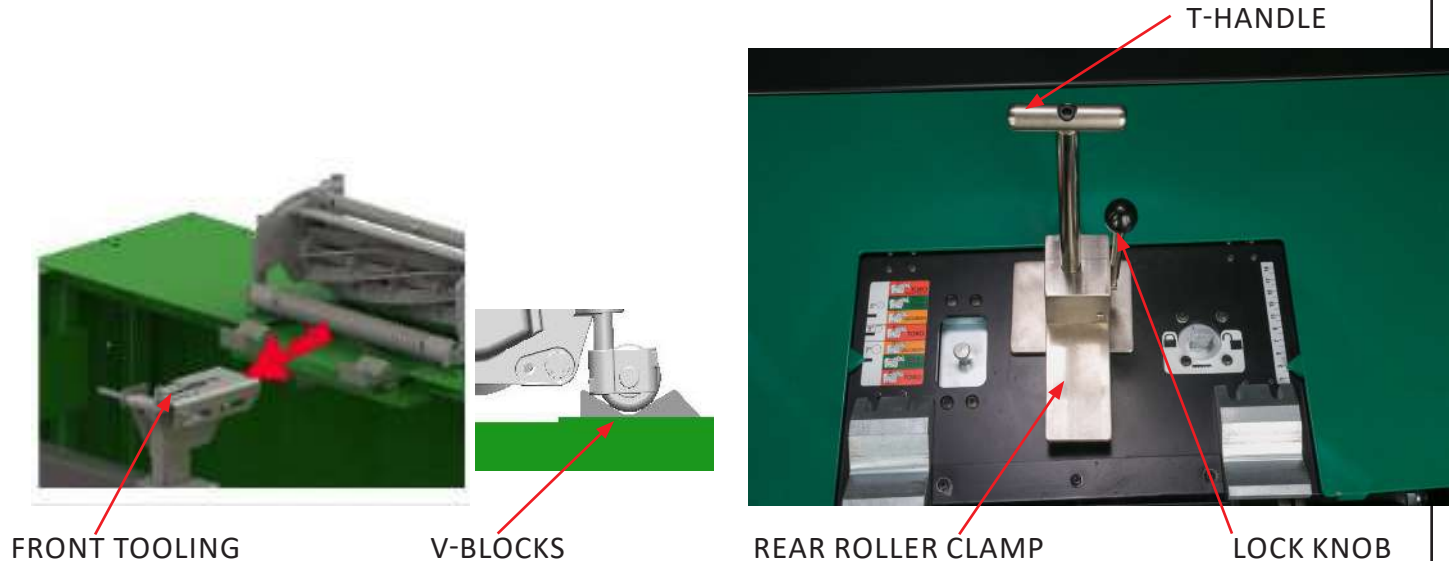
FIG. 38

If the cutting unit is not listed on the decal 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 pin and turn it 90° to lock it in the UP position.
2. Move the right side knob to point at the desired number. See FIG. 37.
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 ACCU-REEL POSITIONER with the cutting unit forwards or backwards until the center shaft of the reel is positioned at a one o'clock, or 30° angle, (looking from the right side) relative to the shaft of the GRINDING HEAD. See FIG. 38.

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



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 and continue with the setup process as shown on Page 22.