

TS*plus*/TS1 Modular Transfer Systems Belt Grinder

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Installation, Operation and Maintenance

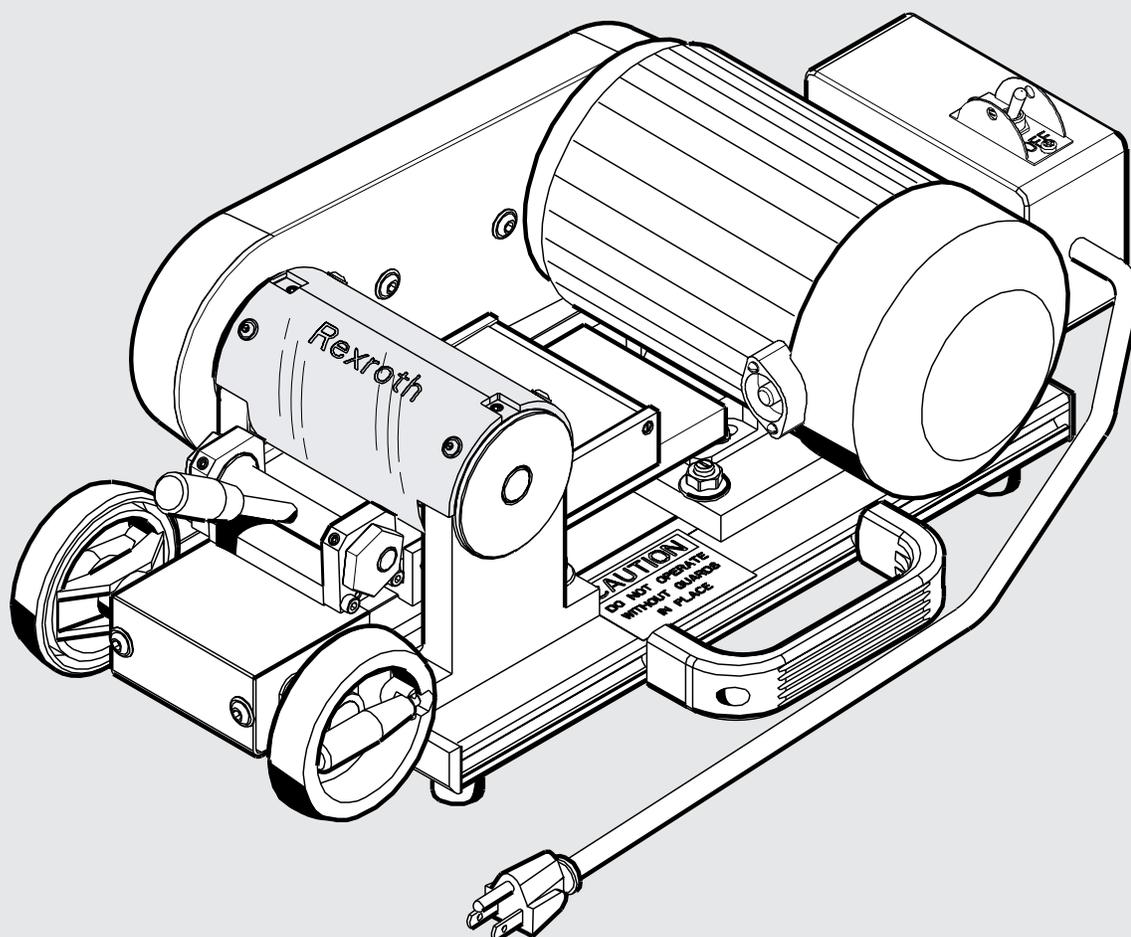


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Module Warranty

BOSCH REXROTH CORPORATION warrants to the original purchaser the modules manufactured by us to be free from defects in materials and workmanship under normal use and service. Our obligation under this warranty shall be limited to the repair or exchange of any part or parts which may thus prove defective under normal use and service within one (1) year from date of installation by the original purchaser. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR USE, AND WE NEITHER MAKE NOR AUTHORIZE ANY OTHER PERSON TO MAKE FOR US, ANY WARRANTY IN CONNECTION WITH THE SALE.

This warranty shall not apply to the modules or any part thereof that has been subject to accident, negligence, alteration, disassembly, abuse, or misuse after delivery by us. The term "Original Purchaser", as used in this warranty, shall be deemed to mean the customer to whom the modules were originally sold.

Our obligation under this warranty is limited to the modules only, and excludes wear items, such as belts, etc., and we may not be responsible for system concept, design, engineering, or function beyond this.

Liability

In no event can the manufacturer accept warranty claims or liability claims for damages resulting from improper use or misuse of the equipment or as a result of changes made to the equipment other than those authorized by the manufacturer. The manufacturer will accept no claim in which non-original spare parts have been used.

Environmental Protection

Always dispose of worn, damaged or obsolete parts in a responsible manner. Some components, such as gearboxes, contain lubricating oil which can pollute the environment. It is the user's responsibility to dispose of all hazardous material within the components following all local, state and federal guidelines.

All rights are held by ROBERT BOSCH GMBH and BOSCH REXROTH CORPORATION, also regarding patent claims. We retain all powers of disposition, such as for copying and/or for passing-on to third parties. **We reserve the right to make technical changes at any time without notice.** Errors and omissions excepted.

Important Safety Information!

IMPORTANT: This manual must be reviewed with all equipment operators as part of your operator training program!

SAFETY FIRST!

Important safety information is contained throughout this manual to alert you to potentially dangerous situations and help prevent accidental injury and property damage.



The safety warning symbol above has been included to warn you of hazards that can hurt or kill you and others, and/or cause serious damage to the equipment and other property. In addition, the following safety alert words are used:

DANGER!

Means that you or others will be seriously or fatally injured if instructions are not followed.

WARNING!

Means that you or others may be seriously or fatally injured if instructions are not followed.

CAUTION!

Means that you or others may be injured if instructions are not followed.

Material Hazards:

Some components, such as gearboxes, contain lubricants or other materials that can represent a potential health hazard if handled, stored, or disposed of improperly.

Please contact Bosch Rexroth for copies of the Material Safety Data Sheets (MSDS) for the lubricating oil used in gearboxes and other potentially hazardous materials.

Review All Safety Information:

Please review the safety information included on this page and throughout this manual with all installers, operators, and maintenance personnel of this equipment.

SAVE THESE INSTRUCTIONS

⚠ WARNING!

Please read all assembly, and maintenance instructions carefully before beginning set-up of the components in this document. Where appropriate, warning symbols ⚠ have been included in this publication to alert you of potential or impending danger.

- Be sure to read and observe all safety warnings in this document as well as those attached to the individual modules. Failure to do so could result in potential risks to your health and safety as well as those around you.
- Covers and guards have been designed to eliminate pinch points and exposure to moving chains and gears. **DO NOT** operate the conveyor or any of the other components in the system with the guards removed. Serious injury may result!
- All set-up maintenance and repair work should be performed only by properly trained, qualified personnel. All operators must be properly trained in the use of this equipment.
- A qualified electrician must make all electrical connections when wiring the components installed in the *TSplus* system. Be sure to follow all local, state and federal regulations when installing electrical devices of any type. The customer assumes responsibility for the control system, and must provide an EMERGENCY-OFF SWITCH or switches for all workstation operators to meet all applicable industry and OSHA requirements. In general, emergency-off switches must be present at easily accessible locations for all operators of the installed *TSplus* conveyor system.
- All power supplies must be LOCKED OUT before beginning maintenance or repair work of any type on the conveyor system. Proper LOCK OUT procedures include the identification of the locked out power supply with a tag to prevent the accidental restoration of power.
- *TSplus* pneumatic components are designed to operate in a range of 4–6 Bar (58–87 psi). It is the users responsibility to install a filtered, regulated air supply to limit the pressure to that recommended by the manufacturer. Before beginning any maintenance or repair, bleed off the pressure lines to all components to prevent unexpected or accidental movement of a system component which could result in personal injury.
- *TSplus* drives, returns and conveyor sections, lift-rotate units and components are designed to transport Bosch Rexroth WT2, WT2/A, WT2/A-H workpiece pallets. Proper usage is defined as the transport and positioning of parts and assemblies via the workpiece pallet and fixture during the assembly process. In no instances should the pallet payload, the downward force applied to the pallet, or the total load carrying capacity of the entire system be exceeded. Exceeding published specifications will result in premature wear or system failure and may cause damage to the motor, gearbox, roller chain, seals and other components.
- **CAUTION!** Do not operate or work near mechanical equipment when wearing loose clothing. Moving components such as roller chain, drive belts, drive shafts and pallets can snag long belts, scarves, ties and other loose fitting garments, pull the worker into the equipment and cause serious, or in extreme cases, life threatening injury.
- **CAUTION!** Operators having long hair must wear appropriate head protection (hair nets, hats, and hair caps) to minimize the risk associated with working near moving machinery. Hanging hair can get caught in moving components such as roller chain, drive belts, drive shafts and pallets, pull the worker into the equipment and cause serious, or in extreme cases, life threatening injury.

⚠ WARNING!

Employees must be instructed in safety requirements. Refer to Rexroth document 3842527147 (2008.02), "Instructing Employees on Safety" for an overview of the dangers, instructions and references to regulations and standards for employees who operate, maintain, repair or who work on or near Rexroth conveyor transport systems. A pdf of this multi-language document can be downloaded at: BoschRexroth-US.com/BRLCatalogs by clicking on "Manuals and Product Updates"

Introduction

Prior to welding transport belts for TS1 or TS*plus* conveyors, the ends must be tapered to provide the proper overlap. The belt grinder is designed to grind the belt ends to the proper bevel in a single pass.

The belt grinder's 1/4 HP, 120 VAC/60 Hz motor operates at 1,750 RPM to drive the toothed belt that powers the grinding mechanism. The grinding mechanism features a round grinding drum with a replaceable abrasive covering. An adjustable clamping and feed mechanism holds the belt securely and helps ensure the correct bevel. The grinder incorporates a guarded toothed belt that will provide many years of reliable service and does not need to be tensioned unless it is being replaced.

The belt grinder is shipped completely assembled. It has been adjusted to correctly grind TS*plus* conveyor system belts. No additional set-up is required.

If grinding 2.2mm transport belts simply remove the two "Marker Screws" to relocate the grinding bed slightly lower as illustrated in Fig. 3.

The main belt grinder components are shown in Fig. 1.

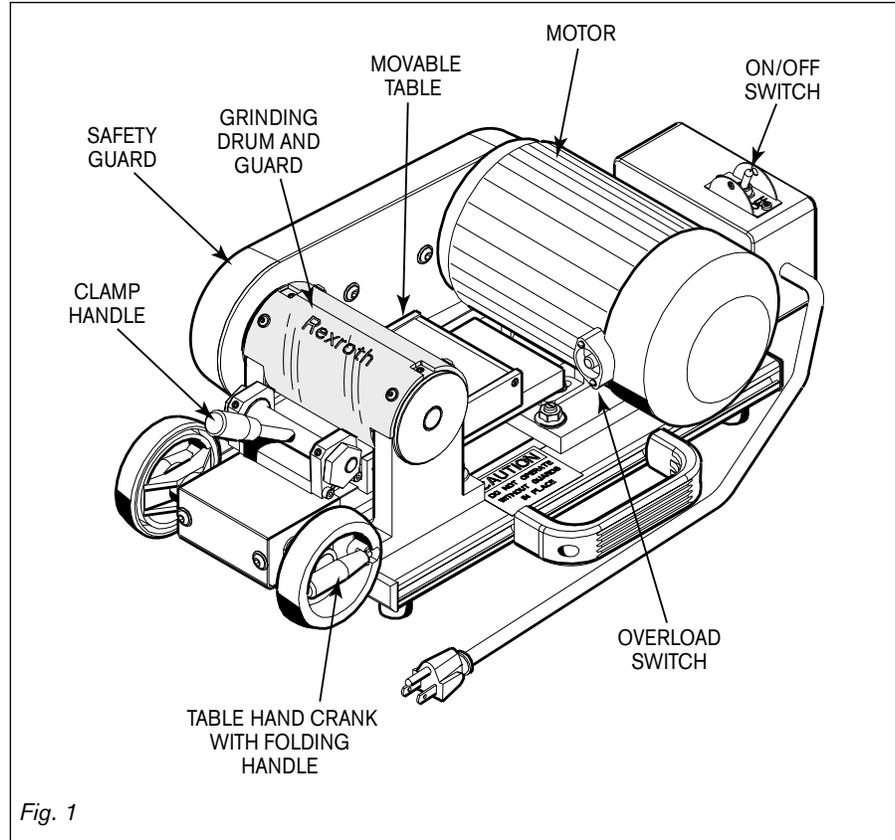


Fig. 1

Set-Up

Bevel Adjustment for 1.8mm thick TS1 or TSplus transport belt (Fig. 3)

The belt grinder is preset with the "Marker Screws" in the 1.8mm location. This provides the correct bevel length for TS1 or TSplus conveyor transport belts. It can easily be reset to grind 2.2mm thick transport belts as described below. The correct bevel length for all transport belts is 60mm (2.36") as shown in Fig. 2.

CAUTION! DO NOT operate the Belt Grinder with any of the protective guards removed! Serious injury may result if the grinder is operated without guards!

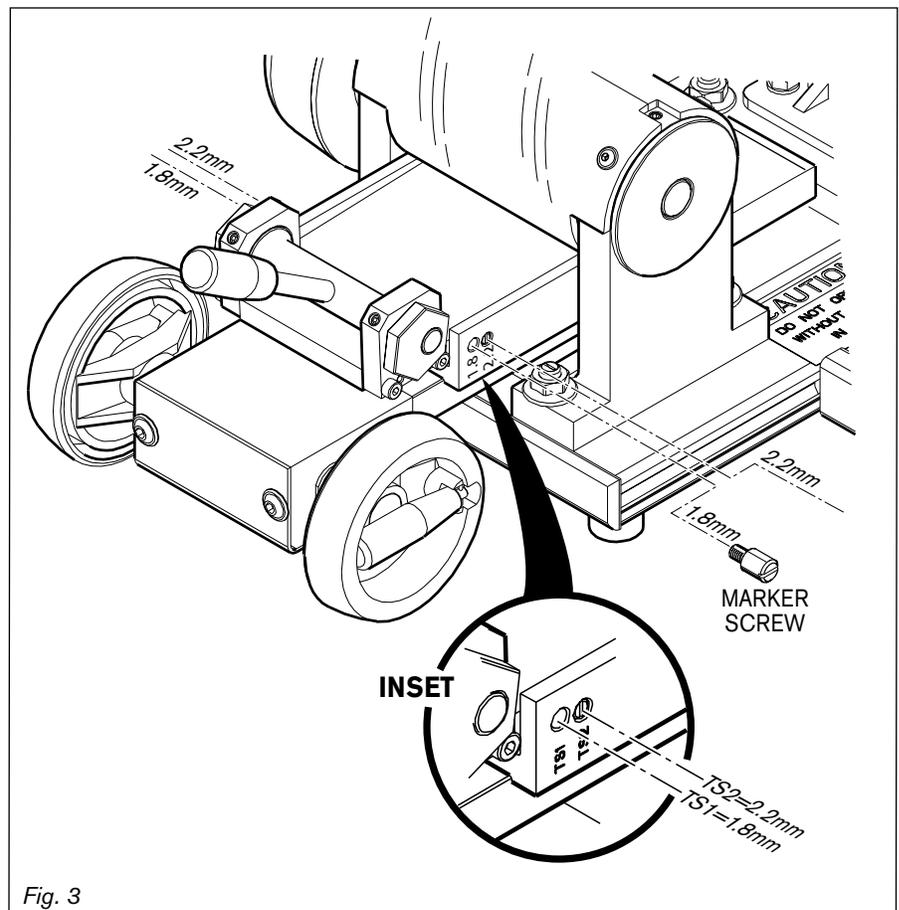
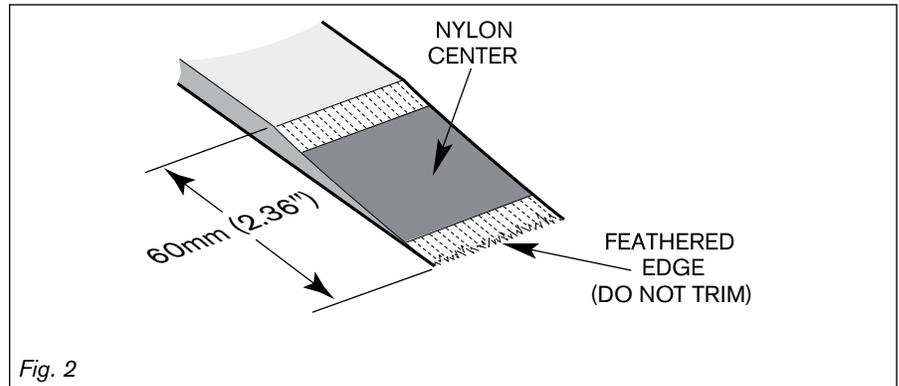
Bevel Adjustment for 2.2mm thick transport belts (Fig. 3)

The belt grinder can also be used to grind 2.2mm thick transport belts. To do so, remove the "Marker Screws" from the 1.8mm locations on both sides of the grinder. Lower the grinder bed slightly to line up the threaded holes at the 2.2mm location, and then reinstall the "Marker Screws". This change provides the correct bevel length of 60mm for 2.2mm belts as shown in Fig. 2

NOTE: Earlier generation TS1 belt was 1.8mm thick while TSplus (or TS2) belt was 2.2mm thick. As a result, some early belt grinders used TS1 and TS2 stampings in the housing to indicate belt thickness. Note that TS1=1.8mm and TS2=2.2mm as shown in the INSET on Fig. 3.

Final Check

Make sure that all guards are in place and all fasteners are tightened securely before using the belt grinder. Be certain the power switch is in the OFF position before plugging in the cord. The belt grinder should be on a solid, stable work surface that is clean and free of items that could present a hazard.



Operation

The belt grinder will grind two belts at once, in a single pass. **The correct bevel is absolutely critical when welding TS1 or TSplus transport belts.** To ensure proper operation, it is important that all settings outlined on page 5 are checked before grinding belts, and that the following steps are followed carefully.

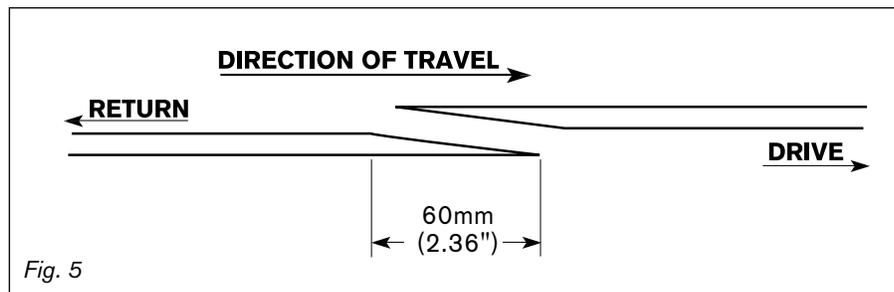
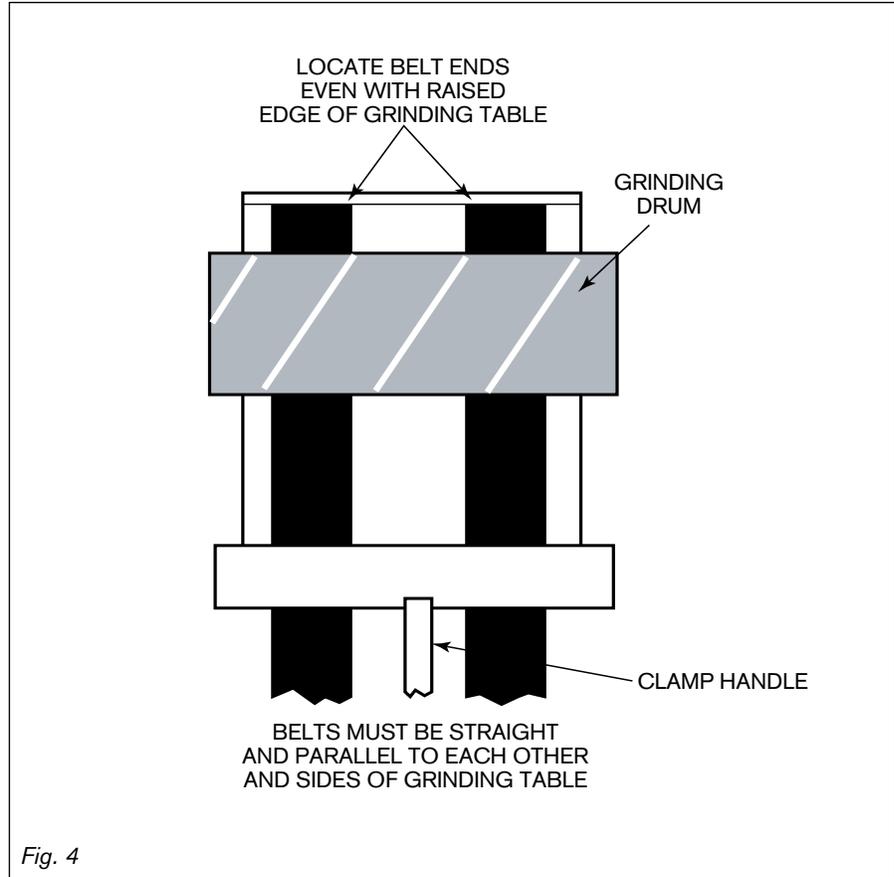
⚠ WARNING! To prevent serious injury, always observe the following safety warnings:

- Make sure all guards are securely in place and all fasteners are tight.
- NEVER wear loose-fitting clothing or jewelry that could be pulled into the grinding drum.
- Long-hair MUST be tied back.
- Because of the fine dust generated in the grinding process, ALWAYS wear safety glasses and a dust mask.

Preparing to grind the belts:

1. Turn the crank handle clockwise, moving the table as far forward (toward the motor) as it will go.
2. Raise the belt clamp handle and feed two belts under the clamping bar and grinding drum, until the ends of the belt are even with the raised edge of the table. Make sure the belts are straight and parallel to the sides of the table and each other, and that the ends of the belt are square with the front edge of the table. See Fig. 4 and 6.

⚠ IMPORTANT: Make sure that you grind the bottom of the belt coming from the drive and the top of the belt coming from the return. This ensures smooth pallet transfer over the belt joint. See Fig. 5.



Operation

Grinding the belts:

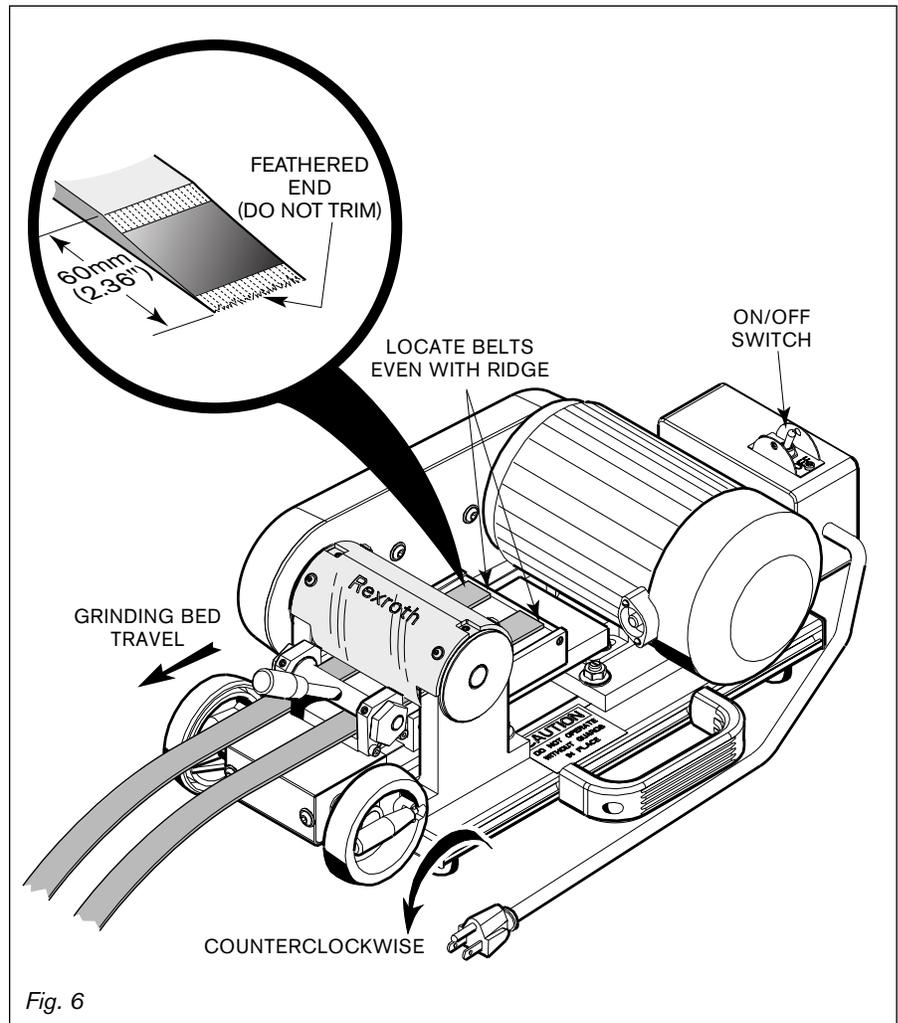
1. Once the belts have been properly positioned, push down on the clamping lever to lock them in place. Make sure the belts are held securely.
2. Make sure that the power switch is in the OFF position, then plug the belt grinder cord into a 3-prong grounded outlet.
3. Perform a final visual check to make sure that all guards are in place and that the belts are properly aligned and securely clamped in place.
4. Turn ON the motor using the switch.
5. Turn the crank handle counterclockwise to feed the belts against the grinding drum. Once the belts contact the grinding drum, maintain a slow and steady pace while turning the hand crank. It may be necessary to slow down as you approach the ends of the belts, as the grinder removes more material from the belts.

CAUTION! Do NOT try to force the feed rate too quickly! Feeding the belt too quickly may overheat or damage the belt, resulting in an unusable bevel.

6. Once the belt is beveled, turn the power switch to OFF and unplug the grinder. Raise the belt clamp and remove the belts. Make sure the ends are properly feathered and the beveled sides are free of burrs, as shown in the inset. Remove any burrs from the sides by lightly sanding with 80 grit sandpaper. **DO NOT TRIM FEATHERED ENDS OF BELT**

IMPORTANT: Protect the beveled surfaces of the belts from oil, dust, moisture, fingerprints, etc. Any contamination could result in a defective weld and create a safety hazard.

The belts are now ready for welding. Refer to the belt welding section of the TS1 or TS*plus* Basic Equipment manual for instructions.



Maintenance

Other than replacing the abrasive on the grinding drum as needed, the belt grinder is maintenance-free. Following the checklist and steps below will help ensure safe operation and superior results.

⚠ WARNING! Make sure the unit is unplugged before performing any maintenance or repair work!

- After belt grinding is complete, vacuum any dust and particulate from the unit.
- Before each use, check that all guards are in place and all fasteners are tight.
- Regularly check the power cord and plug for damage or wear and replace it if necessary.
- Periodically check the drive belt for looseness or wear and adjust or replace as needed.

Replacing the abrasive cover:

The grinding drum uses a self-adhesive abrasive cover. This should be replaced when the abrasive surface becomes worn or clogged with belt particulate. Failure to do so could result in difficulty grinding and poor results.

1. Make sure the unit is unplugged.
2. Using a 2.5mm allen wrench, remove the 4 button head screws that secure the two grinding drum guards in place and remove the guards (Fig. 7).

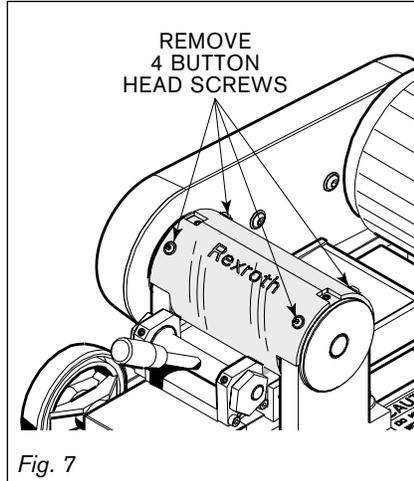


Fig. 7

3. Using a utility knife, carefully pry up the end of the abrasive cover along the edge of the drum (Fig 8).
4. Carefully peel off the abrasive by slowly turning the grinding drum as shown in Fig. 8.
5. Remove any adhesive residue from the grinding drum with a lint-free cloth and lacquer thinner. Allow the drum to dry completely.
6. Peel the backing from the end of the new abrasive cover and attach it to the edge of the drum, then slowly turn the drum, installing the abrasive in a spiral direction, until the entire drum is covered.

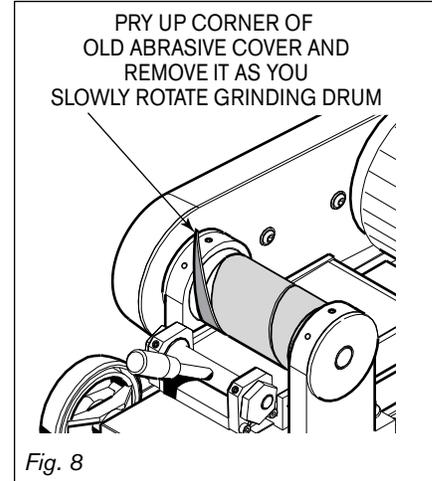


Fig. 8

⚠ IMPORTANT: Always install the new abrasive cover in the same spiral as the old one! Failure to do so could cause the abrasive to become loose or cause poor results.

7. Once the drum is covered, trim any excess abrasive paper that extends past the ends of the drum.
8. Use the 4 button head screws you removed earlier, and install the two guards. Be sure to tighten the screws securely.

⚠ CAUTION! NEVER operate the belt grinder without all guards in place.