



672 SEMI-AUTOMATIC BEDKNIFE GRINDER

SERVICE MANUAL

WARNING

You must thoroughly read and understand this manual before assembling or maintaining the equipment, paying particular attention to the Warning & Safety instructions.



IMPORTANT SAFETY MESSAGE



ORIGINAL INSTRUCTIONS -

As manufacturers of sharpening equipment, we want to confirm to you, our customers, our concern for safety. We also want to remind you about the simple, basic, and common sense rules of safety when using this equipment. Failure to follow these rules can result in severe injury or death to operators or bystanders.

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

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

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

Before operating this grinder, an operator must read and understand all of the information in the Operator's Manual and understand all of 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.

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

Follow these simple, basic safety rules, as well as others, including:

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

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



This machine is designed for sharpening the bedknives used on reel type mower cutting units 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.



INSTALLATION, DAILY MAINTENANCE, AND BASIC UPKEEP IS DISCUSSED IN THE OPERATOR'S MANUAL. THIS MANUAL SHOULD BE USED IN CONJUNCTION WITH THE OPERATOR'S MANUAL FOR PERFORMING SERVICE ON THIS EQUIPMENT.

SAFETY INSTRUCTIONS

- ORIGINAL INSTRUCTIONS -



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

1. **KEEP GUARDS IN PLACE** and in working order.
2. **REMOVE WRENCHES AND OTHER TOOLS.**
3. **KEEP WORK AREA CLEAN.**
4. **DON'T USE IN DANGEROUS ENVIRONMENT.**
Don't use Grinder in damp or wet locations. Machine is for indoor use only. Keep work area well lit.
5. **KEEP ALL VISITORS AWAY.** All visitors should be kept a safe distance from work area.
6. **MAKE WORK AREA CHILD-PROOF** with padlocks or master switches.
7. **DON'T FORCE THE GRINDER.** It will do the job better and safer if used as specified in this manual.
8. **USE THE RIGHT TOOL.** Don't force the Grinder or an attachment to do a job for which it was not designed.
9. **WEAR PROPER APPAREL.** Wear no loose clothing, gloves, neckties, or jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.
10. **ALWAYS USE SAFETY GLASSES.**
11. **SECURE YOUR WORK.** Make certain that the bedknife is securely fastened with the electromagnets provided before operating.
12. **DON'T OVERREACH.** Keep proper footing and balance at all times.
13. **MAINTAIN GRINDER WITH CARE.** Follow instructions in Service Manual for lubrication and preventive maintenance.
14. **DISCONNECT POWER BEFORE SERVICING.**
15. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure the switch is OFF before plugging in the Grinder.
16. **USE RECOMMENDED ACCESSORIES.** Consult the manual for recommended accessories. Using improper accessories may cause risk of personal injury.
17. **CHECK DAMAGED PARTS.** A guard or other part that is damaged or will not perform its intended function should be properly repaired or replaced.
18. **KNOW YOUR EQUIPMENT.** Read this manual carefully. Learn its application and limitations as well as specific potential hazards.
19. **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.
20. **DO NOT OPERATE THE GRINDER WHEN UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION**

SAFETY INSTRUCTIONS

- ORIGINAL INSTRUCTIONS -



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

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

DO

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

DON'T

1. **DON'T** use a cracked wheel or one that **HAS BEEN DROPPED** or has become damaged.
2. **DON'T FORCE** a wheel onto the machine **OR ALTER** the size of the mounting hole. If a wheel won't fit the machine, get one that will.
3. **DON'T** ever **EXCEED MAXIMUM OPERATING SPEED** established for the wheel.
4. **DON'T** use mounting flanges on which the bearing surfaces **ARE NOT CLEAN, FLAT AND FREE OF 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** work into the wheel.
9. **DON'T STAND DIRECTLY IN FRONT** of a grinding wheel whenever a grinder is started.
10. **DON'T FORCE GRINDING** so that motor slows noticeably or the work gets hot.



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

SAFETY INSTRUCTIONS

- ORIGINAL INSTRUCTIONS -

 **WARNING**



UNPLUG THE EQUIPMENT PRIOR TO DOING ANY SERVICE ON THIS EQUIPMENT. FAILURE TO REMOVE POWER TO THIS EQUIPMENT BEFORE SERVICING MAY RESULT IN INJURY OR DEATH.

IF POWER IS REQUIRED FOR TESTING OR TROUBLESHOOTING, THIS SHOULD BE PERFORMED BY A TRAINED PROFESSIONAL OR LICENSED ELECTRICIAN.

REVIEW THE SYMBOLS AND DESCRIPTIONS ON PAGES 10 AND 11 OF THE OPERATOR'S MANUAL. UNDERSTAND ALL SYMBOLS BEFORE OPERATING OR SERVICING THIS EQUIPMENT.



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.**

IMPORTANT GROUNDING INSTRUCTIONS

If electrical testing is required, always verify the machine has a proper ground before performing any tests.

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

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

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

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

 **WARNING**

ALWAYS PROVIDE A PROPER ELECTRICAL GROUND FOR YOUR MACHINE. AN IMPROPER CONNECTION CAN CAUSE A DANGEROUS ELECTRICAL SHOCK. IF YOU ARE UNSURE OF THE PROPER ELECTRICAL GROUNDING PROCEDURE, CONTACT A QUALIFIED ELECTRICIAN.

SERVICE DATA

- ORIGINAL INSTRUCTIONS -

SKILL AND TRAINING REQUIRED FOR SERVICING

This Service Manual is designed for technicians who have the necessary mechanical and electrical knowledge and skills to reliably test and repair the Bedknife Grinder. For those without that background, service can be arranged through a local distributor.

This manual presumes that you are already familiar with the normal operation of the grinder. If not, you should read the Operator's Manual or do the servicing in conjunction with someone who is familiar with its operation.

PERSONS WITHOUT THE NECESSARY KNOWLEDGE AND SKILLS SHOULD NOT OPEN THE CONTROL BOX OR ATTEMPT ANY INTERNAL TROUBLESHOOTING, ADJUSTMENTS, OR PARTS REPLACEMENT.

If you have questions not answered in this manual, please call your distributor.



TORQUE REQUIREMENTS

Throughout this manual we refer to torque requirements as "firmly tighten" or the like. For more specific torque values, refer to the information below.

Bolts going into a Nut or into a Threaded Hole in Steel.

Refer to table at the right.

Bolts going into a Threaded Hole in Aluminum.

Use the Grade 2 values in the table at the right.

Socket-Head Screws




Use the Grade 8 values in the table at the right.

Machine Screw

No. 6 Screws: 11 in.-lbs [0.125 kg-m]

No. 8 Screws: 20 in.-lbs [0.23 kg-m]

No. 10 Screws: 32 in.-lbs [0.37kg-m]

	GRADE 2  SMOOTH HEAD	GRADE 5  3 MARKS ON HEAD	GRADE 8  6 MARKS ON HEAD
1/4 In. thread	6 ft-lbs (0.8 kg-m)	9 ft-lbs (1.25 kg-m)	13 ft-lbs (1.8 kg-m)
5/16 In. thread	11 ft-lbs (1.5 kg-m)	18 ft-lbs (2.5 kg-m)	28 ft-lbs (3.9 kg-m)
3/8 In. thread	19 ft-lbs (2.6 kg-m)	31 ft-lbs (4.3 kg-m)	46 ft-lbs (6.4 kg-m)
7/16 In. thread	30 ft-lbs (4.1 kg-m)	50 ft-lbs (6.9 kg-m)	75 ft-lbs (10.4 kg-m)
1/2 In. thread	45 ft-lbs (6.2 kg-m)	75 ft-lbs (10.4 kg-m)	115 ft-lbs (15.9 kg-m)

MAINTENANCE

LUBRICATION OF LINEAR BEARINGS

STEP 1--Thoroughly clean the shafts.

STEP 2--Flood spray the two shafts with a spray lubricant (**do not use a teflon based lubricant**) until the lubricant is dripping off the shafts. Then run the carriage back and forth through its full range of travel. This will carry the lubricant into the bearings.

STEP 3--With a clean rag, wipe off the excess amount of lubricant from the shafts. Run the carriage back and forth through its full range of travel and wipe the shafts after each traverse. Repeat until the shafts are dry to the feel. This completes the lubrication process.

If the unit will be shut down for an extended period of time, more than four weeks, then the shafts and other appropriate parts of the unit should be flooded with lubricant. That lubricant should be left in place until the unit is brought back into service. When the unit is brought back into service the full lubrication procedure, as stated above, should be repeated.

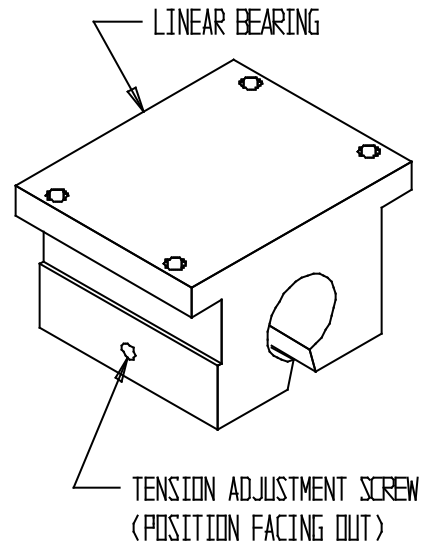


FIG. 1

MAINTENANCE

TESTING FOR PLAY IN THE BEARINGS USING THE BEARING TESTER FORK

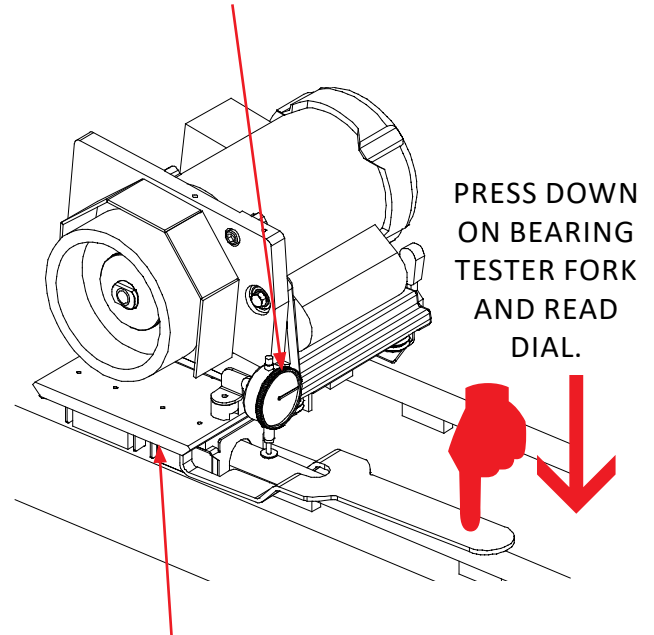
The traverse bearings on this grinder tend to wear and typically last around 3-6 years. If you believe your bearings are still in good working condition they may be tested and adjusted on the machine using the bearing tester fork and a dial indicator. If you do not have a dial indicator you may purchase a dial indicator kit (part no. 3706060) designed to be used with the bearing tester fork. If the bearings are being replaced follow the procedures on the next page. The tester fork may be used at a later date to adjust the bearings in place if needed.

TESTING PROCEDURE:

1. Position the dial indicator assembly on the machine grinding head assembly next to the bearing to be tested. Remove the bellows if the machine has them installed. The dial indicator should be within 1" of the side of the grinding head carriage directly above the bearing being tested. It is best to measure to the traverse shaft with a wide flat tip.
2. Insert the bearing testing fork 3706055 until the fork contacts the wiper bracket or the bearing.
3. With the tip of the dial indicator on the traverse shaft zero out the dial indicator.
4. Use your hand and press on the end of the bearing tester fork until it contacts the traverse rail. See FIG. 2. Read the movement on the dial indicator. If the movement exceeds .003" the bearing needs to be adjusted. Retest the bearing after adjusting the tension on the bearing. If the bearing does not improve to below the .003" reading then the bearing needs to be replaced.

Repeat steps 1-4 for the other other bearings on the located installed on the carriage.

DIAL INDICATOR MUST BE POSITIONED OVER THE BEARING BEING TESTED AND LOCATED WITHIN 1" OF THE SIDE OF THE CARRIAGE BASE.



PRESS DOWN ON BEARING TESTER FORK AND READ DIAL.

IF DIAL READS MORE THAN .003" OF MOVEMENT, ADJUST BEARING TENSION USING THE BEARING TENSION SCREW. SEE FIG 2.

FIG. 2

MAINTENANCE

CARRIAGE LINEAR BEARING REPLACEMENT

1. Remove the optional carriage bellows (if used) from the carriage.
2. Remove the four screws of one linear bearing and slide the linear bearing off the end of the carriage shaft.
3. Insert a new linear bearing onto the end of the carriage shaft with the tension adjustment screw pointing outward. See FIG. 3.
4. Adjust the tension screw of the linear bearing so when you radially rotate the linear bearing around the carriage shaft there should be no free play between the linear bearing and the carriage shaft.

NOTE: The tension is too tight if you feel a cogging action when you rotate the linear bearing around the shaft. This cogging is from the skidding of the bearing on the shaft and indicates the tension screw is too tight. Sliding the bearing block back and forth should be a smooth uniform motion.

5. Slide the linear bearing under carriage and attach with the four screws.

Repeat Steps 2 through 5 with the other two linear bearings.

6. After all three linear bearings are secured to the carriage, you may check for correct bearing tension using the bearing tester fork as described on the previous page. Also, pulling the carriage in the traversing direction should require approximately three pounds of force (with the belt clamp disengaged). To double check the assembly, slide the carriage from "end of travel" to "end of travel". The carriage should have very uniform resistance through its full range of motion.

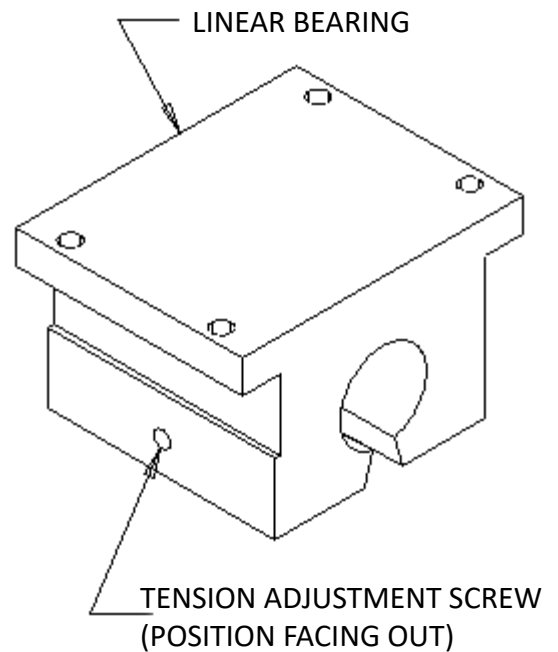


FIG. 3

! SETTING THE BEARING TENSION CORRECTLY IS CRITICAL TO PROPER GRINDING. BEARINGS WHICH ARE TOO TIGHT OR TOO LOOSE WILL CAUSE POOR GRIND QUALITY. ALSO, BEARINGS WHICH ARE TOO TIGHT WILL HAVE SUBSTANTIALLY SHORTER LIVES AND MAY DAMAGE THE SHAFT.

MAGNET REPAIR ASSEMBLY

If a magnet is damaged or fails on your 673 ACCU-Pro Bedknife Grinder or if the linear bearing fails, follow the detailed instructions below:

1. Contact the Foley United Customer Service Department at 800-225-9810 and get a Return Goods Authorization (RGA) number. Your Repair Part No. is 6729510, Magnet Repair Assembly - INA.

This Repair Assembly part number includes the labor to regrind the magnet set, but does not include replacement parts. When the magnet assemblies are returned to Foley United, we test the magnets. Foley United Customer Service Department will then contact you with a list of parts that are required to repair your magnet assemblies. Then we will install the new parts and regrind both magnets on our production fixture. The magnet assemblies are then retested and returned to you for reinstallation.

Please provide your grinder serial number and all contact information for communication on the repairs. Your grinder has an INA linear bearing that uses a shipping guide. This shipping guide was included in your product packet assembly. **IF YOU DO NOT HAVE THE SHIPPING GUIDE YOU MUST CALL THE FACTORY AND HAVE ONE SENT TO YOU BEFORE YOU ATTEMPT TO REMOVE THAT BEARING.** To use the shipping guide you must perfectly align the bearing shipping guide to the profile rail and slide the bearing off the profile rail and immediately onto the bearing shipping guide.

2. Disconnect the electrical wiring for both electromagnets and coil up the wire next to the electromagnets. Remove the left side fixed magnet assembly.
3. Drive down the two roll pins and remove the four attaching screws, saving the screws. Remove the right side moveable magnet assembly. Remove both bellows and the lock block, saving all fasteners. Great care must be taken when removing the moveable magnet assembly from the profile rail. See the warning above.
4. See FIG. 4 which illustrates which parts to return to Foley United. Make certain the bearing shipping guide is in place and then wrap the assembly in heavy paper and tape. Package the two magnet assemblies in a very sturdy shipping container with adequate filler material around and between the magnet assemblies. Note: the magnet assemblies weigh approximately 30 lbs. each and have sharp edges. Make sure to package accordingly.

NOTE: INADEQUATE PACKAGING MAY CAUSE SHIPPING DAMAGE TO THE MAGNETS AND REQUIRE REPLACEMENT OF ONE OR BOTH MAGNETS.

5. To reinstall the left magnet assembly, reinstall with four screws just snugged up, then drive the two new roll pins supplied to you in the return package. Then tighten the four mounting screws.
6. To reinstall the right magnet assembly, slide the linear bearing onto the profile rail. Again, the installation of the INA bearing is critical. You must slide the bearing off the bearing shipping guide and onto the profile rail with perfect alignment between the guide and the rail, or bearing damage will result.

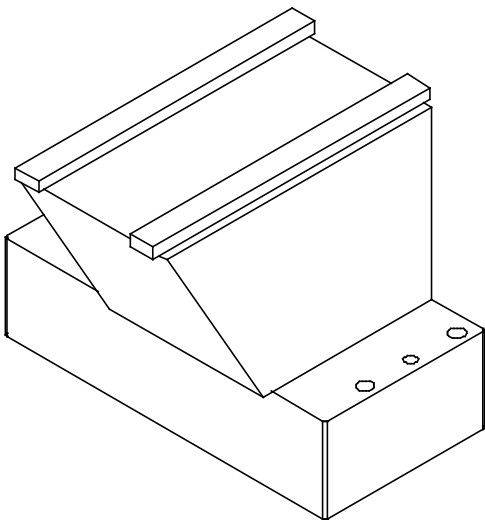
MAINTENANCE

- ORIGINAL INSTRUCTIONS -

7. Once the bearing is successfully on the profile rail, pump three pumps of grease from a standard grease gun into the bearing. Wipe off any excess grease that is visible. Then remove the grease fitting and install the plug supplied to you in the return package. The plug must be seated below the surface of the bearing.
8. Now reinstall the lock block and bellows using the saved fasteners. The screw indicated in FIG. 4 must be left installed in both sides of the INA bearing or the bearing will come apart. The lock block and bellows are designed to use the remaining three screws on the INA bearing for each side for attachment, avoiding the retained screw in the bearing.
9. Reconnect and reattach the wiring for both magnets. Replacement cable ties are supplied to you in the return package. Your grinder should now be operational.

NOTE: FAILURE TO USE THE INA BEARING SHIPPING GUIDE WILL DAMAGE THE BEARING AND REQUIRE YOU TO PURCHASE A REPLACEMENT BEARING.

LEFT SIDE BEARING ASSEMBLY



RIGHT SIDE BEARING ASSEMBLY

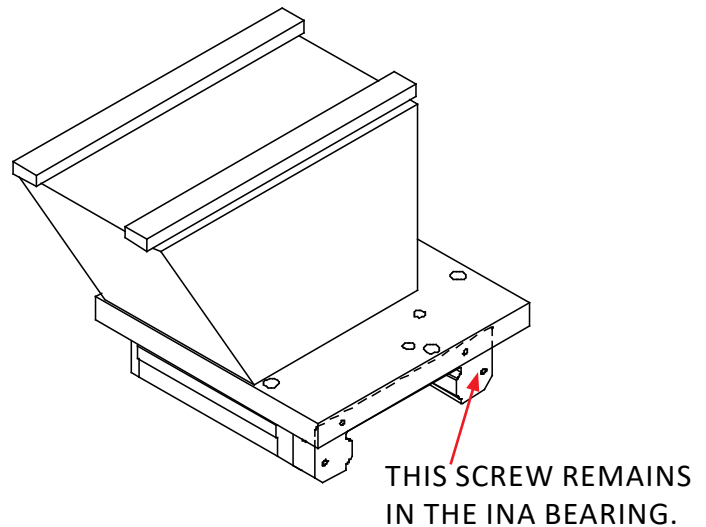


FIG. 4

MAINTENANCE

- ORIGINAL INSTRUCTIONS -

CLEANING AND MAINTENANCE GUIDELINES FOR POLYCARBONATE WINDOWS

Adherence to regular and proper cleaning procedures is recommended to preserve appearance and performance. **DO NOT USE GASOLINE** to clean polycarbonate windows!

WASHING TO MINIMIZE SCRATCHING

Wash polycarbonate windows with a mild dish-washing liquid detergent and lukewarm water, using a clean soft sponge or a soft cloth. Rinse well with clean water. Dry thoroughly with a moist cellulose sponge to prevent water spots. Do not scrub or use brushes on these windows. Also, do not use butyl cellosolve in direct sunlight.

Fresh paint splashes and grease can be removed easily before drying by rubbing lightly with a good grade of VM&P naphtha or isopropyl alcohol. Afterward, wash with warm water and a mild dish washing liquid detergent solution and then thoroughly rinse with clean water.

MINIMIZING HAIRLINE SCRATCHES

Scratches and minor abrasions can be minimized by using a mild automobile polish. Three such products that tend to polish and fill scratches are Johnson Paste Wax, Novus Plastic Polish #1 and #2, and Mirror Glaze Plastic Polish (M.G. M10). It is suggested that a test be made on a corner of the polycarbonate window with the product selected following the polish manufacturer's instructions.

IMPORTANT

- **DO NOT** use abrasive or highly alkaline cleaners on the polycarbonate windows.
- **Never** scrape polycarbonate windows with squeegees, razor blades or other sharp instruments.
- Benzene, gasoline, acetone or carbon tetrachloride should **NEVER** be used on polycarbonate windows.
- **DO NOT** clean polycarbonate windows in hot sun or at elevated temperatures.

GRAFFITI REMOVAL

- Butyl cellosolve, (for removal of paints, marking pen inks, lipstick, etc.)
- The use of masking tape, adhesive tape or lint removal tools works well for lifting off old weathered paints.
- To remove labels, stickers, etc., the use of kerosene, VM&P naphtha or petroleum spirits is generally effective. When the solvent will not penetrate sticker material, apply heat from a hair dryer to soften the adhesive and promote removal. **DO NOT USE GASOLINE!**

LUBRICATION FOR EXTENDED DOWN TIME/STORAGE:

If the machine will be shut down for more than one month, flood the traverse shafts and other appropriate parts with lubricant as outlined on previous page. Leave the lubricant in place until the unit will be used again. Then repeat the lubrication procedure before operating. This procedure applies to the bearing rail and bearing for the moveable right side electromagnet as well.

ADJUSTMENTS

TO ADJUST THE PROXIMITY SWITCHES

For the proximity switches to work properly and reverse the direction of the carriage at each end of a traverse, a distance of 3/16 in. +/- 1/32 [4.75 mm +/- 0.75] must be maintained between the top of the switch and the actuator bracket on the bottom of the carriage. See FIG. 5.

To adjust the clearance, loosen one of the switch mounting nuts while tightening the other.

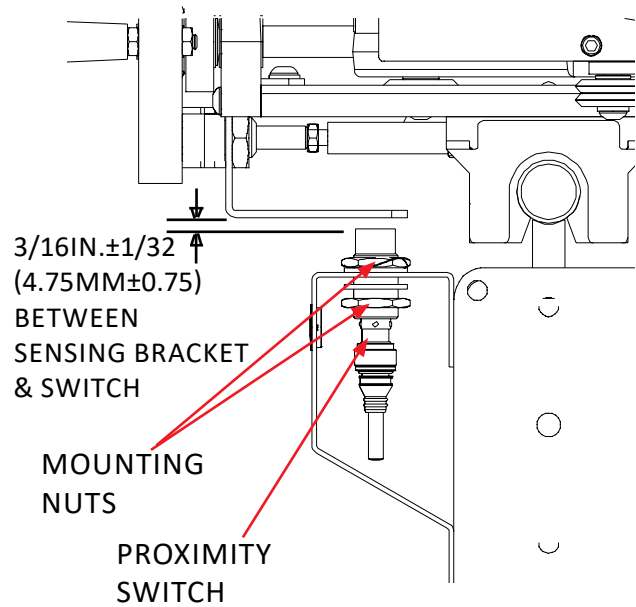


FIG. 5

TO ELIMINATE MOVEMENT IN THE DIAMOND DRESSER ADJUSTMENT COLLAR

The adjustment collar on the diamond dresser (see FIG. 6) has a nylon ball and set screw to put a holding drag on the diamond dresser shaft. If the adjustment collar is moving when not wanted or moving too freely, tighten the setscrew (this will put more load on the nylon ball). If the adjustment collar is difficult to turn, loosen the setscrew decreasing the load on the nylon ball.

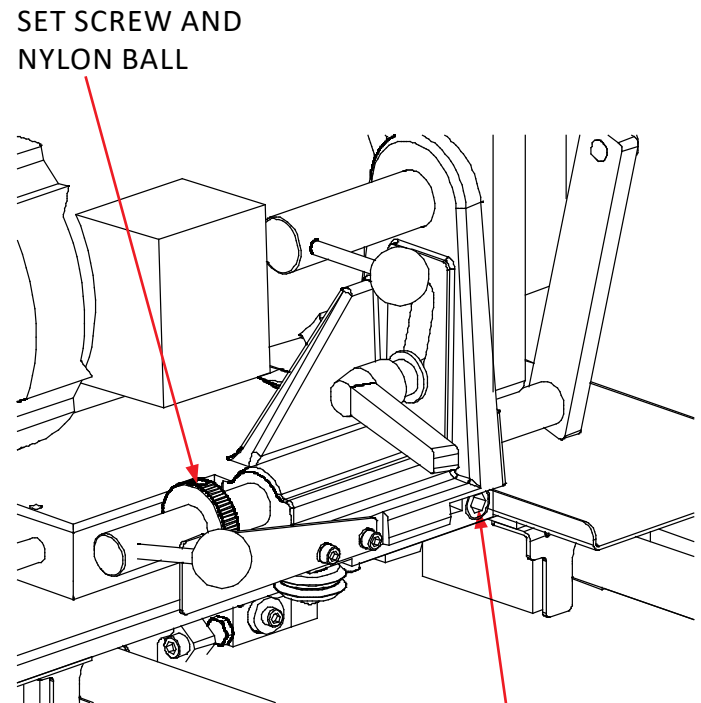


FIG. 6

ADJUSTING THE PRELOAD TENSION ON THE SMALL GRINDING HEAD SLIDE V-ROLLERS

The small grinding head slide V-rollers are positioned two fixed on the left and one adjustable on the right side. To set the correct preload on the right side adjuster, tighten the setscrew in FIG. 6 until the spring is fully compressed solid, then back off 1/2 turn.

TENSION ADJUST SET SCREW

ADJUSTMENTS

TRAVERSE BELT TENSION

To adjust the tension on the traverse belt tighten the screws and nuts located at the right side of the traverse belt. Tighten nuts until the compression springs measure $3/4"$. See FIG. 7. If the springs are not tensioned equally, uneven loading on the traverse system may cause parts to fail.

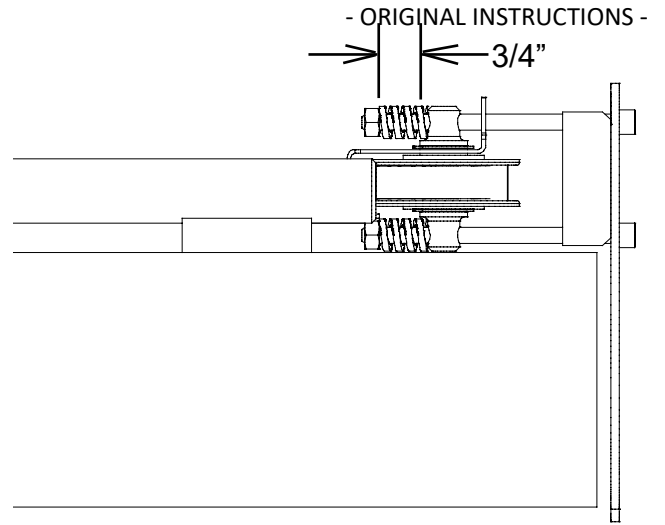


FIG. 7



DO NOT OVERTIGHTEN. OVERTIGHTENING COULD DAMAGE THE BELT OR TRAVERSE DRIVE SYSTEM.

TRAVERSE CLAMP FORCE

If the traverse clamp is slipping during regular operation it may be necessary to tighten the clamp. To tighten, loosen the jam nut and rotate the clamp tip out to adjust the position. Move the traverse belt out of the way and verify the clamped distance from the tip to the clamping block (shoe). See FIG. 8. Lock in place by tightening the jam nut against the clamp, being careful not to move the tip.

Do not set the adjustment at less than $.10"$. The $.10"$ setting allows slippage in a jam situation and damage can occur if this adjustment is set too narrow.

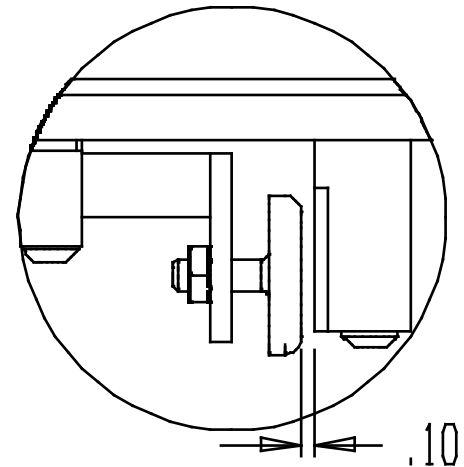


FIG. 8



CAUTION SHOULD BE USED AS ADJUSTING THE TIP WILL AFFECT THE SLIP LOAD AND COULD DAMAGE THE CLAMP TIP, BELT, OR TRAVERSE DRIVE SYSTEM.

ADJUSTMENTS (Continued)

- ORIGINAL INSTRUCTIONS -

TO ELIMINATE INFEEED HANDWHEEL BACKLASH

If there is backlash in the Grinder Head Infeed handwheel (FIG. 20), there are two adjustment points on each to check:

1. Washers behind the handwheel:

A. Remove the setscrew holding the calibration ring to the handwheel. Go through the set screw hole and loosen the setscrew holding the handwheel to the shaft (about one-half turn).

B. Tighten the hex lock nut which secures the handwheel to 100 in. lbs. [1.15 kg-m], then back off 1/2 turn.

C. Check for .015 in. [.04mm] gap between the wave washer and the flat washer. See FIG. 21. Readjust the hex lock nut if necessary.

D. Tighten the setscrew holding the handwheel to the shaft. Install and tighten the calibration ring setscrew.

2. Check the nylon ball tension on the adjustment shaft threads at the grinding head slide. See FIG.20. When you turn the handwheel there should be no free play in the handwheel before the grinding head slide moves. If there is free play, tighten the setscrew that pushes the nylon ball against the acme thread of the adjustment shaft. The nylon ball preloads the free play out of the threaded joint between the adjustment shaft and the tooling bar slide block. Apply tension only enough to zero the free play. DO NOT over tension as the adjuster will be difficult to turn.

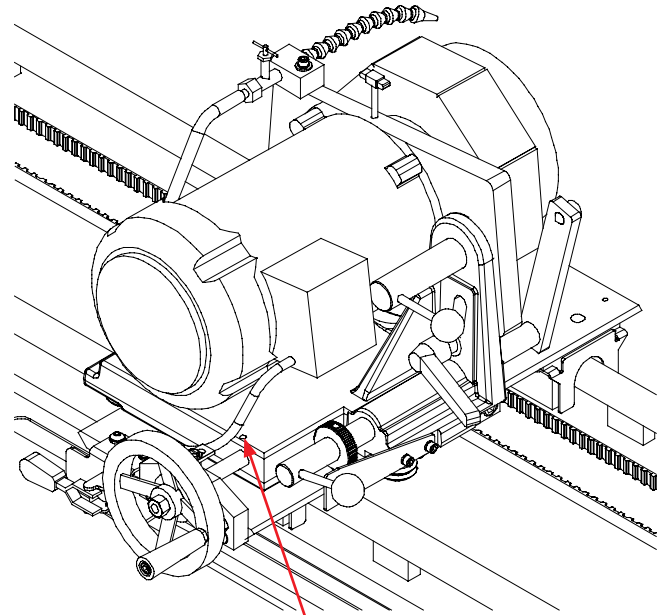


FIG. 20

SETScrew WITH NYLON BALL

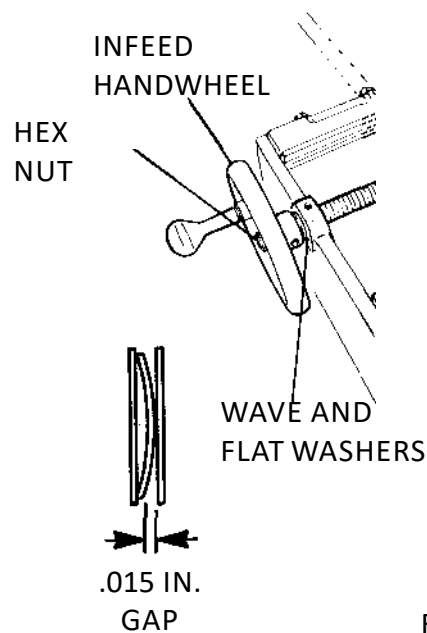


FIG. 21

ADJUSTMENTS

TRAVERSE DRIVE CONTROL BOARD (TDC)

The Traverse Drive Control Board has nine potentiometers and four switches as shown on drawing 6734502 which is included. These potentiometers and switches have been set at the factory to the positions shown on the drawing. Also see FIG. 10 and FIG. 11.

Fwd Accel & Rev Accel---FWD ACC & REV ACC

The potentiometer is factory preset to the minimum full counterclockwise 8:30 position. This position turns the Acceleration/Deceleration off for this application.

Maximum Speed---MAX SPD

The maximum speed potentiometer is preset to position for 90 Volts DC output to the traverse motor at terminals A1 and A2.

IR Compensation---IR COMP

The IR Comp control is preset to 3:00 position. Never adjust past the 4:30 position.

Regulation of the traverse motor may be improved by slight adjustment of the IR COMP trim pot clockwise from its factory set position. Overcompensation causes the motor to oscillate or to increase speed when fully loaded. If you reach such a point, turn the IR COMP trim pot counterclockwise until the symptoms just disappear.

Rev Torque---REV TQ

The Reverse Torque setting determines the maximum current limit for driving the motor in the reverse direction. The potentiometer is preset to the 10:30 position. It should not require adjustment.

Fwd Torque---FWD TQ

The Forward Torque setting determines the maximum current limit for driving the motor in the forward direction. The potentiometer is preset to the 10:30 position. It should not require adjustment.

Deadband---DB

This motor control board has a potentiometer which must be set for 50 HZ or 60 HZ operation. For 60 HZ set to 3:00 position. For 50 HZ set to 9:00 position.

Minimum Speed---MIN SPD

The potentiometer is factory preset to the minimum full counterclockwise 8:30 position.

Tach---TACH

The tach potentiometer is not used in this application. It should be a the factory setting of 8:30.

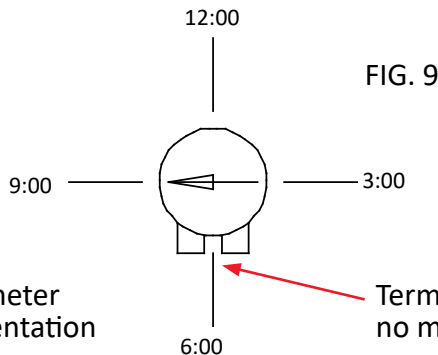
Armature Switch---ARMATURE 90-180

This switch is factory preset to the 90 position for a 90 VDC motor..

Feedback Switch--- FEEDBACK ARM-TACH

This switch is factory preset to the ARM position.

The lower control board has two switches. Both switches are factory preset to 115 for 115 VAC operation.



ADJUSTMENTS

- ORIGINAL INSTRUCTIONS -

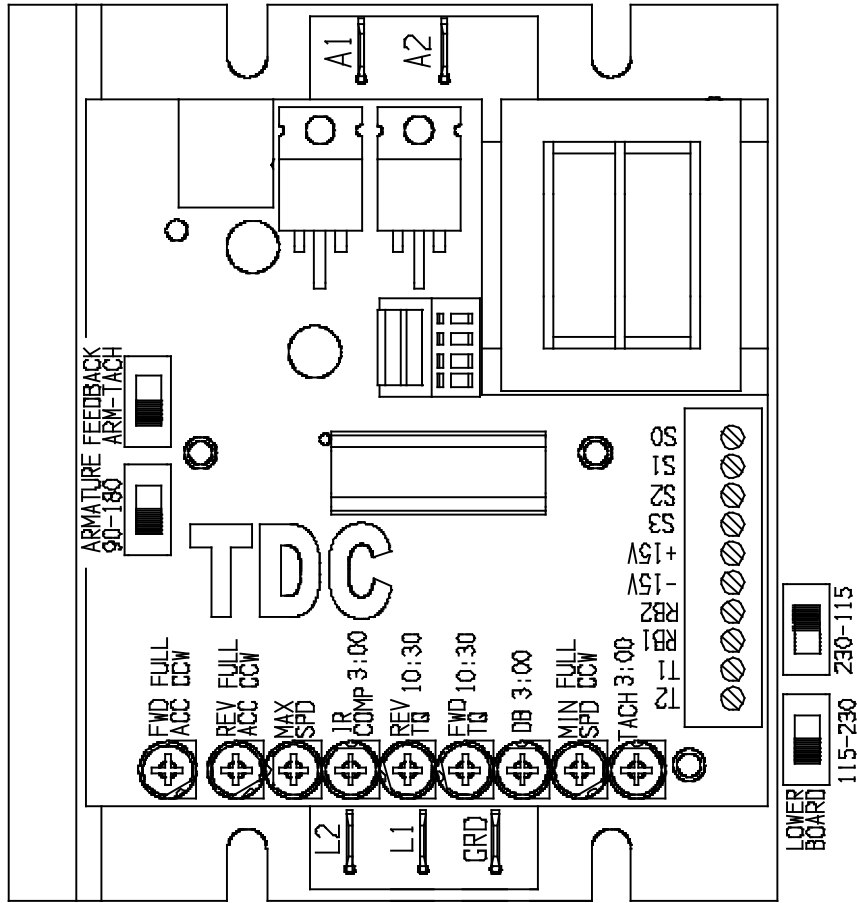


FIG. 10

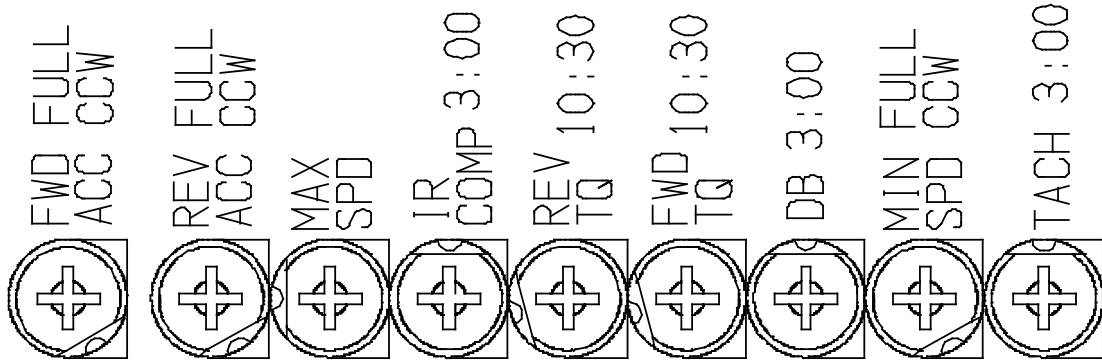
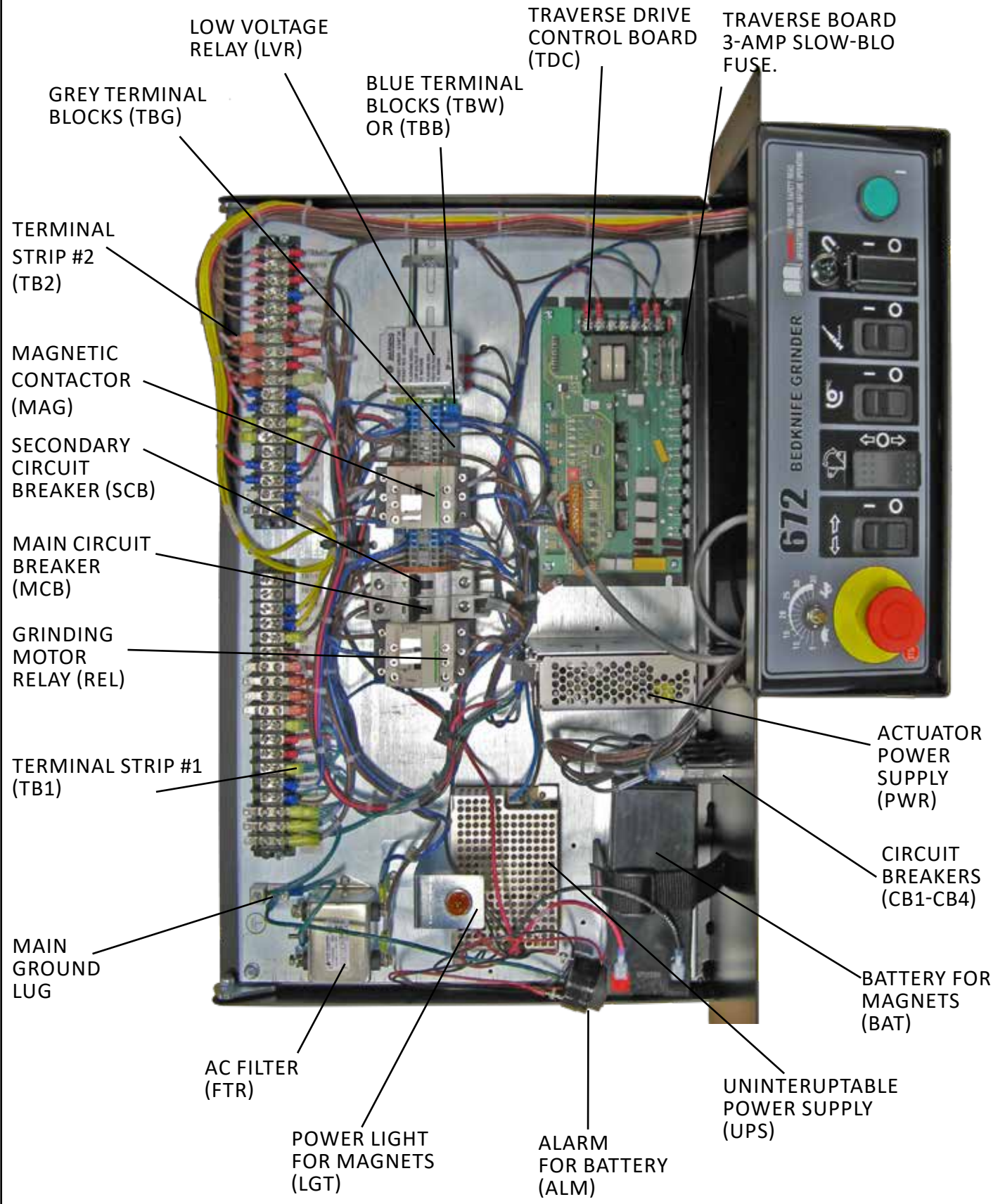


FIG. 11

CONTROL BOX



ELECTRICAL TROUBLESHOOTING

SKILL AND TRAINING REQUIRED FOR ELECTRICAL SERVICING

This Electrical Troubleshooting section is designed for technicians who have the necessary electrical knowledge and skills to reliably test and repair the electrical system. For those without that background, service can be arranged through your local distributor.

This manual presumes that you are already familiar with the normal operation of the Grinder. If not, you should read the operators section, or do the servicing in conjunction with someone who is familiar with its operation.

Persons without the necessary knowledge and skills should not remove the control box cover or attempt any internal troubleshooting, adjustments, or parts replacement.

If you have any question not answered in this manual, please call your distributor. They will contact the manufacturer if necessary.

WIRE LABELS

All wires have a wire label at each end for troubleshooting. The wire label has a code which tells you wiring information. The wire label has a seven or eight position code. The first two or three digits are the wire number: 01-99 or 123. The next three numbers or letters are the code for the component to which the wire attaches. Example: GMC for Grind Motor Control. The last two numbers or letters are the number of the terminal on the component to which the wire attaches.

ELECTRICAL TROUBLESHOOTING INDEX

AC Main Power Controls.....	Page 27-28
Grinding Motor Controls	Page 29-31
Traverse Drive Controls-w/prox.....	Page 32-33
Electromagnets	Page 37
Tooling Bar Rotate Actuator	Page 38
Coolant Pump Controls	Page 39

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--AC Main Power Controls: no electrical power to control panel.

Verify all wires shown on the wiring diagram on pages 54-55 are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If problem persists, test as listed below.

<u>Possible Cause</u>	<u>Checkout Procedure</u>	
Emergency Stop Bottom (ESS) is Depressed	A. Pull Up on ESS Button	Machine works Yes--end troubleshooting No--go to Step B. next
You must push the System Start Switch (SSS) to get power to control Panel	B. Listen for the Magnetic Starter (MAG) contacts to pull in with a clunk	Machine works Yes--end troubleshooting No--go to step C. Next.
Main Power Cord is not plugged in	C. Plug in main power cord	Machine works Yes--end troubleshooting No--go to step D. Next.
ALL Switches MUST be turned OFF for contactor to pull in.	D. Turn off all switches.	Machine works Yes--end troubleshooting No--go to step E. next.
Main 15 amp outlet circuit breaker has tripped	E. Check circuit breaker in your building and reset if necessary. (Check wall outlet with a light to make sure it works)	Machine works Yes--end troubleshooting No--but light works in outlet--go to Step F. next. No--but light does not work in outlet. You must solve your power delivery problem independent of machine.
No 120 Volts AC power to Filter (FTR)	F. Check for 120V at Cord into FTR (Power Cord #32)	FTR "Line" Terminals for 120 Volts AC wires labled 32FTRBL to 32FTRWH Yes--Go to Step G. next. No--Replace Power Cord- 6059054
No 120 Volts AC power out of Filter	G. Check for 120V out of FTR	FTR "Load" Terminals for 120 Volts AC wires labled 01FTRBR to 02FTRBU Yes--Go to Step H. next. No--Replace Filter
No 120 Volts AC power to Main Circuit Breaker (MCB) 15 Amp.	H. Check for 120V to MCB	MCB (01MCB--) to neutral (blue) terminal out of FTR for 120VAC Yes--Go to Step I. next. No--Check wires & replace if needed.
No 120 Volts AC power from Main Circuit Breaker (MCB) 15 Amp	I. Check for 120V from MCB	MCB (03MCB--) to neutral (blue) terminal out of FTR for 120 VAC Yes--Go to Step J. next. No--Flip Switch on MCB to "ON" - Machine works-- end trouble shooting Machine does not work-- replace MCB

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Causes

Checkout Procedure

No 120 Volts AC power to Secondary Circuit Breaker (SCB) 6 Amp.	J. Check for 120V to SCB	SCB (03SCB--) to neutral (blue) terminal out of FTR for 120VAC Yes--Go to Step K. next. No--Check wires & replace if needed.
No 120 Volts AC power from Secondary Circuit Breaker (SCB) 6 Amp.	K. Check for 120V from SCB	MCB (67SCB--) to neutral (blue) terminal out of FTR for 120 VAC Yes--Go to Step L. next. No--Flip Switch on SCB to "ON" - Machine works-- end trouble shooting Machine does not work-- replace SCB
120 Volts AC power not delivered to Terminal Strip	L. Check for 120 Volts AC at terminal strip.	Terminal "11" on Terminal Strip 2 "07TB2-11" to neutral (blue) terminal out of FTR for 120 VAC Yes--Go to Step M. next. No--Check wires #7 & #3, Check Jumper on Terminal Blocks 1-3.
Grinding Motor Switch (GMS) not working	M. Check for 120 Volts AC at GMS Terminals 1	Measure 120 volts AC from GMS Terminal 1 to FTR terminal (Blue) Yes--Go to Step N. next. No--Flip Switch and check again- Works--Switch is upside down. Does not work-- Check wiring/Verify Continuity/ Replace Switch
Bad Emergency Stop Switch (ESS)	N. Check voltage after the (ESS) MAKE SURE SWITCH IS PULLED UP!	Measure 120 Volts AC from (ESS) term 2 to FTR terminal (Blue) Yes--Go to Step O. next No--Check wire for continuity, then verify switch continuity. If bad replace ESS contactor (NC)
Bad System Start Switch (SSS)	O. Hold in SSS and Check voltage after the (SSS)	Measure 120 Volts AC from (SSS) term 3 to FTR terminal (Blue) Yes--Go to Step P. next No--Check wire for continuity, then verify switch continuity. If bad replace SSS contactor (NO)
Low Voltage Relay (REL) not operating	P. Hold in SSS and Check voltage at LVR. LVR must be installed in 8-pin socket.	Measure 120 Volts AC from LVR term 8 to FTR terminal (Blue) Yes--Go to Step Q. next No--Check for 120 Volts AC from LVR term 6 to term 7. Yes--Verify Continuity of term 1 to term 8 on LVR. Replace LVR if bad. No--Verify Continuity of Wires.
Bad Main Contactor (MAG)	Q. Hold in SSS and Check voltage at MAG A1 & A2.	Measure 120 Volts AC from MAG Term A1 to Term A2 Yes--MAG Should pull in with clunk, if not replace MAG. No--Verify Continuity of Wires.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--Machine Shuts off when you turn on Grind motor switch.

<u>Possible Cause</u>	<u>Checkout Procedure</u>	
Guard Door is open.	A. Close the guard doors.	Machine works Yes--end troubleshooting No--go to Step B. next
Low Voltage Relay is tripping.	B. Power delivered to the grinder is inadequate. Verify that adequate power is delivered to the grinder. See page 4 of the manual. Fix the problem with building power.	Machine works Yes--end troubleshooting No--go to Step C. next
Door Safety Switch is not aligned	C. Check Alignment of Door Safety Switch on guard door.	Check alignment of door switch. Yes--end troubleshooting No--Go to Step D. next.
Door Safety Switch is not working properly.	D. Verify Door Switch is working properly.	Disconnect door safety switch cord at terminal 14 and 15 on Terminal Strip 1. Verify Continuity of switch with door closed. Yes--Reconnect Terminals and verify continuity of wires. No--Verify continuity of cord and replace cord or switch.

PROBLEM--(MAG) turns on only with System Start Switch held in.

<u>Possible Cause</u>	<u>Checkout Procedure</u>	
No Power to MAG holding Contact	A. Check voltage to MAG holding contact in.	Measure 120 Volts AC at MAG term T3 to FTR terminal (Blue) with E-Stop Pulled out. (do NOT press start button while checking.) Yes--Go to Step D. next. No--Verify continuity of wiring to MAG T3.
MAG holding contact has failed	B. Verify the magnetic starter (MAG) holding contact is working.	Disconnect Wire to MAG L3 and Measure 120 Volts AC from MAG term L3 to FTR Terminal (Blue). Press and hold Green Start button to hold in MAG contacts while checking. Yes--Verify continuity of wiring from MAG L3 No--Replace MAG.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM-- Grinding motor not working.

Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.

Verify all wires shown on the wiring diagram on pages 54-55 are correct and pull on wire terminals with approximately 3lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If loose terminals are found, retighten and retest system. If problem persists, test as listed below.

<u>Possible Cause</u>	<u>Checkout Procedure</u>	
Grinding Motor Switch (GMS) is not on	A. Turn switch on	Grinding Motor works Yes--end troubleshooting No--go to Step B. next
Guard door is not closed	B. Close Front guard doors	Grinding Motor works Yes--end troubleshooting No--go to Step C. next
12 Amp Circuit Breaker (CB) is tripped	C. Check 12 amp CB on front of Control panel. Press in if tripped.	Grinding Motor works Yes--end troubleshooting No--go to Step D. next
Grind Motor Switch (GMS) not working	D. Check for power to GMS	GMS term 5 to FTR Terminal (Blue) for 120 Volts AC Yes--go to Step E. next No--With power off, check continuity of wires to GMS.
	E. Check for power from GMS	With GMS ON , check GMS Term 6 to FTR Terminal (Blue) for 120 Volts AC. Yes--Go to Step F. next No--replace GMS
Grinding Motor Relay not working	F. Check for power to relay Coil (Relay should click when GMS is turned on.)	Check for 120 Volts (AC) from A1 to A2 of Grinding motor Relay. Yes--If Relay does not pull in with click, replace Relay, if it does Go to Step G. next No-- check continuity of wires to Grinding motor Relay.
No Power to Relay Contacts	G. Verify Power to Relay Contacts	(REL) Term L1 to Term L2 for 120 Volts (AC) Yes--Go to Step H. next No--Check wires to REL Term L1 & L2

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause

Checkout Procedure

Bad Contacts in Grinding motor Relay

H. Verify power out of Grinding Motor Relay. GMS in ON position.

With relay pulled in (click) check (REL) Term T1 to Term T2 for 120 Volts (AC)
Yes--Go to Step **I.** next
No--Replace Gringing Motor Relay

Bad Circuit Breaker

I. Verify Power out of Circuit Breaker.

Check for 120 Volts (AC) from terminals TB2-6 (terminal 6 on right terminal strip) to FTR Terminal (Blue)
Yes--Go to Step **J.** next
No--Check circuit breaker for continuity. Verify wiring and replace if needed.

Bad Grinding Motor

J. Verify Power to Grinding motor Cord.

Verify wiring at terminals 1 & 2 on Terminal Strip 1 (left terminal strip). Check TB1-1 to TB1-2 for 120 VAC.
Yes-- Check terminals on motor cord. If tight replace motor.
No-- Check wires from Grinding Motor Relay and Circuit Breaker to Terminal Strip 1.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--Traverse Drive not working.

Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.

Verify all wires shown on the wiring diagram on pages 54-55 are correct and pull on wire terminals with approximately 3lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If loose terminals are found, retighten and retest system. If problem persists, test as listed below.

<u>Possible Cause</u>	<u>Checkout Procedure</u>	
Traverse Motor Switch (TMS) is not on	A. Turn on (TMS)	Traverse works Yes--end troubleshooting No--got to Step B. next
Traverse Speed Pot (TSP) set to zero	B. Set (TSP) to 35 on the control panel	Traverse works Yes--end troubleshooting No--go to Step C. next
Fuse on Traverse Drive Control (TDC) has failed	C. Check fuse on the Traverse Drive Control Board (TDC) and replace if failed. See Page 23. Too heavy a grind causes grinding head traverse motor to overload and blow the fuse, NOTE: Fuse can not be checked visually. Use Ohm test to check fuse. Fuse must be replaced with a slo-blo fuse.	Traverse works Yes--end troubleshooting No--go to Step D. next See Page 23 for location of fuse on the Traverse Drive Control Board (TDC)
Traverse Drive Control (TDC) is bad	D. Check for 120 Volts (AC) incoming to (TDC)	On (TDC) Terminal L1 to L2 for 120 Volts AC Yes--Go to Step F. No--Go to Step E. next
Bad Traverse Motor Switch (TMS)	E. Check for 120 Volts AC at (TMS). (Make certain (TMS) is on)___	Measure 120 volts AC from TMS Terminal 5 to FTR Terminal (Blue). Yes--Verify wiring to TDC. No--Flip Switch and check again- Works--Switch is upside down. Does not work-- Check wiring/Verify Continuity/ Replace Switch

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause

Checkout Procedure

No DC Voltage from (TDC) Traverse Drive Control

F. Check for 90 Volts DC across (TDC) terminals #A1 to #A2 this voltage drives the DC traverse motor. NOTE: Traverse must be on and have (TSP) turned full CW to maximum voltage of 90 VDC

Check (TDC) terminals #A1 to #A2 for 90 Volts DC
Yes--go to Step **G.** next
No--go to Step **H.** next

Traverse Motor is bad

G. Check traverse motor continuity

Remove motor wires from Terminal Strip 1 terminals #7 & #8 check for 0 ohms across the black and white wires.
Yes--end troubleshooting, motor should run, if not, replace motor.
No--go to Step **K.** next

(TSP) is not working

H. Check (TSP) (10K) on control panel

(TDC) Pin #8 to #7
Pot Full CCW Pot Full CW
0 VDC 9.75 VDC
Pin #8 to 9
Pot Full CCW Pot Full CW
9.75 VDC 0 VDC
Yes--replace the (TDC)
No--go to Step **J.** next

(TSP) (10K) is bad

J. Check (TSP) for 10,000 ohms. Remove three wires from (TDC) red from term #8 white from term #7 black from term #9

Check for 10,000 ohms red to white wires
Full CCW--0 ohms
Full CW--10,000 ohms
Red to black wires
Full CCW--10,000 ohms
Full CW--0 ohms
Yes--replace the (TDC)
No--replace (TSP)

Worn motor brushes

K. Inspect Motor Brushes

Remove the brushes one at a time and maintain orientation for reinsertion. See if brush is worn short, 3/8" (10 mm) minimum length.

Yes--replace motor brushes
No--replace Traverse Motor

NOTE: TRAVERSE MOTOR BRUSHES HAVE SHOWN A VERY LONG LIFE. THEREFORE IT IS IMPROBABLE THAT MOTOR BRUSHES ARE BAD.



DISCONNECT POWER FROM MACHINE

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--Traverse does not stop to reverse directions when flag goes under the proximity switch on the left side or right side of machine.

<u>Possible Cause</u>	<u>Checkout Procedure</u>		
Gap between flag and prox is incorrect.	A. Gap between flag and prox should be 3/16 to 1/4" (4-6 mm). Prox LED does not light when flag is under prox.	If incorrect, adjust per adjustment section of manual. Yes--end troubleshooting No--go to Step B. next	
Proximity Switch is bad.	B. Proximity switch is not working properly or wire connections are loose.	First check to see if proximity light comes on. When the light is on, it means that there is electricity coming to proximity switch. Actuate prox switches with steel tool to take measurements.	The light coming on shows the proximity is getting electrical contact.
		Left proximity (PRO x 1) check Traverse drive Control (TDC) between terminals #13 (black wire) and #15 (brown wire).	Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC
		Right proximity (PRO x) check #14 (black wire) and #15 (brown wire).	Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC
			Replace proximity switch if the voltages do not read as above.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--Traverse speed control goes at one speed only.

Possible Cause

Checkout Procedure

Defective speed control potentiometer

A. Check potentiometer on control panel.

Traverse Drive Control Pin #8 to 7
 Pot full CCW Pot Full CW
 0 VDC 9.75 VDC
 Pin #8 to 9
 Pot full CCW Pot Full CW
 9.75 VDC 0 VDC
 Yes--Pot is OK
 No--Go to Step **B.** next

B. Check potentiometer for 10,000 ohms.
 Remove three wires from Traverse Drive Control red from term #8 white from term #7 black from term #9

Check for 10,000 ohms
 Red to White wires
 Full CCW - 0 ohms
 Full CW - 10,000 ohms
 Red to Black wires
 Full CCW - 10,000 ohms
 Full CW - 0 ohms
 Yes--Go to Step **C.** next
 No--replace potentiometer.
 Wiper inside of potentiometer controls speed.
 Wiper may be bad and not making contact.

Wiring hookup to potentiometer is improper.
 (If components have been replaced.)

C. Check potentiometer wiring for proper hookup. See that speed pot is wired per electrical diagram

Wrong wire hookup effects traverse control. Reversing wires from the potentiometer will cause the the D C motor to run slower than designed or may not funtion clorrectly. Check for Proper function.
 Yes--end troubleshooting
 No--Go to Step **D.** next

Traverse Drive Control Board (TDC) dial pot settings not correct.
 (If board has not been replaced.)

D. Check all pot settings on Traverse Drive Control Board (TDC) as shown in wiring diagram. (See adjustment section Traverse Motor Control Board Settings.)

Minimum and maximum pot settings effect traverse speed.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--If the carriage traverses to one end of stroke or the other and it stops and does not reverse direction.

Possible Cause

Proximity switch is not working properly or wire connections are loose

Checkout Procedure

First check to see if proximity light comes on. When the light is on, it means that there is electricity coming to proximity switch.

Actuate prox switches with steel tool to take measurements.

The light coming on shows the proximity is getting electrical contact.

Left proximity (PRO x 1) check Traverse drive Control (TDC) between terminals #14 (black wire) and #15 (brown wire).

Right proximity (PRO x) check (TDC) between terminals #13 (black wire) and #15 (brown wire).

Proximity light on-
5 Volts DC
Proximity light off-
14 Volts DC

Proximity light on-
5 Volts DC
Proximity light off-
14 Volts DC

Replace proximity switch if the voltages do not read as above.

PROBLEM--Insufficient hesitation at carriage stops prior to reversing traverse.

The dwell time on the traverse drive control not set properly.

Reset dwell time as required. One increment increases Dwell time by 1/2 second.

PROBLEM--Traverse changes directions erratically while running in traverse cycle.

Loose wire to proximity switch.

Check wire connections from the proximity switches and tighten down screws.

A loose wire connection will give intermittent electrical contact.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--Electromagnets do not function.

Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.

<u>Possible Cause</u>	<u>Checkout Procedure</u>	
Electromagnet switch (EMS) is not on.	A. Turn (EMS) switch to on position.	Electromagnets work Yes-- end troubleshooting No-- go to Step B. next
Circuit Breaker tripped	B. Check Circuit breaker on front of Control Panel. Press in if Tripped.	Electromagnets work Yes-- end troubleshooting No-- go to Step C. next
No Power out of UPS	C. Check for 12 Volts (DC) out of UPS at Terminal Strip 2.	Check for 12 Volts (DC) from Terminal Strip 2 Terminal 4 (146TB2-4) to Terminal 3 (146TB2-3) Yes-- Go to Step D. No-- Go to Step F. next
Circuit Breaker is Bad	D. Check for 12 Volts (DC) at input to switch. Remove wires #153 and #162 and check for voltage out of wires.	Check for 12 Volts (DC) from wires removed from switch labeled 162EMS-5 to 153EMS-2 Yes-- Go to Step E. next No-- Bad Circuit Breaker or wire, check continuity of Circuit Breaker and wires, replace bad part.
Electromagnet Switch is Bad	E. With EMS on, Check for 12 VDC out of Electromagnet switch (EMS) at Terminal Strip 2. NOTE: With 12 VDC at electromagnet switch terminals 166EMS-6 and 165EMS-3 the light above the switch on the outside of the panel should be ON. If not, replace the bulb or wires.	Check for 12 Volts (DC) from Terminal Strip 2 Terminal 1 (157TB2-1) to Terminal 2 (158TB2-2) on Terminal Strip 2. Yes-- Bad Magnets- Call local Distributor or Factory Customer Service for assistance. No-- Bad Switch or wires, check Continuity of wires and EMS switch, replace bad part.
UPS is Bad	F. Check for 120 Volts (AC) to UPS at Terminal blocks.	Check for 120 Volts (AC) from Blue Terminal Block (148TBW-5b) to Grey Terminal Block (147TBG-3) Yes-- Replace UPS, also Check Battery (see Step G) No-- Check continuity of wires to UPS.
Bad Battery	G. Check for 10.5 -14 Volt DC at battery. Remove wires to battery and check across terminals on the battery.	Check for between 10.5-14 Volts (DC) out of Battery at Battery Terminals. Yes-- Go to Step G. No-- Machine must be plugged in to charge battery. Leave machine plugged in and check after 24 Hours. If battery still low replace Battery.

TROUBLESHOOTING (Continued)

PROBLEM--Tooling Bar Rotation Actuator does not Function

<u>Possible Cause</u>	<u>Checkout Procedure</u>	
Actuator Motor Switch (AMS) is not on.	A. Push (AMS) switch to the up or Down position.	Actuator works Yes-- end troubleshooting No-- go to Step B. next
Circuit Breaker tripped	B. Check Circuit breaker on front of Control Panel. Press in if Tripped.	Actuator works Yes-- end troubleshooting No-- go to Step C. next
No Power To Power Supply	C. Check for 120 VAC at input to Power Supply (L to N).	Check for 120 Volt (AC) from Terminal 169PWR-L to 150PWR-H Yes-- Go to Step D. next No-- Verify continuity of wires
No Power out of Power Supply	D. Check for 12 VDC from Power Supply (V- to V+)	Check for 12 Volt (DC) from Terminals 152PWR-V- to 152PWR-V+ Yes-- Go to Step E. next No-- Verify continuity of wires
Circuit Breaker is Bad	E. Check for 12 V DC into Actuator Motor Switch (AMS)	Check for 12 Volts (DC) from Terminals 161AMS-4 to 163AMS-1 Yes-- Go to Step F. next No-- Check continuity of wires and Circuit breaker. Repace if bad.
Actuator Motor Switch (AMS) is Bad	F. While pressing switch (AMS) up or down, measue 12 Volts (DC) at Terminal Strip 1	Check for 12 Volts (DC) from Terminals 16 (TB1-16) to 17 (TB1-17) on Terminal Strip 1. Yes-- Go to Step G. next No-- Check Continuity of wires and AMS, replace switch.
Bad Actuator Cord or Motor	G. While pressing switch (AMS) up or down, measure 12 Volts (DC) at end of Actuator Cord where it connects to the motor.	Check for 12 Volts (DC) from Terminals 169ACT-B to 169ACT-O Yes-- Replace Actuator assembly No-- Replace Actuator cord 6709210.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM-- Coolant Pump not working.

Assuming (SSS) System Start Switch is on with 120 volts AC to control panel and all other functions are working.

Verify all wires shown on the wiring diagram on pages 54-55 are correct and pull on wire terminals with approximately 3lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If loose terminals are found, retighten and retest system. If problem persists, test as listed below.

<u>Possible Cause</u>	<u>Checkout Procedure</u>	
Coolant Pump Switch (CPS) is not on.	A. Turn switch	Coolant Pump works Yes--end troubleshooting No--go to Step B. next
Coolant flow valve closed.	B. Open coolant flow valve.	Coolant Pump works Yes--end troubleshooting No--go to Step C. next
2 Amp Circuit Breaker (CB) is tripped	C. Check 2 amp CB on front of Control panel. Press in if tripped.	Coolant Pump works Yes--end troubleshooting No--go to Step D. next
2 Amp Circuit Breaker (CB) failed	D. Check power from CB	Measure 120 volt AC from both sides of 2 amp CB to FTR Terminal (Blue) Yes--go to Step Ea. next No--With power off, check continuity of CB & wires to CB. Replace CB or wires.
Coolant Pump Switch (CPS) not working	E. Check for power from CPS	CPS Term 5 to FTR Terminal (Blue) for 120 Volts AC Yes--Go to Step F. next No--replace CPS
Coolant Pump Not Working	F. Check for power from CPS	Measure 120 volt AC from TB1-4 to TB1-5. Yes--Replace Coolant Pump.

MECHANICAL Troubleshooting

--PROBLEM--

--POSSIBLE CAUSE--

--REMEDY--

--REASON--

Top face of bedknife is ground in a convex shape (high in the center) or concave shape (low in the center)

A--Grinding wheel is loading up with grinding grit.

Dress the wheel as prescribed in the Operators Manual.

A loaded wheel creates undue pressure on the surface being ground.

B--Too heavy a grind on the final grinding pass.

Follow the procedures in the Operators Manual. On the final pass, infeed only about .001" [.025 mm]. Let the wheel spark out for 10-20 passes at about slow speed, with no additional infeed.

For precise grinding, sparking-out process is critical. It eliminates excessive final-grinding pressure which helps maintain grinding straightness.

C--Small Grinding Head Slide Vee Roller loose

Adjust Vee Rollers per procedure on Page 34.

Looseness in roller causes erratic grind.

The top face of the bedknife is ground unevenly across the width.

A--Grinding wheel rim is not completely over the top face being ground.

The wheel rim must extend over the bedknife top face by 1/2" [13 mm] whenever possible. See Operators Manual. If not possible, dress the wheel more often.

When the rim doesn't extend over the top face, it wears unevenly and causes grooves across the bedknife.

B--Small grinding Head Slide Vee Roller loose.

Adjust Vee rollers per procedure on Page 34.

Looseness in rollers causes erratic grind.

C--Backlash in infeed handwheel.

Eliminate backlash in infeed handwheel, see Page 31.

Backlash allows grinding wheel to move under load.

Too coarse a grind on bedknife.

Grinding head is traversing too fast.

Slow down the traversing speed.

Traversing speed controls the grinding surface texture. A slower traverse produces grind marks closer together.

The top face of the bedknife shows burn marks from being too hot.

A--Coolant not directed onto the bedknife and grinding wheel.

Direct coolant into the bedknife, at the point of the grind. See Operators Manual.

When the front face of the bedknife gets too hot, the steel loses its temper (softens).

B--Too heavy stock removal during grinding.

Take off about .002 to .003" [.05 to .075mm] per pass during rough grind. See Operators Manual.

Too much stock removal in one pass creates too much heat and softens the steel.

C--Grinding wheel is glazing.

Dress the wheel before the finish-grinding pass on each bedknife. See Operators Manual.

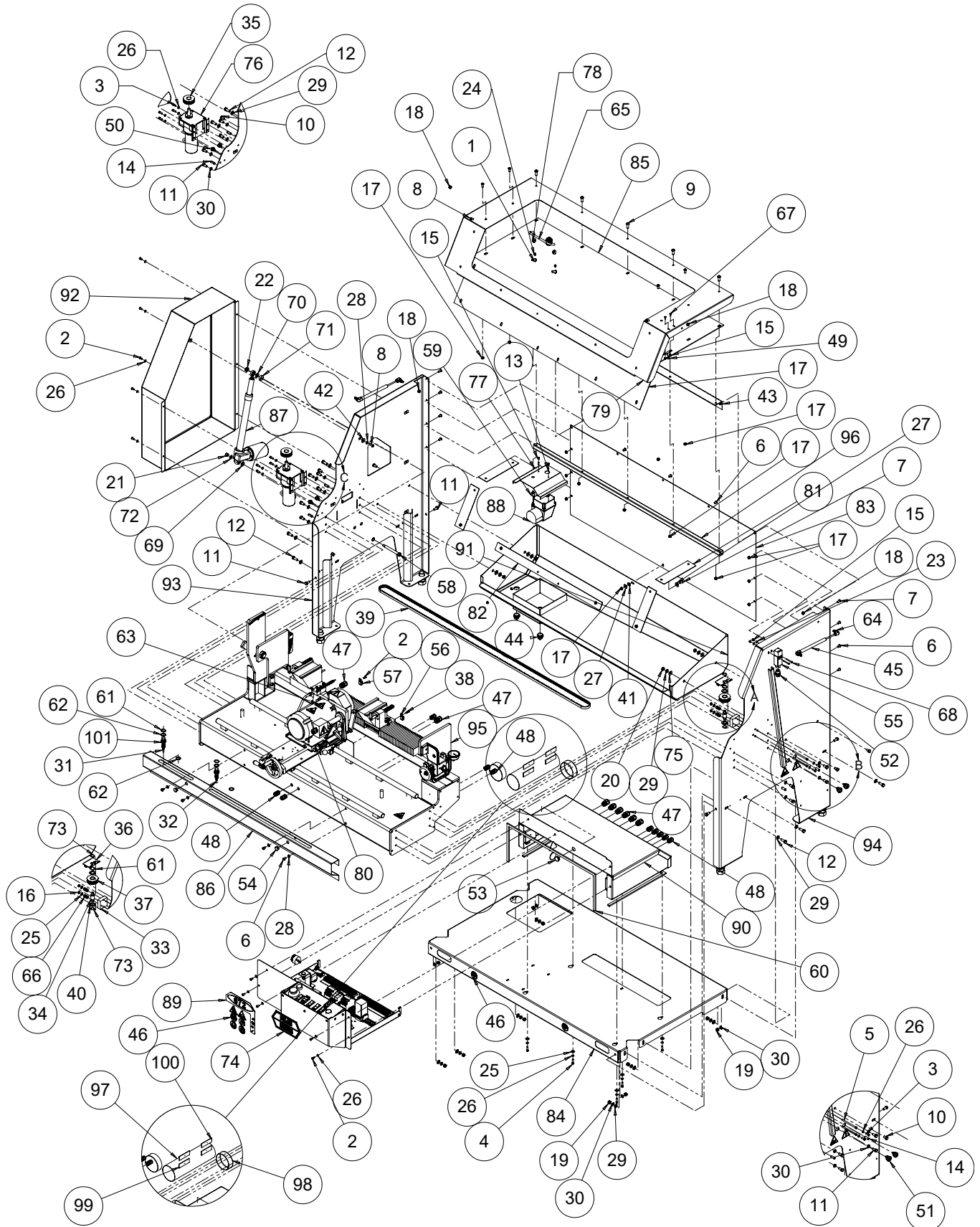
Wheel will glaze if not dressed often enough. Also, as a general rule, use a higher traverse speed for the heavy grind.

MECHANICAL TROUBLESHOOTING (Continued)

--PROBLEM--	--POSSIBLE CAUSE--	--REMEDY--	--REASON--
Grinding wheel is glazing too quickly.	A --Wheel needs dressing.	Dress the wheel before the finish-grinding pass on each bedknife. See Operators Manual.	Wheel will glaze if not dressed often enough. If grinding wheel is not extended 1/2" [12 mm] over bedknife, it will glaze more quickly because there is less dressing.
	B --Too light a cut when rough grinding.	Take off about .002 to .003" [.05 to .075 mm] per pass during rough grind. See Operators Manual.	Too light a grinding cut doesn't permit enough dressing action on the wheel, so it glazes.
	C --Grinding head is traversing too slow.	Speed up traverse.	Too slow a traverse speed can cause excessive heat buildup in the grinding wheel, which glazes the wheel.
Grinding motor vibrates excessively.	Grinding wheel is out of balance.	Visually check the outside diameter runout while slowly rotating the wheel by hand. Also check the motor without a wheel installed. Replace the wheel if out-of-round. Minor imbalance between grinding wheel and motor armature can sometimes be corrected by rotating the wheel position on the motor shaft in 90° increments. This is called clocking the wheel. If you have vibration, try clocking the wheel 3 times. If this does not correct the problem, relace the wheel.	A grinding wheel which isn't properly trued up on outside or inside diameters can vibrate excessively and transfer that vibration to the motor.
Carriage traversing varies speed while grinding	A --Linear bearings in the carriage do not rotate freely	Adjust bearing for proper tension. See adjustments section of this manual.	When bearing preload is too tight, it causes excessive loading to drive carriage.
		Flush linear bearing per lubrication procedure and replace wipers. Or replace three linear bearings and wipers.	Grinding grit is getting into the linear bearings and causing excessive driving torque of the carriage.
	B --Belt it slipping.	Adjust belt clamping force. See adjustment section of manual.	If the traverse belt clamp is damaged or not adjusted properly the belt will slip.
C --Traverse belt tension is too loose.	Adjust traverse belt tension. See adjustments section of this manual.	If the belt is too loose it will tend to vibrate or the belt tensioning springs may tend to jump when loaded.	

PARTS LIST

6729503 MAIN BASE ASSEMBLY



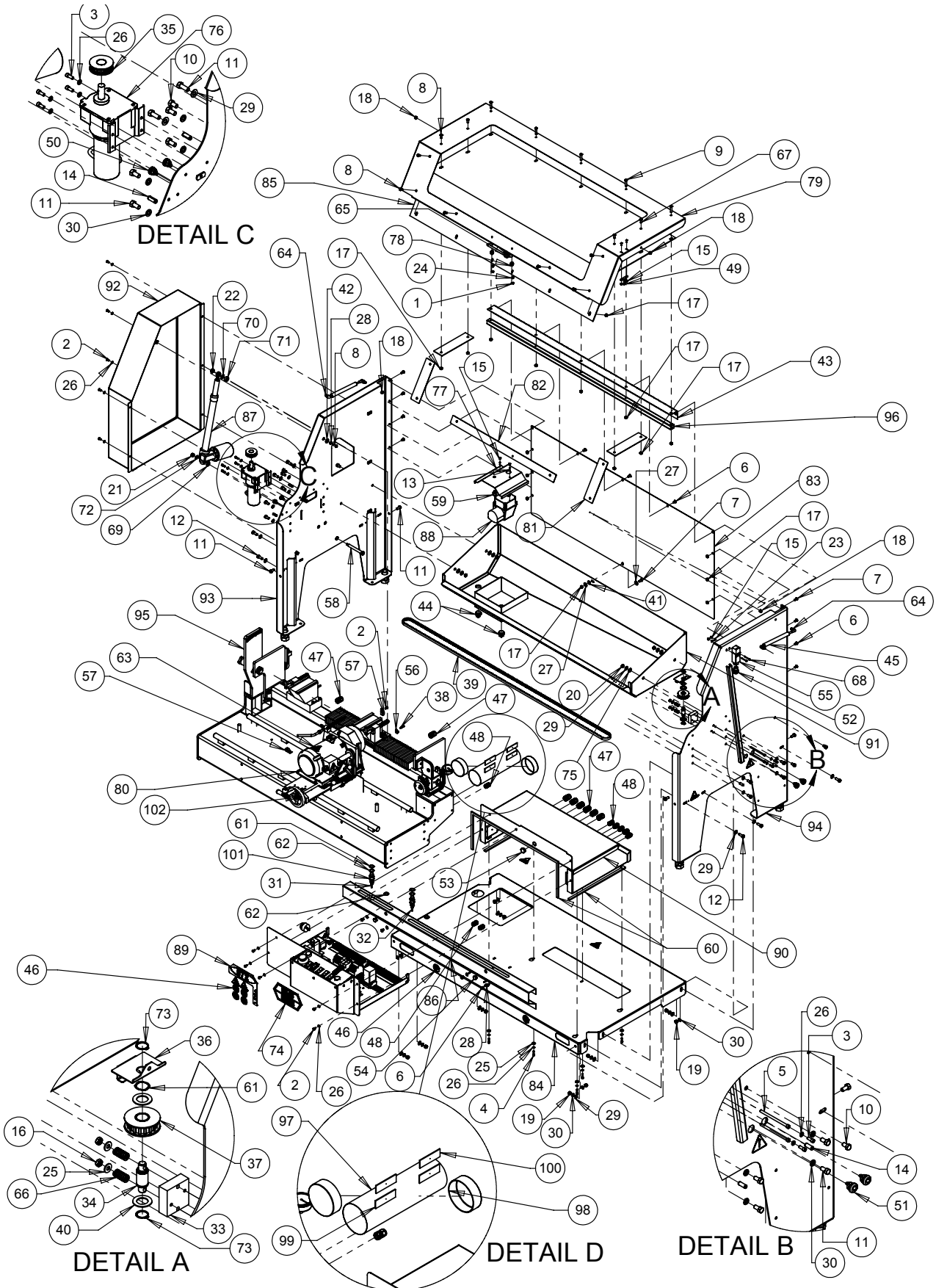
PARTS LIST (Continued)

6729503 MAIN BASE ASSEMBLY

Diagram No.	Part No.	Description
1.....	B190834	10-32 x 1/2 Button Head Socket Cap Screw
2.....	B250816	1/4-20 x 1/2 Button Head Socket Cap Screw
3.....	B251011	1/4-20 x 5/8 Socket Head Cap Screw
4.....	B251411	1/4-20 x 7/8 Socket Head Cap Screw
5.....	B256411	1/4-20 x 4 Socket Head Cap Screw
6.....	B310813	5/16-18 x 1/2 Button Head Socket Cap Screw
7.....	B311013	5/16-18 x 5/8 Button Head Socket Cap Screw
8.....	B311213	5/16-18 x .75 Button Head Socket Cap Screw
9.....	B312413	5/16-18 x 1-1/2 Button Head Socket Cap Screw
10.....	B371001	3/8-16 x 5/8 Hex Head Cap Screw
11.....	B371201	3/8-16 x 3/4 Hex Head Cap Screw
12.....	B371601	3/8-16 x 1 Hex Head Cap Screw
13.....	C161020.....	8-32 x 5/8 Socket Set Screw Cap Point
14.....	H371602	Roll Pin .375 D x 1.00 L
15.....	J167000	8-32 Locknut Jam Nylon Insert
16.....	J257000	1/4-20 Locknut Jam Nylon Insert
17.....	J317000	5/16-18 Locknut Jam Nylon Insert
18.....	J317100	5/16-18 Locknut Full Nylon Insert
19.....	J371000	3/8-16 Hex Nut
20.....	J377000	3/8-16 Locknut Jam Nylon Insert
21.....	J377100	3/8-16 Locknut Full Nylon Insert
22.....	J507000	1/2-13 Locknut Jam Nylon Insert
23.....	K160001.....	Flat Washer #8 SAE
24.....	K190101.....	Flat Washer .225 ID x .75 OD x .05 T
25.....	K250001.....	Flat Washer 1/4 SAE
26.....	K251501.....	1/4 Lockwasher Split
27.....	K310001.....	Flat Washer 5/16 SAE
28.....	K311501.....	5/16 Lockwasher Split
29.....	K370001.....	Flat Washer 3/8 SAE
30.....	K371501.....	3/8 Lockwasher Split
31.....	27168.....	Prox Cord - Traverse LH (Service)
32.....	27169.....	Prox Cord - Traverse RH (Service)
33.....	28192.....	Support Traverse Pulley
34.....	50309.....	Shaft Traverse Pulley
35.....	3706056.....	Idler Cog Pulley 5/8 B x 2.149 PD
36.....	50363.....	Guard Traverse Pulley
37.....	55553.....	Idler Pulley Assembly
38.....	80141.....	Screw - Self Drill #10 x 1" Hex
39.....	80354.....	Belt Cog 1252L050 UK .375P.50W
40.....	80355.....	Thrust Washer .75 ID x1.25 OD
41.....	3389038.....	Rubber Washer .31 x .75 x .06 T
42.....	3529041.....	Washer - Flat .328 x .875 x .125 T
43.....	6739508.....	Hinge Weldment
44.....	3706022.....	Pipe Plug 3/4 NPTF (Steel)
45.....	3706088.....	Gas Spring 60# 7.8" Stroke
46.....	3706106.....	Decal Sheet (Bedknife Grinders)
47.....	3707009.....	Strain Relief Liq T.27-.47W .804H
48.....	3707029.....	Strain Relief Liq T.19-.30W .599H
49.....	3707132.....	Key - Safety Switch 90 Degree
50.....	3707273.....	Strain Relief .33-.36 Wire .625H
51.....	3707275.....	Strain Relief .37-.43 Wire .875H
52.....	3707563.....	Strain Relief Liq T.27-.46W .825H

PARTS LIST

6729504 MAIN BASE ASSEMBLY



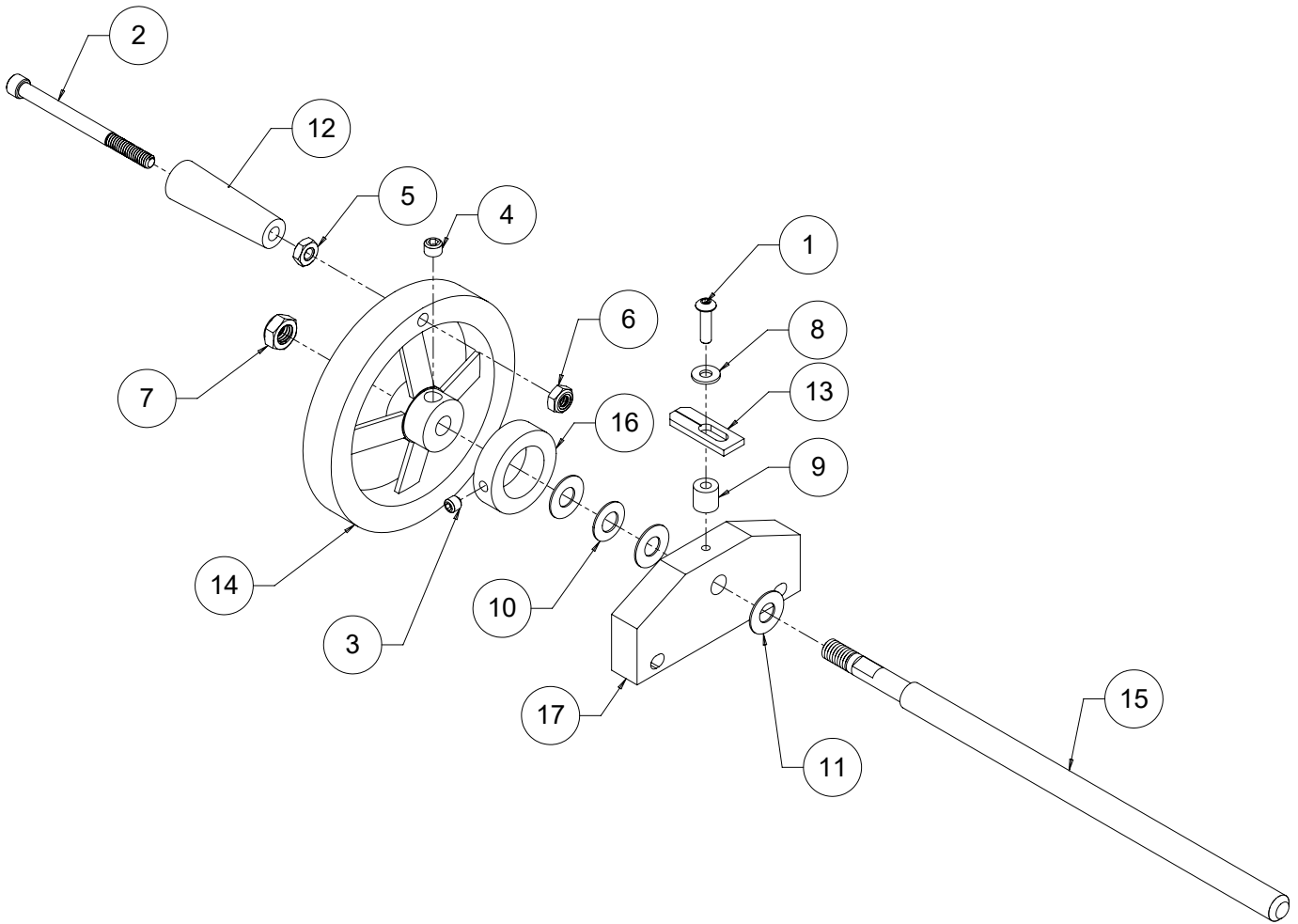
PARTS LIST (Continued)**6729504 MAIN BASE ASSEMBLY**

Diagram No.	Part No.	Description
53.....	3707595.....	Hole Plug .875 Diameter
54.....	3707597.....	Hole Plug .625 Diameter
55.....	3707728.....	Safety Switch NC/NC
56.....	3707933.....	Cord Clamp Single .44 Diameter Black
57.....	3708121.....	Cord Clamp Double .38 Diameter
58.....	3708330.....	Shoulder Bolt .500 D x 4.00 L
59.....	3708339.....	Connector - Barbed Insert
60.....	3708378.....	Strip Foam .25 T
61.....	3708419.....	Wave Spring .78 ID SSR-0100
62.....	3708421.....	Flat Washer .75 x 1.0 x .075 T
63.....	3708461.....	Decal Warning 3600 RPM
64.....	3708572.....	Ball Stud - 10 mm
65.....	3708577.....	Handle - D
66.....	3708658.....	Spring Compression Danly
67.....	3708820.....	8-32 x .50 Button HD Safety Screw
68.....	3708865.....	8-32 x 1.5 Button HD Safety Screw
69.....	3709016.....	Thrust Washer .500 x .937 x .093 T
70.....	3709019.....	Thrust Washer .500 x .937 x .032 T
71.....	2109095.....	Spacer .50 ID x 1.0 OD x.38 L Steel
72.....	3709304.....	Thrust Washer .375 x .812 x .032 T
73.....	3709331.....	Retaining Ring External 5100-75
74.....	3709990.....	Decal Foley United Large
75.....	6009125.....	Rubber Washer .34 x .88 x .06 T
76.....	6059062.....	Motor Assembly Traverse
77.....	6609046.....	Coolant Pump Cover
78.....	6709071.....	Ferrule - Handle
79.....	6739012.....	Hood Top Panel
80.....	6729509.....	Traverse Base Assembly
81.....	6739013.....	Window Support Plate
82.....	6739014.....	Window Support Long Plate
83.....	6709186.....	Upper Tank Back Panel
84.....	6709197.....	Lower Frame Panel
85.....	6739016.....	Door Polycarbonate
86.....	6709199.....	Prox Panel
87.....	6729014.....	Actuator Assembly W168 (12V Rod End)
88.....	6709209.....	Coolant Pump Assembly W118
89.....	6709226.....	672 Decal W/CB Symbols
90.....	6709568.....	Electrical Box Weldment
91.....	6709569.....	Coolant Tank Weldment
92.....	6709573.....	Actuator Cover Weldment
93.....	6729523.....	LH Side Frame Weldment
94.....	6729524.....	RH Side Frame Weldment
95.....	6709562.....	Bedknife Support Assembly
96.....	6739015.....	Window Rear Support Tube
97.....	3706133.....	Clear Tube 3.5 OD x 12" L
98.....	3706134.....	End Cap - 3.5 ID Black Vinyl
99.....	3706135.....	Velcro Hook - 1" W Adhesive Back
100.....	3706136.....	Velcro Loop - 1" W Adhesive Back
101.....	3707601.....	Prox Head - 18 mm DC (Service)
102.....	6729522.....	Manual Handwheel Assembly

PARTS LIST (Continued)**6729514 GRINDING HEAD ASSEMBLY**

Diagram No.	Part No.	Description
1.....	B190611	10-24 x 3/8 Socket Head Cap Screw
2.....	B192011	10-24 x 1-1/4 Socket Head Cap Screw
3.....	B251216	1/4-20 x 3/4 Button Head Socket Cap Screw
4.....	B252016	1/4-20 x 1-1/4 Button Head Socket Cap Screw
5.....	B371611	3/8-16 x 1 Socket Head Cap Screw
6.....	C190820.....	10-24 x 1/2 Socket Set Screw Cap Point
7.....	C250420.....	1/4-20 x 1/4 Socket Set Screw Cap Point
8.....	C621060.....	5/8-18 x 5/8 Socket Set Screw Cap Point
9.....	H250802	Pin - Roll .25 D x.50 L
10.....	J377000	3/8-16 Locknut Jam Nylon Insert
11.....	K190001.....	Flat Washer #10 SAE
12.....	K191501.....	#10 Lockwasher Split
13.....	K251501.....	1/4 Lockwasher Split
14.....	K310101.....	Flat Washer 5/16 USS Cut Zinc
15.....	K371501.....	3/8 Lockwasher Split
16.....	3679116.....	Connector - Shut Off Valve
17.....	3702086.....	Diamond Dresser
18.....	3707009.....	Strain Relief Liq T.27-.47 W .804 H
19.....	3708103.....	Conical Washer .258 x .50 x.019 T
20.....	3708543.....	Shoulder Bolt .313 D x.313 L
21.....	3708553.....	Spring - Comp.924 OD x .78 ID x 8.75 L
22.....	3708561.....	Adjustable Handle 3/8-16 x 1.56 L
23.....	3708657.....	Roller - Dual Vee
24.....	3708658.....	Spring Compression Danly
25.....	3709304.....	Thrust Washer .375 x .812 x .032 T
26.....	3709526.....	Knob 1/4-20F 1" Ball
27.....	3709593.....	Connector - Barbed Female NPT
28.....	3709595.....	Valve - Shut Off Needle
29.....	3709642.....	Coolant Line Assembly
30.....	3709705.....	Nylon Ball 5/32 Diameter
31.....	6609027.....	Arm - Roller Pivot
32.....	6609028.....	Bushing - V Roller Short
33.....	6609029.....	Bracket - Dresser Lock
34.....	6609058.....	Bushing - V Roller Long
35.....	6609502.....	Motor Assy - 3/4HP C-Face
36.....	6609505.....	Motor Pivot Assembly
37.....	6709035.....	Stud 1/4-20 x 3.00 Ht
38.....	6709038.....	Collar - Adjuster
39.....	6709103.....	Flange - Outer 5/8-11 LH
40.....	6709501.....	Tee Knob Assembly
41.....	6709503.....	Eccentric Pin Assembly
42.....	6709509.....	Dresser Arm Weldment
43.....	6709552.....	Gr Wheel Guard Weldment
44.....	6729043.....	Base - Carriage Slide

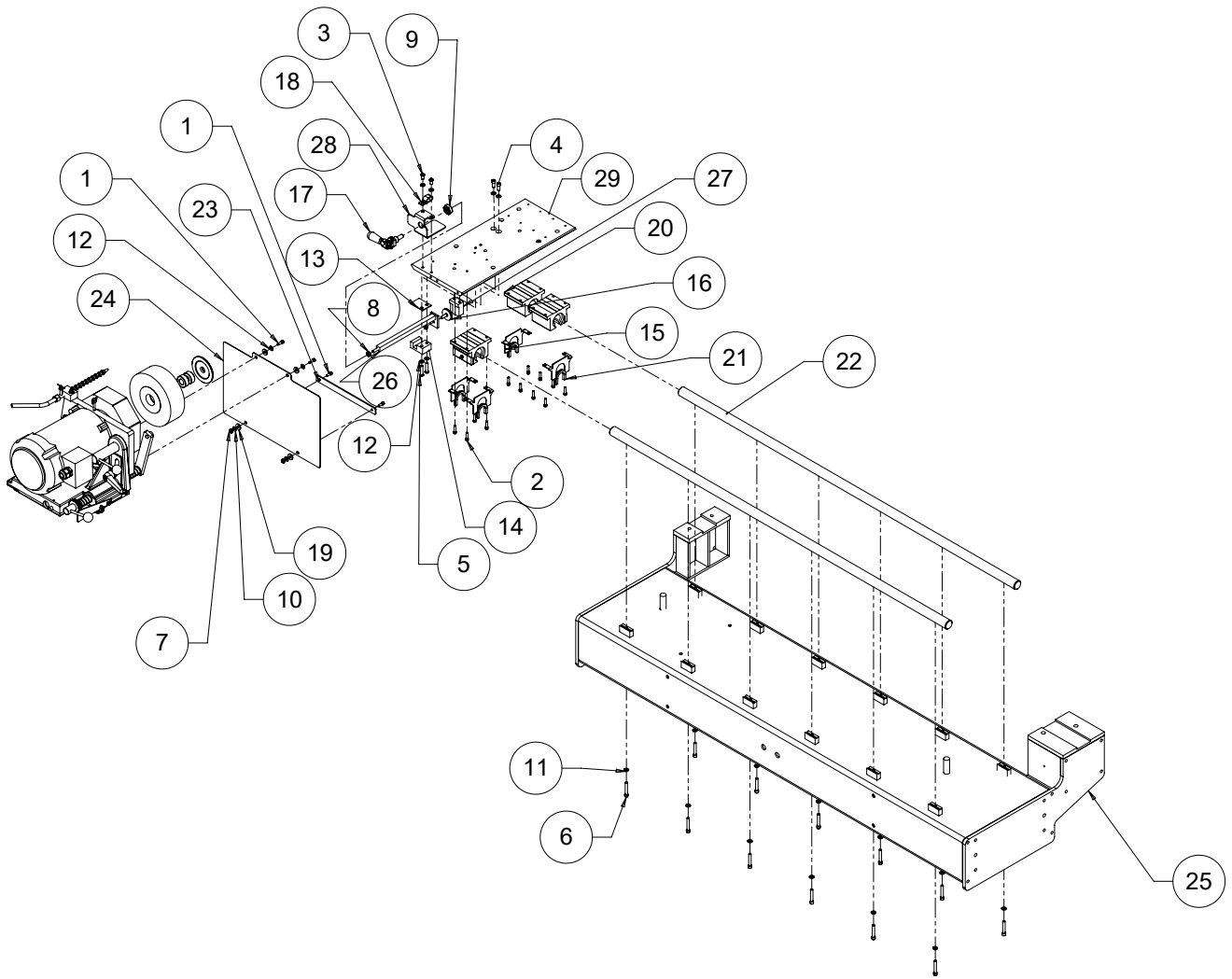
PARTS LIST (Continued) 6729522 GRINDING HEAD HANDWHEEL ASSEMBLY



PARTS LIST**6729522 GRINDING HEAD HANDWHEEL ASSEMBLY**

DIAGRAM NO.	PART NO.	DESCRIPTION
1.....	B191213	10-24 x 3/4 Button Head Socket Cap Screw
2.....	B255011	1/4-20 x 3-1/8 Socket Head Cap Screw
3.....	C250420.....	1/4-20 x 1/4 Socket Set Screw Cap Point
4.....	C310420.....	5/16-18 x 1/4 Socket Set Screw Cap Point
5.....	J252000	1/4-20 Hex Jam Nut
6.....	J257000	1/4-20 Locknut Jam Nylon Insert
7.....	J377000	3/8-16 Locknut Jam Nylon Insert
8.....	K190001.....	Flat Washer #10 SAE
9.....	6009224.....	Spacer .50 OD x .191 ID x .43 L
10.....	3709062.....	Conical Washer .382 x .75 x .035 T
11.....	3709304.....	Thrust Washer .375 x .812 x .032 T
12.....	3709370.....	Handle 691-P
13.....	3809047.....	Indicator - Clear
14.....	6009044.....	Handwheel - 4.50 Diameter Modified
15.....	6009218.....	Shaft Adjusting Acme LH
16.....	6059082.....	Ring - Calibration
17.....	6609030.....	Shaft - Locking Stud 1.125 S

PARTS LIST (Continued) 6729509 TRAVERSE & CARRIAGE ASSEMBLY

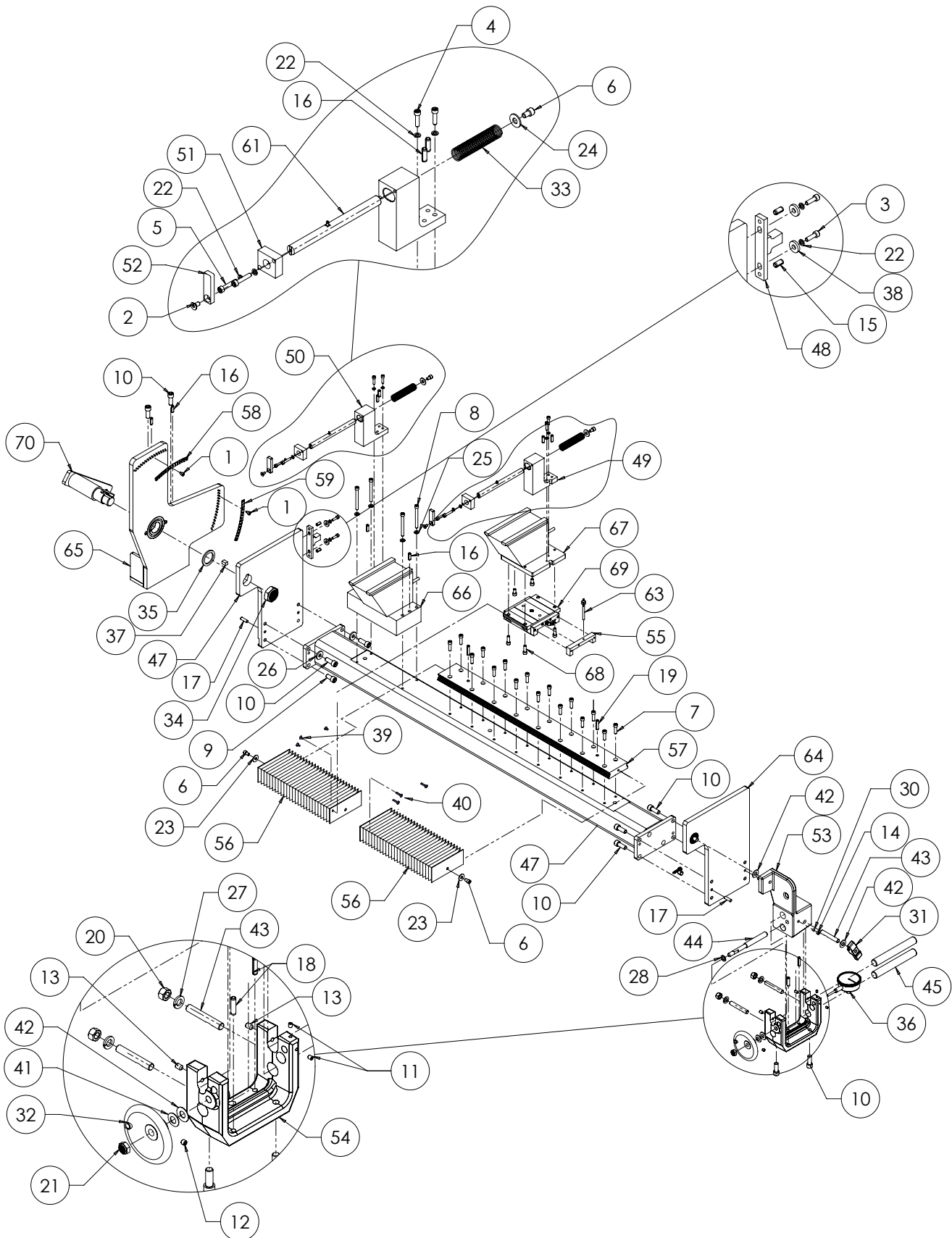


PARTS LIST (Continued) 6729509 TRAVERSE & CARRIAGE ASSEMBLY

DIAGRAM NO.	PART NO.	DESCRIPTION
1.....	B190811	10-24X1/2 Shcs
2.....	B191211	10-24X3/4 Shcs
3.....	B250816	1/4-20X1/2 Bhscs
4.....	B251026	1/4-28X5/8 Shcs
5.....	B252016	1/4-20X1-1/4 Bhscs
6.....	B252411	1/4-20X1-1/2 Shcs Full Thread
7.....	J197000	10-24 Locknut Jam Nylon Insert
8.....	J252000	1/4-20 Hex Jam Nut
9.....	J627200	5/8-18 Locknut Jam Nylon Insert
10.....	K190001.....	Flat Washer #10 Sae
11.....	K241501.....	
12.....	K251501.....	1/4 Lockwasher Split
13.....	28188.....	Spacer Trav Clamp
14.....	28189.....	Block Clamp Support
15.....	28211.....	Brkt - Rail Wiper 1" Shaft
16.....	50310.....	Tip Belt Clamp
17.....	80335.....	Clamp Destaco
18.....	3708121.....	Cord Clamp Double .38 Dia.
19.....	3708691.....	Flat Washer .25X.62X.12T
20.....	3709044.....	Ball Brg Bushing
21.....	3969064.....	Wiper - Foam
22.....	6509063.....	Carrier Shaft
23.....	6709039.....	Brkt - Rubber Cover
24.....	6709149.....	Cover - Rubber
25.....	6709174.....	Traverse Base Machned (Belt)
26.....	6709566.....	Belt Clamp Bar Assy
27.....	6729004.....	Traverse Clamp Block
28.....	6729040.....	Traverse Clamp Bracket
29.....	6729041.....	Carriage (Belt)

PARTS LIST (Continued)

6709562 BEDKNIFE SUPPORT ASSEMBLY

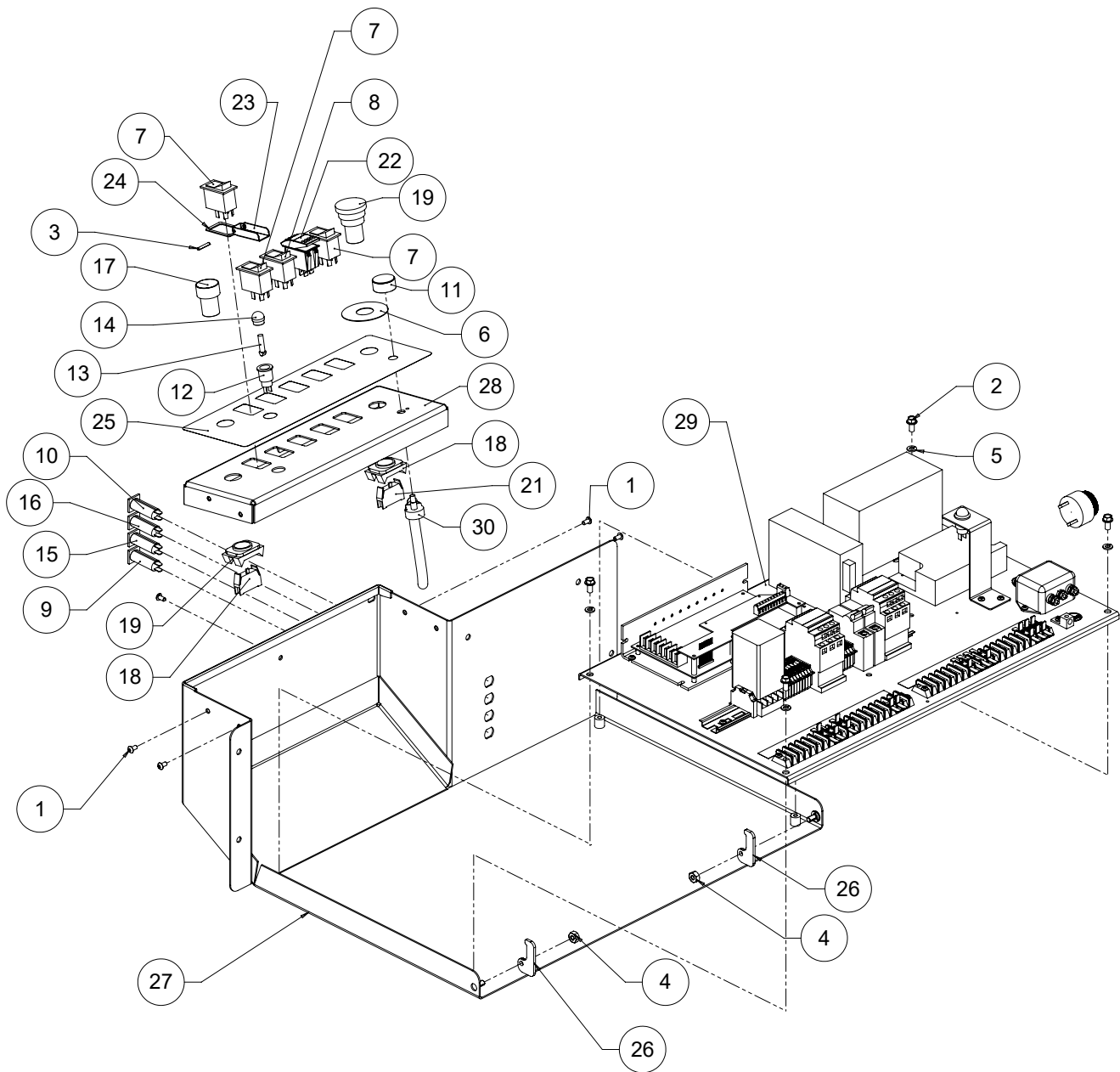


PARTS LIST (Continued)**6709562 BEDKNIFE SUPPORT ASSEMBLY**

DIAGRAM NO.	PART NO.	DESCRIPTION
1.....	B190411.....	Socket Head Cap Screw 10-24 x 1/4
2.....	B190805.....	Flat Head Socket Cap Screw 10-24 x 1/2
3.....	B191011.....	Socket Head Cap Screw 10-24 x 3/8
4.....	B191211.....	Socket Head Cap Screw 10-24 x 3/4
5.....	B191611.....	Socket Head Cap Screw 10-24 x 1
6.....	B250611.....	Socket Head Cap Screw 1/4-20 x 3/8
7.....	B251411.....	Socket Head Cap Screw 1/4-20 x 7/8
8.....	B253611.....	Socket Head Cap Screw 1/4-20 x 2-1/4
9.....	B371211.....	Socket Head Cap Screw 3/8-16 x 3/4
10.....	B371611.....	Socket Head Cap Screw 3/8-16 x 1
11.....	C190420.....	Set Screw Cup Point 10-24 x 1/4
12.....	C250420.....	Set Screw Cup Point 1/4-20 x 1/4
13.....	C250627.....	Set Screw Cup Point 1/4-20 x 3/8 with nylon patch
14.....	C310420.....	Set Screw Cup Point 5/16-18 x 1/4
15.....	H250802.....	Roll Pin .25D x .50LG
16.....	H251202.....	Roll Pin .25D x .75LG
17.....	H251406.....	Drive Lock Pin .25D x .875LG
18.....	H251602.....	Roll Pin .25D x 1.00 LG
19.....	H251802.....	Roll Pin .25D x 1.125LG
20.....	J371000.....	Hex Nut 3/8-16
21.....	J377000.....	Nylon Locknut Jam 3/8-16
22.....	K191501.....	Split Lockwasher #10
23.....	K250001.....	Flat Washer 1/4
24.....	K250101.....	Washer - Flat .31 x .73 x .052T
25.....	K251501.....	Split Lockwasher 1/4
26.....	K310101.....	Flat Washer 5/16
27.....	K371501.....	Split Lockwasher 3/8
28.....	09054.....	3/8 ID x 5/8 OD x 1/16 Thick Flat Washer
30.....	3579109.....	Nylon Plug 3/16 Diameter
31.....	3708245.....	T-Knob 2.5 3/8-16F
32.....	3708393.....	Handwheel 3.5 Diameter
33.....	3708554.....	Compression Spring .6250D x 3.0L
34.....	J997200.....	1-14 Locknut Jam Nylon Insert
35.....	3708564.....	Oilite Thrust Bearing 1.25ID
36.....	3708581.....	Inch Dial Indicator
37.....	3708593.....	Square Key 5/16 x 1/2L
38.....	3708691.....	Washer .25 x .62 OD x .12
39.....	3708701.....	Button Head Socket Cap Screw M3-.5 x 16
40.....	3708702.....	Button Head Socket Cap Screw M3-.5 x 30
41.....	3709062.....	Conical Washer .382 x .75 x .035
42.....	3709304.....	Thrust Washer
43.....	6009035.....	Locking Stud Shaft
44.....	6009036.....	Acme Adjusting Shaft
45.....	6009095.....	Slide Shaft
46.....	6709004.....	Machined Tooling Bar
47.....	6709008.....	Left-hand Pivot Plate
48.....	6709011.....	Index Stop Bracket
49.....	6709012.....	Right-Hand Gage Base
50.....	6709013.....	Left-Hand Gage Base
51.....	6709015.....	Retainer Block Gage
52.....	6709021.....	Gage Tip
53.....	6709107.....	Tooling Slide Mounting
54.....	6709108.....	Cross Slide Support
55.....	6709134.....	Bearing Block Lock Block
56.....	6709135.....	Rail Bellows 25/70
57.....	6709136.....	Wide Machined Rail 25/70
58.....	6709151.....	Decal - Upper Tooling Index
59.....	6709152.....	Decal - Lower Tooling Index
61.....	6729502.....	Gage Shaft Assembly
63.....	6709501.....	Tee Knob Assembly
64.....	6709519.....	Pivot Bearing Assembly
65.....	6729512.....	Tooling Mounting Bracket Assembly
66.....	6729510.....	Magnet Repair Assembly - INA 672
67.....	6729510.....	Magnet Repair Assembly - INA 672
68.....	B251211.....	Socket Head Cap Screw 1/4 -20 x 3/4
69.....	3708694.....	Linear Bearing Wide
70.....	6729511.....	Tooling Rotate Arm Weldment

PARTS LIST (Continued)

6729516 CONTROL PANEL ASSEMBLY



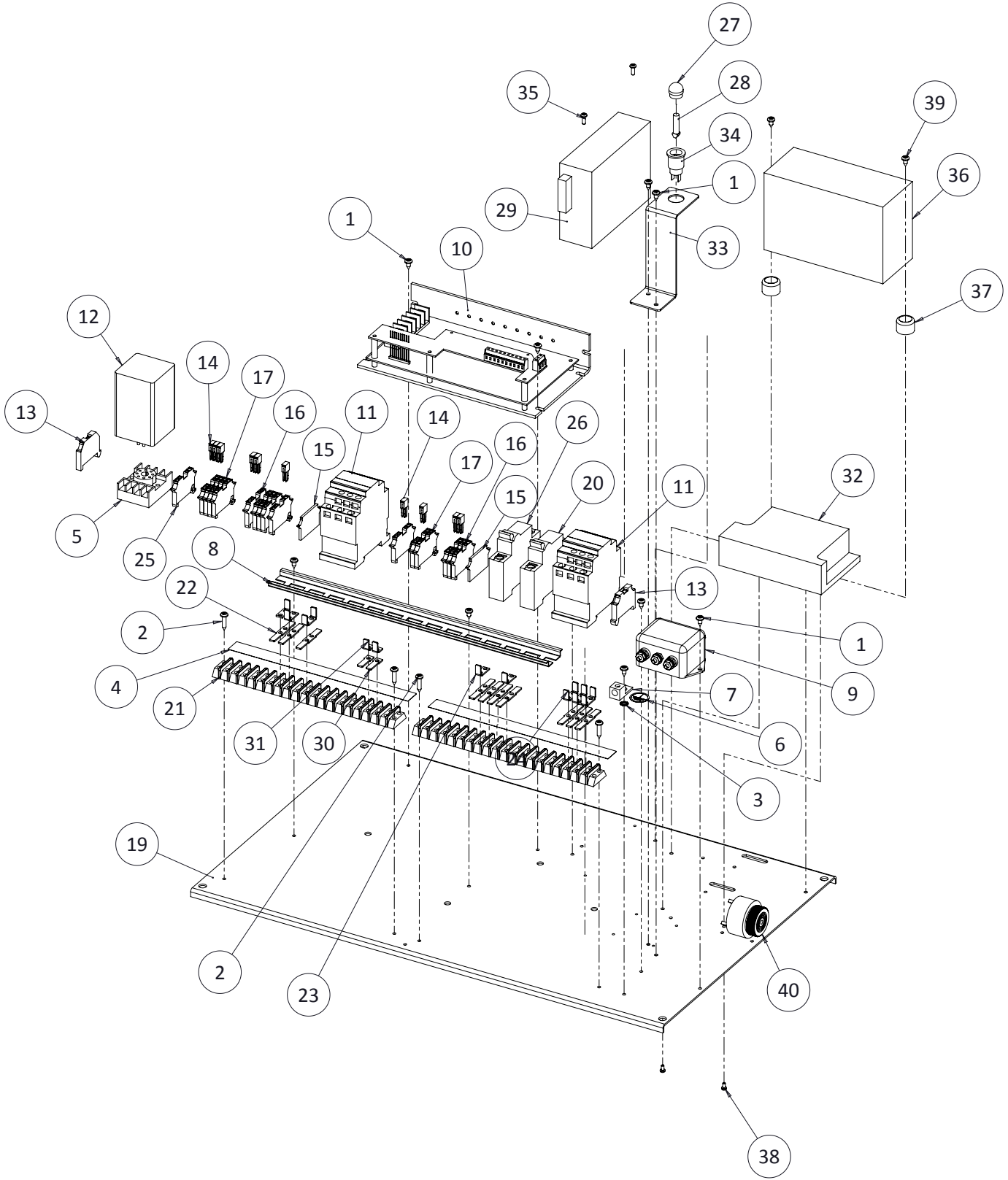
PARTS LIST (Continued)

6729516 CONTROL PANEL ASSEMBLY

DIAGRAM NO.	PART NO.	DESCRIPTION
1.....	B190634	10-32 x 3/8 Button Head Socket Cap Screw
2.....	D250800	Hex Head Thread Cutting Screw 1/4-20 x .5"
3.....	H121302	Roll Pin .125 D x .813 Lg
4.....	J257000	1/4-20 Nylon Insert Jam Locknut
5.....	R000536	Lock Washer 1/4 Internal Teeth
6.....	3707342.....	Ring Yellow E-Stop
7.....	3707367.....	Switch Rocker On/Off Dpst
8.....	3707429.....	Switch Rocker On-Off
9.....	3707442.....	Circuit Breaker 2 Amp
10.....	3707444.....	Circuit Breaker 10 Amp
11.....	3707446.....	Speed Knob With Pointer
12.....	3707487.....	Pilot Lamp Socket
13.....	3707489.....	Lamp - 24V .073 Amp
14.....	3707539.....	Green Fluted Dome Lens
15.....	3707543.....	Circuit Breaker 12 Amp
16.....	3707547.....	Circuit Breaker 15 Amp
17.....	3707564.....	Pushbutton Green Start
18.....	3707565.....	No Contact Block
19.....	3707566.....	Switch Latch
20.....	3707567.....	Push/Pull Red Stop Button
21.....	3707568.....	NC Contact Block
22.....	3707713.....	Rocker Switch Momentary On/Off/On Wide
23.....	6709122.....	Switch Guard Cover
24.....	6709123.....	Switch Guard Base
25.....	6709206.....	Control Panel Decal
26.....	6709213.....	Control Travel Stop
27.....	6709567.....	Control Panel Weldment
28.....	6709572.....	Control Top Weldment
29.....	6729519.....	Control Panel Sub Assembly
30.....	6059050.....	672 Traverse Potentiometer

PARTS LIST (Continued)

6759519 CONTROL PANEL SUB-ASSEMBLY



PARTS LIST (Continued)**6729519 CONTROL PANEL SUB-ASSEMBLY**

DIAGRAM NO.	PART NO.	DESCRIPTION
1.....	D160666	Pan Head Self-Tapping Screw #8 x 3/8 Long
2.....	D161266	Pan Head Self-Tapping Screw #8 x 3/4 Long
3.....	R000480	#8 Lockwasher
4.....	55223.....	Terminal Strip Decal
5.....	3707073.....	8-Pin socket
6.....	3707163.....	Primary Ground Decal
7.....	3707164.....	Primary Ground Lug
8.....	3707378.....	14" Din Rail
9.....	3707764.....	Power Line Filter 20 Amp
10.....	3707850.....	Traverse Control Board
.....	3707546.....	3-Amp Slow-Blo fuse for Traverse Board
11.....	3707556.....	Magnetic Starter
12.....	3707688.....	High/Low Voltage Sensor Relay
13.....	3707625.....	Screwless Terminal Block End Stop
14.....	3707626.....	Terminal Block Jumper
15.....	3707627.....	Terminal Block End Plate
16.....	3707628.....	2-Conductor Terminal Block - Grey
17.....	3707629.....	2-Conductor Terminal Block - Blue
18.....	3708920.....	Low Voltage Warning Decal
19.....	6009270.....	Electrical Sub Panel
20.....	3707589.....	15-Amp Circuit Breaker
21.....	3707706.....	19 Pole Terminal Strip
22.....	3707707.....	Double Spade Terminal
23.....	3707709.....	Single Spade Terminal 90°
24.....	3707708.....	Double Spade Terminal 90°
25.....	3707624.....	2-Conductor Terminal Block - Ground
26.....	3707779.....	6 Amp Circuit Breaker
27.....	3707488.....	Amber Dome Lens
28.....	3707489.....	24V Lamp
29.....	3707948.....	Power Supply 150 Watt
30.....	3707741.....	Flat Single Spade Terminal
31.....	3707742.....	90° Single Spade Terminal
32.....	3707855.....	Power Supply with Battery Backup (UPS)
33.....	6729027.....	Power Light Bracket
34.....	3707487.....	Lamp Socket
35.....	D130608	Pan Head Self-Tapping Screw #6-32 x 3/8 Long
36.....	3707854.....	12 V Battery
37.....	3709767.....	Rubber Bumper
38.....	3708574.....	M3 x .5 Screw
39.....	D160866	Pan Head Self-Tapping Screw #8 x 3/8 Long
40.....	3707856.....	Alarm

WIRING DIAGRAM

6724519

