FOLEY COMPANY

ACCU-660 MANUAL BEDKNIFE GRINDER

ASSEMBLY AND 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.

6607954 (05-20)

SAFETY INSTRUCTIONS

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

The ***Warning Symbol*** identifies special instructions or procedures which, if not strictly observed, **could result in personal injury.**

The ***Caution Symbol*** identifies special instructions or procedures which, if not correctly followed, **could result in damage to or destruction of equipment.**

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

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

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

DO

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

DON'T

1. **DON'T** use a cracked wheel or one that **HAS BEEN DROPPED** or has become damaged.
2. **DON'T FORCE** a wheel onto the machine **OR ALTER** the size of the mounting hole. If wheel won't fit the machine, get one that will.
3. **DON'T** ever **EXCEED MAXIMUM OPERATING SPEED** established for the wheel.
4. **DON'T** use mounting flanges on which the bearing surfaces **ARE NOT CLEAN, FLAT AND FREE OF 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 work gets hot.

SAFETY INSTRUCTIONS/SPECIFICATIONS

This machine is intended for grinding the bedknife from a reel mowing unit ONLY. Any use other than this may cause personal injury and void the warranty.

To assure the quality and safety of your machine and to maintain the warranty, you MUST use original equipment manufactures replacement parts and have any repair work done by a qualified professional.

ALL operators of this equipment must be thoroughly trained BEFORE operating the equipment.

Do not use compressed air to clean grinding dust from the machine. This dust can cause personal injury as well as damage to the grinder. This machine is intended for indoor use only. Do not use a power washer to clean the machine.

CONTENTS

SPECIFICATIONS

Electrical Requirements ..... 115V 50/60 Hz, 15-amp circuit

Net Weight..... .....670 lbs [304 kg]

Shipping Weight ..... 700 lbs [318 kg]

Maximum Grinding Length .....32 in. [813 mm]

Sound Level..... Less than 75 Dba

TRAINING REQUIRED/TORQUE REQUIREMENTS

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 ACCU-660 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 Operators Manual, 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 questions not answered in this manual, please call your distributor. They will contact the manufacturer if necessary.

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 Thread Hole in Steel.
Refer to table at the right.

Bolts Going into a Thread 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:	11in.-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)

ASSEMBLY INSTRUCTIONS

UNPACK THE CARTONS

NOTE: Before you install the machine, read the following assembly procedure completely. Then study "Getting to Know Your Bedknife Grinder" in the Operators Manual.

Use care when unpacking. Double-check the packing cartons for any miscellaneous items before discarding.

Inspect all items for shipping damage as they are removed from the shipping containers. If you find any damage, notify the carrier's claims agent and do not proceed further until the damage has been inspected by the agent. Refer also to the "Shipping and Receiving Instructions" packed with the unit.

Remove the shipping strap that secures the carriage to the left end of the machine during shipment.

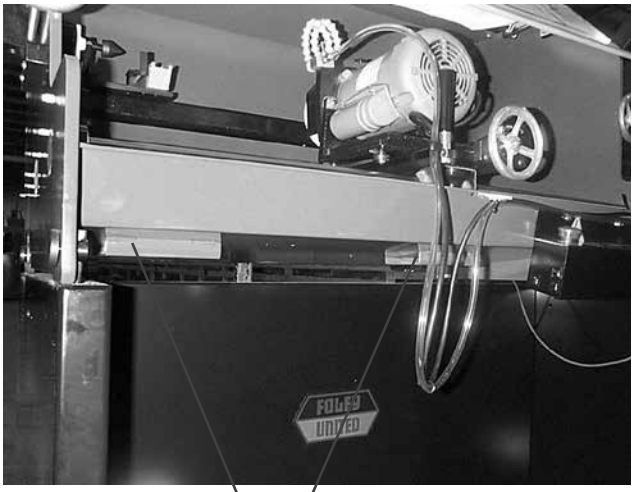


FIG. 1

Fork Lift Brackets

INSTALLATION OF UPPER GRINDING HEAD ASSEMBLY

To remove the load from the large V-rollers during shipping, the upper grinding head assembly is shipped on the crate base.

To install the upper grinding head assembly, remove the two feed screw guide screws that are temporarily installed in the carriage and set aside. Remove the manual traversing handle and set aside. Remove the double wire clip and screw and set aside.

Cut the plastic strap that holds the upper grinding head assembly to the crate base. Remove the blue die spring from the infeed handwheel where it has been taped and install the spring between the carriage slide and the small V-roller arm set screw. Loosen the set screw so it is flush to the outside of the arm. Lift the upper grinding head assembly and install the small V-rollers onto the V-cut on the carriage.

Adjust the preload tension on the small V-roller arm per the procedure on page 20.

Install the two feed infeed guide screws. Install the manual traversing handle. Install the motor cord and coolant hose through the double wire clip, leaving enough slack for motor infeed movement and install to the carriage. Cable tie the motor cord and coolant hose to the cable tie mount in the center of the grinder under the coolant tank lip. Do not pull the cable tie tight or you will restrict coolant flow.

Remove the Grinder from the Pallet
To remove the Grinder from the wood pallet:

1. Unbolt the brackets that hold each end of the grinder legs to the bottom of the pallet.

2. The grinder's four leveling feet (FIG. 2) are seated in countersunk holes in the pallet. Lift one end of the machine until both feet are out of their holes.

3. Prop this first end up with sturdy boards or other supports so the feet remain out of their holes, then lift the other end and remove the grinder from the pallet.

   NOTE: Use the forklift brackets located on the bottom side of the main frame as shown in FIG. 1 to move the grinder.

4. Discard the leg screws and the shipping straps.

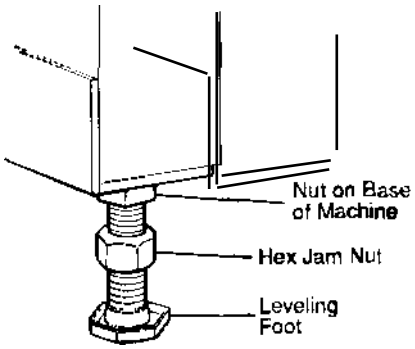


FIG. 2

THE GRINDER WEIGHS 670 LBS [304KG]. TO LIFT, USE POWER EQUIPMENT.

LOCATE AND LEVEL THE GRINDER

Set the Grinder on a level concrete floor, on a single uncracked slab of concrete.

If the unit must be located near a wall, allow adequate space for operating and servicing. Refer to FIG. 3 for recommended and alternate locations near a wall.

Place a level on the front carriage rail near the center of the machine and check the level from left to right. See FIG. 4A. Adjust the leveling feet until the machine is level.

Place the level across the front and rear carriage rails near the left end of the machine. See FIG. 4B. Adjust the two leveling feet on the left end until level.

Place the level across the front and rear carriage rails near the right end of the carriage bed. Level the right end in the same way as the left end. For grinding accuracy, the two ends must have the identical level within +/-.01" [.25 mm] so the frame is not twisted.

Recheck the level in both directions. When satisfactory, tighten the hex jam nuts on the leveling feet securely against the nuts welded to the bottom of the base. See FIG. 2. Don't turn the leveling feet when tightening.

Again recheck the level after the nuts are firmly tightened.

FOR GRINDING ACCURACY, THE MACHINE DOES NOT HAVE TO BE PERFECTLY LEVEL. HOWEVER, IT IS CRITICAL THAT FRONT-TO-BACK LEVELING BE IDENTICAL AT BOTH ENDS OF THE MACHINE.

INSTALL THE SPINNING HANDLE

Install the spinning handle on the horizontal handwheels. See FIG. 5.

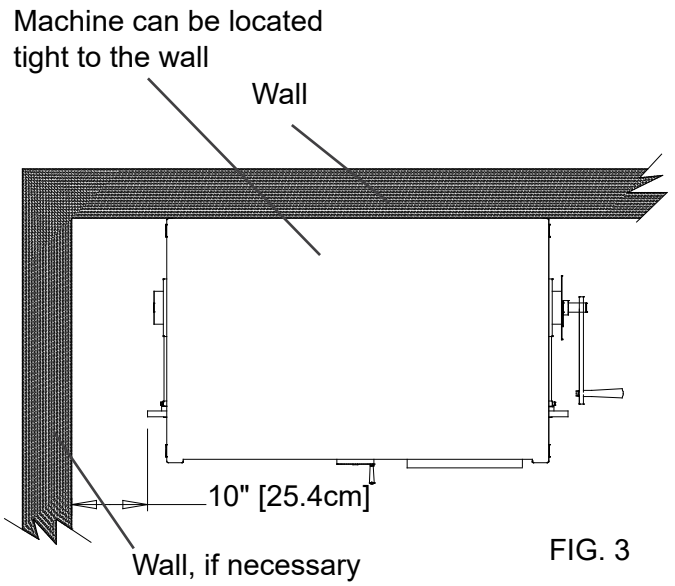


FIG. 3

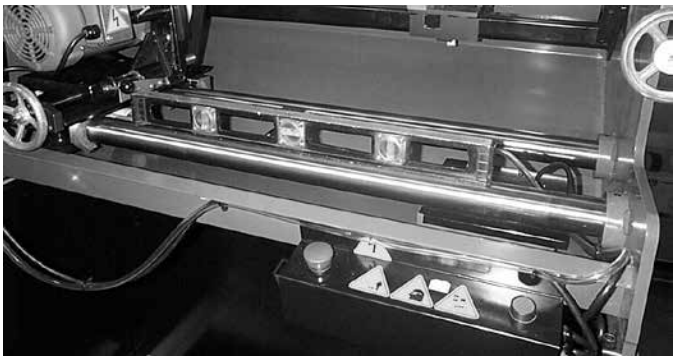


FIG. 4A

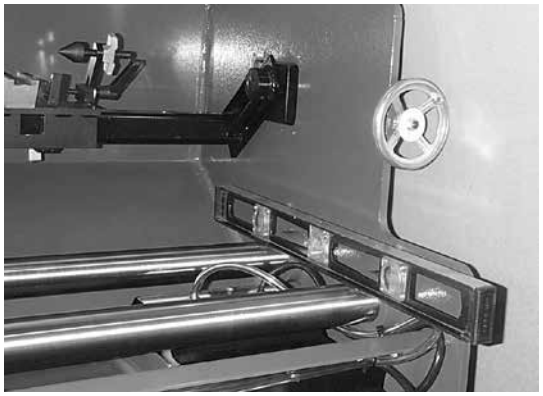


FIG. 4B

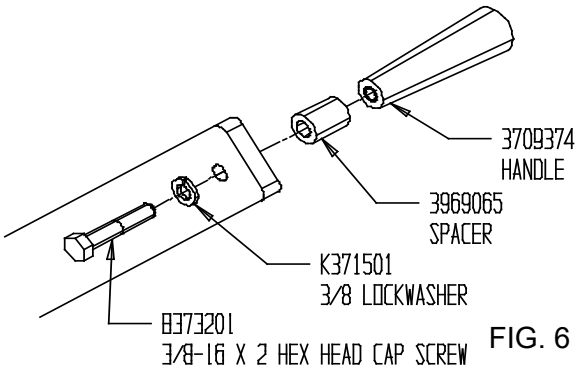


FIG. 6

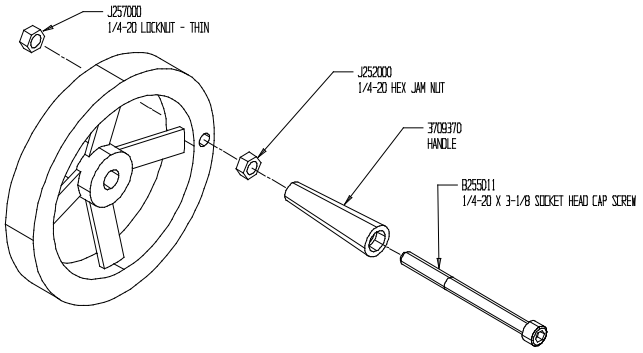


FIG. 5

APPLYING POWER

BEFORE YOU APPLY POWER TO THE GRINDER, REFER TO THE "IMPORTANT GROUNDING INSTRUCTIONS" ON PAGE 9.

115 Volt Model Only. Plug the control box power cord into a standard 115V AC 15-amp grounded receptacle. See FIG. 7.

FIG. 7

IT IS RECOMMENDED THAT THIS ACCU-660 BEDKNIFE GRINDER HAS ITS OWN PERMANENT POWER CONNECTION FROM THE POWER DISTRIBUTION PANEL, WITH NO OTHER MAJOR POWER DRAW EQUIPMENT ON THE SAME LINE.

IT IS REQUIRED THAT THE POWER DELIVERED TO THIS GRINDER IS 115 VAC - 15 AMPS. THE TOLERANCE ON THIS POWER REQUIREMENT IS +/- 5%. THEREFORE THE MINIMUM VOLTAGE REQUIREMENT IS 109VAC WITH 15 AMPS. VOLTAGE MUST BE CHECKED WITH ALL EQUIPMENT UNDER LOAD (OPERATING) ON THE CIRCUIT.

DO NOT OPERATE THIS GRINDER WITH AN EXTENSION CORD.

DO NOT OPERATE THIS GRINDER ON A GROUND FAULT INTERUPTER (GFI) CIRCUIT. THE (GFI) WILL TRIP CONSTANTLY.

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

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

FOR 15 AMP RATED LARGE MACHINES

For 0 to 30 Feet from panel to receptacle = Use 14 Ga. Wire.
For 30 to 50 Feet from panel to receptacle = Use 12 Ga. Wire.
For 50 to 80 Feet from panel to receptacle = Use 10 Ga. Wire.
For 80 to 140 Feet from panel to receptacle = Use 8 Ga. Wire.

For 0 to 15 Meters from panel to receptacle = Use 2.5mm Wire.
For 15 to 42 Meters from panel to receptacle = Use 4.0mm Wire.

ASSEMBLY INSTRUCTIONS (Continued)

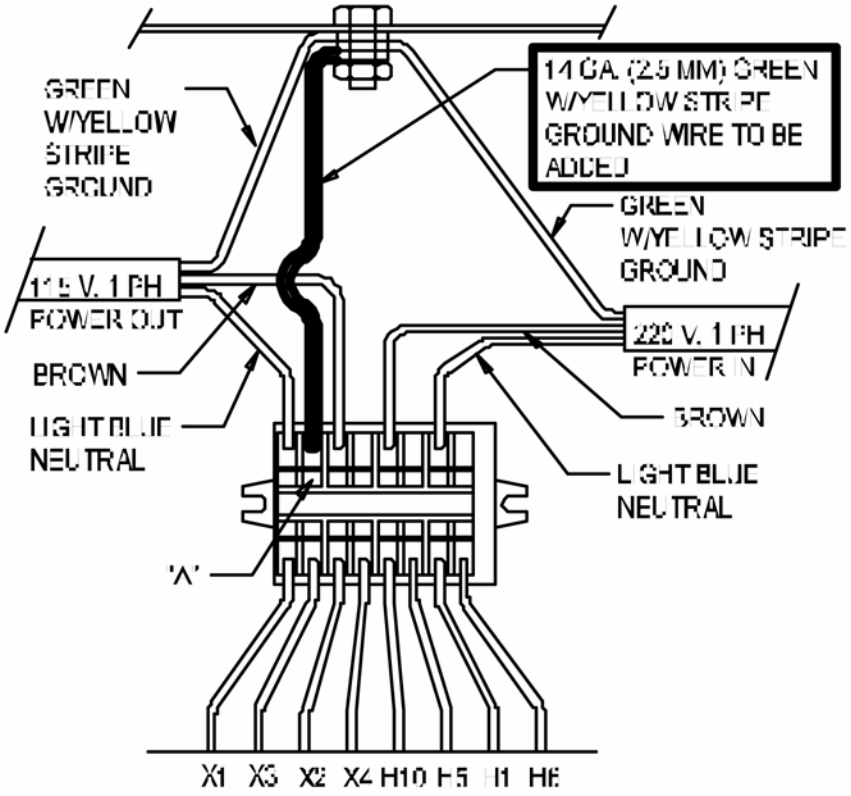
FOR 220 V 50 or 60Hz applications Product No. 6600951 should be ordered.

6600951 has a 2 KVA step down transformer from 220V 50-60 Hz input power to 115V 50-60 Hz machine power.

The wiring diagram is shown in FIG. 7A.

The power cord has no connector. A connector which is appropriate for your locality and 220 volt, 8 amp application should be installed.

USE ONLY A QUALIFIED ELECTRICIAN TO COMPLETE THE INSTALLATION.



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

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

ATTACH THE OTHER END OF THE GREEN W/YELLOW STRIPE WIRE SUPPLIED TO THE GROUND STUD ON THE TRANSFORMER. FIG. 7A

IMPORTANT GROUNDING INSTRUCTIONS

In case of a malfunction of 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.

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.

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INSTALL THE COOLANT

ALWAYS READ THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THE COOLANT YOU ARE USING. BELOW ARE WARNINGS THAT APPLY TO MOST COOLANTS.

AVOID CONTACT OF COOLANT WITH EYES: IT WILL CAUSE EYE IRRITATION. WEAR FACE SHIELD OR GOGGLES WHEN HANDLING CONCENTRATE. IN CASE OF CONTACT, FLUSH EYES WITH WATER FOR 15 MINUTES AND CONTACT A PHYSICIAN.

AVOID BREATHING MISTS. PROVIDE LOCAL VENTILATION. KEEP CONCENTRATED BOTTLE CLOSED WHEN NOT IN USE.

CONTINUED CONTACT OF CONCENTRATE ON SKIN MAY CAUSE IRRITATION. WASH WITH SOAP AND WATER AFTER CONTACT.

DO NOT TAKE INTERNALLY. IF INGESTED, CONSULT PHYSICIAN AND DO NOT INDUCE VOMITING.

(HAZARD POTENTIAL APPLIES TO CONCENTRATE, AND IS LESS AT NORMAL USE DILUTION.)

Mixing the Coolant

Mix Part No. 3708620 Coolant in a separate container, at a ratio of 50 parts water to 1 part concentrate. Refer also to the label on the Coolant container. If the coolant tray is empty, this will take about 8 gallons of water and 1.3 pint of concentrate [30 liters of water, and 0.6 liter of concentrate]. Fill with coolant until the coolant level is .25 - .50" [6 -12 mm] above the top of the coolant pump.

THE COOLANT RATIO AS SPECIFIED MUST BE USED. TOO HIGH A CONCENTRATION OR TOO LOW A CONCENTRATION WILL CAUSE CORROSION AND PERFORMANCE PROBLEMS.

Using the Coolant

Direct the nozzle so the coolant sprays onto the bedknife face being ground. Some coolant will then be deflected onto the grinding wheel. Adjust the flow valve so there is a steady stream of coolant. Avoid a stronger flow than needed, excessive coolant does not cool more, and increases splattering.

Fluid Level in the Coolant Tank

Check the fluid level in the coolant tank daily to avoid running out while grinding. Keep the coolant level between .25-.50 inches [6-12 mm}above the coolant sump top edge. The pump inlet must always be submerged in water. Never add plain water to the coolant when the level is low. Always add water and concentrate in the correct proportions. It is recommended to pre-mix coolant and water in a separate container for this purpose.

CHECK THE CARRIAGE TRAVERSE

Visually check that the grinding head will be able to traverse to both sides of the machine without contacting any components.

Manually move the grinding head through a complete cycle. Watch carefully for obstructions to the head travel, and check that the grinding motor cord and coolant hose are not stretched.

CHECK THE GRINDING MOTOR

Close the guard door to connect the interlock. Press START. Check that the grinding head runs properly. Be prepared to press STOP if there is any problem. Also check that the coolant system functions properly.

MAKE FINAL PREPARATIONS FOR OPERATION

Carefully read the operating instructions in the Operators Manual.

First, study the pages titled "Getting to Know Your Grinder" and "General Operating Information" for important background explanations about the machine and about bedknife grinding. **Then,** read the "Operating Instructions" pages for step-by-step procedures on mounting the bedknife and grinding its top and front faces.

MAINTENANCE

DAILY MAINTENANCE IS SPECIFIED ON PAGE 4 OF THE OPERATOR'S MANUAL, AND IS TO BE PERFORMED BY THE OPERATOR. LISTED BELOW ARE PERIODIC MAINTENANCE ITEMS TO BE PERFORMED BY YOUR COMPANY'S MAINTENANCE DEPARTMENT:

1. Clean the Traverse Rails by wiping down with WD-40 or equivalent on a weekly basis.

2. Replace the four foam rail wipers (FIG. 10) every 6 months of operation.

3. Clean the interior of the Coolant Tray as necessary and at least every 6 months.

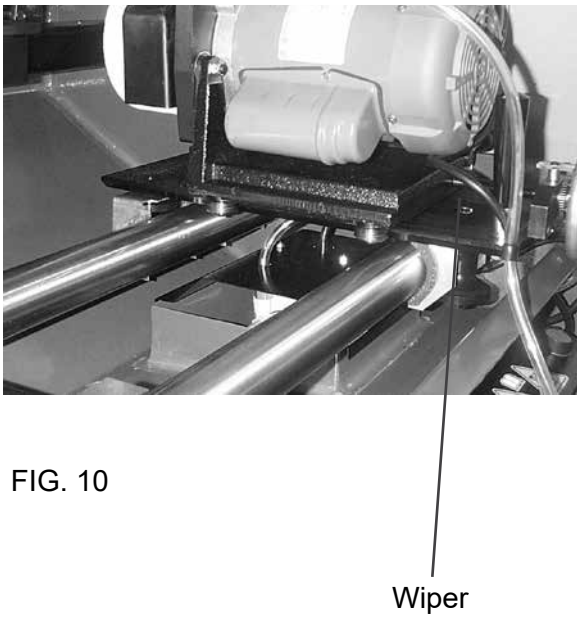


FIG. 10

MAINTENANCE (Continued)

CLEANING AND MAINTENANCE GUIDELINES FOR POLYCARBONATE WINDOWS

Cleaning Instructions

DO NOT USE GASOLINE
Follow regular and proper cleaning procedures to preserve the appearance and performance of this machine.

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, a warm final wash should be made, using a mild dish washing liquid detergent solution and ending with a thorough rinsing 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's 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.

Some Important "DON'TS"

- **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 (hair dryer) to soften the adhesive and promote removal.
- **GASOLINE SHOULD NOT BE USED!**

TO ADJUST THE CARRIAGE V-ROLLERS ECCENTRIC

The carriage large V-rollers are adjusted for zero free play with an eccentric on the single roller attachment bolt closest to the operator.

To adjust the eccentric, position the Grinding Head and Carriage Assembly to center it on the traverse rail center strut assembly. Move the Grinding Head inward with the infeed handwheel to expose the V-roller lock nut. See FIG. 11.

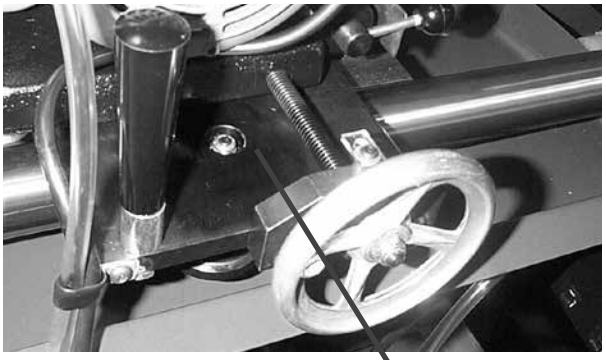


FIG. 11

Put a 3/4" wrench on the hex head eccentric bolt bottom side. Loosen the top side locknut with a 1/2" socket only enough to move the eccentric bolt. The roller spacer washer under the carriage and above the roller assembly must be completely flush with no air gaps. If you have air gaps, the eccentric bolt is to loose. With the eccentric bolt and locknut loose only enough to move the eccentric, turn the (3/4" wrench) eccentric bolt only enough to take the free play out of the large V-rollers.

Determine zero free play by grasping the carriage and trying to move it up and down firmly. Tighten the eccentric only enough for zero free play. When correct, retighten the top side lock nut. Make certain the roller spacer and bracket are tightened square to the carriage with no air gaps, then verify no free play.

DO NOT OVERTIGHTEN THE ECCENTRIC. OVERTIGHTENING CAN OVERLOAD THE TRAVERSE SHAFTS AND CAUSE A BAD GRIND.

TO ELIMINATE INFEED HANDWHEEL BACKLASH

There are two adjustment points on the Grinder Head Infeed Handwheel (FIG. 12A), to check for backlash:

1. Washers behind the handwheel:

   A. Loosen (about half a turn) the set screw holding the handwheel to the shaft. This set screw is accessed by removing the calibration ring set screw and rotating the calibration ring to access the handwheel set screw.

   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.12B. Readjust the hex lock nut if necessary.

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

   E. Check the nylon ball tension on the adjustment shaft threads at the grinding head slide. See FIG. 12A. 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 set screw 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.

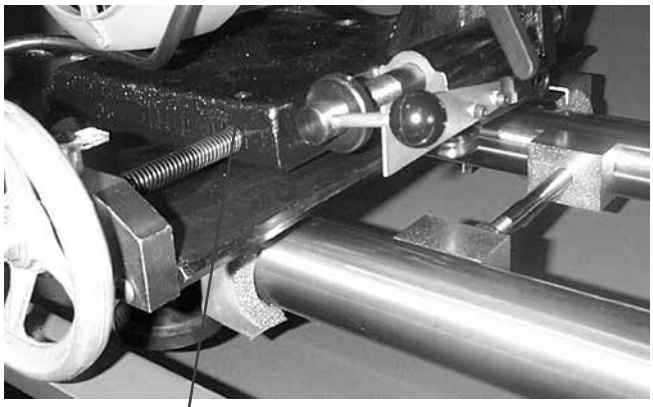


FIG. 12A

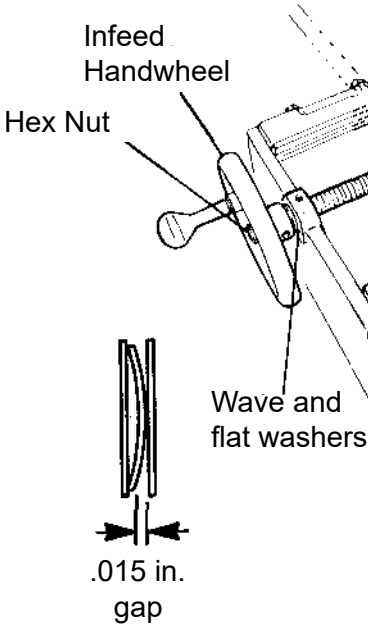


FIG. 12B

TO ELIMINATE ALIGNMENT ADJUSTMENT BACKLASH

If there is backlash in the alignment adjustment handwheels (FIG. 13A), there are two adjustment points on each to check:

1. Washers behind the handwheel:
   A. Loosen (about half a turn) the set screw holding the handwheel to the shaft.
   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. 13B. Readjust the hex lock nut if necessary.
   D. Tighten the set screw holding the handwheel to the shaft.

FIG. 13A

2. Check the nylon ball tension on the adjustment shaft threads at the tooling bar slide blocks. See FIG. 13A. When you turn the handwheel there should be no free play in the handwheel before the tooling bar slide block moves. If there is free play, tighten the set screw 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. The set screw for the right side tooling bar slide block is under the protractor decal plate.

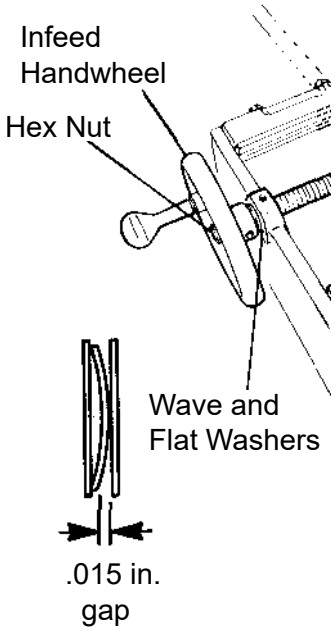


FIG. 13B

ADJUSTMENTS (CONTINUED)

TO ELIMINATE MOVEMENT IN THE DIAMOND DRESSER ADJUSTMENT COLLAR

The adjustment collar on the diamond dresser (See FIG. 14) 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 set screw and put more load on the nylon ball. If the adjustment collar is very difficult to turn, loosen the set screw and put less load on the nylon ball.

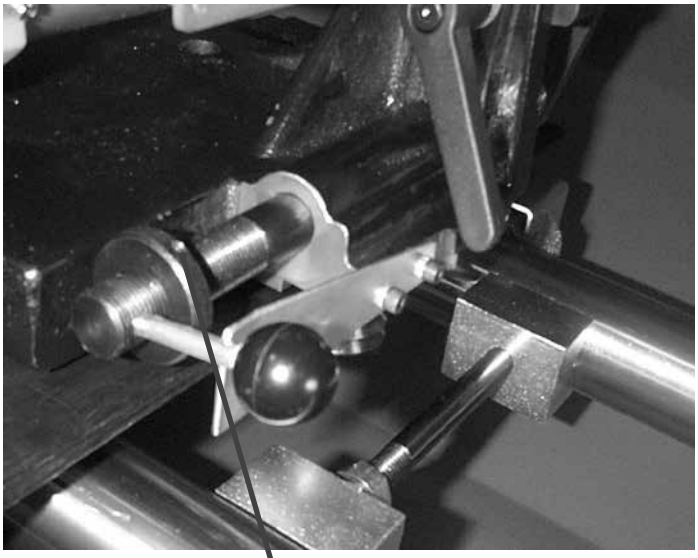


FIG. 14

TO SET THE ZERO DEGREE ON THE TOOLING ROTATION PROTRACTOR

To set the zero value on the tooling rotated pointer, put a magnetic based angle finder on the top machined surface of the tooling bar. Loosen the rotation lock lever and rotate the bar to the lower front face grinding position, rotate until the magnetic base angle finder reads zero and lock the lock lever. Loosen the set screw on the pointer and rotate the pointer to zero degrees on the protractor decal. See FIG. 15.

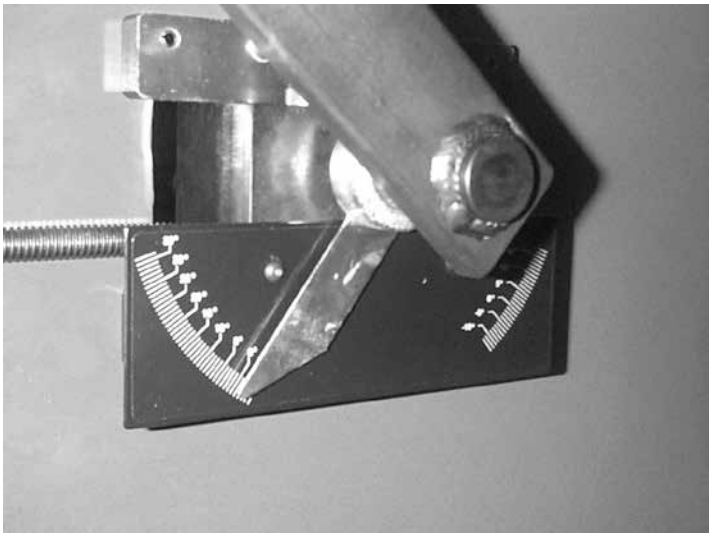


FIG. 15

ADJUSTING THE PRELOAD TENSIION 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 set screw in FIG. 16 until the spring is fully compressed solid, then back off 1/2 turn.

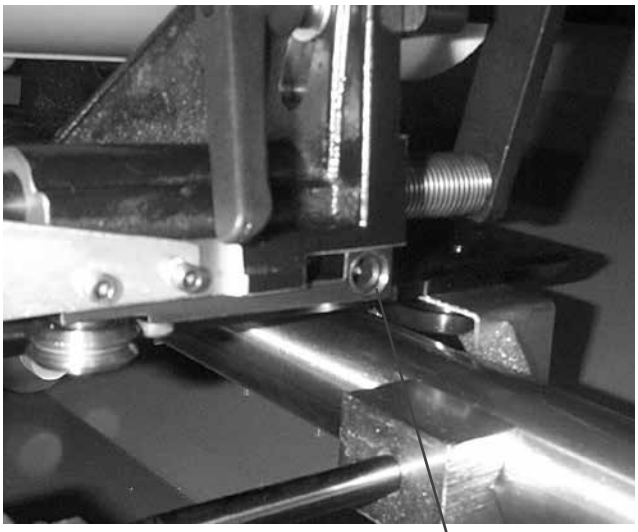


FIG.16

ADJUSTING THE TRAVERSE RAIL CENTER STRUT ADJUSTMENT

The grinder is equipped with a center strut to maintain rail spacing against the Large V-roller eccentric preload.

To correctly adjust the strut, with no carriage large V-roller eccentric preload and the carriage and grinding head to one side measure the dimension over rails at each end of the grinder. Average the two values and adjust the center strut to exactly the average value and tighten. See FIG. 17 Verify your ready after locking the strut assembly. (p. 16) Now reset the carriage large V-roller eccentric per instructions on Page 14.

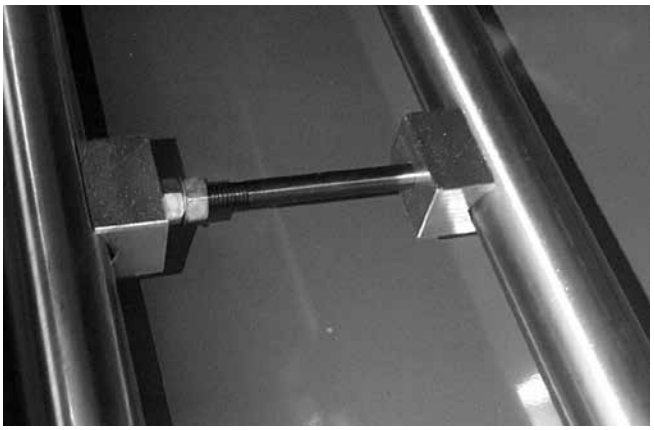


FIG. 17

TROUBLESHOOTING - ELECTRICAL MAIN POWER

--ELECTRICAL--

--PROBLEM--	--POSSIBLE CAUSE--	--REMEDY--	--REASON--
Grinding motor and coolant pump do not function (no apparent power to machine).	**A--**Main power source breaker is tripped, power source switch is off, or grinder is not plugged in.	Reset breaker, turn switch on and plug machine in.	
	B--System Start Switch (SSS) is not on.	Press System Start Switch.	
	C--Guard door is not closed	Close the guard door.	Because the guard door is interlocked to the grinding motor, the grinding motor will not operate if door is open.
	D--Grinding motor, start circuit or coolant pump circuit breaker has tripped	Reset circuit breaker on end of control panel. NOTE: If circuit breaker tripping persists, find the short in the appropriate circuit.	
	E--Voltage is not going through interlock relay.	With the guard door closed and the system start switch latched, check for 115 VAC at terminals 0 and 1 on both relays. If no, consult distributor. If yes, check for 115VAC at terminal. Relay 2 term.2 to wire Block Light Blue for grinding motor. Relay 2 term 6 to wire Block Light Blue for coolant pump. If no, consult distributor.	

TROUBLESHOOTING (Continued) - BEDKNIFE GRINDING

--PROBLEM--	--POSSIBLE CAUSE--	--REMEDY--	--REASON--
Top face of bedknife is ground in a convex shape (high in the center) or convex shape (high in the center)	**A--**Grinding wheel loading up with grinding grit.	Dress the wheel prescribed in the Operators Manual.	A loaded wheel creates undue pressure on the surface being ground. Both ends of bedknife move because of this pressure, allowing bedknife to rock on the middle support.
	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 on centers and middle support, which helps maintain grinding straightness.
	C--Small Grinding Head Slide V-Roller loose	Adjust V-Rollers per procedure on Page 18.	Looseness in roller causes erratic grind.
	D--Carriage Large V-Rollers loose.	Adjust V-Roller per procedure on Page14.	Looseness in roller causes erratic grind.
	E--Traverse Rail Center Strut out of adjustment.	Adjust center strut per procedures on Page18.	Strut holds the shafts parallel. If not adjusted correctly, grind will not be straight.

TROUBLESHOOTING (Continued) - BEDKNIFE GRINDING

--PROBLEM--	--POSSIBLE CAUSE--	--REMEDY--	--REASON--
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 V-Roller loose.	Adjust V-rollers per procedure on Page 18.	Looseness in rollers causes erratic grind.
	C--Carriage Large V-Rollers loose	Adjust V-Roller per procedure on Page 14.	Looseness in rollers causes erratic grind.
	D--Backlash in infeed handwheel.	Eliminate backlash in infeed handwheel, see Page 15.	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.

TROUBLESHOOTING (Continued) - BEDKNIFE GRINDING

--PROBLEM--	--POSSIBLE CAUSE--	--REMEDY--	--REASON--
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 grinding wheel, 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.
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 .033" [.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 run out while slowly rotating the wheel. Also check the motor without a wheel installed. Replace the wheel if out-of -round.	A grinding wheel which isn't properly trued up on outside or inside diameters can vibrate excessively and transfer that vibration to the motor.

PARTS LISTS
&
EXPLODED
VIEWS

6609523 CONTROL PANEL EXPLODED VIEW

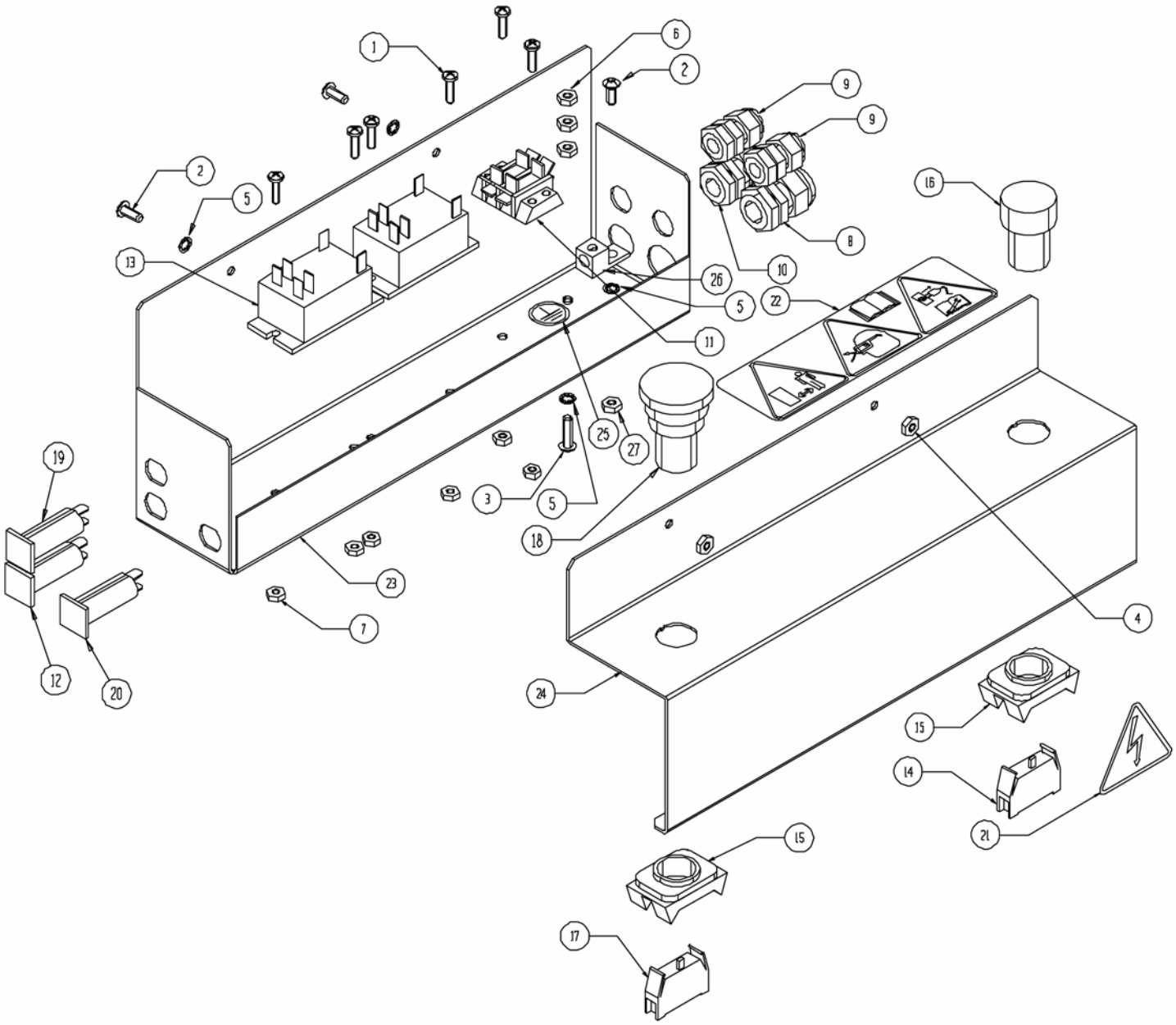
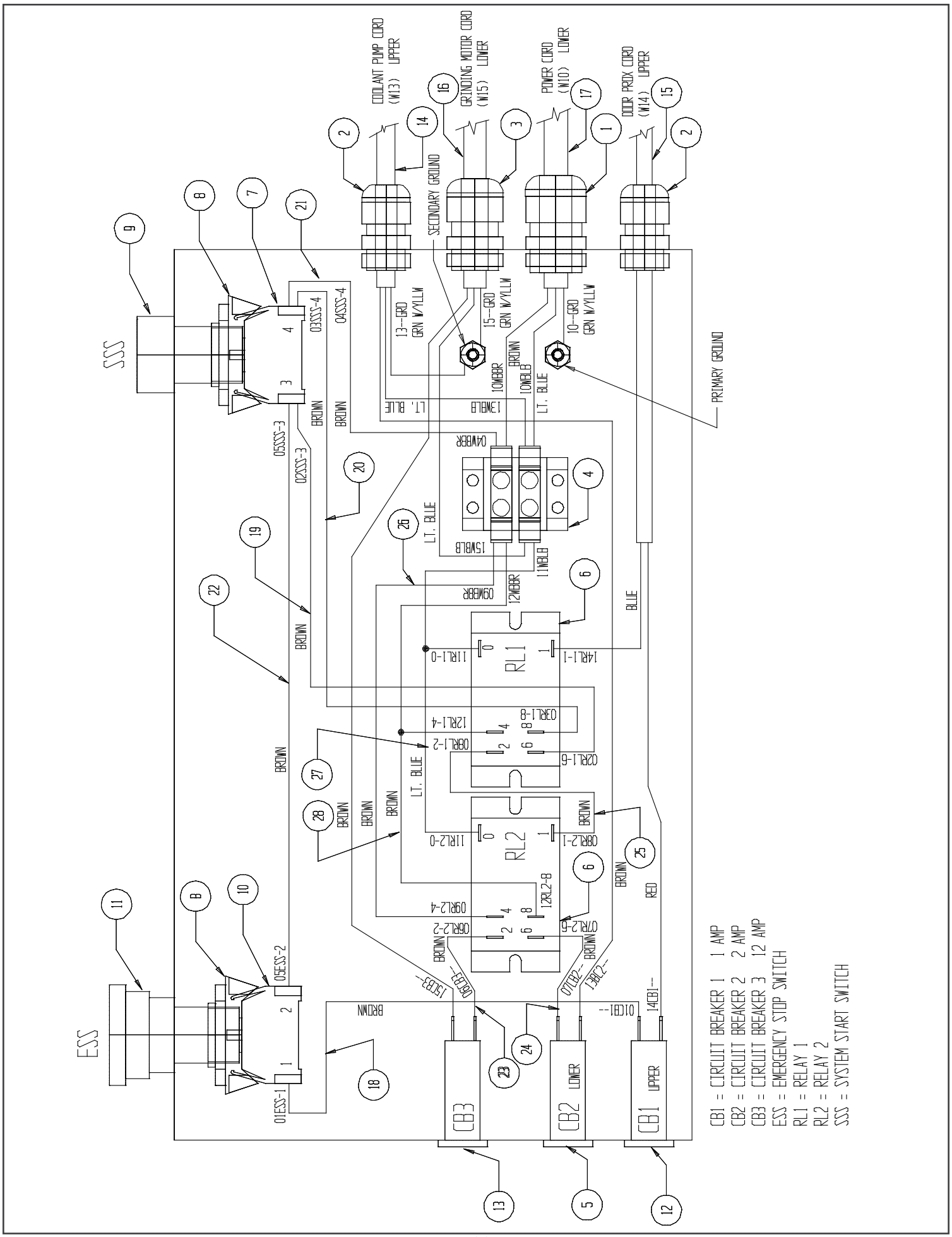


DIAGRAM NUMBER	PART NUMBER	PART DESCRIPTION
1	B161014	8-32 X 5/8 Pan Head Machine Screw
2	B190813	10 - 24 X 1/2 Button Head Socket Cap Screw
3	B191213	10 - 24 X 3/4 Button Head Socket Cap Screw
4	J197100	10 -24 Locknut Nylon Full
5	R000483	Washer-Lock #10 Int Teeth
6	R000553	Kep Nut 10 -24
7	R000558	Kep Nut 8-32
8	3707009	Strain Relief
9	3707029	Strain Relief
10	3707049	Strain Relief
11	3707439	Terminal Block .25 Spade
12	3707442	Circuit Breaker--2 Amp
13	3707447	Relay 120 Volt
14	3707506	Block--Contact
15	3707507	Latch
16	3707508	Pushbutton--Green Cap
17	3707521	Block--Contact N.C.
18	3707522	Pushbutton--Red Cap
19	3707542	Circuit Breaker--1 amp
20	3707543	Circuit Breaker--12 amp
21	3708448	Decal--Warning Electrical
22	3708650	Decal--Warning Safety
23	6609054	Base-- Control Box
24	6609055	Cover--Control Box
25	3707163	Ground Decal
26	3707164	Grounding Lug
27	J197000	10-24 Locknut - Jam

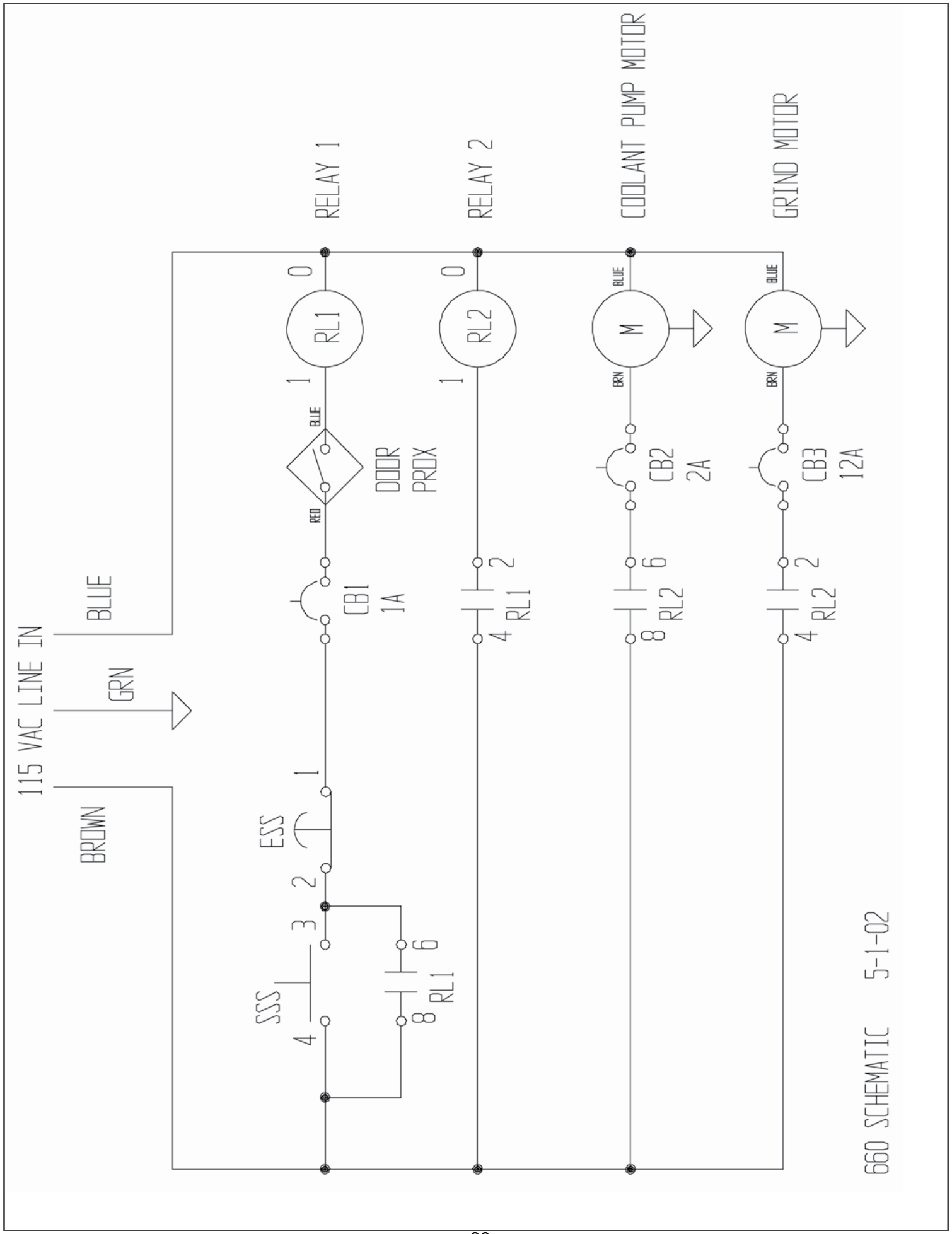
6609523 CONTROL PANEL WIRING EXPLODED VIEW



PARTS LIST: 6609523 CONTROL PANEL WIRING

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	3707009	Strain Relief Liquid Tray .24 - .47
2	3707029	Strain Relief Liquid Tray .16 - .31
3	3707049	Strain Relief Liquid Tray .20 - .39
4	3707439	Terminal Block .25 Spade
5	3707442	Circuit Breaker - 2 amp
6	3707447	Relay - DPST 120V Coil
7	3707506	Block - Contact N. O.
8	3707507	Latch - MTG
9	3707508	Pushbutton - Green Cap
10	3707521	Block - Contact N. C.
11	3707522	Pushbutton - Red Cap
12	3707542	Circuit Breaker 1 amp
13	3707543	Circuit Breaker -12 amp
14	6609056	Pump - Coolant 660 W13
15	6609057	Prox Assy - Door W14
16	6609064	Cord - GR Motor W15
17	6609068	Cord - Power W10
18	6609071	Wire Assy - W01 .25/FER
19	6609072	Wire Assy - W02 .25F/FER
20	6609073	Wire Assy - W03 .25F/FER
21	6609074	Wire Assy - W04 .25F/FER
22	6609075	Wire Assy - W05 FER/FER
23	6609076	Wire Assy - W06 .25F/.25F
24	6609077	Wire Assy - W07 .25F/.25F
25	6609078	Wire Assy - W08 .25F/.25F
26	6609079	Wire Assy - W09 .25F/.25F
27	6609081	Wire Assy - W11 2 Loop
28	6609082	Wire Assy - W12 2 Loop

6609523 CONTROL PANEL SCHEMATIC



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6609524 BEDKNIFE SUPPORT EXPLODED VIEW

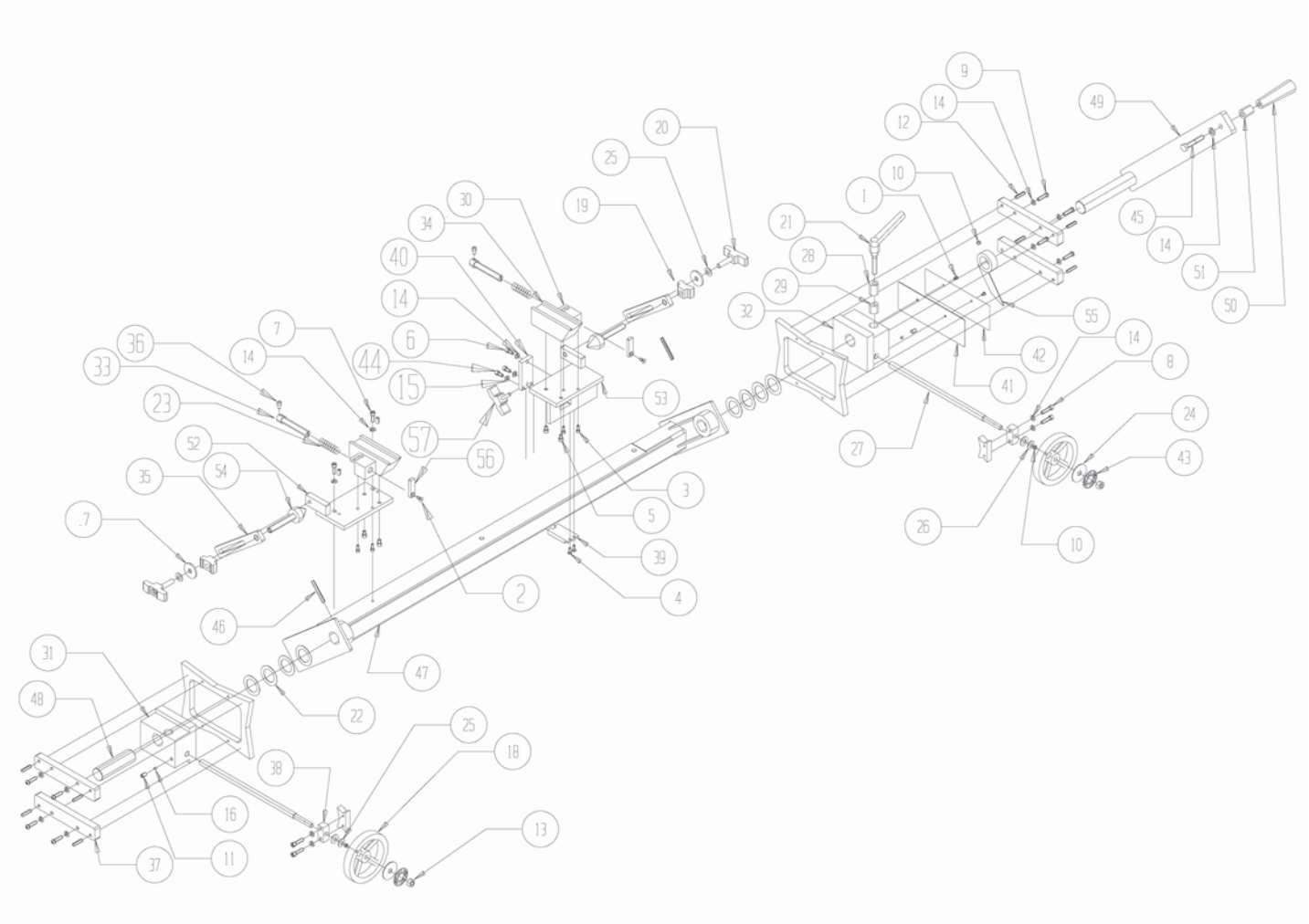

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B160407	8-32 x 1/4 Button Head Socket Cap Screw
2	B190805	10-24 x 1/2
3	B190811	10-24 x 1/2 Socket Head Cap Screw
4	B190813	10-24 x 1/2 Button Head Socket Cap Screw
5	**B250611**	**1/4 - 20 x 3/8 Socket Head Cap Screw**
6	H250802	Roll Pin .25 Dia. x .50 Long
7	B251211	1/4 - 20 x 3/4 Socket Head Cap Screw
8	B251611	1/4 - 20 x 1 Socket Head Cap Screw
9	B251616	1/4 -20 x 1 Button Head Socket Cap Screw
10	**C310420**	**5/16 - 18 x 1/4 Socket Set Screw**
11	C310820	5/16 - 18 x 1/2 Socket Set Screw
12	H251602	Pin - Roll .25 Dia. x 1.00 Long
13	J377000	3/8 - 16 Locknut Jam Nylon
14	K251501	1/4 Lockwasher Split
15	**3529069**	**Spacer .25 ID x .3750 D x .69 L**
16	3579109	Nylon Plug 3/16 Dia.
17	3589106	Washer - Flat .39 x 1.38 x .125
18	3708148	Handwheel 4.5 Dia. .38 Bore
19	80318	Knob - T 1.5 1/2 - 13F
20	**6009555**	**T-Knob Assy. 3/8 - 16**
21	3708597	Handle - Adj 3/8 - 16 x 1.97
22	3708652	Washer - Cncl
23	3708836	Spring Compressor .600 Od x 2.5 Long
24	3708665	Washer - Flat .41 x 1.63 x .047
25	**3709062**	**Washer - Cncl .382 x .75 x .035**
26	3709304	Washer - Thrust .375 x .812
27	6109013	Shaft - Adjusting Acme Left Hand
28	6309050	Lock Bar- Left Hand Adjuster
29	6309051	Lock Bar - Thread Left Hand Adjuster
30	**6609087**	**Gauge Base**
31	6609015	Block - Slide Left Hand
32	6609016	Block - Slide Right Hand
33	6609018	Shaft - Gauge
34	6609019	Magnet - Tooling 660
35	**6609021**	**Arm - Center Adjuster**
36	6609023	Screw - Gauge Lock
37	6609024	Guide - Slide Block
38	6609025	Block - Adj. Mount
39	6609093	Lock Support Bar
40	**6609092**	**Slide Lock Bar RH**
41	6609047	Plate - Index Decal
42	6609048	Decal - Protractor
43	6609069	Decal - Tooling Handwheel
44	6609501	Knob Assy - T
45	**B254001**	**1/4 - 20 x 2 - 1/2 Hex Head Cap Screw**
46	H253202	Pin - Roll .25Dia x 2.0 Long
47	6609010	Tooling Bar - Machined
48	6609017	Pin - Tooling Bar Left Hand
49	6609503	Rotate Arm Weldement - Tooling
50	**3709374**	**Handle**
51	3969065	Spacer
52	6609535	Mount Weldment - Left Hand
53	6609536	Mount Weldment - Right Hand
54	6609538	Center Assy
55	**6609544**	**Index Brkt Weldement**
56	6709021	Tip Gauge

6609525 COOLANT PUMP ASSEMBLY EXPLODED VIEW

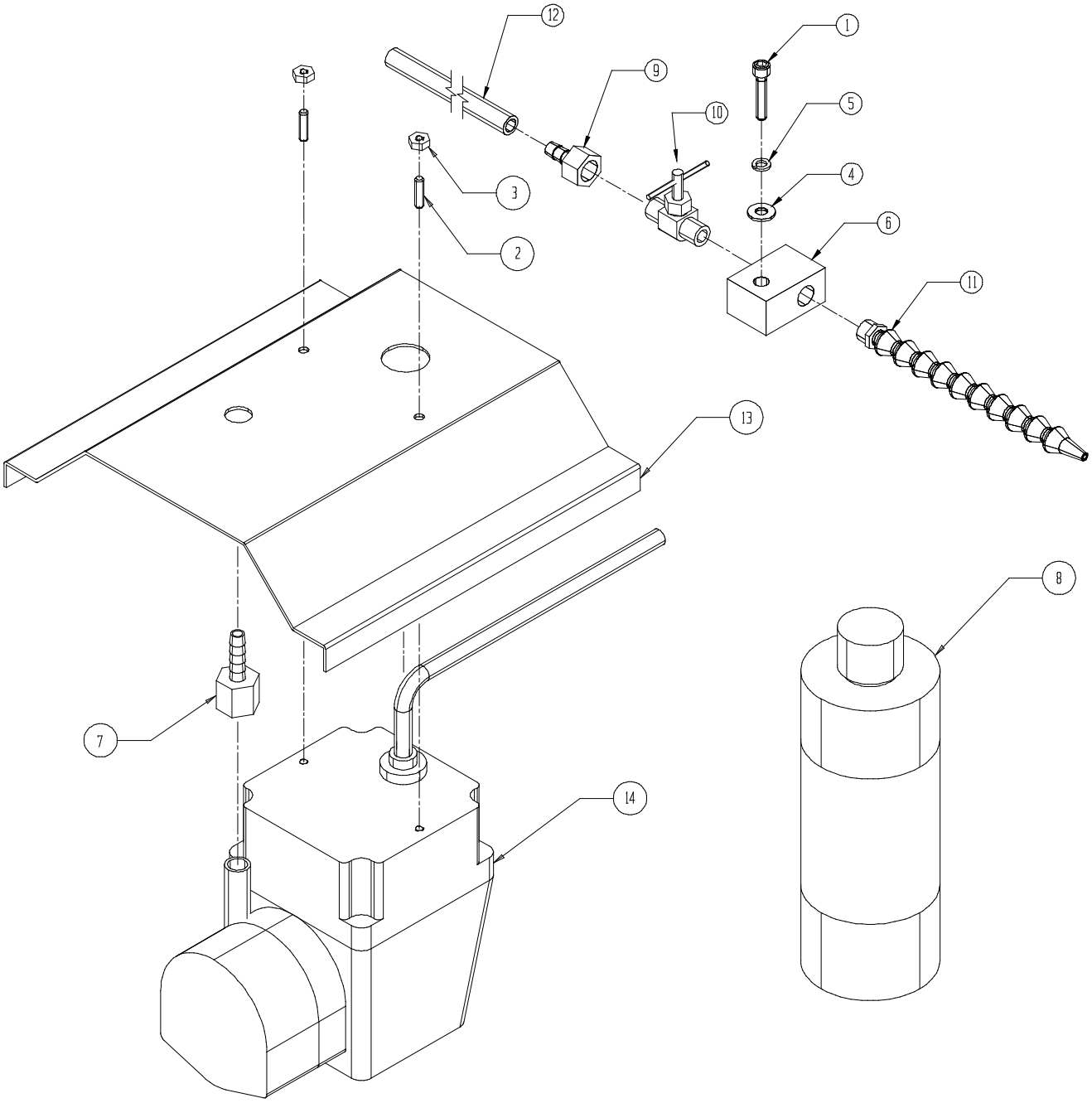

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B192011	10--24 X 1-1/4 Socket Head Cap Screw
2	C161020	8-32 x 5/8 Socket Set Screw
3	J167000	8-32 Locknut Jam Nylon
4	K190001	#10 Flat Washer
5	K191501	#10 Lockwasher Split
6	3679116	Connector--Shut off Valve
7	3708339	Connector--Barbed Insert
8	3708620	Coolant--Flood & Mist Pint
9	3709593	Connector--Barbed Female
10	3709595	Valve--Shut Off Needle
11	3709642	Coolant Line Assy
12	6609044	Tube--Coolant 1/4 ID x 88"
13	6609046	Cover--Coolant Pump
14	6609056	Pump--Coolant 660 W13

6609526 LEG ASSEMBLY EXPLODED VIEW

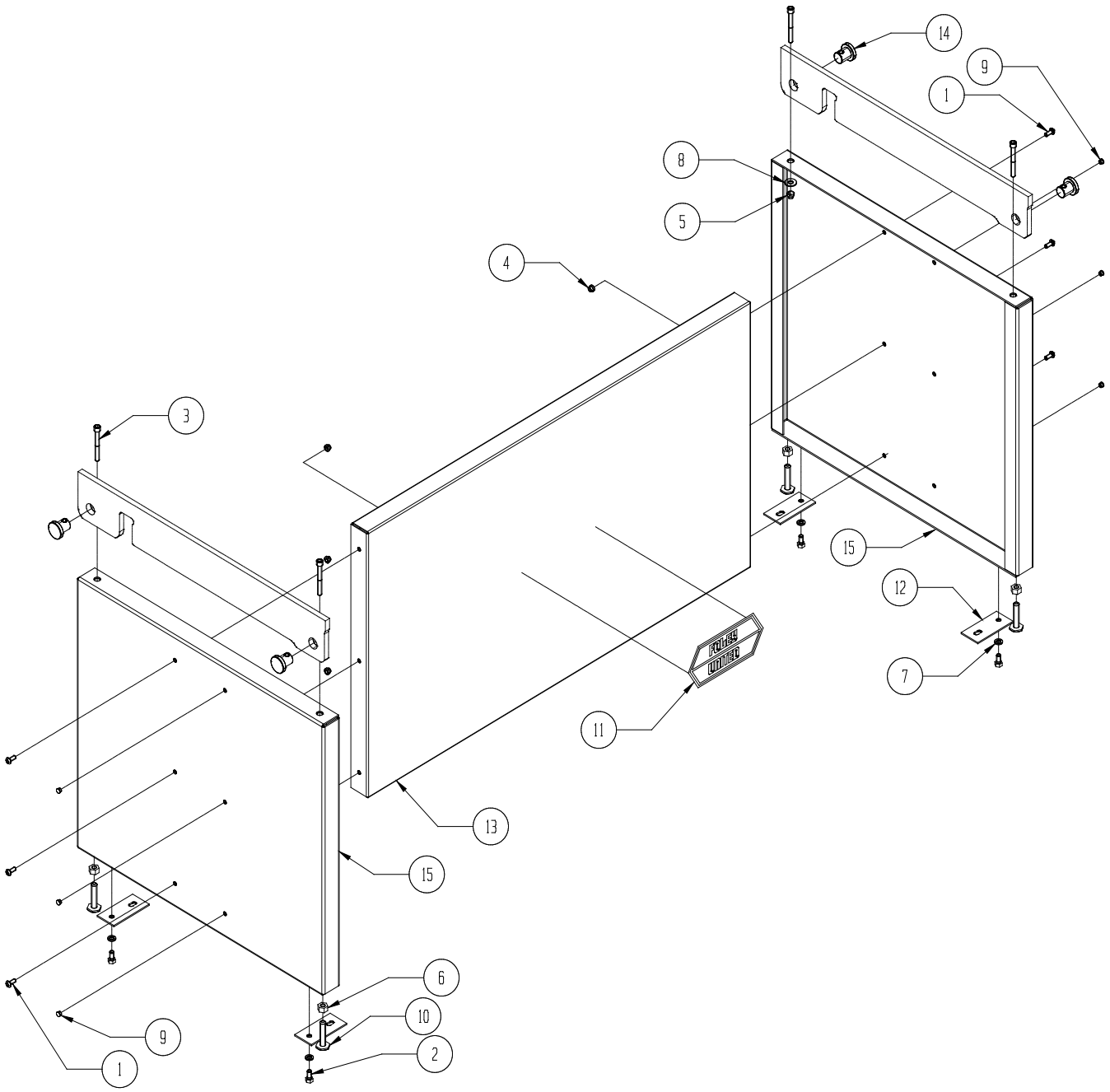

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B311213	5/16 - 18 x .75 Button Head Socket Cap Screw
2	B371201	3/8 - 16 x 3/4 Hex Head Cap Screw
3	B374811	3/8 - 16 x 3 Socket Head Cap Screw
4	J317100	5/16 - 18 Locknut Nylon Full
5	J377100	3/18 - 16 Locknut Hex Nylok
6	J501000	1/2 -13 Hexnut
7	K371501	3/8 Lockwasher Split
8	R000454	Washer - Flat
9	3708666	Plug - Hole .3/4 Dia.
10	3709563	Leveling - Bolt Adjustable
11	3709990	Decal - Foley United Large
12	3889068	Strap - Anchor
13	6609062	Panel - Leg Center
14	6609063	Pin - Base
15	6609560	Leg Weldment - 660

6609528 MAIN BASE ASSEMBLY EXPLODED VIEW

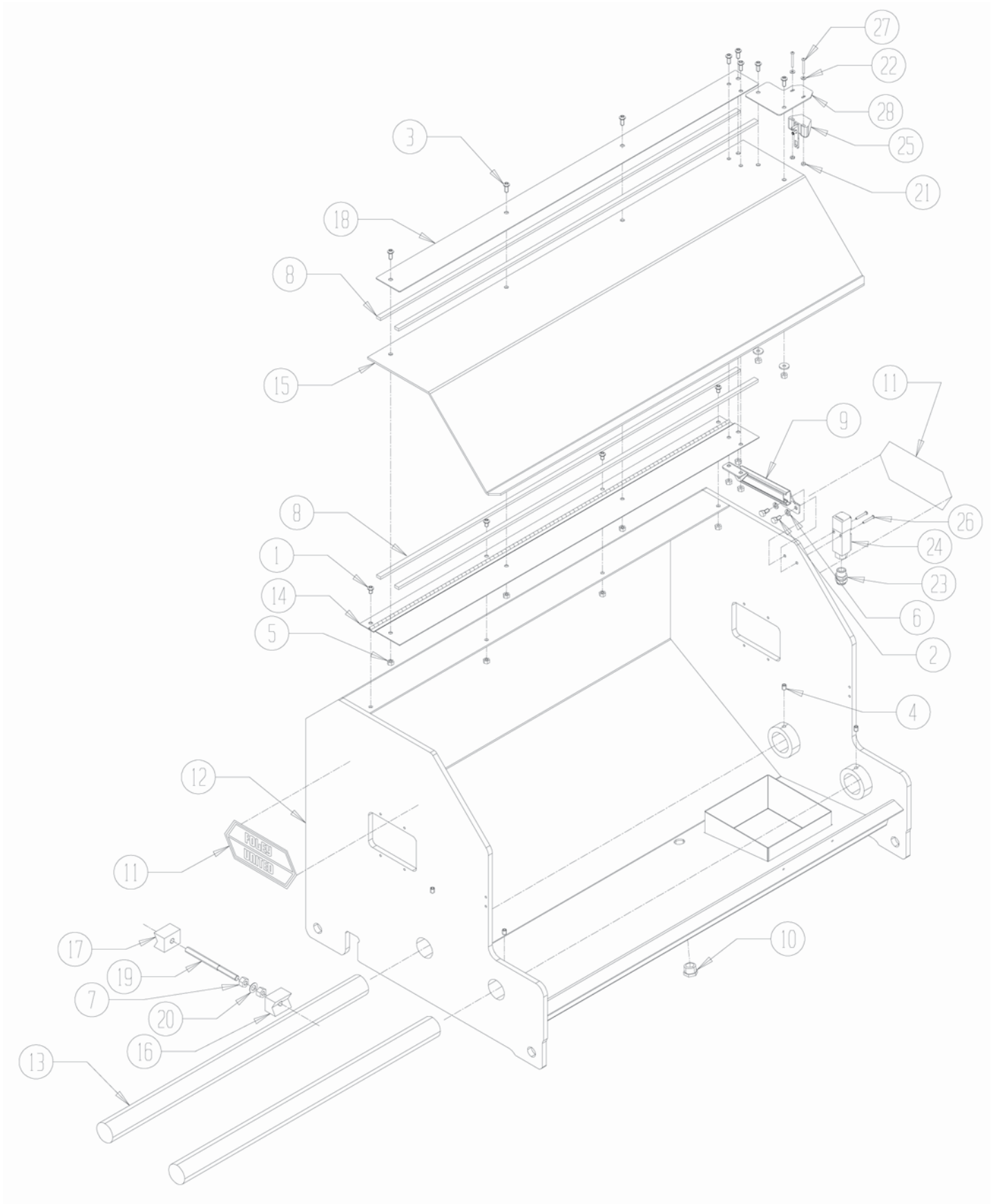

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B310813	5/16 - 18 X 1/2 Button Head Socket Cap Screw
2	B311001	5/15 - 18 x 5/8 Hex Head Cap Screw
3	B311213	5/16 - 18 x .75 Button Head Socket Cap Screw
4	C370820	3/8 - 16 x 1/2 Socket Set Screw Cup Point
5	J317000	5/16 - 18 Locknut Nylon Jam
6	K311501	5/16 Lockwasher Split
7	J501000	1/2 - 13 Hexnut
8	3708378	Strip - Foam
9	6609089	Door Strut - Modified
	6609088	Bracket - Door Strut
	B250816	1/4 - 20 X 1/2 Button Head Socket Cap Screw
	J257000	1/4 - 20 Locknut Thin
10	3708664	Pipe Plug 3/4 NPT
11	3709990	Decal - Foley United Large
12	6609000	Base - Main Machined
13	6609031	Shaft - Carriage Traverse
14	6609032	Hinge - Door
15	6609033	Door - Tank Cover
16	6609040	Block - Brace Front
17	6609041	Block - Brace Rear
18	6609042	Plate - Door Hinge
19	6609043	Shaft - Brace
20	3709019	Washer - Thrust
21	J167000	8-32 Locknut Thin
22	K160001	#8 Flat Washer
23	3707563	Strain Relief
24	3707728	Safety Switch
25	3707763	Door Safety Switch Key
26	3708818	8-32 x 1.25 Button Head Safety Screw
27	3708865	8-32 x 1.5 Button Head Safety Screw
28	6609090	Door Switch Mount Plate

6609529 GRINDING HEAD ASSEMBLY EXPLODED VIEW

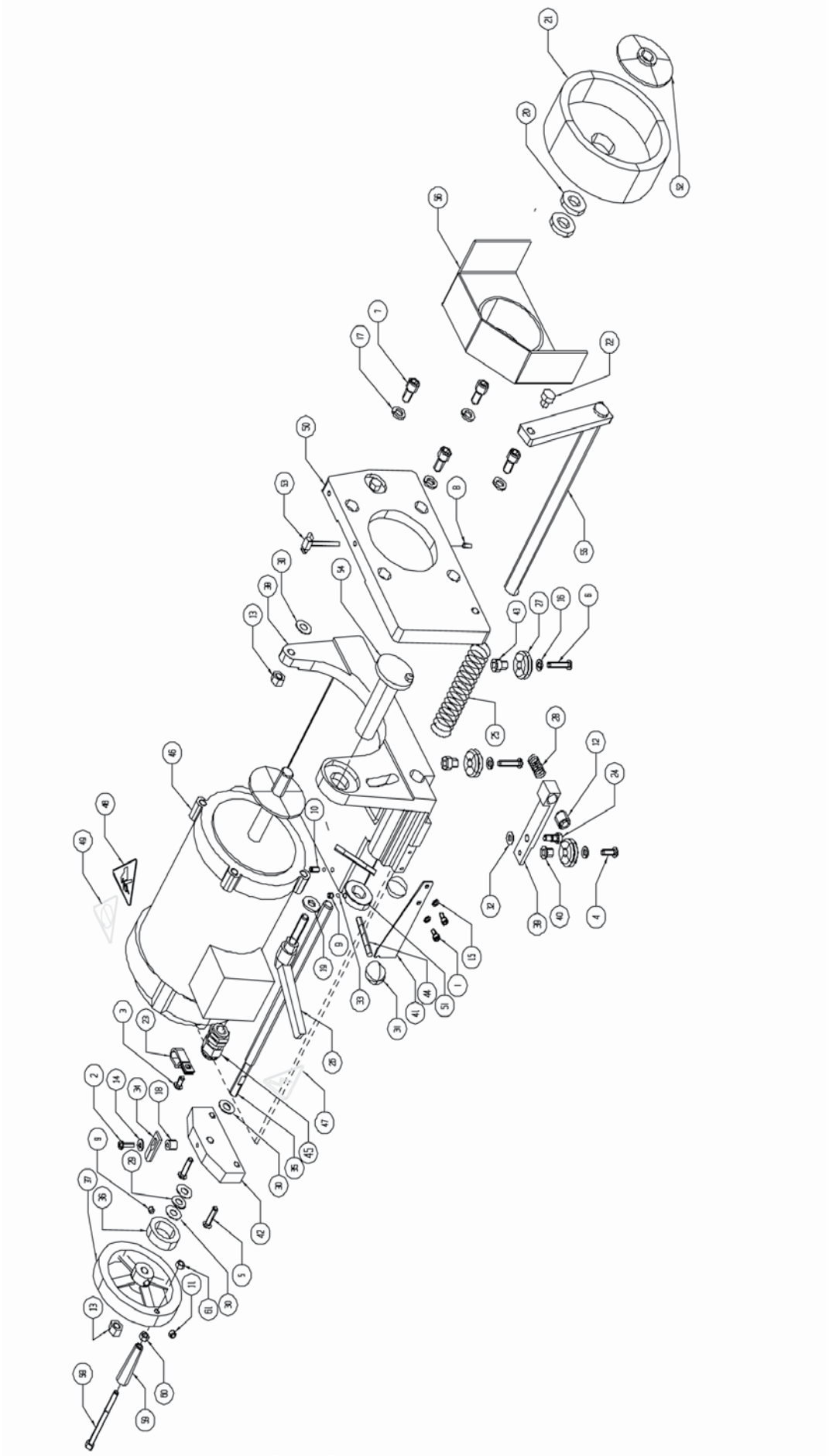

DIAGRAM NUMBER	PART NUMBER	PART DESCRIPTION
1	B190611	10 - 24 x 3/8 Socket Head Cap Screw
2	B191213	10 - 24 x 3/4 Button Head Socket Cap Screw
3	B250816	1/4 -20 x 1/2 Button Head Socket Cap Screw
4	B251216	1/4 - 20 x 3/4 Button Head Socket Cap Screw
5	**B251616**	**1/4 - 20 x 1 Button Head Socket Cap Screw**
6	B252016	1/4 - 20 x 1 - 1/4 Button Head Socket Cap Screw
7	B371211	3/8 - 16 x 3/4 Socket Head Cap Screw
8	C190820	10 - 24 x 1/2 Socket Set Screw
9	C250420	1/4 - 20 x 1/4 Socket Set Screw
10	**C250820**	**1/4 - 20 x 1/2 Socket Set Screw**
11	C310420	5/16 - 18 x 1/4 Socket Set Screw
12	C621060	5/8 - 18 x 5/8 Socket Set Screw
13	J377000	3/8 - 16 Locknut Jam Nylon
14	K190001	No. 10 Flat Washer
15	**K191501**	**No. 10 Lockwasher Split**
16	K251501	1/4 Lockwasher Split
17	K371501	3/8 Lockwasher Split
18	3589081	Spacer
19	K310101	5/16 Flat Cut Washer
20	**3700409**	**Bushing - Reducer**
21	3700411	Grinding Wheel Straight Cup 6" dia x 2" deep
22	3702086	Diamond Dresser
23	3708121	Clamp - Double Tube
24	3708543	Shoulder Bolt
25	**3708553**	**Spring Compression**
26	3708561	Adjustable Handle
27	3708657	Roller Dual Vee
28	3708658	Spring Compression
29	3709062	Washer Conical
30	**3709304**	**Washer - Thrust**
31	3709526	Knob
32	3708103	Washer Conical
33	3709705	Nylon Ball
34	3809047	Indicator Clear
35	**6009023**	**Shaft Adjusting**
36	6059082	Ring Calibrated
37	6009044	Handwheel
38	6609004	Base Carriage Slide
39	6609027	Arm - Roller Pivot
40	**6609028**	**Bushing-V Roller Short**
41	6609029	Bracket - Dresser Lock
42	6609030	Guide - Feed Screw
43	6609058	Bushing-V Roller Long
44	6609059	Stud
45	**3707009**	**Strain Relief**
46	6609502	Motor Assy 3/4 HP
47	3708448	Decal Warning Electrical
48	3708458	Decal Warning Sharp
49	3708461	Decal Warning 3600 RPM
50	**6609505**	**Motor Pivot Assy**
51	6709038	Collar - Adjuster
52	6709103	Flange - Outer
53	6709501	Tee Knob Assy
54	6709503	Eccentric Pin Assy
55	**6709509**	**Dresser Arm Weldment**
56	6709552	Grinding Wheel Guard Weldment
58	B255011	Socket Head Cap Screw 1/4 - 20 x 3 - 1/8 Long
59	3709370	Handle
60	**J252000**	**Hex Jam Nut 1/4 - 20**
61	J257000	1/4 - 20 Nylok Lock Nut

6609530 CARRIAGE ASSEMBLY EXPLODED VIEW

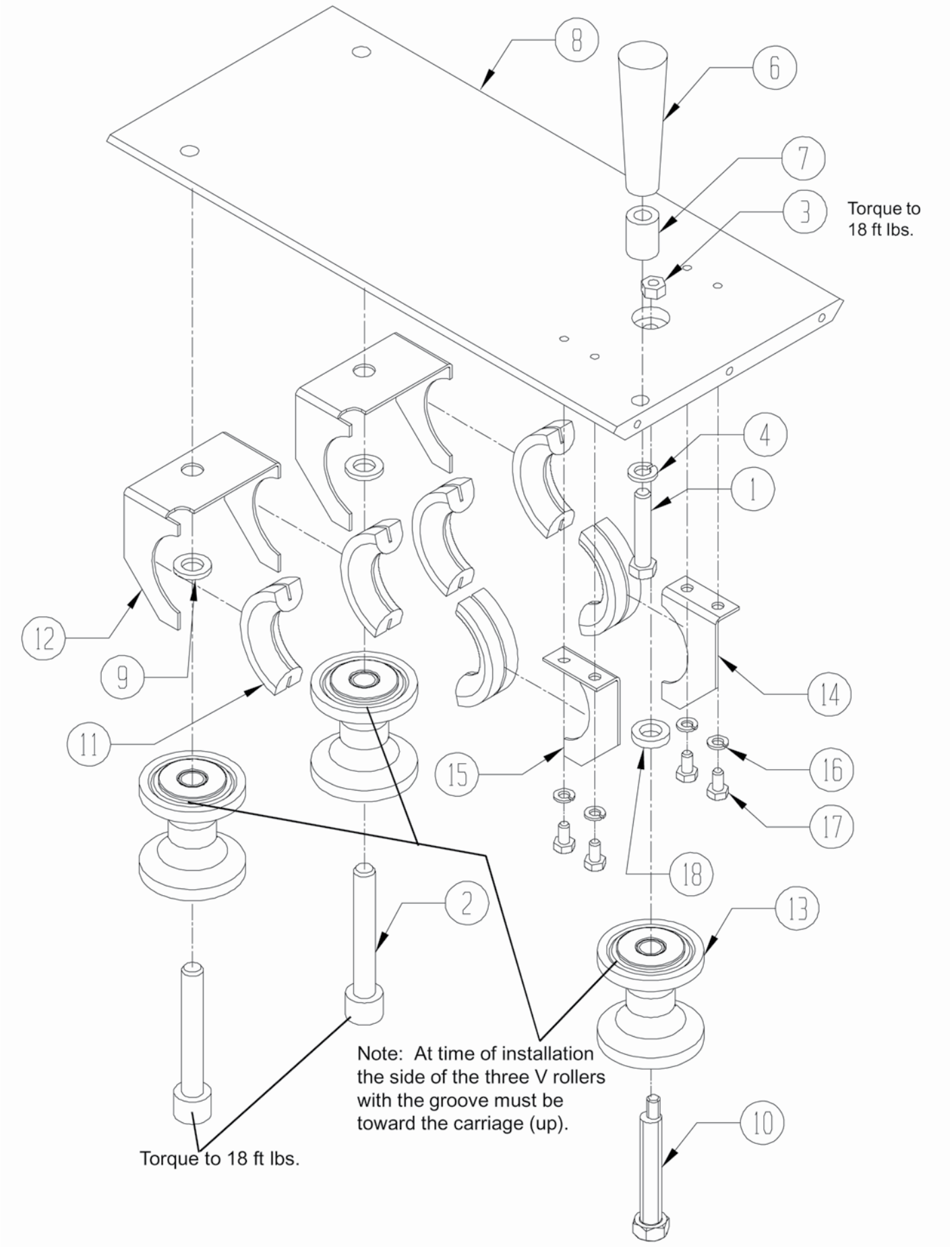

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B373201	3/8 - 16 x 2 Hex Head Cap Screw
2	B505611	1/2 - 13 x 3 - 1/2 SocketHead Cap Screw
3	J317000	5/16 -18 Locknut Nylon Jam
4	K371501	3/8 Lockwasher Split
6	3709374	Handle
7	3969065	Spacer
8	6609006	Carriage
9	6609034	Spacer - Carriage Roller
10	6609049	Bolt - Eccentric
11	6609053	Wiper - Shaft
12	6609083	Bracket - Wiper
13	6609537	Roller Assy - Carriage
14	6609086	Rear Roller Wiper Bracket - RH
15	6609084	Rear Roller Wiper Bracket - LH
16	K251501	1/4 Lockwasher
17	B250801	1/4 - 20 x 1/2 Hex Head Cap Screw
18	6609085	Rear Roller Spacer