

# ***ACCU-Master/ ACCU-Pro*** **AUTOMATIC** **REEL MOWER GRINDER** **with *ACCU-Touch***

## **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.

# 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 correctly followed, could result in personal injury.

The **Caution Symbol** identifies special instructions or procedures which, if not strictly observed, 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 cutting unit is securely fastened with the clamps provided before operating.
12. **DON'T OVERREACH.** Keep proper footing and balance at all times.
13. **MAINTAIN GRINDER WITH CARE.** Follow instructions in Service Manual for lubrication and preventive maintenance.
14. **DISCONNECT POWER BEFORE SERVICING,** or when changing the grinding wheel.
15. **DO NOT USE SHARP OBJECTS ON THE TOUCH SCREEN.** Do not clean the touch screen with solvents.
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.

### 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.



**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.

This machine is intended for grinding the reel of reel type mower 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 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. Machine is for indoor use only. Do not use a power washer to clean the machine.



### Low Voltage Relay

The grinder is equipped with a low voltage relay which is factory preset at 100 VAC. If the power supply line does not deliver 100 VAC power under load, the relay will open and trip out the starter. If this occurs, your power supply line is inadequate and must be correct before proceeding further with the grinder.

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-Separate Drawings Included in the Product Packet

# SERVICE DATA

## 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-Pro* or *ACCU-Master* Grinder. 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 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 the 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 Going Into a Nut or Steel




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

### Machine Screws

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 (0.37 kg-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

Remove the sides, front, and back of the crate. Remove the plastic bag, shrink wrap and bubble wrap around control panel. Remove the metal clips that secure the grinder to the wood base. With a fork lift, raise the grinder from the wood base and set it in its final position. See FIG. 1 and 2.



**THE UNIT WEIGHS  
1500 - 2000 LBS. [680-907 kg]  
TO LIFT, USE POWER  
EQUIPMENT.**

Remove shipping straps from traverse carriage.  
Remove window protective sheets.

## [652 ACCU-Master (Boom Model)]

The winch boom is held in place during shipping with a steel brace. Remove and discard this brace. Remove the shrink wrap and cable tie that holds the winch trolley to the beam.

## [Lift Models]

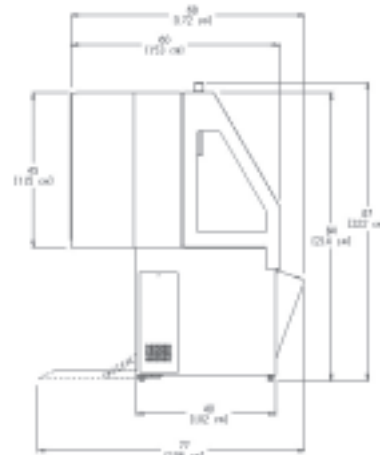
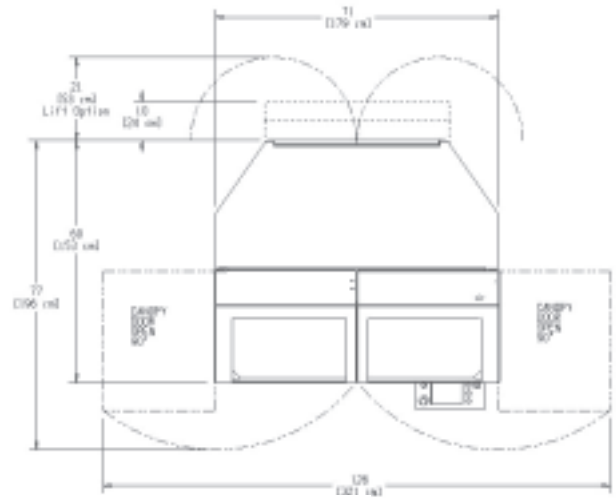
Remove and discard the bolt used to hold the ramp up for shipping before using rear lift.

## POSITION BASE

The base should be placed on a relatively level concrete floor, with ample ceiling height to allow for the installation of the unit. Do not place the unit across two concrete slab seams or across a large crack.

The 632 ACCU-Pro Spin/Relief Grinder will require an operating area of about 150" W x 108" D x 87" H (381 x 274 x 221 cm). The mower reel will be lifted from the front of the machine if using the boom and the rear if a lift is installed. The machine operator will operate the unit from the front of the machine. Position the base to allow sufficient operating room in front of the machine (and behind if using the rear lift). See FIG. 2.

The 652 ACCU-Master will require an operating area of about 150" W x 108" D x 87" H [381 x 274 x 221 cm]. The reel mower assembly will be lifted from the front of the machine if using the boom and the rear if a lift is installed. The machine operator will operate the unit from this same position. Position the base to allow sufficient operating room in front of the machine. See FIG. 1.



**652**

FIG. 1

**632**

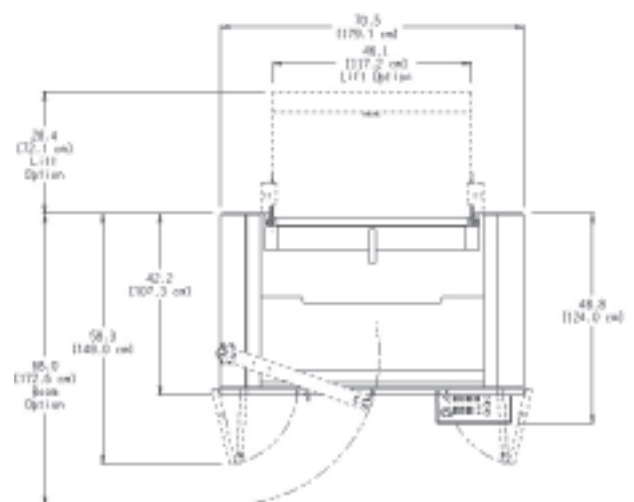
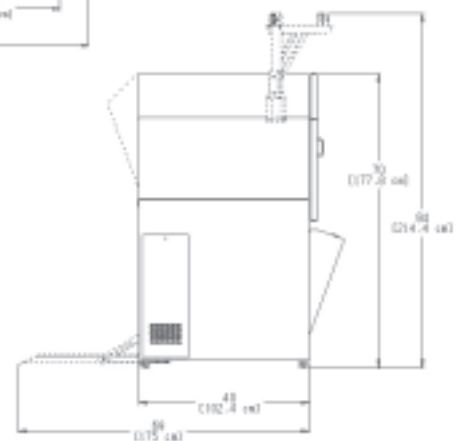
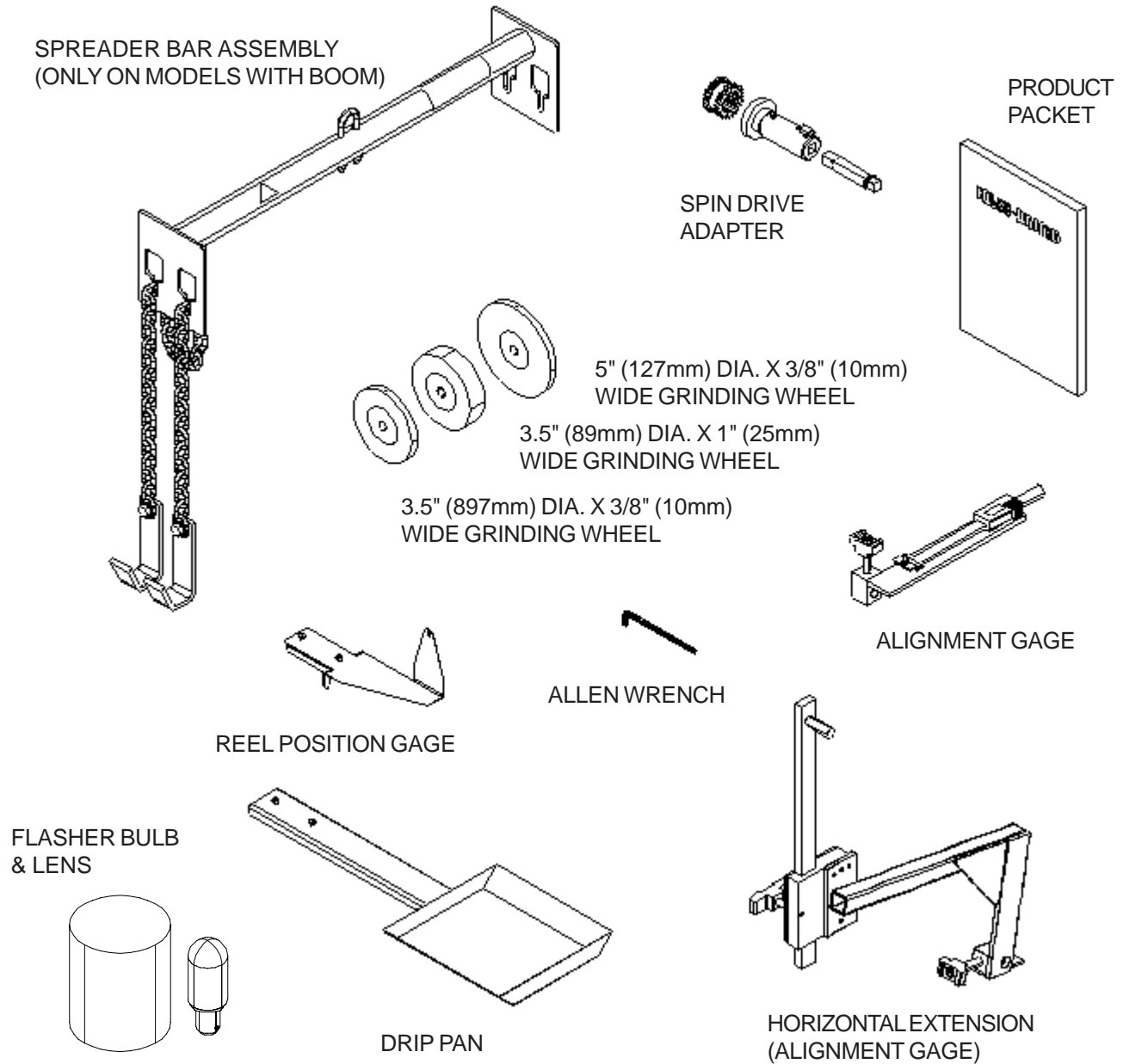


FIG. 2

## ASSEMBLY INSTRUCTIONS (Continued)

Remove the carton and remove the contents from the carton onto a workbench. The carton includes:





# ASSEMBLY INSTRUCTIONS (Continued)

## LEVEL BASE

Place a level on the top of the table and check the unit from side to side for level. Adjust the leveling feet as necessary to bring to level. See FIG. 4.

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

When both front to back and side to side leveling procedures have been completed, thread the hex jam nuts up against the nut that is welded to the bottom until they lock into place. Be careful not to move the leveling feet during this process. See FIG. 3. Make certain that all four leveling feet are firmly contacting the floor.

Recheck with level after locking nuts are firmly tightened.

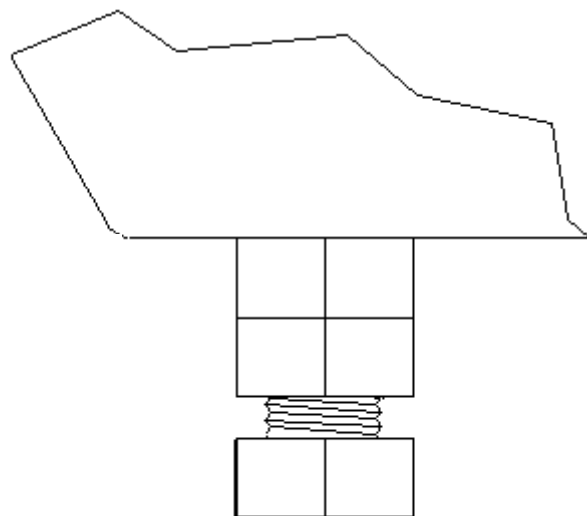


FIG. 3

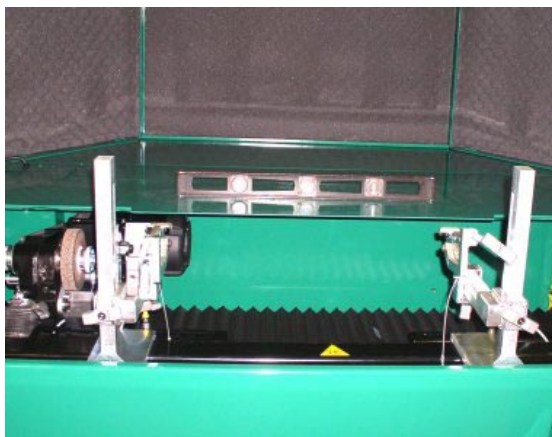


FIG. 4



FIG. 5

## INSTALL THE FLASHER LIGHT

Locate flasher bulb and lense in carton. Install bulb and lense to the flasher assembly socket. This is located on top of the front right frame member on the 632 ACCU-Pro and on the top of the right canopy door for the 652 ACCU-Master. See Fig. 6.

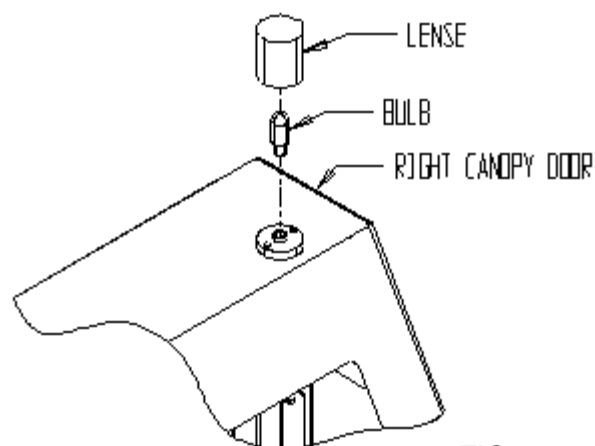


FIG. 6



## ASSEMBLY INSTRUCTIONS (Continued)

### APPLY POWER



**BEFORE YOU APPLY POWER TO THE GRINDER, REFER TO THE "IMPORTANT GROUNDING INSTRUCTIONS" ON PAGE 10.**

**115 Volt Model Only.** Plug the power cord into a standard 115V AC 20-amp grounded receptacle. See FIG. 7.

**220 Volt Model Only.** For 220 Volt Applications order Part No. 6320935, 6320945, 6520915, or 6520925, which includes a prewired 3 KVA 220 V step down to 110 V 50-60 Hz transformer should be ordered.

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

**IT IS REQUIRED THAT THE POWER DELIVERED TO THIS GRINDER IS 115 VAC - 20 AMPS. THE TOLERANCE ON THIS POWER REQUIREMENT IS +/- 5%. THEREFORE THE MINIMUM VOLTAGE REQUIREMENT IS 109VAC WITH 20 AMPS. VOLTAGE MUST BE CHECKED WITH ALL EQUIPMENT UNDER LOAD (OPERATING) ON THE CIRCUIT.**

**DO NOT OPERATE THIS GRINDER WITH AN EXTENSION CORD.**

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



FIG. 7

The grinder is equipped with a low voltage relay which is factory preset at 100 VAC. If the power supply line does not deliver 100 VAC power under load, the relay will open and trip out the starter. If this occurs, your power supply line is inadequate and must be corrected before proceeding further with the grinder.



### FOR 20 AMP RATED LARGE MACHINES

Below is a list of required wire size in **your** building. (This is the wiring from the main panel to the grinder receptacle box.)

For 0 to 40 Feet from panel to receptacle = Use 12 Ga. Wire.

For 40 to 60 Feet from panel to receptacle = Use 10 Ga. Wire.

For 60 to 100 Feet from panel to receptacle = Use 8 Ga. Wire.

For 100 to 160 Feet from panel to receptacle = Use 6 Ga. Wire.

For 0 to 12 Meters from panel to receptacle = Use 4.0mm Wire.

For 12 to 18 Meters from panel to receptacle = Use 6.0mm Wire.

For 18 to 30 Meters from panel to receptacle = Use 10.0mm Wire.

For 30 to 48 Meters from panel to receptacle = Use 16.0mm Wire.

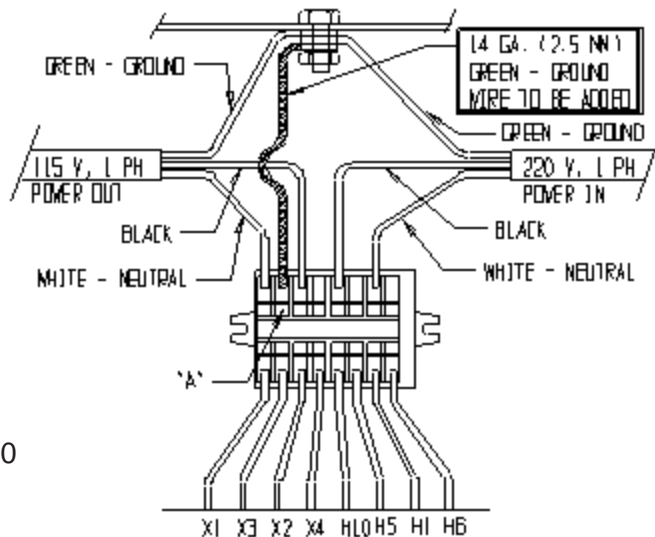
## ASSEMBLY INSTRUCTIONS (Continued)

For 220 V 50 or 60Hz applications Product No. 6320935, 6320945, 6520915 or 6520925 should be ordered.

These products includes a 3 KVA 220 Volt Step Down to 110 volt 50/60 Hz transformer which is prewired.

The wiring diagram is shown in FIG. 8.

The power cord has no connector. A connector which is appropriate for your locality and 220 volt, 10 amp application should be installed.



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

INSTALL THE GREEN 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 WIRE SUPPLIED TO THE GROUND STUD ON THE TRANSFORMER.

FIG. 8

**USE ONLY A QUALIFIED ELECTRICIAN TO COMPLETE THE INSTALLATION.**

### IMPORTANT GROUNDING INSTRUCTIONS

In case of a malfunction or electrical 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.

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.**

# PERIODIC 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 tank and filter of the vacuum system weekly or more often depending on the number of reels ground. **(VACUUM SYSTEM IS OPTIONAL EQUIPMENT ALL 632 ACCU-PRO MODELS).**
2. Use the grease fitting provided to grease the dove tail with high quality lithium grease monthly. Wipe off excess grease. See FIG. 9.
3. Wipe and re-oil with spray lubricant, the grinding wheel diameter adjusting lead screw every three months. Wipe off all excess lubricant. See FIG. 9.
4. Check the gib adjustment on the Grinding wheel diameter adjustment every 3 months. See FIG. 9.
5. Inspect the Grinding wheel Poly-V belt for cracking and adjust the belt tension per procedure called out in the adjustment section every six months.
6. Wipe and relube with never-seez, the vertical and horizontal alignment shafts and lead screws, every six months. See FIG. 10.
7. Lift the bellows and wipe off the bearing rails monthly. Lubricate linear bearing, follow the lubrication procedure on the following pages. Generally, this will be every six months to a year.

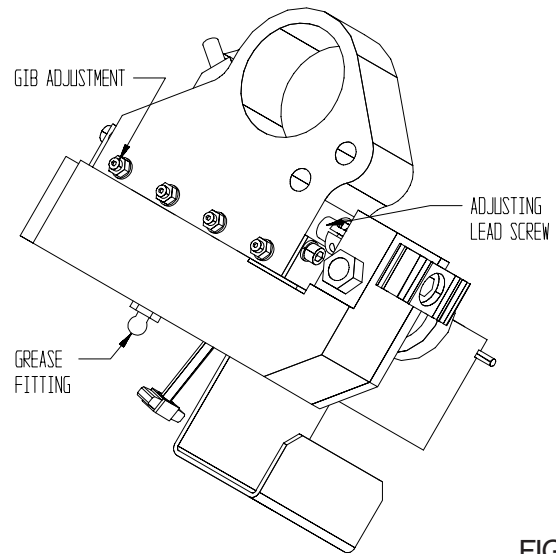


FIG. 9

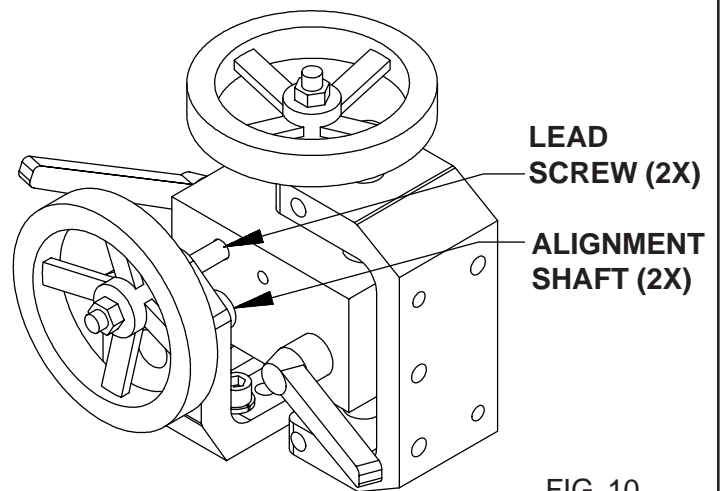


FIG. 10

# STORAGE PROCEDURE

It is important to follow the procedures below when placing your grinding in storage for an extended period of time. Proper care will help maintain the working functions of the grinder and decrease maintenance and problems that occur when storing the grinder.

## BEFORE STORING THE GRINDER:

-Clean the machine thoroughly. **(DO NOT USE COMPRESSED AIR OR A POWER WASHER TO CLEAN THIS MACHINE!)** See Maintenance section for instructions on cleaning polycarbonate.

-Lubricate the following parts by flooding the area with a spray lubricant and leaving it in place: (Do not use a Teflon based lubricant)

    Traverse Shafts & Linear bearings (see Lubrication section of manual)  
    Remove grinding wheel and spray the movable parts of the finger system  
    Cross slide shafts and adjustment screws (Right side of Traverse Base)  
    Scratches in the paint or any other bare metal surfaces

-Work the lubricant in by moving parts through their full range of motion.

-Make sure all controls are in the off position and unplug the unit from the wall. Turn off the digital alignment gage.

-Cover the unit if possible with a sheet or tarp.

## BRINGING THE UNIT BACK INTO SERVICE:

-Remove the cover and reapply lubricant to the items stated above. Wipe off all excess lubricant. (See Lubrication section for more details.)

-Plug the unit into the wall and test all electrical functions.

-Check the belts for cracking and adjust the tension if necessary.

-Check for damaged or missing parts.

# LUBRICATION

## 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. See FIG. 11 Then run the carriage back and forth through its 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 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 and that lubricant 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.

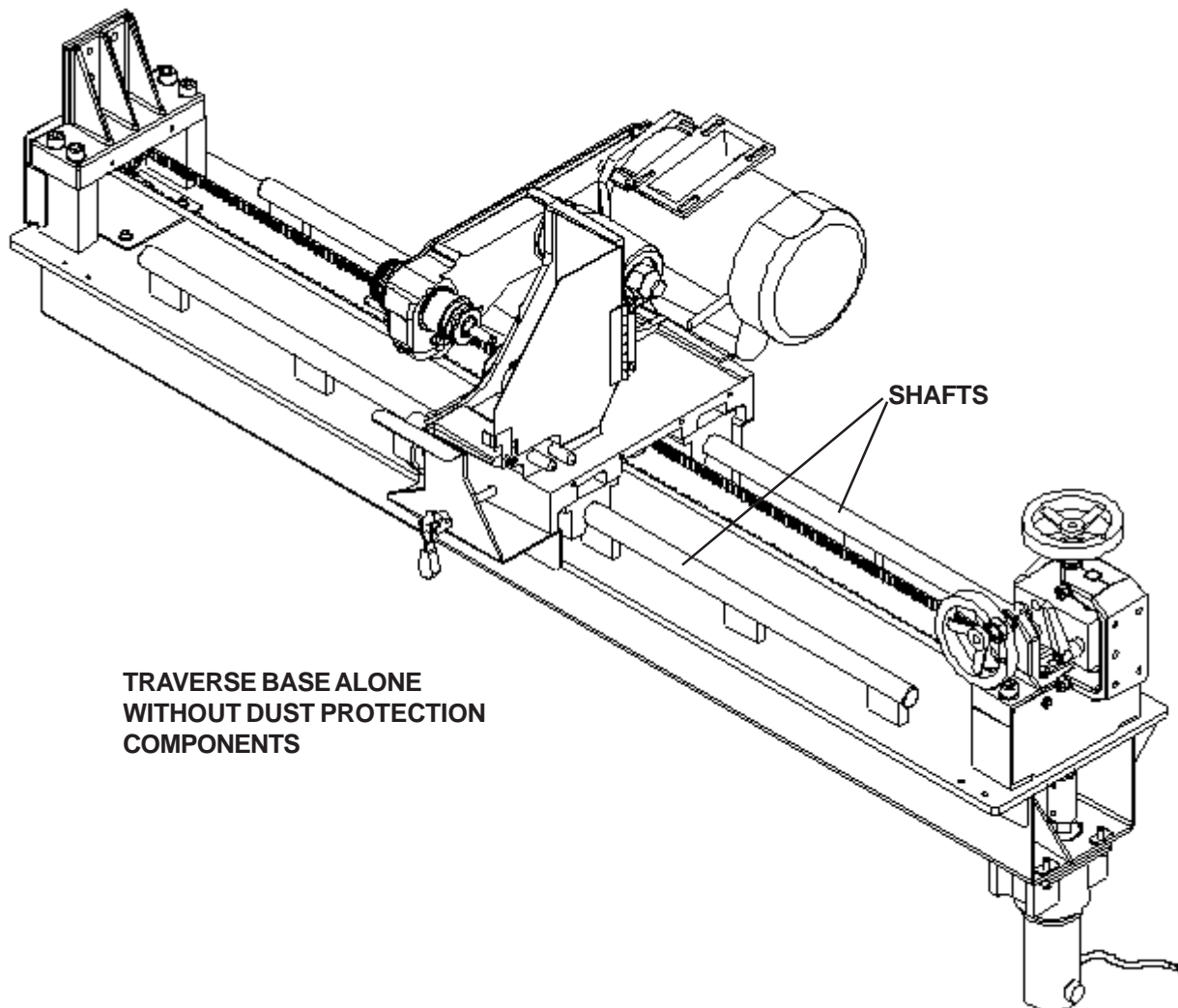


FIG. 11

## MAINTENANCE (Continued)

### CLEANING AND MAINTENANCE GUIDELINES FOR POLYCARBONATE WINDOWS

#### Cleaning Instructions



#### **DO NOT USE GASOLINE**

Adherence to regular and proper cleaning procedures is recommended to preserve appearance and performance.

#### **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 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!**

# MAINTENANCE (Continued)

## DIGITAL GAGE

### Important

- ❑ Do not mark the scale unit with and electric engraver or scratch the scale.
  - ❑ **Always use an SR44 battery (silver oxide cell)**
  - ❑ **If the scale will not be used for more than three months, remove the battery and store it properly.**
-  **Otherwise, leakage, if any, from the battery may damage the unit.**

### Description of Parts

- |                        |                      |
|------------------------|----------------------|
| 1. Beam                | 2. Main Scale        |
| 3. Battery compartment | 4. Output Connection |
| 5. Display             | 6. ON/OFF Power      |
| 7. ZERO/ABS switch     | 8. Origin Switch     |
| 9. Inch/mm Switch      | 10. Tapped hole      |
| 11. Slider             |                      |

### Battery Installation and Origin Setting

Set the origin of the scale after installing the battery. Otherwise, the error sign("E" at the least significant digit) may appear, resulting in incorrect measurements.

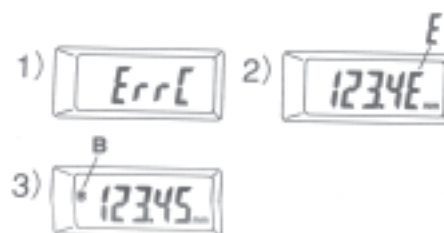
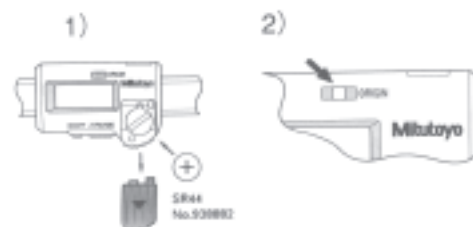
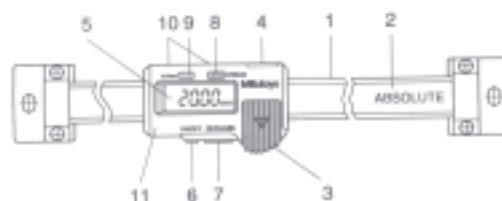
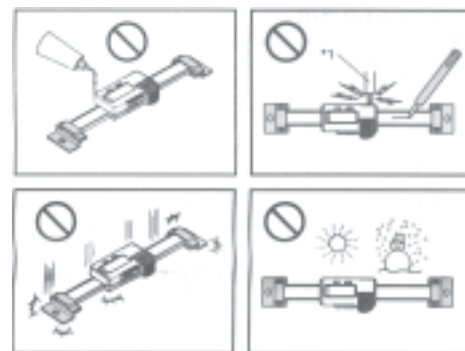
- 1) To install the battery, remove the compartment lid and install the SR44 battery with its positive side facing up. After the battery is installed, set the origin.
- 2) To set the origin, move the slider to an area you wish to set as your origin. Turn the power on. Hold the ORIGIN switch down for more than one second. The "0.00" display appears, indication Origin setting is complete. The origin will be retained even if the power is turned off.

### Incremental (INC) & Absolute (ABS) mode

The LCD will display measurements from the origin when turned on (ABS mode). To set the origin see above. The display can be set to zero at any desired position by pressing the ZERO/ABS switch. INC indicator will appear in the display (INC mode), permitting measurements from this zero point. To return to the ABS mode hold the ZERO/ABS button for more than 2 seconds.

### Error Symptoms & Remedies

- ❑ **ERRC and display flickering:** Occurs when the scale surface is stained. Clean the scale surface and coat a thin film of low viscosity oil to keep out moisture.
- ❑ **E in the least significant digit:** This occurs when the slider is moved too quickly, but it does not affect the measurement. If it stays on when the slider stops, the scale surface is probably stained. If this is the case, take remedies as for ErrC.
- ❑ **B indication:** Battery voltage is low. Replace the battery as soon as possible.





## ADJUSTMENTS (Continued)

### CARRIAGE LINEAR BEARING REPLACEMENT

**STEP 1**--Detach the bellows mounting brackets from the carriage. Detach front and rear shields. See FIG. 15.

**STEP 2**--Remove the three screws of one linear bearing and slide the linear bearing off the end of the carriage shaft.

**STEP 3**--Insert a new linear bearing onto the end of the carriage shaft with the tension adjustment screw pointing outward. See FIG. 14. 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: 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 tension screw is too tight.

Finally, sliding the bearing block back and forth should be a smooth uniform motion.

**! 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.**

**STEP 4**--Slide linear bearing under carriage and attach with the three screws.

**NOTE: Repeat Steps 2 thru 4 with the other three linear bearings.**

**STEP 5**--After all four linear bearings are reattached to the carriage check for correct bearing tension. The bearing tension is correct when you try to lift the carriage and can feel no carriage movement, which is free play up and down. The most dependable method of checking free play is to use a magnetic base dial indicator attached to the traverse frame weldment and reading the vertical movement above each bearing. This movement should be within .001" (.03 mm) Also, when pulling the carriage in the traversing direction, there should be only approximately a 3 lb force, with the belt disengaged. To check this attach a spring scale to the carriage and pull parallel to the carriage shafts. To double check the assembly, slide the carriage assembly from "end of travel" to "end of travel", it should have very uniform resistance through the full range of travel.

**STEP 6**--Replace the bellows carriage mounting brackets onto the carriage. Replace front and rear shields. See FIG. 15.

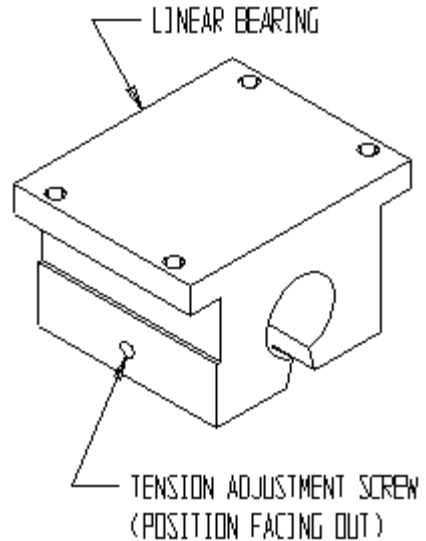


FIG. 14

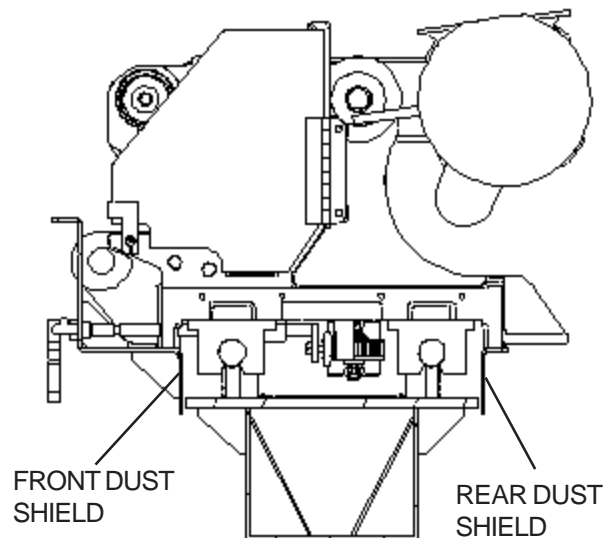


FIG. 15

## ADJUSTMENTS (Continued)

### REEL FINGER DOVETAIL GIB AND ADJUSTING KNOB ADJUSTMENTS

The reel finger slide to the reel finger positioner has a dovetail with an adjustable gib for tensioning. Tighten the gib set screws on the side so there is no free play in the dovetail slide. Check for movement when pushing on the relief finger side to side with a 20 lbs. (44 kg) force. Make sure the knob assembly for adjusting the relief finger to the grinding wheel is rotatable by hand. The gib adjustment should be sufficient to maintain a rigid position of the reel finger. See FIG. 16.

Check the knob assembly rotating tension by checking the tightness of the nylon plug to the knob assembly threads. The tightness has to be sufficient so the knob assembly does not rotate during the relief grinding cycle. See FIG. 17.

**NOTE:** To adjust the nylon plug you must lock the index finger assembly down and then adjust the reel finger positioner so the clearance holes line up with the nylon plug set screw.

Take up any free play between the tee knob assembly, reel finger slide and .375 threaded split shaft collar. Loosen the shaft collar locking cap screw and rotate the shaft collar until there is no end play. Retighten locking cap screw on the threaded split shaft collar. See FIG. 16.

### GRINDING HEAD BELT TENSION ADJUSTMENT

The left side grip grinding wheel knob must be removed for belt tensioning adjustment. Remove the six screws holding the vacuum hose bracket, the two double tube clamps and the belt cover. For grinding motor belt adjustment, loosen the four socket head cap screws that attach the motor mounting plate. Adjust the grinding motor for proper belt tension and tighten the four socket head cap screws. The proper belt tension for the grinding head is to push down on the poly V belt half way between to two pulleys with 5 lbs. [2 kg] of force and belt movement dimensions to be .12 inches [3 mm]. See FIG. 18.

To verify belt tension mount the belt guard with two screws. Turn the motor on. If the belt is tensioned correctly, start-up torque of the motor through the pulley to the belt should have zero slippage. If there is belt slippage when turning on the motor there will be a slight squeal before the belt comes up to speed. When you achieve correct tension, reassemble all of the remaining parts that have been removed.

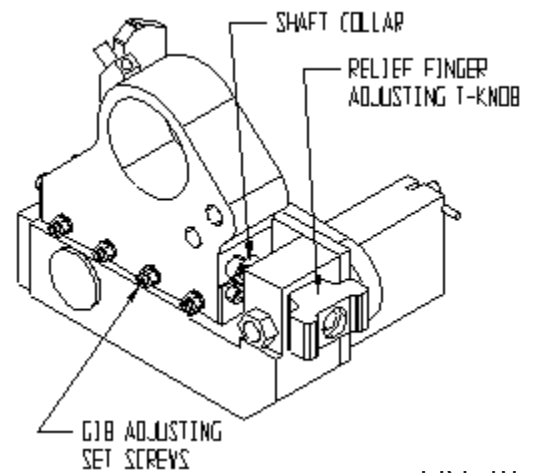


FIG. 16

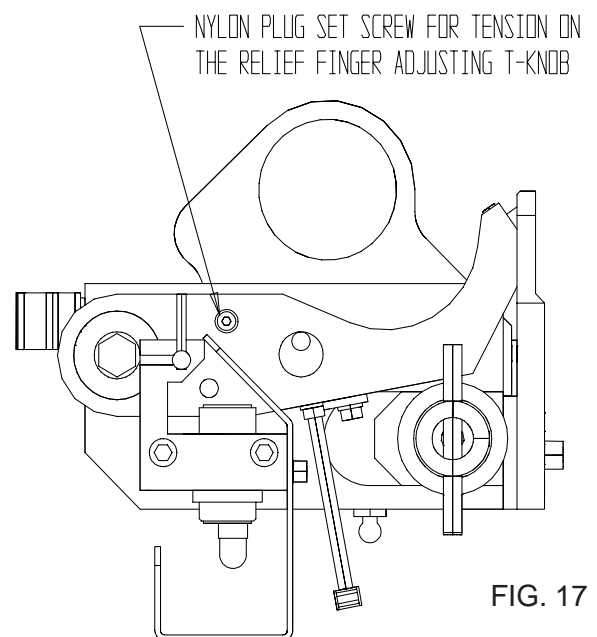


FIG. 17

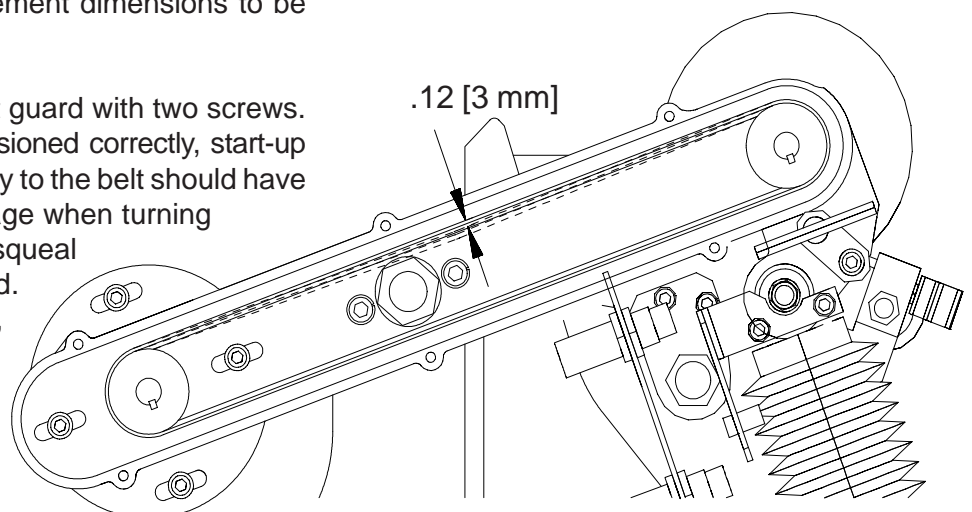


FIG. 18

## ADJUSTMENTS (Continued)

### INDEX FINGER PROXIMITY SETTING

Set all motor switches to the off position.

Press the machine system start switch, so the grinder is operational.

Push down on the index finger until the stop pin is within .06 inches (1.5 mm) of bottoming out. (You can use a 1/16" gage pin or rod stock between the stop pin and index finger). Set the proximity switch to activate the light at this setting. This assures the index finger to be close to its final stop position so the reel is completely indexed before the carriage starts to traverse. See FIG. 19.

The spring load force pushing up on the index finger brings it away from the proximity when released.

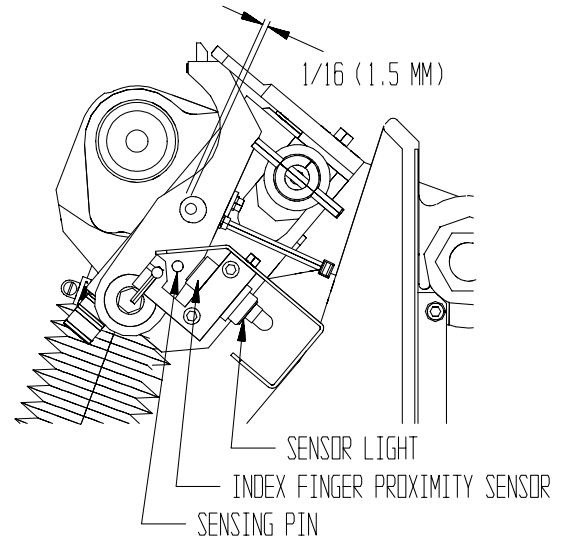


FIG. 19

### STEPPER INFEEED TRAVEL LIMITS

The infeed stepper maximum extension is 6.0" (152 mm) and minimum compression is 3.5" (89 mm). If you experience a situation where the grind does not properly finish, check that you have not exceeded stepper travel by checking the values per FIG. 20.

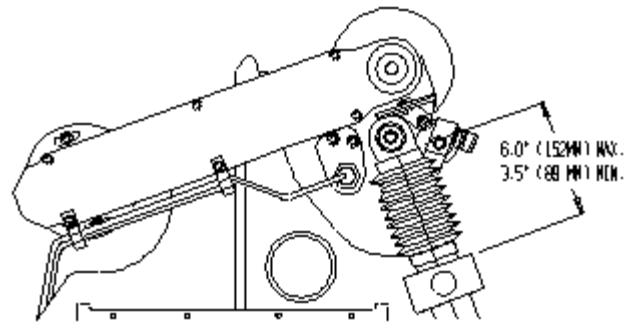


FIG. 20

### LOCKING INDEX FINGER PIN

To align the Index Finger Locking Pin to the hole in the Index Finger Assembly loosen the two socket head cap screws so the index sensor block is movable. Push down on the index finger assembly until the spring loaded index finger locks into hole with no binding. Tighten the two socket head cap screws so the index sensor block is secured, and the locking pin moves freely. See FIG. 21.

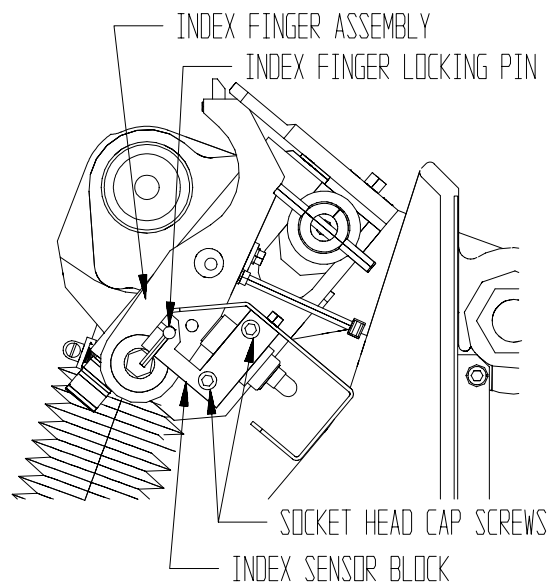


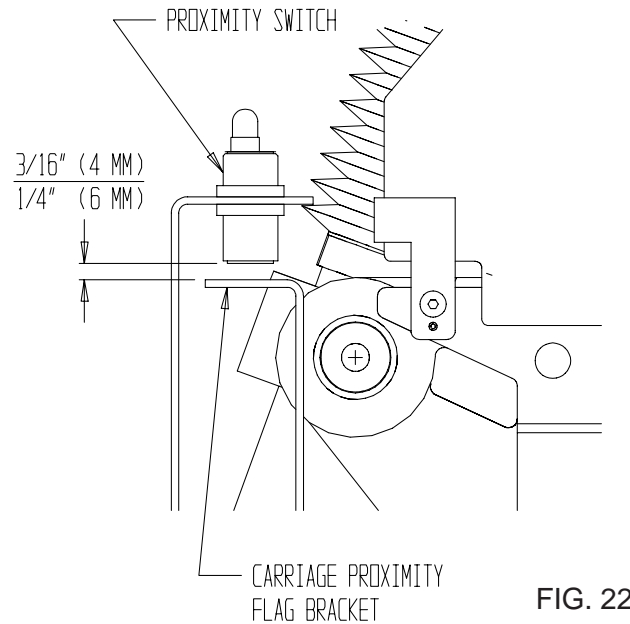
FIG. 21

## ADJUSTMENTS (Continued)

### PROXIMITY SWITCH

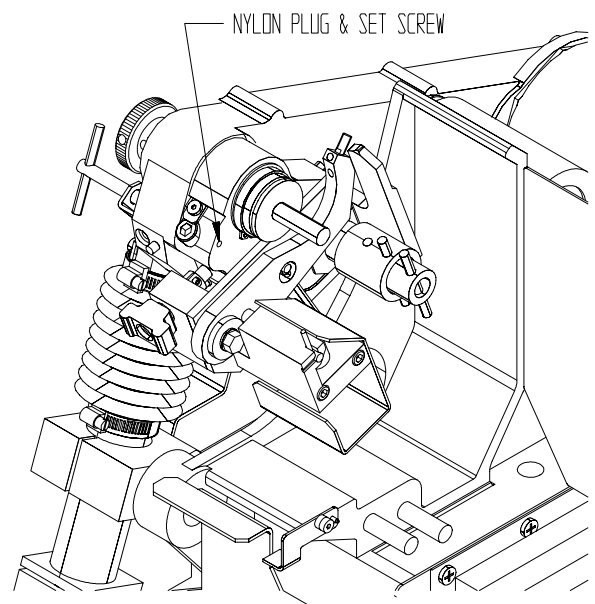
For the proximity switch to perform properly and reverse the direction of the carriage at each end of the rails, a distance of 3/16" [4 mm] to 1/4" [6 mm] needs to be maintained between the carriage proximity flag bracket and the proximity switch. See FIG. 22.

**NOTE:** The light on the proximity switch activates when metal crosses over the switch.



### ADJUSTABLE RELIEF TENSION

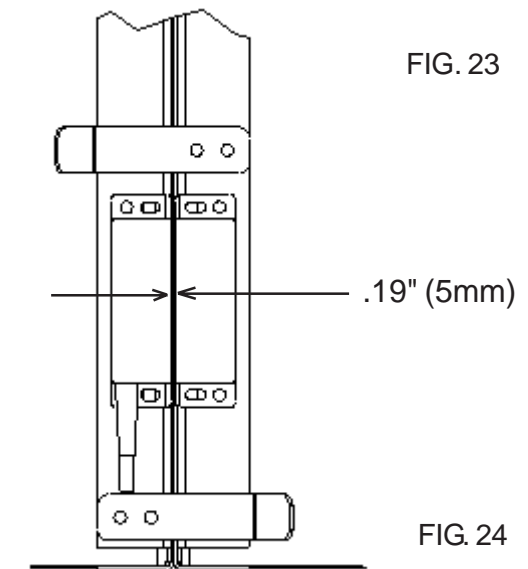
If the relief angle appears to vary during relief grinding adjust the tension on the nylon plug and set screw. See FIG. 23.



### SAFETY SWITCH ALIGNMENT

For the safety switches to work properly they must be adjusted so the sender and receiver are parallel to each other with a maximum gap of .19 inches (5mm). See FIG. 24.

(Adjust by moving the doors or brackers. If this does not help, a special wrench is needed to adjust the safety screws used to hold the switch in place.)



## ADJUSTMENTS (Continued)

### SPIN GRINDING ATTACHMENT ADJUSTMENT

If free play develops so the crank handle wants to rotate with free play when operating in the scissor action (raising and lowering) on the spin grinding attachment, the free play can be eliminated by tightening the set screw identified in FIG. 24.

If there is too much play in the spin drive pivot points, torque down the hex nut tight so conical washer is compressed, then back off 1/2 turn. See FIG. 24.

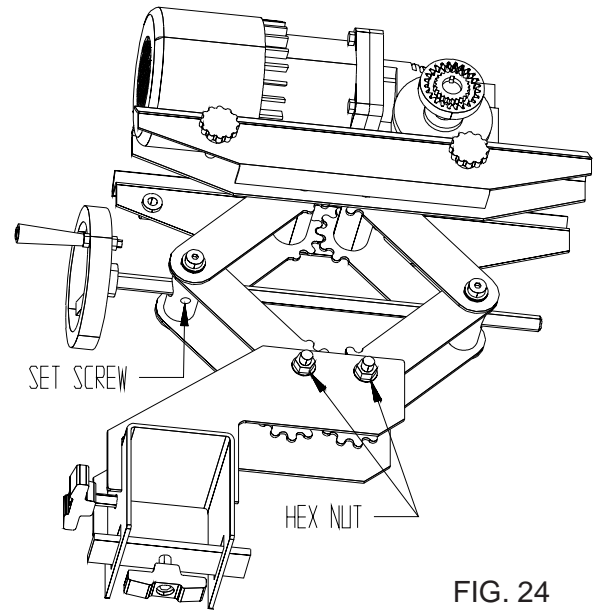


FIG. 24

### TRAVERSE BELT TENSION

To adjust the tension on the traverse belt tighten the screws and nuts located at the left side of the traverse belt. Tighten nuts until the compression springs measure 3/4". See FIG. 25. If the springs are not tensioned equally, uneven loading on the traverse system may cause parts to fail.



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

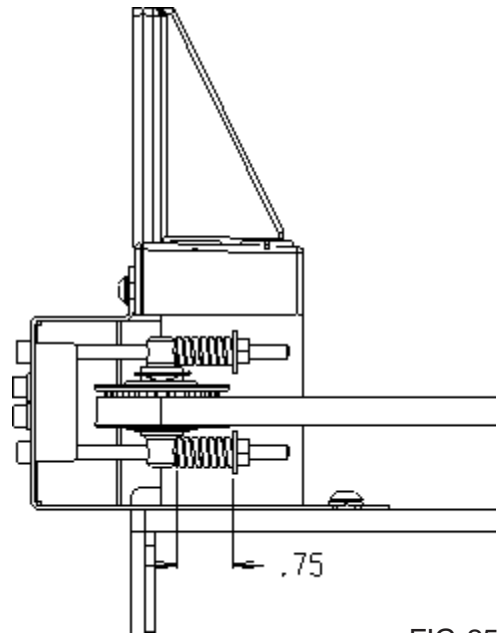


FIG. 25

### 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 on the clamp tip. Screw the tip out so there is .10" gap between the tip and the Clamp Support Block. See FIG 26. Lock in place by tightening the jam nut against the clamp being careful not to move the tip. Verify the distance between the clamp tip and block is still .10". The .10" setting allows slippage in a jam situation and damage can occur if this adjustment is set to narrow.



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

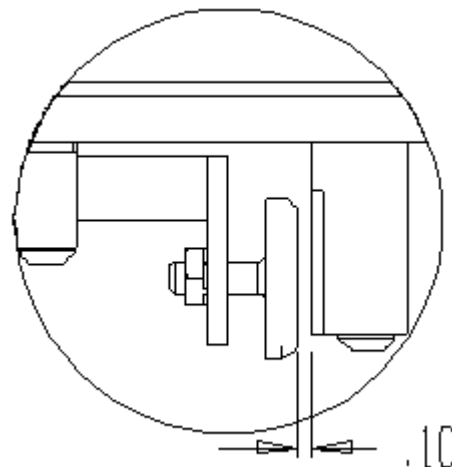


FIG. 26

# ADJUSTMENTS (Continued)

## ADJUSTING CROSS SLIDE ASSEMBLY

If the cross slide becomes very difficult to turn it may become necessary to adjust the assembly. To relieve the tension on the assembly follow the procedure listed below:

**STEP 1**--Using a hydraulic jack, raise the traversing carriage base just enough to alleviate the weight stress on the Cross Slide Assembly.

**STEP 2**--Knock out the pins on either side of the Mounting Frame Adjuster and loosen the 4 bolts (B504801) that connect the Carriage Mounting Frame to the frame of the grinder.

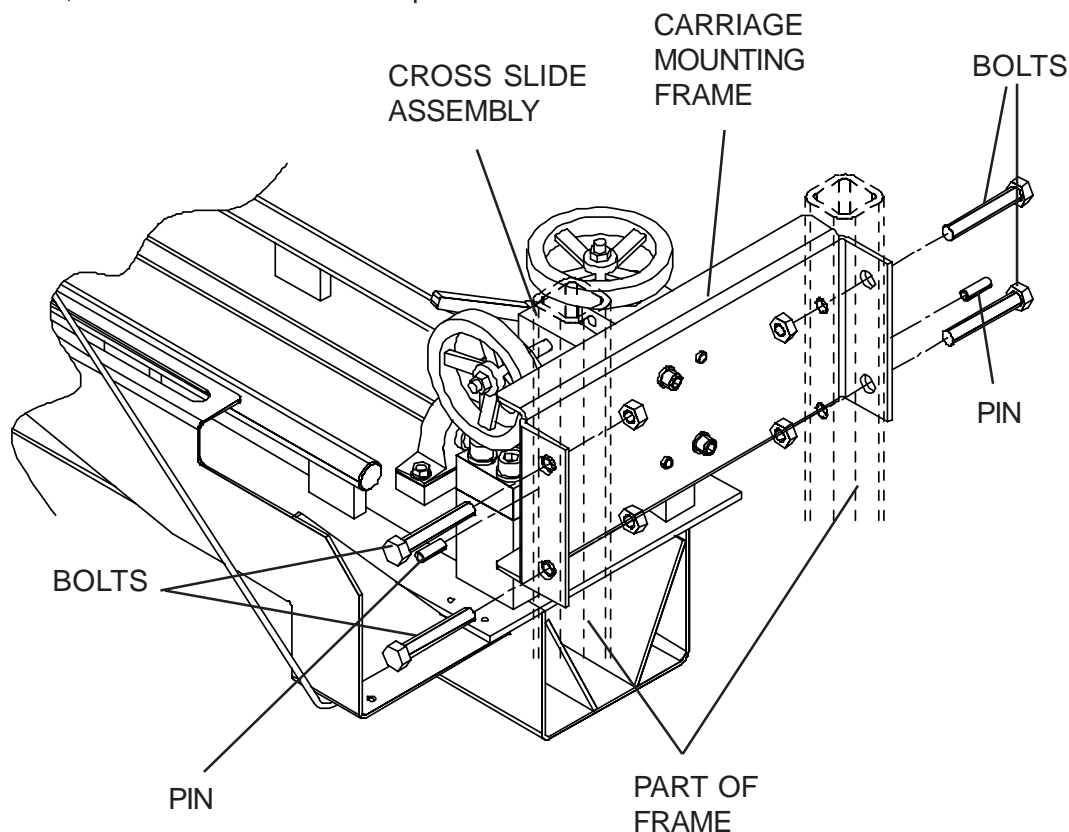
**STEP 3**--Jack the traversing carriage base up to put a preload on the Cross Slide Assembly.

**STEP 4**--Tighten the 4 bolts on the Carriage Mounting Frame to 75 ft-lbs.

**STEP 5**--Release the jack pressure and test the vertical and horizontal handwheels for ease of movement through their full range of motion.

**STEP 6**--If the Cross Slides tend to bind, repeat above steps jacking higher or lower (STEP 1) until the handwheels move freely.

**STEP 7**--When the Cross Slides move freely through their full range of motion, drill new holes and repin the assembly.





## ADJUSTMENTS (Continued)

### CROSS SLIDE SHAFT REPLACEMENT

If the cross slide shafts become scarred or gnarled, replace them by the following procedure:

**STEP 1**--Use a hydraulic jack to raise the weight off the Cross Slide Assembly.

**STEP 2**--Loosen the two nuts on the support casting that hold the locking stud and tap with plastic or rubber hammer to loosen.

**STEP 3**--Loosen the locking handles and tap the center stud with a plastic hammer.

**STEP 4**--Loosen locknut and setscrew and remove the handwheel.

**STEP 5**--Remove the Slide Shaft.

**STEP 6**--Remove all burrs and resurface the shaft to a clean, smooth, polished surface. (OR REPLACE WITH A NEW SHAFT.)

**STEP 7**--Coat shaft with Never-Cease and re-install the shaft through the Support, Cross Slide Block and the three locking studs. The shaft must move freely inside the Cross Slide Block before reassembling.

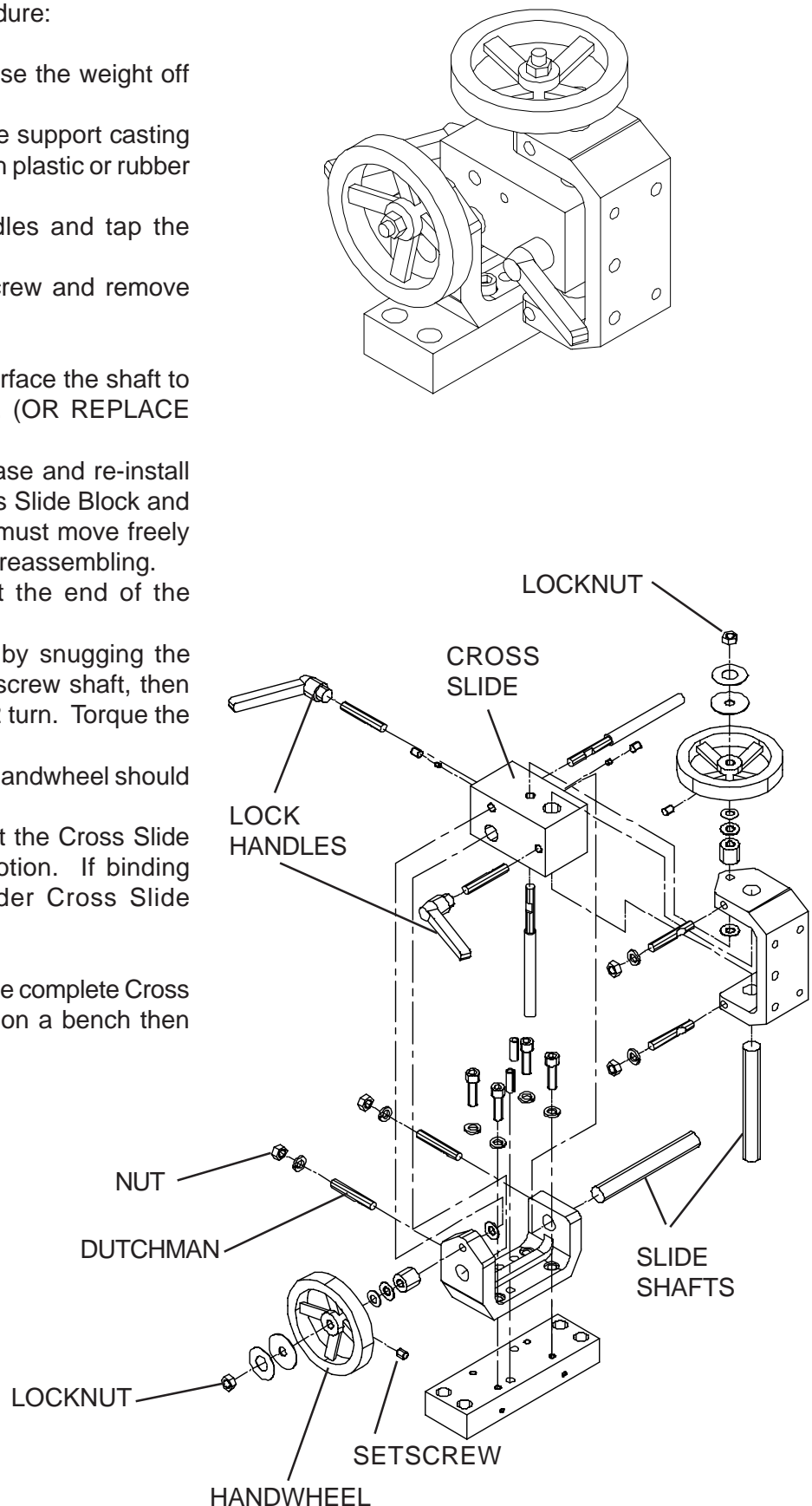
**STEP 8**--Retightening the nuts at the end of the locking studs to lock shaft in place.

**STEP 9**--Reinstall the Handwheel by snugging the setscrew to the flat located on the screw shaft, then torque nut until tight and back off 1/2 turn. Torque the setscrew to 70 in-lbs.

**STEP 10**--Test the Cross Slide, the handwheel should turn freely.

**STEP 11**--Lower the jack and retest the Cross Slide Assembly through full range of motion. If binding occurs, follow the procedure under Cross Slide Assembly located on page 21.

NOTE: It is also possible to remove the complete Cross Slide Assembly and do the repairs on a bench then reinstall.





# CONTROL BOARD POTENTIOMETER ADJUSTMENTS

## SPIN DRIVE CONTROL BOARD (SDC)

The Spin Drive Control Board has three potentiometers on the lower board and two potentiometers on the upper board as shown on drawing 6524511 which is included. These potentiometers have been set at the factory to the positions shown on the drawing. Also see FIG. 27A and 27B.

### In the Relief Grinding Mode---

The Remote Speed Pot and the Relief Torque Pot (RTP) interact with each other. The remote speed pot is located on the upper board of the Spin Drive Control (SDC) preset at 9:30. The (RTP) is located on the control panel and is for relief torque adjustment. See FIG. 27B.

The Remote Speed Pot when rotated clockwise will increase maximum spin drive speed. The remote speed pot should never be above the 10:30 setting.

Relief Torque Pot (RTP) can vary the reel to finger holding torque for relief grinding. The recommended starting point is 15 in/lbs of torque setting. Never adjust the (RTP) potentiometer dial past the red line marking. Setting the reel to finger torque to high could cause the traverse motor system to not operating smoothly.

### In the Spin Grinding Mode---

The Remote Torque Potentiometer and the Spin Speed Pot (SSP) interact with each other. The remote torque pot is located on the upper board of the Spin Drive Control (SDC) preset at 2:00 for torque setting. The (SSP) is located on the control panel and is for spin speed adjustment. See FIG. 27B.

The Remote Torque Potentiometer controls maximum torque allowable in the spin grind cycle only. This should never be adjusted past the 2:30 position.

The Spin Speed Pot (SSP) controls reel spin speed, adjust as required. This controls the spin drive speed for spinning the reel.

## POTENTIOMETERS ON THE SPIN DRIVE CONTROL (SDC) LOWER BOARD See FIG. 27A.

### Maximum Speed Pot---

The maximum speed is factory preset to 4:30 (fully clockwise) to allow for maximum spin speed.

### Minimum Speed Pot---

The minimum speed is factory preset at 8:30 (full counterclockwise) so zero speed is obtainable for spin speed.

### IR Compensation Pot---

The IR Compensation is factory set at 9:00.

Regulation of the spin or relief grind spin motor may be improved by a 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.

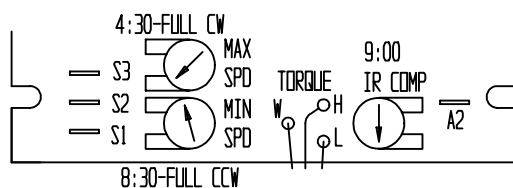


FIG. 27A

See potentiometer  
orientation on page 24

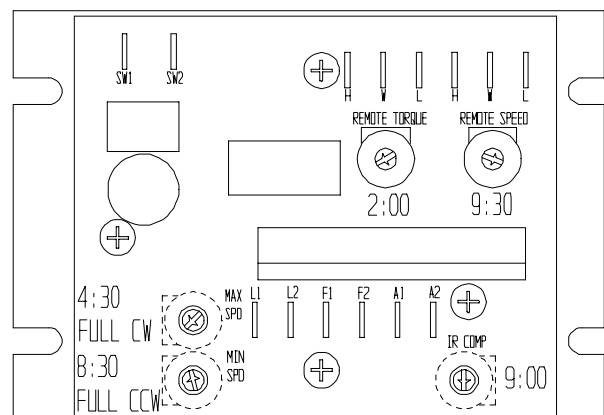


FIG. 27B

# MACHINE SERVICE

## TRAVERSE DRIVE CONTROL BOARD (TDC)

The Traverse Drive Control Board has five potentiometers as shown on drawing 6524511 which is included. These potentiometers have been set at the factory to the positions shown on the drawing. Also see FIG. 29.

### Maximum Speed---

The maximum speed potentiometer is preset to 2:30 position for 90 Volts DC to the traverse motor.

### Rev Torque---

The Reverse Torque setting determines the maximum current limit for driving the motor in the reverse direction. The potentiometer is preset to the 3:00 position. It should not require adjustment.

### Fwd Torque---

The Forward Torque setting determines the maximum current limit for driving the motor in the forward direction. The potentiometer is preset to the 3:00 position. It should not require adjustment.

### Accel - Decel---

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

### IR Compensation---

The IR Comp control is preset to 9:30 position. Never adjust past the 11:00 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.

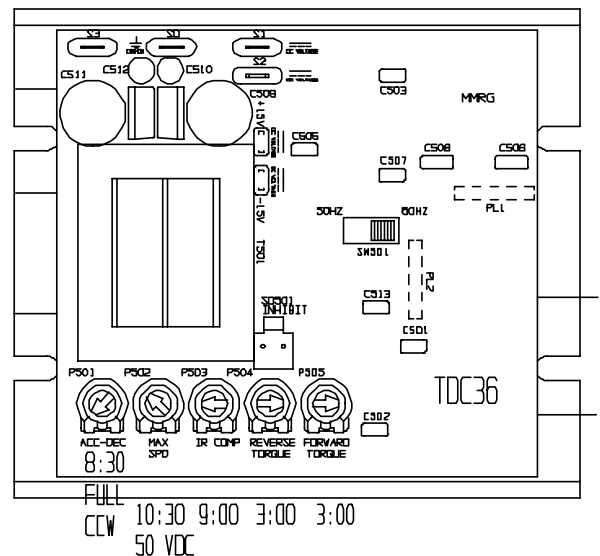
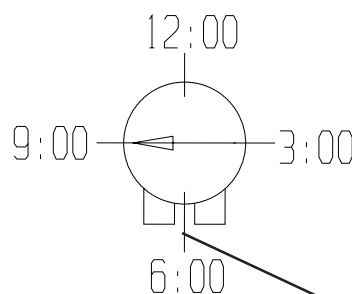


FIG. 29



### Potentiometer Clock Orientation

Terminal ends (Feet) are always at the 6:00 position, no matter how the potentiometer is orientated on the board.

## MACHINE SERVICE (Continued)

### REPLACEMENT OF GRINDING HEAD SHAFT & BEARINGS

Remove grinding wheel and grinding wheel knob. The Grinding Head Spindle Assembly consists of the grinding head spindle and a ball bearing press fit together. The left side ball bearing is slip fit on the opposite end. During assembly use loctite on the left side bearing bore. To replace the spindle assembly remove the left side grinding wheel grip knob, square key and belt cover. See FIG. 29. Loosen the 4 socket head cap screws on the motor plate to remove the poly-V belt. Loosen the 2 set screws on the spindle pulley and remove the pulley, square key and pulley spacer. Push on the right hand side of the spindle assembly to compress conical washers so there is no pressure on the shaft retaining ring and to expose the retaining ring for removal. Using a retaining ring pliers remove the small retaining ring from the spindle assembly. You can now remove the spindle assembly out the right side by lightly tapping on the left end with a rubber mallet. The second ball bearing can be removed from the belt side of the Grinding Head Housing.

To reassemble place the 4 conical washers (2 Pair nested and then place the 2 pairs back to back) against the ball bearing on the new spindle assembly. See FIG. 30. Slide this assembly into the Grinding Head Housing and slip fit the new left side ball bearing onto the spindle assembly and into grinding head housing (apply loctite #242 to the bore of the bearing before assembling). Using a C-clamp compress the conical washers so you can replace the retaining ring. The retaining ring is fragile and easily damaged when removing. Always use a new retaining ring when reassembling the grinding head spindle. Only open the retaining ring enough to install. Opening the ring excessively will damage the retaining ring.

Replace the pulley spacer and mount the square key positioned tight against the pulley spacer. Remount the pulley pushing against the pulley spacer and bottom out against the snap ring with no end play. Next tighten the two pulley set screws. Then remount the poly-V belt. (See Grinding Head Belt Tension Adjustment in the adjusting section). Replace belt cover and square key and mount the left side grinding wheel grip knob and tighten the two set screws.



THE BELT SIDE SHAFT RETAINING RING IS FRAGILE AND EASILY DAMAGED WHEN REMOVING. ALWAYS USE A NEW RETAINING RING WHEN REASSEMBLING THE GRINDING HEAD SPINDLE. ONLY OPEN THE RETAINING RING ENOUGH TO INSTALL. OPENING THE RING EXCESSIVELY WILL DAMAGE THE RETAINING RING, MAKING IT UNUSABLE.

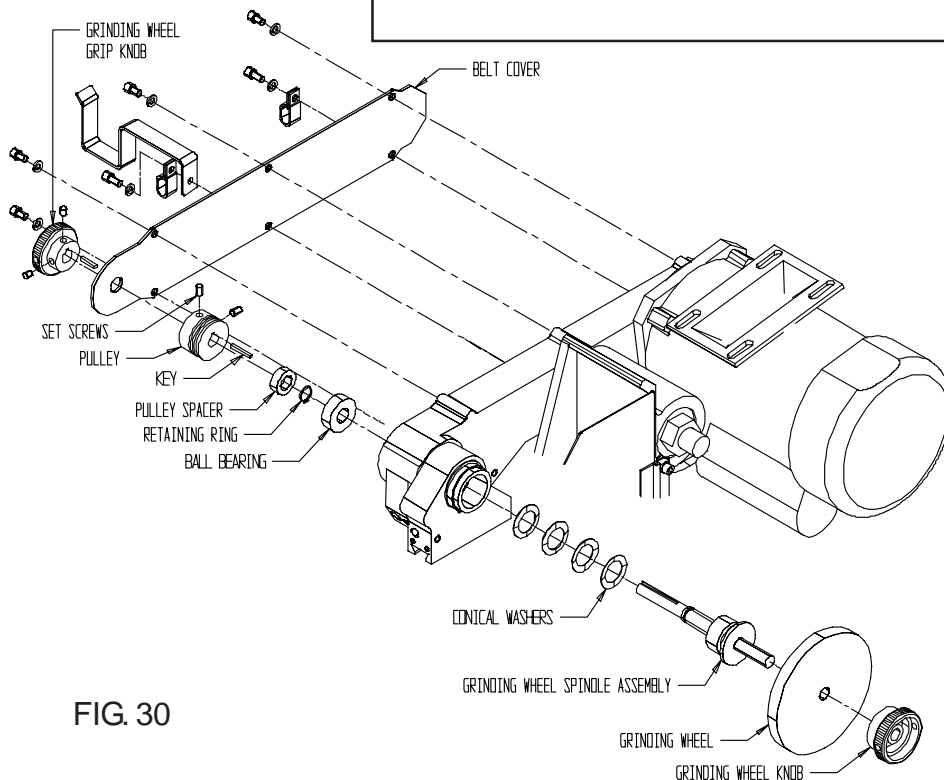
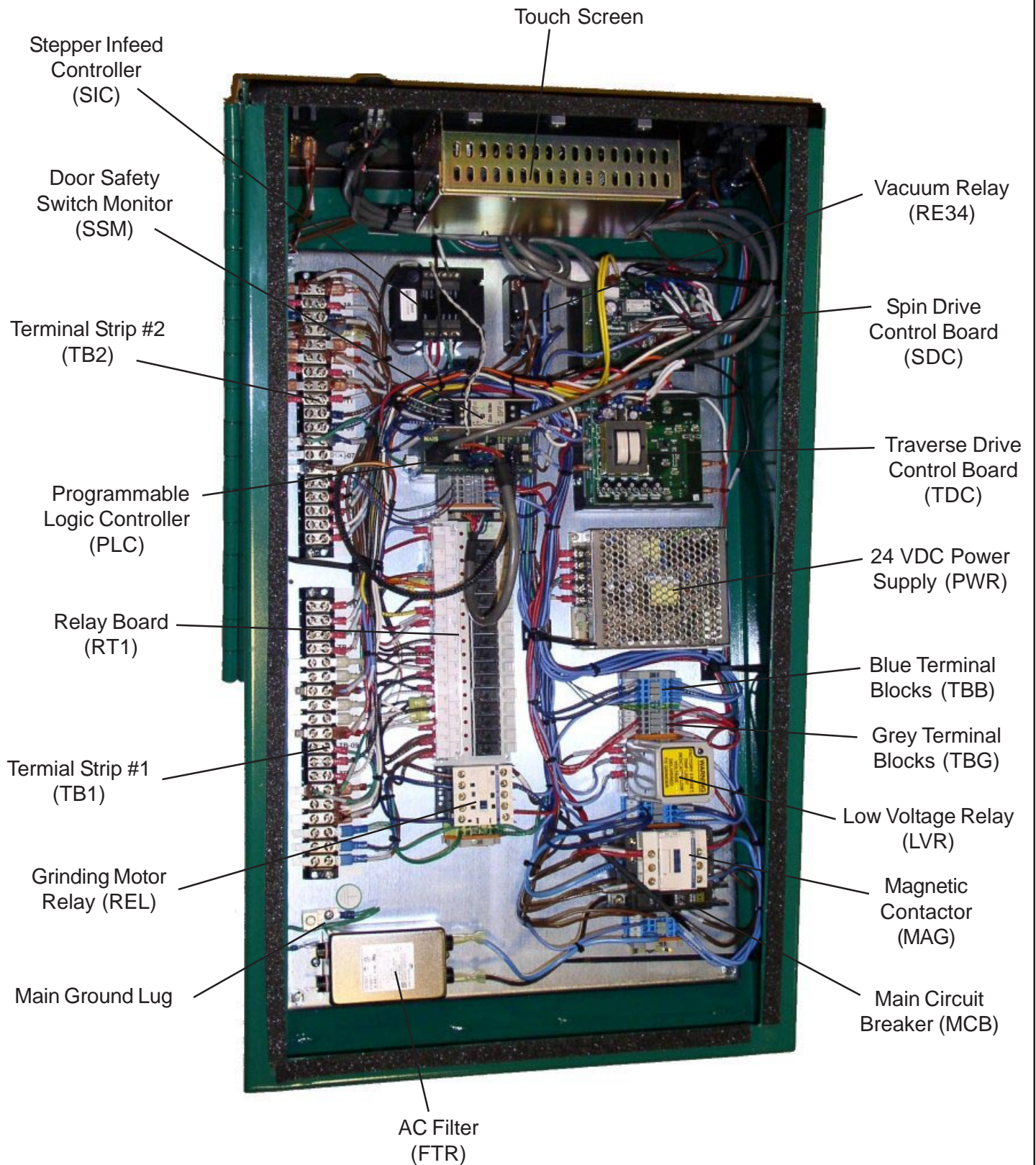


FIG. 30



FIG. 31

## ACCU-TOUCH CONTROL PANEL





# 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 *ACCU-Touch* 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 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 any question not answered in this manual, please call your distributor. They will contact the manufacturer if necessary.

## WIRE LABELS

All wires on the ACCU-Master have a wire label at each end for assembly and troubleshooting. The wire label has a code which tells you wiring information. The first set of digits are the schematic wire number: These identify the connection number. Look at the column numbers on the left side of the schematic rung to identify the wire(s) The next number(s) are the Foley wire number. The next group of numbers or letters are the code for the component to which the wire attaches. Example: RT1 for Relay Terminal 1. The last set of numbers or letters are the number of the terminal on the component to which the wire attaches.

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Traverse Drive Controls--w/prox .....	Page 38-39
Stepper Infeed Controls-- .....	Page 40-41
System Error Messages .....	Page 42-42
Flashing Light .....	Page 46

## ELECTRICAL TROUBLESHOOTING (Continued)

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

**In your Product Packet Assembly, there are a series of prints. Find the print titled ACCU-Touch Wiring Diagram, before starting the troubleshooting below. Verify all wires shown on that drawing 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 loose terminals are found, retighten and retest system. If problem persists, test as listed below.**

Possible Cause	Checkout Procedure	
You must turn ON the Switch on the top of the control panel.	<b>A.</b> Look for Touch screen to come on.	Machine works Yes--end troubleshooting No--go to Step <b>B.</b> next
Main Power Cord is not plugged in	<b>B.</b> Plug in main power cord	Machine works Yes--end troubleshooting No--go to Step <b>C.</b> next
Main 20 amp outlet circuit breaker has tripped in building panel	<b>C.</b> Check circuit breaker and reset if necessary. (Check wall outlet with a light to make sure it works)	Machine works Yes--end troubleshooting No--but a light works in outlet--go to Step <b>D.</b> next No--but light does not work in outlet. You must solve your power delivery problem independent of machine.
Main 20 amp circuit breaker has tripped in machine panel	<b>D.</b> Check circuit breaker and reset if necessary.	Machine works Yes--end troubleshooting No----go to Step <b>E.</b> next
No 115 Volts AC to Main Circuit Breaker	<b>E.</b> Check for incoming power (MCB) for 115 Volts AC	Check 115 Volts AC from (MCB) 01MBC- brown wire to Blue Terminal Block TBB17 light blue wire. Yes--go to Step <b>F.</b> next No--Verify Filter function, check wiring.
No 115 Volts AC power from 2-Amp Circuit Breaker	<b>F.</b> Check for 115 Volts AC from 2-Amp Circuit Breaker	Check 115 Volts AC from 2-Amp CB "157CB13-BL" to Blue Terminal Block TBB17 light blue wire. Yes--go to Step <b>H.</b> next No--Check continuity of CB and replace.
No 115 Volts AC power from Power Switch (PSW)	<b>H.</b> Check for 115 Volts AC from Power Switch	Check 115 Volts AC from PSW terminal #3 to Blue Terminal Block TBB17. Yes--go to Step <b>I.</b> next No--Check continuity of Switch and replace
No 24 Volts DC power from Power Supply	<b>I.</b> Check for 24 Volts DC from Power Supply (PWR)	Check 24 Volts DC from PWR V+ to V- Yes--Verify wiring to Touch Screen No--Verify power to PWR. Replace power supply.

# ELECTRICAL TROUBLESHOOTING (Continued)

## PROBLEM--Red E-Stop screen displayed on Touch Screen

In your Product Packet Assembly, there are a series of prints. Find the print titled ACCU-Touch Wiring Diagram, before starting the troubleshooting below. Verify all wires shown on that drawing 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 loose terminals are found, retighten and retest system. If problem persists, test as listed below.

Possible Cause	Checkout Procedure	
You must push the green Push to Start Switch (PSS)	<b>A.</b> Listen for magnetic contactor (MAG) to pull in with a clunk.	Machine works Yes--end troubleshooting No--go to Step <b>B.</b> next
Pull red e-stop button out	<b>B.</b> Repeat push the green button (SSS) again.	Machine works Yes--end troubleshooting No--go to Step <b>C.</b> next
115V power not delivered to MAG coil	<b>C.</b> Check at Magnetic contactor coil for 115 Volts AC with main electrical power on and pushing (SSS)	(MAG) Term #A1 to A2 for 115 Volts AC Yes--replace magnetic starter if not pulling in with click. No--go to Step <b>D.</b> next
Controller E-stop output relay on	<b>D.</b> Check on relay board (RT1) for light on for output "F" (farthest light to right)	Light is: Off-- Controller software corrupt or missing, or Relay Board not working. On-- go to step <b>E.</b> next
Controller E-stop relay no continuity	<b>E.</b> With the machine power on, Relay light on, measure across relay contacts.	(RT1) terminals F+ to F- for 115 Volts AC Yes-- Replace output relay F in (RT1) No-- go to step <b>F.</b> next
(SSS) Is bad	<b>F.</b> With the machine power on, measure across normally open contacts of (SSS)	(SSS) Term #3 to #4 for 115 Volts AC (SSS) not pushed, "0" Volts AC (SSS) pushed. No-- Replace (PSS) Yes-- go to step <b>G.</b> next
(ESS) Is bad	<b>G.</b> With the machine power on, measure across normally closed contacts of (ESS)	(ESS) Term #1 to #2 for "0" Volts (ESS) pulled out, 115 Volts AC (ESS) pressed in. No-- Replace (ESS) Yes-- go to step <b>H.</b> next
Bad wires	<b>H.</b> With the machine power off, verify continuity of wires and connections.	Measure continuity of wires #11, 12, 15, 22, 35, 37, 50, 59, 60, 146, 147, 148, 149, & 150. Replace any bad wires or repair loose connections.



## ELECTRICAL TROUBLESHOOTING (Continued)

### PROBLEM--Machine light is not working

In your Product Packet Assembly, there are a series of prints. Find the print titled ACCU-Touch Wiring Diagram, before starting the troubleshooting below. Verify all wires shown on that drawing 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 loose terminals are found, retighten and retest system. If problem persists, test as listed below.

#### Possible Cause

#### Checkout Procedure

Light switches are not turned on or there is a bad bulb

**A.** Turn on machine light toggle switch on light. Check the light bulb in another light fixture or replace with a new bulb. Plug a different light that is known to work into light plug.

Light works  
Yes--end troubleshooting  
No--go to Step **B.** next

Wire cord is bad

**B.** Check for 115 Volts AC at Terminal Strip

Check for 115 Volts AC across terminals # 6 & 7 on Terminal Strip 2 (TB2)  
Yes--replace cord for light  
No--go to Step **C.** next

Wiring is bad

**C.** Check continuity of wiring from MAG to Terminal Block

Check wiring and tighten or replace any damaged or loose parts.

\*NOTE: The light may flicker on and off when the grinding motor is turned on. This is due to the high current draw on the system when starting the grind motor.

# ELECTRICAL TROUBLESHOOTING (Continued)

## PROBLEM--Spin Drive not working in (manual) jog mode and in SPIN MODE.

Assuming 115 Volts AC to control panel and all other manual (jog) mode functions are working.

In your Product Packet Assembly, there are a series of prints. Find the print titled ACCU-Touch Wiring Diagram before starting the troubleshooting below. Verify all wires shown on that drawing are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or loose crimps between wire and terminal. If loose terminals are found, tighten and retest system. If problem persists, test as listed below.

Possible Cause	Checkout Procedure	
Spin Speed Pot (SSP) set to zero	<b>A.</b> Set (SSP) to 200 on the control panel.	Spin Motor works Yes--end troubleshooting No--go to Step <b>B.</b> next
Spin Motor Switch not on on Touch Screen	<b>B.</b> Turn spin drive switch on (touch green area) from SPIN MANUAL screen.	Spin Motor works Yes--end troubleshooting No--go to Step <b>C.</b> next
Door is open	<b>C.</b> Alarm on screen should indicate that the door must be closed for the spin drive to operate. Close door.	Spin Motor works Yes--end troubleshooting No--go to step <b>D.</b> next
Circuit breaker 42 is tripped (4A)	<b>D.</b> Reset circuit breaker switch (Tripped by current overload) check that reel is free spinning	Spin Motor works Yes--end troubleshooting No--go to step <b>E.</b> next
Relay 9 (RT1) is not working	<b>E.</b> Check for (SDC) input of 115 Volts AC	(SDC) Term #L1 to #L2 for 115 Volts AC Yes--skip to step <b>H.</b> next No--go to Step <b>F.</b> next
Verify Light is on	<b>F.</b> Check (RT1) for light #9 to be on (Door must be closed and spin drive switch on)	Light is ON. Yes--go to Step <b>G.</b> next No--Bad PLC, RT1, cables, or Software.
Verify Continuity of relay 9 in RT1	<b>G.</b> With light #9 on, Check (RT1) relay 9 for continuity.	(RT1) Term 9+ to term 9- for 115 Volts AC No--Check CB42 (4-Amp) for 115 Volts AC -check from CB to Blue Terminal Block 17 Yes--Replace relay #9 in (RT1)
Relay 4 (RT1) is not working (Spin/Torque selector relay)	<b>H.</b> With 115 Volts AC at Term L1 and L2, check (SDC) output. Have Spin speed pot (SSP) set at 400	(SDC) term A1 to term A2 measure approx 90 Volts DC Yes--Skip to Step <b>L.</b> No-- go to step <b>I.</b> Next
	<b>I.</b> With 115 Volts AC at Term L1 and L2, check (SDC) output. Have Relief Torque Pot (RTP) set to Red Line.	(SDC) term A1 to term A2 measure approx 12 Volts DC No-- Skip to step <b>N.</b> Yes-- go to step <b>J.</b> Next

# ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause	Checkout Procedure	
	<b>J.</b> Check (RT1) for light #4 to be on Insure that Spin Drive switch has been pressed on from SPIN MANUAL screen at least once	Light is: On-- go to Step <b>K.</b> next Off-- Contact factory
Relay #4 is bad	<b>K.</b> With light #4 on, verify continuity	Remove one of the wires at Terminal 4, measure (RT1) 4+ to 4- for "0" Ohms Yes--Replace (SDC) No--replace Relay 4 (RT1)
Reversing relay(s) bad (RT1)	<b>L.</b> Measure voltage at spin motor    <b>M.</b> Reverse direction of spin motor from SPIN MANUAL touch screen	(RT1) Term A+ to term D+ should read the same 90 Volts DC measured at step <b>H.</b> Note polarity Yes--Skip to Step <b>O.</b> No-- go to Step <b>M.</b> next  (RT1) Term A+ to term D+ should read the same 90 Volts DC measured at step <b>H.</b> , but opposite polarity Yes--Skip to Step <b>O.</b> No-- Replace relays A, B, C, & D in (RT1)
Spin Speed Pot (SSP) is not working	<b>N.</b> (SSP) on Main Panel	(SDC) Black wire of (SSP)- H to Red wire of (SSP)-W Pot full CCW                      Pot Full CW 4.4 Volts DC                      0 Volts DC (SDC) White wire of (SSP)- L to Red wire of (SSP)-W Pot full CCW                      Pot Full CW 0 Volts DC                      4.4 Volts DC Yes-- Replace (SDC) No-- Replace (SSP)
Spin Drive motor is bad	<b>O.</b> With machine power off, Check spin motor continuity	At (RT1) Term A+ and B+ or C+ and D+ check approx. 0 ohms across the black and white wires Yes-- Motor should work, end troubleshooting. No--go to Step <b>P.</b> next
Worn motor brushes	<b>P.</b> Inspect motor brushes	Remove the brushes one at a time and maintain orientation for reinsertion. See if brush is worn short 3/8" [10mm] minimum length. Yes-- replace motor brushes No-- replace Spin Drive motor

## ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--Spin Drive not working in (manual) jog mode and in RELIEF MODE.**

**Assuming 115 Volts AC to control panel and all other manual (jog) mode functions are working.**

**In your Product Packet Assembly, there are a series of prints. Find the print titled ACCU-Touch Wiring Diagram, before starting the troubleshooting below. Verify all wires shown on that drawing are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or loose crimps between wire and terminal. If loose terminals are found, tighten and retest system. If problem persists, test as listed below.**

Possible Cause	Checkout Procedure	
Relief Torque Pot (RTP) set to zero	<b>A.</b> Set (SSP) to 20 on the control panel.	Spin Motor works Yes--end troubleshooting No--go to Step <b>B.</b> next
Spin Motor Switch not on on Touch Screen	<b>B.</b> Turn spin drive switch on (touch green area) from RELIEF MANUAL screen.	Spin Motor works Yes--end troubleshooting No--go to Step <b>C.</b> next
Door is open	<b>C.</b> Alarm on screen should indicate that the door must be closed for the spin drive to operate. Close door.	Spin Motor works Yes--end troubleshooting No--go to step <b>D.</b> next
Circuit breaker 42 is tripped (4A)	<b>D.</b> Reset circuit breaker switch (Tripped by current overload) check that reel is free spinning	Spin Motor works Yes--end troubleshooting No--go to step <b>E.</b> next
Relay 9 (RT1) is not working	<b>E.</b> Check for (SDC) input of 115 Volts AC	(SDC) Term #L1 to #L2 for 115 Volts AC Yes--skip to step <b>H.</b> next No--go to Step <b>F.</b> next
Verify Light is on	<b>F.</b> Check (RT1) for light #9 to be on (Door must be closed and spin drive switch on)	Light is On--go to Step <b>G.</b> next No--Bad PLC, RT1, cables, or Software.
Verify Continuity of relay 9 in RT1	<b>G.</b> With light #9 on, Check (RT1) relay 9 for continuity.	(RT1) Term 9+ to term 9- for 115 Volts AC No--Check CB42 (4-Amp) for 115 VAC -check from CB to Blue Term Block 17 Yes--Replace relay #9 in (RT1)
Relay 4 (RT1) is not working	<b>H.</b> With 115 Volts AC at Term L1 and L2, check (SDC) output. Have Relief Torque Pot (RTP) set at Red Line.	(SDC) term A1 to term A2 measure approx 12 Volts DC Yes--Skip to Step <b>L.</b> No-- go to step <b>I.</b> Next
	<b>I.</b> With 115 Volts AC at Term L1 and L2, check (SDC) output. Have Spin Speed Pot (SSP) set to 400	(SDC) term A1 to term A2 measure approx 90 Volts DC No-- Skip to step <b>N.</b> Yes-- go to step <b>J.</b> Next

## ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause	Checkout Procedure	
	<b>J.</b> Check (RT1) for light #4 to be off Insure that Spin Drive switch has been pressed on from RELIEF MANUAL screen at least once	Light is: Off-- go to Step <b>K.</b> next On-- Contact factory
Relay #4 is bad	<b>K.</b> With light #4 on, verify continuity	Remove one of the wires at Terminal 4, measure (RT1) 4+ to 4- for "0" Ohms Yes--Replace relay 4 (RT1) No--replace (SDS)
Reversing relay(s) bad (RT1)	<b>L.</b> Measure voltage at (RT1)	(RT1) Term A+ to term D+ should read the same 12 Volts DC measured at step <b>H.</b> Note polarity Yes--Skip to Step <b>M.</b> No-- Replace relays A, B, C, & D in (RT1)
	<b>M.</b> Reverse direction of spin motor from SPIN MANUAL touch screen	(RT1) Term A+ to term D+ should read the same 12 Volts DC measured at step <b>H.</b> , but opposite polarity Yes--Skip to Step <b>O.</b> No-- Replace relays A, B, C, & D in (RT1)
Relief Torque Pot (RTP) is not working	<b>N.</b> (RTP) on Main Panel	(SDC) Black wire of (RTP)- H to Red wire of (RTP)-W Pot full CCW                      Pot @ Red line .2 Volts DC                      .1 Volts DC (SDC) White wire of (RTP)- L to Red wire of (RTP)-W Pot full CCW                      Pot @ Red line .1 Volts DC                      .2 Volts DC Yes-- Replace (SDC) No-- Replace (SSP)
Spin Drive motor is bad	<b>O.</b> With machine power off, Check spin motor continuity	At (RT1) Term A+ and B+ or C+ and D+ check approx. 0 ohms across the black and white wires Yes-- Motor should work, end troubleshooting. No--go to Step <b>P.</b> next
Worn motor brushes	<b>P.</b> Inspect motor brushes	Remove the brushes one at a time and maintain orientation for reinsertion. See if brush is worn short 3/8" [10mm] minimum length. Yes-- replace motor brushes No-- replace Spin Drive motor

## ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--Grinding motor not working in (manual) jog mode.**

**Assuming 115 Volts AC to control panel and all other manual (jog) mode functions are working.**

**In your Product Packet Assembly there are a series of prints. Find the print titled ACCU-Touch Wiring Diagram, before starting the troubleshooting below. Verify all wires shown in the drawing are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or loose crimps between wire and terminal. If loose terminals are found, tighten and retest system. If problem persists, test as listed below.**

Possible Cause	Checkout Procedure	
Grinding Motor Switch is not on	<b>A.</b> Turn switch on from either SPIN MANUAL screen or RELIEF MANUAL screen	Grinding Motor works Yes--end troubleshooting No--go to Step <b>B.</b> next
Circuit Breaker (CB28) 15A is tripped	<b>B.</b> Reset circuit breaker switch (tripped by current overload)	Grinding Motor works Yes--end troubleshooting No--go to step <b>C.</b> next
Grinding Motor Relay is not working (REL)	<b>C.</b> Check for (REL) incoming 115 Volts AC	(REL) Term #L1 to #L2 for 115 Volts AC Yes--go to step <b>D.</b> next No--Verify wiring, replace Circuit Breaker (CB28)
	<b>D.</b> Check for (REL) output voltage of 115 Volts AC	(REL) Term #T1 to #T2 for 115 Volts AC Yes-- Verify 115 VAC at TB1-1 & TB1-2, Check terminals, replace Grind motor. No--go to step <b>E.</b> next
Relay (REL) coil or contacts are not working	<b>E.</b> Check for (REL) input of 24 Volts DC at the coil. Reminder, Grind Drive switch must be on and doors must be closed.	(REL) Term A1 to Term A2 for 24 Volts DC Yes--Replace (REL) No--Skip to Step <b>F.</b>
Relay 5 (RT1) is not working	<b>F.</b> (RT1) check that the light is on for relay 5, make sure grind drive switch is on	Light is: On-- Go to Step <b>I.</b> next Off--Contact Factory
	<b>I.</b> Light is on for Relay 5, check continuity	(RT1) Term 5+ to 5-, measure DC voltage 0 Volts DC-- Check wiring, Relay (REL) should work, end troubleshooting. 24 Volts DC-- Replace relay 5 (RT1)

# ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--Dust Collector not working in (manual) jog mode.**

**Assuming 115 Volts AC to control panel and all other manual (jog) mode functions are working.**

**In your Product Packet Assembly, there are a series of prints. Find the print titled ACCU-Touch Wiring Diagram, before starting the troubleshooting below. Verify all wires shown on that drawing 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 loose terminals are found, tighten and retest system. If problems persists, test as listed below.**

Possible Cause	Checkout Procedure	
Dust Collector Switch is not on (Vacuum)	<b>A.</b> Turn on switch located on top of Vacuum in the back right of corner of the machine.	Dust Collector works-- Yes--end troubleshooting No--go to Step <b>B.</b> next
Dust Collector Switch (Vacuum) on touch screen is not on	<b>B.</b> Turn switch on from SPIN MANUAL or RELIEF MANUAL screen.	Dust Collector works-- Yes--end troubleshooting No--go to Step <b>C.</b> next
Vacuum not working	<b>C.</b> Check for 115 Volts AC at the receptacle plug by plugging in a hand drill or light.	Light works Yes--Replace Vacuum No--go to Step <b>D.</b> next
(RT1) relay E is not working	<b>D.</b> With Vacuum switch on, Check for (RT1) Relay E on	Light is on: Yes--go to step <b>E.</b> next No--Contact Factory
	<b>E.</b> (RT1) Relay E, verify continuity	(RT1) Term #E+ to #E- for 115 Volts AC Yes--replace Relay E (RT1) No--go to Step <b>F.</b> next
Circuit Breaker (CB32) is not working (3-amp)	<b>F.</b> Check for power out of circuit breaker (CB32)	Terminal Block 17 (light blue wire) #02 to (CB32) (brown) #156 for 115 Volts AC Yes--go to Step <b>G.</b> next No--replace (CB2)
Relay 34 (RE34) is not working	<b>G.</b> Check for (RE34) input of 115 Volts AC at coil.	(RE34) Term 0 to term 1 for 115 Volts AC Yes-- go to Step <b>H.</b> next No--Check continuity of wires.
	<b>H.</b> Check for (RE34) input of 115 Volts AC at contacts	(RE34) Term 8 to term 4 for 115 Volts AC Yes--go to Step <b>I.</b> next No--Check continuity of wires.
	<b>I.</b> Check for (RE34) output of 115 Volts AC at contacts	(RE34) Term 6 to term 2 for 115 Volts AC Yes--Replace Plug No--replace (RE34)



## ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--Winch does not work in either direction.**

In your Product Packet Assembly, there are a series of prints. Find the print titled **ACCU-Touch Wiring Diagram**, before starting the troubleshooting below. Verify all wires shown on that drawing are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or loose crimps between wire and Terminal. If loose terminals are found, tighten and retest system. If problem persists, test as listed below.

Possible Cause	Checkout Procedure	
7 amp circuit breaker on winch motor is tripped	<b>A.</b> Reason: Check for a lifting overload condition or wiring shorted to ground. Reset breaker located at end of winch motor.	Winch works-- Yes--end troubleshooting No--go to Step <b>B.</b> next
No voltage to motor	<b>B.</b> Check that motor coil cord from DC motor is plugged in	Winch works-- Yes--end troubleshooting No--go to Step <b>C.</b> next
	<b>C.</b> Check for 115 Volts AC at the plug end winch cord wire #6 by plugging in a hand drill	Drill works-- Yes--replace winch No-- go to Step <b>D.</b> next
	<b>D.</b> Check for Machine is plugged in Start button is pressed. (Red E-Stop Screen must not be up)	Winch works-- Yes--end troubleshooting No--go to Step <b>E.</b> next
	<b>E.</b> Verify wiring from MAG to Terminal Strip 2.	Measure 115 Volts AC from TB2-6 to TB2-7. Yes--replace cord to winch No--Verify power out of mag. Replace bad wiring.

# ELECTRICAL TROUBLESHOOTING (Continued)

## PROBLEM-- Traverse Drive not working in (manual) jog mode

Assuming 115 Volts AC to control panel and all other manual (jog) mode functions are working.

In your Product Packet Assembly, there are a series of prints. Find the print titled ACCU-Touch Wiring Diagram, before starting the troubleshooting below. Verify all wires shown on that drawing are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or loose crimps between wire and terminal. If loose terminals are found, tighten and retest system. If problem persists, test as listed below.

Possible Cause	Checkout Procedure	
Traverse Speed Pot (TSP) set to zero	<b>A.</b> Set (TSP) to 35 on the control panel	Traverse works Yes--end troubleshooting No--go to step <b>B.</b> next
Traverse Belt Clamp release lever released	<b>B.</b> Insure release lever is in adjusted properly. See Adjustments section of this manual.	Traverse works Yes--end troubleshooting No--go to Step <b>C.</b> next
Circuit Breaker 32 (CB32) (3 amp) tripped	<b>C.</b> Too heavy a grind causes grinding head traverse motor to overload and trip the circuit breaker. Reset (CB32)	Traverse works Yes--end troubleshooting No--go to Step <b>D.</b> next
Traverse Drive Control (TDC) do not have power	<b>D.</b> Check for 115 Volts AC incoming to (TDC) (insure traverse right or left has been pressed at least once)	On (TDC) Term L1 to L2 for 115 Volts AC Yes--Skip to Step <b>H.</b> No--go to Step <b>E.</b> next
Relay 8 (RT1) is bad	<b>E.</b> Check for relay 8 (RT1) light on (insure traverse right or left has been pressed at least once)	Light is: On-- go to Step <b>F.</b> next Off-- Contact Factory
	<b>F.</b> Check relay 8 for continuity, Insure relay 8 light is on	(RT1) Term 8+ to 8- read 115 Volts AC Yes-- Replace Relay 8 (RT1) No-- go to Step <b>G.</b> next
Circuit Breaker 32 (CB32) bad	<b>G.</b> Check CB32 for voltage	(CB32) from Line neutral, Light Blue wire at the line filter wire # 02FTRBU, to wire #156CB32-BL at CB32 measure 115 Volts AC: No-- Replace CB32 Yes-- Verify continuity of wires to RT1. Replace or repair bad wire(s)

# ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause	Checkout Procedure	
No DC Voltage from (TDC) Traverse Drive Control	<b>H.</b> 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 <b>I.</b> next No--go to Step <b>J.</b> next  Note:If voltage is less than 90 VDC verify pots on TDC. See page 24
Traverse Motor is bad	<b>I.</b> Check traverse motor continuity	Remove wires from terminals A1 & A2 0 ohms across the black and white wires Yes--go to Step <b>J.</b> next No--go to Step <b>N.</b>
Check Relays 2 and 3	<b>J.</b> (RT1) Verify that relay 2 light comes on when Traverse Right is pressed, and that relay 3 light comes on when Traverse Left is pressed	Lights come: On-- go to step <b>K.</b> next Off-- Skip to step <b>L.</b>
(TSP) (10K) is bad	<b>K.</b> Check (TSP) for 10,000 ohms Remove three wires from (TDC) red from term S2 white from term S0 black from inline connector (Wire 39)	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 <b>L.</b> next No--replace (TSP)
Gap between flag and prox is incorrect.	<b>L.</b> Gap between flag and Prox should be 3/16" to 1/4" [4-6mm]. Prox light does not light when flag is under prox.	If incorrect, adjust per adjustment section of manual. Traverse works-- Yes-- End troubleshooting No-- go to step <b>M.</b> next
Proximity switch is bad	<b>M.</b> From the Touch screen, Enter "HELP" screen from main menu.	Follow instructions on screen to verify traverse proximity switches are ok. Switch is Good-- Replace (TDC) Bad-- Replace switch
Worn motor brushes	<b>N.</b> 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 Drive Motor

## ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--Stepper Infeed not working in (manual) jog mode.**

**Assuming 115 Volts AC to control panel and all other manual (jog) mode functions are working.**

**In your Product Packet Assembly, there are a series of prints. Find the print titled ACCU-Touch Wiring Diagram, before starting the troubleshooting below. Verify all wires shown on that drawing are correct and pull on wire terminals with approximately 3 lbs force all terminals to verify there are no loose terminal connections and/or loose crimps between wire and terminal. If loose terminals are found, tighten and retest system. If problem persists, test as listed below.**

Possible Cause	Checkout Procedure	
Infeed Jog Switch is not held to on position	<b>A.</b> Hold switch on in either direction	Stepper motor works Yes--end troubleshooting No--go to Step <b>B.</b> next
Actuator is at physical limit	<b>B.</b> Move stepper in opposite direction	Stepper Motor works Yes--end troubleshooting No--go to step <b>C.</b> next
Circuit Breaker (CB13) is tripped (2 amp)	<b>C.</b> Reset circuit breaker switch (tripped by current overload) Grinding head stepper infeed mechanism jammed causing overload	Stepper Motor works Yes--end troubleshooting No--go to step <b>D.</b> next
High Low Switch is not on high speed	<b>D.</b> Put switch on high speed (rabbit) for ease of checkout of Stepper Infeed Control (SIC)	High speed works Yes--end troubleshooting No--go to Step <b>E.</b> next
Stepper motor drive coupling is loose	<b>E.</b> You can feel stepper pulses on motor when (HLS) is on high or low & (IJS) switch is depressed in either up or down direction. Open stepper infeed inspection plate to check for loose coupling. Retighten coupling to drive actuator screw. See adjustment section of manual.	Stepper works-- Yes--end troubleshooting No--go to Step <b>F.</b> next
No DC voltage to Stepper Infeed Control (SIC)	<b>F.</b> (SIC) Check for 24 Volts DC Power in	(SIC) Term GND to V+ measure 24 Volts DC Yes-- go to step <b>G.</b> next No-- Skip to step <b>H.</b>
No DC Voltage to OPTO terminal of (SIC)	<b>G.</b> (SIC) Check voltage at OPTO terminal	(SIC) Term GND to OPTO measure 24 Volts DC Yes-- go to step <b>I.</b> No-- Replace wire #60 (with resistor)

## ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause	Checkout Procedure	
Mag contact or wire bad	<b>H.</b> Measure voltage at (MAG) insure power is on, and green (PSS) has been pressed.	(MAG) term 13 to 14, Measure 0 volts DC Yes--Verify DC power to Mag term 13 No-- if 24 Volts DC, Replace (MAG)
No Step pulse from PLC	<b>I.</b> Check light Y0 on PLC. While pressing up or down it should light (pressing down Y1 will also light)	Light comes on: Yes-- go to step H. next No-- Contact Factory
Stepper Infeed Control (SIC) Wiring bad	<b>J.</b> Check wiring at (SIC).	Insure all wires are connected at the (SIC) to the connectors and that none have become loose. Some connections have multiple wires in them, be sure all are tight by gently "tugging" on them. If all wires appear to be connected and correct, proceed:
Stepper Infeed Control (SIC) or Stepper motor is bad	<b>K.</b> Check output at (SIC). Have High/Low Switch set on high speed (rabbit)	(SIC) Terminal phase A to terminal phase A' Measure 4.7 Volts DC, 0.2-0.3 Volts while jog button is pressed. (SIC) Terminal phase B to terminal phase B' Measure 4.7 Volts DC, 0.2-0.3 Volts while jog button is pressed. Yes--replace stepper motor No--replace (SIC)

## ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--No Manual (jog) cycle or Auto Cycle stops because of a system error message on Touch Screen.**

System Error Message	Checkout Procedure	Message Status
STORE FINGER FOR SPIN GRIND	<p><b>A.</b> Rotate index finger assembly to spin position</p> <p><b>B.</b> Check (PLC) input from Finger Stored/Down prox</p>	<p>Clears--Proceed to next system error message you have or continue running. Remains--go to Step <b>B.</b> next</p> <p>From "Help" Screen verify Finger Stored/Down prox input is on (Red) Follow instructions on screen.</p>
ROTATE HEAD DOWN FOR SPIN GRIND	<p><b>A.</b> Rotate grind head assmbly down</p> <p><b>B.</b> Check (PLC) input from Head in Relief Pos. (Position) prox</p>	<p>Clears--Proceed to next system error message you have or Continue running. Remains--go to Step <b>B.</b> next</p> <p>From "Help" Screen verify Head in Relief Pos. prox input is working. Follow instructions on screen.</p>
HOME TRAVERSE (TO RIGHT PROX) TO START	<p><b>A.</b> Jog Grind head to right prox with touch screen controls</p> <p><b>B.</b> Check (PLC) input from Right Traverse prox switch</p>	<p>Clears--Proceed to next system error message you have or Continue running. Remains--go to Step <b>B.</b> next</p> <p>From "Help" Screen verify Right Traverse Prox input is working. Follow instructions on screen.</p>
ROTATE HEAD UP FOR RELIEF GRIND	<p><b>A.</b> Rotate grind head assmbly up</p> <p><b>B.</b> Check (PLC) input from Head in Relief Pos. prox</p>	<p>Clears--Proceed to next system error message you have or Continue running. Remains--go to Step <b>B.</b> next</p> <p>From "Help" Screen verify Head in Relief Pos. prox input is working. Follow instructions on screen.</p>



## ELECTRICAL TROUBLESHOOTING (Continued)

System Error Message	Checkout Procedure	Message Status
RELEASE FINGER FOR RELIEF	<p><b>A.</b> Release finger. Make sure that the finger is allowed to come foreward at least once.</p> <p><b>B.</b> Check (PLC) input from Door Saftey Switch</p>	<p>Clears--Proceed to next system error message you have or continue running.</p> <p>Remains--go to Step <b>B.</b> next</p> <p>From "Help" Screen verify Finger Stored / Down prox input is working. Follow instructions on screen.</p>
ENTER NUMBER OF BLADES	<p><b>A.</b> Blade count is required to run Relief grind. Count blades and enter the number under the Blade # Field.</p>	<p>Clears--Proceed to next system error message you have or continue running.</p>
LOW VOLTAGE DETECTED	<p><b>A.</b> Input line voltage has dropped below 100V. Plug machine into a better source of power. See Power requirements at front of manual.</p>	<p>Clears--Proceed to next system error message you have or continue running.</p>
DOOR MUST BE CLOSED TO OPERATE	<p><b>A.</b> For safety reasons, door must be closed to operate spin and / or grind motors. Close and latch door.</p> <p><b>B.</b> Check (PLC) input from Door Saftey Switch</p>	<p>Clears--Proceed to next system error message you have or continue running.</p> <p>Remains--go to Step <b>B.</b> next</p> <p>From "Help" Screen verify Head in Relief Pos. prox input is working. Follow instructions on screen.</p>
INCREASE TORQUE KNOB SETTING	<p><b>A.</b> An excessive amount of time has passed between blade indexes or at the start of a relief cycle. Increase the Relief Torque Pot.</p>	<p>Clears--Proceed to next system error message you have or continue running.</p>
TORQUE KNOB LOW OR DIRECTION WRONG	<p><b>A.</b> An excessive amount of time has passed at the beginning of a Relief grind cycle before the finger down prox was detected. Verify Torque pot setting and / or spin direction. Reminder: Blade should push finger down.</p>	<p>Clears--Proceed to next system error message you have or continue running.</p>

## ELECTRICAL TROUBLESHOOTING (Continued)

### PROBLEM--No Manual (jog) cycle or Auto Cycle stops because of a system error message on Touch Screen (Continued)

System Error Message	Checkout Procedure	Message Status
FINGER NOT RELEASED, CHECK LH PROX POS (POSITION)	<p><b>A.</b> During a relief grind cycle, the PLC did not see the finger released at the left prox position. Verify that the setting of the left traverse prox allows the finger to come off the blade.</p> <p><b>B.</b> Check (PLC) input from Finger Stored/Down prox</p>	<p>Clears--Proceed to next system error message you have or continue running.</p> <p>Remains--go to Step <b>B.</b> next</p> <p>From "Help" Screen verify Finger Stored/Down prox input is Working. Follow instructions on screen.</p>
MOVE NOT POSSIBLE IN PAUSE MODE	<b>A.</b> Press "Resume" on touch screen to finish current cycle.	Clears--Proceed to next system error message you have or Continue running.
MACHINE IS IN PAUSE MODE, PRESS RESUME	<b>A.</b> Machine was left in pause mode after last cycle. Press "resume" on touch screen.	Clears--Proceed to next system error message you have or Continue running.
DOOR OPENED WHILE GRIND AND / OR SPIN ON	<b>A.</b> Door was opened while potentially dangerous operations were still on. Turn off motors, pause, or finish cycle before opening doors.	Clears--Proceed to next system error message you have or Continue running.
INCREASE TRAVERSE KNOB SETTING	<b>A.</b> An excessive amount of time has passed at the beginning of an auto cycle before the grind head assy. has moved. Increase Traverse Speed pot or check that carriage is not released.	Clears--Proceed to next system error message you have or Continue running.
TRAVERSE TIMEOUT, CHECK POT OR SETUP	<b>A.</b> An excessive amount of time has passed during a traverse cycle. Increase Traverse Speed pot or verify that carriage assembly is not released or hitting an obstruction.	Clears--Proceed to next system error message you have or Continue running.

## ELECTRICAL TROUBLESHOOTING (Continued)

System Error Message	Checkout Procedure	Message Status
ACCEPT VALUES BEFORE RUNNING	<b>A.</b> Before an auto cycle can be started, verify the values in the displayed boxes and accept them by pressing the "Accept Values" button on the touch screen.	Clears--Proceed to next system error message you have or continue running.
OPEN DOOR TO RESET LIGHT	<b>A.</b> Before an auto cycle can be started, the last cycle completed must be cleared. Open the door or press the "Cycle Complete" button on the main screen to reset.	Clears--Proceed to next system error message you have or continue running.

## ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--Flasher light does not turn on at end of automatic cycle.**

In your Product Packet Assembly, there are a series of prints. Find the print titled **ACCU-Touch Wiring Diagram**, before starting the troubleshooting below. Verify all wires shown on that drawing are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminals. If loose terminals are found, tighten and retest system. If problem persists, test as listed below.

Possible Cause	Checkout Procedure	
Bulb is burned out	<b>A.</b> Remove bulb and test continuity	Bulb- Measure approx 300 Ohms Yes--go to Step <b>B.</b> next No--Replace bulb
Flasher (FLR) is bad	<b>B.</b> (FLR) Unplug flasher at terminal (RT1) 7+ and touch lead to black wire at (RT1) 7-	Light works: Yes--go to step <b>C.</b> next No-- Replace Flasher Assy.
No 115 Volts AC to flasher	<b>C.</b> After a cycle has completed, measure voltage to Flasher.	(RT1) Term. 7+ to Blue Term Block 17 Measure 115 Volts AC Yes-- Verify continuity in cord, Replace flasher No-- go to step <b>D.</b> next
Relay 7 (RT1) is bad	<b>D.</b> After a cycle has completed, check (RT1) for light 7 to be on	Light is on: Yes-- go to step <b>E.</b> next No-- Contact Factory
	<b>E.</b> Check continuity of relay 7	(RT1) Term 7+ to 7- Measure 115 Volts AC Yes-- Replace Relay 7 (RT1) No-- go to step <b>F.</b> next
Circuit Breaker (CB32) tripped	<b>F.</b> Reset CB32	Press in on Circuit breaker CB32 on front of control panel. Works Yes--End Troubleshooting No-- Replace CB32

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# MECHANICAL TROUBLESHOOTING

## Possible Cause

## Checkout Procedure

### **PROBLEM--Reels ground have high/low blades.**

Traverse Speed set to fast.

Check roundness using a magnetic base dial indicator. Traverse speed should be set approximately 12 ft/min [4 meters/min] if roundness is varying.

Lineal bearings for the grinding head carriage are out of adjustment (loose) or have grit buildup causing uneven traversing load.

Relubricate and adjust linear bearings per adjustment section. If problem persists, replace lineal bearings on the carriage base. Check for any holes in the bellows that would permit any grinding grit penetration. See adjustment section for lineal bearing replacement.

### **PROBLEM--Excessive grinding stock being removed when traversing to the right in the relief grinding mode.**

Gib adjustment for the relief finger assembly is loose so reel finger has movement. When traversing to the right minimum grinding stock removal should be seen as compared with heavy stock removal when traversing to the left.

Tighten the set screws for the gib adjustment. See procedure in the adjustment section in the manual.

### **PROBLEM--Grinding stock removal from reel is irregular during spin grinding.**

Lineal bearings on the grinding head carriage are too loose.

The lineal bearing must be preloaded to the traverse shafts with no vertical movement. See manual adjustment section for carriage linear bearing adjustments.

### **PROBLEM--Carriage traversing varies speed while grinding.**

Lineal bearings in the carriage do not rotate freely.

Check for grinding grit getting into the lineal bearings and cause excessive driving torque of carriage. Abrasive noise is detectable when excessive grit is in the lineal bearings. Replace the four lineal bearings in the main carriage. Check bellows for holes and replace if necessary.

Traverse Belt is slipping.

Check the spacing of the clamp to the support block. Clamp tip may need to be adjusted if the belt is slipping. The belt may also be too loose. See Adjustments section for proper measurements of clamp gap and belt tension.



## MECHANICAL TROUBLESHOOTING (Continued)

### **PROBLEM--Too heavy a burr on cutting edge of reel blades.**

#### **Possible Cause**

Traverse speed set to high causing a heavy burr on the reel blade when spin grinding.

#### **Checkout Procedure**

Traverse speed should be set lower approximately 12 ft/min. [4 meters/min.] for a smaller burr on cutting edge.

### **PROBLEM--Cone shaped reel after grinding.**

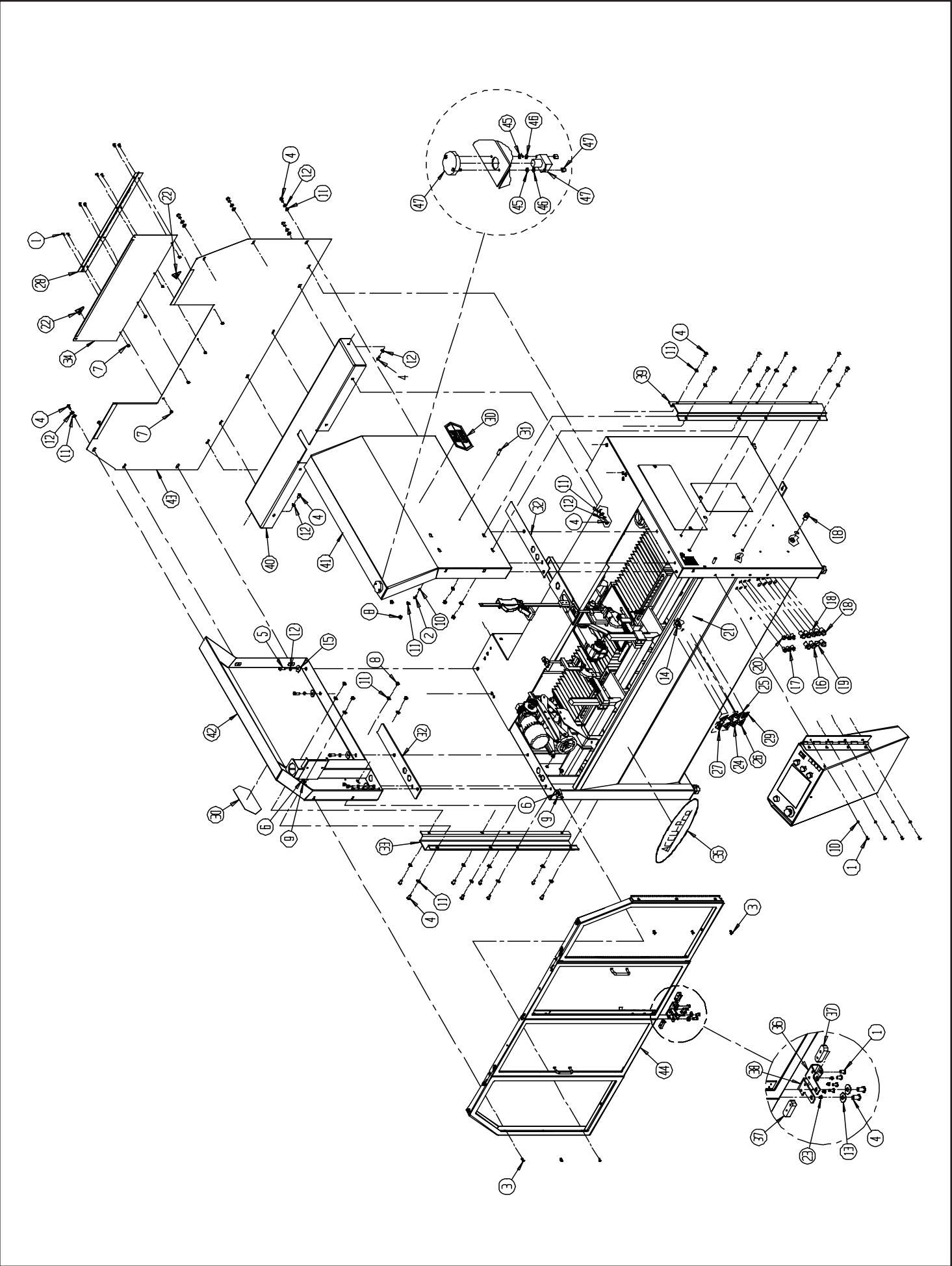
Grinding head travel not parallel to the reel center shaft.

Grinding head travel was not setup parallel to the reel center shaft in vertical and horizontal planes. See Align the Reel Section in Operator's Manual.

### **PROBLEM--Relief grind on the reel blades do not go the full length of the reel.**

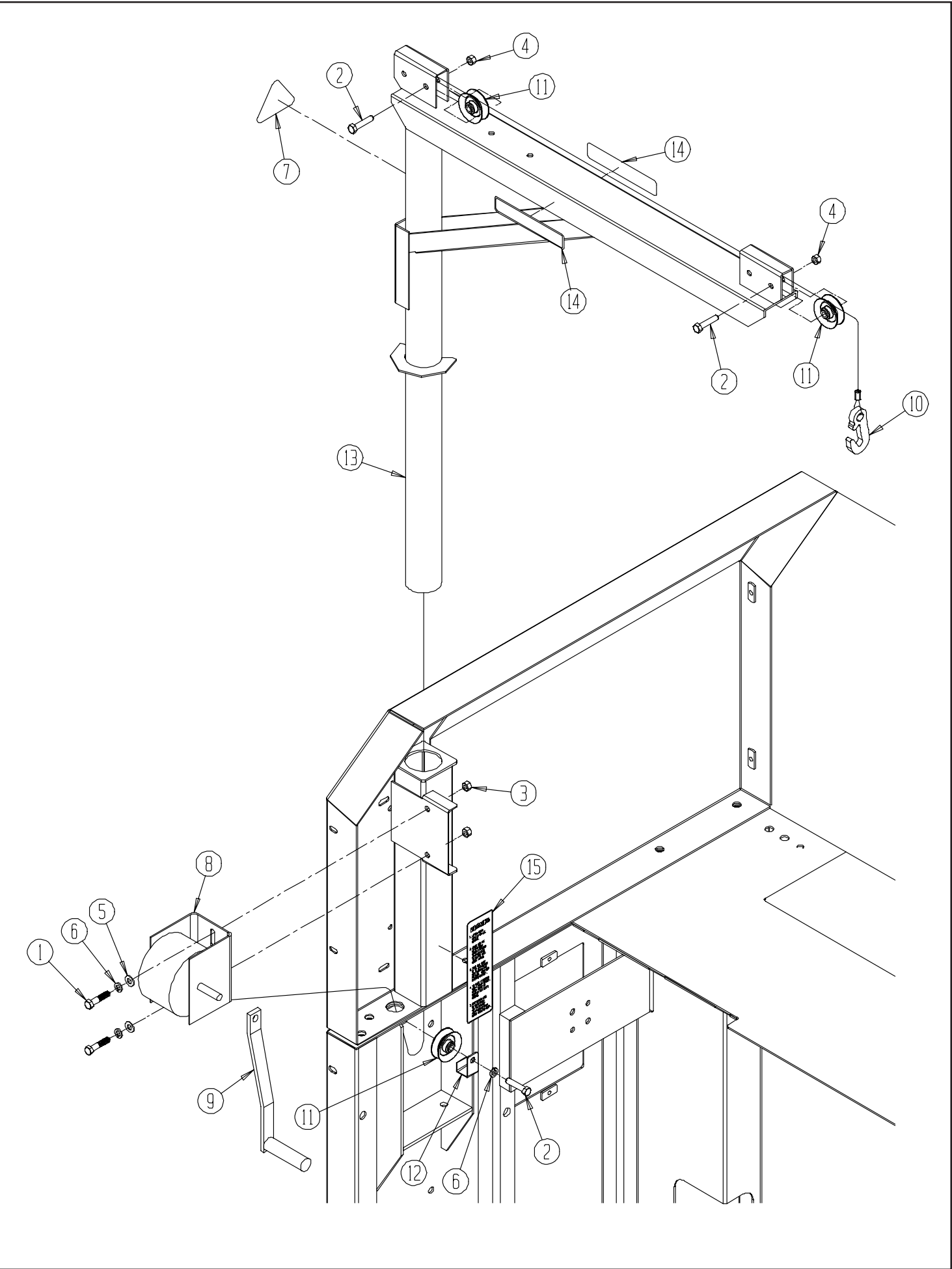
The right side corner of the grinding wheel is always to be in contact with the reel blade. This is high point of the relief finger.

The right hand side of the grinding wheel is not in full contact for relief grinding. See Operator's Manual for NORMAL HELIX AND REVERSE HELIX for information of dressing the grinding wheel.



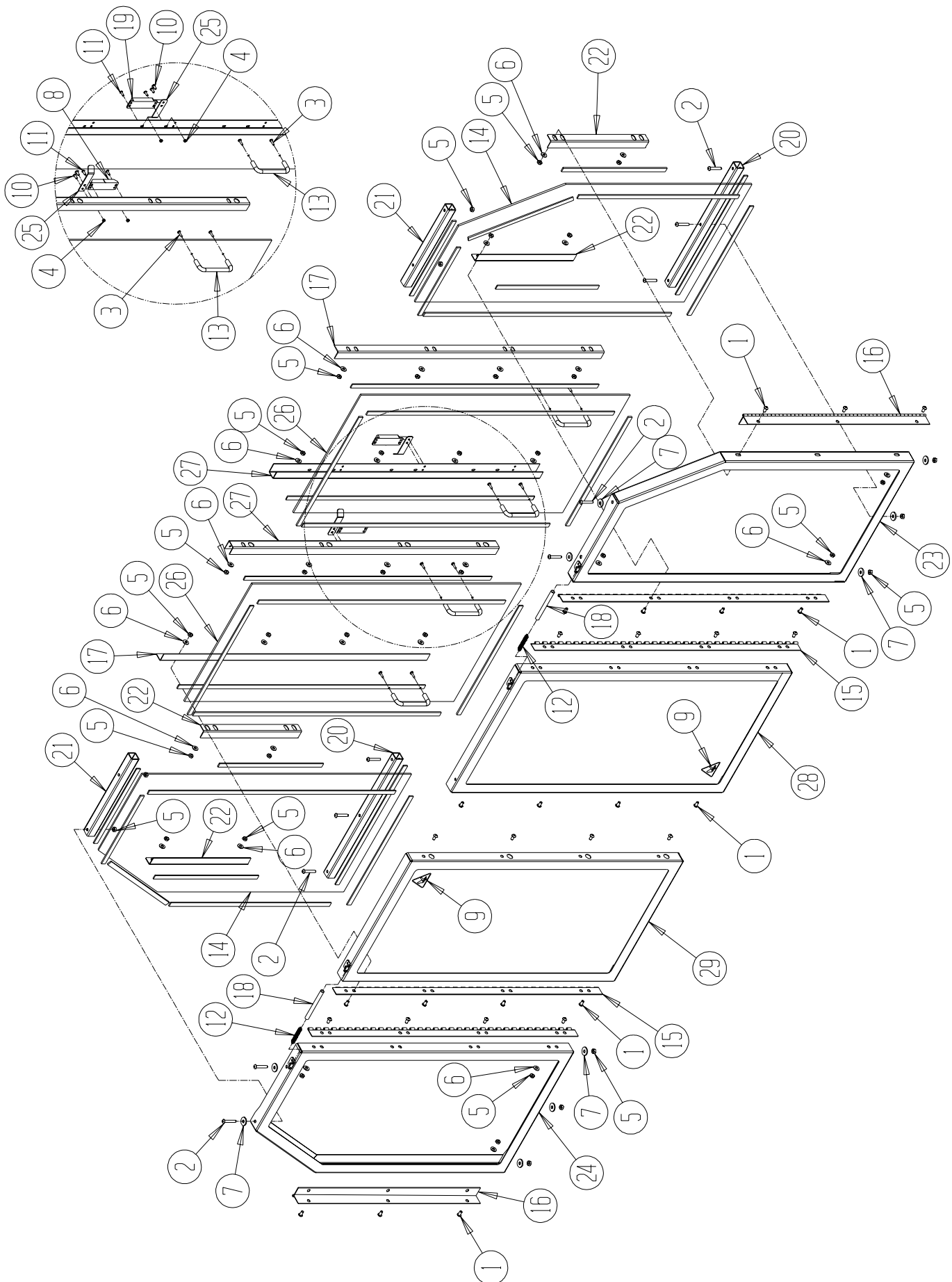
**PARTS LIST****6329537 CANOPY ASSEMBLY - WINCH & BOOM**

<b>DIAGRAM NUMBER</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>
1 .....	B250816 .....	Button Head Cap Screw 1/4-20 x 1/2 Long
2 .....	B251001 .....	Hex Head Cap Screw 1/4-20 x 5/8 Long
3 .....	B250801 .....	Hex Head Cap Screw 1/4-20 x 1/2 Long
4 .....	B371216 .....	Button Head Cap Screw 3/8-16 x 3/4 Long
5 .....	B371611 .....	Socket Head Cap Screw 3/8-16 1 Long
6 .....	J257000 .....	1/4-20 Nylon Jam Locknut
7 .....	J257100 .....	1/4-20 Nylon Locknut
8 .....	J377000 .....	3/8-16 Nylon Jam Locknut
9 .....	K250001 .....	1/4 Flat Washer
10 .....	K251501 .....	1/4 Split Lockwasher
11 .....	K370001 .....	3/8 Flat Washer SAE
12 .....	K371501 .....	3/8 Split Lockwasher
13 .....	R000454 .....	Flat Washer (1 OD x .44 ID)
14 .....	09394 .....	2 Prong Knob
15 .....	3589106 .....	Flat Washer (1.38 OD x .39 ID)
16 .....	3707009 .....	Liquid Tight Strain Relief .27-.47 Wire
17 .....	3707029 .....	Liquid Tight Strain Relief .19-.30 Wire
18 .....	3707093 .....	Liquid Tight Strain Relief .43-.55 Wire
19 .....	3707595 .....	7/8 Hole Plug
20 .....	3707597 .....	5/8 Hole Plug
21 .....	3708448 .....	Electrical Warning Decal
22 .....	3708458 .....	Sharp Warning Decal
23 .....	3708521 .....	Plastic Rivet
24 .....	3708605 .....	Respirator Warning Decal
25 .....	3708606 .....	Hearing Protection Warning Decal
26 .....	3708612 .....	No Fuel Warning Decal
27 .....	3708703 .....	Multiple Safety Symbols Decal
28 .....	3708869 .....	Spring Hinge
29 .....	3708872 .....	Patent Decal
30 .....	3709990 .....	Foley United Decal
31 .....	6309039 .....	Gage Mounting Pin
32 .....	6329022 .....	Side Frame Spacer Plate
33 .....	6329024 .....	Canopy Boom Support Bracket
34 .....	6329029 .....	Hinged Walker Panel
35 .....	6329053 .....	ACCUPro Decal
36 .....	6329047 .....	Door Guide Bracket RH
37 .....	6329048 .....	Door Slide
38 .....	6329049 .....	Door Guide Bracket LH
39 .....	6329059 .....	Canopy Support Bracket
40 .....	6329503 .....	Rear Top Filler Weldment
41 .....	6329505 .....	Guard Weldment RH
42 .....	6329506 .....	Guard Weldment - Boom LH
43 .....	6329520 .....	Rear Panel Weldment
44 .....	6329533 .....	Front Guard Door Assembly (see page 55)
45 .....	R000480 .....	#8 Lock Washer
46 .....	R000558 .....	#8-32 Kep Nut
47 .....	6529019 .....	Flasher Base Assembly



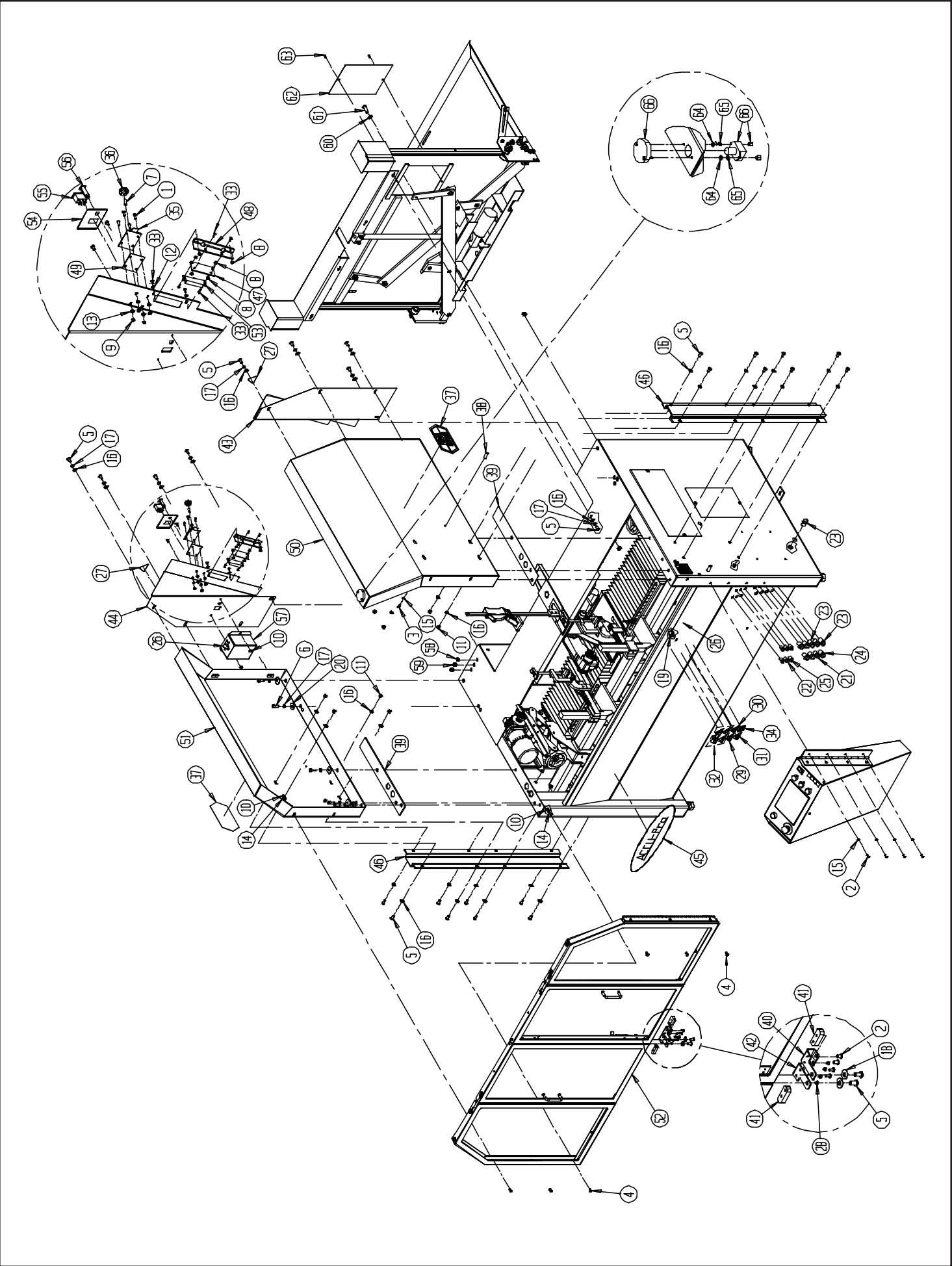
<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B371601 .....	Hex Head Cap Screw 3/8-16 x 1Long
2 .....	B372801 .....	Hex Head Cap Screw 3/8-16 x 1 3/4 Long
3 .....	J371000 .....	3/8-16 hex Nut
4 .....	J377100 .....	3/8-16 Nylon Locknut
5 .....	K370001 .....	3/8 Flat Washer
6 .....	K371501 .....	3/8 Split Lockwasher
7 .....	3708456 .....	Warning Decal - Boom Capacity
8 .....	3708645 .....	Winch
9 .....	3708647 .....	7" Winch Handle
10 .....	3709407* .....	Hook and Cable Assembly
11 .....	3709795 .....	Pulley
12 .....	6059003 .....	Pulley Guard Bracket
13 .....	6059527 .....	Boom Weldment
14 .....	6309036 .....	Boom Capacity Decal
15 .....	6309037 .....	Winch Warning Decal

\* Hook & Cable Assembly is packed in carton assembly. Install as shown (cable runs down middle of boom tube).

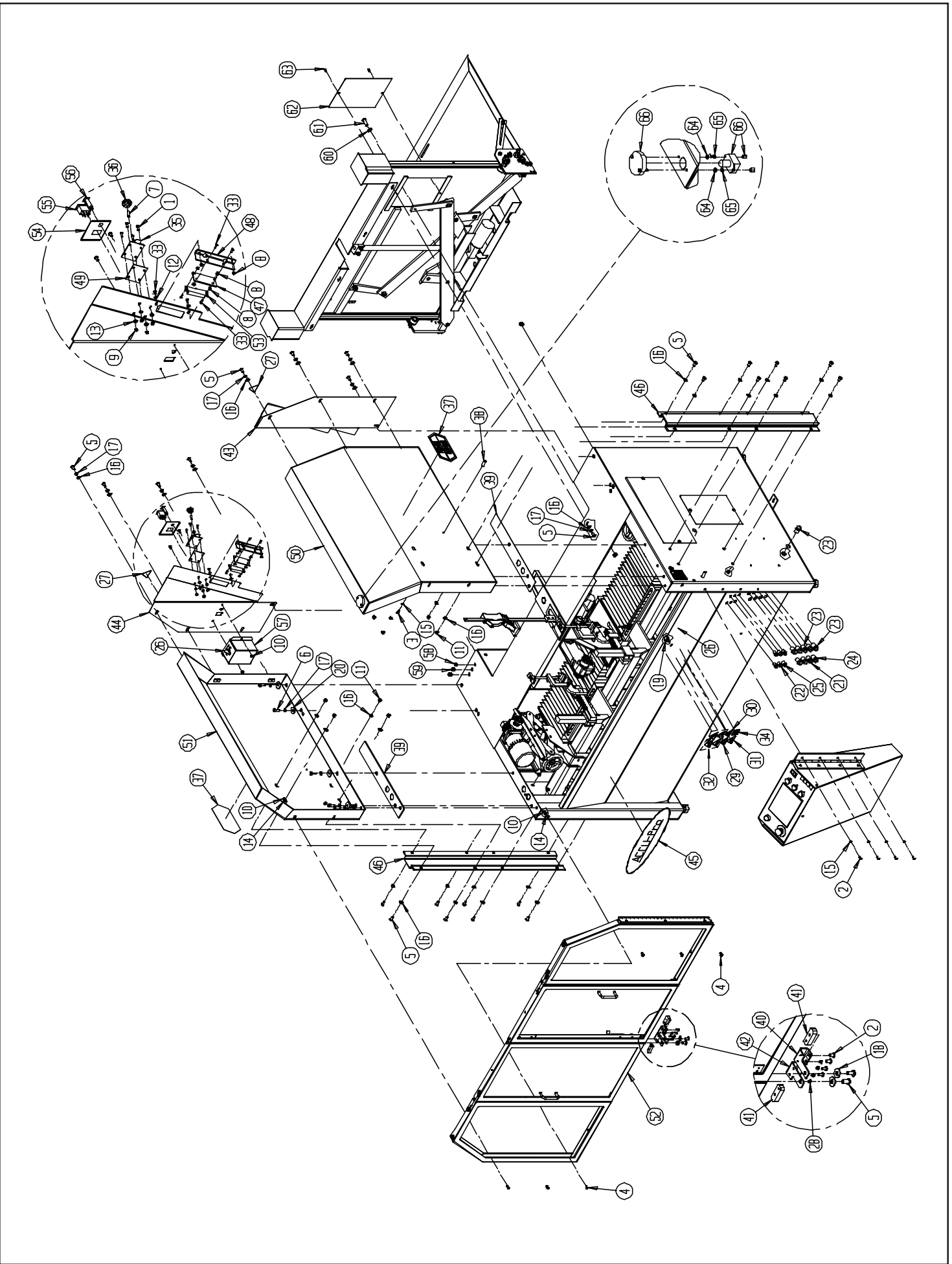




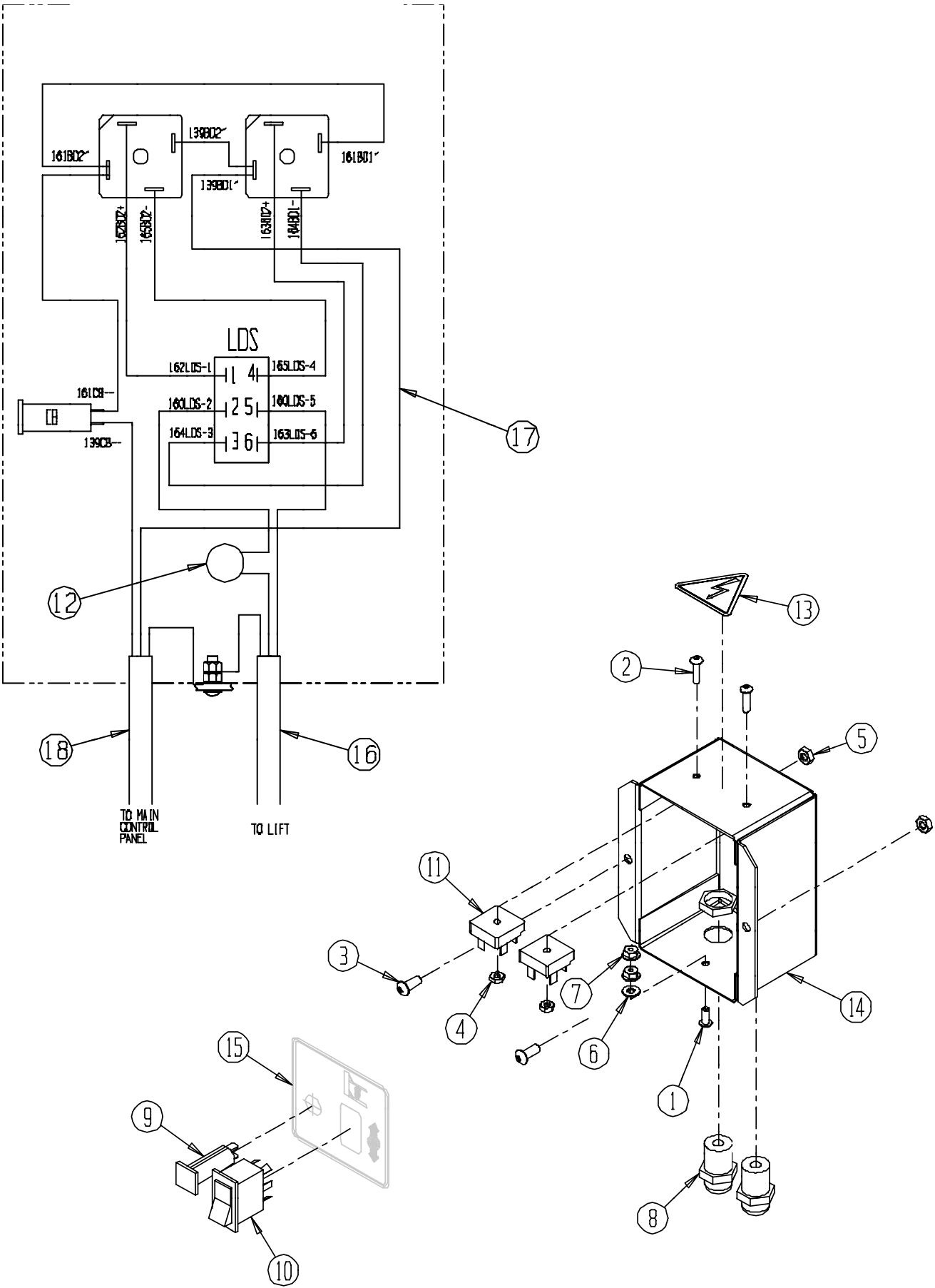
<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B250816 .....	Button Head Cap Screw 1/4-20 x 1/2 Long
2 .....	B252416 .....	Button Head Cap Screw 1/4-20 x 1 1/2 Long
3 .....	D161266 .....	Pan Head Machine Screw #8 x 3/4 Long
4 .....	J167000 .....	8-32 Nylon Jam Locknut
5 .....	J257000 .....	1/4-20 Nylon Jam Locknut
6 .....	K250001 .....	1/4 Flat Washer
7 .....	R000453 .....	Flat Washer
8 .....	3707331 .....	Door Safety Switch Coded Magnet
9 .....	3708458 .....	Sharp Warning Decal
10 .....	3708675 .....	3/16 Blind Rivet
11 .....	3708820 .....	Button Head Safety Screw #8-32 x 1/2 Long
12 .....	3708855 .....	Extension Spring
13 .....	3708857 .....	Black Pull Handle
14 .....	6059013 .....	Front Outside Window
15 .....	6059029 .....	Front Center Hinge
16 .....	6059030 .....	Front End Hinge
17 .....	6059036 .....	Center Window Support
18 .....	6059044 .....	Spring Cover Sleeve
19 .....	6059021 .....	Door Safety Switch (Front)
20 .....	6059066 .....	Bottom Window Support
21 .....	6059067 .....	Top Window Support
22 .....	6059068 .....	Short Window Support
23 .....	6059069 .....	Front RH Window Frame Weldment
24 .....	6059072 .....	Front LH Window Frame Weldment
25 .....	6309038 .....	Door Bracket
26 .....	6329046 .....	Front Inside Window
27 .....	6329071 .....	Window Retainer/ Switch Mount
28 .....	6329512 .....	Front RH Inside Window Frame Weldment
29 .....	6329513 .....	Front LH Inside Window Frame Weldment



<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B191213 .....	Button Head Cap Screw #10-24 x 3/4 Long
2 .....	B250816 .....	Button Head Cap Screw 1/4-20 x 1/2 Long
3 .....	B251001 .....	Hex Head Cap Screw 1/4-20 x 5/8 Long
4 .....	B250801 .....	Hex Head Cap Screw 1/4-20 x 1/2 Long
5 .....	B371216 .....	Button Head Cap Screw 3/8-16 x 3/4 Long
6 .....	B371611 .....	Socket Head Cap Screw 3/8-16 1 Long
7 .....	C311620 .....	Socket Set Screw Cup Pt. 5/16-18 x 1 Long
8 .....	J167000 .....	#8-32 Nylon Jam Locknut
9 .....	J197100 .....	#10-24 Nylon Locknut
10 .....	J257000 .....	1/4-20 Nylon Jam Locknut
11 .....	J377000 .....	3/8-16 Nylon Jam Locknut
12 .....	K160001 .....	#8 Flat Washer
13 .....	K190001 .....	#10 Flat Washer
14 .....	K250001 .....	1/4 Flat Washer
15 .....	K251501 .....	1/4 Split Lockwasher
16 .....	K370001 .....	3/8 Flat Washer SAE
17 .....	K371501 .....	3/8 Split Lockwasher
18 .....	R000454 .....	Flat Washer (1 OD x .44 ID)
19 .....	09394 .....	2 Prong Knob
20 .....	3589106 .....	Flat Washer (1.38 OD x .39 ID)
21 .....	3707009 .....	Liquid Tight Strain Relief .27-.47 Wire
22 .....	3707029 .....	Liquid Tight Strain Relief .19-.30 Wire
23 .....	3707093 .....	Liquid Tight Strain Relief .43-.55 Wire
24 .....	3707595 .....	7/8 Hole Plug
25 .....	3707597 .....	5/8 Hole Plug
26 .....	3708448 .....	Electrical Warning Decal
27 .....	3708458 .....	Sharp Warning Decal
28 .....	3708521 .....	Plastic Rivet
29 .....	3708605 .....	Respirator Warning Decal
30 .....	3708606 .....	Hearing Protection Warning Decal
31 .....	3708612 .....	No Fuel Warning Decal
32 .....	3708703 .....	Multiple Safety Symbols Decal
33 .....	3708820 .....	Button Head Safety Screw #8-32 x 1/2 Long
34 .....	3708872 .....	Patent Decal
35 .....	3708882 .....	Spring Latch
36 .....	3709788 .....	Knob
37 .....	3709990 .....	Foley United Decal
38 .....	6309039 .....	Gage Mounting Pin
39 .....	6329022 .....	Side Frame Spacer Plate
40 .....	6329047 .....	Door Guide Bracket RH



<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
41 .....	6329048 .....	Door Slide
42 .....	6329049 .....	Door Guide Bracket LH
43 .....	6329050 .....	Rear Panel RH - Lift
44 .....	6329051 .....	Rear Panel LH - Lift
45 .....	6329053 .....	ACCUPro Decal
46 .....	6329059 .....	Canopy Support Bracket
47 .....	6329083 .....	Door Switch Mounting Plate
48 .....	6329084 .....	Door Switch Mounting Bracket
49 .....	6329085 .....	Latch Spacer Plate
50 .....	6329505 .....	Guard Weldment RH
51 .....	6329519 .....	Guard Weldment - Lift LH
52 .....	6329533 .....	Front Guard Door Assembly (see page xx)
53 .....	3707607 .....	Door Safety Switch Assembly
.....	6329097 .....	Rear Door Switch Cord
54 .....	6209102 .....	Lift Control Decal
55 .....	3707428 .....	Rocker Switch
56 .....	3707156 .....	6-Amp Circuit Breaker
57 .....	6209101 .....	Lift Control Box
58 .....	3707066 .....	Strain Relief .22-.25 Wire
59 .....	3707273 .....	Strain Relief .33-.36 Wire
60 .....	3709019 .....	Thrust Washer .94 OD x .50 ID
61 .....	80048 .....	Button Head Cap Screw 1/2-13 x 1 1/2 Long
62 .....	6209100 .....	Lift Access Panel
63 .....	B250805 .....	Flat Head Cap Screw 1/4-20 x 1/4 Long
64 .....	R000480 .....	#8 Lock Washer
65 .....	R000558 .....	#8-32 Kep Nut
66 .....	6529019 .....	Flasher Base Assembly
.....	6529043 .....	Lift Power Cord W139
.....	6529044 .....	Rear Door Switch Cord

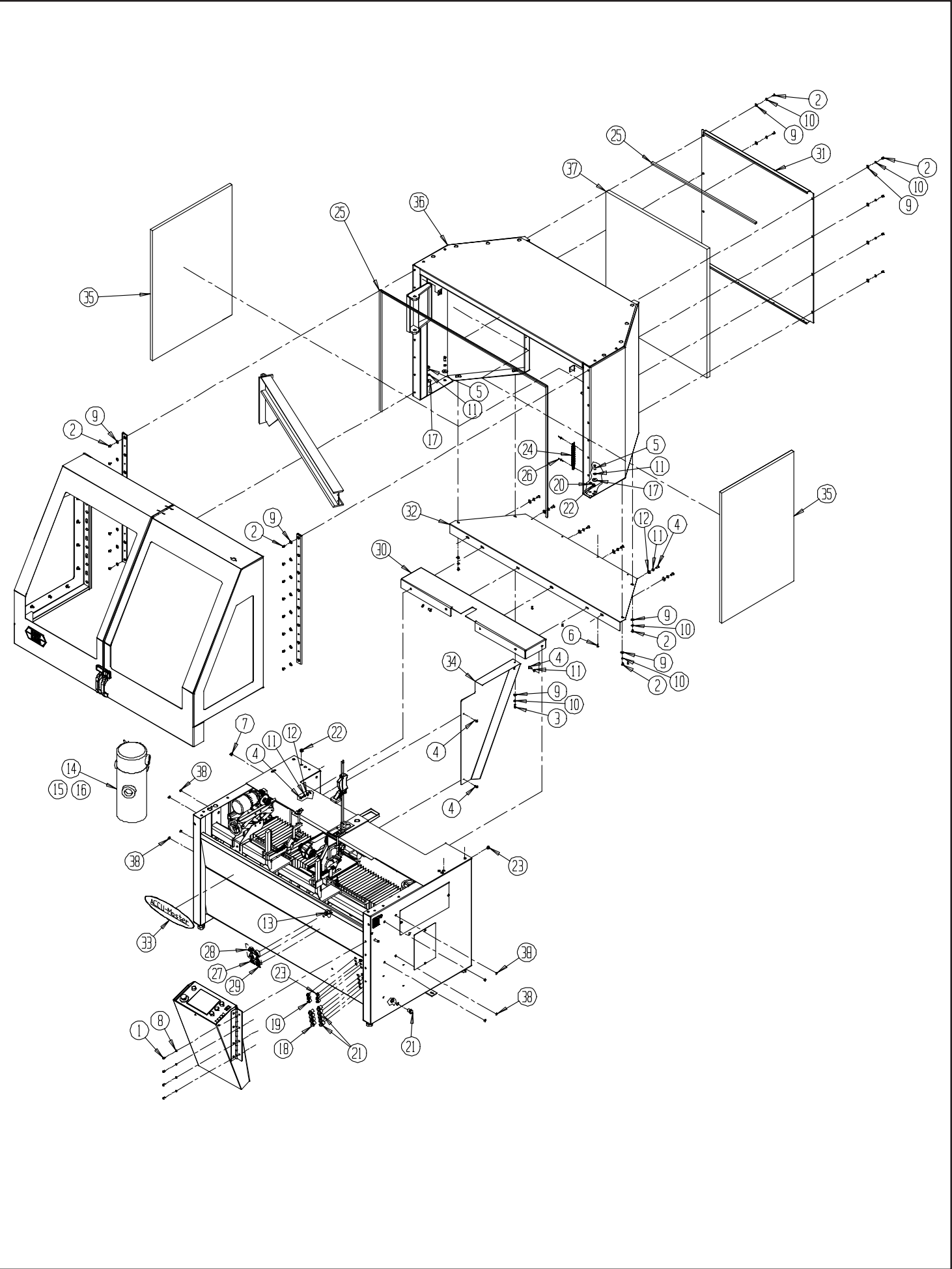




<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B190813 .....	Button Head Cap Screw #10-24 x 1/2 Long
2 .....	B191213 .....	Button Head Cap Screw #10-24 x 3/4 Long
3 .....	B251016 .....	Button Head Cap Screw 1/4-20 x 5/8 Long
4 .....	J197000 .....	#10-24 Nylon Jam Locknut
5 .....	J257100 .....	1/4-20 Nylon Locknut
6 .....	R000483 .....	#10 Lockwasher
7 .....	R000553 .....	#10-24 Kep Nut
8 .....	3707009 .....	Liquid Tight Strain Relief .27-.47 Wire
9 .....	3707156 .....	6-Amp Circuit Breaker
10 .....	3707428 .....	Rocker Switch Momentary on-off-on
11 .....	3707526 .....	25-Amp Bridge Diode
12 .....	3707644 .....	Thermistor Assembly
13 .....	3708448 .....	Electrical Warning Decal
14 .....	6209101 .....	Lift Electrical Control Box
15 .....	6209102 .....	Lift Control Decal
16 .....	6209110 .....	Lift Actuator Cord
17 .....	6209111 .....	Lift Controls Harness
18 .....	6329082 .....	Lift Power Cord



<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B190813 .....	Button Head Cap Screw #10-24 x 1/2 Long
2 .....	B371611 .....	Socket Head Cap Screw 3/8-16 x 1 Long
3 .....	B372011 .....	Socket Head Cap Screw 3/8-16 x 1 1/4 Long
4 .....	B374011 .....	Socket Head Cap Screw 3/8-16 x 2 1/2 Long
5 .....	B377211 .....	Socket Head Cap Screw 3/8-16 x 4 1/2 Long
6 .....	B502405 .....	Flat Head Cap Screw 1/2-13 x 1 1/2 Long
7 .....	B503211 .....	Socket Head Cap Screw 1/2-13 x 2 Long
8 .....	J377100 .....	3/8-16 Nylon Locknut
9 .....	J377000 .....	3/8-16 Nylon Jam Locknut
10 .....	J507100 .....	1/2-13 Nylon Locknut
11 .....	K370001 .....	3/8 Flat Washer
12 .....	K371501 .....	3/8 Split Lockwasher
13 .....	K500001 .....	1/2 Flat Washer
14 .....	K501501 .....	1/2 Split Lockwasher
15 .....	80048 .....	Button Head Cap Screw
16 .....	3599029 .....	Flat Washer
17 .....	3707373 .....	Electro Mechanical Actuator
18 .....	3708868 .....	Compression Spring
19 .....	3708870 .....	External Snap Ring
20 .....	3709019 .....	Thrust Washer
21 .....	3709700 .....	Cam Follower
22 .....	3709702 .....	Flanged Bronze Bushing
23 .....	6209070 .....	Lift Long Arm
24 .....	6209071 .....	Lift Swing Arm
25 .....	6209072 .....	Lift Short Arm
26 .....	6209073 .....	Bearing Plate
27 .....	6209074 .....	Bearing Plate Arm Block
28 .....	6209089 .....	Ramp Support Strap
29 .....	6209095 .....	Anti-Rollback Plate
30 .....	6209097 .....	Pivot Pin
31 .....	6209116 .....	Lift Cross Support
32 .....	6509507 .....	Lift Bearing Assembly
33 .....	6509570 .....	Lift Frame Weldment
34 .....	6509572 .....	Load Carrier Weldment
35 .....	6209573 .....	Actuator Top Block Assembly
36 .....	6209574 .....	Ramp Weldment
37 .....	3708456 .....	Capacity Warning Decal (Not Shown)
38 .....	6309036 .....	Capacity Warning Decal - Text (Not Shown)



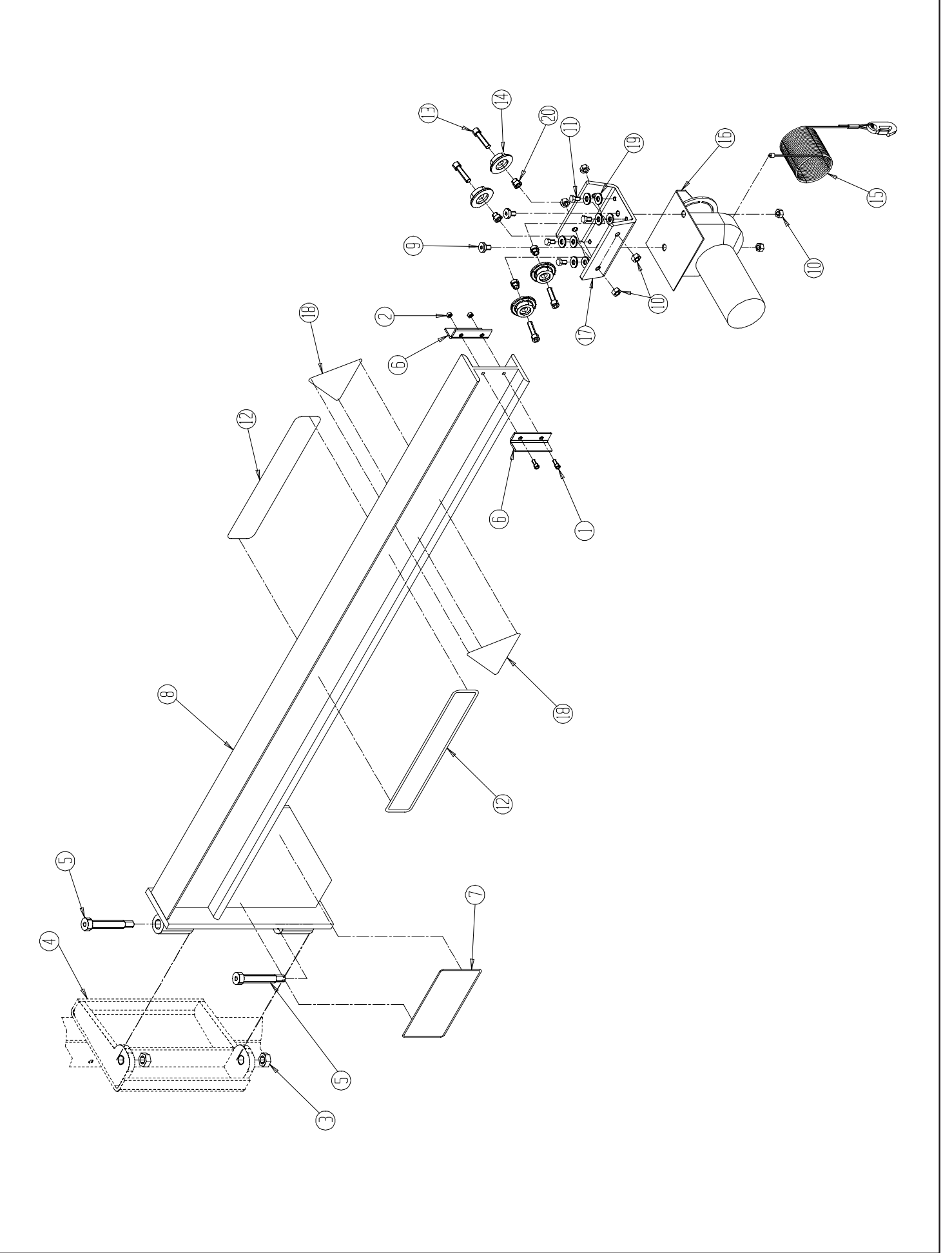
# PARTS LIST

# 6529532 CANOPY ASSEMBLY WINCH & BOOM

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B250816 .....	Button Head Cap Screw 1/4-20 x 1/2 Long
2 .....	B310813 .....	Button Head Cap Screw 5/16-18 x 1/2 Long
3 .....	B311211 .....	Socket Head Cap Screw 5/16-18 x 3/4 Long
4 .....	B371216 .....	Button Head Cap Screw 3/8-16 x 3/4 Long
5 .....	B371611 .....	Socket Head Cap Screw 3/8-16 1 Long
6 .....	D191067 .....	#10 Machine Screw x 5/8 Long
7 .....	J377100 .....	3/8-16 Nylon Locknut
8 .....	K251501 .....	1/4 Split Lockwasher
9 .....	K310001 .....	5/16 Flat Washer SAE
10 .....	K311501 .....	5/16 Split Lockwasher
11 .....	K370001 .....	3/8 Flat Washer SAE
12 .....	K371501 .....	3/8 Split Lockwasher
13 .....	09394 .....	2 Prong Knob
14 .....	09818 .....	Vacuum
15 .....	3708873 .....	Vacuum Hose End Adapter
16 .....	3708874 .....	Vacuum Sizing Adapter
17 .....	3589106 .....	Flat Washer (1.38 OD x .39 ID)
18 .....	3707009 .....	Liquid Tight Strain Relief .27-.47 Wire
19 .....	3707029 .....	Liquid Tight Strain Relief .19-.30 Wire
20 .....	3707066 .....	Strain Relief .22-.25 Wire
21 .....	3707093 .....	Liquid Tight Strain Relief .43-.55 Wire
22 .....	3707273 .....	Strain Relief .33-.36 Wire
23 .....	3707597 .....	5/8 Hole Plug
24 .....	3708205 .....	Socket Holder
25 .....	3708379 .....	Foam Strip
26 .....	3708465 .....	3/16 Blind Rivet
27 .....	3708612 .....	No Fuel Warning Decal
28 .....	3708703 .....	Multiple Safety Symbols Decal
29 .....	3708872 .....	Patent Decal
30 .....	6329503 .....	Rear Top Filler Weldment
31 .....	6529004 .....	Rear Canopy Panel
32 .....	6529005 .....	Bottom Canopy Panel
33 .....	6529021 .....	ACCUMaster Decal
34 .....	6529042 .....	Canopy Support Panel
35 .....	6529082 .....	Canopy Side Foam Pad
36 .....	6529083 .....	Canopy Back Foam Pad
37 .....	6529501 .....	Canopy Weldment
38 .....	3709372 .....	1/2" Hole Plug

## ITEMS NOT SHOWN

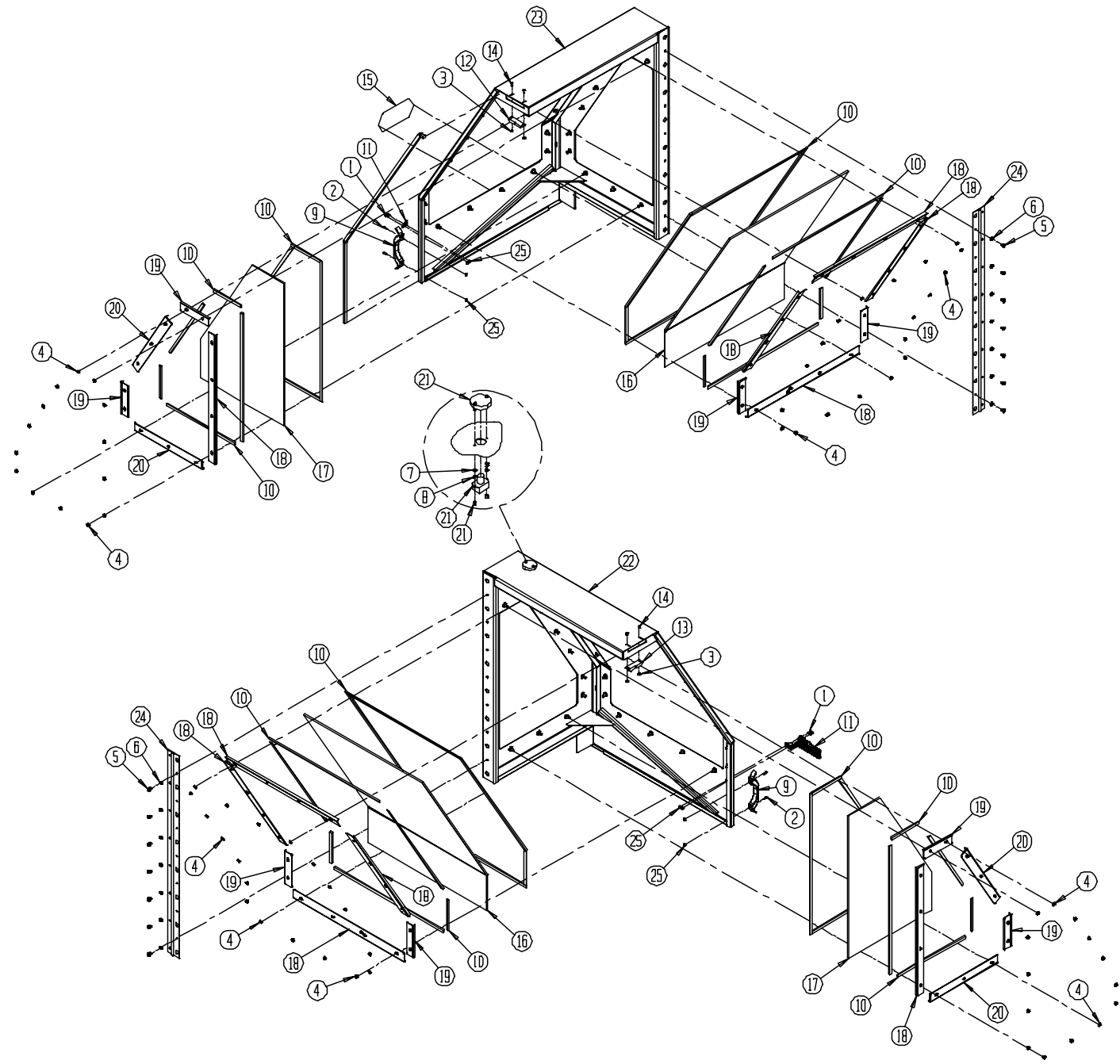
.....	3707609 .....	Fluorescent Machine Light
.....	6529038 .....	Winch Cord Receptacle W139
.....	6529041 .....	Front Door Switch Cord Assembly
.....	3708448 .....	Electrical Warning Decal



**PARTS LIST****6509526 WINCH AND BOOM ASSEMBLY**

<b>DIAGRAM NO.</b>	<b>PART. NO.</b>	<b>DESCRIPTION</b>
1	B251611	Socket Head Cap Screw 1/4-20 x 1 Long
2	J257100	1/4-20 Nylok Locknut
3	J627100	5/8-11 Locknut
4	6509541	Canopy Frame Weldment
5	3708398	Shoulder Bolt, .75 Dia. x 3.5 Long
6	6509103	Trolley stop Bracket
7	6509115	Winch Warning Decal
8	6509544	Boom Weldment
9	B371616	Button Head Socket Cap Screw 3/8-16 x 1" Long
10	J377100	3/8-16 Hex Jam Nylok Locknut
11	3708519	5/16-18 x 1/2 Nylon HHCS
12	6509298	Decal - Boom Cap
13	B372411	3/8-16 x 1.50 SHCS
14	6509367	Trolley Wheel Assy
15	6509594	Hook and Cable Assembly
16	6509546	Electric Winch
17	6509364	Trolley Base
18	3708456	Decal - Boom Capacity Symbol
19	K310101	5/16 Flat Washer
20	6509366	Spacer - Trolley Wheel



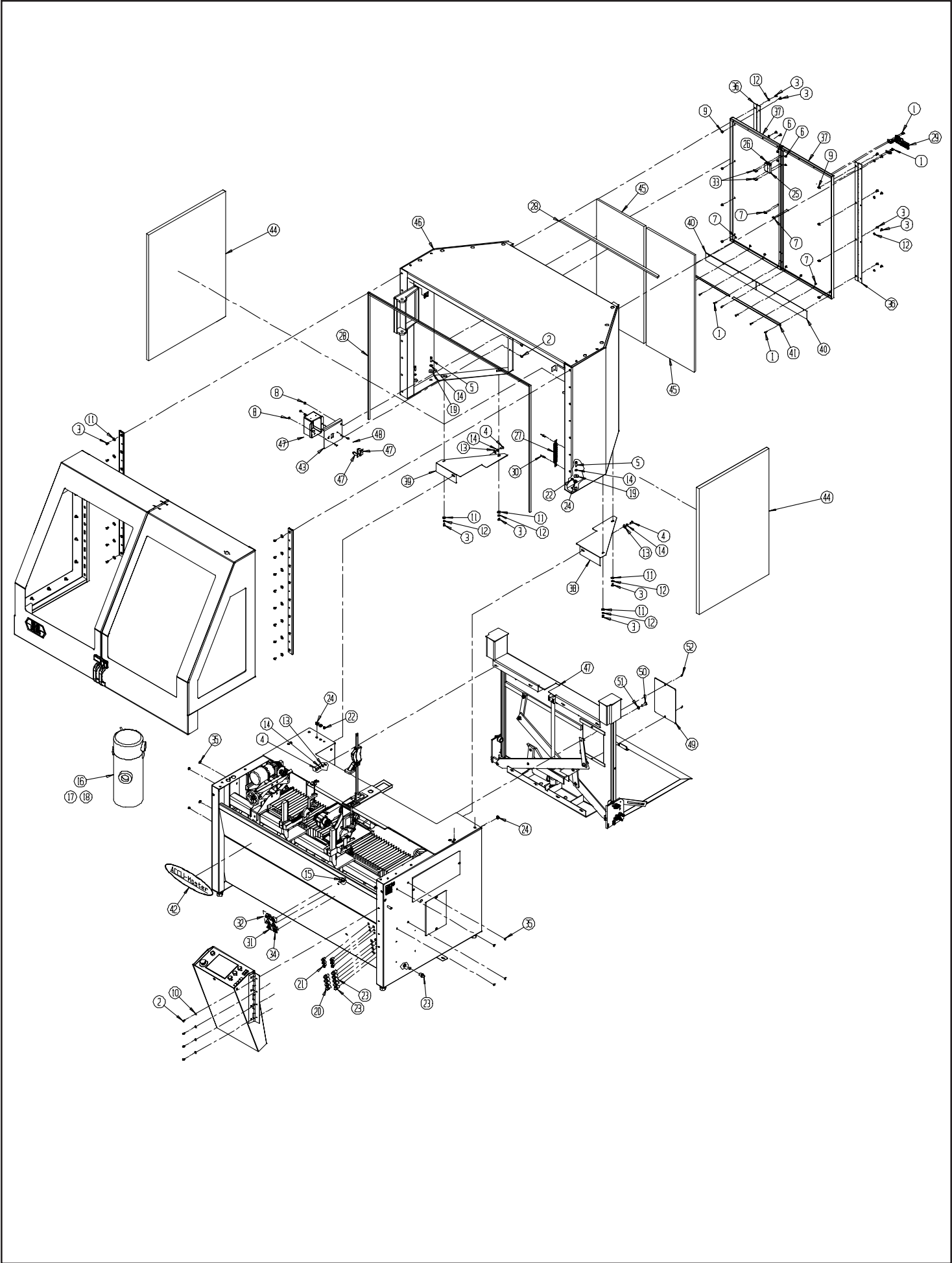


**PARTS LIST****6529532 - CANOPY DOORS ASSEMBLY**

<b><u>DIAGRAM NUMBER</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	B190811 .....	Socket Head Cap Screw #10-24 x 1/2 Long
2 .....	B191011 .....	Socket Head Cap Screw #10-24 x 5/8 Long
3 .....	J167000 .....	#8-32 Nylon Jam Locknut
4 .....	J311000 .....	5/16-18 Hex Nut
5 .....	B250816 .....	Button Head Cap Screw 1/4-20 x 1/2 Long
6 .....	K251501 .....	1/4 Split Lockwasher
7 .....	R000480 .....	#8 Lockwasher
8 .....	R000558 .....	#8-32 Kep Nut
9 .....	09891 .....	Grab Handle
10 .....		Foam Strips
11 .....	3708416 .....	Soft Latch
12 .....	3707331 .....	Coded Door Switch Magnet
13 .....	3707607 .....	Door Switch Assembly
14 .....	3708820 .....	Button Head Safety Screw #8-32 x 1/2 Long
15 .....	3709990 .....	Large Foley United Decal
16 .....	6509104 .....	Canopy Door Front Window
17 .....	6509105 .....	Canopy Door Side Window
18 .....	6509110 .....	Window Retaining Bracket - Long
19 .....	6509111 .....	Window Retaining Bracket - Short
20 .....	6509182 .....	Window Retaining Bracket - Medium
21 .....	6529019 .....	Flasher Light Base Assembly
22 .....	6529505 .....	Right Door Weldment
23 .....	6529506 .....	Left Door Weldment
24 .....	6509099 .....	Hinge
25 .....	J197100 .....	#10-24 Nylon Locknut

PARTS LIST

6529534 CANOPY ASSEMBLY- REAR LIFT



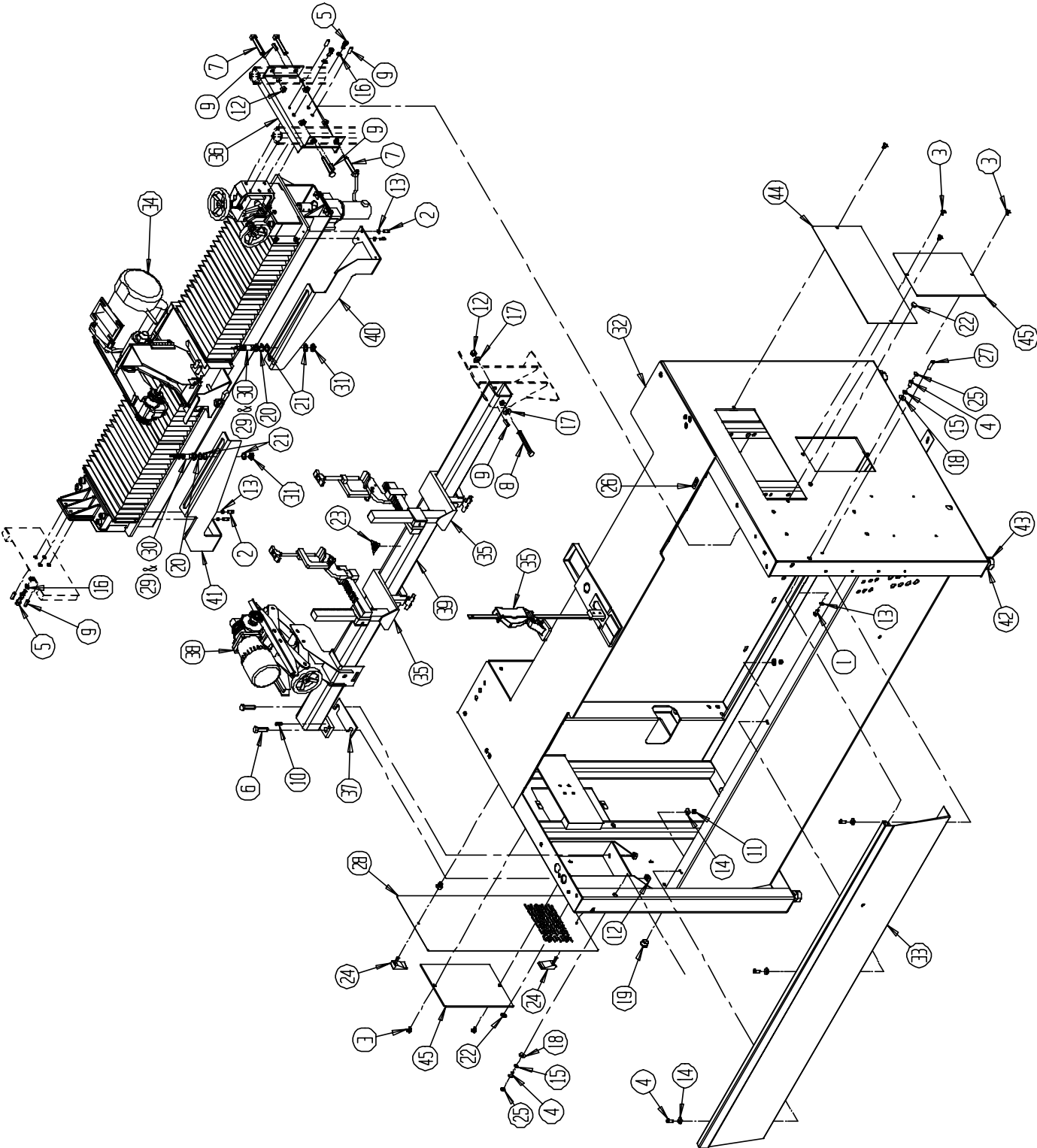
# PARTS LIST

# 6529534 CANOPY ASSEMBLY - REAR LIFT

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B190811 .....	Socket Head Cap Screw #10-24 x 1/2 Long
2 .....	B250816 .....	Button Head Cap Screw 1/4-20 x 1/2 Long
3 .....	B310813 .....	Button Head Cap Screw 5/16-18 x 1/2 Long
4 .....	B371216 .....	Button Head Cap Screw 3/8-16 x 3/4 Long
5 .....	B371611 .....	Socket Head Cap Screw 3/8-16 1 Long
6 .....	J167000 .....	#8-32 Nylon Jam Locknut
7 .....	J197100 .....	#10-24 Nylon Locknut
8 .....	J257100 .....	1/4-20 Nylon Locknut
9 .....	J317100 .....	5/16-18 Nylon Locknut
10 .....	K251501 .....	1/4 Split Lockwasher
11 .....	K310001 .....	5/16 Flat Washer SAE
12 .....	K311501 .....	5/16 Split Lockwasher
13 .....	K370001 .....	3/8 Flat Washer SAE
14 .....	K371501 .....	3/8 Split Lockwasher
15 .....	09394 .....	2 Prong Knob
16 .....	09818 .....	Vacuum
17 .....	3708873 .....	Vacuum Hose End Adapter
18 .....	3708874 .....	Vacuum Sizing Adapter
19 .....	3589106 .....	Flat Washer (1.38 OD x .39 ID)
20 .....	3707009 .....	Liquid Tight Strain Relief .27-.47 Wire
21 .....	3707029 .....	Liquid Tight Strain Relief .19-.30 Wire
22 .....	3707066 .....	Strain Relief .22-.25 Wire
23 .....	3707093 .....	Liquid Tight Strain Relief .43-.55 Wire
24 .....	3707273 .....	Strain Relief .33-.36 Wire
25 .....	3707331 .....	Door Safety Switch Coded Magnet
26 .....	3707607 .....	Door Safety Switch Assembly
27 .....	3708205 .....	Socket Holder
28 .....	.....	Foam Strip
29 .....	3708416 .....	Soft Latch
30 .....	3708465 .....	3/16 Blind Rivet
31 .....	3708612 .....	No Fuel Warning Decal
32 .....	3708703 .....	Multiple Safety Symbols Decal
33 .....	3708872 .....	Patent Decal
34 .....	3708820 .....	Button Head Safety Screw #8-32 x 1/2 Long
35 .....	3709372 .....	1/2" Hole Plug
36 .....	6059025 .....	Rear Door Hinge
37 .....	6529006 .....	Rear Door
38 .....	6529010 .....	Bottom Rear RH Panel
39 .....	6529011 .....	Bottom Rear LH Panel
40 .....	6529016 .....	Rear Door Rubber Flap
41 .....	6529017 .....	Rear Door Flap Bracket
42 .....	6529021 .....	ACCUMaster Decal
43 .....	6529023 .....	Lift Control Plate
44 .....	6529082 .....	Canopy Side Foam Pad
45 .....	6529084 .....	Canopy Rear Door Foam Pad
46 .....	6529501 .....	Canopy Weldment
47 .....	6200970 .....	LIFT Parts See Pages (xx - xx)
48 .....	6209102 .....	Lift Control Decal
49 .....	6209100 .....	Lift Access Panel
50 .....	80048 .....	Button Head Cap Screw 1/2-13 x 1 1/2 Long
51 .....	3709019 .....	Thrust Washer
52 .....	B250805 .....	Flat Head Cap Screw 1/4-20 x 1/2 Long

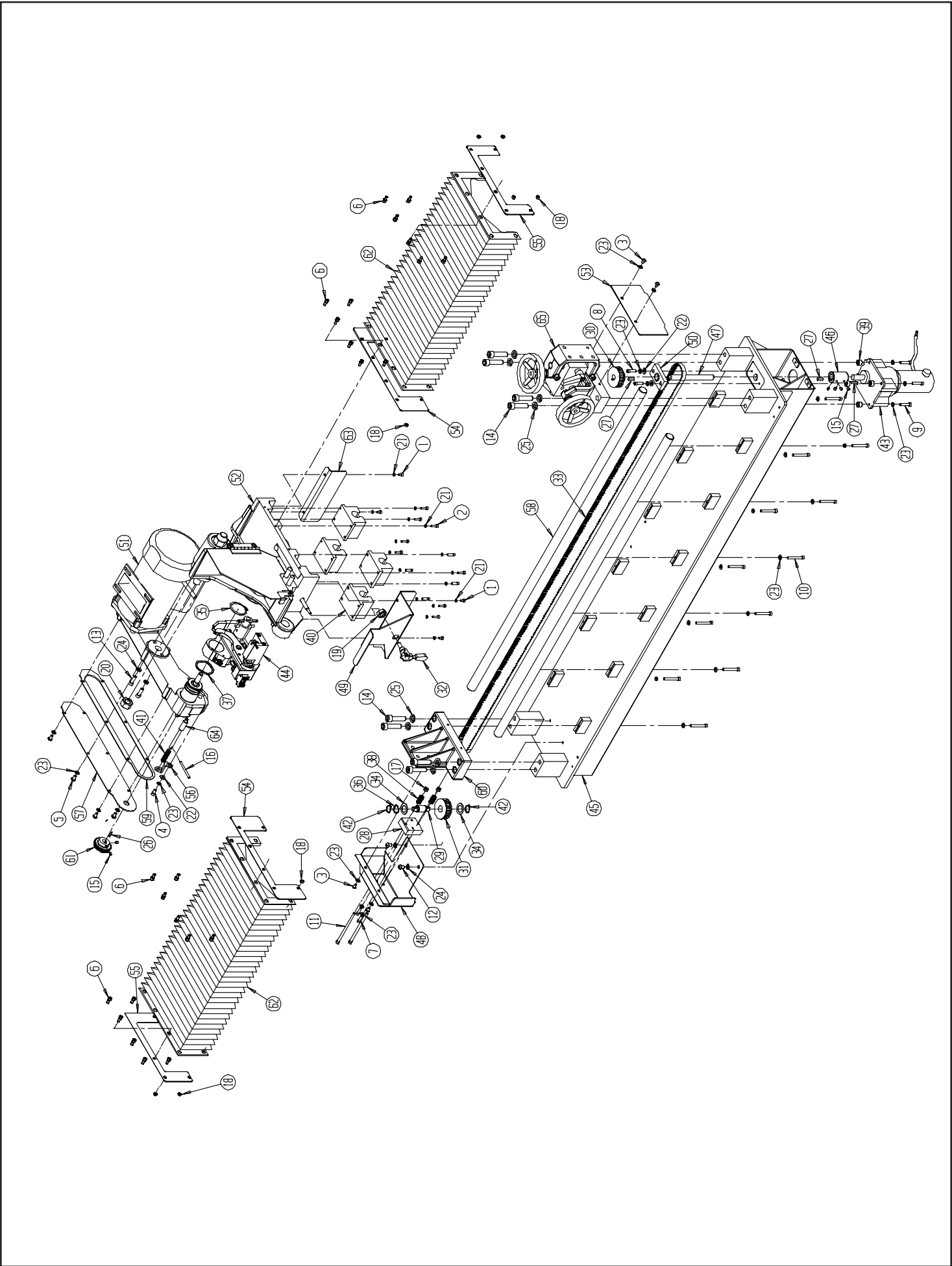
## ITEMS NOT SHOWN

.....	3707609 .....	Fluorescent Machine Light
.....	6529041 .....	Front Door Switch Cord Assembly
.....	6529043 .....	Lift Power Cord W139
.....	6529044 .....	Rear Door Switch Cord Assembly
.....	3708448 .....	Electrical Warning Decal



**PARTS LIST****6329530 MAIN CABINET ASSEMBLY**

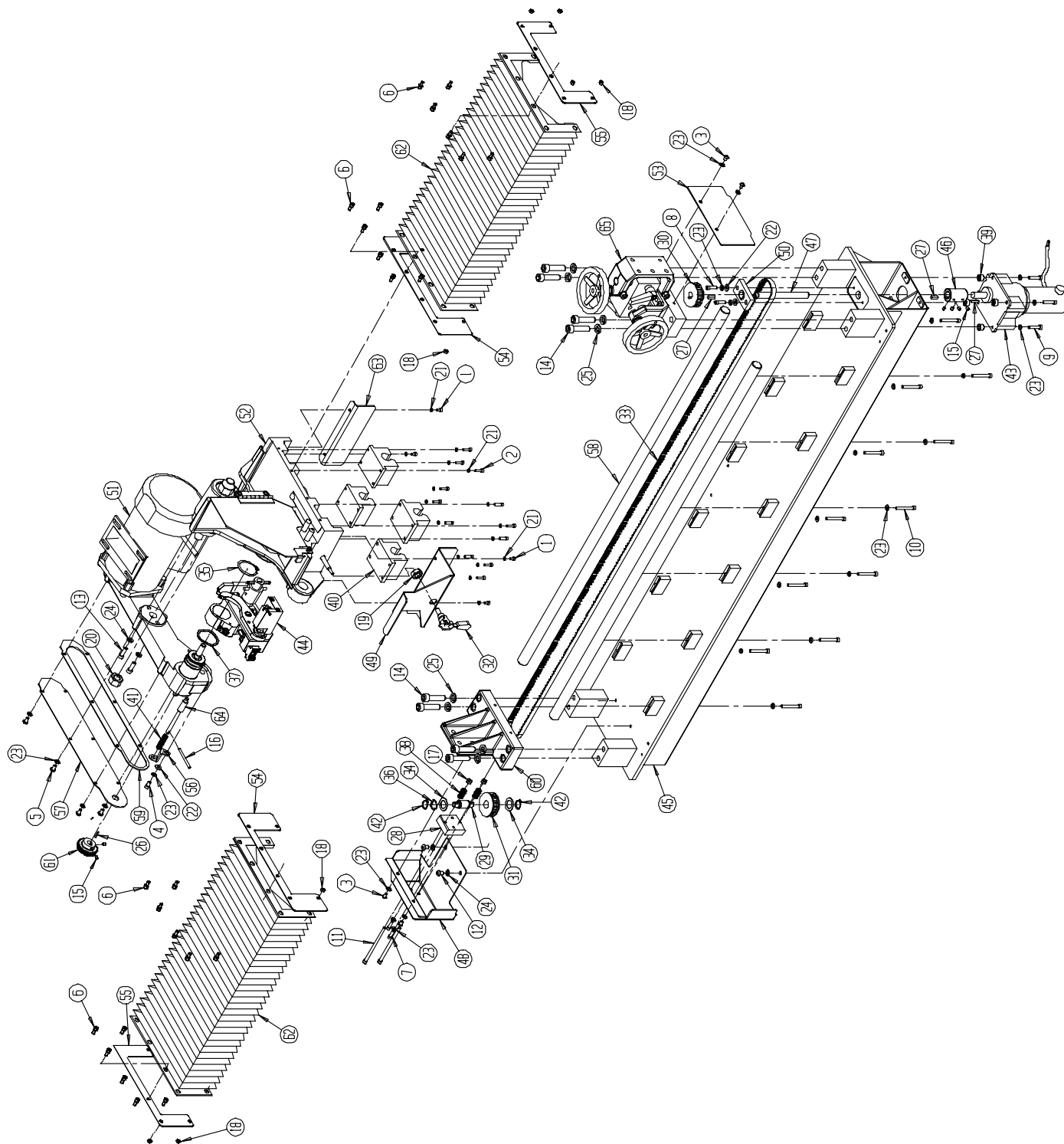
<b>DIAGRAM NUMBER</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>
1 .....	B251001 .....	Hex Head Cap Screw 1/4-20 x 5/8
2 .....	B251011 .....	Socket Head Cap Screw 1/4-20 x 5/8
3 .....	B310813 .....	Button Head Socket Cap Screw 5/16-18 x 1/2
4 .....	B311213 .....	Button Head Socket Cap Screw 5/16-18 x 3/4
5 .....	B371211 .....	Socket Head Cap Screw 3/8-16 x 3/4
6 .....	B502801 .....	Hex Head Cap Screw 1/2-13 x 1 3/4
7 .....	B504801 .....	Hex Head Cap Screw 1/2-13 x 3
8 .....	B506801 .....	Hex Head Cap Screw 1/2-13 x 4.25
9 .....	H371602 .....	Roll Pin .375 Dia. x 1 Long
10 .....	H372002 .....	Roll Pin .375 Dia. x 1 1/4 Long
11 .....	J317100 .....	5/16-18 Locknut
12 .....	J507100 .....	1/2-13 Locknut
13 .....	K251501 .....	1/4 Split Lockwasher
14 .....	K310001 .....	5/16 Flat Washer SAE
15 .....	K311501 .....	5/16 Split Lockwasher
16 .....	K371501 .....	3/8 Split Lockwasher
17 .....	K500001 .....	1/2 Flat Washer SAE
18 .....	R000453 .....	Flat Washer (.88 OD x .31 ID x .104 T)
19 .....	3707595 .....	7/8" Hole Plug
20 .....	3708419 .....	Wave Spring
21 .....	3708421 .....	Flat Washer (1.0 OD x .75 ID x .08T)
22 .....	3708542 .....	5/8" Hole Plug
23 .....	3708612 .....	Fuel Warning Decal
24 .....	3708867 .....	Swell Latch
25 .....	3709372 .....	1/2" Hole Plug
26 .....	6309111 .....	Decal - Up/Down
27 .....	6309039 .....	Gage Pin Mounting
28 .....	6329017 .....	Vac Door
29 .....	3707601 .....	Proximity Switch Head
30 a .....	6329075 .....	LH Traverse Proximity Switch Cord
30 b .....	6329076 .....	RH Traverse Proximity Switch Cord
31 .....	3707459 .....	Proximity Switch Nut
32 .....	6329501 .....	Cabinet Weldment
33 .....	6329504 .....	Front Panel Weldment
34 .....	6329525 .....	Traverse Base Assembly (see page 64)
35 .....	6329535 .....	Mower Support Assembly (see page 78)
36 .....	6509035 .....	Cross slide Mount
37 .....	6509389 .....	Tooling Bar Shim
38 .....	6509465 .....	Spin Drive Assembly (see page 80)
39 .....	6509510 .....	Tooling Bar Weldment
40 .....	6509560 .....	Proximity Switch Bracket Weldment RH
41 .....	6509561 .....	Proximity Switch Bracket Weldment LH
42 .....	J992000 .....	1-8 Hex Jam Nut
43 .....	A993201 .....	Adjustable Leveling Bolt
44 .....	6509039 .....	Right-Hand Access Panel
45 .....	6509040 .....	Left-Hand Access Panel - Small



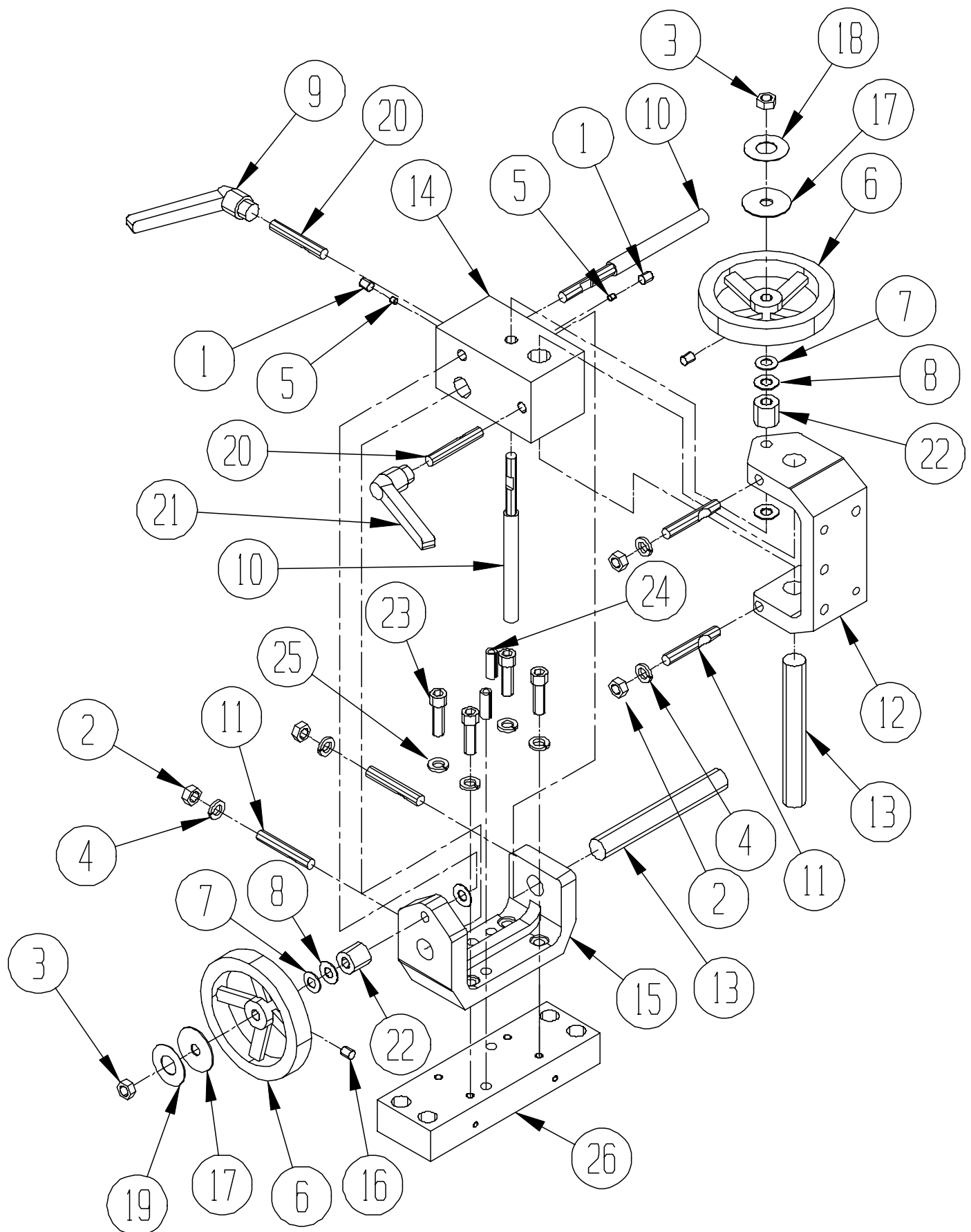


**PARTS LIST****6329525 TRAVERSE BASE ASSEMBLY**

<b><u>DIAGRAM NUMBER</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	B190611 .....	Socket Head Cap Screw 10-24 x 3/8 Long
2 .....	B191211 .....	Socket Head Cap Screw 10-24 x 3/4 Long
3 .....	B250616 .....	Button Head Socket Cap Screw 1/4-20 x 3/8 Long
4 .....	B250811 .....	Socket Head Cap Screw 1/4-20 x 1/2 Long
5 .....	B250818 .....	Pan Head Machine Screw 1/4-20 x 1/2 Long
6 .....	B250819 .....	Button Head Socket Cap Screw 1/4-20 x 1/2 Long
7 .....	B251211 .....	Socket Head Cap Screw 1/4-20 x 3/4 Long
8 .....	B251411 .....	Socket Head Cap Screw 1/4-20 x 7/8 Long
9 .....	B252011 .....	Socket Head Cap Screw 1/4-20 x 1 1/4 Long
10 .....	B253211 .....	Socket Head Cap Screw 1/4-20 x 2 Long
11 .....	B256411 .....	Socket Head Cap Screw 1/4-20 x 4 Long
12 .....	B310813 .....	Button Head Socket Cap Screw 5/16-18 x 1/2 Long
13 .....	B311611 .....	Socket Head Cap Screw 5/16-18 x 1 Long
14 .....	B503211 .....	Socket Head Cap Screw 1/2-13 x 2 Long
15 .....	C250420 .....	Socket Head Set Screw Cup Point 1/4-20 x 1/4 Long
16 .....	H184002 .....	3/8 Diameter Roll Pin x 2 1/2 Long
17 .....	J257000 .....	1/4-20 Nylon Locknut Thin
18 .....	J257100 .....	1/4-20 Nylon Locknut
19 .....	J627200 .....	5/8-18 Nylon Locknut Thin
20 .....	J757300 .....	3/4-16 Nylon Locknut
21 .....	K191501 .....	No. 10 Washer
22 .....	K250001 .....	1/4 Flat Washer SAE
23 .....	K251501 .....	1/4 Split Lockwasher
24 .....	K311501 .....	5/16 Split Lockwasher
25 .....	K501501 .....	1/2 Split Lockwasher
26 .....	R000376 .....	Square Key 1/8 x 3/4 Long
27 .....	R000377 .....	Square Key 3/16 x 3/4 Long
28 .....	28192 .....	Traverse Pulley Support
29 .....	50309 .....	Traverse Pulley Shaft
30 .....	50354 .....	Drive Pulley (Cog)
31 .....	55553 .....	Idler Pulley Assembly
32 .....	80335 .....	Destaco Clamp
33 .....	80354 .....	Cog Belt
34 .....	80355 .....	Thrust Washer (1 1/4OD x 3/4 ID)
35 .....	3708195 .....	External Retaining Ring
36 .....	3708419 .....	Wave Spring (.78 ID)
37 .....	3708436 .....	Wave Spring
38 .....	3708658 .....	Compression Spring
39 .....	3708884 .....	Spacer 5/8 OD x 9/32 ID x 3/8 Long
40 .....	3709044 .....	Linear Ball Bearing

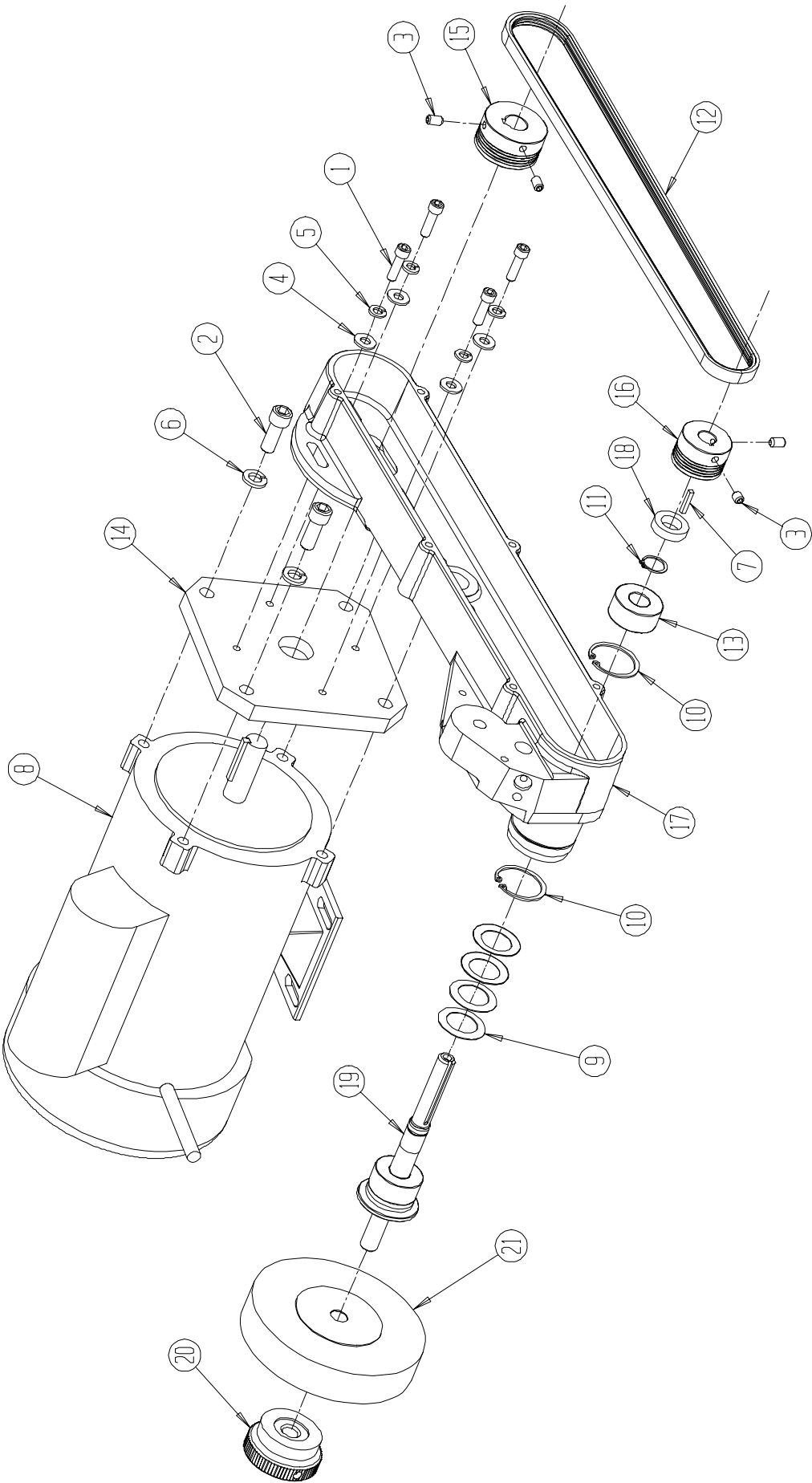


<b>DIAGRAM NUMBER</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>
41 .....	3709072 .....	Compression Spring
42 .....	3709331 .....	External Retaining Ring
43 .....	6059062 .....	Traverse Motor Assembly
44 .....	6309573 .....	Finger & Body Assembly (see page 74)
45 .....	6329032 .....	Traverse Base
46 .....	6329034 .....	5/8 Shaft Coupler
47 .....	6329035 .....	Motor Extension Shaft
48 .....	6329036 .....	Pulley Mount Bracket
49 .....	6329507 .....	Prox Flag Bracket Weldment
50 .....	6329511 .....	Shaft Support Block Assembly
51 .....	6329526 .....	Grinding Head Assembly (see page 70)
52 .....	6329527 .....	Carriage Assembly (see page 72)
53 .....	6509020 .....	Traverse Base Adjuster End Cap
54 .....	6509021 .....	Bellows Bracket Carriage Mount
55 .....	6509025 .....	Bellows Bracket End Mount
56 .....	6509054 .....	Plunger Pin Retainer
57 .....	6509055 .....	Belt Cover
58 .....	6509063 .....	Carrier Shaft
59 .....	6509210 .....	Belt Cover Gasket
60 .....	6509221 .....	Traverse Base Fixed Bracket
61 .....	6509238 .....	Grinding Wheel Grip Knob
62 .....	6509250 .....	Bellows - Way cover
63 .....	6509253 .....	Carriage Dust Cover Bracket
64 .....	6509484 .....	Plunger Pin
65 .....	6509565 .....	Cross Slide Assembly (see page 68)



**PARTS LIST****6509565 CROSS SLIDE ASSEMBLY**

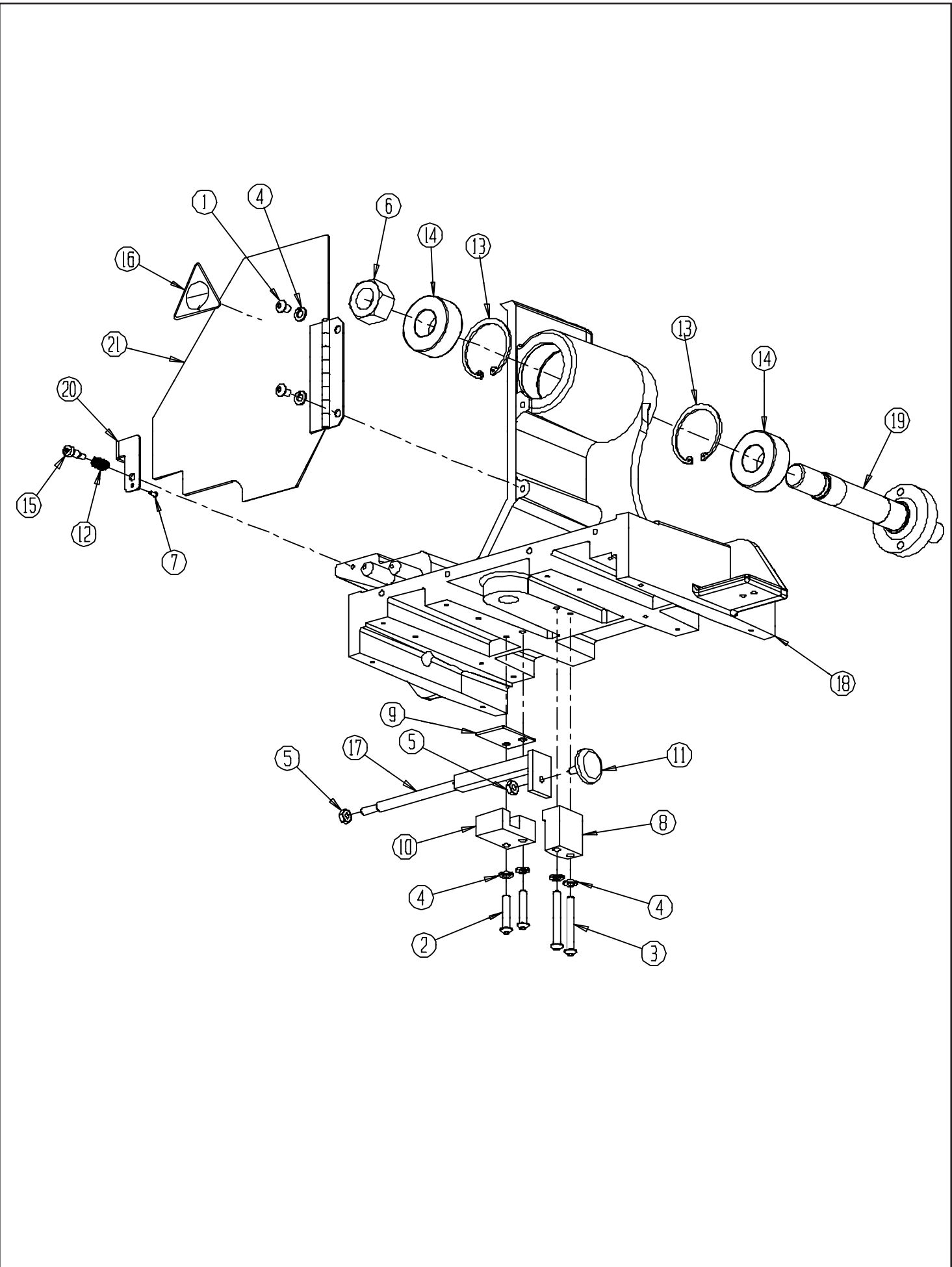
<b><u>DIAGRAM NUMBER</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	C311220 .....	Socket Set Screw CPPT 5/16-18 x 3/4 Long
2 .....	J371000 .....	3/8-16 Hex Nut
3 .....	J377000 .....	3/8-16 Hex Jam Nylon Locknut
4 .....	K371501 .....	3/8 Split Lockwasher
5 .....	3579109 .....	3/16 Dia. Nylon Plug
6 .....	3708148 .....	Handwheel 4.5 Dia. .38 Bore
7 .....	3709062 .....	Bell V Washer .75 O. D. x .035 T
8 .....	3709304 .....	Thrust Washer
9 .....	3708705 .....	Adjustable Handle 5/16-18 Female - Orange
10 .....	6509390 .....	Adjusting ACME Shaft
11 .....	6009035 .....	Locking Stud Shaft
12 .....	6009082 .....	Cross Slide Support
13 .....	6009095 .....	Slide Shaft
14 .....	6509011 .....	Cross Slide
15 .....	6509015 .....	Cross Slide Horizontal support
16 .....	C310820 .....	Socket Set Screw 5/16-18 x 5/8 Long
17 .....	3708665 .....	Flat Washer
18 .....	6309115 .....	Grey Decal
19 .....	6309114 .....	Orange Decal
20 .....	6309113 .....	5/16-18 Locking Stud
21 .....	3708706 .....	Adjustable Handle 5/16-18 Female - Grey
22 .....	3969065 .....	Spacer .406 ID x .75 OD x 1.0 Long
23 .....	B372011 .....	Socket Head Cap Screw 3/8-16 x 1 1/4 Long
24 .....	H371602 .....	Rollpin 3/8 Dia. x 1 Long
25 .....	K371501 .....	3/8 Split Lockwasher
26 .....	6509010 .....	Traverse Base Adjuster Bracket



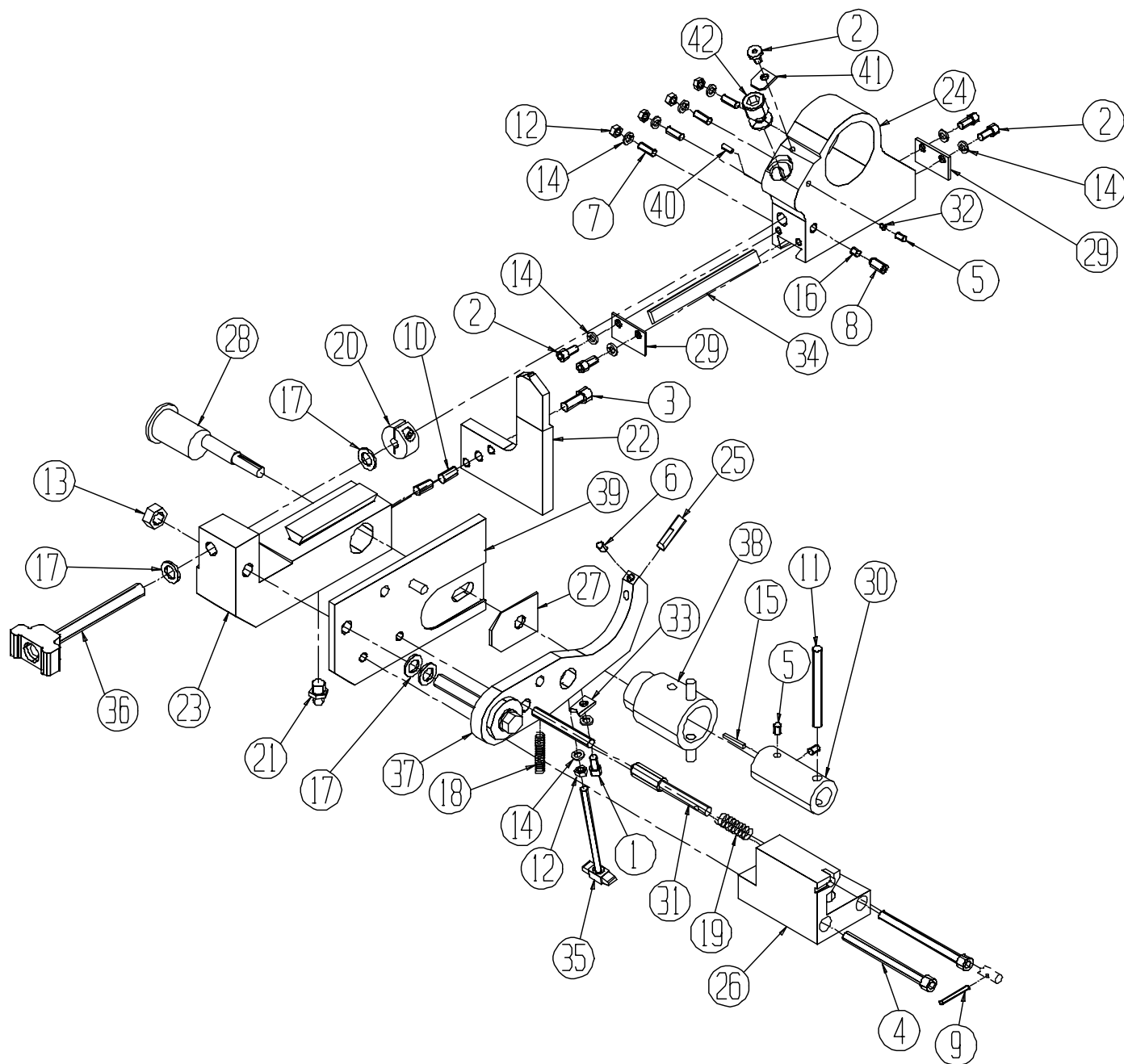
**PARTS LIST****6329526 GRINDING HEAD ASSEMBLY**

<b><u>DIAGRAM NUMBER</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	B251411 .....	Socket Head Cap Screw 1/4-20 x 7/8 Long
2 .....	B371611 .....	Socket Head Cap Screw 3/8-16 x 1 Long
3 .....	C250627 .....	Socket Set Screw Cup Point 1/4-20 x 3/8 Long
4 .....	K250001 .....	1/4 Flat Washer SAE
5 .....	K251501 .....	1/4 Split Lockwasher
6 .....	K371501 .....	3/8 Split Lockwasher
7 .....	R000376 .....	Square Key 1/8 x 3/4 Long
8 .....	3707690 .....	1 HP 120 VAC Motor
9 .....	3708193 .....	Conical Washer 1.36 OD x .88 OD
10 .....	3708194 .....	Internal Retaining Ring
11 .....	3708196 .....	External Retaining Ring
12 .....	3708202 .....	Poly-V Belt
13 .....	3708204 .....	Double Row Ball Bearing
14 .....	6329041 .....	Motor Mount Plate
15 .....	6329042 .....	Pulley - Poly V 1.80 Diameter
16 .....	6329043 .....	Pulley - Poly V 1.44 Diameter
17 .....	6509018 .....	Grinding Head Housing
18 .....	6509247 .....	Spacer
19 .....	6509578 .....	Grinding Head Spindle Assembly
20 .....	6509237 .....	Grinding Wheel knob
21 .....		Grinding Wheel (see page 93)



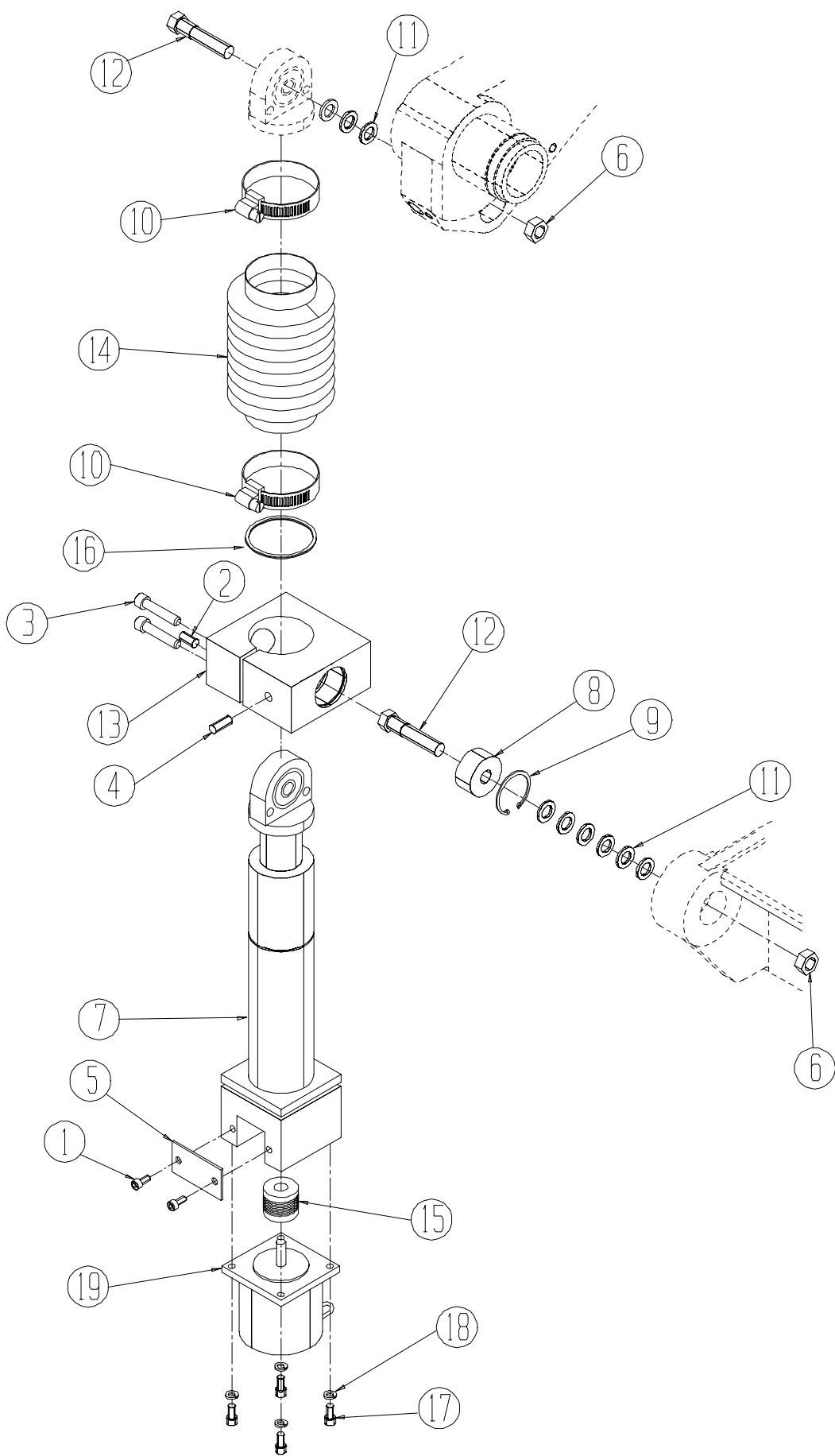


<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B250616 .....	Button Head Cap Screw 1/4-20 x 3/8 Long
2 .....	B252016 .....	Button Head Cap Screw 1/4-20 x 1 1/4 Long
3 .....	B253216 .....	Button Head Cap Screw 1/4-20 x 2 Long
4 .....	K251501 .....	1/4 Split Lockwasher
5 .....	J252000 .....	1/4-20 Jam Nut
6 .....	J887300 .....	7/8-14 Nylon Jam Locknut
7 .....	R602031 .....	#4 x .31 Drive Screw
8 .....	28187 .....	Traverse Clamp Block
9 .....	28188 .....	Traverse Clamp Spacer Plate
10 .....	28189 .....	Clamp Support Block
11 .....	50310 .....	Belt Clamp Tip
12 .....	3708105 .....	Compression Spring
13 .....	3708184 .....	Retaining Ring
14 .....	3708186 .....	Ball Bearing
15 .....	3708208 .....	Shoulder Bolt .250 Dia. x .387 Long
16 .....	3708462 .....	Decal - RPM, Symbol
17 .....	6329040 .....	Traverse Clamp
18 .....	6329058 .....	Carriage Base
19 .....	6509023 .....	Grinder Head Pivot Shaft
20 .....	6509251 .....	Swing Door Latch
21 .....	6509584 .....	Swing Door Weldment



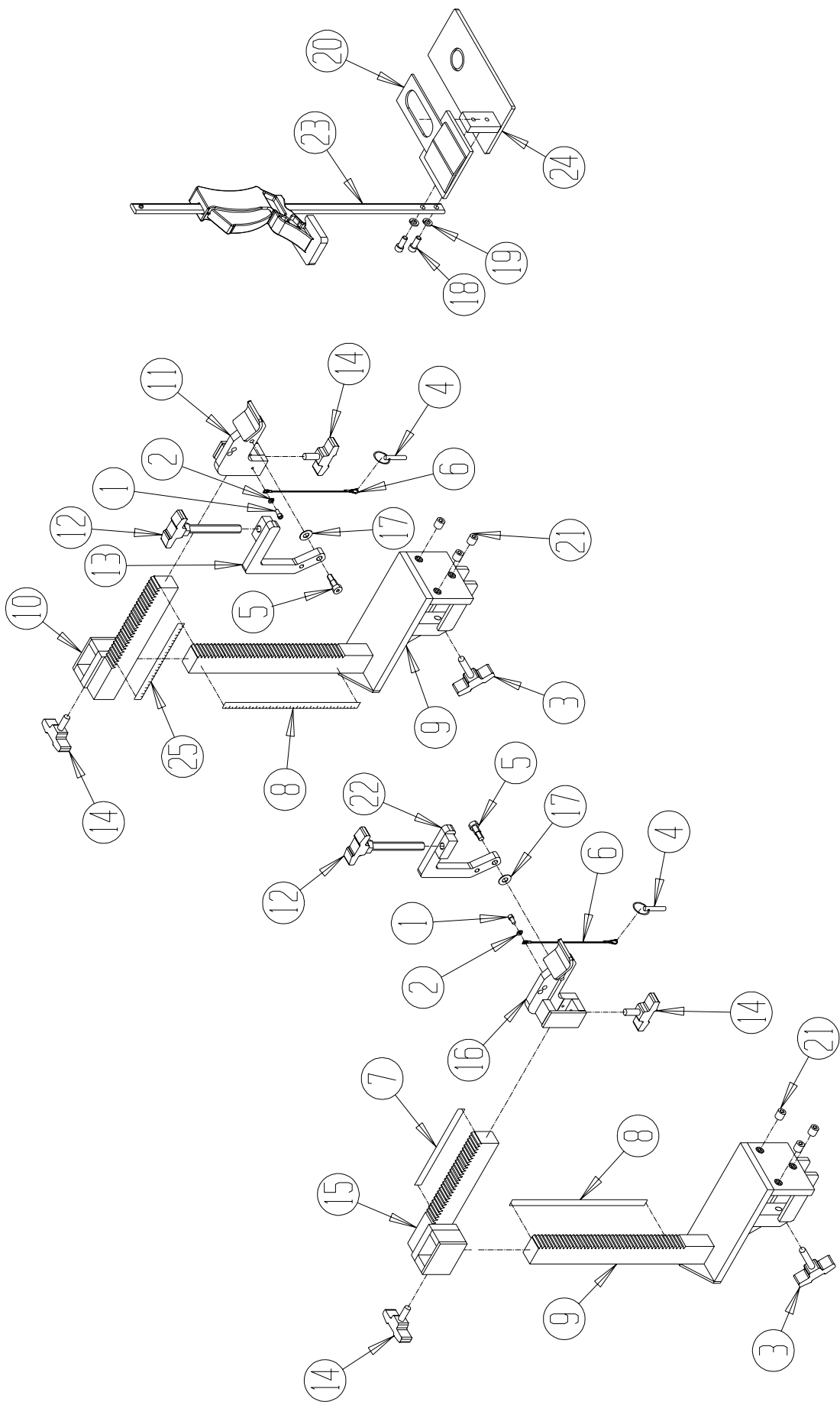
**PARTS LIST****6309573 FINGER AND BODY ASSEMBLY**

<b><u>DIAGRAM NUMBER</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	B190631 .....	Socket Head Cap Screw 10-32 x 3/8 Long
2 .....	B190634 .....	Button Head Socket Cap Screw 10-32 x 3/8 Long
3 .....	B251011 .....	Socket Head Cap Screw 1/4-20 x 5/8 Long
4 .....	B254811 .....	Socket Head Cap Screw 1/4-20 x3 Long
5 .....	C190460 .....	Socket Set Screw 10-24 x 1/4
6 .....	C190467 .....	Socket Set Screw - Nylok Cup 10-32 x .25 Long
7 .....	C190860 .....	Socket Set Screw - CP-PT 10-32 x 1/2 Long
8 .....	C190860 .....	Socket Set Screw - 10-32 x 1/2 Long
9 .....	H122002 .....	Roll Pin 1/8 Dia. x 1 1/4 Long
10 .....	H250813 .....	Dowel Pin 1/4 Dia. x .5 Long
11 .....	H254009 .....	Drive Lock Pin 1/4 x 2.5 Long
12 .....	J191100 .....	10/32 Hex Nut
13 .....	J377200 .....	3/8-24 Jam Nylok Locknut
14 .....	K191501 .....	No. 10 Lock Washer
15 .....	R000351 .....	Square Key .093 x .75 Long
16 .....	3579284 .....	1/8 Dia. Nylon Plug
17 .....	3709304 .....	Thrust Washer
18 .....	3708107 .....	Compression Spring
19 .....	3708175 .....	Compression Spring
20 .....	3708199 .....	3/8-16 Dia. Split Shaft Collar
21 .....	3709472 .....	Straight Grease Fitting
22 .....	6509432 .....	Relief Finger
23 .....	6509004 .....	Reel Finger Slide
24 .....	6509357 .....	Reel Finger Positioner
25 .....	6509007 .....	Index Stop Pin
26 .....	6509008 .....	Index Sensor Block
27 .....	6509009 .....	Slide Washer
28 .....	6509058 .....	Eccentric Index Pin
29 .....	6509060 .....	Gib Stop Plate
30 .....	6509215 .....	Adjustable Index Lever
31 .....	6509229 .....	Locking Index Finger Pin
32 .....	3579284 .....	1/8" Diameter Nylon Plug
33 .....	6509239 .....	Anti Rotation Plate
34 .....	6509258 .....	Dovetail Gib
35 .....	6509501 .....	Tee Knob Assembly
36 .....	6509547 .....	Knob Assembly
37 .....	6509572 .....	Index Finger Assembly
38 .....	6509591 .....	Index Lock Handle Weldment
39 .....	6509592 .....	Index Finger Positioner Weldment
40 .....	H120402 .....	1/8" Diameter x 1/4" Long Pin Roll
41 .....	6509358 .....	Stop Plate
42 .....	6509356 .....	Reel Positioner Adjuster



**DIAGRAM****NO.****PART NUMBER****DESCRIPTION**

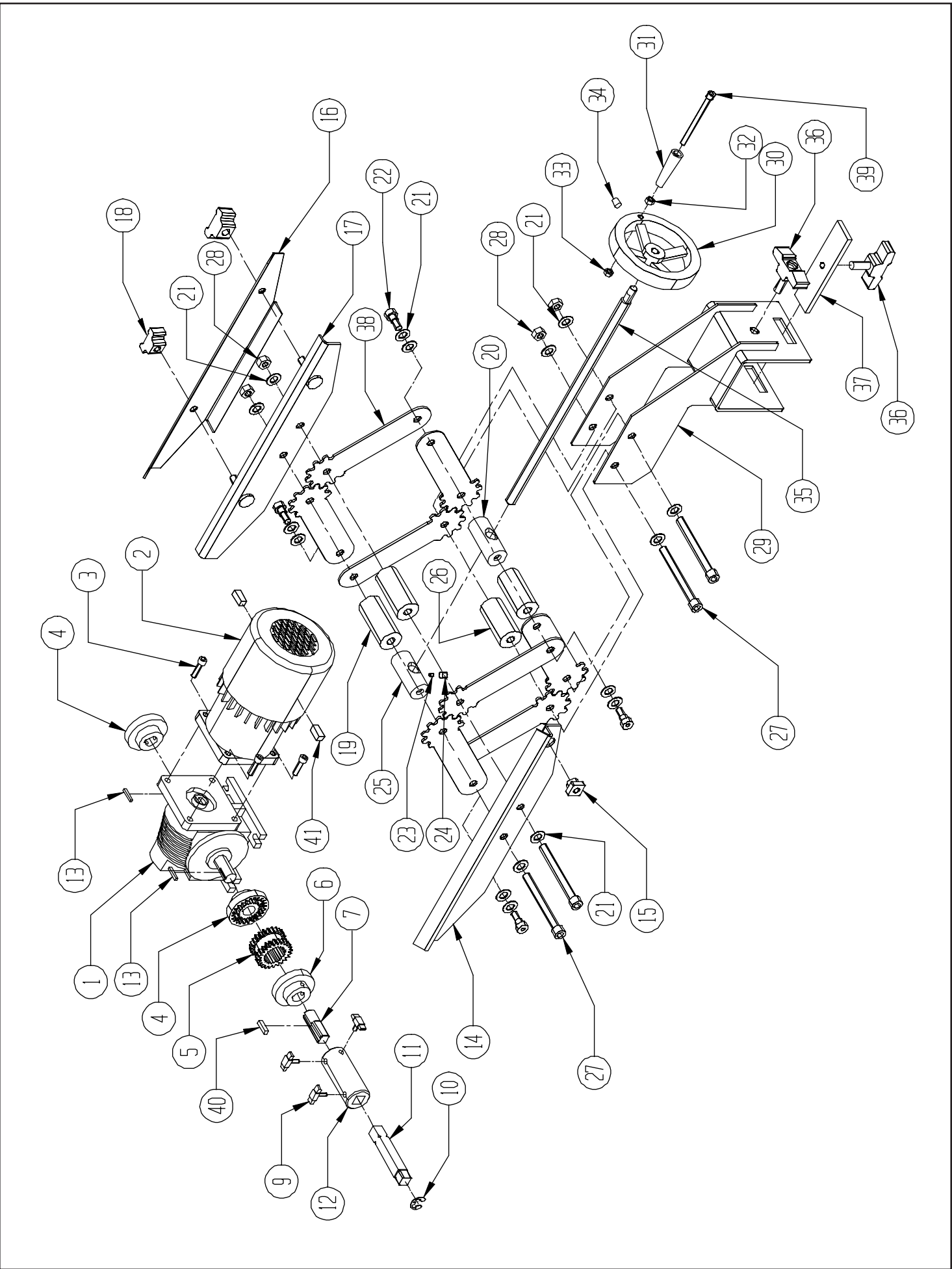
1	B190613	Button Head Cap Screw #10-24 x 3/8 Long
2	B252011	Socket Head Cap Screw 1/4-20 x 1 1/4 Long
3	C250825	Socket Set Screw 1/4-20 x 1/2
4	C251020	1/4-20 x 5/8" Set Screw
5	6509381	Base Cover Plate
6	J377200	3/8-24 Nylok Jam Locknut
7	6509384	Infeed Stepper Assy.
8	3708187	Ball Bearing
9	3708189	Retaining Ring
10	3708192	Hose Clamp 2.25 Dia.
11	3709304	Thrust Washer
12	6509048	Hex Pivot Pin
13	6509051	Trunion Block
14	6509056	Bellows, 1.88 I. D.
15	3708629	Flex Coupling
16	3708424	Spiral Retaining Ring
17	B190811	Socket Head Cap Screw 10-24 x 1/2 Long
18	K191501	No. 10 Lock Washer
19	6509470	Stepper Infeed Motor





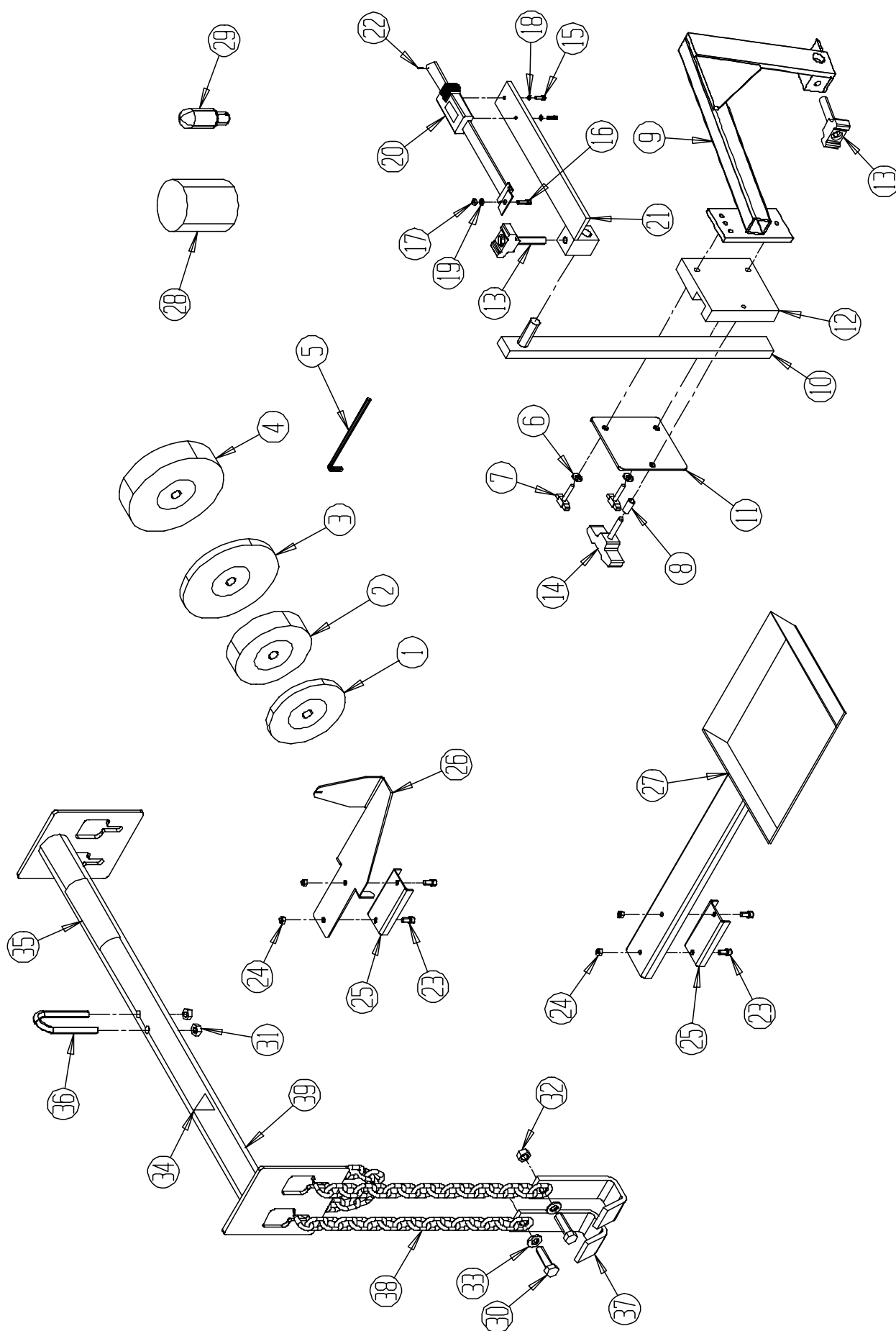
**PARTS LIST****6329535 MOWER SUPPORT ASSEMBLY**

<b><u>DIAGRAM NUMBER</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	B190614 .....	Pan Head Machine Screw 10-24 x 3/8 Long
2 .....	K191501 .....	No.10 Lockwasher
3 .....	6009577 .....	Knob Assembly
4 .....	3708364 .....	Quick Release Pin .31 Dia.
5 .....	3708158 .....	Shoulder Bolt .375 Dia. x .50 Long
6 .....	3708366 .....	6" type B Lanyard
7 .....	6509128 .....	Horizontal Scale Decal RH
8 .....	6329072 .....	Vertical Scale Decal
9 .....	6509507 .....	Bar Mounting Weldment Bracket
10 .....	6509517 .....	L.H. Front Roller Horiz. Weldment Bracket
11 .....	6329587 .....	L. H. Roller Clamp Weldment Bracket
12 .....	6509559 .....	Knob Assembly
13 .....	6509564 .....	L.H. Front Roller Clamp Weldment
14 .....	6509588 .....	Knob Assembly
15 .....	6509515 .....	R.H. Front Roller Horiz. Weldment Bracket
16 .....	6329586 .....	R.H. Roller Clamp Weldment Bracket
17 .....	3709304 .....	Thrust Washer
18 .....	B311211 .....	Socket Head Cap Screw 5/16-18 x 3/4 Long
19 .....	K311501 .....	5/16 Lockwasher
20 .....	70512 .....	Rear Roller Support Bracket Weldment
21 .....	C500861 .....	1/2-20 x 1/2 Flat Pt Socket Head Set Screw
22 .....	6509576 .....	R.H. Front Roller Clamp Weldment
23 .....	3708881 .....	Rear Clamp
24 .....	6329514 .....	Rear Clamp Base Weldment
25 .....	6509304 .....	Horizontal Scale Decal LH



**PARTS LIST (Continued)****6509465 SPIN DRIVE ASSEMBLY**

<b><u>DIAGRAM NUMBER</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	3708391 .....	Reducer: 10:1 Ratio
2 .....	6329039 .....	Motor, DC .20 HP TEFC
3 .....	B251411 .....	Socket Head Cap Screw 1/4-20 x 7/8 Long
4 .....	3709586 .....	Flange Coupler .50
5 .....	3709585 .....	Sleeve Coupler
6 .....	3709584 .....	Flange Coupler 5/8
7 .....	6009217 .....	Drive Coupling Adapter
9 .....	09394 .....	Tee Knob Assembly
10 .....	3709073 .....	Retaining Ring
11 .....	6009051 .....	Drive Adapter 1/2 Square
12 .....	6009052 .....	Adapter
13 .....	R000376 .....	Square Key 1/8 x .75 Long
14 .....	6009078 .....	Gearbox Slide Bracket
15 .....	3707279 .....	Strain Relief Wire
16 .....	6009079 .....	Gearbox Clamp Bracket
17 .....	6009580 .....	Gearbox Slide Weldment Bracket
18 .....	3708262 .....	T-Knob - 5/16-18
19 .....	6009045 .....	Linkage Spacer 2.29 Long
20 .....	6009046 .....	Linkage Spacer R.H. Thread
21 .....	3709062 .....	Belleville .75 Dia. x .35 T
22 .....	3709809 .....	Shoulder Bolt .375 Dia. x .375 Long
23 .....	3709705 .....	Nylon Ball 5/32 Dia.
24 .....	C310420 .....	Socket Set Screw 5/16-18 x 1/4
25 .....	6009047 .....	Linkage spacer L. H. Thread
26 .....	6009048 .....	Linkage Spacer 2.5 Long
27 .....	B375611 .....	Socket Head Cap Screw
28 .....	J377100 .....	Nylok Hex Locknut 3/8-16
29 .....	6509519 .....	Support Bracket Weldment
30 .....	3708148 .....	Handwheel 4.5 Dia.
31 .....	3709370 .....	Handle
32 .....	J252000 .....	Hex Jam Nut 1/4-20
33 .....	J257000 .....	1/4-20 Nylok Locknut
34 .....	C310620 .....	Socket Set Screw 5/16-18 x 3/8 Long
35 .....	6009076 .....	Double Thread Rod
36 .....	6009555 .....	Knob Assembly
37 .....	6509114 .....	Spin Drive Plate Lock
38 .....	6009067 .....	Geared Linkage
39 .....	B255011 .....	Socket Head Cap Screw 1/4-20 x 3 1/8 Long
40 .....	R000377 .....	Square Key 3/16 x .75 Long
41 .....	3707623 .....	DC Motor Brush



**PARTS LIST (Continued)****6329529 MISCELLANEOUS PARTS**

<b><u>DIAGRAM NUMBER</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	3700088 .....	Grinding Wheel 3.5" Dia. x .38 w
2 .....	3700086 .....	Grinding Wheel 3.5" Dia. x 1" Wide
3 .....	3700087 .....	Grinding Wheel 5" Dia. x .3/8" Side
4 .....	3700089* .....	Grinding Wheel 5" Dia. x 1" Wide
5 .....	R000863 .....	5/16 Allen Key
6 .....	K251501 .....	1/4 Lockwasher
7 .....	80396 .....	T-Knob Assembly
8 .....	3529069 .....	Space
9 .....	6329517 .....	Alignment Extension Weldment
10 .....	6329518 .....	Gage Bar Weldment
11 .....	6509349 .....	Retaining Plate
12 .....	6509418 .....	Plate-Pivot
13 .....	6509567 .....	Knob Assembly
14 .....	6609501 .....	T-Knob Assembly
15 .....	B120611 .....	Socket Head Cap Screw 5-40 x .38 Long
16 .....	B161011 .....	Socket Head Cap Screw 8-32 x 5/8 Long
17 .....	J161000 .....	8-32 Hex Nut
18 .....	K121501 .....	No. 5 Split Lockwasher
19 .....	K161501 .....	No. 8 Lockwasher
20 .....	6509359 .....	Digital Gage
21 .....	6509412 .....	Base Weldment Indicator
22 .....	H060302 .....	1/16 x 3/16L Roll Pin
23 .....	B190811 .....	Socket Head Cap Screw 10-24 x 1/2
24 .....	J197100 .....	10-24 Nylok Locknut
25 .....	3708384 .....	Magnet
26 .....	6509474 .....	Reel Positioner Gage
27 .....	6509557 .....	Drip Pan Weldment
28 .....	3707603 .....	Amber lens
29 .....	3707465 .....	Flasher bulb

(SPREADER BAR ASSEMBLY COMES ON BOOM MACHINES ONLY)

30 .....	B372011 .....	Socket Head Cap Screw 3/8-16 x 1 1/4" Long
31 .....	J317100 .....	5/16-18 Lock Nut
32 .....	J377100 .....	3/8-16 Nylok Locknut
33 .....	3589106 .....	Flat Washer (1.38 OD x .39 ID x .125 T)
34 .....	3708456 .....	Warning Capacity Decal
35 .....	3708856 .....	Spreader Bar Decal
36 .....	3709316 .....	5/16-18 x 3" U-Bolt 1 1/2"
37 .....	6009102 .....	Grab Hook
38 .....	6329061 .....	Chain
39 .....	6509590 .....	Spreader Bar Weldment

\* 3700089- Grinding wheel is installed on grinding head when shipped. The other wheels are located in the carton assembly.

## 6529510 CONTROL PANEL ASSEMBLY



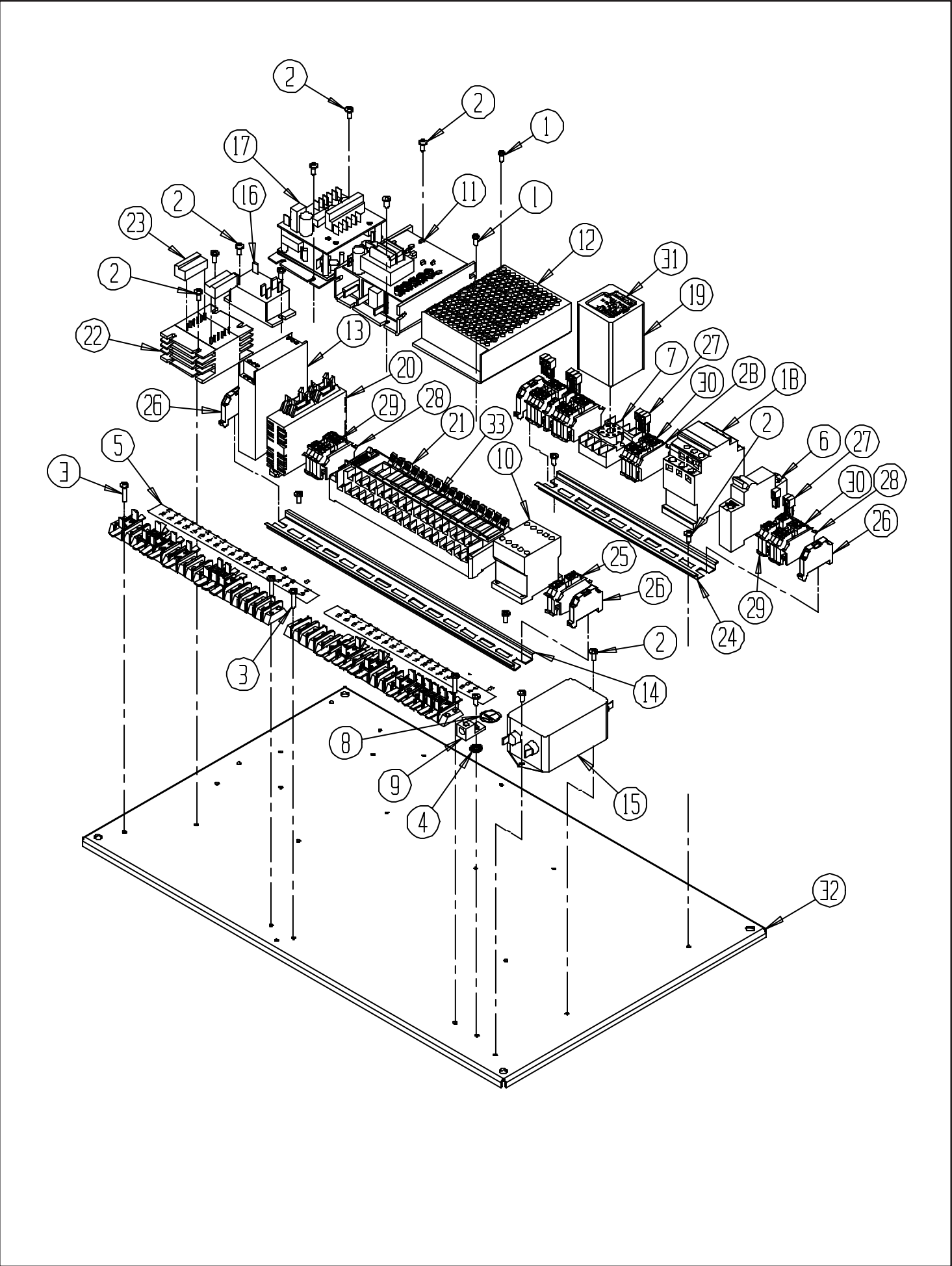
**PARTS LIST****6529510 CONTROL PANEL ASSEMBLY**

<b><u>DIAGRAM NUMBER</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1 .....	B190813 .....	Button Head Cap Screw 10-24 x 1/2 Long
2 .....	B250816 .....	Button Head Cap Screw 1/4-20 x 1/2 Long
3 .....	D250800 .....	Thread Cutting Screw 1/4-20 x 1/2 Long
4 .....	J257000 .....	1/4-20 Nylon Jam Locknut
5 .....	R000536 .....	1/4 Lock Washer
6 .....	3707342 .....	Yellow Emergency Stop Ring
7 .....	3707367 .....	Rocker Switch DPST
8 .....	3707399 .....	3-Amp Circuit Breaker
9 .....	3707442 .....	2-Amp Circuit Breaker
10 .....	3707443 .....	4-Amp Circuit Breaker
11 .....	3707446 .....	Potentiometer Knob
12 .....	3707547 .....	15-Amp Circuit Breaker
13 .....	3707564 .....	Green Start Pushbutton
14 .....	3707565 .....	Normaly Open Contact Block
15 .....	3707566 .....	Switch Mounting Latch
16 .....	3707567 .....	Push/Pull Red Emergency Stop Button
17 .....	3707568 .....	Normaly Closed Contact Block
18 .....	3707572 .....	Touch Screen
19 .....	6329070 .....	Hinge
20 .....	6329509 .....	Control Box Weldment
21 .....	6529020 .....	Control Panel Decal
22 .....	6529511 .....	Electrical Panel Sub-Assembly
23 .....	6529517 .....	Control Panel Top Weldment
24 .....	6509446 .....	Potentiometer Assembly - Spin Speed
25 .....	6509447 .....	Potentiometer Assembly - Relief Torque
26 .....	6059445 .....	Potentiometer Assembly - Traverse Speed

**Cords Not Shown**

.....	6329078 .....	Main Power Cord
.....	6529036 .....	Light Receptacle
.....	6529037 .....	Dust Collector Receptacle
.....	6529039 .....	Flasher Cord
.....	3707224 .....	Cable Tie Mount
.....	3707225 .....	Cable Tie 6.5 Long x .18 Wide
.....	3707255 .....	Cable Tie 4.0 Long x .10 Wide





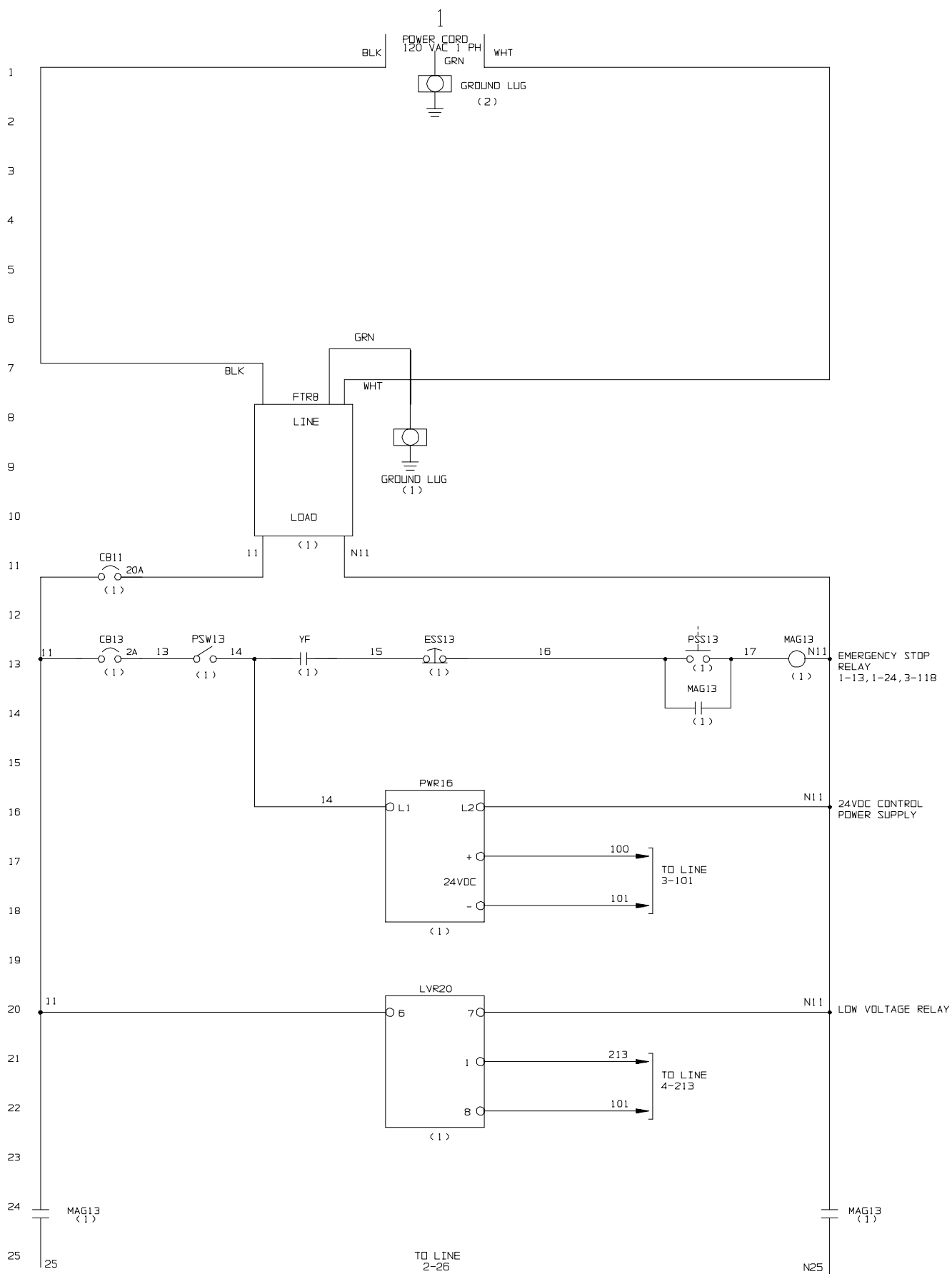
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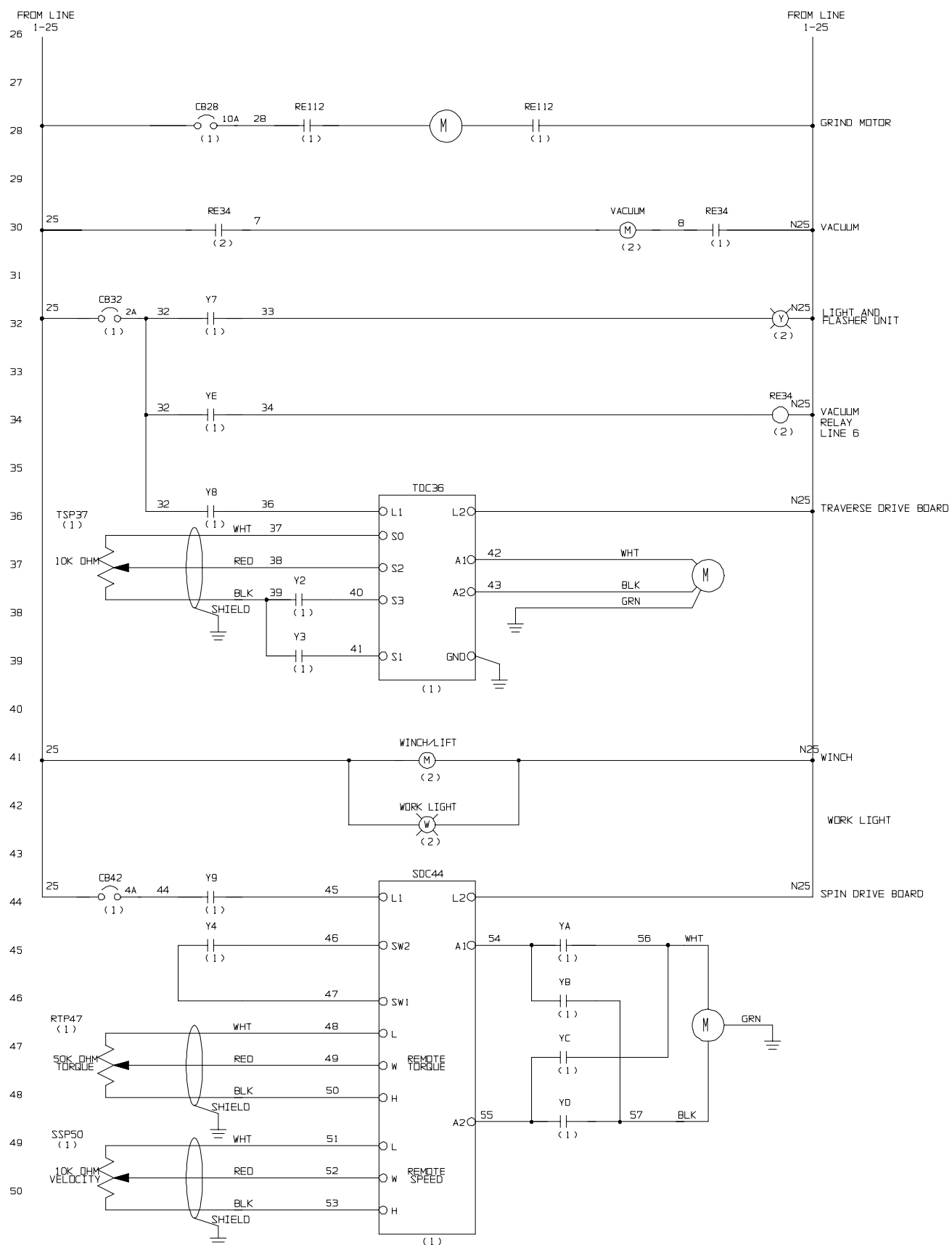
# 6529511 CONTROL PANEL SUB-ASSEMBLY

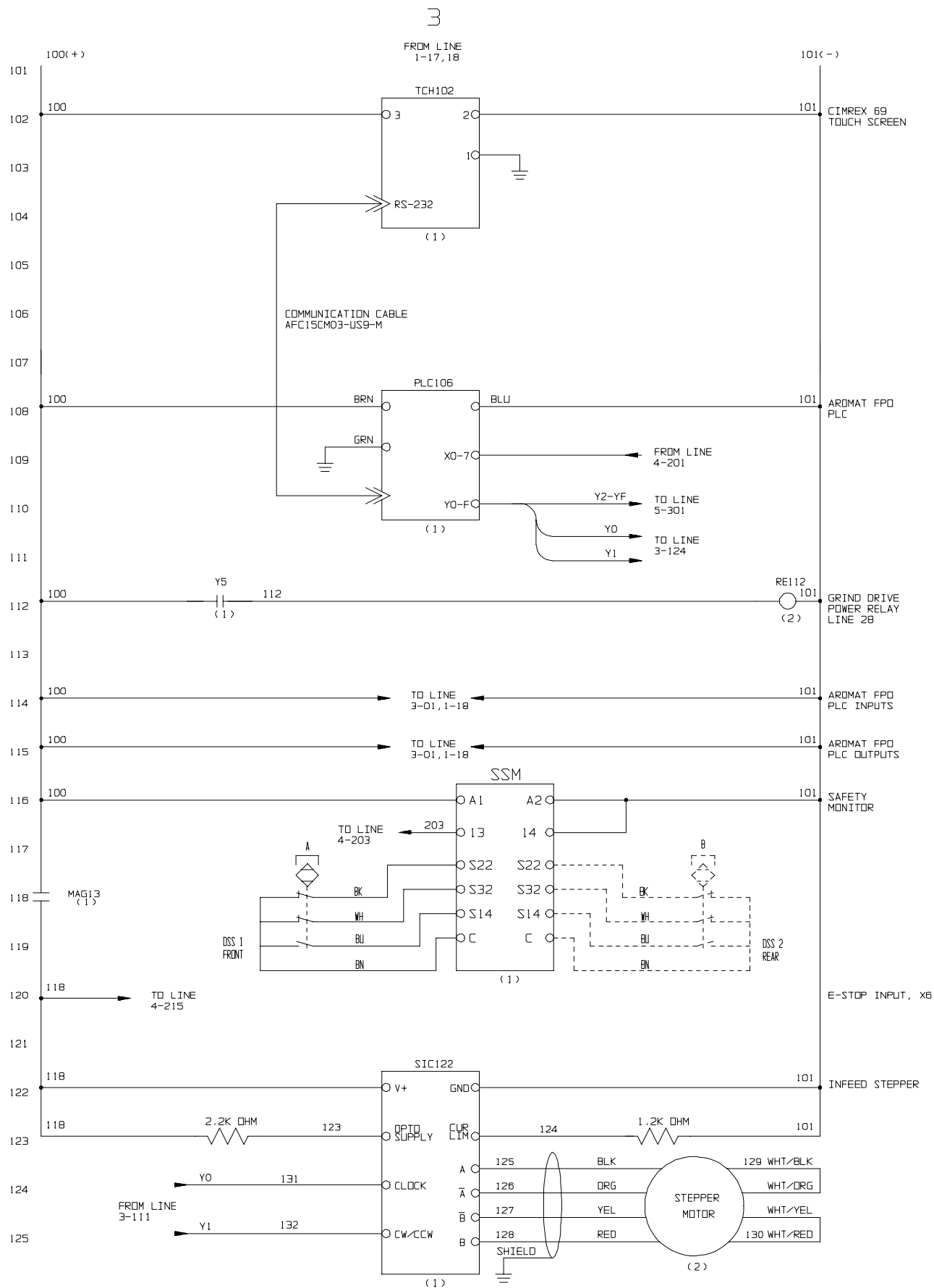
<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	D130608 .....	Pan Head Self-Tapping Screw #6 x 3/8 Long
2 .....	D160666 .....	Pan Head Self-Tapping Screw #8 x 3/8 Long
3 .....	D161266 .....	Pan Head Self-Tapping Screw #8 x 3/4 Long
4 .....	R000480 .....	#8 Lockwasher
5 .....	55223 .....	Terminal Strip Decal
6 .....	80259 .....	20-Amp Main Circuit Breaker
7 .....	3707073 .....	8-Pin socket
8 .....	3707163 .....	Primary Ground Decal
9 .....	3707164 .....	Primary Ground Lug
10 .....	3707186 .....	24VDC Contactor
11 .....	3707321 .....	Traverse Control Board
12 .....	3707322 .....	Power Supply 40 Watt - 24VDC
13 .....	3707328 .....	Door Safety Switch Monitor
14 .....	3707378 .....	14" Din Rail
15 .....	3707403 .....	Power Line Filter
16 .....	3707447 .....	Relay - DPDT 120VAC Coil
17 .....	3707524 .....	Spin/Relief Control Board
18 .....	3707556 .....	Magnetic Starter
19 .....	3707558 .....	Low Voltage Sensor Relay
20 .....	3707569 .....	Aromat PLC
21 .....	3707571 .....	Output Block with Relays
22 .....	3707577 .....	Stepper Drive - 2-Amp
23 .....	3707593 .....	6Pin Terminal Strip (for Stepper Drive)
24 .....	3707606 .....	9" Din Rail
25 .....	3707624 .....	2-Conductor Terminal Block - Ground
26 .....	3707625 .....	Screwless Terminal Bock End Stop
27 .....	3707626 .....	Terminal Block Jumper
28 .....	3707627 .....	Terminal Block End Plate
29 .....	3707628 .....	2-Conductor Terminal Block - Grey
30 .....	3707629 .....	2-Conductor Terminal Block - Blue
31 .....	3708826 .....	Low Voltage Warning Decal
32 .....	6529031 .....	Electrical Sub Panel
33 .....	3707574 .....	5-Amp Relay Block
.....	3707631 .....	Terminal Block Marker - 1-10
.....	3707632 .....	Terminal Block Marker - 11-20
.....	6309079 .....	Ground Wire Assembly W99
.....	6509449 .....	PLC to Output Block Cable
.....	6529029 .....	PLC to Touchscreen Cable
.....	6529030 .....	PLC to Inputs Cable



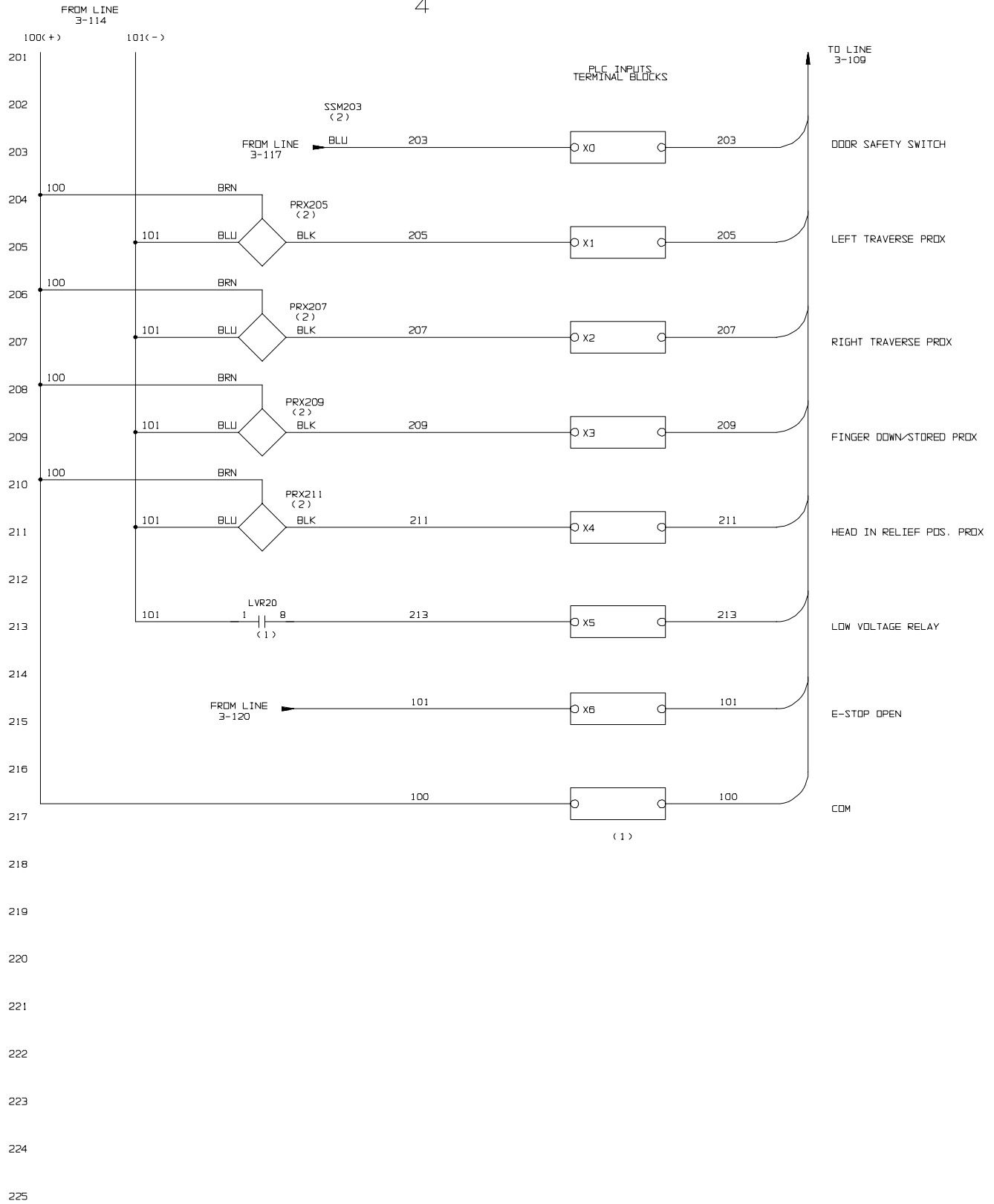












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