



**5500906**

**AUTO - INDEX  
SPIN / RELIEF  
REEL GRINDER**

Patent No. 5,321,912  
6,010,394 & 6,290,581

**ASSEMBLY  
and  
SERVICE  
MANUAL**



**WARNING**

You must thoroughly read and understand this manual before operating 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. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure all switches is **OFF** before plugging in the grinder.
16. **USE RECOMMENDED ACCESSORIES.** Consult the manual for recommended accessories. Using improper accessories may cause risk of personal injury.
17. **CHECK DAMAGED PARTS.** A guard or other part that is damaged or will not perform its intended function should be properly repaired or replaced.
18. **KNOW YOUR EQUIPMENT.** Read this manual carefully. Learn its application and limitations as well as specific potential hazards.
19. **KEEP ALL SAFETY DECALS CLEAN AND LEGIBLE.** If safety decals become damaged or illegible for any reason, replace immediately. Refer to replacement parts illustrations in Service Manual for the proper location and part numbers of safety decals.
20. **DO NOT OPERATE THE GRINDER WHEN UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION.**

# SAFETY INSTRUCTIONS



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



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

# TABLE OF CONTENTS



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.

## CONTENTS

Safety Instructions .....	Page 2-5
Daily Maintenance .....	Page 4
Service Data .....	Page 6
Assembly Instructions .....	Page 7-12
Maintenance .....	Page 13-19
Adjustments .....	Page 20-25
Electrical Troubleshooting .....	Page 26-41
Mechanical Troubleshooting .....	Page 42-43
Exploded Views and parts Lists .....	Page 44-75

## DAILY MAINTENANCE BY THE OPERATOR

On a daily basis, clean the machine by wiping it off.

On a daily basis, remove all grinding grit from the grinding shaft, traverse shafts, and tooling bar area.

On a daily basis, inspect the machine for loose fasteners or components.

Contact your company's Maintenance Department if damaged or defective parts are found.



**DO NOT USE COMPRESSED AIR TO CLEAN GRINDING DUST FROM GRINDER**

# SAFETY INSTRUCTIONS



Safety Awareness Symbols are inserted in this manual to alert you to possible Safety Hazards. Whenever you see these symbols, heed 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.

## PLEASE TAKE SPECIAL NOTE OF THE FOLLOWING WARNING DECALS LOCATED ON THE FRONT AND SIDES OF THE GRINDER.



Symbol for hearing protection required when operating this machine.



Symbol that operator and people in close proximity must wear respirators or have an adequate ventilation system.



Symbol for Read operators manual, wear safety glasses and disconnect power before servicing.



Symbol to keep visitors a safe distance away from the grinder.



Symbol for sharp object which will cause serious injury.



Symbol for minimum safe rated RPM of grinding wheel.



Symbol identifying a panel, cover, or area as having live electrical components within.



Symbol to keep exposed gasoline or flammables away from the grinder because it operates with a large amount of sparks.

# 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 550 Spin/Relief Grinder. For those without the background, service can be arranged through your local distributor.

This section 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 (0.125kg - m)

No. 8 screws: 20 in. - lbs (0.23 kg - m)

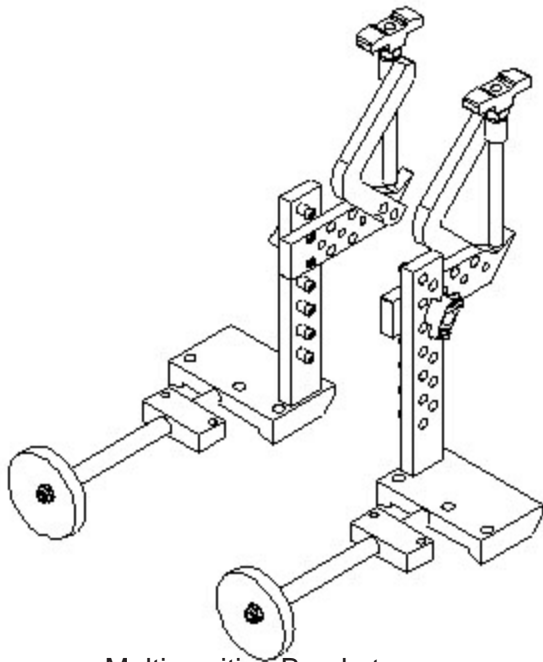
No. 10 screws: 32 in. - lbs (0.37 kg - m)

	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)

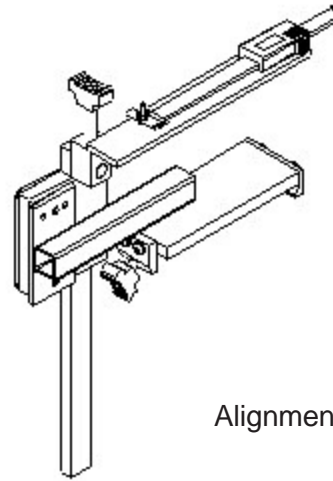


# ASSEMBLY INSTRUCTIONS (Continued)

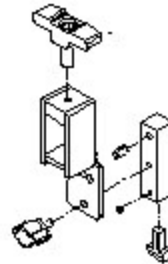
Remove the carton and remove the contents from the carton onto a workbench. The carton includes:



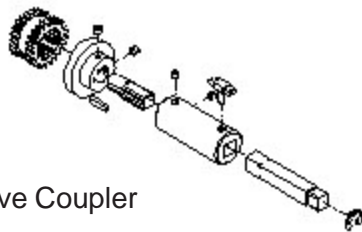
Multi position Brackets



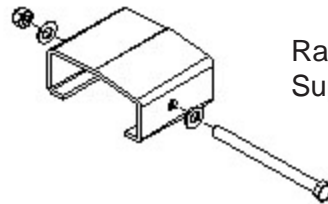
Alignment Gage



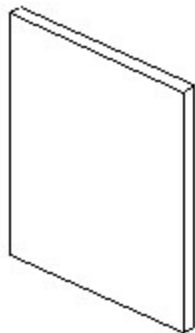
Diamon Dresser



Drive Coupler



Raised Rear Support



Product Packet Assembly  
(Operators & Assembly  
Manuals)



Spanner Wrench

## ASSEMBLY INSTRUCTIONS (Continued)

### LEVEL BASE

Place level on the top of the table and check the levelness of the unit from side to side. Adjust the leveling feet as necessary to bring to level. See FIG. 25.

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. 26.

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. 24. Make certain that all four leveling feet are firmly contacting the floor.

Recheck with level after locking nuts are firmly tightened.

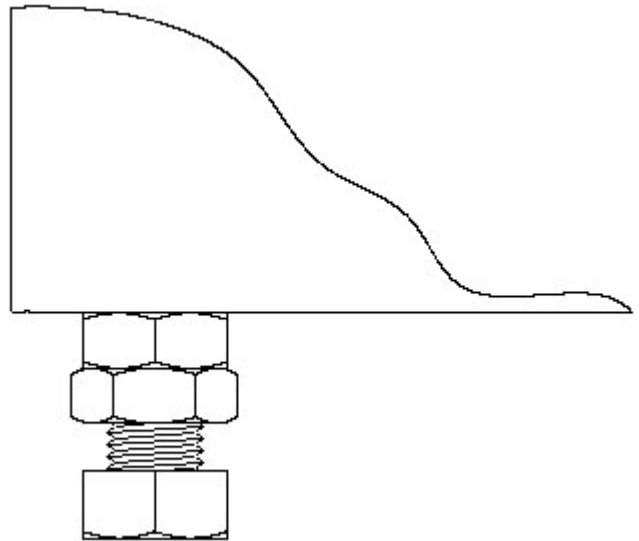


FIG. 25

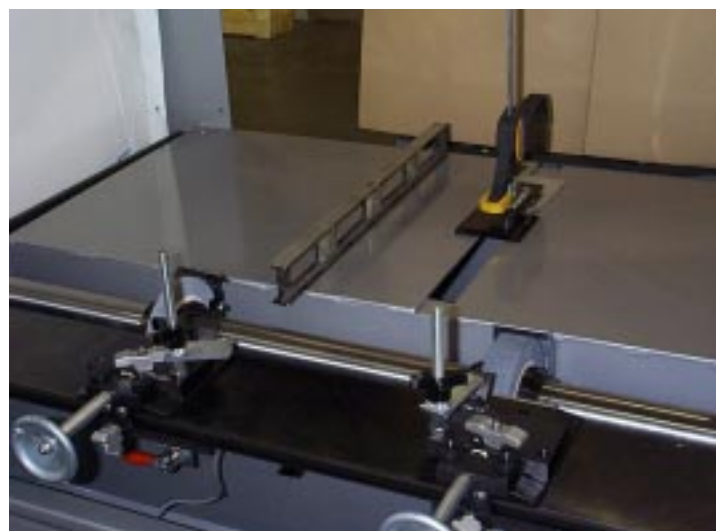


FIG. 26

# ASSEMBLY INSTRUCTIONS (Continued)

## APPLY POWER



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

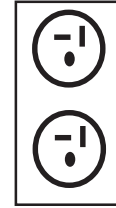


FIG. 27

**115 Volt Model Only.** Plug the control box power cord into a standard 115V AC 20-amp grounded receptacle. See FIG. 27.

**220 Volt Model Only.** For 220 Volt Applications order Part No. 5500956, which includes a prewired 2 KVA 220 V step down to 115V 50-60 Hz transformer. See details on Page 11.

**IT IS RECOMMENDED THAT THIS SPIN/RELIEF GRINDER HAS ITS OWN PERMANENT POWER CONNECTION FROM THE POWER DISTRIBUTION PANEL, WITH NO OTHER MAJOR POWER DRAW EQUIPMENT ON THE SAME LINE.**

The grinder is equipped with a 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.

**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.**



### **FOR 20 AMP RATED LARGE MACHINES**

Below is a list of required wire size in your building.

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)

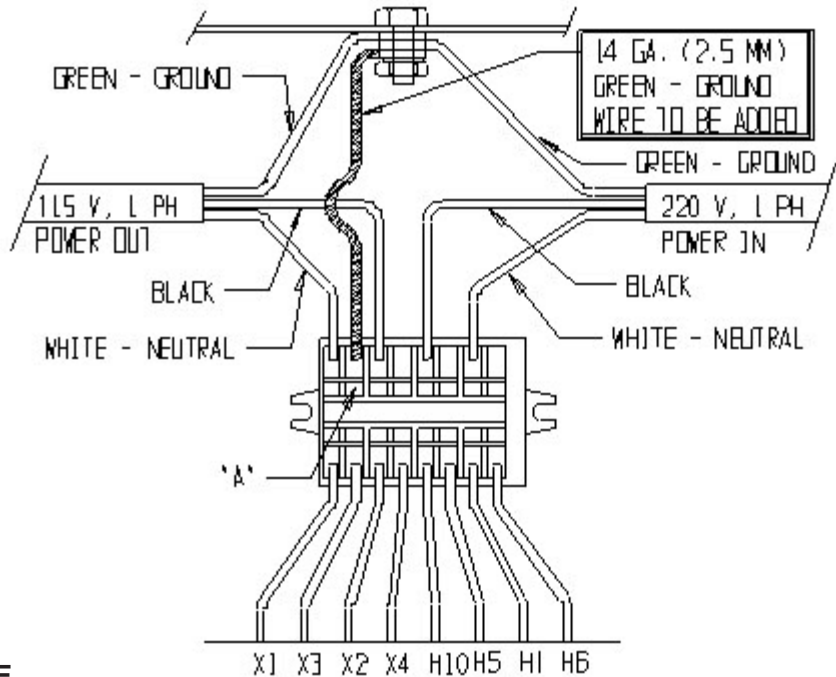
**FOR 220 V 50 or 60Hz applications**  
Product No. 5500956 should be ordered.

5500956 includes a 2 KVA 220V, step down to 115 V 50-60 Hz transformer.

The transformer wiring diagram is shown in FIG. 28.

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

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



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

INSTALL THE GREEN 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. 28

### IMPORTANT GROUNDING INSTRUCTIONS

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

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

Before plugging in the Grinder, make sure it will be connected to a supply circuit protected by a properly sized circuit breaker or fuse.

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.**

## ASSEMBLY INSTRUCTIONS (Continued)

### INSTALLATION OF OPTIONAL WINCH AND BOOM KIT 55522

If you purchased the optional winch and boom kit (55522) you will need to assemble it to the grinder. First remove the left side polycarbonate guarding and save the fasteners to use on the new guarding. Position the boom base on the left side so that the mounting brackets line up with the holes on the side of the frame. Use the 1/2 inch bolts and lock washers to fasten the base to the frame. Position the new guarding into place and use the remaining fasteners and the old fasteners to mount the new guarding.

Place the boom and winch assembly into the base and attach the spreader bar assembly. Remove the rubber grommet from the old guarding and place in the new guarding.

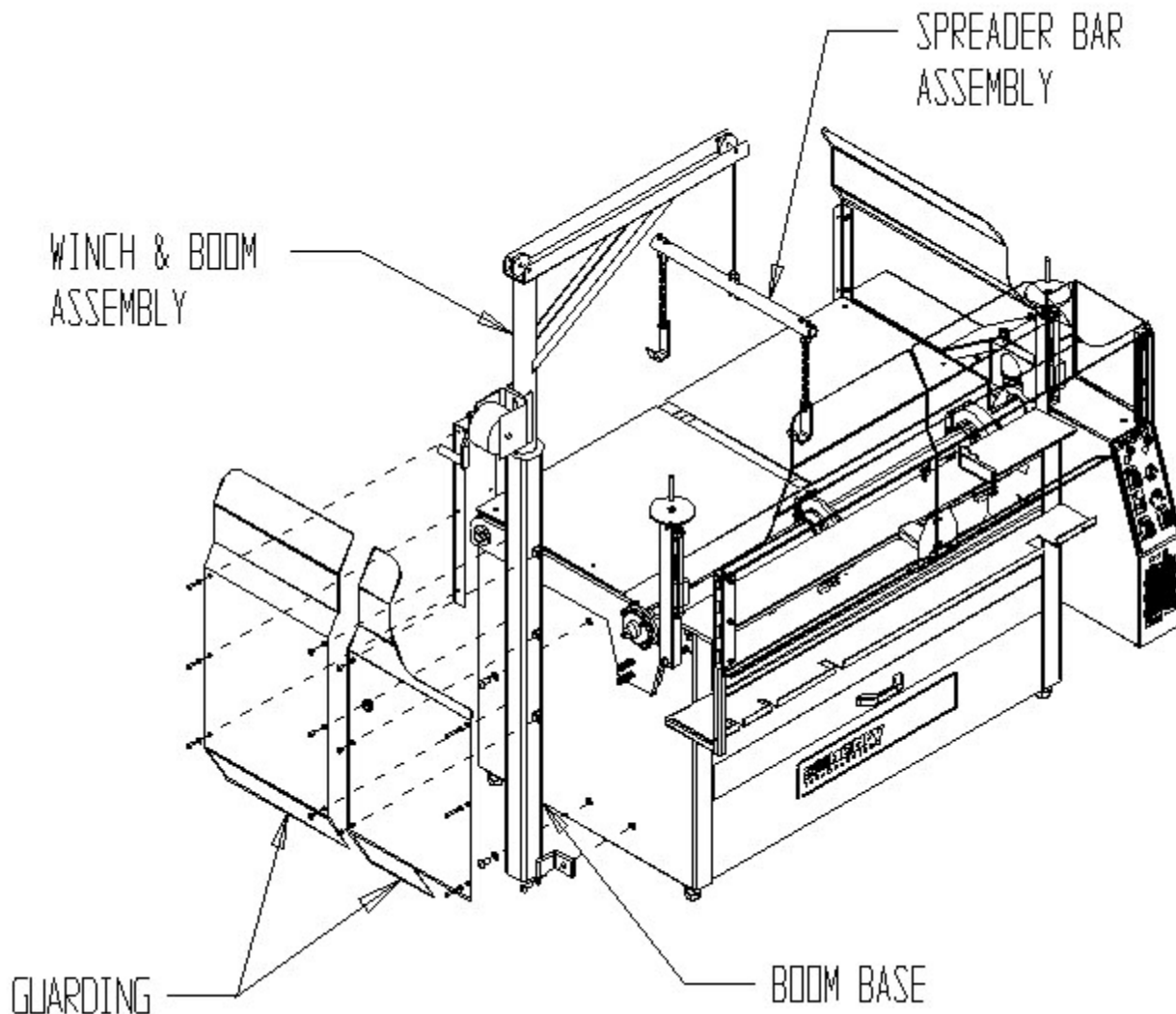


FIG. 29

# 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 dust tray located at the lower front of the machine monthly using a vacuum or by removing it. Pull the tray out until the back of the tray is even with the front of the frame and vacuum it out. To remove continue to pull straight out until the tray is free.

**USE CAUTION WHEN PULLING THE TRAY OUT AS THERE IS NO MECHANICAL STOP. WHEN REMOVING TRAY PULL STRAGHT OUT AND SUPPORT IT TO PREVENT DUMPING.**

2. Inspect the Poly-V belt on the grinding motor for cracking and make any necessary adjustments every three months.
3. Wipe and relube with never-seez, the horizontal adjustment shafts located on the tooling every six months.
4. Wipe and relube with never-seez, the vertical adjustment shafts every six months. Run the arms up and down to coat the working areas of the shaft.
5. Inspect the traverse cog belt for cracking and defects every three months. Remove any grit or dust that may affect the function of the belt. Adjust tension if necessary per procedures called out in the adjustment section.
6. Lubricate grinding shaft bearings with one shot of grease once every 2 years.

**DO NOT GREASE BEARINGS FOR FIRST 2 YEARS. THEY ARE GREASED AT THE FACTORY AND GREASING WILL CAUSE THE BEARINGS TO OVERHEAT AND FAIL PREMATURELY.**

VERTICAL ADJUSTMENT  
SHAFTS (LOCATED INSIDE  
HOUSING)

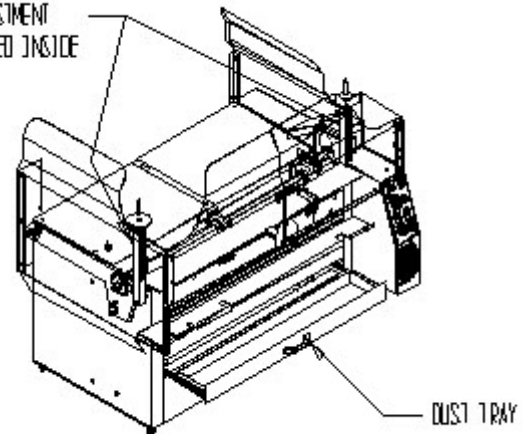


FIG. 30

HORIZONTAL ADJUSTMENT  
SHAFT

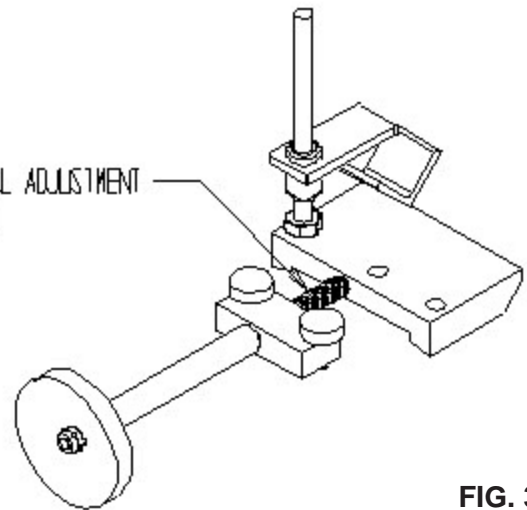


FIG. 31

# LUBRICATION

## LUBRICATION OF GRINDING SHAFT AND LINEAR BEARINGS

STEP 1 – Thoroughly clean all three shafts.

STEP 2 – Flood spray all three shafts with WD40 until the lubricant is dripping off the shafts. Then run the grinding head assemblies back and forth through their full range of travel. This will remove the dust and deposits from inside the wheel flanges. Repeat if necessary until lubrication is clear of deposits. Clean keyways located on the grinding shaft with soft brush.

STEP 3 – With a clean rag, wipe off the excess amount of lubricant from the shafts. Run the grinding assemblies through their 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.

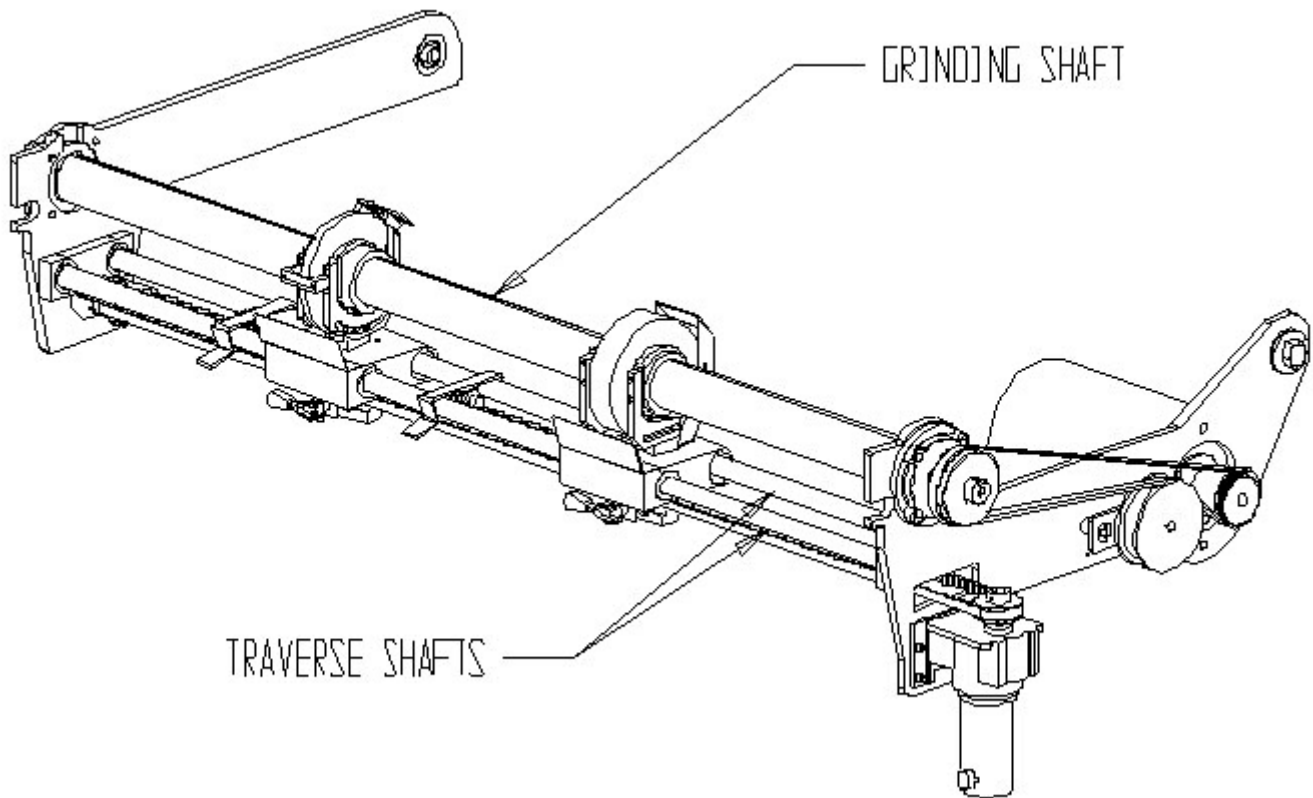


FIG. 32

# MAINTENANCE

## REPLACEMENT OF GRINDING WHEEL

To replace the wheel first open the Polycarbonate guarding located on the left side of the machine. Now, lower the left side of the grinding shaft and raise the right side. Loosen the two bolts that hold the bearings on the relief hub so that that bearings fall away from the wheel and hub (toward the front of the machine). Press the index finger down and the wheel and hub assembly should move freely to the right. Loosen the setscrews on the bearing and remove the screws that hold the bearing to the left arm.

Remove the bearing and lift the left end of the grinding shaft. Slide the grinding wheel hub assembly(s) off the shaft taking note of what side the nut is on. Using the spanner wrench (50014) remove and replace the grinding wheel(s) on the hub assembly.

**NOTE: THE RELIEF HUB HAS A LEFT HAND THREAD FOR THE NUT. THE SPIN HUB HAS A RIGHT HAND THREAD.**

Place the grinding wheel hub assembly(s) back on the grinding shaft and make sure the spin hub is located between the drive yoke assembly and the relief hub is to the right of the drive assembly.



**MAKE SURE THE WHEEL(S) IS PLACED ON THE SHAFT WITH THE SAME ORIENTATION AS SHOWN. FAILURE TO INSTALL CORRECTLY WILL CAUSE THE WHEEL NUT TO LOOSEN. (THE NUT ON THE RELIEF HUB SHOULD BE TO THE RIGHT & THE NUT ON THE SPIN HUB SHOULD BE TO THE LEFT.)**

Reinstall the bearing on the left side of the shaft making sure to fit the pilot on the bearing into arm. Tighten mounting screws, and tighten the setscrews to the shaft. Close and tighten polycarbonate guard. Move bearing support back in place - see relief hub bearing adjustment complete details.

## WHEEL DRESSING

If the grinding wheel becomes loaded with material it may be necessary to dress the wheel. The 550 is supplied with a diamond dresser. To use, place the dresser on the spin drive horizontal arm in the area where the wheel is to be dressed. Adjust the dresser to the appropriate position and angle. Raise the grinding wheel so it is nearly touching the dresser.

For dressing the spin grinding wheel, put the dresser in the straight position. Close the doors and infeed the

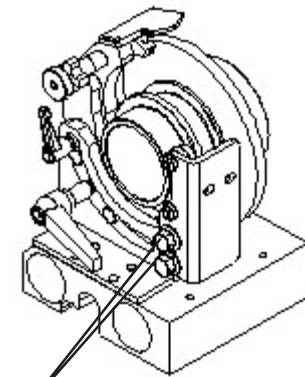
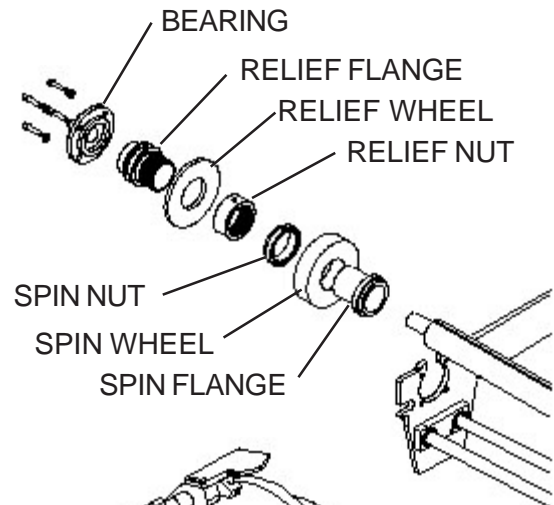


FIG. 33

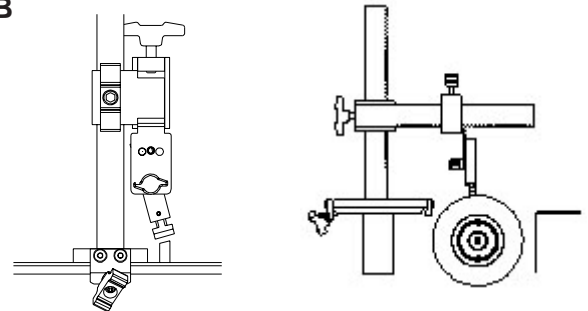


FIG. 34

spin grinding wheel into the dresser and then move the grinding wheel side to side against the dresser which will dress the full face of the wheel.

For dressing the relief wheel, put the dresser at the correct angle for normal helix reel or reverse helix reel. See pages 24 and 25 of the Operators Manual. Close the doors and infeed the relief grinding wheel into the dresser. Do Not move the grinding wheel from side to side.

## MAINTENANCE (CONTINUED)

### GRINDING MOTOR BELT REPLACEMENT/ ALIGNMENT

To replace or inspect the grinding motor belt, remove the rear side panel. To remove the belt, pull down on the tensioner pulley.

For the belt to function properly the grinding shaft pulley and the grinding motor pulley must be in line with the tensioner pulley. To adjust the pulley position loosen the setscrews on the pulley. Locate the belt in the center of the idler pulley. Measure from the arm to the edge of the belt at the idler pulley. Adjust the two other pulley's until the same measurement is achieved and tighten the pulley setscrews.

Before reinstalling the rear panel, run the grind motor to assure that the belt is not misaligned. The belt will walk off the pulley if the system is not aligned properly.

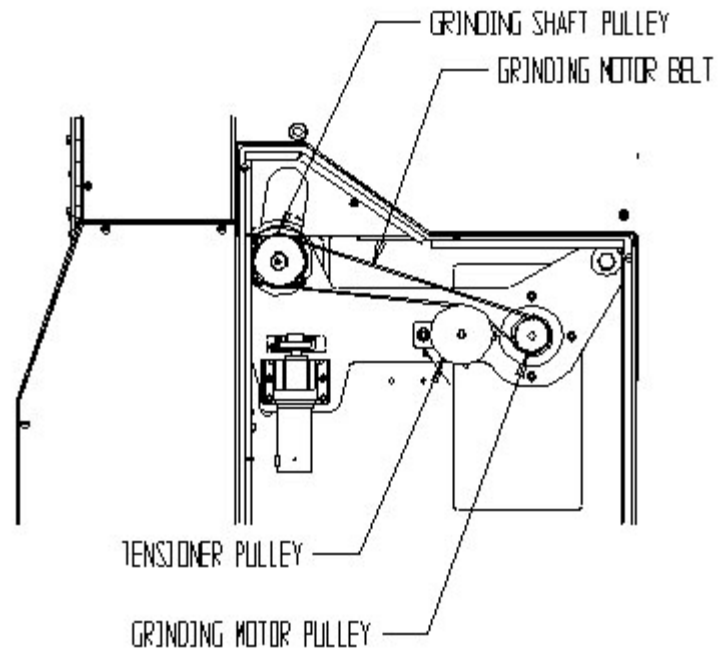


FIG. 35

### TRAVERSE BELT REPLACEMENT

To replace the traverse belt first loosen the nuts on the left side pulley that are used to tension the belt. Remove the right side rear side panel. Loosen the screws holding the traverse motor and tilt the bottom of the motor out releasing any remaining tension on the belt. On the left side remove the nut from the bottom belt tensioning screw, this will allow the belt to be removed.

Place a new belt on the left pulley making sure it is seated properly in the cogged teeth and replace the locknut. Feed the new belt through the slot on the right arm and place on motor pulley. Use the motor as a lever to apply tension to the new belt. Tighten motor screws and adjust the tension in the belt as specified in the BELT TENSION section. Adjust the height of the motor pulley if necessary so the belt is located in the center of the traverse belt clamp.

Test the traverse motor and replace the rear side panel.

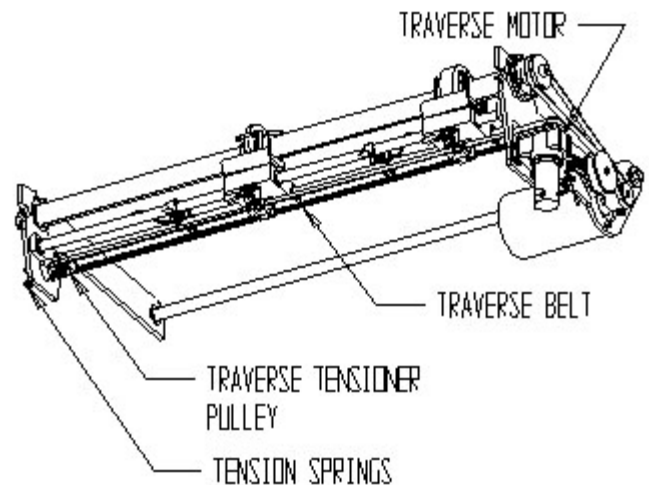


FIG. 36

## MAINTENANCE (CONTINUED)

### TRAVERSE SHAFT/LINEAR BEARING REPLACEMENT

Remove the left side guarding. Then remove the grinding shaft by removing the left side bearing and loosening the setscrews on the right side bearing. Also remove the traverse belt.

To remove the traverse shafts first lower the grinding shaft so that it is in its lowest position. Then remove the left side arm.

To remove the left arm, remove the bolt at the rear of the machine. (It may be necessary to clamp onto the shaft that the bolt is screwed into so that it does not spin.) After removing the bolt, pull the arm off the rear shaft. Remove the front of the arm from the vertical adjuster housing, pull the arm straight off the traverse shafts. (Caution should be used as the shafts may come out of the right side arm.)

Slide the grinding head assemblies off the traverse shafts.

Replace the shafts if necessary or press the bearings out of the bearing housings and replace with new bearings and seals. (Two bearings go in the front and 1 in the rear of the housing).

Clean the 2 spherical bearings in the arm and place the traverse shaft into the right arm. Replace the grinding head assemblies (spin first). Clean the bearing in the left arm and slide onto traverse shaft. (Note: The spherical bearing in the arm has to be lined up with the shafts for the shafts to slide into the bearings.) Replace and tighten items in the opposite order of removal. Make sure the wheels are properly located in the correct grinding head assembly with the nut side of the wheel toward the left side of the machine (see Replacement of Grinding Wheel.)

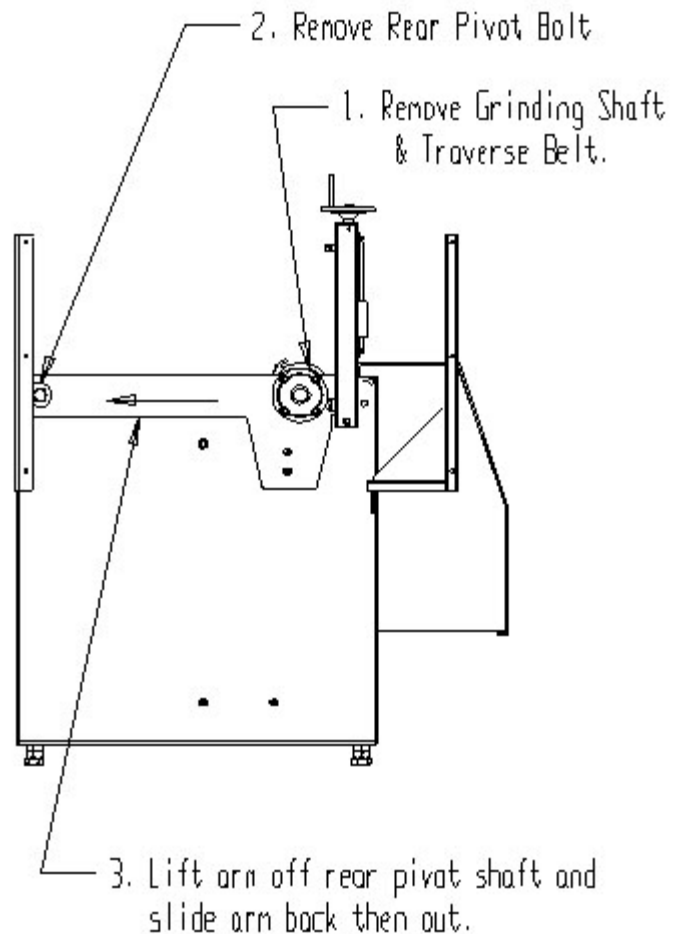


Fig. 37

# 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, liquid dish washing 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 food grade VM&P naphtha or isopropyl alcohol. Afterward, a warm final wash should be made, using mild, liquid dish washing 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

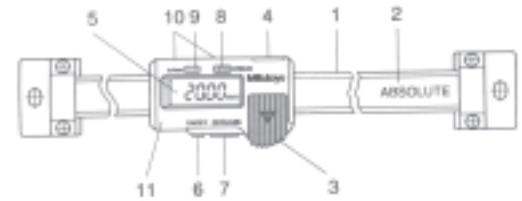
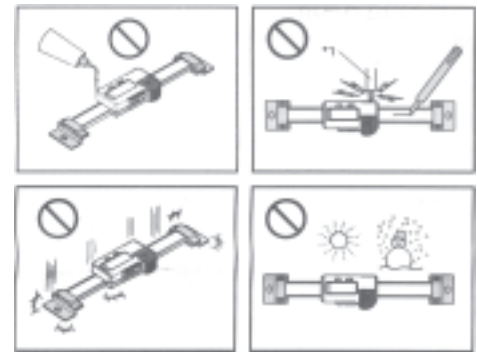
Do not mark the scale unit with and electric engraver or scratch the scale.

### 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

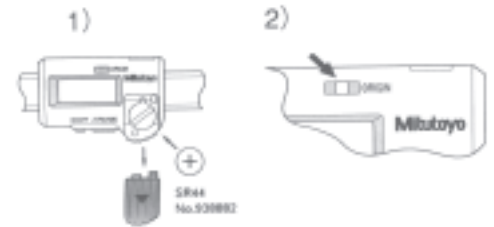
- |                        |                    |
|------------------------|--------------------|
| 1. Beam                | 2. Main Scale      |
| 3. Battery compartment | 4. Outp Connection |
| 5. Display             | 6. ON/OFF Power    |
| 7. ZERO/ABS switch     | 8. Origin Switch   |
| 9. Inch/mm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



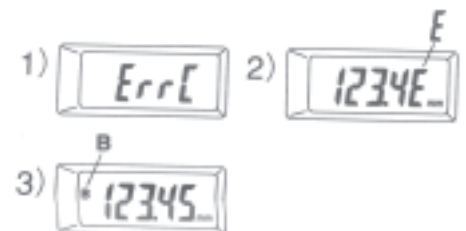
### Incremental (INC) & Absolute (ABS) mode

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

- u u **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.
- u u **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.
- u u **B indication:** Battery voltage is low. Replace the battery as soon as possible.



# ADJUSTMENTS

## PROXIMITY SWITCH

For the proximity switch to perform properly and reverse the direction of the grinding head assembly the sensor end of the prox must face toward the head assembly that is in use and must be mounted such that it is located past the edge of the prox holder.

NOTE: The light on the proximity switch activates when metal is approximately 3/16" [4.8 mm] from front of proximity switch.

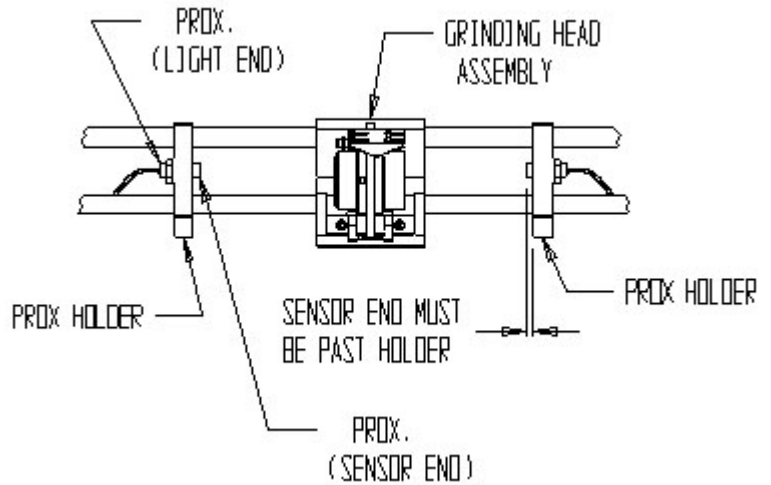


FIG. 38

## VERTICAL INFEED SHAFT DRAG

If the grinding shaft tends to walk during grinding, the drag on the vertical adjusters needs to be increased. To increase the drag in the vertical adjustment shafts, tighten the setscrew on the back of the vertical adjustment housing.

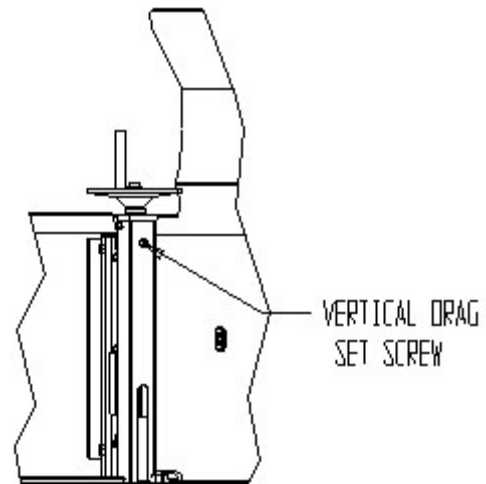


FIG. 39

# ADJUSTMENTS (CONTINUED)

## TRAVERSE BELT TENSION

To adjust the tension on the traverse belt, tighten the screws and nuts located to the left side of the traverse belt to a minimum of 1.75" [44 mm]. The traverse belt should be level when adjusting the belt tension.



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

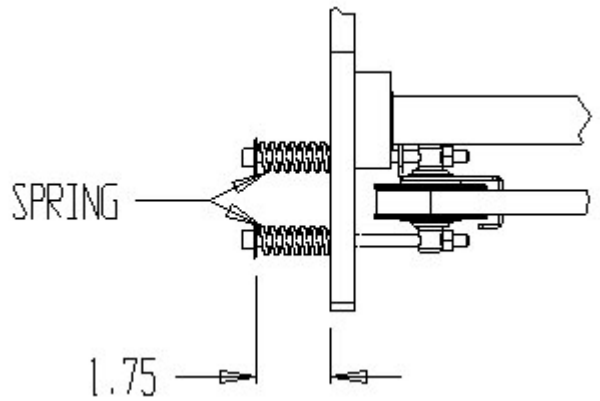


FIG. 40

## TRAVERSE CLAMP FORCE

If the traverse clamp is slipping during regular operation it may be necessary to tighten the clamp. To tighten, loosen the jam nut and screw the tip out. Move the traverse belt out of the way and verify the clamped distance from the tip to the clamping block (shoe). Jam the nut against the clamp being careful not to move the tip.

The bracket that supports the clamp is also equipped with slots if further adjustments need to be made. To move the bracket loosen the two screws that are holding it in place and slide forward or back. Retighten the screws and make sure they are tight or the bracket will move during clamping. Check the tip distance and make any necessary adjustments.

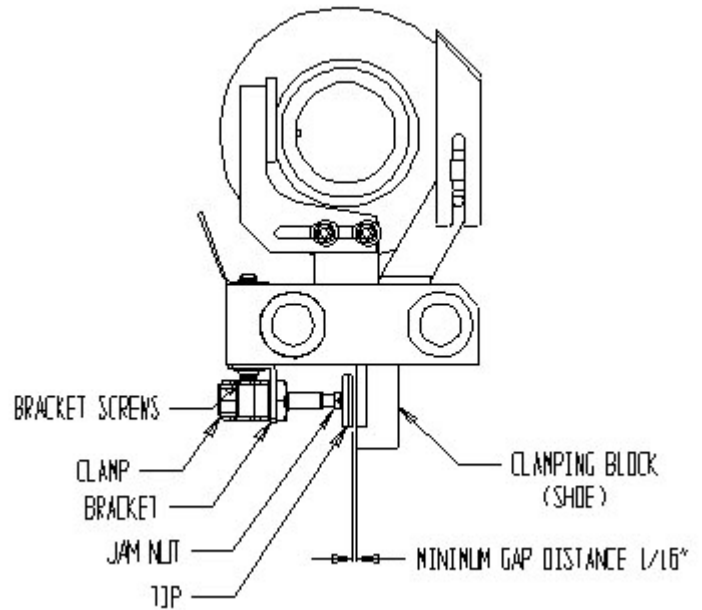


FIG. 41



**THE TIP HAS BEEN FACTORY SET SO THAT IT WILL SLIP IF THE GRINDING HEAD ASSEMBLY COMES IN CONTACT WITH SOMETHING. CAUTION SHOULD BE USED AS ADJUSTING THE TIP WILL AFFECT THE SLIP LOAD AND COULD DAMAGE THE CLAMP TIP, BELT OR TRAVERSE DRIVE SYSTEM.**

## ADJUSTMENTS (CONTINUED)

### SPIN GRINDING HEAD WEAR PADS

The bronze wear pads used to move the spin wheel will wear and may need to be adjusted or replaced.

Replace or flip the pads when they wear to within a 1/16" [1.6 mm] of the screws. To accomplish the best fit, the holes in the pads are offset. When installing new pads flip or rotate the pads until Gap 2 is as small as possible without the pads pinching the wheel.

On the spin grinding head assembly, the pads can be adjusted in and out by loosening the screws located on the sides of the yokes. Gap 1 should be adjusted to about 1/16" [1.6 mm].

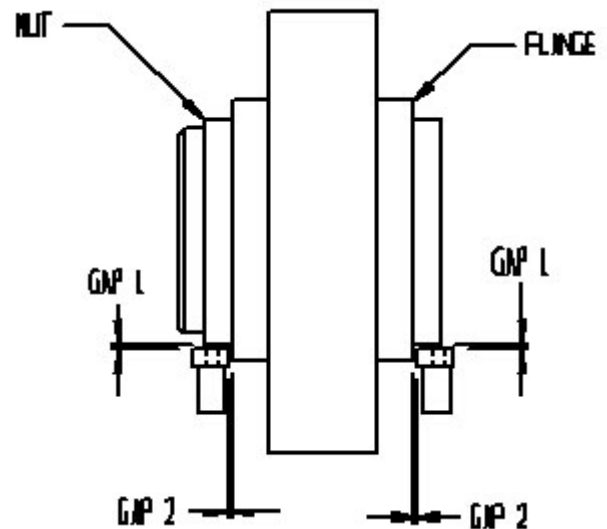


FIG. 42

### SAFETY SWITCH ALIGNMENT/REPLACEMENT

The safety switch located on the right guard door must line up properly with the key located on the opposite door or the grinder will not function.

The switch and key must be within 1/4" and the targets on the switches must line up in order for the switch to function properly.

The switch and key are attached to the guarding using a "Torx" style tamper resistant screws.

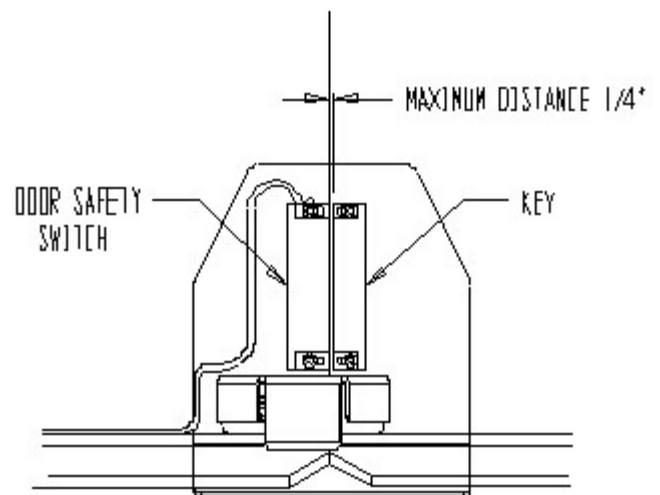


FIG. 43

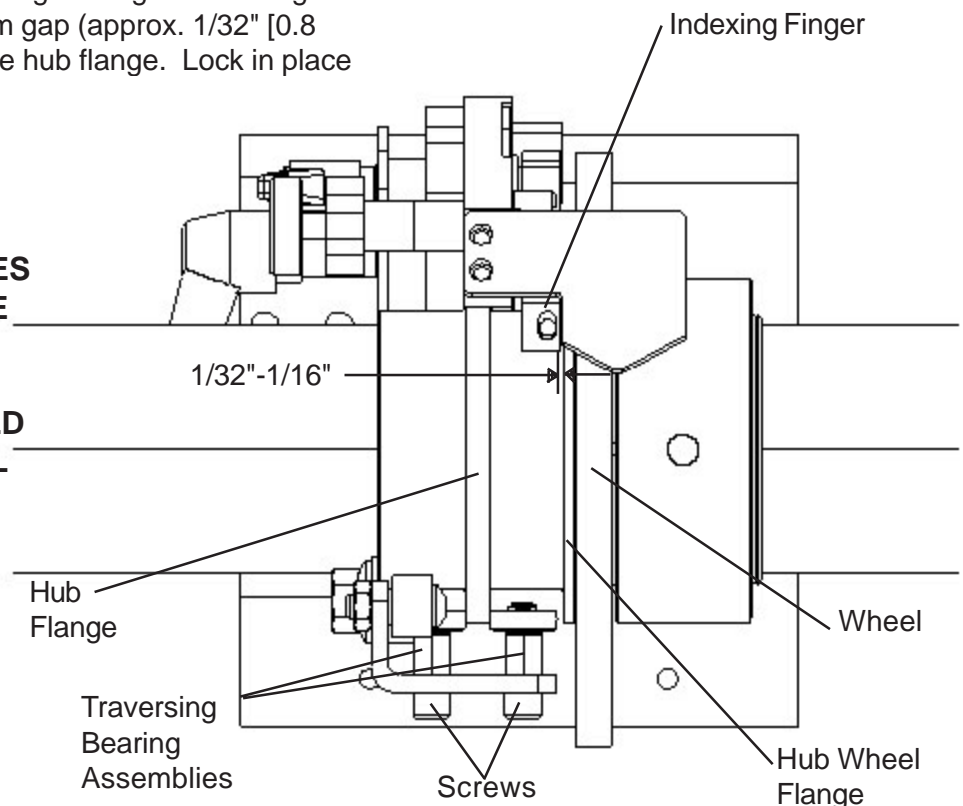
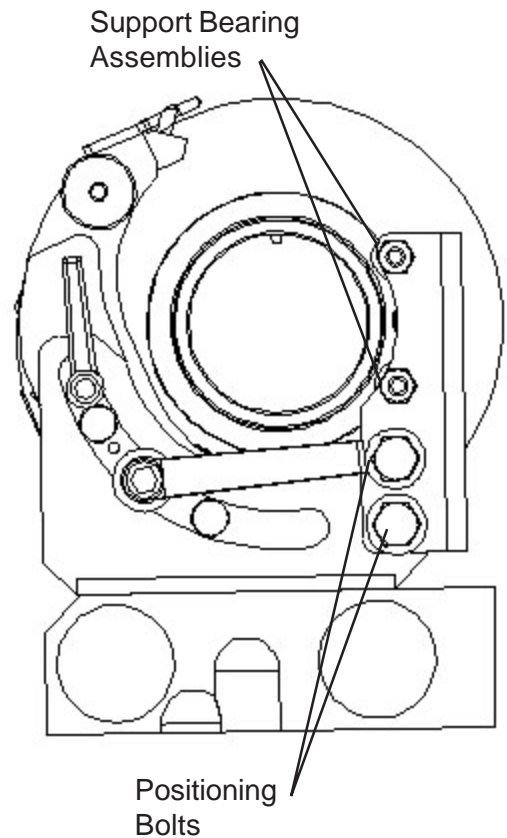
## RELIEF GRINDING HEAD BEARING ADJUSTMENTS

It may be necessary to adjust the guide bearings on the relief head. To adjust the position of the support bearings, loosen the two positioning bolts located on the side of the support assembly. Press on the support assembly until both support bearing assemblies are touching the hub. Hold the support in place with the bearing assemblies touching the hub and tighten the two bolts positioning bolts. Check to see if both bearing assemblies are touching or have minimal clearance to the hub by rotating the grinding shaft.

**NOTE: EXCESSIVE PRELOAD OF THE BEARING ASSEMBLIES ON THE HUB CAN CAUSE THE BEARINGS TO WEAR QUICKER AND COULD CAUSE THEM TO FAIL PREMATURELY.**

To adjust the traversing bearing assemblies use an allen wrench and 3/8" wrench. Use the allen wrench to loosen the screws while using the 3/8" wrench to hold the bearing assembly shaft. After loosening the bearing assemblies push them away from the hub flange. Now Position the hub so there is 1/32"-1/16" [0.8-1.6 mm] clearance between the indexing finger and the hub wheel flange. Now bring the LEFT traversing bearing assembly in until it just contacts the hub flange. Lock this bearing in place by tightening the screw. Press on the wheel so that the hub flange is against the left traversing bearing and verify the clearance of the indexing finger to the wheel flange. Now bring the Right traversing bearing in until there is a minimum gap (approx. 1/32" [0.8 mm]) between the bearing and the hub flange. Lock in place by tighten the screw. Check to see if the bearing assemblies operate freely and

**NOTE: EXCESSIVE PRELOAD OF THE BEARING ASSEMBLIES ON THE HUB FLANGE CAN CAUSE THE BEARINGS TO WEAR QUICKER AND COULD CAUSE THEM TO FAIL PREMATURELY.**



# CONTROL BOARD POTENTIOMETER ADJUSTMENTS

## POTENTIOMETER ADJUSTMENTS TRAVERSE DRIVE CONTROL (TDC)

Min. Speed--Factory set at full (CCW) 8:30. Do not change this setting.

(Right Traverse) Forward Torque--Factory set at full (CW) 4:30. Do not change this setting.

(Left Traverse) Reverse Torque--Factory set at full (CW) 4:30. Do not change this setting.

IR COMP--Factory set to 9:00. IR COMP is current (I) resistance (R) compensation (COMP). IR COMP adjusts the output voltage of the drive which balances load to motor RPM. Regulation of a traverse motor may be improved by slight adjustment of the IR COMP 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 pot counterclockwise until the symptoms disappear.

Max. Speed--Set at 3:30 for maximum voltage of 90 Volts DC to the traverse motor. When voltage is above 90 volts DC, the traverse motor will start to pulsate and not run smoothly.

(Right Traverse) Forward Acceleration--Factory set at full (CCW) 8:30. Do not change this setting.

(Left Traverse) Reverse Acceleration--Factory set at full (CCW) 8:30. Do not change this setting.

(DB) Dead Band is the potentiometer setting for the 50 or 60 Hz cycle control. Factory set to 9:00, works for both 50 and 60 Hz. Do not change this setting.

Calibrating the **DWELL TIME** rotary DIP switch adjusts the amount of time the process remains in the stop position after a limit switch is actuated. The **DWELL TIME** range is adjustable from 0-4 seconds. A DIP switch setting of 0 sets the **DWELL TIME** to 0 seconds, while a setting of 9 sets the **DWELL TIME** to 4.5 seconds. Dwell time is preset to #4 setting for a 2 second dwell time when reversing at each end of stroke. A setting of 6, sets the dwell time at 3 seconds, etc.

**Diagnostic LED's indicate the function that is currently being performed:**

**POWER** indicates that AC power is being applied to the control.

**FORWARD** indicates that the process is running in the forward direction (traversing left).

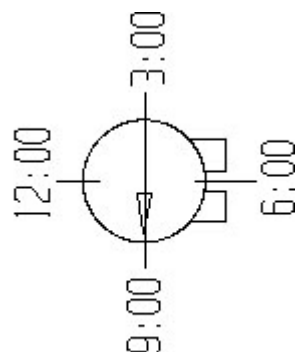
**REVERSE** indicates that the process is running in the reverse direction (traversing right).

**PROX 1 FWD LIMIT** lights when the forward limit switch is actuated (left prox.).

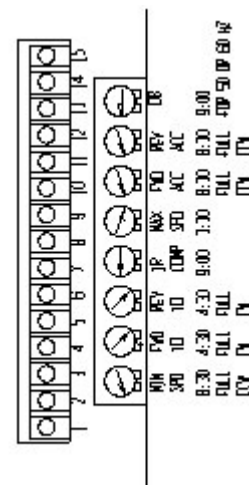
**PROX 2 REV LIMIT** lights when the reverse limit switch is actuated (right prox.).

**DWELL** lights when the process remains stopped after a proximity switch is actuated.

**Potentiometer  
Clock Orientation**



- DWELL TIME
- DWELL RED
- PROX 2 REV LIMIT GREEN
- PROX 1 FWD LIMIT GREEN
- REVERSE GREEN
- FORWARD GREEN
- POWER RED



**FIG. 44**

# CONTROL BOARD POTENTIOMETER ADJUSTMENTS (Continued)

## 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 FIG. 45 and FIG. 46. These potentiometers have been set at the factory to the positions shown on FIG. 45 and FIG. 46.

### In the Relief Grinding Mode--

The Relief Speed Pot (RSP) and the Relief Torque Pot (RTP) interact with each other. The (RSP) is located on the upper spin board as a relief speed preset at 9:30 (20 Volts DC). See FIG. 45. The (RTP) is located on the control panel and is for relief torque adjustment.

Relief Speed Pot (RSP) when rotated clockwise will increase maximum spin drive speed. This speed 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 30 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 operate smoothly.

### In the Spin Grinding Mode--

The Spin Torque Potentiometer (STP) and the Spin Speed Pot (SSP) interact with each other. The (STP) is located on the upper spin board as spin torque preset at 2:00 for torque setting. See FIG. 45. The (SSP) is located on the control panel and is for spin speed adjustment.

Spin Torque Pot (STP) controls maximum torque allowable in the spin grinding cycle only. This should never be adjusted past the 2:30 position. If the reel does not turn check that the reel is free turning by hand spinning.

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 LOWER BOARD OF THE SPIN DRIVE CONTROL (SDC) See FIG. 46.

### Maximum Speed Pot--

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

### Minimum Speed Pot--

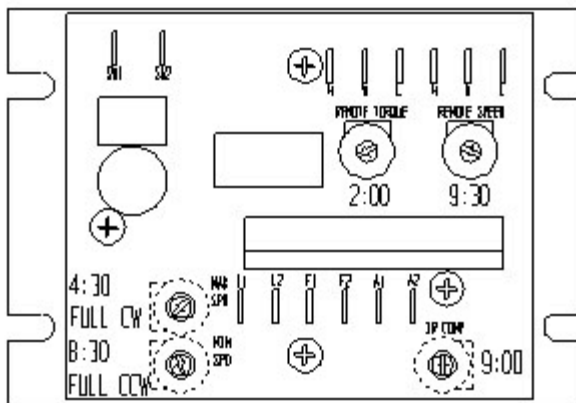
The minimum speed is factory preset at 8:30 (full counterclockwise) so zero speed is obtainable for spin speed.

### IR Compensation Pot--

The IR Compensation is factory set at 9:00.

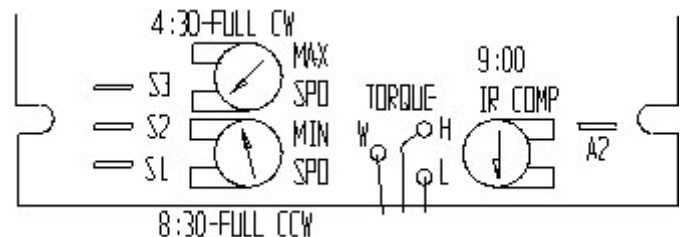
Regulation of the spin or relief grind spin motor may be improved by a slight adjustment of the IR COMP pot clockwise from its factory-set position. Overcompensation causes the motor to oscillate or to increase speed when fully loaded. If you reach such a point, turn the IR COMP pot counterclockwise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

**UPPER SPIN BOARD**



**FIG. 45**

**LOWER SPIN BOARD**



**FIG. 46**

# 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 550 electrical system. For those without that background, service can be arranged through your local distributor.

This section presumes that you are already familiar with the normal operation of the Grinder. If not, you should read the front of this 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 550 have a wire label at each end for troubleshooting. The wire label has a code which tells you wiring information. The wire label has a seven position code. The first two digits are the wire number: 01-99. The next three numbers or letters are the code for the component to which the wire attaches. Example: TDC for Traverse Drive Control. The last two numbers or letters are the number of the terminal on the component to which the wire attaches.

## ELECTRICAL TROUBLESHOOTING INDEX

AC Main Power Controls .....	Page 27-29
Spin Drive Controls .....	Page 30-33
Grinding Motor Controls .....	Page 34-35
Traverse Drive Controls-w/prox .....	Page 36-38
Traverse--stopping and reversing .....	Page 38-40

## ELECTRICAL TROUBLESHOOTING (Continued)

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

Verify all wires shown on the wiring diagram on pages 72-75 are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If problem persists, test as listed below.

<b>Possible Cause</b>	<b>Checkout Procedure</b>	
You must pull out the Emergency Stop Button (ESS) and push the system Start Switch (SSS) to get power to control Panel	A. Listen for the Magnetic Starter (MAG) contacts to pull in with a clunk	Machine works Yes--end troubleshooting No--go to Step B next
Main Power Cord is not plugged in	B. Plug in main power cord	Machine works Yes--end troubleshooting No--go to Step C next
Guard doors must be closed and latched for contactor to pull in.	C. Close and latch guard doors.	Machine works Yes--end troubleshooting No--go to Step D next
Main 20 amp outlet circuit breaker has tripped	D. Check circuit breaker in your building and reset if necessary. (Check wall outlet with a light to make sure it works)	Machine works Yes--end troubleshooting No--but light works in outlet--go to Step E next. No--but light does not work in outlet. You must solve your power delivery problem independent of machine.
No 115 volts AC power to (MAG)	E. Check for incoming power for 115 Volts.	(MAG) Terminals TB-01 to TB-02 for 115 Volts AC Yes--Go to Step F next. No--Check continuity across terminal block, Replace main power cord #32
No 115 Volts AC power out of (MAG)	F. Check for 115 V	(MAG) Term #T1 to T3 for 115 Volts AC Yes--check continuity of wires between T1 and T3 to switches No--Go to Step I

# ELECTRICAL TROUBLESHOOTING (Continued)

## Possible Causes

## Checkout Procedure

115V power not delivered to (MAG) coil.

**I.** Check at Magnetic Starter coil for 115 Volts AC with main electrical power on and pushing (SSS) and **GRINDING MOTOR SWITCH (GMS)** and SPIN MOTOR SWITCH (SMS) in the **OFF** position.

(MAG) Term #A1 to A2 for 115 volts AC  
Yes--replace magnetic starter  
No--go to Step **J.** next

No power to the control circuit

**J.** Check voltage to Circuit Breaker CB-1 (1 AMP)

Measure 115 volts AC from Circuit Breaker wire #10 at the Circuit Breaker end to TB-02.  
Yes-- Go to Step **K.** next  
No--Check continuity of wire #41, if bad replace

Circuit Breaker Tripped

**K.** Check voltage after Circuit Breaker CB-1 (1-AMP)

Measure 115 Volts AC from Circuit Breaker wire #11 at the Circuit Breaker end to TB-02.  
Yes--To Step **L.** next  
No--Wait for Circuit Breaker to cool and push in, if bad replace

Bad Emergency Stop Switch (ESS)

**L. Pull up on Stop Button and** Check voltage after the (ESS).

Measure 115 Volts AC from (ESS) term 1 to TB-02.  
Yes--Go to Step **M.** next  
No--Check wire #03 for continuity, then verify switch continuity. If bad replace EES

Bad Grinding Switch

**M.** Check Voltage to switch (GMS)

Measure 115 Volts AC from (GMS) term 1 to TB-02  
Yes--Go to Step **N** next.  
No--Check continuity of wire #09, if bad replace

**N.** Check Voltage from switch (GMS). Switch must be in the OFF position.

Measure 115 Volts AC from (GMS) term 2 to TB-02.  
Yes--Go to Step **O** next  
No--Check continuity of (GMS) switch, if bad replace.

## ELECTRICAL TROUBLESHOOTING (Continued)

### Possible Cause

### Checkout Procedure

System Start Switch (SSS) not functioning.

**O.** Check push button contact input.

Measure 115 volts AC at switch term 3 to TB-02  
 Yes--Go to Step P. next  
 No--Check continuity of wire #10 from SSS to GMS

**P.** Check push button contact output.

Measure 115 Volts AC at switch term 4 to TB-02 with button pressed  
 Yes-- Go to Step Q next  
 No--Replace switch

(MAG) not operating

**Q.** Check contactor action.

Measure 115 Volts AC at A1 and A2 on contactor with (SSS) on.  
 Yes--If MAG is not clicking on, replace contactor  
 No--Go to Step R. next.

Line Voltage is too low

**R.** Check (LVR) monitoring voltage

Measure 115 volts AC at (LVR) Term #6 to #7  
 Yes--go to Step S.  
 No--check continuity of wires to term #6 and #7 from (MAG). If voltage is less than 101 Volts AC check the incoming voltage. The grinder will not operate with a voltage of less than 101 Volts AC.

(LVR) is not Functioning

**S.** Check (LVR) input voltage with main electrical power on and pushing (SSS) and (GMS) in the OFF position.

Measure 115 volts AC from (LVR) term #8 to TB-02  
 Yes--go to Step T.  
 No-- Check continuity of wires 56

**T.** Check (LVR) output voltage

Measure 115 volts AC from (LVR) term #1 to TB-02  
 Yes--Check continuity of wire #58  
 No--Replace (LVR)

# ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--(MAG) turns on but grinding motor and spin motor do not work**

**Possible Cause**

**Checkout Procedure**

Doors are not shut

A. Shut doors

Machine works  
Yes--end troubleshooting  
No--go to Step B next

Door Safety Switch not operating

B. Check light on Safety switch.

Light on Safety switch is on when doors are closed and goes off when doors are opened  
Yes--go to Step C next.  
No--go to Step D

C. Check gap and alignment of Switch to Key.

Adjust gap or alignment of signal side of switch to key.  
Yes--end trouble shooting  
No--go to Step F.

DC Power Supply is not operating

D. Check input to 24 Volt DC Power Supply (PWS)

Measure 115 volts AC from (PWS) term #4 to TB-01, (PWS) term #2 to TB-01, (PWS) term #3 to TB-02, (PWS) term #1 to TB-02.  
Yes--go to Step E next.  
No--Check continuity of wires 58 and 59.

E. Check output of 24 Volt DC Power Supply (PWS)

Measure 24 volts DC from -OUT to +OUT on (PWS).  
Yes--go to Step F next  
No--replace DC Power Supply

Relay (REL) not operating

F. Check voltage at relay (REL) with the doors closed on main power on.

Measure 24 volts DC at (REL) term A1 and A2  
Yes--Contactor should pull in, if not replace contactor.  
No--check continuity of wires #51 and #52 and their terminal blocks. If ok then replace switch

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

**Possible Cause**

**Checkout Procedure**

(MAG) holding contact has failed

A. Check wiring to and from MAG holding contact in. Verify the magnetic starter holding contact is working.

Measure 115 Volts AC at MAG term 13 to 14 with SSS not pushed.  
Yes--Replace contactor  
No--Verify wiring to 13 and 14. If bad replace.

# ELECTRICAL TROUBLESHOOTING (Continued)

## PROBLEM--SPIN DRIVE NOT WORKING IN SPIN MODE.

Assuming (SSS) System Start Switch is on with 115 volts AC to control panel and all other functions are working.

Verify all wires shown on the wiring diagram on pages 84-87 are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or not 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	
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 Rotation Switch (SRS) are not on	<b>B.</b> Turn (SRS) switch to direction of reel rotation required. NOTE: center position is off	Spin Motor works Yes--end troubleshooting No--go to Step <b>C.</b> next
Circuit Breaker 2 (4 AMP) is tripped	<b>C.</b> Check Circuit breaker and reset, replace if bad Check that reel is free spinning.	Spin Motor works Yes--end troubleshooting No--go to Step <b>D.</b> next
Spin Rotation Switch (SRS) is not working	<b>D.</b> Check for (SRS) input of 115 Volts AC	(SRS) Term 5 to term 8 for 115 Volts AC Yes--go to Step <b>E.</b> next No--Verify DC power Supply and REL is working. - See D-F PAGE 30.
	<b>E.</b> Check for (SRS) output of 115 Volts AC NOTE: Check spin rotation switch in both positions.	(SRS) Term 1 to term 4 for 115 Volts AC Yes--go to Step <b>F.</b> next No--replace (SRS) switch
Spin Drive Control (SDS) is not working	<b>F.</b> Check (SDC) L1 to L2 for 115 Volts AC	(SDC) Term L1 to term L2 for 115 volts AC Yes--go to Step <b>G.</b> next No--replace wires 06 and 07.
	<b>G.</b> Check (SDC) A1 & A2 for approx. 90 Volts DC (Have Spin Speed Pot set to 400 RPM)	(SDC) Term A1 to A2 for approx 90 volts DC Yes--go to Step <b>H.</b> next No--go to Step <b>L.</b>
	<b>H.</b> Check for approx 90 Volts DC input to (SRS)	(SRS) Term 6 to 7 for approx 90 Volts DC Yes--go to Step <b>J.</b> next No--replace wires 02 & 09
	<b>J.</b> Check for approx 90 Volts DC out put to (SRS).	(SRS) Term 2 to 3 for approx 90 Volts DC Yes--go to Step <b>K.</b> next No--replace (SRS) switch
Spin Drive motor is bad	<b>K.</b> Check spin motor continuity	Remove wires at (SRS) Term 2 & 3 check 0 ohms across the black and white wires Yes--end troubleshooting No--got to Step <b>M.</b> next



**Disconnect Power from Machine!**

# ELECTRICAL TROUBLESHOOTING (Continued)

## Possible Cause

## Checkout Procedure

(SSP) is not working

**L.** (SSP) (10K) Remove 3 Remote Speed wires.  
Red wire to term W  
White wire to term L  
Black wire to term H

Check for 10,000 ohms  
Red wire to white wire  
Full CCW--0 ohms  
Full CW--10,000 ohms  
Red wire to black wire  
Full CCW--10,000 ohms  
Full CW--0 ohms  
Yes--replace (SDC)  
No--replace (SSP)

Worn Motor Brushes

**M.** Inspect Motor Brushes



**DISCONNECT POWER  
FROM MACHINE !**

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 Spin Drive Motor

**PROBLEM : Spin drive speed goes at one speed only.****Possible Cause****Remedy**

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

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

If wiring is wrong, correct and test.

Yes--end of troubleshooting  
No--Go to Step B. next

Defective spin speed control (SSP) potentiometer.

**B.** (SSP) 10K Remove 3 remote speed wires.  
red wire to term W  
white wire to term L  
black wire to term H

Check for 10,000 ohms

Red wire to white wire

Full CCW--0 ohms

Full CW--10,000 ohms

Red wire to black wire

Full CCW--10,000 ohms

Full CW--0 ohms

Yes-- Go to Step C. next

No--Replace (SSP)

Main circuit board dial pot settings not correct. (If board has been replaced

**C.** Check all pot settings on both boards as of the (SDC) shown on Page 24. (See Adjustment Section Spin Drive Control [SDC] Board Setting).

Yes-- end of troubleshooting

No--replace (SDC)

IR Comp trim pot not adjusted properly.

**A.** See adjustment section for trim pot setting on Page 24.

Original adjustment was not set properly

Torque to rotate the reel too high.

**B.** Readjust bearing preload for the reel. Maximum torque load 25 in./lb to rotate reel.

Too much load on drive motor will cause motor to hunt and vary speed.

Check all terminal connections for tightness.

**C.** When .250 female spade terminals are not tight, remove and crimp slightly together. When re-installing, push on pressure should have increased for good contact.

When connections are not tight the control board varies voltage to the DC motor which then varies speed.

# ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM-- Grinding motor not working.**

**Assuming (SSS) System Start Switch is on with 115 volts AC to control panel and all other functions are working.**

**Verify all wires shown on the wiring diagram on pages 70 are correct and pull on wire terminals with approximately 3lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If loose terminals are found, retighten and retest system. If problem persists, test as listed below.**

Possible Cause	Checkout Procedure	
Grinding Motor Switch (GMS) is not on	<b>A.</b> Turn switch on	Grinding Motor works Yes--end troubleshooting No--go to Step <b>B.</b> next
	<b>B.</b> Close and latch guard doors.	Grinding Motor works Yes--end troubleshooting No--go to Step <b>C.</b> next
Circuit Breaker Tripped	<b>C.</b> Check voltage to Circuit Breaker - 2.	Measure 115 Volts AC from Wire #15 on CB-02 to TB-02. Yes--go to Step <b>D.</b> next No--Verify REL is working- pg. 30
	<b>D.</b> Check Voltage out of Circuit Breaker- 2	Measure 115 Volts AC from Wire #15 on CB-02 to TB-02. Yes--go to Step <b>E.</b> next No-- Reset circuit Breaker after it cools or replace.
GMS not working	<b>E.</b> Check for power to GMS	GMS term 5 to TB-02 for 115 Volts AC Yes--go to Step <b>F.</b> next No--With power off, check continuity of wire 53 and replace if bad.
	<b>F.</b> Check for power from GMS	GMS Term 4 to TB-02 for 115 Volts AC Yes--Go to Step <b>G.</b> next No--replace GMS
RELAY not working	<b>G.</b> Check for power at coil of Relay	Measure 115V AC from terminals 0 to 1 of REL2 Yes--Go to step <b>H.</b> next No -- Check wires 57 & 01 and replace
	<b>H.</b> No power to contacts of relay.	Measure 115V AC from terminals 4 to 8 of REL2 Yes--Go to step <b>I.</b> next No -- Go to step <b>J,</b>
	<b>I.</b> Contacts not working in Relay 2	Measure 115V AC from terminals 2 to 6 of REL2 Yes--Go to step <b>L</b> No -- Replace Relay 2

## ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause	Checkout Procedure	
Circuit Breaker Tripped	<b>J.</b> Check voltage to Circuit Breaker CB-3 (20 AMP)	Measure 115 volts AC from Circuit Breaker wire #16 at the circuit breaker end to TB-02 Yes--Go to Step <b>K</b> next No--Check Continuity of wire #16, if bad replace. Also check that MAG is working properly. pg 27
	<b>K.</b> Check voltage after Circuit Breaker CB-3 (20 AMP)	Measure 115 volts AC from Circuit Breaker wire #03 at the Circuit Breaker end to TB-02. Yes--Replace wire #03 No--Wait for Circuit Breaker to cool and push in, if bad replace
Grinding Head Motor cord is bad (remove back cover to motor)	<b>L.</b> Check grinding motor cord #01.	At motor check Line 1 to Line 2 for 115 V AC Yes--replace motor No--replace grinding motor cord #31

## ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--**Traverse Drive not working.

**Assuming (SSS) System Switch is on with 115 Volts AC to control panel and all other functions are working.**

<b>Possible Cause</b>	<b>Checkout Procedure</b>	
Traverse Motor Switch (TMS) is not on	<b>A.</b> Turn on (TMS)	Traverse works Yes--end troubleshooting No--got to Step <b>B.</b> next
Traverse Speed Pot (TSP) set to zero	<b>B.</b> Set (TSP) to 35 on the control panel	Traverse works Yes--end troubleshooting No--go to Step <b>C.</b> next
Fuse on Traverse Drive Control (TDC) has failed	<b>C.</b> Check fuse and replace if failed. Too heavy a grind causes grinding head traverse motor to overload and blow the fuse,	Traverse works Yes--end troubleshooting No--go to Step <b>D.</b> next
Traverse Drive Control (TDC) is bad	<b>D.</b> Check for 115 Volts AC incoming to (TDC)	On (TDC) Terminal L1 to L2 for 115 Volts AC Yes--Go to Step <b>F.</b> next No--Go to Step <b>E.</b> next
Bad wires to (TDC)	<b>E.</b> Check for 115 Volts AC at (TMS). (Make certain (TMS) is on)	Check for 115 Volts AC at Term 1 & 4 of the (TMS) Note: Switch must be on. Yes--With power off, check continuity of wires 28 & 29, if bad replace wires. No--Check 115 Volt AC power delivered to (TMS) Term 2 & 5. If no check wires 12 & 13. If yes then replace TMS

# ELECTRICAL TROUBLESHOOTING (Continued)

## Possible Cause

## Checkout Procedure

No DC Voltage from (TDC) Traverse Drive Control

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

Check (TDC) terminals #A1 to #A2 for 90 Volts DC

Yes--go to Step **G.** next

No--go to Step **H.** next

Traverse Motor is bad

**G.** Check traverse motor continuity



**DISCONNECT POWER FROM MACHINE**

Remove motor wires from terminals #A1 & #A2 Check 0 ohms across the black and white wires

Yes--end troubleshooting

No--go to Step **I.** next

(TSP) is not working

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

Check for 10,000 ohms red to white wires

Full CCW--0 ohms

Full CW--10,000 ohms

Red to black wires

Full CCW--10,000 ohms

Full CW--0 ohms

Yes--replace the (TDC)

No--replace (TSP)

Worn motor brushes

**I.** Inspect Motor Brushes



**DISCONNECT POWER FROM MACHINE**

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

Yes--replace motor brushes

No--replace Traverse Motor

# ELECTRICAL TROUBLESHOOTING (Continued)

**PROBLEM--**Traverse does not stop to reverse directions when bearing housing comes in contact with the proximity switch on the left side or right side of machine.

Prox is  
Positioned  
Incorrectly

A. Check to make sure the Proxes are on the appropriate sides. The light side Prox should be on the outside

If incorrect, reposition  
Yes--end troubleshooting  
No--Go to Step B next.

Prox is  
mounted  
incorrectly

B. Adjust so Prox is located with sensing end out from prox holder

Adjust Prox depth on mounting  
Yes--end troubleshooting  
No--Go to Step C next.

Proximity  
Switch is bad.

C. Proximity switch is not working properly or wire connections are loose.

First check to see if proximity light comes on. When the light is on, it means that there is electricity coming to proximity switch. Actuate prox switches with steel tool to take measurements.

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

Left proximity (PROX 1) check Traverse drive Control (TDC) between terminals #13 (black wire) and #15 (brown wire).

Proximity light on-  
0 Volts DC  
Proximity light off-  
12 Volts DC

Right proximity (PROX) check #13 (black wire) and #15 (brown wire).

Proximity light on-  
0 Volts DC  
Proximity light off-  
12 Volts DC

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

# ELECTRICAL TROUBLESHOOTING (Continued)

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

## Possible Cause

## Checkout Procedure

Defective speed control potentiometer

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

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

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

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

Wrong wire hookup effects traverse control. Reversing red and orange wires to potentiometer to the D C motor will run at zero speed but maximum will be too slow. Reversing red and white wires does not affect speed control.  
Check for Proper function.  
Yes--end troubleshooting  
No--Go to Step **D.** next

Main circuit board dial pot settings not correct. (If board has not been replaced.)

**C.** Check all pot settings on circuit board as shown in wiring diagram. (See adjustment section Traverse Motor Control Board Settings.)

Minimum and maximum pot settings effect traverse speed.

## ELECTRICAL TROUBLESHOOTING (Continued)

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

Possible Cause	Remedy	Reason
Proximity switch is not working properly or wire connections are loose	First check to see if proximity light comes on. When the light is on, it means that there is electricity coming to proximity switch. Actuate prox switches with steel tool to take measurements.	The light coming on shows the proximity is getting electrical contact.
	Left proximity (PROX1) check Traverse drive Control (TDC) between terminals #14 (black wire) and #15 (brown wire).	Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC
	Right proximity (PROX) check (TDC) between terminals #13 (black wire) and #15 (brown wire).	Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC
		Replace proximity switch if the voltages do not read as above.

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

The dwell time on the traverse drive control not set properly.	Reset dwell time as required. One increment increases Dwell time by 1/2 second.
--	---

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

Loose wire to proximity switch.	Check wire connections from the proximity switches and tighten down screws.	A loose wire connection will give intermittent electrical contact.
---------------------------------	---	--



# MECHANICAL TROUBLESHOOTING

**PROBLEM-- Excessive noise or vibration on one end of the machine.**

**Possible Cause**

Set screws on bearings are not tight on grinding shaft.

**Checkout Procedure**

Tighten set screws located on bearings (#80336)

**PROBLEM--Grinding wheel traverse binding.**

**Possible Cause**

Shafts are dirty.

**Checkout Procedure**

Clean the shafts as specified in the maintenance section of this manual.

Grinding shaft is at a severe angle.

Raise or lower one end of the shaft until approximately level. This grinder is not designed to operate at a sever angle. Adjust reel or setup until the shaft is approximately level.

**PROBLEM-- Handwheel or vertical indicator gage "walks" during grinding.**

**Possible Cause**

Bracket connecting gage to vertical adjuster is loose.

**Checkout Procedure**

Push lightly up and down on the digital gage to see if it is loose. Tighten the screws on the bracket to the vertical adjuster or remove the gage and tighten the screws from the bracket to the gage.

Plug and set screw loose.

Tighten the drag on the vertical shafts by tightening the setscrew located on the back of the vertical adjuster husing. (See Vertical Infeed Shaft Drag in the adjustment section.)

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

**Possible Cause**

Traverse Speed set too fast.

**Checkout Procedure**

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

# MECHANICAL TROUBLESHOOTING

**PROBLEM-- Uneven traverse speed or grinding stock removal from reel is irregular.**

## **Possible Cause**

Linear bearings are damaged or have grit buildup causing uneven traversing load.

Grinding shaft or wheels have grit buildup causing uneven loading.

Left side traverse pulley is full of grit causing the pulley not to turn freely on shaft.

**PROBLEM--Traverse Belt Slips**

## **Possible Cause**

Clamping tip is not adjusted properly.

Too heavy a grind for traverse speed.

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

## **Possible Cause**

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

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

## **Possible Cause**

Grinding head travel not parallel to the reel center shaft.

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

## **Possible Cause**

Need to adjust the finger stop.

Need to dress the Wheel to the correct angle

## **Checkout Procedure**

Clean shafts and bearings according to the lubrication of Grinding Shaft and Linear Bearings instructions in the Maintenance Section of the manual. If problem persists replace linear bearings according to the replacement of linear bearings instructions.

Clean the wheel flanges and shaft (see Lubrication of Grinding Shaft). Replace flanges or shaft if necessary.

Clean and lubricate the shaft and pulley.

## **Checkout Procedure**

Adjust the clamping tip as specified in the Traverse Clamp Force section of this manual.

Slow the traverse speed or back off on the amount that is being infed.

## **Checkout Procedure**

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

## **Checkout Procedure**

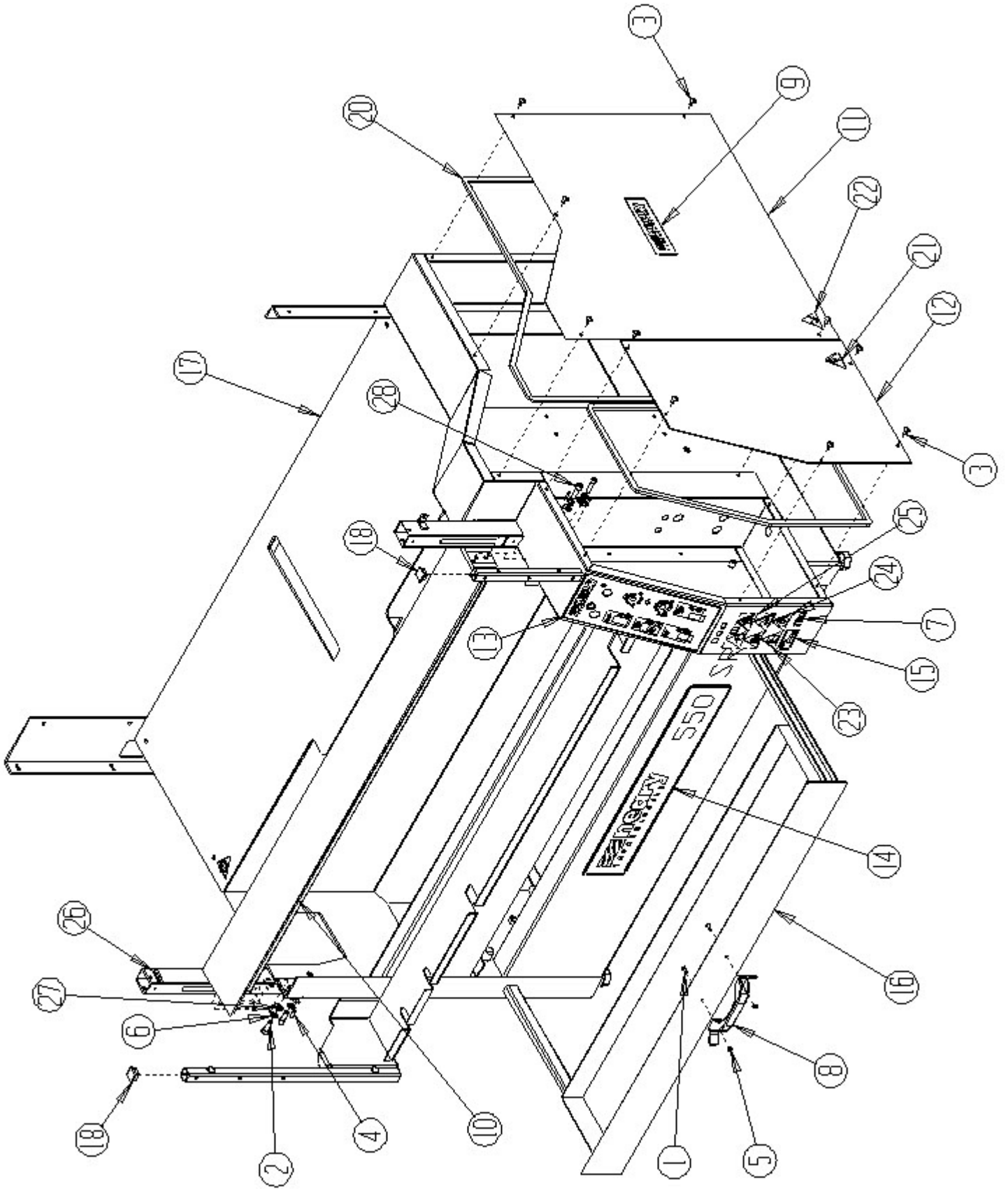
Grinding head travel was not setup parallel to the reel center shaft in vertical and horizontal planes. See Align the Reel Section.

## **Checkout Procedure**

Adjust finger stop and check for contact full length.

Dress the wheel (For more detail, see relief grinding section in operating instructions of the manual.)

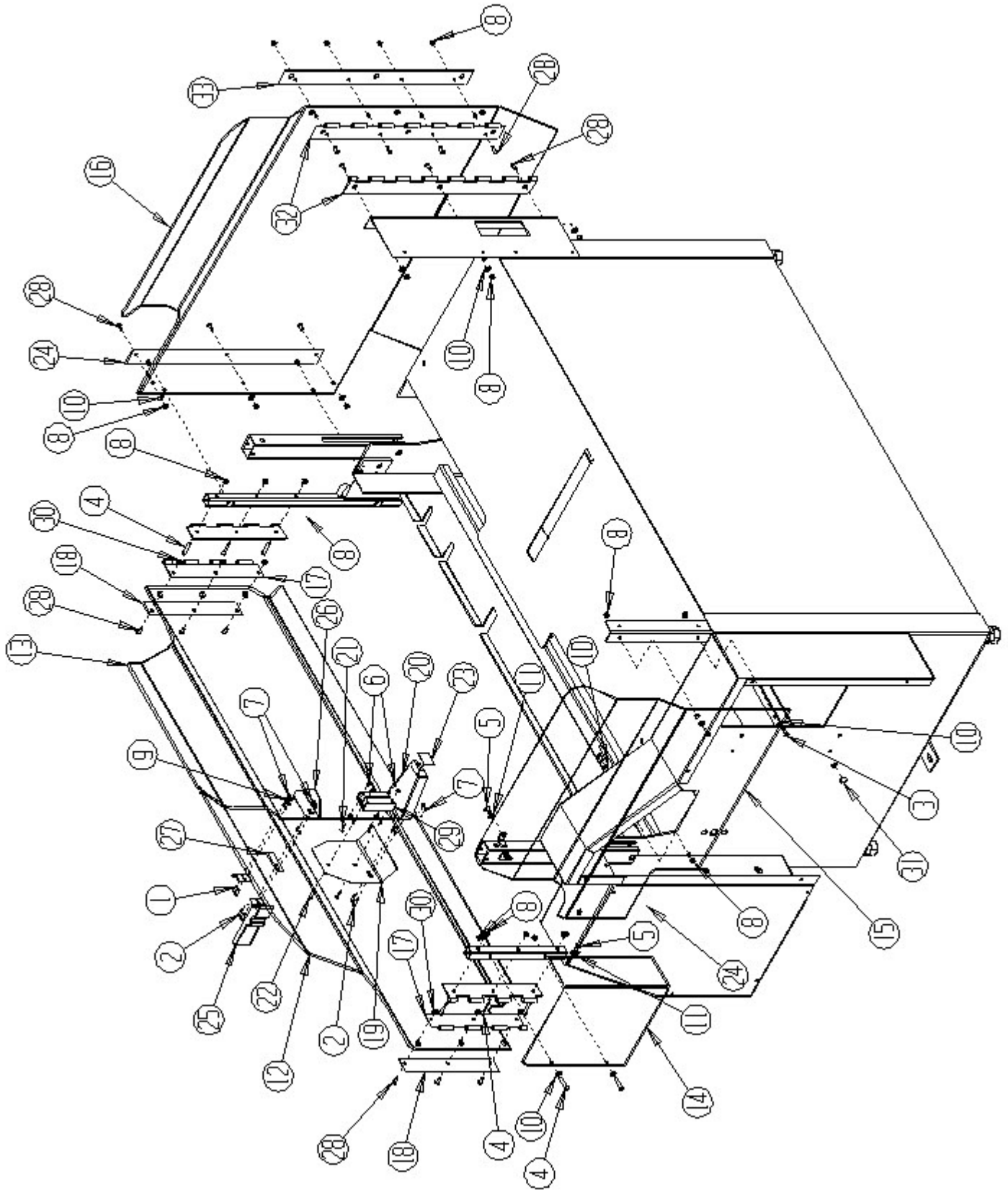
# EXPLODED VIEW: 55568 MAIN BASE ASSEMBLY



## PARTS LIST: 55568 MAIN BASE ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B191011 .....	10-24 x 5/8 Socket Head Cap Screw
2 .....	B371611 .....	3/8-16 x 1 Socket Head Cap Screw
3 .....	D250808 .....	1/4-20 x 1/2 threaded Cut Screw "F"
4 .....	H251202 .....	Roll Pin .25 d x .75 Lg
6 .....	K371501 .....	3/8 Lockwasher Split
7 .....	3708697 .....	Patent Decal
8 .....	09891 .....	Grab Handle Enclosure
9 .....	09913 .....	Neary Technologies Decal
10 .....	50234 .....	Tooling Bar-Machined
11 .....	50306 .....	Drive Panel Cover
12 .....	50307 .....	Electrical Panel Cover
13 .....	55129 .....	Control Panel Decal
14 .....	50398 .....	Neary 550 Decal
15 .....		Nameplate 550SR & Serial Number
16 .....	55513 .....	Tray Weldment
17 .....	55100 .....	Frame Weldment 550
18 .....	80362 .....	Square Plug 1" Sq x 14 Ga Tube
20 .....	3708378 .....	Foam Strip .25T 50Ft
21 .....	3708448 .....	Electrical Warning Decal
22 .....	3708458 .....	Sharp Warning Decal
23 .....	3708605 .....	Respirator Warning Decal
24 .....	3708606 .....	Hearing Protection Decal
25 .....	3708703 .....	Safety Symbol Decal
26 .....	6309111 .....	Up/Down Decal
27 .....	K370101 .....	Flat Washer 3/8
28 .....	B372011 .....	3/8-16 x 1.25 Socket Head Cap Screw

# EXPLODED VIEW: 55586 GUARD ASSEMBLY

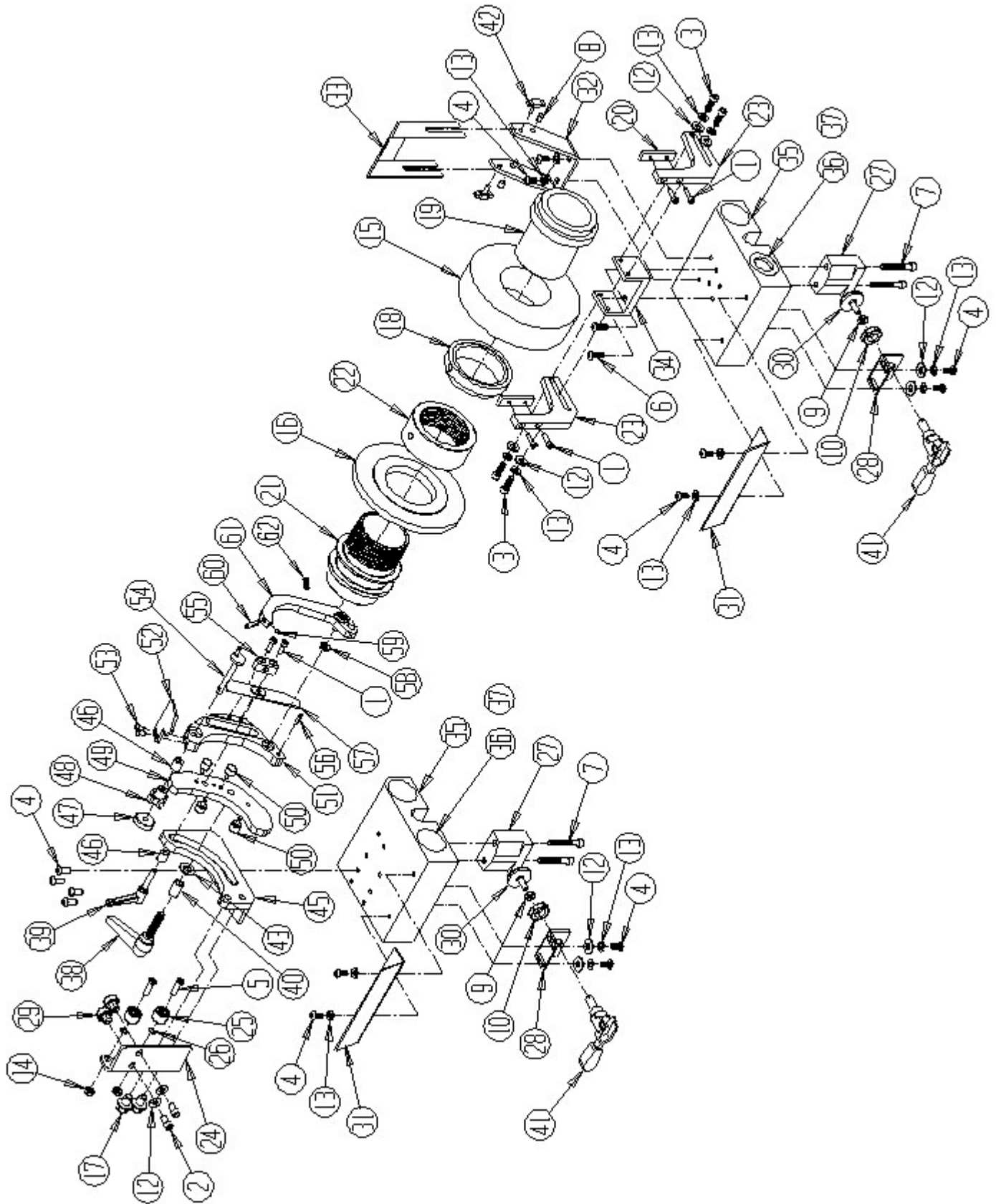


## PARTS LIST: 55586 GUARD ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B191011 .....	10-24 x 5/8 Socket Head Cap Screw
2 .....	B191211 .....	10-24 x 3/4 Socket Head Cap Screw
3 .....	B251216 .....	1/4-20 x 3/4 Button Head Socket Cap Screw
4 .....	B252416 .....	1/4-20 x 1-1/2 Button Head Socket Cap Screw
5 .....	B310813 .....	5/16-18 x 1/2 Button Head Socket Cap Screw
6 .....	J167000 .....	8-32 Locknut Jam Nylon
7 .....	J197000 .....	10-24 Locknut Nylon Full
8 .....	J257000 .....	1/4-20 Thin Locknut Nylon Full
9 .....	K190001 .....	Flat Washer #10
10 .....	K250001 .....	Flat Washer 1/4
11 .....	K310001 .....	Flat Washer 5/16
12 .....	50366 .....	Guard Door R.H.
13 .....	50368 .....	Guard Door L.H.
14 .....	50370 .....	Guard Panel R.H. Small
15 .....	50372 .....	Guard Panel R.H. Large
16 .....	55143 .....	Guard Panel L.H.
17 .....	50382 .....	Front Guard Hinge
18 .....	50384 .....	Front Hinge Plate
19 .....	6309124 .....	Front Door Plate
20 .....	50402 .....	Door Rear Bracket
21 .....	3707585* .....	8-32 x .75 Flat Head Tamper Resistant Screw
22 .....	3708819* .....	8-32 x .75 Button Head Tamper Resistant Screw
23 .....	80374 .....	Rubber Pad
24 .....	55585 .....	Guard Plate Assembly
25 .....	3708416 .....	Soft Latch
26 .....	6309033 .....	Door Rear Bracket
27 .....	6309038 .....	Door Front Bracket
28 .....	B251016 .....	1/4-20 x 5/8 Button Head Socket Cap Screw
29 .....	55523 .....	Door Safety Switch
30 .....	J257000 .....	1/4-20 Thin Locknut Nylon
31 .....	3708542 .....	Hole Plug - .625 Diameter
32 .....	55139 .....	Rear Guard Hinge - LH
33 .....	55140 .....	Guard Plate- Rear LH

\* A special wrench is need to adjust these screws. Please contact the factory for details.

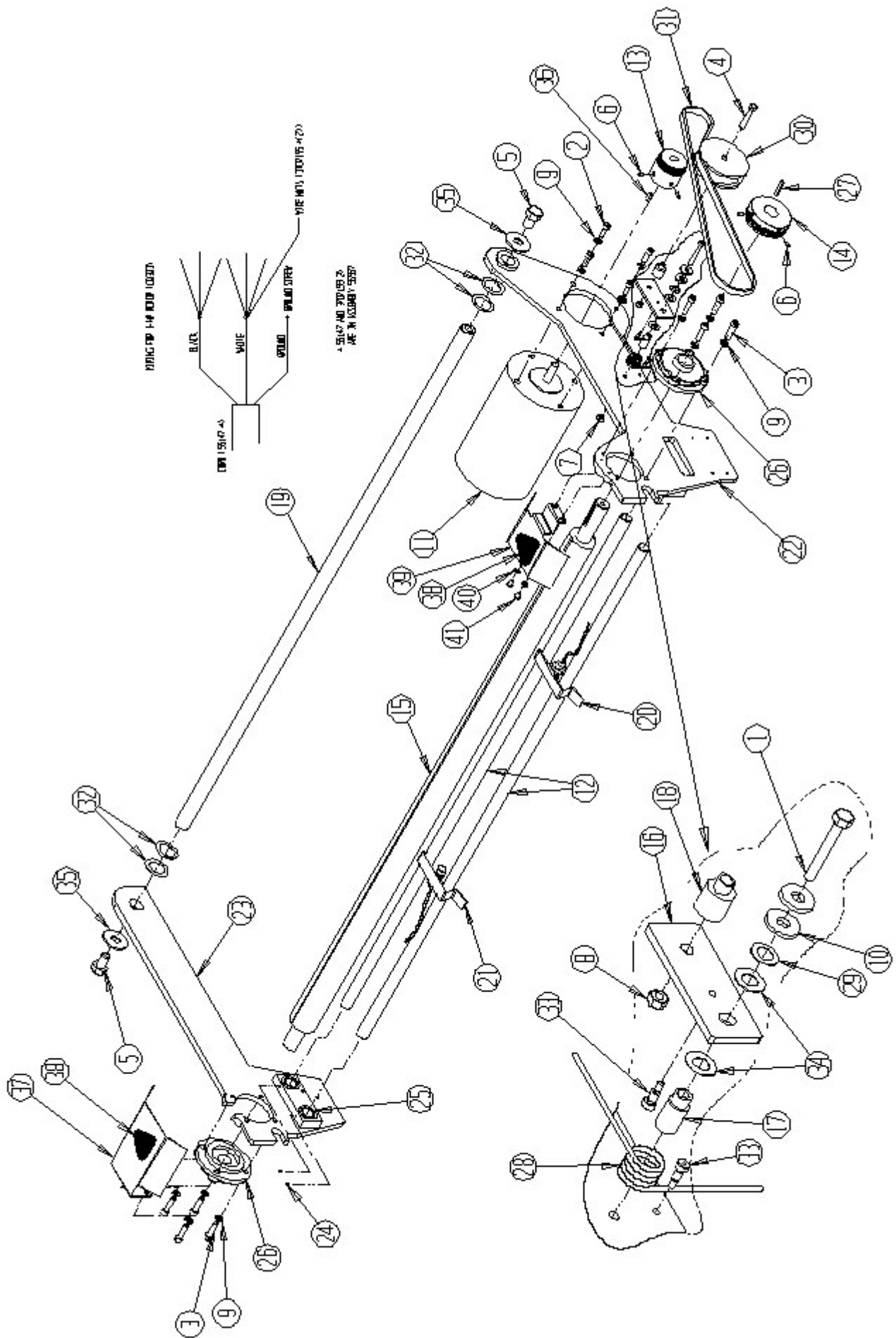
# EXPLODED VIEW: 55583 GRINDING HEAD ASSEMBLY



# PARTS LIST: 55583 GRINDING HEADED ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B191011 .....	10-24 X 5/8 Socket Head Cap Screw
2 .....	3708848 .....	1/4-28 x 1/2 Socket Head Cap Screw w/ patch
3 .....	B251211 .....	1/4-20 x 3/4 Socket Head Cap Screw
4 .....	B250816 .....	1/4-20 x 1/2 Button Head Socket Cap Screw
5 .....	80407 .....	1/4-20 x 1.00 Socket HeadCap Screw - Low Head
6 .....	B251216 .....	1/4-20 x 3/4 Button Head Socket Cap Screw
7 .....	B253211 .....	1/4-20 x 2.00 Socket Head Cap Screw
8 .....	H250602 .....	Roll Pin .25D x .375 Lg
9 .....	J252000 .....	1/4-20 Hex Jam Nut
10 .....	J627200 .....	5/8-18 Locknut Jam Nylon
12 .....	K250001 .....	Flat Washer 1/4
13 .....	K251501 .....	1/4 Lockwasher Split
14 .....	J257000 .....	1/4-20 Locknut Jam Nylon
15 .....	05720 .....	Grinding Wheel 6 x 2.75B x 1.5W 46G
16 .....	05731 .....	Grinding Wheel 6 x 2.75B x .38W 24G Type 1
17 .....	3708839 .....	3/8-16 x 1/2 Screw w/locking Flange
18 .....	50037 .....	Spin Flange Nut
19 .....	50039 .....	Spin Wheel Flange
20 .....	50073 .....	Wear Pad
21 .....	55200 .....	Relief Wheel Flange
22 .....	55201 .....	Relief Flange Nut
23 .....	50204 .....	Spin Yoke
24 .....	55126 .....	Bearing Support Bracket
25 .....	55280 .....	Double Bearing Assembly
26 .....	80406 .....	Spacer washer
27 .....	50297 .....	Traverse Shoe
28 .....	50298 .....	Traverse Clamp Bracket
29 .....	55296 .....	Single Bearing Assembly
30 .....	50310 .....	Belt Clamp Tip
31 .....	50320 .....	Traverse Guard
32 .....	50321 .....	Shield Mount Bracket
33 .....	50324 .....	Spark Shield
34 .....	50329 .....	Spin Support
35 .....	50569 .....	Bearing Housing Assembly
36 .....	09404 .....	Linear Bearing
37 .....	09479 .....	Oil Seal 1"ID x 1.57"OD x .187
38 .....	3708561 .....	Adjustable Handle 3/8-16 x 1.56 Long
39 .....	3708835 .....	Adjustable Handle 1/4-20 x 1.25 Long
40 .....	27115 .....	Spacer - .386 ID x .50 OD x .75 Long
41 .....	80335 .....	Destaco 602 Clamp
42 .....	80337 .....	T-knob Assembly
43 .....	xxxxx .....	Washer
44 .....	B190811 .....	10-24 x 1/2 Socket Head Cap Screw
45 .....	55119 .....	Finger Rotate Base
46 .....	6009057 .....	Spacer .265 ID x .48 OD x .50 Long
47 .....	55144 .....	Knob - 1/4-20 x 1" Diameter
.....	C190360 .....	10-32 x 3/16 Socket Head Set Screw
48 .....	3708838 .....	Star Knob - 1" Diameter
49 .....	55112 .....	Cam Plate
50 .....	80392 .....	Cam Follower - 1/2" Diameter
51 .....	55113 .....	Finger Slide
52 .....	55117 .....	Fixed Finger
53 .....	B190634 .....	10-32 x 3/8" Button Head Socket Cap Screw
54 .....	55118 .....	Stop Pin
55 .....	55116 .....	Index Finger Stop Block
56 .....	H181202 .....	3/16 x 3/4" long Roll Pin
57 .....	55579 .....	Locking Plate Weldment
58 .....	3708833 .....	Spacer - .252 ID x .50 OD x .125 Long
59 .....	C190467 .....	10-32 x 1/4" Socket Head Set screw
60 .....	55127 .....	3/16 Diameter Index Stop Pin
61 .....	55581 .....	Indexing Finger Assembly
62 .....	3708107 .....	Compression Spring

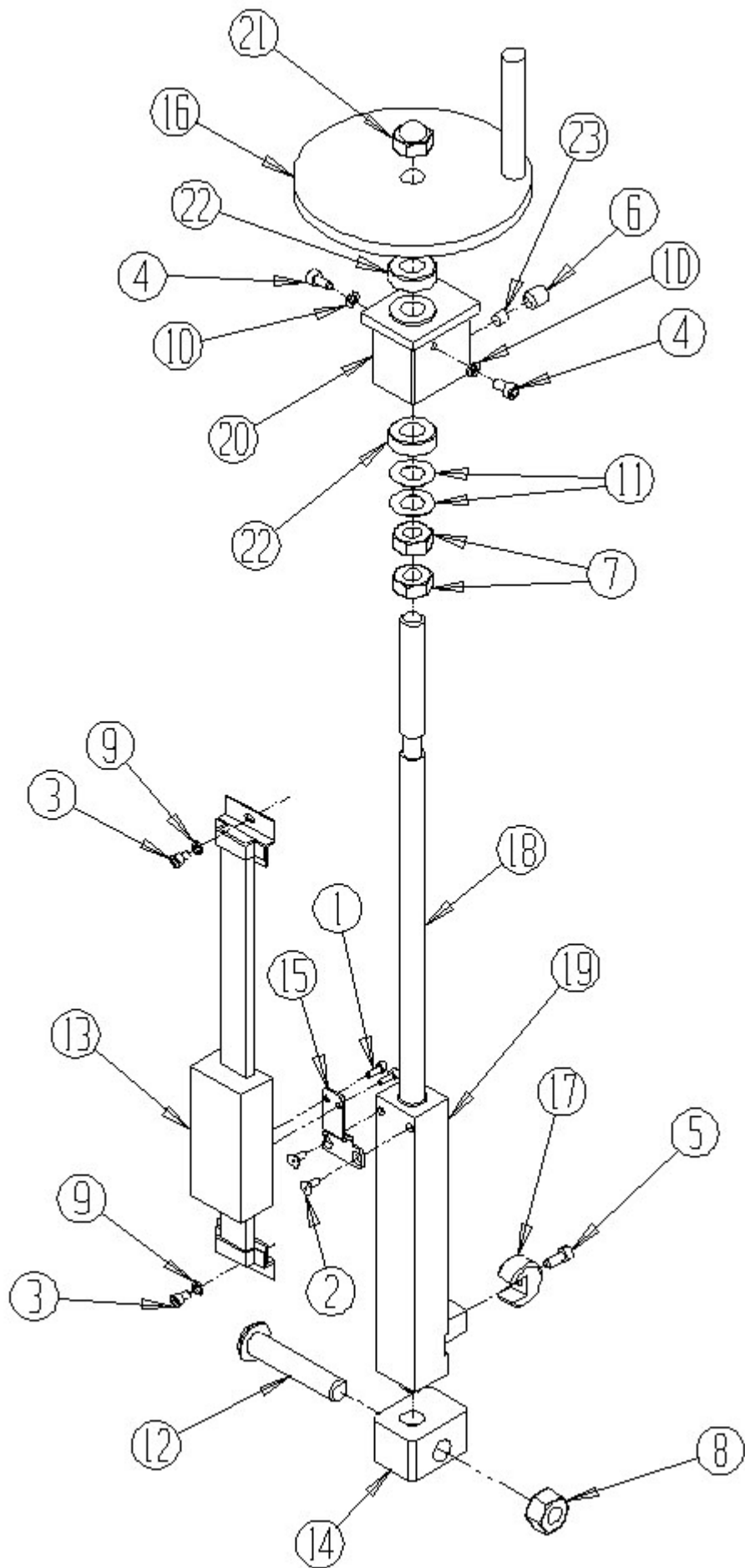
# PARTS LIST: 55562 PIVOT ARM AND GRINDING SHAFT ASSY 1 of 2



# ARTS LIST: 55562 PIVOT ARM AND GRINDING SHAFT ASSY 1 of 2

<u>GRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
.....	B313601	5/16-18 x 2-1/4 Hex Head Cap Screw
.....	B371611	3/8-16 x 1 Socket Head Cap Screw
.....	B372411	3/8-16 x 1-1/2 Socket Head Cap Screw
.....	B373601	3/8-16 x 2-1/4 Hex Head Cap Screw
.....	B752001	3/4-10 x 1.25 Hex Head Cap Screw
.....	C250820	1/4-20 x 1/2 Cup Point Set Screw
.....	J317100	5/16-18 Locknut Nylon Full
.....	J377100	3/8-16 Locknut Hex Nylok Full
.....	K371501	3/8 Lockwasher Split
.....	R000453	Flat Washer .31 x .88 x .104T
.....	09393	Motor 1HP 115/230V 60/50Hz
.....	50235	Traverse Shaft
.....	50236	Pulley 2.45 Diameter Poly V
.....	50237	Pulley 3.72 Diameter Poly V
.....	50256	Grinding Wheel Shaft
.....	50279	Tensioner Bar
.....	50280	Tensioner Pivot Shaft
.....	50281	Tensioner Pulley Shaft
.....	50282	Pivot Shaft Support Arm
.....	50311	Prox Switch Holder R.H.
.....	50318	Prox Switch Holder L.H.
.....	50574	Arm Assembly R.H.
.....	50576	Arm Assembly L.H.
.....	C190420	10-24 x 1/4 Cup Point Set Screw
.....	09680	Torrington Bearing
.....	80336	Piloted Bearing Flange
.....	80338	Key .25 sq x 1.25 Lg
.....	80342	Torsion Spring
.....	80343	Conical Washer .539 x .862 x .014T
.....	80349	Idler Pulley 4.0 Diameter
.....	80350	Poly V Belt
.....	80351	Conical Washer 1.40 x 2.03 x .024T
.....	3708425	Shoulder Bolt .313 D x .375 L
.....	3709019	Thrust Washer .500 x .937 x .032 T
.....	3709886	Flat Washer .812 x 2.25 x .135 T
.....	80126	Key 3/10 sq x 1.00 Lg
.....	55262	Guard - Grinding Wheel LH
.....	3708458	Decal - Warning Sharp
.....	55263	Guard - Grinding Wheel RH
.....	K251501	1/4 Lockwasher
.....	B250816	1/4 -20 x 1/2 L BHSCS

# EXPLODED VIEW: 55562 PIVOT ARM AND GRINDING SHAFT ASSY 2 of 2



## PARTS LIST: 55562 PIVOT ARM AND GRINDING SHAFT ASSY 2 of 2

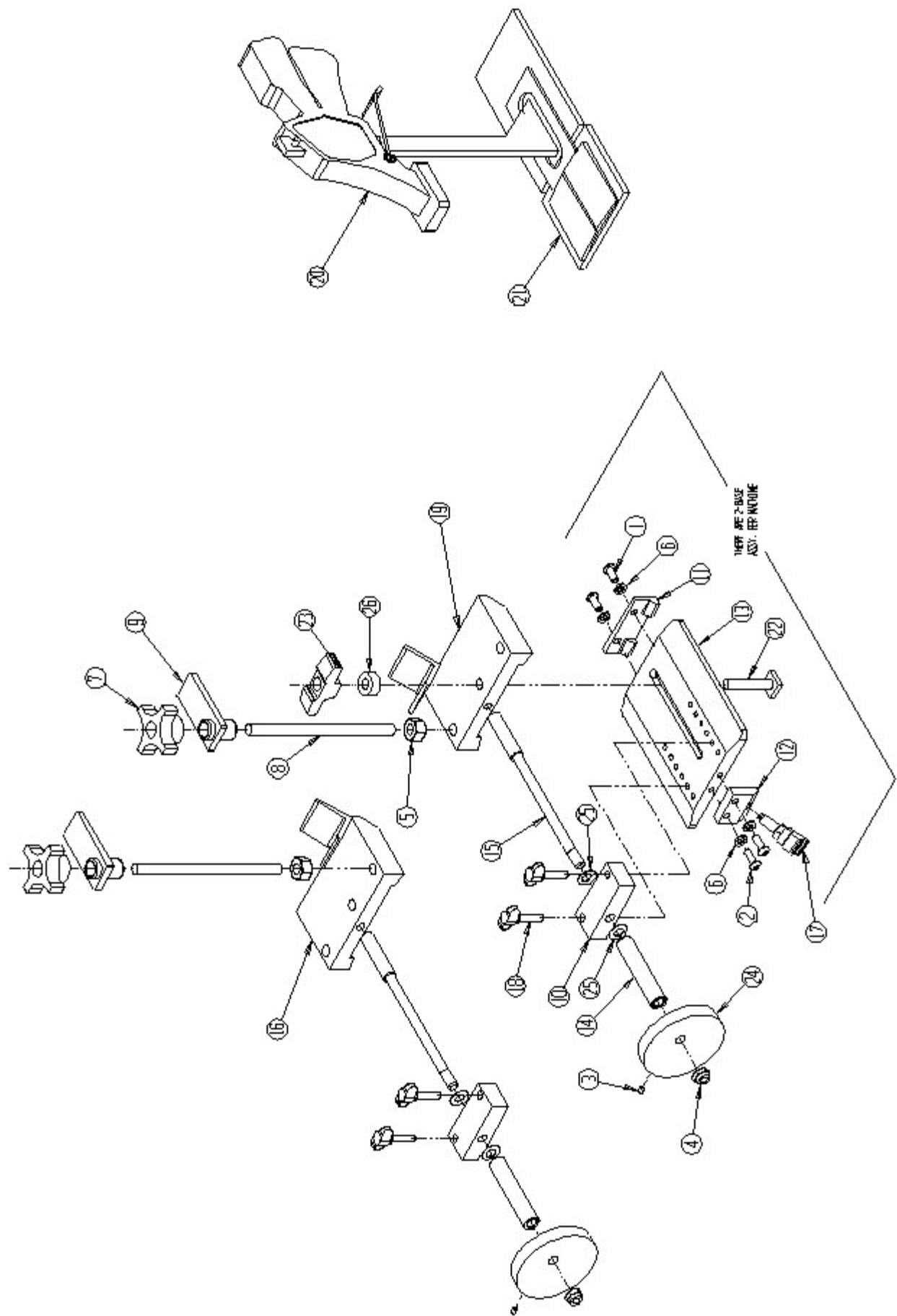
<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B120311 .....	5-40 X .188 Lg Socket Head Cap Screw
2 .....	B130605 .....	6-32 x 3/8 Flat Head Socket Cap Screw
3 .....	B160411 .....	8-32 x 1/4 Socket Head Cap Screw
4 .....	B190611 .....	10-24 x 3/8 Socket Head Cap Screw
5 .....	B190831 .....	10-24 x 1/2 Socket Head Cap Screw
6 .....	C370820 .....	3/8-16 x 1/2 Cup Point Set Screw
7 .....	J502000 .....	1/2-13 Hex Jam Nut
8 .....	J507100 .....	1/2-13 Locknut Full Nylon
9 .....	K161501 .....	#8 Lockwasher Split
10 .....	K191501 .....	#10 Lockwasher Split
11 .....	09068 .....	Washer Conical .50 x 1.25 x .078T
12 .....	09299 .....	1/2-13 x 2.5 Lg Button Head Socket Cap Screw
13 .....	09707 .....	Digital Scale, 6" Mitutoyo #572
14 .....	50095 .....	Mounting Block
15 .....	50283 .....	Gage Mounting Bracket
16 .....	50322 .....	Handwheel 1/2-13 ID
17 .....	50325 .....	Arm Support Pivot
18 .....	50348 .....	Vertical Adjustment Shaft
19 .....	50573 .....	Vertical Adjuster Assembly
20 .....	50591 .....	Cap Assembly
21 .....	80344 .....	Hex Acorn Nut 1/2-13
22 .....	3709042 .....	Ball Bearing Thrust Nice #603-1/4
23 .....	7469149 .....	Nylon Plug 5/16 Diameter



## PARTS LIST: 55563 TRAVERSE DRIVE ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B251011 .....	1/4-20 X 5/8 Socket Head Cap Screw
2 .....	B257211 .....	1/4-20 x 4.5 Socket Head Cap Screw
3 .....	J257000 .....	1/4-20 Locknut Thin
4 .....	K250001 .....	Flat Washer 1/4
5 .....	K251501 .....	1/4 Lockwasher Split
6 .....	50309 .....	Traverse Pulley Shaft
7 .....	50354 .....	Cog Pulley Drive
8 .....	50361 .....	Motor Assembly Trav W16
9 .....	50363 .....	Traverse Pulley Guard
10 .....	55553 .....	Cog Pulley Driven .375 P .50W
11 .....	80353 .....	Die Spring .34 ID x 2.0 Lg
12 .....	80354 .....	Cog Belt
13 .....	80355 .....	Thrust Washer .75 ID x 1.25 OD
14 .....	3709331 .....	Retaining Ring
15 .....	C250460 .....	1/4-28 x 1/4 Socket Head Set Screw
16 .....	80126 .....	3/16 SQ x 1.00 Key

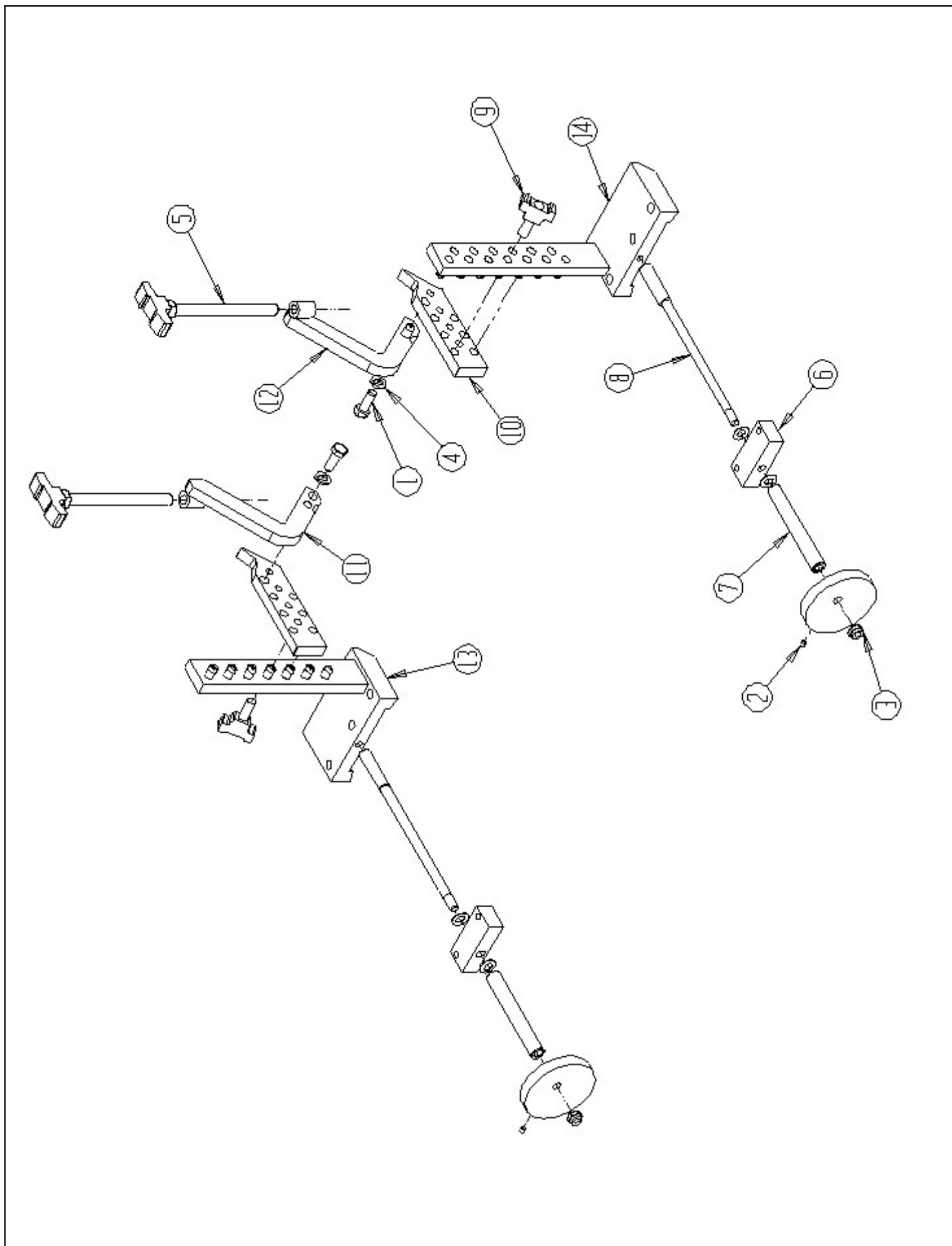
# EXPLODED VIEW: 55565 MOWER SUPPORT ASSEMBLY



## PARTS LIST: 55565 MOWER SUPPORT ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B251016 .....	1/4-20 X 5/8 Button Head Cap Screw
2 .....	B251216 .....	1/4-20 x 3/4 Button Head Cap Screw
3 .....	C250420 .....	1/4-20 x 1/4 Cup Point Set Screw
4 .....	J377000 .....	3/8-16 Locknut Jam Nylon
5 .....	J502000 .....	1/2-13 Hex Jam Nut
6 .....	K251501 .....	1/4 Lockwasher Split
7 .....	09853 .....	Knob 4 prong 1/2-13 F
8 .....	17119 .....	Threaded Stud 1/2-13 x 65 Lg
9 .....	50242 .....	Roller Clamp Weldment
10 .....	50288 .....	Tooling Block Adjustment
11 .....	50290 .....	Front Clamp Plate
12 .....	50291 .....	Clamp Block
13 .....	50292 .....	Tooling Base Plate
14 .....	50295 .....	Tooling Spacer
15 .....	50296 .....	Acme Shaft L.H. Tooling
16 .....	50568 .....	V Roller Weldment L.H.
17 .....	50570 .....	T-Knob Assembly 3/8-16 x .75 Dog Point
18 .....	80396 .....	Knob Assembly 1/4-20 x 1.0 Lg
19 .....	55506 .....	V Roller Weldment R.H.
20 .....	50254 .....	Rear Roller Clamp Assembly
21 .....	70512 .....	Roller Support Bracket Weldment
22 .....	80346 .....	Bolt T Slot 3/8-16 x 2.0 Lg
23 .....	3708245 .....	Knob T 235 3/8-16 F
24 .....	3708393 .....	Handwheel 3.50 Diameter
25 .....	3709062 .....	Conical Washer .382 x .75 x .035 T
26 .....	3889045 .....	Spacer .406 ID x .88 OD x .38Long

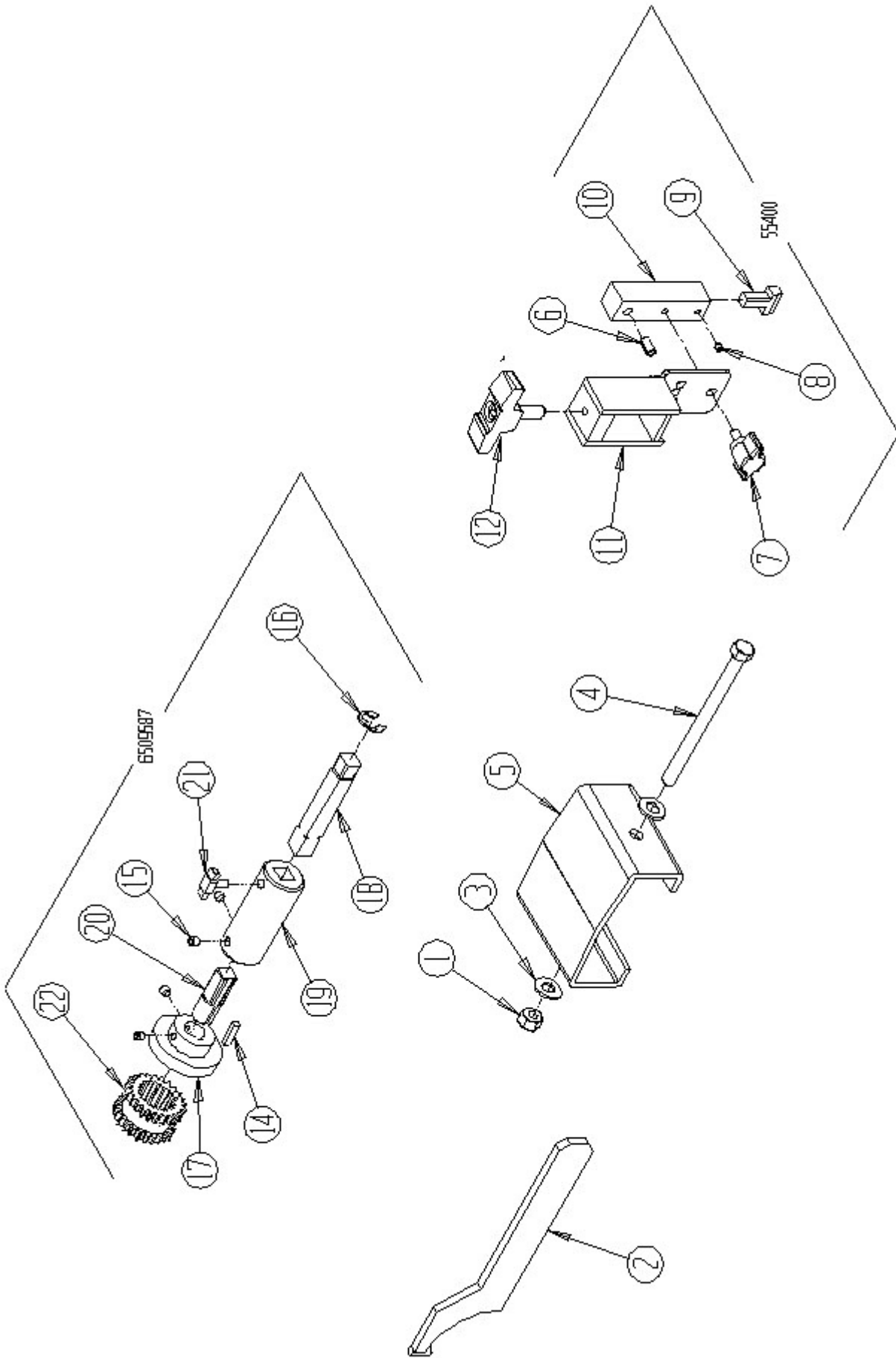
# EXPLODED VIEW: 55572 VERTICAL MOWER SUPPORT ASSEMBLY



## PARTS LIST: 55572 VERTICAL MOWER SUPPORT ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B371601 .....	3/8-16 X 1 Hex Head Cap Screw
2 .....	C250420 .....	1/4-20 x 1/4 Cup Point Cap Screw
3 .....	J377000 .....	3/8-16 Locknut Jam Nylon
4 .....	K371501 .....	3/8 Lockwasher Split
5 .....	17519 .....	Knob T Assembly 1/2-13 x 6.5"
6 .....	50288 .....	Tooling Block Adjustment
7 .....	50295 .....	Tooling Spacer
8 .....	50296 .....	Acme Shaft L.H. Tooling
9 .....	50592 .....	Knob T 3/8-16 x 1.0 Lg
10 .....	55282 .....	Hanger "V"
11 .....	55343 .....	Clamp Weldment Large L.H.
12 .....	55358 .....	Clamp Weldment Large R.H.
13 .....	55511 .....	Tooling Post Assembly L.H.
14 .....	55512 .....	Tooling Post Assembly R.H.

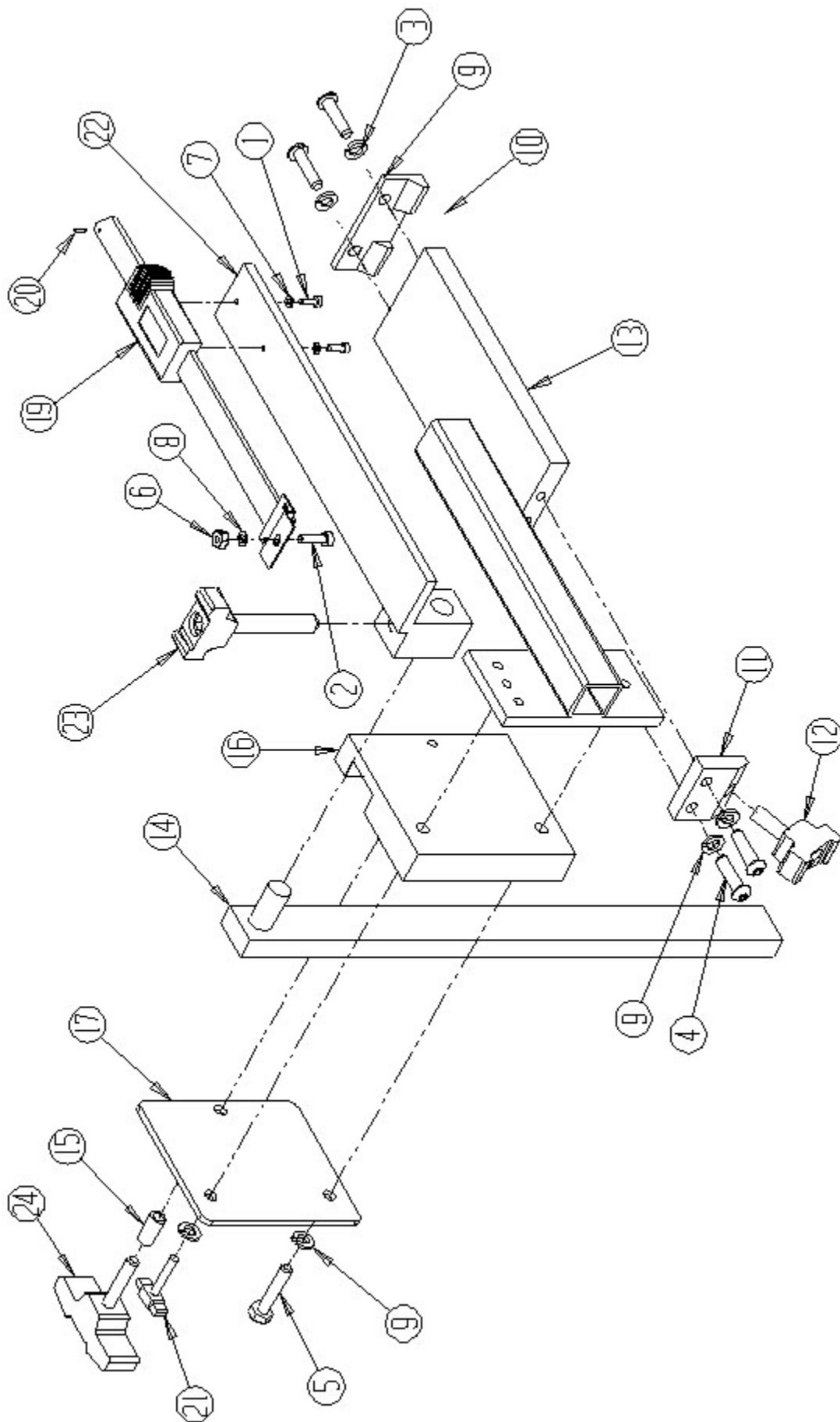
# EXPLODED VIEW: 55574 CARTON ASSEMBLY



## PARTS LIST: 55574 CARTON ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	J377100 .....	3/8-16 Locknut
2 .....	50014 .....	Spanner Wrench
3 .....	k370001 .....	3/8 Flat Washer
4 .....	B378001 .....	3/8-16 x 5.00 Hex Head Cap Screw
5 .....	55124 .....	Rear Roller Raised Support
6 .....	H250802 .....	1/4" x 1/2" Roll Pin
7 .....	09394 .....	1/4-20 2-prong Knob
8 .....	C190320 .....	#10-24 x 3/16 Socket Head Setscrew
9 .....	3708845 .....	3/4 Wide x 1/4 Thick Diamond Dresser
10 .....	55122 .....	Dresser Support Block
11 .....	55580 .....	Dresser Support Weldment
12 .....	6509588 .....	T-Knob Assembly
14 .....	R000377 .....	Sq Key 3/16 x .75
15 .....	C250620 .....	1/4-20 x 3/8 Cup Point Set Screw
16 .....	3709073 .....	Retaining Ring
17 .....	3709584 .....	Flange Coupler .625 Bore
18 .....	6009051 .....	Drive Adapter 1/2 sq 3.5 Lg
19 .....	6009052 .....	Adapter
20 .....	6009217 .....	Driver Coupler Adapter
21 .....	6009598 .....	Tee Knob Assembly 1/4-20 x .50
22 .....	3709585 .....	Sleeve Coupler

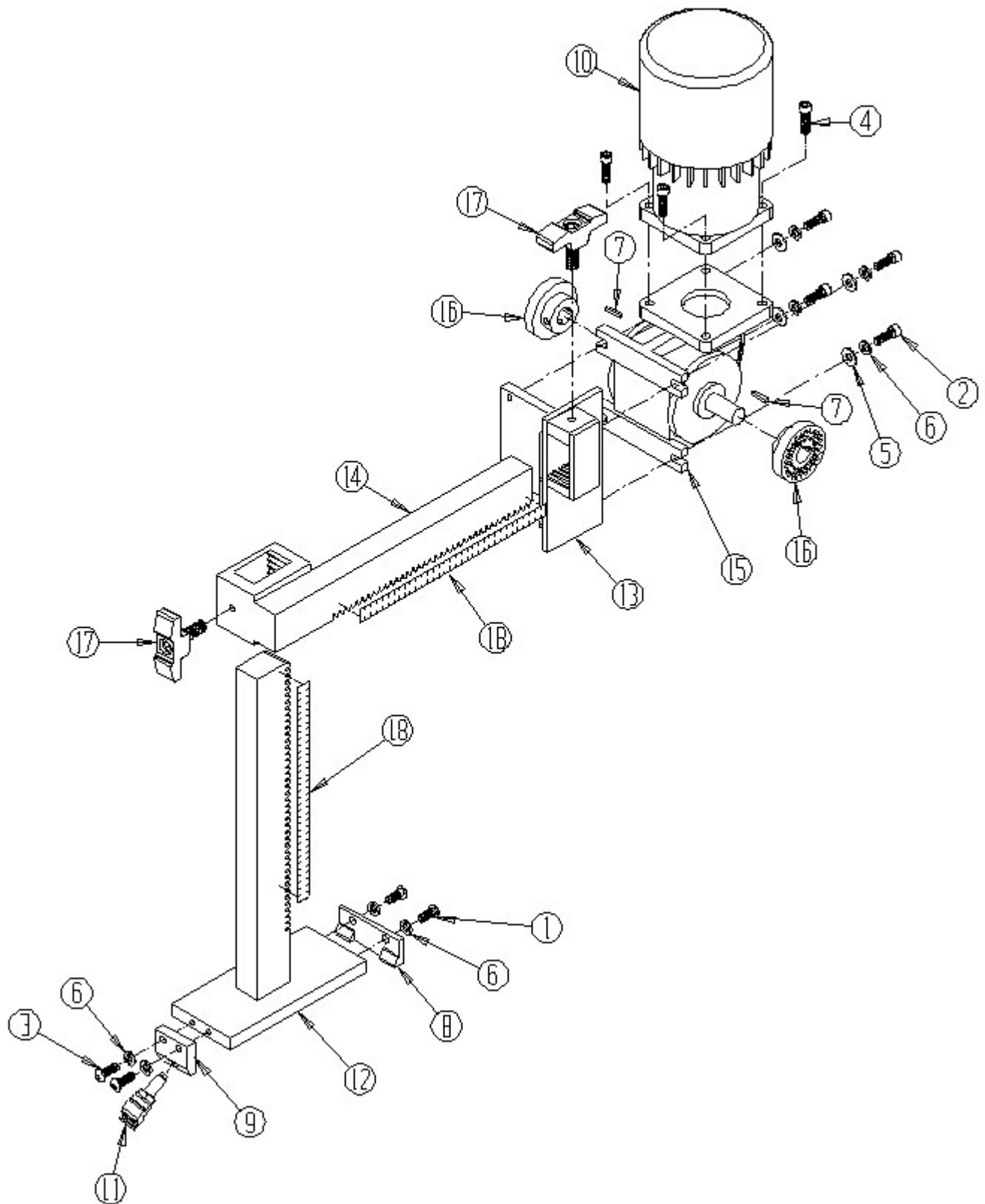
# EXPLODED VIEW: 55571 ALIGNMENT GAGE ASSEMBLY



## PARTS LIST: 55571 ALIGNMENT GAGE ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B120611 .....	5-40 x .38 Socket Head Cap Screw
2 .....	B161011 .....	8-32 x 5/8 Socket Head Cap Screw
3 .....	B251016 .....	1/4-20 x 5/8 Button Head Socket Cap Screw
4 .....	B251216 .....	1/4-20 x 3/4 Button Head Socket Cap Screw
5 .....	B252001 .....	1/4-20 x 1-1/4 Hex Head Cap Screw
6 .....	J161000 .....	8-32 Hex nut
7 .....	K121501 .....	#5 Lockwasher Split
8 .....	K161501 .....	#8 Lockwasher Split
9 .....	K251501 .....	1/4 Lockwasher Split
10 .....	50290 .....	Front Clamp Plate
11 .....	50291 .....	Clamp Block
12 .....	50570 .....	T-Knob Assembly 3/8-16 x .75 Dog Point
13 .....	50586 .....	Gage Base Weldment
14 .....	50597 .....	Gage Bar Assembly Vertical
15 .....	3529069 .....	Spacer .25 ID x .375 OD x .69 L
16 .....	6509418 .....	Pivot Plate Machined
17 .....	6509349 .....	Retainer Plate
19 .....	6509359 .....	Digital Gage Machined
20 .....	H060302 .....	Roll Pin .063 D x .188 L
21 .....	3708813 .....	T-Knob Assembly 1.25 Lg
22 .....	6509412 .....	Indicator Base Weldment
23 .....	6509567 .....	Knob Assembly T 1.5 3/8-16 x 2.25
24 .....	6509501 .....	T-Knob Assembly 3.0 Lg

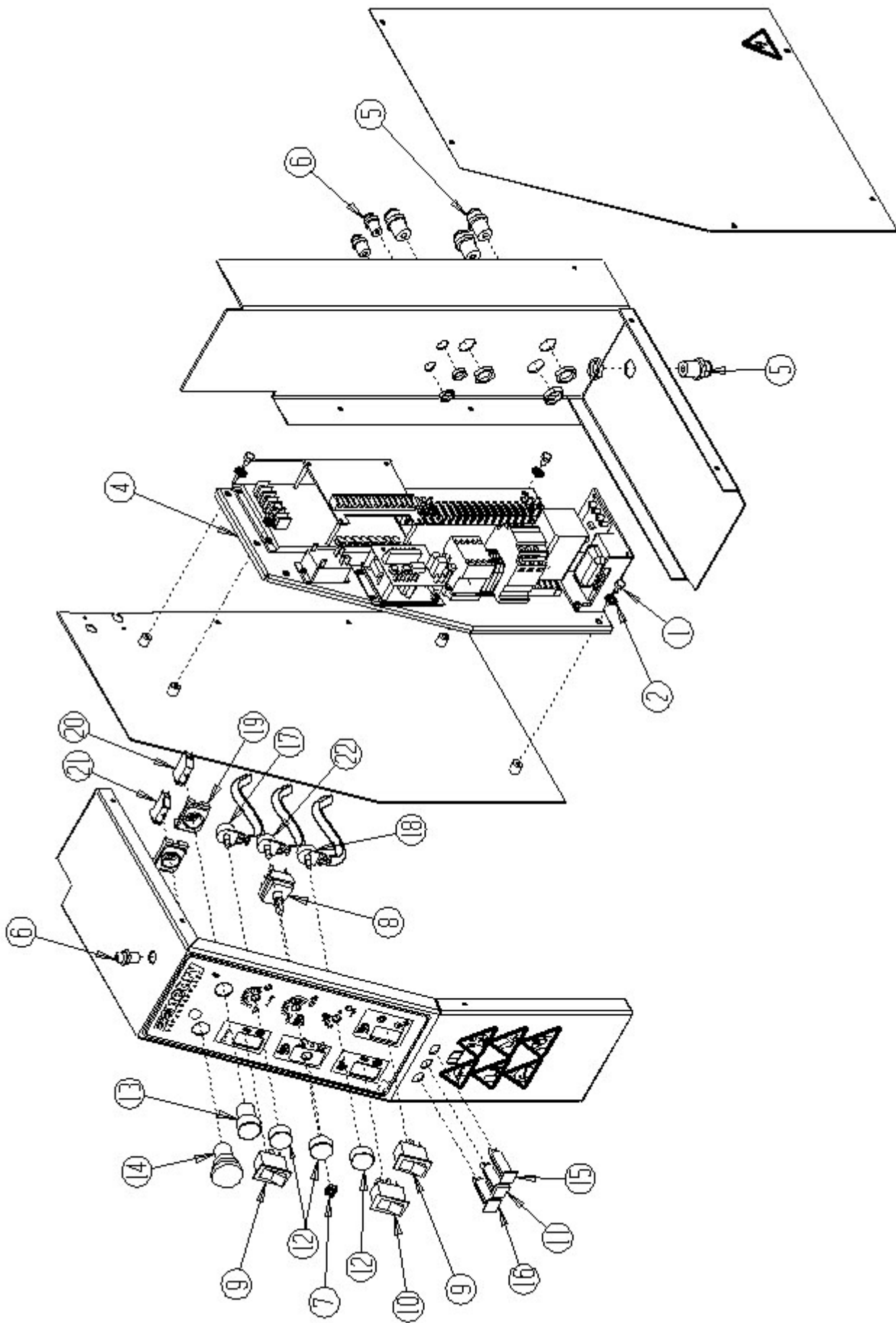
# EXPLODED VIEW: 55564 SPIN DRIVE ASSEMBLY



## PARTS LIST: 55564 SPIN DRIVE ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	B251016 .....	1/4-20 x 5/8 Button Head Socket Cap Screw
2 .....	B251211 .....	1/4-20 x 3/4 Socket Head Cap Screw
3 .....	B251216 .....	1/4-20 x 3/4 Button Head Socket Cap Screw
4 .....	B251411 .....	1/4-20 x 7/8 Socket Head Cap Screw
5 .....	K250001 .....	Flat Washer 1/4
6 .....	K251501 .....	1/4 Lockwasher Split
7 .....	R000376 .....	Sq Key 1/8 x .75
8 .....	50290 .....	Front Clamp Plate
9 .....	50291 .....	Clamp Block
10 .....	50362 .....	Motor Spin Assembly Spin W13
11 .....	50570 .....	T-Knob Assembly 3/8-16 x .75 Dog Point
12 .....	50585 .....	Spin Mount Weldment Vertical
13 .....	50595 .....	Spin Arm Weldment
14 .....	55514 .....	Spin Arm Weldment Horizontal
15 .....	3708391 .....	Reducer 10:1 Ratio
16 .....	3709586 .....	Flange Coupler .50 Bore
17 .....	6509588 .....	Knob Assembly T 2.5 3/8-16 x 1.00L
18 .....	6509129 .....	Decal - Scale
19 .....	3707623 .....	DC Motor Brush (not shown)

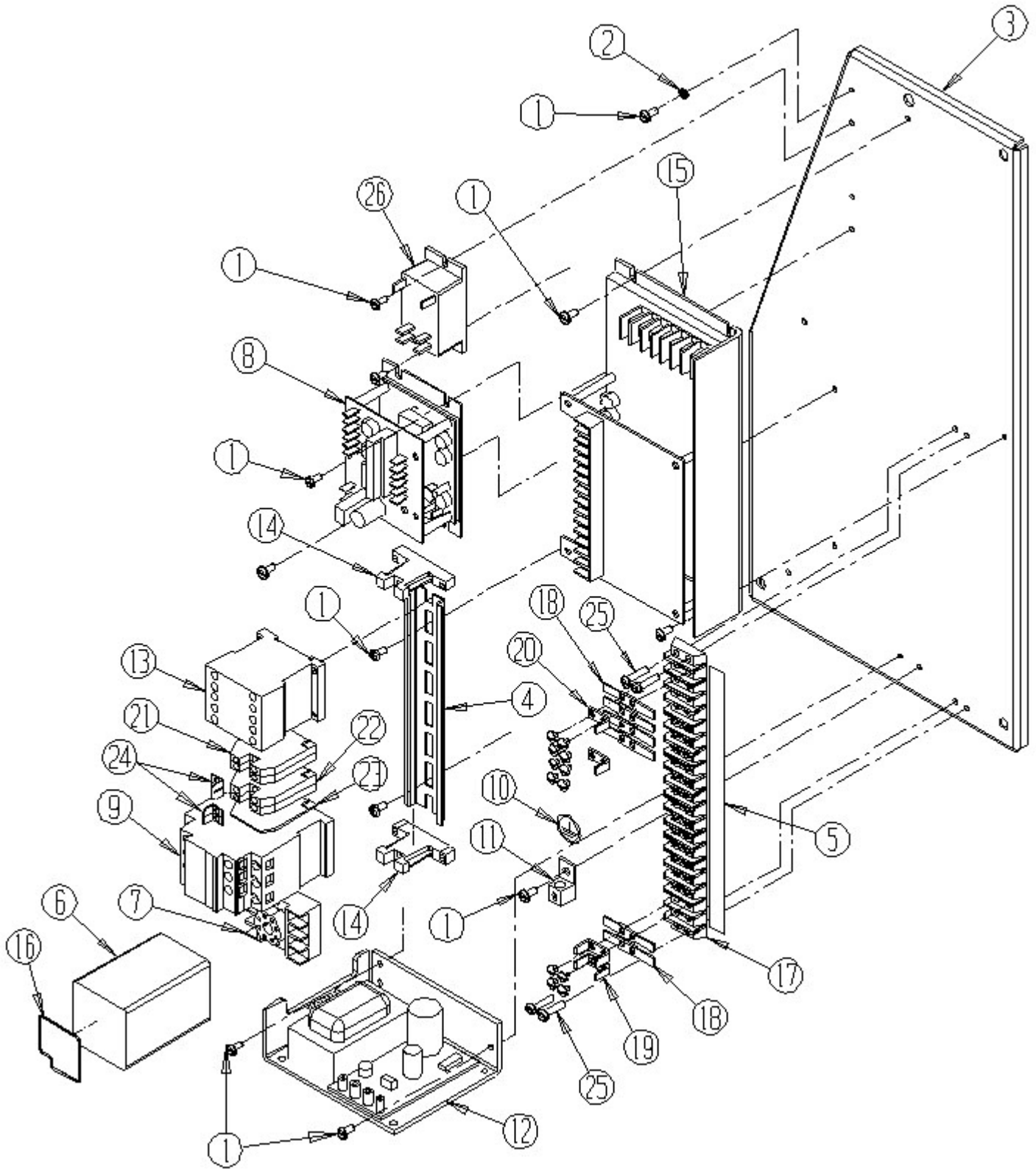
# EXPLODED VIEW: 55587 CONTROL PANEL ASSEMBLY



## PARTS LIST: 55587 CONTROL PANEL ASSEMBLY

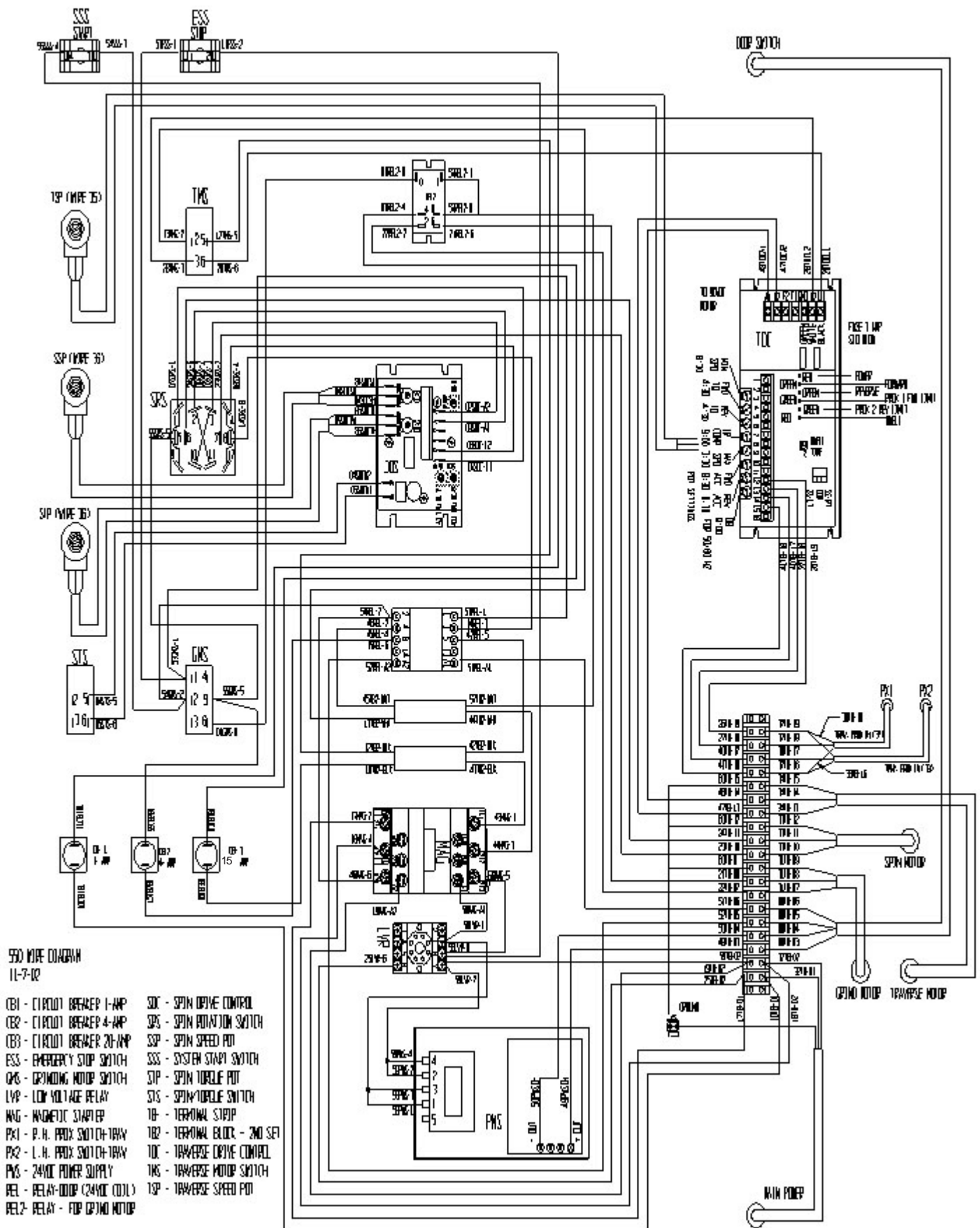
<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	D250800 .....	Threaded Screw Cutting 1/4-20 x 1/2 "F" HE
2 .....	R000536 .....	Lock Washer 1/4 Internal Teeth
4 .....	55558 .....	Electric Panel Sub Assembly
5 .....	3707009 .....	Strain Relief Liq T .24-.47W
6 .....	3707029 .....	Strain Relief Liq T .16-.31W
7 .....	3707075 .....	Toggle Switch Boot
8 .....	3707080 .....	Toggle Switch Hes/Rev
9 .....	3707367 .....	Rocker Switch On/Off
10 .....	3707429 .....	Rocker Switch On-Off
11 .....	3707443 .....	Circuit Breaker-4 Amp
12 .....	3707446 .....	Pot Knob W/Pointer
13 .....	3707564 .....	Green Start Push Button
14 .....	3707567 .....	Red Push-Pull Emergency Stop Button
15 .....	3707542 .....	Circuit Breaker-1 Amp
16 .....	3707547 .....	Circuit Breaker-15 Amp
17 .....	6009199 .....	Pot Assembly Traverse W35
18 .....	6309066 .....	Pot Assembly Spin
19 .....	3707566 .....	Switch Latch
20 .....	3707565 .....	Normaly Open Contact Block
21 .....	3707568 .....	Normaly Closed Contact Block
22 .....	6309065 .....	Pot Assembly Torque

# EXPLODED VIEW: 5558 ELECTRIC PANEL SUB ASSEMBLY



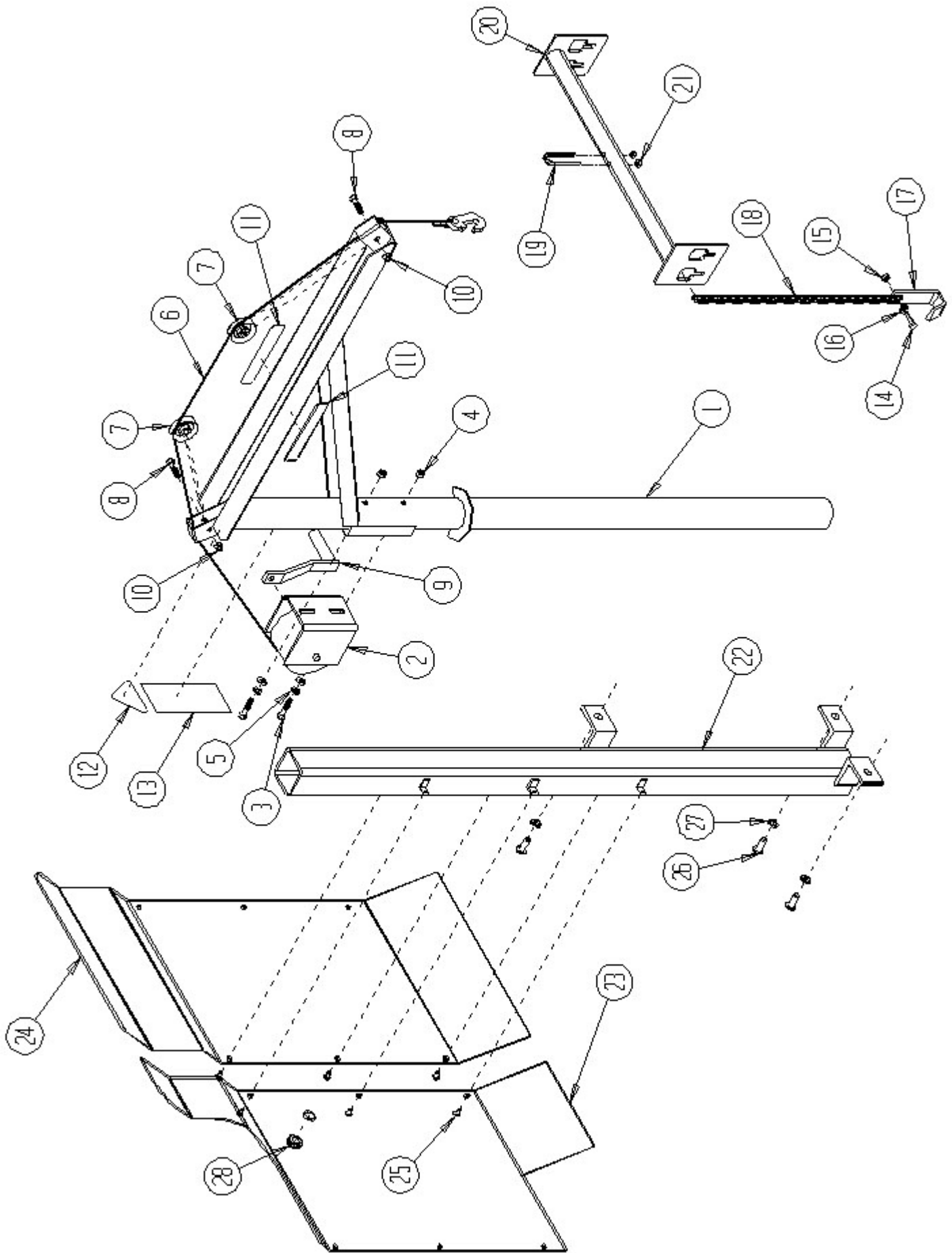
## PARTS LIST: 55558 ELECTRIC PANEL SUB ASSEMBLY

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 .....	D160608 .....	8-32 x 3/8 Pan Head Machine Screw
2 .....	R000480 .....	Lock Washer # 8 External Teeth
3 .....	55145 .....	Electrical Panel
4 .....	55221 .....	Terminal Block Assembly
5 .....	55523 .....	Din Rail Assembly
6 .....	3707558 .....	Volt Sensor Relay 100 VAC
7 .....	3707073 .....	8 Pin Socket
8 .....	3707524 .....	Spin Control Board
9 .....	3707556 .....	Starter Magnetic 1 HP
10 .....	3707163 .....	Primary Ground Decal
11 .....	3707164 .....	Ground Lug Primary
12 .....	3707307 .....	Power Supply 24 DC Modified
13 .....	3707186 .....	Square Contactor
14 .....	3707705 .....	Contact Block
15 .....	3707550 .....	Traverse Control Board 425 B
16 .....	3708826 .....	Low Voltage Warning Decal
17 .....	3707706 .....	Terminal Strip - 19 pole
18 .....	3707707 .....	Double Flat Spade For Term. Strip
19 .....	3707708 .....	Double 90° Spade For Term. Strip
20 .....	3707709 .....	Single 90° Spade for Term Strip
21 .....	3707701 .....	White Terminal Block
22 .....	3707702 .....	Grey Terminal Block
23 .....	3707703 .....	Terminal Block Cover
24 .....	3707704 .....	2-Pole Jumper for Terminal Block
25 .....	D161266 .....	8-32 x 3/4 Pan Head Machine Screw
26 .....	3707447 .....	Relay - DPST - 120 VAC Coil



**THIS PAGE INTENTIONALLY BLANK FOR NOT TAKING**

# OPTIONAL WINCH & BOOM KIT (#55522)



## OPTIONAL WINCH & BOOM KIT (#55522)

DIAGRAM NO.	PART NO.	DESCRIPTION
1	18566	Boom
2	3708578	Winch
3	B375601	Bolt, 3/8-16 x 3.5
4	J371000	Hex Nut
5	K371501	Lock Washer
6	3709407	Hook & Cable
7	3709795	Pulley
8	B372801	3/8-16 x 1.25 long Hex Head Cap Screw
9	3708647	7" Winch Handle
10	J377100	Locknut
11	6309036	400 Cap. Decal
12	3708456	Decal - Warning
13	6309037	Decal - Winch
14	B371601	Hex Head Cap Screw 3/8-16 x 1 Long
15	J377100	Nylok Locknut
16	K370001	3/8 Flat Washer
17	6009102	Grab Hook
18	6509113	Chain
19	3709316	U-Bolt
20	6509590	Spreader Bar Weldment
21	J317100	5/16-18 Locknut
22	50387	Boom Housing Weldment
23	50388	Panel-Guard Front
24	50390	Panel-Guard Rear
25	B310813	5/16-18 x 1/2 Button Head Socket Cap Screw
26	09297	1/2-13 x 1.25 Button Head Socket Cap Screw
27	K501501	1/2 Lockwasher
28	3708046	Grommet (Remove from old guarding)