

# Belt /Disk Sander

Model: BTM250



***Operation manual***

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## General Specifications

|  |   |
|--|---|
| Table size                                   | Disc: 12x16 3/8 in. (254x416mm)<br>Belt: 7 3/8x14 3/4 in. (187x355mm) |
| Table tilt                                   | (both) 45° down, 20° up   |
| Miter gauge groove                           | (both) 3/8x3/4 in. (9.5x19mm)   |
| Disc diameter                                | 12 in. (305mm)  |
| Disc Speed                                   | 1960 RPM  |
| Platen size                                  | 6 1/4x14 3/4 in. (159x375mm)  |
| Belt size                                    | 6x48 in. (152x1214mm)   |
| Belt speed                                   | 2850 SFM  |
| Dimensions w/platen vertical (depth, W, H)   | 19x16x57 1/2 in.<br>(475x400x1437mm)                                  |
| Dimensions w/platen horizontal (depth, W, H) | 25 1/2x16x43 in.<br>(637x400x1075mm)                                  |
| Weight                                       | 90Kg  |



## WARNING

### General Machinery Cautions

- Misuse of this machine can cause serious injury.
- For safety, the machine must be set up, used and serviced properly.
- Read, understand and follow the instructions in the operator's and parts manual which was shipped with your machine.

When setting up the machine:

- Always avoid using the machine in damp or poorly lighted work areas.
- Always be sure the machine is securely anchored to the floor.
- Always keep the machine guards in place.

Always put the start switch in the "OFF" position before plugging in the machine.

#### When using the machine:

- Never operate the machine with safety guards missing.
- Always wear safety glasses with side shields (See ANSI Z87.1)
- Never wear loose clothing or jewelry.
- Never overreach — you may slip and fall into the machine.
- Never leave the machine running while unattended.
- Always shut the machine off when not in use.

When servicing the machine:

- Always unplug the machine from the electrical power while servicing.
- Always follow the instructions in the operators and parts manual when changing accessory tools or parts.

You — the stationary power tool user — hold the key to safety.

Read and follow these simple rules for best results and full

benefits from your machine. Used properly, the machinery is among the best in design and safety. However, any machine used improperly can be rendered inefficient and unsafe. It is absolutely mandatory that those who use our products be properly trained in how to use them correctly. They should read and understand the Operators and Parts Manual as well as all labels affixed to the machine. Failure in following all of these warnings can cause serious injuries.

### General Machinery Warnings

1. Always wear protective eye wear when operating machinery. Eye wear shall be impact resistant, protective safety glasses with side shields which comply with ANSI Z87.1 specifications. Use of eye wear which does not comply with ANSI Z87.1 specifications could result in severe injury from the breakage of the eye protection.
2. Wear proper apparel. No loose clothing or jewelry which can get caught in moving parts. Rubber soled, nonslip, footwear is recommended for best footing.
3. Do not overreach. Failure to maintain a proper working position can cause you to fall into the machine or cause your clothing to get caught — pulling you into the machine.
4. Keep the guards in place and in proper working order. Do not operate the machine with the guards removed.
5. Avoid dangerous working environments. Do not use stationary machine tools in wet or damp locations. Keep work areas clean and well lit.
6. Special electrical precautions should be taken when working on flammable materials.
7. Avoid accidental starts by being sure that the start switch is in the "OFF" position before plugging in the machine.
8. Never leave the machine running while unattended. The machine shall be shut off whenever it is not being

used.

9. Disconnect the electrical power before servicing, whenever changing accessories or when general maintenance is done on the machine.
10. Maintain all machine tools with care. Follow all maintenance instructions for lubricating and the changing of accessories. No attempt shall be made to modify or have makeshift repairs done to the machine. This not only voids the warranty but also renders the machine unsafe.
11. The machinery must be anchored to the floor.
12. Secure your work. Use clamps or a vise to hold your work, when practical. It is safer than using your hands and it frees both hands to operate the machine.
13. Never brush chips away while the machine is in operation.
14. Keep work area clean. Cluttered areas invite accidents.
15. Remove adjusting keys and wrenches before turning the machine on.
16. Use the right tool. Don't force a tool or attachment to do a job it was not designed for.
17. Use only recommended accessories and follow manufacturers instructions pertaining to them.
18. Keep hands in sight and clear of all moving parts and cutting surfaces.
19. All visitors should be kept at a safe distance from the work area. Make your workshop completely safe by using padlocks, master switches, or by removing starter keys.
20. Know the tool you are using — its application, limitations, and potential hazards.

## General Electrical Cautions

This machine should be grounded in accordance with the National Electrical Code and local codes and ordinances. The work should be done by a qualified electrician. The machine should be grounded to protect the user from electrical shock.

## Wire Sizes

Caution: For circuits that are a great distance from the electrical service box, the wire size must be increased in order to deliver ample voltage to the motor. To minimize power losses and to prevent motor overheating and burnout, the use of wire sizes for branch circuits or electrical extension cords according to the following table is recommended:

## Safety Requirements for Abrasive Sanding Machines

Abrasive sanding can be hazardous to operators and bystanders. Sanding sparks, chips and dust particles thrown off by the sanding disc can cause serious injury if contacted or inhaled. To avoid such injuries you must comply with the following safety requirements:

1. Always wear protective eyewear when operating machinery. Eye wear shall be impact resistant, safety glasses with side shields which comply with ANSI Z87.1. Use of eye wear which does not comply with ANSI Z87.1 specifications could result in severe injury from the breakage of the eye protection.
2. Wear leather safety gloves, arm guards, leather aprons and safety shoes.
3. A dust collection system is recommended, The operator should also wear a dust mask at all times.
4. Additional precautions may be necessary for sanding materials which are flammable or have other hazardous properties. You should always consult the manufacturer of such materials for instructions on sanding and handling.
5. Do not force or jam the workpiece into the sanding disc.

6. Before sanding, always allow the motor to come up to operating speed, then check the sanding disc for wobble, runout, or any unbalanced condition. If the disc is not operating accurately and smoothly, immediately stop the motor and make repairs before attempting any sanding operations.

7. Abrasive discs must be stored in a controlled environment area. Relative humidity should be 35% to 50% and the temperature should be between 60° and 80° Fahrenheit. Failure to do so could cause premature disc failure.

8. Examine the face of the sanding disc carefully. Excessive sanding that wears down to the backing material can tear the disc. Never use a disc which shows backing, nicks or cuts on the surface or edge or damage due to creasing or poor handling.

9. When installing a new disc, be certain the disc is accurately centered on the drive wheel. Failure to do so could cause a serious unbalanced condition.

10. Always present the workpiece to the wheel while resting the workpiece firmly on the table. Failure to do so could result in damage to the workpiece or throwing of the workpiece off the wheel.

11. Safety shoes which comply with ANSI Z41.1 should be worn.

12. Personal hearing protection such as ear plugs or ear muffs should be used to protect against the effect of noise exposure.



Figure A



Figure B



Figure C



Figure D

# Operating Instructions

These sanders can be used to remove stock from a wide variety of machinable materials. Different materials require different grit types and grades to achieve the desired stock removal rate and surface finish. Please consult with your abrasive materials supplier for specific recommendations on the correct grit material and grade required for your specific needs.

When removing stock from soft materials (wood, plastic, etc.) these machines are typically called "sanders." When removing stock from hard materials (cast iron, steel, etc.) they are referred to as "grinders". The word "sander" is used, more-or-less consistently, throughout this manual. It refers to the machines and not the type of abrasive finishing being performed.

Before operating your sander, please read the basic instructions on safe machine usage on the preceding two pages.

## Belt Sander

The sanding belt must be in good condition, at proper tension, and tracking correctly, before doing any sanding, grinding or other abrasive machining operations. Refer to the section on *Track Mechanism Maintenance* if you have any problems with belt tension or tracking.

## Adjusting the Belt Sander Table

You can tilt the table in a range between 20° upward and 45° downward. A single locking handle on the side of the table is used to lock and unlock the table to permit adjustment.

There are two positive lock stop positions: at 90° (that is, at a right angle to the platen) and at 45° downward (essentially 90° + 45° or 135° total to the platen.)

### To Tilt the Belt Sander Table:

1. Unlock the locking handle on the side of the table.
2. Using the pointer and scale, set the angle to any required angle between 20° upward and 45° downward.
3. Lock the lock handle.

### To Tilt the Table to Exactly 45°:

1. Flip out the stop bracket (see Figure 20).
2. Unlock the locking handle.
3. Move the table until it contacts the stop bracket.
4. Lock the table lock handle.

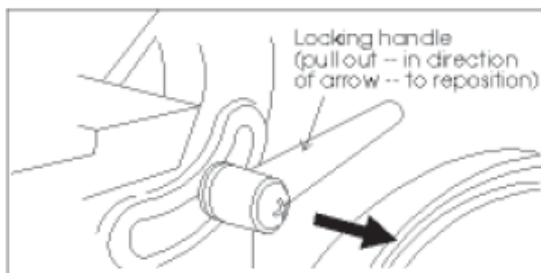


Figure 1: Locking handle for belt table

**CAUTION:** NEVER ADJUST THE TABLE ANGLE WHILE THE SANDER IS RUNNING. ALWAYS TURN THE MOTOR OFF BEFORE ADJUSTING THE TABLE ANGLE.

### Using the Indexing Lock Handle

The lock handle is spring loaded and can be repositioned on its shaft to permit easy locking and unlocking.

### To Reposition the Handle:

1. Pull outward against its spring.
2. Rotate the handle to the position you require.
3. Release the handle and its spring will return it to the correct operating position.

### Adjusting the Belt Sander Arm

The arm which holds the sanding belt can be positioned at a full vertical position, a full horizontal position, or at any angle in between which is convenient to the type of sanding you are doing.

A positive stop mechanism is used to permit quick adjustment to the vertical or horizontal positions.

### To Adjust to Vertical:

1. Unlock both of the lock bolts. These are located under the arbor cover.
2. Move the arm to vertical until it contacts its stop.
3. Tighten both of the lock bolts, and replace arbor cover.

### To Adjust to Horizontal:

1. Unlock both of the lock bolts.
2. Move the arm to horizontal until it contacts its stop. (See Figure 3.)
3. Tighten both of the lock bolts and replace arbor cover.

### To Adjust the Arm to Any Angle Between Vertical and Horizontal:

1. Unlock both of the lock bolts.
2. Use a machinist's protractor and level to set the arm to

the required angle.

3. Tighten both of the lock bolts and replace arbor cover.

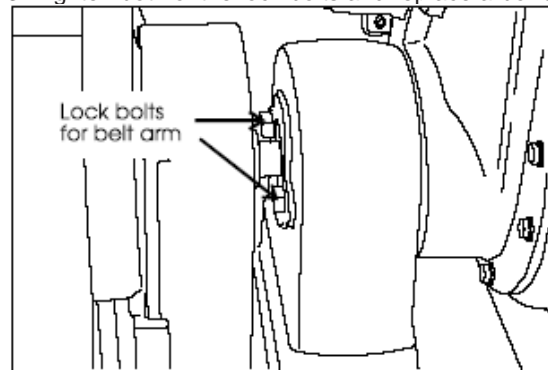


Figure 2: Lock bolts for belt arm

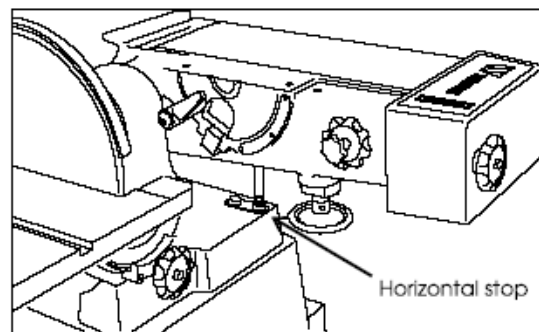


Figure 3: Arm at horizontal -- note that the table is removed. The table may be removed or left in position, and may also be set to any angle to allow horizontal sanding of various angles.

**CAUTION:** NEVER ADJUST THE TABLE ANGLE WHILE THE SANDER IS RUNNING. ALWAYS TURN THE MOTOR OFF BEFORE ADJUSTING THE TABLE ANGLE.

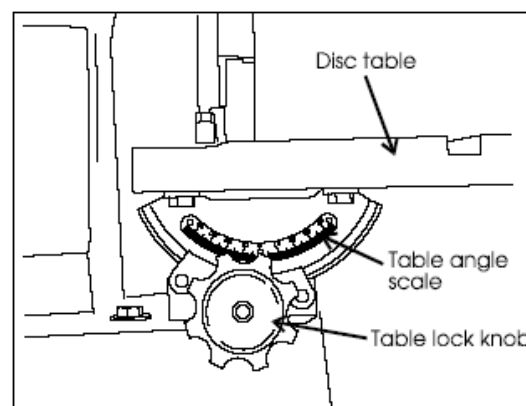


Figure 4: Disc sander table adjustment

### Adjusting the Disc Sander Table

1. Unlock the two locking knobs underneath the table at each end. (See Figure 4.)
2. Using the pointer and scale, set the angle to any required angle between 20° upward and 45° downward.
3. Lock the two locking knobs underneath the table.

**CAUTION:** NEVER ADJUST THE TABLE ANGLE WHILE THE SANDER IS RUNNING. ALWAYS TURN THE MOTOR OFF BEFORE ADJUSTING THE TABLE ANGLE.

## Use of the Miter Gauge

The miter gauge can be used on either the disc or belt surfaces to sand accurate angles on workpieces. When using the gauge, alone, you sand a single angle. However, by tilting the table and using the miter gauge in combination with the table tilt, it is possible to sand compound angles, as well.

When grinding a compound angle you should always check the accuracy of your setup by sanding a piece of scrap material before doing any finish sanding on the actual workpiece.

1. Set the angle you wish to sand using the scale on the miter gauge.
2. Tighten the miter gauge securely so the miter reference surface will not move while you are sanding.
3. Place the workpiece against the miter reference surface and slide it along the reference surface and into the sanding disc or belt. The basic method is shown in Figure 5, below.

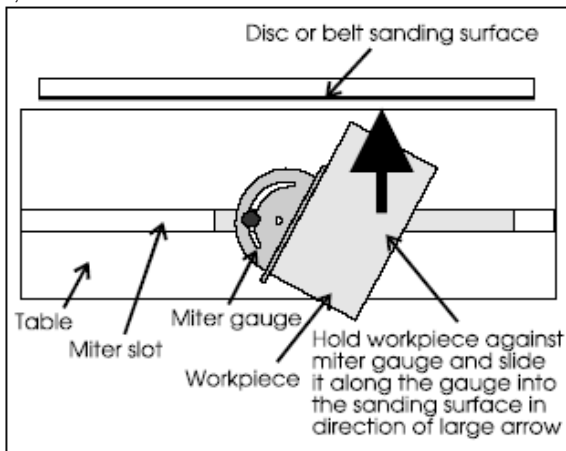


Figure 5: Use of the miter system

## Maintenance

### Belt Replacement

1. Disconnect the power to the machine to prevent accidental start-ups. If the machine is plugged into an outlet, unplug it. If the machine is hardwired to a branch circuit with a junction box, remove the fuse or trip the circuit breaker to the branch.
2. Remove the lock knob and top cover (See Figure 6).
3. Remove the side guard and table.
4. Release the belt tension by turning the tension handle in a counterclockwise direction (See Figure 7). If the handle is difficult to turn, perform *Track Mechanism Maintenance* according to the instructions following this section.
5. Remove the belt.
6. Check the drums and platen for scoring or signs of wear which might require service or replacement.
7. Check the height of the platen with a straight edge. If it is not 1/32 in. above the drums, adjust it according to the instructions in *Platen Replacement or Adjustment* in the *Machine Setup* section of this manual.
8. Check the drums for looseness which might cause tracking problems. Correct any loose condition by tightening or replacing any parts as required.
9. Slip the new belt onto the drums and platen.
10. Adjust the tension handle clockwise until the belt is flat against the platen and there is no curling or buckling of the

belt in the middle.

11. Turn the drums by hand to see if the belt tracks more or less true. **JUST BECAUSE THE OLD BELT TRACKED CORRECTLY DOES NOT MEAN THE NEW BELT WILL.** Always check the tracking when replacing a belt.

12. To adjust the tracking:

- 12.1. Plug the machine back into the outlet or reestablish power in the branch.
- 12.2. Loosen the tracking lock knob.
- 12.3. Jog the motor on and off as necessary to observe the tracking, and turn the tracking knob as necessary to make the belt track in the center of the platen and drums. Turn the tracking knob clockwise to move the belt toward the right and counterclockwise to move the belt toward the left.
- 12.4. When the belt seems to be tracking correctly, turn the motor on and leave it running while fine tuning the tracking.
- 12.5. Lock the tracking lock knob.
- 12.6. When the lock knob is secure, turn the power off and disconnect the machine from the outlet or branch as in Step 1, above.
13. Replace the table, side guard, top cover and lock knob by reversing steps 3 and 2, above.
14. If you have not already done so, reconnect the power to the machine and return it to service.

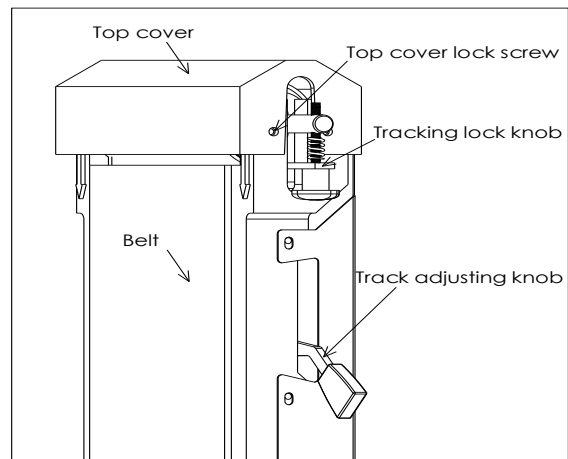


Figure 6: Top cover components

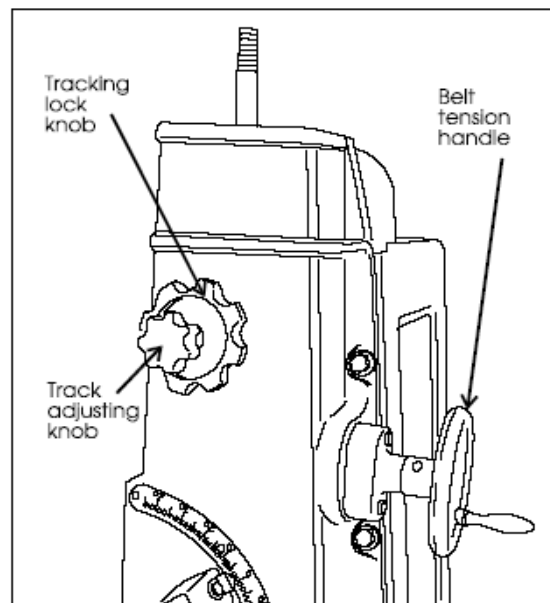


Figure 7: Belt adjustment components (Note top cover removed for removal and replacement of belt.)

## Track Mechanism Maintenance

While the use of a dust collection system can extend service intervals, an accumulation of dust will almost certainly require periodic cleaning of the tracking mechanism. The more continuous the use of the machine, the more frequently this maintenance should be performed.

As mentioned in the preceding section, the need for required maintenance is often indicated by difficulty in adjusting the tension/tracking mechanism.

### Maintenance:

1. With the belt removed according to the instructions in *Belt Replacement*, pull out the upper tracking system and clean away all built up material in the upper part of the bracket casting.
2. Take the two keys off of the idler pin bracket, wipe off, and re-grease.
3. Reverse the above steps to make the machine ready for reinstallation of the belt according to the *Belt Replacement* instructions.

## Installing Abrasive Discs

1. Disconnect the power to the machine to prevent accidental start-ups.
2. Peel off the old abrasive disc.
3. Clean the drive disc surface using naphtha or a similar nonflammable solvent that will dry film-free.
4. Pull the protective backing half off the new abrasive disc.
5. Position the new disc carefully so it is centered accurately on the drive disc. (See Figure 8.)
6. When accurately centered, remove the rest of the protective backing and press the abrasive disc firmly against the drive disc so complete adhesive contact is made.
7. Reconnect the power to the machine.

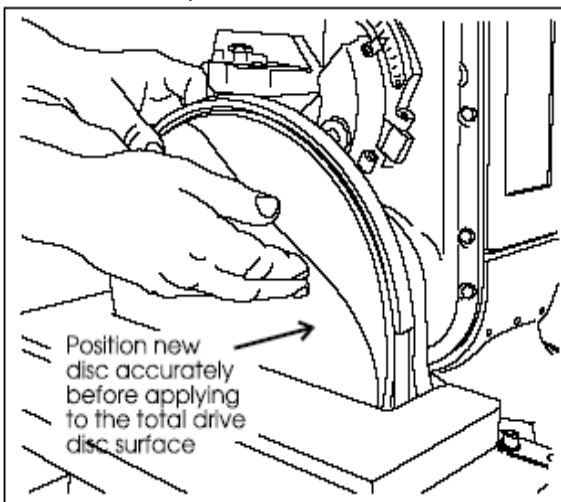


Figure 8: Installing new abrasive disc

## Replacing the V-Belt.

1. Disconnect the power to the machine to prevent accidental start-ups.
2. Remove the belt guard (Figure 9) and disc table
3. Remove the table tilt lock knob (Figure 10).

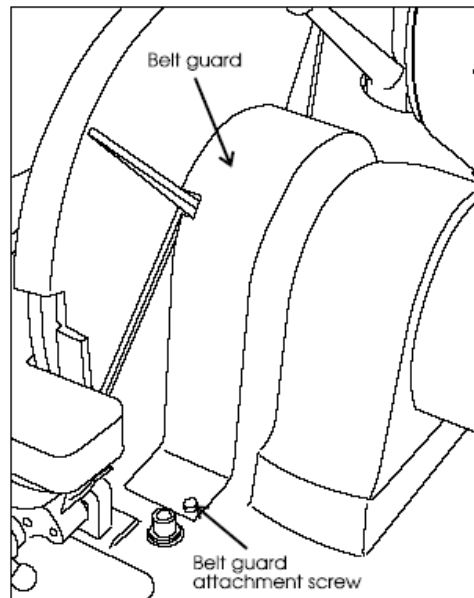


Figure 9: Removing belt guard

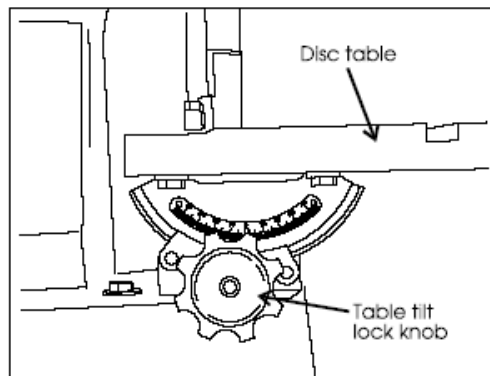


Figure 10: Disc table lock knob

3. Loosen the four motor bolts so the motor can slide on its plate.
4. Remove the belt from the motor pulley.
5. Remove three of the base mounting bolts, then loosen the fourth bolt slightly. This allows you to rotate the machine on the machine base (See Figure 11).

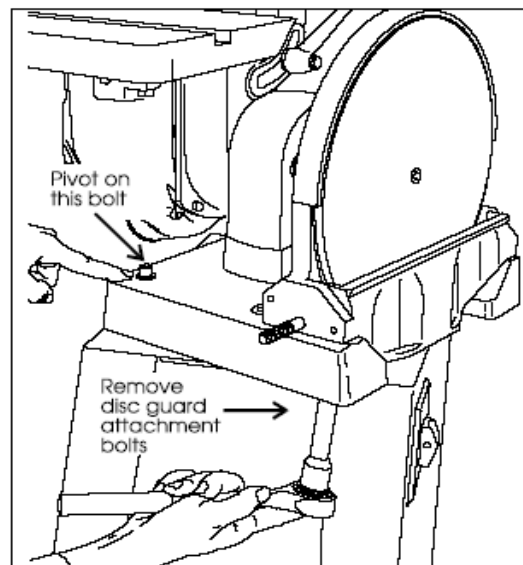


Figure 11: Rotating the machine casting to remove the disc guard bolts

6. Remove the two bolts, underneath the machine casting, that secure the disc guard to the casting (See Figure 11).
7. Through the hole in the disc guard casting, locate and remove the TWO set screws that secure the drive disc to the arbor. One set screw clamps on the arbor key and the other clamps on the arbor shaft, itself. Be sure you loosen both of them.

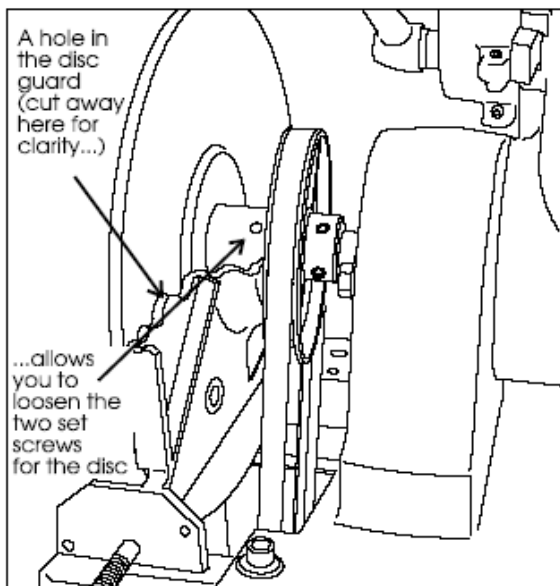


Figure 12: Locating the set screws that secure the disc to the arbor

8. Slide the disc and its guard off of the machine, together (See Figure 13).

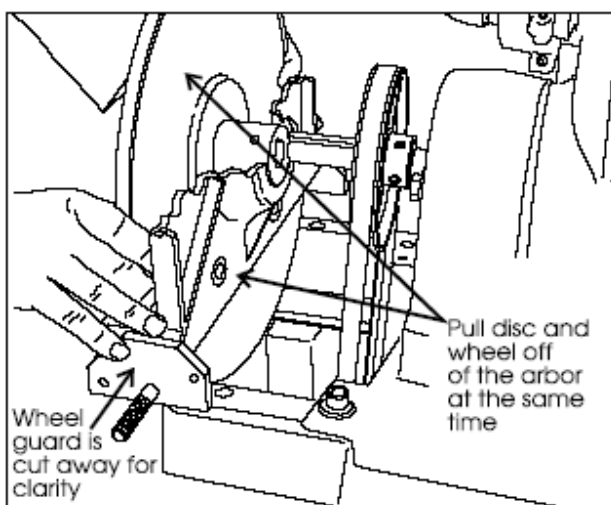


Figure 13: Removing the guard and drive disc, together.

9. The V-belt can now be removed from the drive arbor.
10. Install the new belt on the top pulley.
11. Slide the disc and guard back into position.
12. Reinstall the disc guard bolts underneath the table.
13. Position the drive disc so that it is no more than 1/16 inch away from the table, then tighten BOTH of the set screws by inserting the hex wrench through the hole in the disc guard casting.
14. Rotate the machine back onto its base and secure it with all four mounting bolts.
15. Install the belt over the bottom pulley.
16. Tension the belt so that when pressed, in the middle of its travel, it has no more than one belt's width of movement -- then tighten the four motor bolts.

17. Observe the alignment of the motor pulley and arbor pulley. If necessary, correct their alignment by shifting the motor slightly on its mount (which involves loosening and retightening the mounting bolts and checking tension) or by shifting the pulley slightly on the motor shaft (which involves loosening the motor pulley set screw and sliding the pulley into alignment) or by moving the arbor pulley slightly on its shaft (See Figure 14).

18. When the pulleys are accurately aligned, reinstall the belt guard.

19. Reestablish electrical power to the machine.

## Machine Setup

### Basic Setup

1. Position the machine where it will be located on the shop floor. When positioning the machine, consider the type of work which will be done on it so you allow sufficient room not only for the workpieces, but also for service to the machine.
2. Open the door in the base of the machine and, using the holes in the base as a template, mark the floor for the position of the hold-down bolts.
3. Move the machine to expose the hold-down bolt marks and install anchors for the hold-down bolts.
4. Put the machine back over the hold-down anchors and bolt the machine securely to the shop floor. **THIS MUST BE DONE FOR SAFE OPERATION OF THE MACHINE.**
5. Establish an electrical service connection to the machine. This will vary according to the model purchased. **ALL ELECTRICAL CONNECTIONS SHOULD BE MADE BY A QUALIFIED ELECTRICIAN WHO IS FAMILIAR WITH YOUR STATE AND LOCAL CODES.** Many models of these machines make use of high voltages which pose a significant risk of *serious injury* or *DEATH* if proper knowledge and precautions are not used. Electrical instructions are included in the *Electrical* section of these *Machine Setup* instructions.
6. Machines with belts are shipped with the belts in slack condition. During the electrical hookup phase of machine setup, the belt will have to be tightened and checked for tracking. See the *Belt Replacement* section for instructions on this procedure.

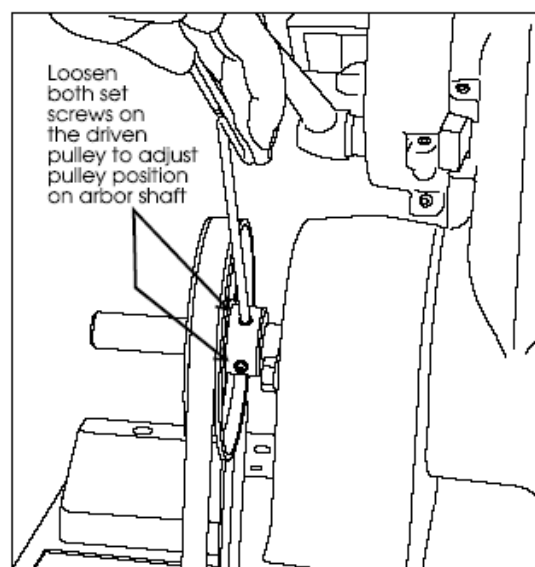


Figure 14: Loosening pulley set screws to allow the adjustment of pulley on arbor shaft.



## Disc Table Angle Adjustment

1. Disconnect the power to the machine to prevent accidental start-ups.
2. Loosen the table locking knobs on either end of the table.
3. Using a machinist's square against the table and disc, set the table at exactly  $90^\circ$  to the disc (See Figure 15).
4. Tighten the table locking knobs.
5. Check the pointer. If it is not exactly on the zero mark, loosen the pointer attaching screw, adjust the pointer, and retighten the screw.
6. Reconnect the power to the machine.

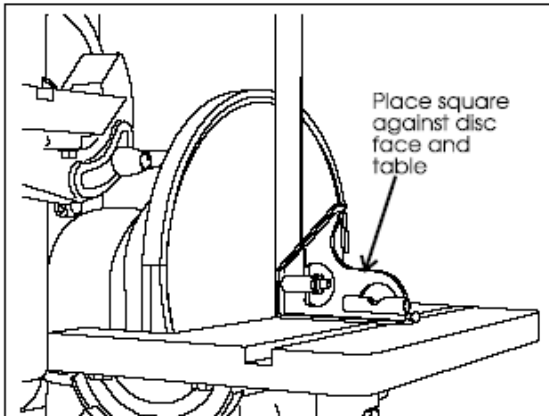


Figure 15: Using a square to check the disc table scale.

## Disc Table Miter Parallelism Adjustment

1. Disconnect the power to the machine to prevent accidental start-ups.
2. Set the table angle to zero.
3. Place a scale or adjustable machinist's square against either the left or right edge of the disc face and measure the distance to the miter slot edge (See Figure 16).
4. Move the measuring device to the opposite edge of the disc and measure the distance to the miter slot.
5. Adjust the table by loosening the four attachment screws under the table, then move the table until the distance between the miter slot and the disc is equal on both sides (See Figure 17).
6. Tighten the four attachment screws.
7. Reconnect the electrical power to the machine.

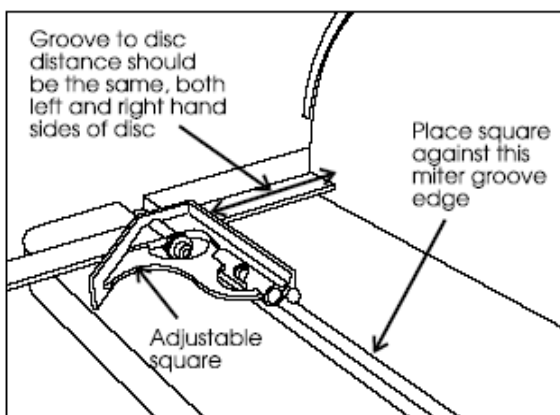


Figure 16: Using an adjustable square to set the table parallelism.

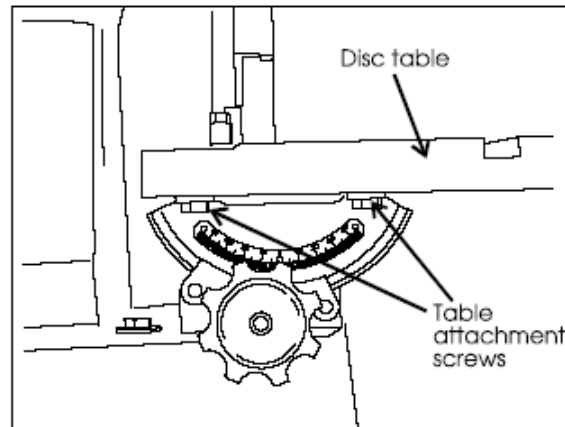


Figure 17: Table attachment screws -- loosen to adjust miter groove parallelism.

## Disc Table Gap Adjustment

1. Using a scale, check the gap between the edge of the table and the face of the disc. It should be very close to  $3/32$  inch. If it is much more or less than that distance, adjust it as follows:
2. Disconnect the electrical power to the machine.
3. Using the access hole on the top of the disc guard, locate and loosen the two set screws that secure the disc to the shaft.
4. Slide the disc in or out along its shaft until the table-to-disc gap is  $3/32$  inch (See Figure 18).
5. Tighten both set screws.
6. Reconnect the electrical power to the machine.

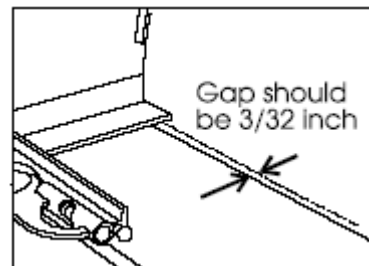


Figure 18: Table-to-disc gap measurement.

## Belt Table Miter Slot Parallelism Adjustment

1. Disconnect the power to the machine to prevent accidental start-ups.
2. Set the table angle to zero.
3. Place a scale or adjustable machinist's square against either the left or right edge of the belt or platen and measure the distance to the miter slot edge (See Figure 19).
4. Move the measuring device to the opposite edge of the belt or platen and measure the distance to the miter slot.
5. Adjust the table by loosening the three attachment screws under the table, then move the table until the distance between the miter slot and belt or platen is equal on both sides.
6. Tighten the three attachment screws.
7. Reconnect the electrical power to the machine.

## Belt Table Angle Adjustment

1. Loosen the table locking handle and tilt the table upward to about  $15^\circ$ .
2. Flip out the stop bracket (See Figure 21).
3. Lower the table until its adjusting screw touches

the stop bracket.

4. Place a machinist's square against the table and belt or platen.
5. If adjustment is required, turn the adjusting screw (Figure 20) until the table is exactly square to the platen.
6. Check the pointer. If it is not on 0°, loosen the pointer screw and adjust the pointer until it is on 0°.
7. Tighten the pointer screw.
8. Loosen the table lock handle and tilt the table until its stop contacts the 45° stop position.
9. Using a machinist's protractor set on 135° (90° + 45°) adjust the screw until the table and platen are in correct adjustment. DO NOT reset the pointer after this operation.

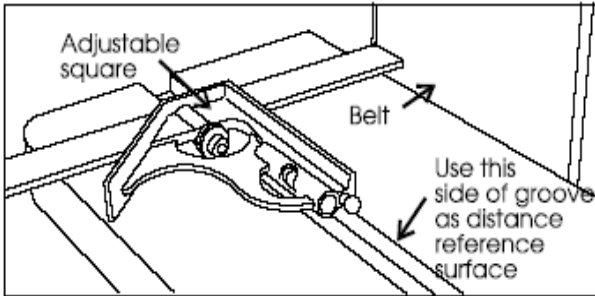


Figure 19: Using an adjustable square to check and set miter slot parallelism on the belt table.

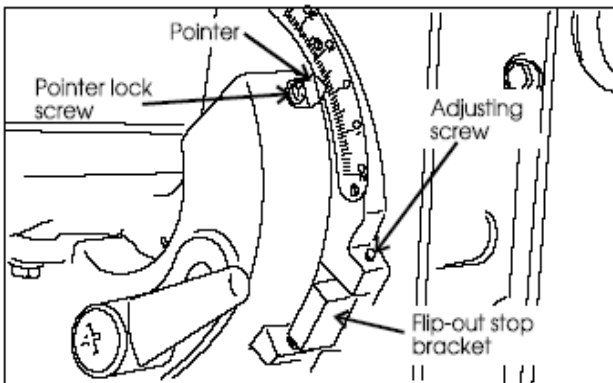


Figure 20: Location of adjustment (socket head) screws and pointer attachment screw for table angle adjustment.

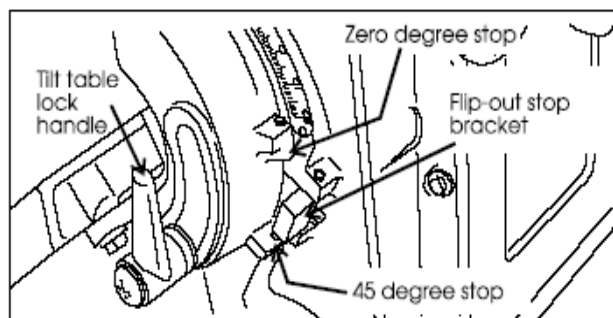


Figure 21: Locations of stop lugs and stop bracket for zero and 45° table positions.

## Adjusting or Replacing the Platen

1. Disconnect the electrical power to the machine to prevent accidental start-ups.
2. Remove the top cover, side guard and belt as outlined in *Belt Replacement*.
3. Remove the table by unscrewing the locking handle and lifting the complete table assembly, from the machine.
4. If you are replacing the platen, remove the three screws

that hold it to its mount -- then install the new platen and replace the mounting screws finger tight.

5. If you are only adjusting the platen, loosen the three mounting screws to allow adjustment.
6. Using a straight edge as shown in Figure 22, adjust the platen height until it is 1/32 inch higher than the crown of both the drive and idler drums.
7. Tighten the platen adjustment screws.
8. Reinstall the table and belt.
9. Check and adjust, if necessary, the tracking of the belt according to instructions in *Belt replacement*.
10. Reinstall the guards and covers.
11. Check and adjust the table angles and miter slot squareness, according to table adjustment instructions in this manual.
12. Reconnect the electrical power to the machine.

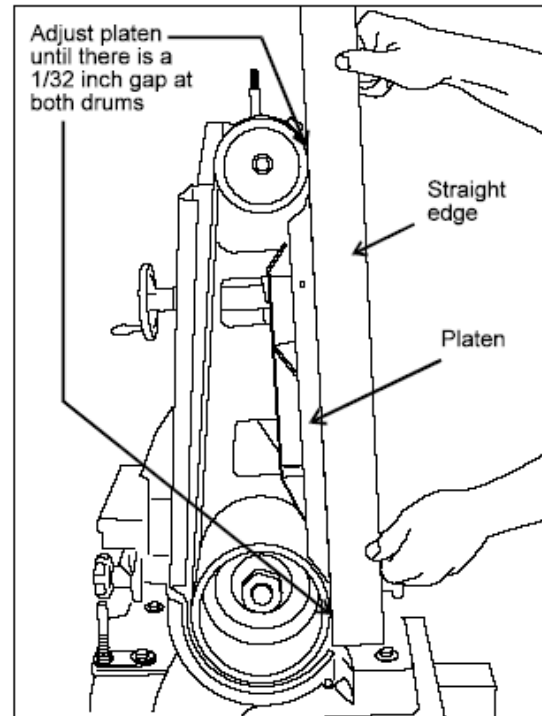


Figure 22: Method for adjusting height of platen above drive and idler drums.

## Electrical

**Caution:** The sanders are available in a wide variety of electrical configurations to meet the needs of the purchaser with respect to power available and compliance with electrical codes. Each machine is tested at the factory for operation before shipment and the power cord is tagged with the power requirements for the machine, as shipped. **HOWEVER, before attempting any electrical hookup, you should be certain:**

1. The electrical characteristics of the service branch match the requirements of the motor.
2. The service branch is equipped with wires of the required gauge or size.
3. The branch circuit intended for the machine is protected with a time delay fuse or circuit breaker with a rated amperage just slightly greater than the full load current of the motor.

**CAUTION:** All electrical service work on your Wilton sander should be performed by a qualified, licensed electrician who is familiar with all safe standard electrical installation practices and all applicable electrical

codes. This includes local electrical codes which may affect the connection and operation of the Wilton sander in your specific manufacturing operation.

## Single Phase Electrical Hookup

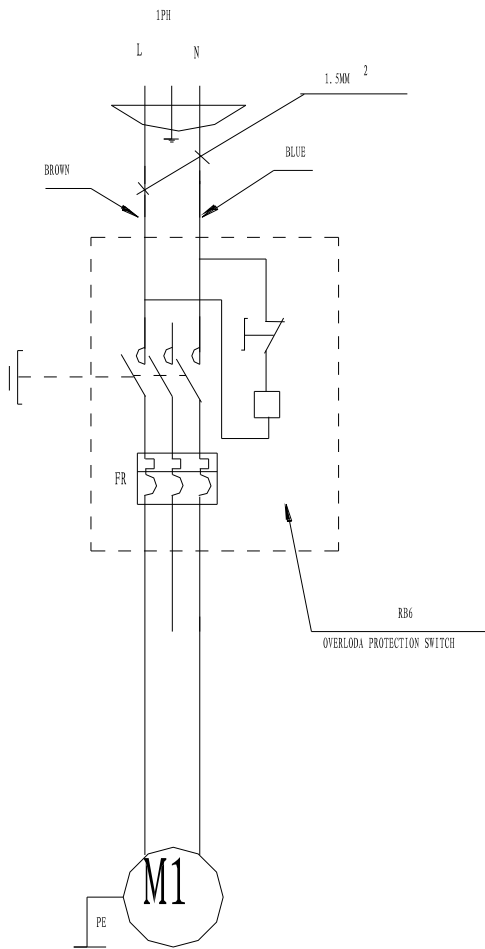
When connecting your machine to single phase power, you may be connecting to either 115 or 230 volts, depending upon the motor type provided. Local codes may, or may not, permit the use of a plug type of connection for your machine. Where a plug connection is permitted, the following installation practices must be followed:

1. The plug used must be a grounding type of plug. That is, on a 115 volt single phase connection, the plug must be a three-prong plug with two flat, parallel blades for the power wires and a single rounded or U-shaped prong for the ground connection. On 230 volt single phase connections, the lug must be a three prong plug with two flat blades in tandem to carry the current, and a third round or U-shaped prong for the ground connection.

2. The service branch to which the plug is connected must be a branch with a separate ground wire so the grounding prong of the plug can be connected to ground effectively.

**Note: Local electrical codes in many jurisdictions DO NOT ALLOW THE USE OF PLUG TYPE CONNECTIONS FOR SINGLE PHASE POWER WHEN THE MACHINE IS USED IN A COMMERCIAL OR INDUSTRIAL ESTABLISHMENT.**

In these cases you must connect your machine to the service branch using a hardwired junction box connection.

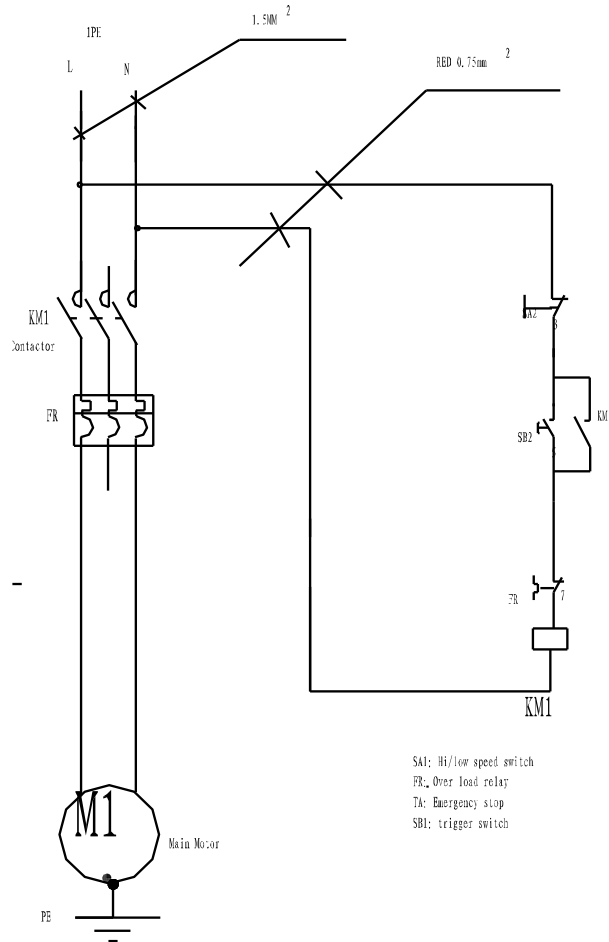


## Motor Rotation

The motor should be turning counterclockwise, the belt sander should be moving downward, and the disc sander should be turning clockwise. These motors are wired at the factory for correct rotation.

## Voltage Conversion

Single phase machines are pre-wired for 115V or 230V per customer request. If it becomes necessary to change the voltage, remove the back cover from the base and place the machine on its side. Remove the terminal cover from the motor. Rewire the motor according to the motor connection diagram, Different electrical plugs are required depending on which voltage you select. This completes the voltage conversion process.



## Circuit Protection

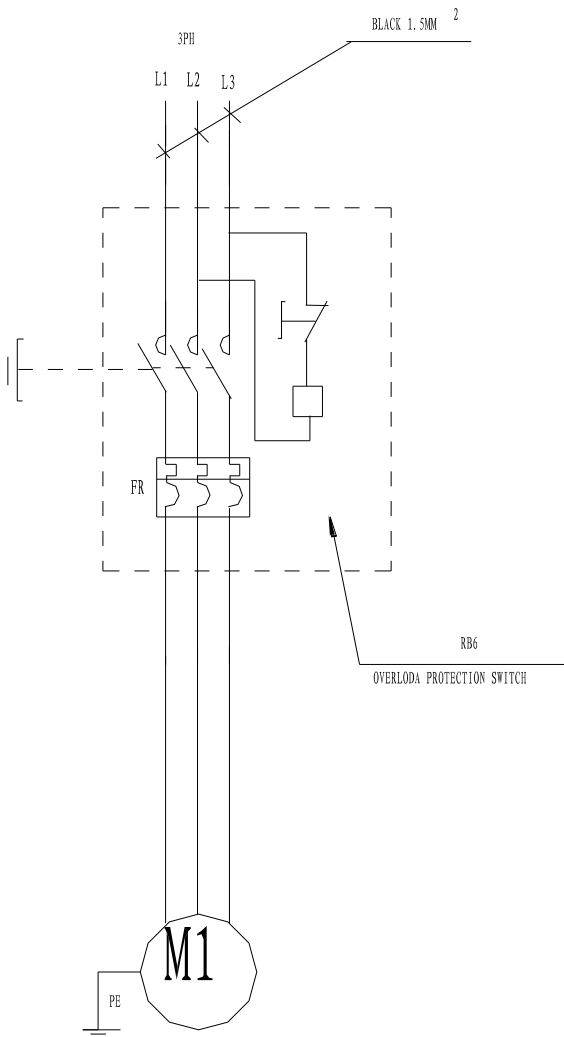
Where the service branch is protected with **overload protector** that has too high a value to offer protection to the motor supplied, **overload protector** box should be used at the point where the machine connection is made and the time delay **overload protector** should be a value just slightly higher than the maximum load current draw.

## Three Phase Electrical Hookup

1. Be certain the power to the branch you are connecting is off and locked out, so power cannot be reestablished accidentally.

2. Connect the ground wires. These wires will be either green, or green with a white stripe.

3. Connect the remaining three cable wires to the three power wires in the service branch.
4. Reestablish the power to the branch.



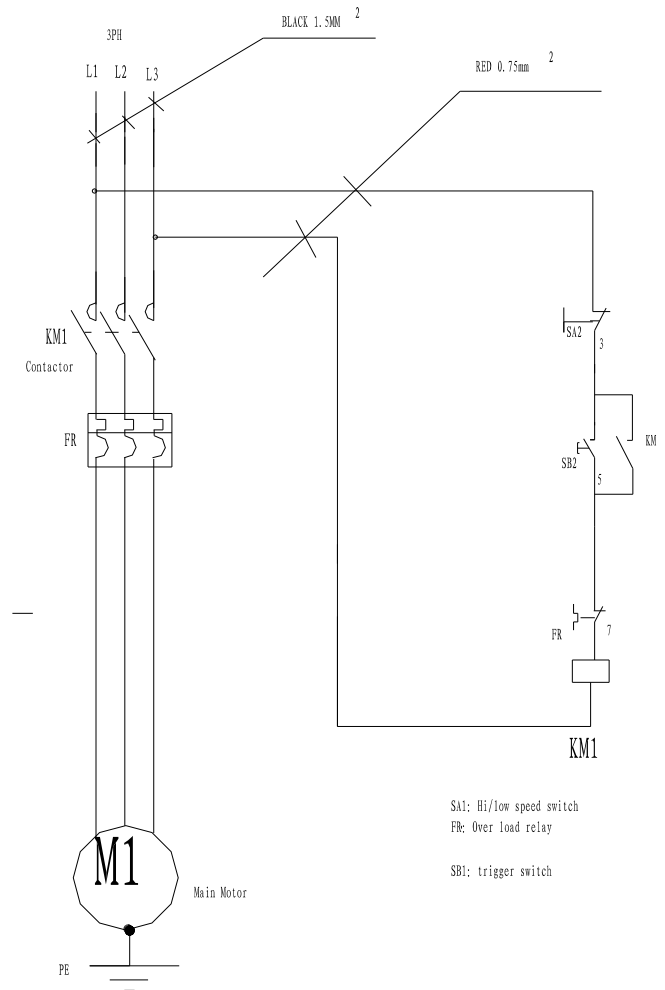
### Motor Rotation

The motor should be turning counterclockwise, the belt sander should be moving downward and the disc sander should be turning clockwise. If this is the case, the machine can be considered wired correctly. If the motor is not turning in the correct direction, take the following corrective action:

1. Disconnect power in the branch again and be certain it cannot be accidentally turned on while you correct the wiring.
2. Reverse ANY TWO of the power wires to the machine.
3. Reestablish the power to the machine.
4. Turn the machine on. The motor should now be turning in the correct direction.

### Voltage Conversion

Three phase machines are pre-wired for 230V or 460V per customer request. If it becomes necessary to change the voltage, remove the back cover from the base and place the machine on its side. Remove the terminal cover from the motor. Rewire the motor according to the motor connection diagram. This completes the voltage conversion process

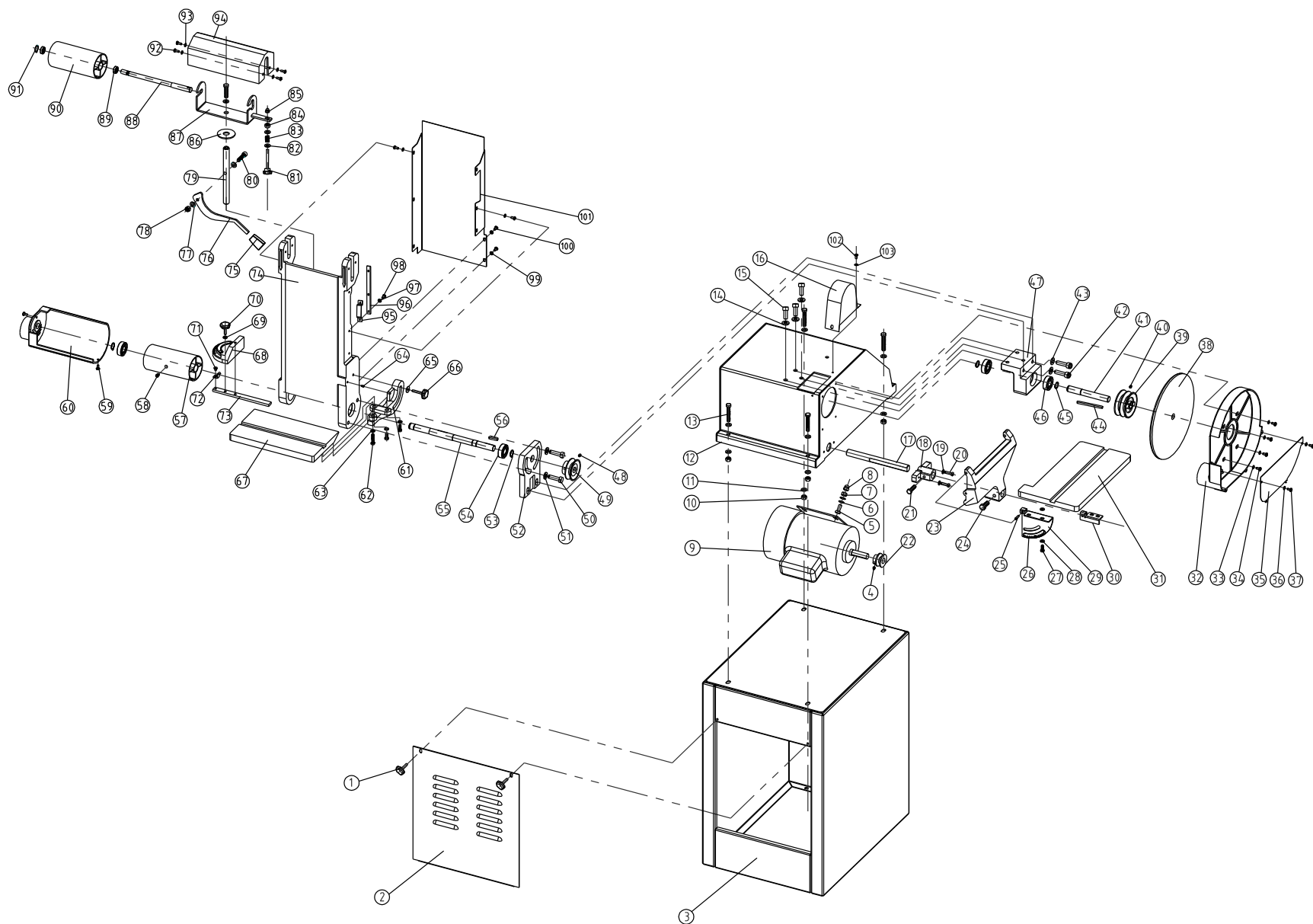


### Circuit Protection

Where the service branch is protected with a fuse or circuit breaker that has too high a value to offer protection to the motor supplied, a fuse or circuit breaker box should be used at the point where the machine connection is made and the time delay fuse or circuit breaker should be a value just slightly higher than the maximum load current draw.

# Troubleshooting

| Fault  | Probable cause   | Suggested remedy  |
|--|--|---|
| Motor will not run   | <ol style="list-style-type: none"> <li>1. Motor is defective</li> <li>2. Voltage is too low</li> <br/> <li>3. Switch is defective</li> <li>4. Branch circuit fuse is blown or the circuit breaker is tripped</li> <br/> <li>5. Branch is shut down for service</li> <br/> <li>6. Open circuit in the wiring</li> </ol> | <ol style="list-style-type: none"> <li>1. Replace the motor.</li> <li>2. Check the power supply for the proper voltage.</li> <li>3. Replace the switch.</li> <li>4. Determine the reason for the blown fuse or tripped circuit breaker -- then replace the fuse or reset the breaker.</li> <li>5. Check all personnel and machines on the branch to be certain someone has not shut down the branch for service. DO NOT replace the fuse or reset the breaker unless you are certain no personnel are working on the machines, wires or controls in the circuit.</li> <li>6. Inspect all the wire connections for loose or open connections.</li> </ol> |
| Motor stalls easily  | <ol style="list-style-type: none"> <li>1. Low voltage.</li> <li>2. Fuse is blown (three phase motors only.)</li> <li>3. Improper wiring.</li> </ol>  | <ol style="list-style-type: none"> <li>1. Check for proper voltage at the motor -- correct as necessary.</li> <li>2. Replace the blown fuse.</li> <li>3. Check for proper connections.</li> </ol>   |
| Abrasive belt or disc slows down although motor keeps running at working speed   | <ol style="list-style-type: none"> <li>1. Belt is slipping</li> </ol>  | <ol style="list-style-type: none"> <li>1. Replace the belt.</li> </ol>  |
| Poor tracking  | <ol style="list-style-type: none"> <li>1. Tracking is out of adjustment.</li> <li>2. Too much belt tension.</li> <li>3. Not enough belt tension.</li> <li>4. Belt is jointed improperly.</li> <li>5. Lack of crown on the drive roller.</li> <br/> <li>6. Worn bearings.</li> </ol>                                    | <ol style="list-style-type: none"> <li>1. Adjust the belt tracking.</li> <li>2. Loosen the tension until the belt is just taut.</li> <li>3. Tighten the tension until the belt is more taut.</li> <li>4. Check the belt for an irregular seam or shape.</li> <li>5. Remove the belt and put a straight edge along the drive roller. There should be a slight crown (high spot toward the middle of the roller.) If the crown has worn away, replace the roller.</li> <li>6. Check all the bearings for excessive heat or loose shafts. Replace if necessary.</li> </ol>   |
| Unsteady belt  | <ol style="list-style-type: none"> <li>1. Slack in the abrasive belt.</li> </ol>   | <ol style="list-style-type: none"> <li>1. Adjust the belt tension.</li> </ol>   |
| Short belt life  | <ol style="list-style-type: none"> <li>1. Excessive pressure applied while grinding.</li> <li>2. Working on only one side of the belt or only in one area of the disc.</li> <li>3. Incorrect abrasive material or grit size.</li> </ol>  | <ol style="list-style-type: none"> <li>1. Allow the belt to do the cutting. Excessive pressure only dulls the grit and removes it from the cloth.</li> <li>2. Use all the surface areas of the abrasive cloth.</li> <li>3. Check with your abrasives supplier for recommendations on the type and coarseness of the abrasive required for the workpieces you are sanding or grinding.</li> </ol>  |
| <p><b>CAUTION:</b> For all of the electrical faults and corrections in the above table we recommend the use of a qualified and licensed electrician for all circuit tracing, diagnosis and repair.</p> |  |   |



## Parts List of BTM250

| No. | Description            | Quantity | No. | Description               | Quantity |
|-----|------------------------|----------|-----|---------------------------|----------|
| 1   | Knob M6X15             | 2        | 32  | guard cover               | 1        |
| 2   | coolant cover          | 1        | 33  | flat washer               | 4        |
| 3   | stand                  | 1        | 34  | phillips head screw M5x6  | 4        |
| 4   | fat lock nut M6X8      | 1        | 35  | block plate               | 1        |
| 5   | hex boltM8X20          | 4        | 36  | flat washer               | 4        |
| 6   | flat washer 8          | 8        | 37  | phillips head screw M5x6  | 4        |
| 7   | hex bolt M8            | 4        | 38  | grinding wheel disc       | 1        |
| 8   | nut M8                 | 4        | 39  | belt wheel 1              | 1        |
| 9   | motor                  | 1        | 40  | flat lock screw M6x8      | 1        |
| 10  | hex nut M8             | 4        | 41  | Belt Wheel shaft          | 1        |
| 11  | flat washer 8          | 8        | 42  | hex bolt M10x25           | 2        |
| 12  | stand for motor        | 1        | 43  | flat washer 10            | 2        |
| 13  | hex bolt M8X50         | 4        | 44  | key 5x5x75                | 1        |
| 14  | flat washer 10         | 3        | 45  | spring ring17 for shaft   | 2        |
| 15  | hex bolt M10X25        | 3        | 46  | bearing                   | 2        |
| 16  | belt cover             | 1        | 47  | supporting stand          | 1        |
| 17  | connecting shaft       | 1        | 48  | spring ring for shaft 17  | 1        |
| 18  | fixed seat             | 1        | 49  | belt wheel 2              | 1        |
| 19  | flat washer 6          | 2        | 50  | hex bolt M10x40           | 2        |
| 20  | hex bolt M6X20         | 2        | 51  | flat wahsr 10             | 2        |
| 21  | hex bolt M8X20         | 1        | 52  | swivel stand              | 1        |
| 22  | belt wheel 3           | 1        | 53  | spring ring for shaft 17  | 4        |
| 23  | table stand            | 1        | 54  | bearing                   | 2        |
| 24  | hex bolt M10X25        | 1        | 55  | lower wheel shaft         | 1        |
| 25  | spring column pin 6x40 | 1        | 56  | key 5x5x32                | 1        |
| 26  | scale                  | 1        | 57  | lower idler wheel         | 1        |
| 27  | hex bolt               | 4        | 58  | flat lock screw M8x10     | 2        |
| 28  | flat washer            | 8        | 59  | phillips head screw M5x16 | 2        |
| 29  | stand 2                | 1        | 60  | Dust box                  | 1        |
| 30  | adjusting stand        | 1        | 61  | table stand               | 1        |
| 31  | table                  | 1        | 62  | hex bolt                  | 3        |

| No. | Description               | Quantity | No. | Description               | Quantity |
|-----|---------------------------|----------|-----|---------------------------|----------|
| 63  | flat washer               | 3        | 93  | washer                    | 4        |
| 64  | spring column pin 4x40    | 1        | 94  | upper cover               | 1        |
| 65  | big washer                | 1        | 95  | small pressing plate      | 1        |
| 66  | knob M6X35                | 1        | 96  | pressing plate            | 1        |
| 67  | table                     | 1        | 97  | phillips head screw M5x10 | 2        |
| 68  | scale plate               | 1        | 98  | flat washer 5             | 2        |
| 69  | flat washer               | 1        | 99  | phillips head scwew M5x6  | 8        |
| 70  | knob                      | 1        | 100 | flat wahsr 5              | 8        |
| 71  | phillips head screw M5x6  | 1        | 101 | guard cover               | 1        |
| 72  | pointer                   | 1        | 102 | phillips head screw M5x6  | 2        |
| 73  | sliding pole              | 1        | 103 | flat washer 5             | 2        |
| 74  | supporting body           | 1        |     |                           |          |
| 75  | adjusting handle sleeve   | 1        |     |                           |          |
| 76  | adjusting handle          | 1        |     |                           |          |
| 77  | flat washer               | 2        |     |                           |          |
| 78  | hex nut M8                | 2        |     |                           |          |
| 79  | adjusting shaft           | 1        |     |                           |          |
| 80  | hex bolt                  | 1        |     |                           |          |
| 81  | knob                      | 1        |     |                           |          |
| 82  | flat washer               | 2        |     |                           |          |
| 83  | small pressing spring     | 1        |     |                           |          |
| 84  | hex nut M6                | 1        |     |                           |          |
| 85  | nut M6                    | 1        |     |                           |          |
| 86  | washer                    | 1        |     |                           |          |
| 87  | adjusting stand           | 1        |     |                           |          |
| 88  | upper idler wheel shaft   | 1        |     |                           |          |
| 89  | bearing                   | 2        |     |                           |          |
| 90  | Upper idler               | 1        |     |                           |          |
| 91  | spring ring for shaft 12  | 2        |     |                           |          |
| 92  | phillips head screw M5x16 | 4        |     |                           |          |



