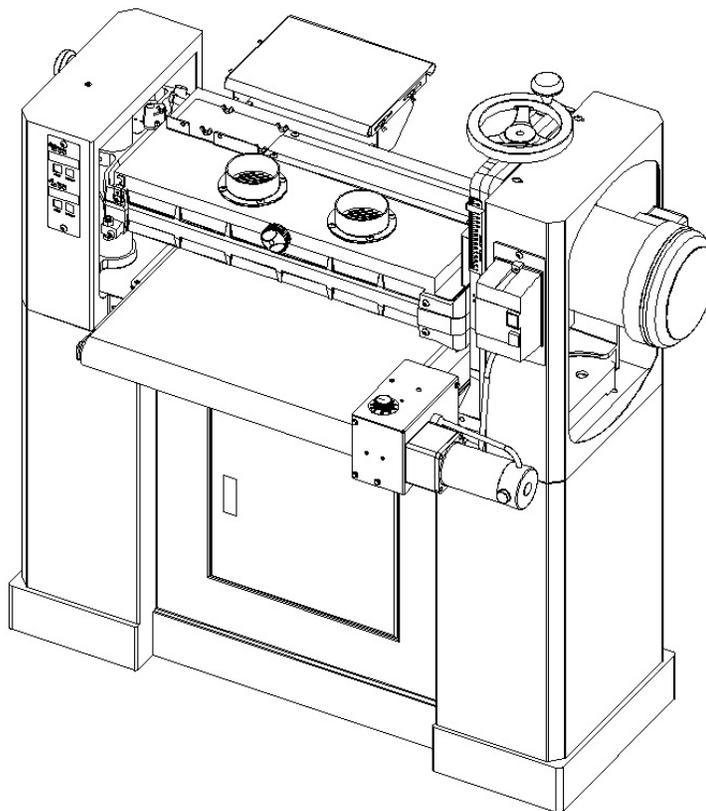


# Operating Instructions and Parts Manual

## Dual Drum Sander

Model ST-635 DDS M / ST-635 DDS T



# CE-Conformity Declaration

**Product: Dual Drum Sander**

**ST-635 DDS M**

Article Number: 77.830.83002.11

**ST-635 DDS T**

Article Number: 77.830.83003.12

Brand: SWISSTEC

Manufacturer:

DKSH Hong Kong Limited

23/F Tower A, Southmark, 11 Yip Hing Street, Wong Chuk Hang, Hong Kong

On our own responsibility we hereby declare that this product complies with the regulations

- \* 2006/42/EC Machinery Directive
- \* 2004/108/EC EMC Directive (Electro Magnetic Compatibility)
- \* 2006/95/EC Low Voltage Directive
- \* 2002/95/EC RoHS Directive (Reduction of Hazardous Substances)

designed with consideration of the standards

\*\* EN ISO 12100-1, EN ISO 12100-2, EN ISO 13857, EN 349, EN 953,  
EN 60204-1, EN ISO 13849-1, EN ISO 11202, EN ISO 14121-1

Technical file compiled by: Marcel Baumgartner, General Manager Sourcing – Technology

2011-10-10 Marcel Baumgartner, General Manager Sourcing – Technology  
DKSH Hong Kong Limited  
23/F Tower A, Southmark, 11 Yip Hing Street, Wong Chuk Hang, Hong Kong

# Table of Contents

Table of Contents .....	3
Safety: Authorized Use .....	4
Safety: General Safety Notes .....	4
Remaining Hazards.....	6
Specifications .....	6
Features and Terminology .....	7
Setup and Assembly .....	8
Unpacking.....	8
Contents of boxes.....	8
Stand assembly .....	9
Sander installation .....	9
Dust collection .....	9
Installing abrasives.....	9
Electrical Connections.....	11
Adjustments .....	11
Drum height control .....	11
Depth gauge .....	11
Conveyor belt tension and tracking.....	12
Conveyor belt replacement .....	12
Checking drum alignment.....	12
Tension roller alignment .....	13
Adjusting height control .....	14
Poly-v belt adjustment/ replacement .....	15
Operating Controls .....	15
Start/stop – sanding drum .....	15
Start/stop – conveyor.....	16
Drum height control .....	16
Operation.....	16
Basic operating procedure .....	16
Thickness measuring device .....	16
Setting the depth of cut.....	16
Disengaging the drums.....	18
Selecting feed rates.....	18
Edge sanding.....	18
Digital Readout.....	19
Digital readout for rear drum height.....	19
Digital readout for sanding thickness .....	19
Selecting Drum Abrasives.....	20
Selecting abrasive grits .....	20
Selecting grit combinations .....	20
Tips for Maximum Performance .....	21
Multiple-piece sanding runs.....	21
Sanding multiple pieces at once.....	21
Edge sanding on conveyor.....	21
Sanding imperfect stock .....	21
Face frames & raised panel doors .....	21
Stock feeding angle .....	21
Cleaning abrasive strips .....	21
Keeping the machine clean .....	22
Maintenance.....	22
Troubleshooting .....	23
Exploded View: Machine Body Assembly .....	26
Part List: Machine Body Assembly .....	27
Exploded View: Drum Head Assembly .....	30
Part List: Drum Head Assembly .....	31
Exploded View: Conveyor and Motor Assembly .....	33
Part List: Conveyor and Motor Assembly.....	34
Exploded View and Parts List: Closed Stand Assembly .....	36
Exploded View and Parts List: In/ Outfeed Tables Assembly (Optional).....	37

## Safety: Authorized Use

1. This sander is designed for sanding wood and similar materials only. Sanding of other materials is not permitted and may be carried out in specific cases only after consulting with the manufacturer.
2. The machine is not suitable for wet sanding.
3. The proper use also includes compliance with the operating and maintenance instructions given in this manual.
4. The machine must be operated only by persons familiar with its operation and maintenance and who are familiar with its hazards.
5. The required minimum age must be observed.
6. The machine must only be used in a technically perfect condition.
7. When working on the machine, all safety mechanisms and covers must be mounted.
8. In addition to the safety requirements contained in these operating instructions and your country's applicable regulations, you should observe the generally recognized technical rules concerning the operation of woodworking machines.
9. Any other use exceeds authorization. In the event of unauthorized use of the machine, the manufacturer renounces all liability and the responsibility is transferred exclusively to the operator.

## Safety: General Safety Notes

Woodworking machines can be dangerous if not used properly. Therefore the appropriate general technical rules as well as the following notes must be observed.

1. Read and understand the entire instruction manual before attempting assembly or operation.
2. Keep this operating instruction close by the machine, protected from dirt and humidity, and pass it over to the new owner if you part with the tool.
3. No changes to the machine may be made.
4. Daily inspect the function and existence of the safety appliances before you start the machine. Do not attempt operating in this case, protect the machine by unplugging the main cord.
5. Remove all loose clothing and confine long hair.
6. Before operating the machine, remove tie, rings, watches, other jewelry, and roll up sleeves above the elbows.
7. Wear safety shoes; never wear leisure shoes or sandals.
8. Always wear the approved working outfit.
9. Do **not** wear gloves.
10. Remove jammed work pieces only when motors are turned off and the machine is at a complete standstill.
11. Install the machine so that there is sufficient space for safe operation and work piece handling.
12. Keep work area well lighted.
13. The machine is designed to operate in closed rooms and must be placed stable on firm and leveled ground.
14. Make sure that the power cord does not impede work and cause people to trip.
15. Keep the floor around the machine clean and free of scrap material, oil and grease.
16. Stay alert! Give your work undivided attention. Use common sense. Do not operate the machine when you are tired.

17. Do not operate the machine under the influence of drugs, alcohol or any medication. Be aware that medication can change your behavior.
18. Never reach into the machine while it is operating or running down.
19. Never leave a running machine unattended. Before you leave the workplace switch off the machine.
20. Keep children and visitors a safe distance from the work area.
21. Do not operate the electric tool near inflammable liquids or gases. Observe the fire fighting and fire alert options, for example the fire extinguisher operation and place.
22. Don't use in a dangerous environment. Don't use the machine in damp or wet locations, or expose it to rain.
23. Wood dust is explosive and can also represent a risk to health. Dust from some typical woods in particular, and from hardwoods like beach and oak, is classified as a carcinogenic substance. Always use a suitable dust extraction device. To reduce your exposure to these chemicals, work in a well-ventilated area and work with approved safety equipment, such as face or dust masks that are specifically designed to filter out microscopic particles.
24. Before machining, remove any nails and other foreign bodies from the work piece.
25. Never operate with the guards not in place – serious risk of injury!
26. Use a feeding aid if you want to feed short stock into the machine.
27. Machine only stock which rests securely on the table.
28. Specifications regarding the maximum or minimum size of the work piece must be observed.
29. Do not machine more than two work pieces at the same time.
30. Connection and repair work on the electrical installation may be carried out by a qualified electrician only.
31. Have a damaged or worn power cord replaced immediately.
32. Replace any torn or worn sanding paper immediately.
33. Make all machine adjustments or maintenance with the machine unplugged from the power source.
34. Remove adjusting keys and wrenches. Form a habit of checking to see that keys and adjusting wrenches are removed from the machine before turning it on.
35. Stand to one side of the conveyor and make sure no one else is standing in line with the conveyor while feeding stock into the machine. Should a part slip while being fed, it may exit the machine at a high rate of speed and can cause injuries to anyone standing directly in front of the infeed.
36. Use the right tool at the correct speed and feed rate. Do not force a tool or attachment to do a job for which it was not designed. The right tool will do the job better and safer.
37. Use recommended accessories; improper accessories may be hazardous.
38. Always feed stock against the rotation of the drum.
39. Keep your hands clear when feeding parts onto the conveyor. The part will be forced down as it begins to feed, causing a pinching action between the part and the conveyor bed. Never reach into a running machine. Turn off sander and disconnect from power before attempting to retrieve parts from within the machine.
40. Turn off the machine and disconnect from power before cleaning. Use a brush or compressed air to remove chips or debris — do not use your hands.
41. Do not stand on the machine. Serious injury could occur if the machine tips over.

# Remaining Hazards

When using the machine according to regulations some remaining hazards may still exist.

1. The moving sanding drum in the work area can cause injury.
2. Drawing-in/trapping hazard by power feed mechanism.
3. Squeezing hazard by work piece power-outfeed.
4. Thrown work pieces can lead to injury.
5. Sanding dust and noise can be health hazards. Be sure to wear personal protection gear such as safety goggles, ear plugs and dust mask. Use a suitable dust exhaust system.
6. The use of incorrect main supply or a damaged power cord can lead to injuries caused by electricity.

# Specifications

Model Number.....	ST-635 DDS M .....	ST-635 DDS T
Article Number .....	77.830.83002.11 .....	77.830.83003.12
Maximum Sanding Width (mm).....	635 .....	635
Minimum Sanding Length (mm).....	57 .....	57
Maximum Thickness (mm).....	150 .....	150
Minimum Thickness (mm).....	0.8 .....	0.8
Maximum Edge Sanding Width (mm) .....	150 .....	150
Drum Dimensions (dia.x L, mm).....	127 x 635/ x2 .....	127 x 635/ x2
Drum Speed (RPM).....	1500 .....	1500
Sanding Speed (m/ sec).....	10 .....	10
Conveyor Variable Feed Rate (m/min) .....	Variable, 0-6 .....	Variable, 0-6
Dust Port Diameter (mm) .....	100 x 2 .....	100 x 2
Suction at 20 m/sec.....	560m3/h x 2 .....	560m3/h x 2
Conveyor Motor.....	0.15kW .....	0.15kW
Power .....	230V ~1/N/PE 50Hz .....	400V ~3/PE 50Hz
Motor Output Power .....	2,2kW (3HP), S1 100% .....	3,7kW (5HP), S1 100%
Overall Dimensions (HxWxD, mm) .....	18-5/8 .....	18-5/8
Net Weight (kg) .....	255 .....	261
Reference Current.....	15A .....	7,9A
Extension Cord (H07RN-F) .....	3x1,5mm <sup>2</sup> .....	4x1,5mm <sup>2</sup>
Installation Fuse Protection.....	20A .....	16A

The above specifications were current at the time this manual was published, but because of our policy of continuous improvement, we reserve the right to change specifications at any time and without prior notice, without incurring obligations.

# Noise Emission

Acoustic pressure level (EN 11202):

Idling	72.4 dB (A)
In operation	88.4 dB (A)

The specified values are emission levels and are not necessarily to be seen as safe operating levels. As workplace conditions vary, this information is intended to allow the user to make a better estimation of the hazards and risks involved only.

# Features and Terminology

The illustration below shows the major components and features of the Dual Drum Sander. These are referenced throughout the manual and will help to familiarize you with the operation and functions of the machine.

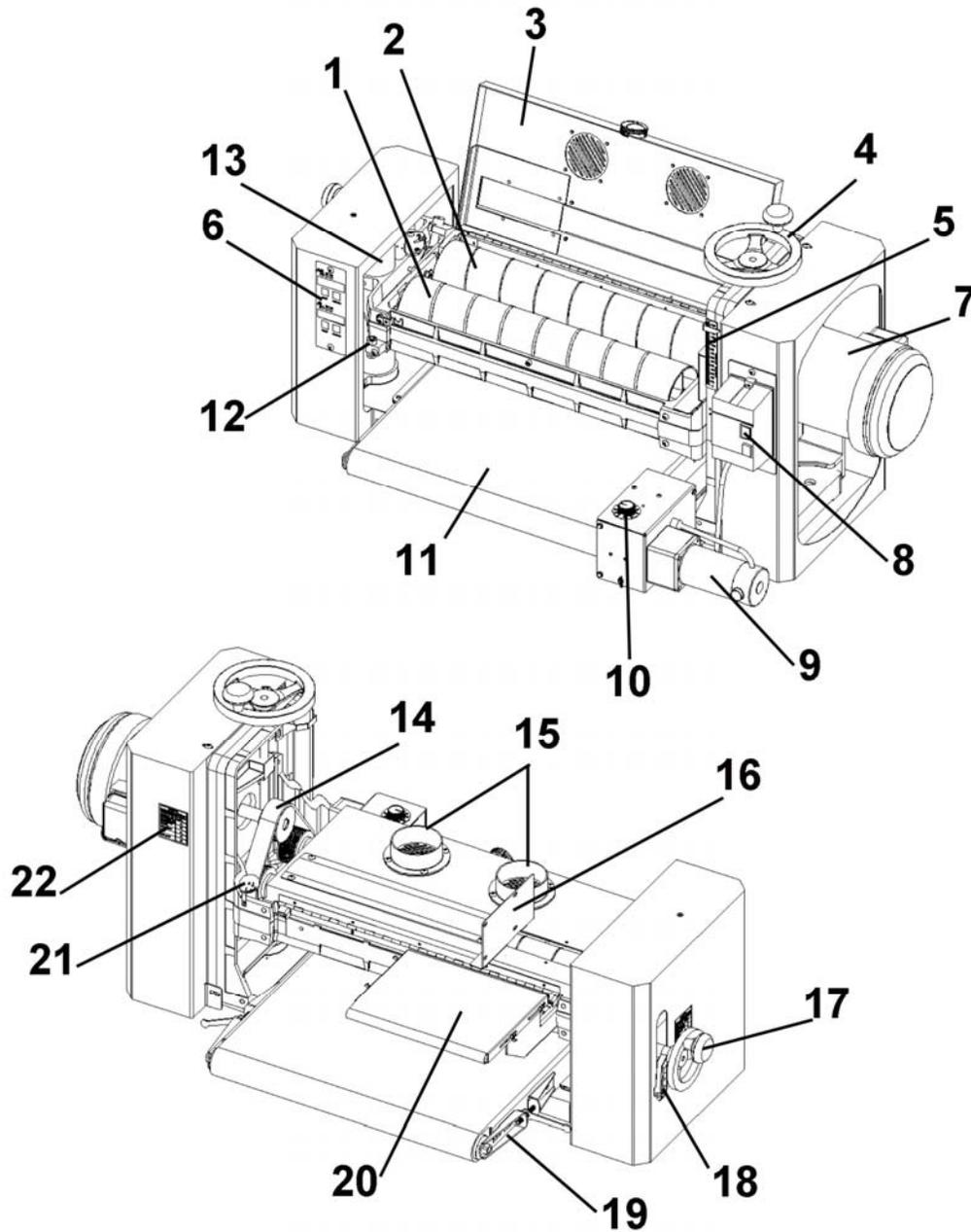


Figure 1

- |   |                                    |
|---|------------------------------------|
| 1. Front drum                           | 12. Thickness measuring device     |
| 2. Rear drum (independently adjustable) | 13. Outboard column and leadscrew  |
| 3. Dust cover                           | 14. Poly-V belt                    |
| 4. Height adjustment handwheel          | 15. Dust ports                     |
| 5. Manual scale                         | 16. Fence                          |
| 6. Digital readout                      | 17. Rear drum adjustment handwheel |
| 7. Drum motor                           | 18. Rear drum lock handle          |
| 8. Magnetic switch                      | 19. Conveyor belt take-up          |
| 9. Conveyor gearmotor                   | 20. Extension table                |
| 10. Controller                          | 21. Rear drum height gauge         |
| 11. Conveyor belt                       | 22. Rear drum setting chart        |

# Setup and Assembly

## Unpacking

Open boxes and check for shipping damage. Report any damage immediately to your distributor and shipping agent. Do not discard any shipping material until the Dual Drum Sander is assembled and running properly.

Compare the contents of your boxes with the following parts list to make sure all parts are intact. Any missing parts should be reported to your distributor. Read this instruction manual thoroughly for assembly, maintenance and safety instructions.

## Contents of boxes

### Box # 1 Sander & Conveyor Bed Assembly

See Figure 2.

- 1 Sander and Conveyor Bed Assembly (A)
- 2 Handle (B)
- 1 Large Handwheel (C)
- 1 Small Handwheel (D)
- 1 Fastener Tool (E)
- 1 12/14 mm Open Wrench
- 1 Owner's Manual
- 1 Hardware Bag, containing:
  - 4 Hex Cap Screws 3/8-16 x 3/4" (F)
  - 4 Flat Washers 3/8" (G)

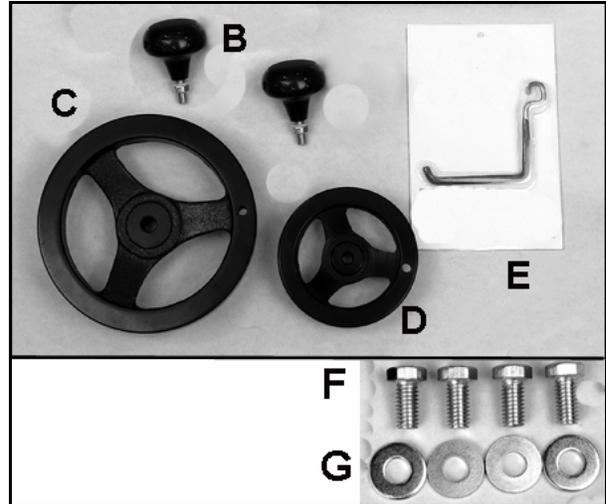
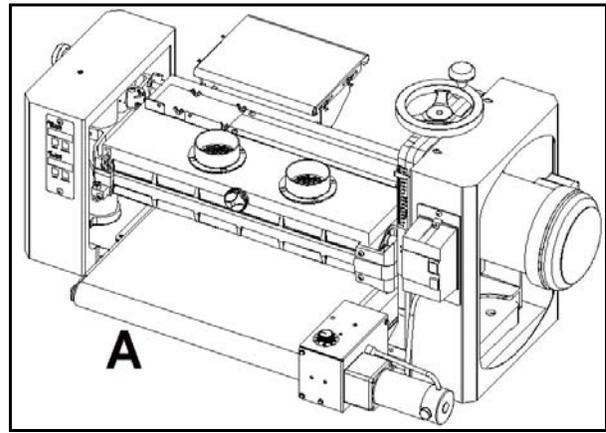


Figure 2 – (Box #1)

### Box # 2 Enclosed Stand Assembly

See Figure 3.

- 1 Front Plate with Door – J
- 1 Rear Plate – K
- 1 Hinged Bottom Plate – L
- 2 Stand Sides – M
- 1 Hardware Bag, containing:
  - 12 Hex Cap Screws, 5/16-18x1/2" (N)
  - 12 Flat Washers, 5/16" (O)

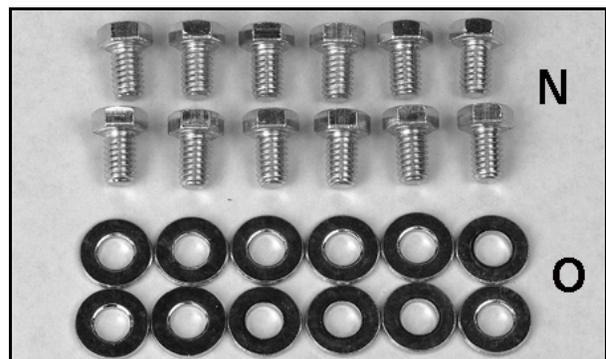
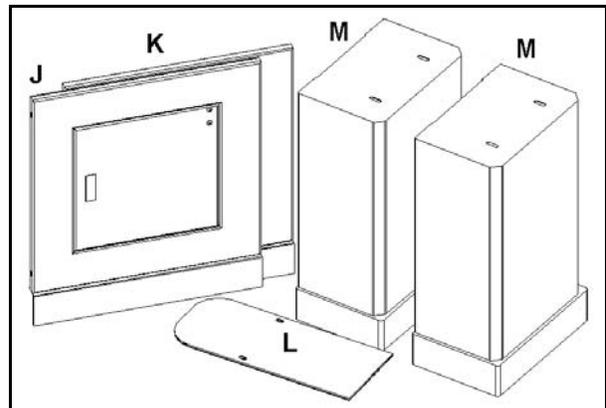


Figure 3 – (Box #2)

## Stand assembly

See Figure 4.

1. Position two stand sides (M) on the ground with the base down and with the openings toward the center.
2. Mount hinged bottom plate (L) to stand sides with four screws (N) and washers (O). Hand-tighten only at this time.
3. Secure rear plate (K) to left and right stand sides (M) with four screws (N) and washers (O). Hand-tighten only.
5. Secure front plate with door (J) to left and right stand sides (M) in same manner as above with four screws (N) and washers (O). Hand-tighten only.

Fasteners will be fully tightened only after sander is mounted, to ensure proper settling of stand.

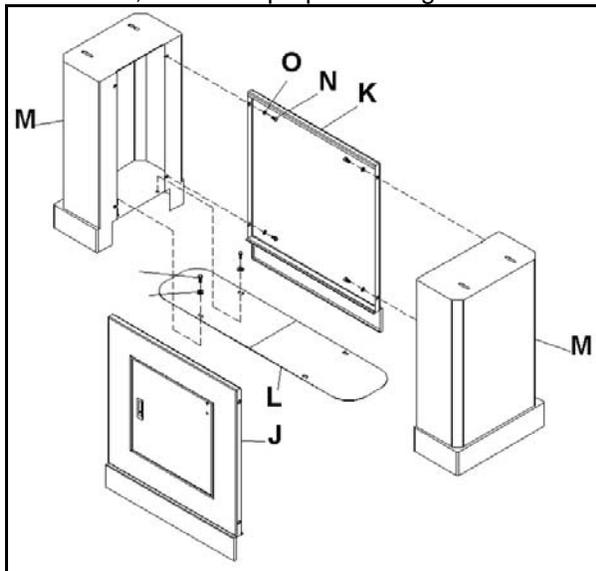


Figure 4

## Sander installation

**Sander is heavy! Exercise caution and use properly rated lifting equipment (hoist, straps, or forklift). Failure to comply may cause serious injury.**

1. Remove the two shipping brackets that secured the sander to the pallet.
2. Lift sander using straps beneath the cast iron frame, but not directly under the drums or conveyor.

**Do not lift sander under drums or conveyor table, or any area that can be damaged or misaligned in the process.**

3. Position sander atop the stand. Open stand door and secure sander from beneath using four screws (F, Figure 2) and flat washers (G, Figure 2).
4. Attach large handwheel (C, Figure 5) to height

adjustment screw, and tighten the two set screws.

5. Install handle (B, Figure 5) into threaded hole and tighten nut against handwheel.

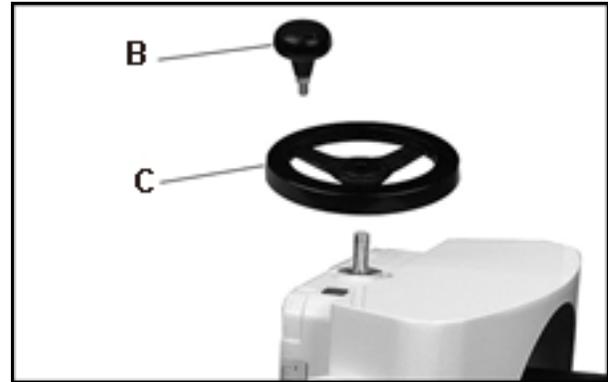


Figure 5

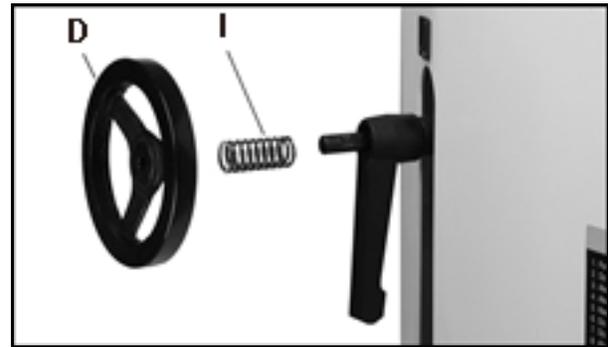


Figure 6

6. Place spring (I, Figure 6) onto rear drum adjustment shaft, and push it into recess in locking handle. Attach small handwheel (D, Figure 6) and tighten the two set screws on the flats of the shaft.

7. After installing sander to stand, finish tightening all mounting hardware that was previously hand-tightened during the stand assembly.

## Dust collection

Dust collection is mandatory for a safe work environment and extended abrasive life. This Dual Drum Sander is equipped with two 100 mm dust collection ports at the top of the dust cover. It is designed to be used with standard 100 mm dust collection hoses connected to a high volume dust collector.

## Installing abrasives

The sander is shipped with an 80-grit abrasive strip on the front drum, and a 100-grit on the rear. Proper attachment of abrasive strips to drum is critical to achieving top performance from your drum sander. Abrasive strips do not have to be pre-measured. The end of the roll is first tapered and attached to the left (outboard) side of the drum. Then the strip is wrapped around the drum, and the second taper is made for attachment to the inboard side of the drum.

**Note:** You can use the original abrasive strip mounted to the drum as a template for cutting your own strips.

1. Mark and cut a taper at one end of the roll as shown in Figure 7. Because the tapered end should use most of the outboard slot width, its end must be trimmed back as shown.

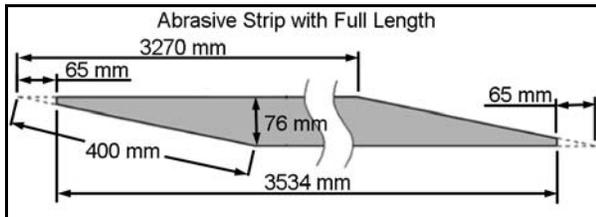
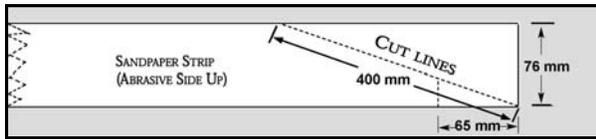


Figure 7

2. Raise fastener lever as shown in Figure 8 on outboard end of drum, and insert tapered end of abrasive so that it uses most of slot width. Release fastener lever to securely hold strip end to fastener.

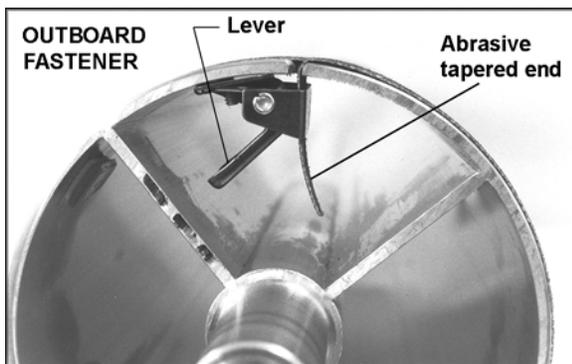


Figure 8

3. Begin wrapping strip around drum. The tapered edge of the strip end should follow edge of drum.
4. Continue to wrap abrasive in spiral fashion by rotating drum with one hand and guiding strip with the other (Figure 9). Successive windings of the strip should be flush with previous windings without any overlap.
5. Mark trailing end of strip where it crosses right (inboard) side of drum (Figure 10).

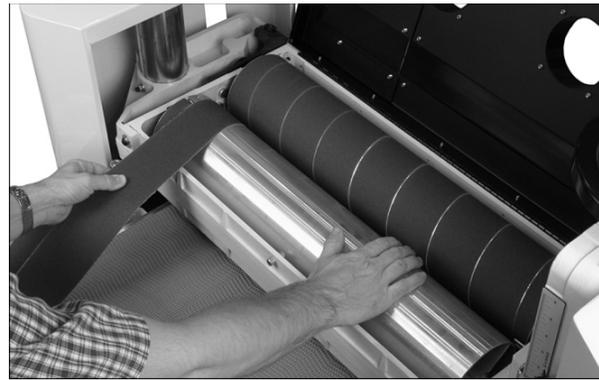


Figure 9

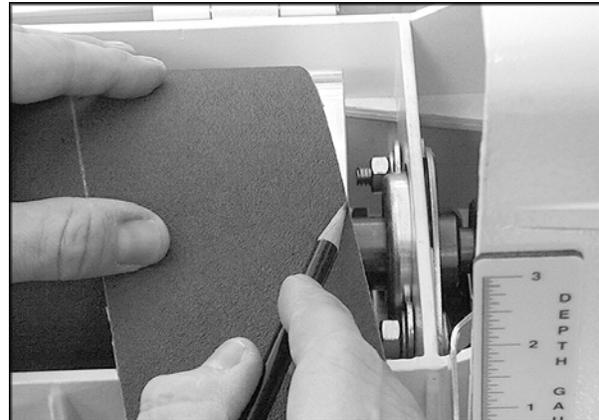


Figure 10

6. Remove abrasive strip from drum, and cut a taper as was done with the starting edge (see Figure 7). **Note:** The taper on the remaining roll can be used as the taper for the starting edge of the next strip to be cut.
7. Rewrap drum beginning at the left, as described in steps 2 through 4.
8. You can use your fingers to work the inboard take-up fastener, but it is more convenient to use the supplied Fastener Tool (E, Figure 2). Hold the Fastener Tool with the red end pointing away from you (see Figure 12) and insert its hook into the outside hole of fastener lever (Figure 11).

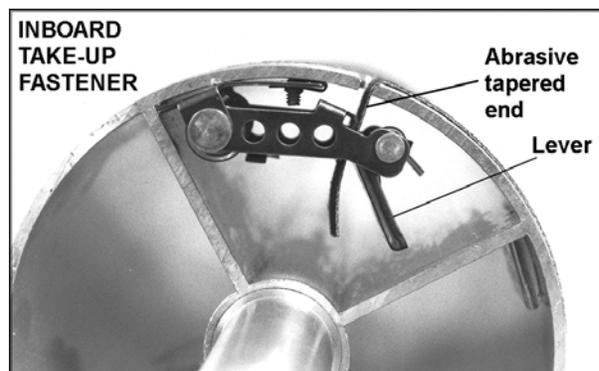


Figure 11



Figure 12

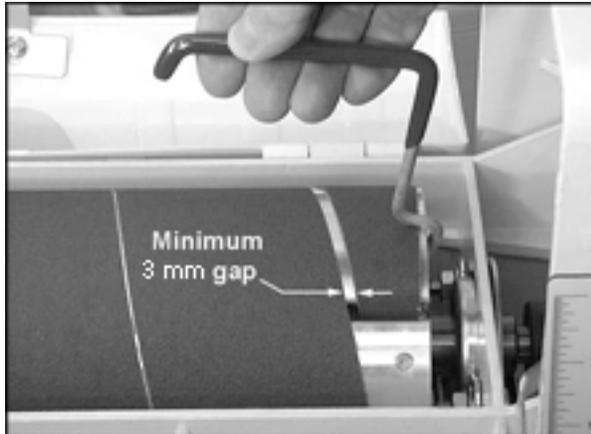


Figure 13

9. Lift lever with the Fastener Tool, pulling the lever up until it touches inside of drum.
10. Turn Fastener Tool counterclockwise and lower it onto the abrasive strip, making sure it is holding the paper tight (Figure 13).
11. Insert tapered end of abrasive strip (B, Figure 14) into slot and fastener. It may be necessary to trim tapered end of abrasive strip so that it does not “bottom out” against inside of drum.

**IMPORTANT:** Leave a gap – at least 3 mm – between tapered strip and the closed end of the slot (Figure 13) to allow strip to be pulled into fastener as needed. If necessary, trim outside edge of abrasive strip.

12. Hold abrasive in place with your left hand, lift up the Fastener Tool and turn it clockwise while maintaining upward pressure. Slowly move Fastener Tool away from you slightly, then down, while easing it out of hole. This releases the lever (Figure 11) in its proper position.

All abrasive strips will stretch in use and may stretch enough to allow the take-up lever to reach its lowest position, so that it cannot maintain tension on the strip. If this occurs, follow the above procedures to re-set the take-up lever.

**Always remove Fastener Tool from machine before operating.**

## Electrical Connections

Electrical connection and any extension cords used must comply with applicable regulations.

The main voltage must comply with the information shown on the machine license plate.

The mains connection must have a 16A surge-proof fuse.

Only use connection cables marked H07RN-F.

Connections and repairs to the electrical equipment may only be carried out by qualified electricians.

### Attention:

Check first if the sanding drums run freely and if all safety devices are fitted before starting the machine.

If the direction of rotation is not correct on 3 phase model, the phase converter inside the CCE Euro plug must be pushed in and turned 180°. (See rotation arrow shown on machine for correct direction of rotation)

## Adjustments

### Drum height control

The drum height and depth of cut are controlled by the height adjustment handle (see Figure 5). Rotating the handle counterclockwise lowers the drum, clockwise raises it. One revolution of the handle will move the drum 1.27 mm.

### Depth gauge

The depth gauge indicates distance between bottom of front sanding drum and top of conveyor surface. Adjustment is performed by “zeroing” the gauge. The scale has been preset at factory, but should be verified by the operator.

1. With an abrasive strip on the drum, lower sanding drum while slightly rotating it, until it just touches top of conveyor belt.
2. At this drum position, the depth gauge pointer (A, Figure 14) should align with the zero mark of the scale. If it does not, loosen hex nut (B, Figure 14) and adjust pointer to align with zero.
3. Re-tighten hex nut (B, Figure 14).
4. The digital readout must now be set to zero. See Section Digital Readout for procedure.

**Note:** Depending on the desired accuracy, you may need to repeat this process when installing different abrasive grits.

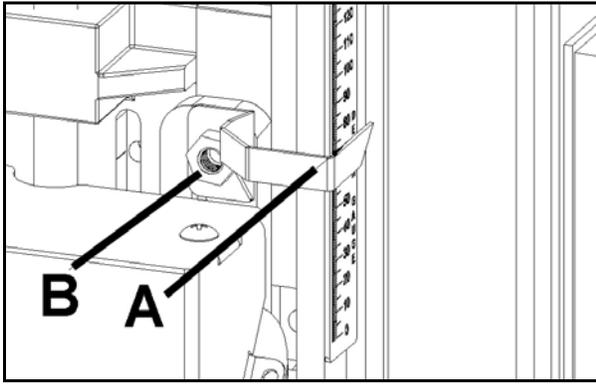


Figure 14

## Conveyor belt tension and tracking

Conveyor belt tension adjustment may be necessary during the break-in period to compensate for belt stretching.

**IMPORTANT:** The conveyor belt has been loosened for shipping. Before operating sander, adjust belt tension according to the following instructions if necessary!

**Belt Tension:** To adjust conveyor belt tension, first adjust take-up screw nut (A, Figure 15) using the attached wrench (B, Figure 15). Do this on both sides of conveyor to obtain approximately equal tension on both sides of the belt when taut. Insufficient belt tension will cause slippage of conveyor belt on the drive roller during sanding operation; the conveyor belt is too loose if it can be stopped by hand pressure applied directly to the top of the conveyor belt. Excessive belt tension can result in bent rollers, bent brackets, and/or premature wearing of the bronze roller bushings or conveyor belt.

**Belt Tracking:** Belt tracking adjustments are made while the conveyor belt is running. After the proper belt tension is obtained, turn the conveyor unit on and set it at the fastest speed setting. Watch for a tendency of the conveyor belt to drift to one side of the conveyor. To adjust the belt tracking, tighten the take-up screw nut (A, Figure 15) on the side the belt is drifting toward, and loosen the take-up screw nut on the opposite side. Adjusting the take-up screw nuts on either side of the conveyor allows belt tracking adjustments to be made without affecting belt tension.

**NOTE:** Adjust the take-up screw nuts only 1/4 turn at a time. Then allow time for the belt to react to the adjustments before proceeding further. Try to avoid over-adjustments.

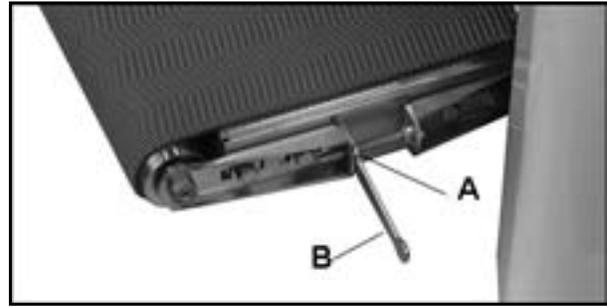


Figure 15

## Conveyor belt replacement

1. Disconnect machine from power source, and unplug motor cord from control box receptacle.
2. Raise drum to highest position.
3. Loosen conveyor take-up screw nuts (A, Figure 15) to relieve belt tension, and slide the driven roller fully inward.
4. Remove the four bolts that attach conveyor table to base. Lift up conveyor table and remove it from machine (1Ph model) or swing it away from machine (3Ph model).
5. Install new belt, and re-install conveyor table. Tension and track the new belt.

## Checking drum alignment

This sander was shipped from the factory pre-adjusted with the drums aligned to the conveyor table. Unless the machine was stressed during shipment, only fine adjustment should be necessary. Minor alignment corrections can be done without relieving belt tension or adjusting the tension rollers, but should be done without any abrasive strips attached.

First inspect the alignment with a thickness gauge. The following procedure uses a steel straight edge as a gauge.

1. Disconnect sander from power source.
2. Open dust cover and remove abrasive strips from drums.
3. Place gauge on conveyor bed at inboard (right) side (Figure 16).

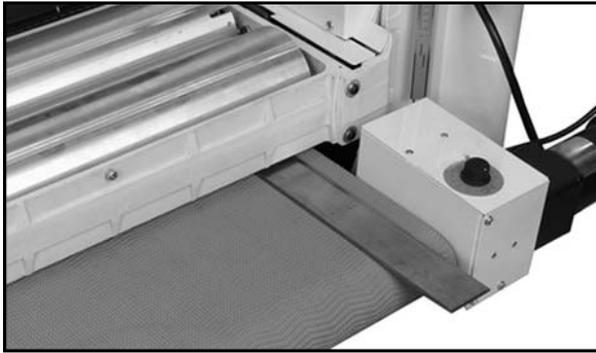


Figure 16

4. With dust cover open, lower drum while slowly rotating it by hand, until front drum lightly contacts gauge. Raise or lower the rear drum to a same height as the front drum by rotating the rear drum height adjustment handwheel (F, Figure 18) clockwise to raise it or counter-clockwise to lower it.
5. Remove gauge and place at outboard (left) side.
6. Then, holding up the front tension roller, check at outboard (left) side of the front drum to see that the drum is parallel to the table. If it is not, alignment is necessary.
7. To align front drum, loosen the four socket head button screws (A,B,C,D as shown in Figure 17 and Figure 18) at front and rear of outboard support bracket (left of the machine). Note: Do not loosen any socket head button screws at the inboard (right) side.

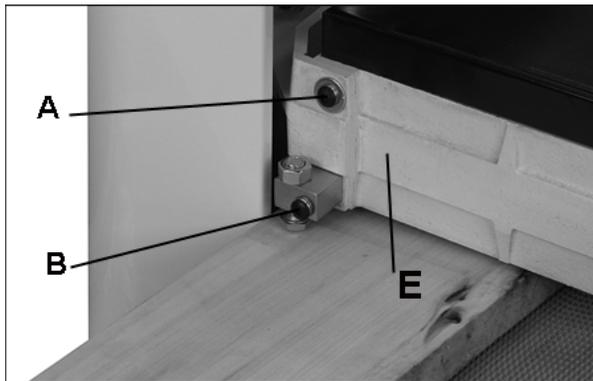


Figure 17

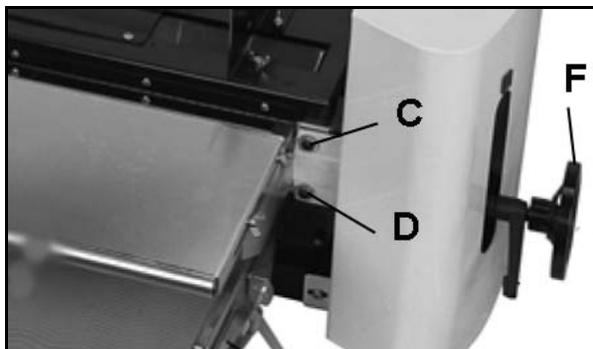


Figure 18

8. Finely raise or push down the outboard (left) side of the drum carriage (E, Figure 17) to achieve parallel alignment of the front drum. The distance between the conveyor table and both sides of the front drum should be the same.
9. Re-tighten the four screws.
10. Before altering this drum carriage position, also check to see that the rear drum is likewise parallel to the conveyor table, with both sides at the same height above the table. Using the same thickness gauge, check both sides of the rear drum from the rear of the machine while holding up the rear tension roller.
11. Adjustment of the rear drum is done by loosening both the set screws (A, Figure 19) located on the pinion (B, Figure 19) at outboard side. This has to be done thru underneath the outboard support bracket.
12. Finely raise or lower the rear drum by rotating the rear drum height adjustment handwheel to achieve parallel alignment of the rear drum.
13. Re-tighten both the set screws, aligning the set screw to the flat of the shaft.

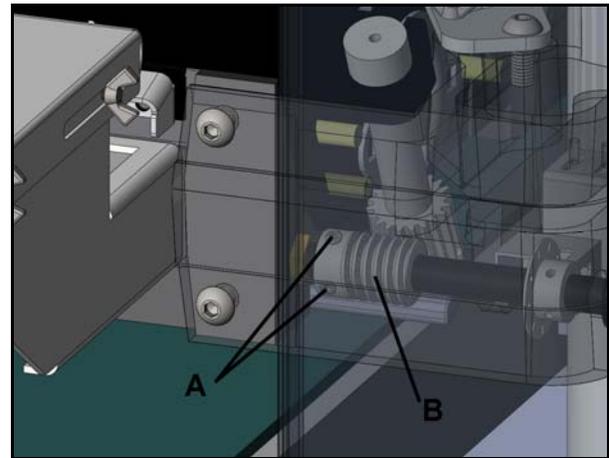


Figure 19

### Tension roller alignment

This dual drum sander provides spring tensioned infeed and outfeed rollers located immediately fore and aft of each sanding drum. The tension rollers place a downward pressure on pieces when sanded to prevent slippage on the feed conveyor.

Improperly adjusted tension rollers (i.e., those set too high, rendering them non-functional) could allow kick-back/slippage of pieces being sanded.

Too much tension roller pressure can cause snipe marks which are identified as a visible line running across the width of the board approximately 57mm from the end of the board. If the snipe mark

occurs on the leading end of the board, adjust outfeed tension roller. If a snipe mark occurs on the trailing end of the board, adjust the infeed tension roller.

Tension roller pressure can be adjusted two ways:

1. Loosen tension roller spring retain screws (A, Figure 20) on both ends of each drum to reduce tension roller pressure.

OR

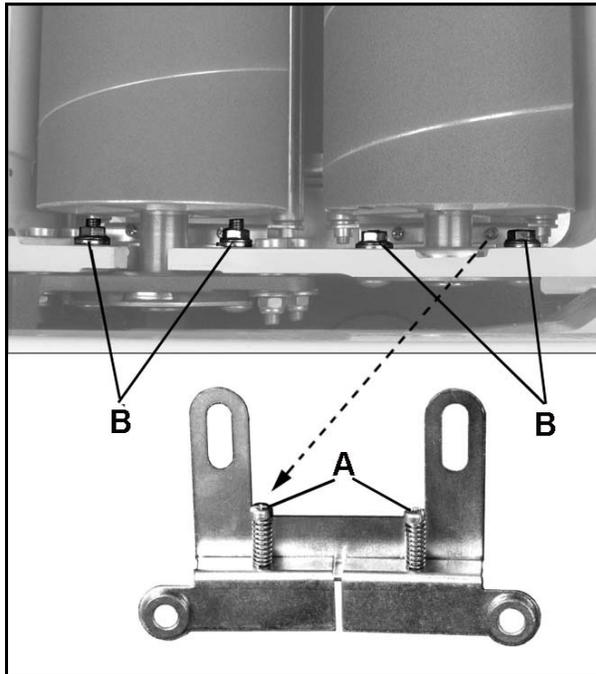


Figure 20

2. Raise height of tension rollers to reduce tension roller pressure as follows:
  1. Disconnect sander from power source.
  2. Remove the belt cover and loosen the belt tension. See Section Poly-v Belt adjustment/ replacement.
  3. Open dust cover and remove abrasive strips from the drums.
  4. Adjust rear drum at equal height to front drum.
  5. Put two same home made gauge blocks (Figure 21) made of hardwood on the conveyor bed directly underneath both ends of front drum. Lower drum while slowly rotating it by hand, until front drum lightly contacts gauge blocks. The infeed and outfeed rollers should be resting firmly on both lower sides of each gauge block as shown in Figure 21.
  6. Loosen all eight hex nuts on the bearing bolts (B, Figure 20). This will allow the tension rollers to drop to their position and

contact with the gauge blocks. Note: Figure 20 only shows outboard end of drums. Adjustments must be made on both ends of each drum.)

7. Tighten the four hex nuts on the bearing bolts for front drum. Rotate the front drum by hand to make sure it lightly contacts gauge blocks on both ends after tightening the nuts.
8. Move gauge blocks to rear drum and tighten the other four hex nuts. Rotate the rear drum by hand to make sure it lightly contacts gauge blocks on both ends after tightening the nuts.
9. Install abrasive strips, close dust cover, tension the belt and reinstall the belt cover.

If there still is a snipe mark left on pieces being sanded, loosen tension roller spring retain screws (A, Figure 20) on both ends of rear drum and/or raise rear drum to keep rear drum just slightly lower than front drum.

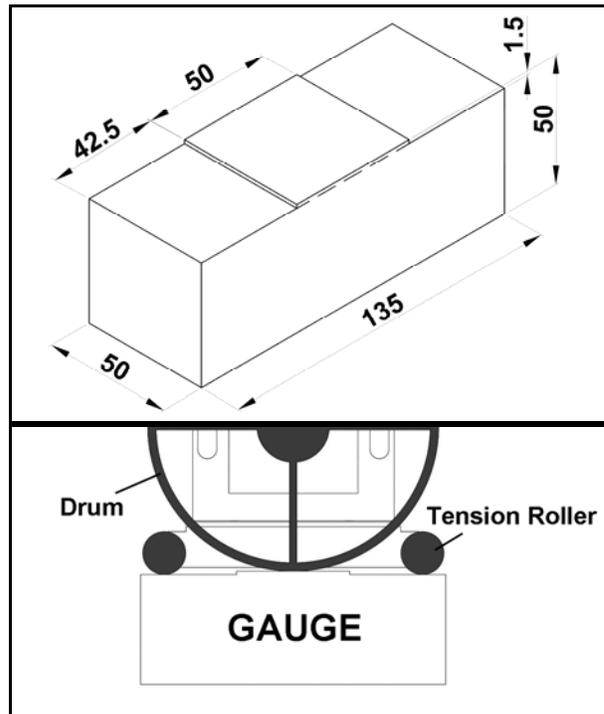


Figure 21

### Adjusting height control

If the height control mechanism does not operate smoothly or there is excessive vertical movement or deflection of the drum carriage, perform the following adjustments.

1. Tighten all four lock nuts (A, Figure 22) and then loosen them 1/8 to 1/4 turn. If the lock nuts are set too tight, height control will not operate easily. If the lock nuts are too loose, excessive deflection or binding may occur.

2. Thoroughly lubricate the mating surfaces of the motor mount slide (C, Figure 22), and the height adjustment screw (B, Figure 22).
3. Push height adjustment handwheel (A, Figure 23) downward to set firmly on housing. Loosen set screws of shaft collar (B, Figure 23). Slide shaft collar upward against housing so that all vertical free play of height adjustment screw is eliminated. Use a block of wood on top of the motor mount plate and under collar. Raise the motor mount plate by rotating the handwheel to help remove free play. Lubricate around washers beneath handle and above collar.
4. If the height adjustment mechanism still feels rough, check the miter gear alignment on the underside of the base. The miter gears (A, Figure 24) can be adjusted on their shafts by loosening the set screws on the gears. Check and adjust so that the gear mesh is not too tight or too loose, and that the gear teeth align with the opposing gear.

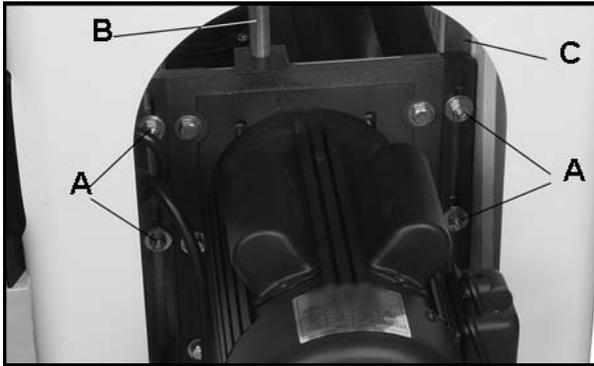


Figure 22

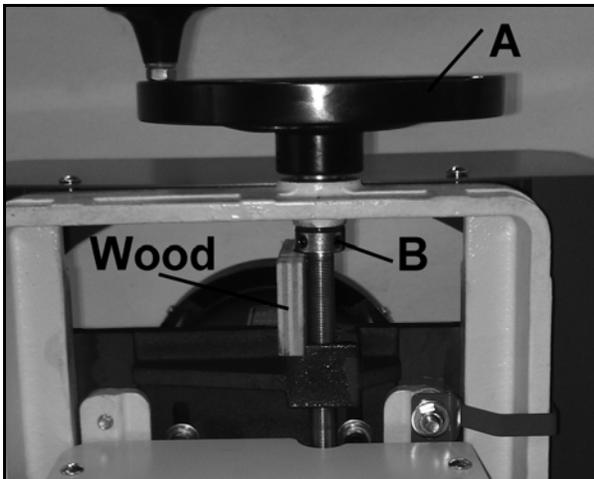


Figure 23

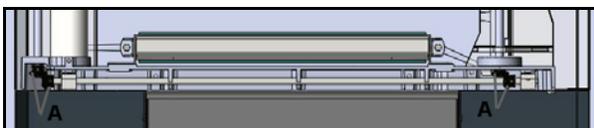


Figure 24

## Poly-v belt adjustment/ replacement

To adjust tension or replace the poly-v belt:

1. Remove belt guard by removing two screws.
2. Loosen the four cap screws (A, Figure 25) securing motor to motor plate.
3. Push down on motor to de-tension belt, and remove belt from around pulleys.
4. Reverse procedure to mount and tension new belt. Note: Use a block of wood on top of the cast base and under motor housing. Lower the motor by rotating the height adjustment handwheel to help tension the belt.

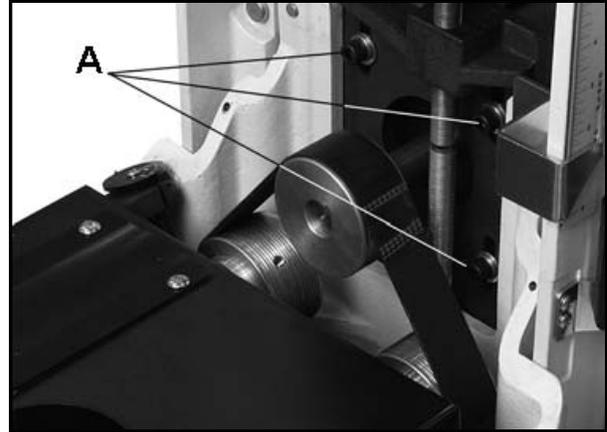


Figure 25

## Operating Controls

Before using your drum sander, review the previous pages in this manual on initial set-up and adjustment. In this section, you will learn how to operate the machine. Note that connecting the machine to an adequate dust collection system is necessary before operating the unit.

### Start/stop – sanding drum

This switch (Figure 26) operates the sanding drum only. The conveyor is controlled separately.

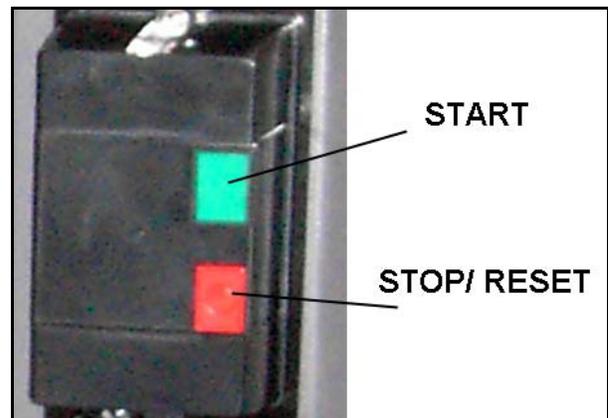


Figure 26

**Start** – Press green switch to start.

**Stop** – Press red switch to stop.

**Reset** – The switch is thermally protected. If the motor is overloaded, or a momentary interruption of electrical current is sensed, the switch will shut off. Allow a few minutes for the machine to cool down and reset by pushing the STOP button.

1. Press red button to reset.
2. Press green button to restart machine.

### Start/stop – conveyor

Conveyor speed is controlled by the speed rate control knob (A, Figure 27) which sets conveyor speed from stopped (0, knob fully counterclockwise) to 6 m/min. (100%, knob fully clockwise).

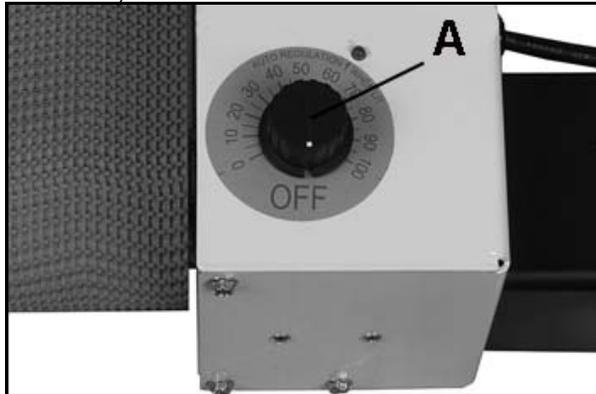


Figure 27

### Drum height control

Drum height is controlled by height adjustment handwheel. Rotating handwheel counterclockwise lowers the drum; clockwise raises it. One revolution of the handwheel moves the drum 1.27 mm.

## Operation

Before using your drum sander, review the previous pages in this manual on initial set-up and adjustment. In this section, you will learn how to operate the machine. Note that connecting the machine to an adequate dust collection system is necessary before operating the unit.

**Do not start drum while it is in contact with workpiece!**

**Do not place fingers beneath workpiece where it contacts the conveyor belt!**

### Basic operating procedure

1. Set depth of cut for front drum.
2. Set depth of cut for rear drum (slightly lower than front drum if using finer grit).
3. Start dust collection system.
4. Start drums.

5. Start conveyor and select feed rate.

6. Feed stock through machine.

To feed stock through the sander, rest and hold the board to be sanded on the conveyor belt, allowing the conveyor to carry the board into the drums. Once the stock is halfway through, reposition yourself to the outfeed side of the machine to receive and control the board as it exits.

### Thickness measuring device

The thickness measuring device (Figure 28) is useful for quickly establishing the thickness of your workpiece, and moving the drum head in relation to it.

1. Place workpiece on conveyor bed and beneath measuring device.
2. Lower drum head until measuring device just contacts the workpiece.
3. Note thickness on scale. Remove workpiece and do the sanding directly or adjust drum for desired sanding depth.
4. To adjust measuring device height, loosen hex nut and rotate screw up or down as needed. Tighten hex nut.



Figure 28

### Setting the depth of cut

Adjusting the drum sander for the proper contact between the abrasive and the stock determines the mechanical depth of cut. Determining the depth of cut is the most important set-up procedure before operating the drum sander. It may take some experimentation to determine the proper depth of cut, given the variables of abrasive grit, type of wood and feed rate. For best results, use scrap wood to practice sanding and to develop skill and familiarity with the machine before doing finish work.

A good rule of thumb when sanding with grits finer than 80 is to raise the conveyor table so the drums contacts the workpiece but still can be

rotated by hand. When using grits coarser than 80 grit, you can lower the drums slightly more. However, a combination of several variables will determine the proper depth of cut to use, including the following:

1. Abrasive type and grit size.
2. Width of the piece being processed.
3. Hardness of the piece.
4. Feed rate of the conveyor belt.

The depth of cut is controlled by the height adjustment handwheel, and the rear drum is then set independently using the rear drum adjustment handwheel. The rear drum adjustment allows proper depth of cut with virtually any abrasive grit combinations on the drums. The two drums are normally both used during sanding operations, but either the front or rear drum can be used alone.

Sanding with a different abrasive grit on each drum is possible in a single pass. The coarser abrasive is wrapped on the front drum for dimensioning and surfacing of the wood, while the finer abrasive is wrapped on the rear drum. When used in this way, the rear drum generally is positioned just slightly lower than the front drum so it removes the scratches left by the coarser grit on the front drum (Figure 29). However, the exact depth of cut of the rear drum will depend on the specific abrasive grits on each of the drums.

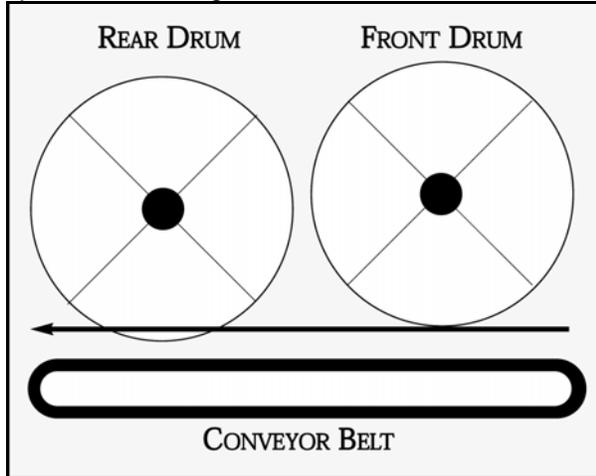


Figure 29

The chart (Figure 30) shows grit combinations and rear drum settings, can also be found on your machine. It suggests settings for various abrasive grit combinations; try these to start and make adjustments as necessary for your work. When adjusting the rear drum, turn the handwheel so that the indicator moves to the desired setting of the scale (See Figure 31). The depth of cut of the rear drum should be rechecked each time a different grit combination is used.

<b>Dual Drum Grit Combinations and Setting</b>	
<b>Front Drum Grit/ Rear Drum Grit</b>	<b>Rear Drum Setting</b>
<b>100/150, 120/150 120/180, 150/220</b>	<b>0.1</b>
<b>80/100, 80/120 100/180</b>	<b>0.2</b>
<b>60/100, 36/36</b>	<b>0.4</b>
<b>60/80</b>	<b>0.5</b>
<b>36/60, 36/80</b>	<b>0.8</b>

Figure 30

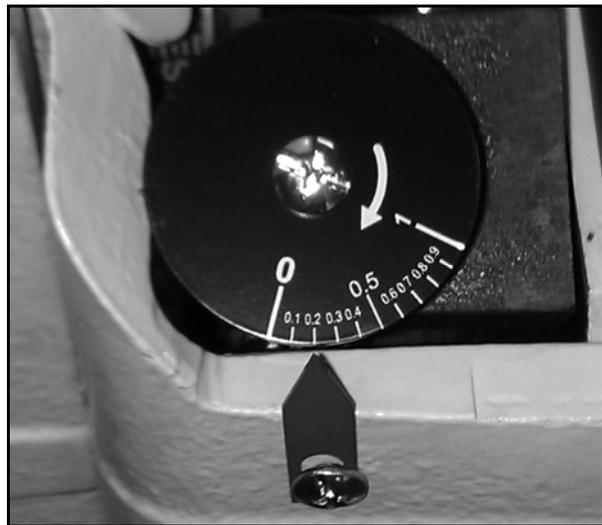


Figure 31

Fine-tuning the rear drum settings can help improve performance. Here is a quick way: Raise the rear drum so it is higher than the front drum, place the stock to be sanded under the front drum. Then lower the drum head so the front drum contacts the wood, but still can be rotated by hand. Sand the piece with the front drum and stop the machine. Then insert the stock in from the back so it is under the rear drum only. Turn down the rear drum using the adjustment handwheel. Lower the rear drum until it contacts the stock but still can be rotated by hand. Lock the locking handle in place after the adjustment done. Use this setting, and note the readings on the depth indicators for future reference.

One revolution of the rear drum adjustment handwheel moves the rear drum 0.2 mm.

## Disengaging the drums

Either the front or rear drum may be disengaged so that the other drum can be used alone. To use the front drum as a single-drum sander, disengage the rear drum by raising it to approximately 1mm higher than front drum. To use the rear drum alone, lower it to approximately 1mm lower than front drum.

## Selecting feed rates

Selecting the proper feed rate is essential to proper finish sanding. The variable feed rate control of the conveyor belt adjusts the load on the machine; it can be infinitely adjusted for maximum operating performance. A faster feed rate allows faster sanding but fewer revolutions of the drums per centimeter of sanding. A slower feed rate provides more revolutions of the drum per centimeter of sanding to allow a greater depth of cut and smoother sanding.

The controller (See Fig. 32) continuously monitors the load on the drum motor and automatically regulates the speed of the conveyor motor to maintain the highest feed rate without overload. If the load on the drum motor increases, the controller will decrease the conveyor feed rate and will stop the conveyor under extreme conditions.

If the load on the drum decreases, the controller will increase the feed rate but will not increase it faster than the manual setting on the switch dial. For abrasive planing and thickening, the feed rate can be set at any speed after adjusting for the proper depth of cut. If the load on the drum motor approaches its optimum due to inconsistent stock, the feed rate will automatically slow down. If the load on the drum motor decreases, the feed rate will automatically increase to its original setting.

When finish sanding with grits finer than 80, the best finish will be achieved if the conveyor does not change speeds during operation. While the controller will slow the feed rate when the main motor reaches its optimum, it is advisable to operate below the regulation point. When the red indicator light (A, Figure 32) comes on, the controller has detected too great a depth of cut and/or too fast a feed rate. This change in conveyor speed may leave a detectable mark on finish surfaces. If a mark is visible, make adjustments by slowing conveyor and/or lessening the depth of cut and run the stock through again.

Begin experimenting with the feed rate set at about 40% to 50% of maximum. The best feed rate will depend on a number of factors, including type of stock, grit and depth of cut used, and whether the stock is feed directly in line with the conveyor bed or at an angle. If you observe a

ripple effect on the stock, slow down the feed rate. If the finish is smooth and the machine is not overworking, you can experiment with using a faster feed rate. Also try a faster feed rate if the stock you are working begins to show burn marks. With cherry, hard maple and some other hardwoods, using a shallower depth of cut and a faster feed rate will help minimize burn marks. Slightly angling the stock as it is fed into the machine may also help prevent burning the stock.

Because of the wide range of variables, it is important to experiment with your specific conditions and make adjustments to achieve the optimum feed rate. If problems occur, check the depth of cut and/or adjust the feed rate.

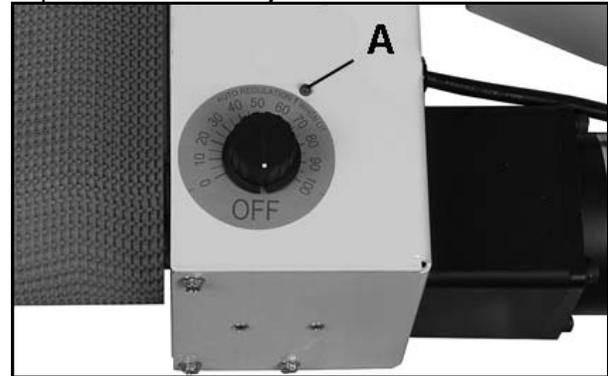


Figure 32

## Edge sanding

The extension table (Figure 33) is installed for edge sanding. It can be slid in close to the dust cover for edge sanding or slid out for opening the dust cover.

Position the extension table level with or slightly below the dust cover surface for proper support of stock. To check position, place a straight edge on top of the dust cover and extending out over the extension table.

The plate (A, Figure 34) can be removed to allow edge sanding and remounted as a vertical guide fence. Raise rear drum until it just contacts with the workpiece but still can be rotated by hand.

**Feeding direction is from the rear of machine to the front as the red arrows shown in Figure 34.**

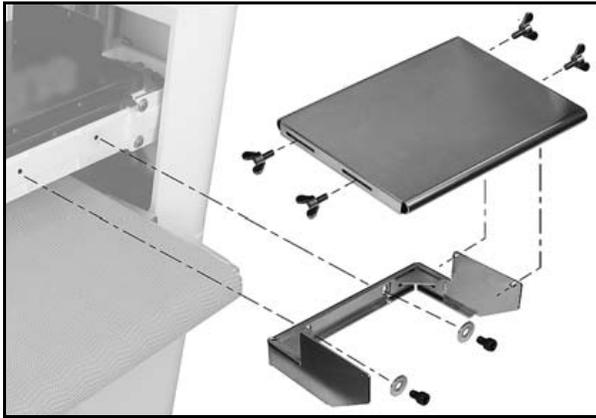


Figure 33

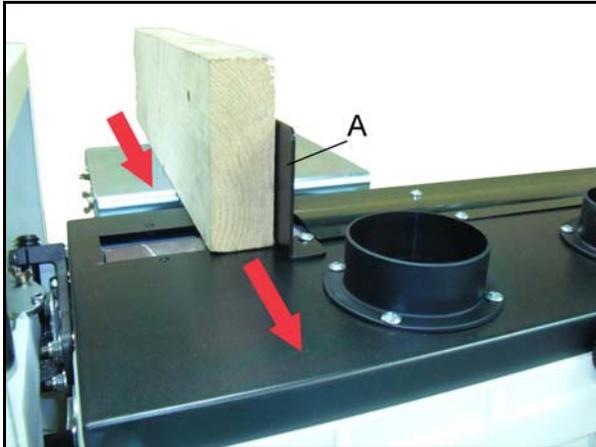


Figure 34

## Digital Readout

Figure 35 identifies parts of the digital readouts.

### **0 SET** – zero-setting

Press this button to set current position as zero point.

### **inch/mm** – inch/millimeter

Pressing this button back and forth between imperial and metric, and can be done at any time without affecting saved settings.

The DRO comes with memory function. The LED display will display with "-----" flash when it is saving the setting. The setting will be kept in the device's memory, but it needs re-setting if you move the drums after power off.

### Digital readout for rear drum height

It displays the distance of the rear drum vertical motion. It is helpful for selecting grits to use on this dual drum machine and setting the rear drum. There is an easy method of establishing the rear drum to zero for this function, as follows.

1. Disconnect sander from power source.
2. Open dust cover and remove abrasive strips.

3. Place gauge on conveyor bed as shown in Figure 16.
4. With dust cover open, lower drums while slowly rotating the front drum by hand, until front drum lightly contacts gauge.
5. Lower rear drum by rotating the rear drum adjustment handwheel and rotating the rear drum by hand until rear drum also lightly contacts gauge. Tighten the locking handle of the rear drum adjustment handwheel.
6. Reinstall abrasive strips and close dust cover.
7. Turn on the machine.
8. Press "0 SET" button to set the current position of the rear drum as "0".

There is a quick 0 setting plate (A, Figure 36) for rear drum located on the outboard support bracket. You can adjust this plate for future uses after you have established zero for the rear drum, as follows.

1. Swing the plate out by loosening the wing screw (B, Figure 36) to atop the sliding plate (C, Figure 36).
2. Tighten wing screw. Loosen hex nut (D, Figure 36) and adjust set screw to just slightly contacts with the sliding plate.

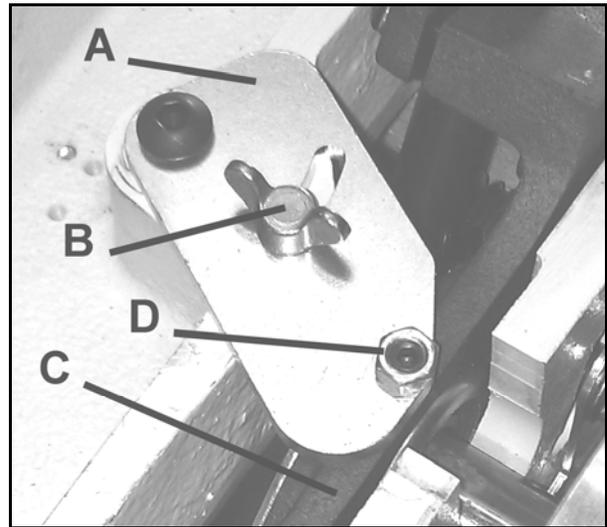


Figure 36

### Digital readout for sanding thickness

It displays the distance from drum to conveyor bed and represents the thickness of your board. There is an easy method of establishing zero for this function, as follows.

1. Turn on the machine.
2. Run a planed board through the sander at an appropriate cutting depth, then turn board over and sand other side. Do not move drums from current position.

3. Measure and record the thickness of the sanded board with calipers. This measurement of the finished board is the equivalent of the distance from abrasive strip to conveyor belt.
4. Press "0 SET" button to set the current position as "0".
5. Lower the drum with the equivalent of the distance you recorded. The "-" minus light as shown in Figure 35 will now be lit.
6. Reset the position to "0" by pressing the "0 SET" button again.

You also can reset the digital display to zero at any positions as your reference point. If this feature is used, you will have to follow the above procedures to reset the display to zero for measuring the thickness of your board.



Figure 35

## Selecting Drum Abrasives

It is important to select the proper grit of abrasives for the type of sanding being performed to achieve maximum sanding results. As with any sanding operation, first begin sanding with a coarser grit, depending on the roughness of the stock or the amount of stock to be removed. Then progressively work toward finer grits. The chart below shows the general uses for the various grits.

### Abrasive Selection Guide

Grit	Common Application
24	Abrasive planing, surfacing rough-sawn boards, maximum stock removal, glue removal.
36	Abrasive planing, surfacing rough-sawn boards, maximum stock removal, glue removal.
50	Surfacing and dimensioning boards, trueing warped boards
60	Surfacing and dimensioning boards, trueing warped boards.
80	Light dimensioning, removal of planer ripples.
100	Light surfacing, removal of planer ripples.
120	Light surfacing, minimal stock removal.
150	Finish sanding, minimal stock removal.
180	Finish sanding only, not for stock removal.
220	Finish sanding only, not for stock removal.



## Selecting abrasive grits

The amount of stock to be removed is a major consideration when choosing the grit grade to start with. Grits 24, 36, 50, and 60 are primarily designed for stock removal. Grits 24 and 36 will remove the most material in one pass, whether you are doing abrasive planing, cleaning up glued panels, or flattening stock. Grits from 100 through 220 are primarily finishing grits designed to remove the scratch pattern from the previous grit used. For best results, never skip more than one grit grade when progressing through a sanding sequence.

For fine work, such as furniture, try not to skip any grit grades during the sanding process. In general, premium quality abrasives will produce a better finish with a less noticeable scratch pattern.

Caution: Grits that are too fine can sometimes burnish the wood and leave a glossy surface which will not accept stains evenly. This will vary by type of wood. Oak, for example, is susceptible to burnishing because of its open pores.

## Selecting grit combinations

The chart shown in Figure 30 is a general guide to consult when selecting grits to use on dual drum machines and setting the rear drum. The first column suggests grits for the front drum with a corresponding grit to use on the rear drum. The second column suggests depth settings to try on the rear drum, depending on the grit used. The setting values are based on a "0" reading when the drum contacts the work piece but still can be rotated by hand.

Note that the grits and settings are starting suggestions only. Other combinations and settings are possible, depending on your particular circumstances. It is a good idea to keep records of the combinations you use and their results. Keeping these records handy will help you select the best combinations of grits for future work.

## Tips for Maximum Performance

The versatility designed into this dual drum sander allows it to be used for a wide variety of tasks that will boost the return on your investment. For example, its capabilities range from taking the place of a planer to thickness rough stock, to speeding up fine sanding work often done with slower, dust-generating hand sanders.

Learning how to use its adjustments and controls will allow you to fine-tune the machine for maximum results. The best results come from experimenting with different abrasive grits and machine settings to match the job at hand. Following is a list of useful tips which can help you improve performance of your sander.

### Multiple-piece sanding runs

When abrasive planing (or thickness sanding) a run of similar pieces that you want to have the same thickness, it is best to determine the thickness of the thinnest piece and process all pieces to that same thickness. Be aware that the sander will remove cups and crowns in the work piece; consider this when measuring and processing stock to the same thickness.

### Sanding multiple pieces at once

When sanding multiple pieces simultaneously, make sure to stagger (step) the pieces across the width of the conveyor belt. This provides better contact with the tension rollers. Try to only process multiple pieces of similar thickness. If there is a significant thickness difference, the thinner pieces can slip on the conveyor belt if they do not contact the tension rollers. Also note that pieces thicker than 20 mm should be longer than the minimum normally recommended to prevent tipping of the stock. Going to longer pieces is especially important when sanding boxes or other tall, short or light stock.

### Edge sanding on conveyor

When edge sanding, the sander will mimic the opposite edge of the stock which is laying on the conveyor belt. Because of this, it is important for the stock edge to have been ripped at the proper angle to the face before the sanding process. When edge sanding stock that is less than 20 mm wide, or more than 50mm high, it is good procedure to stack and clamp several pieces together to prevent them from slipping or tipping on the conveyor belt.

## Sanding imperfect stock

When sanding stock with a cup or crown, place the crown up. This will stabilize the stock to help prevent tipping or rocking during sanding. After the crown has been removed and the top is flat, turn the stock over and sand the opposite side. To avoid personal injury, take special care when sanding stock that is twisted, bowed, or otherwise varies in thickness from end to end. If possible, support such stock as it is being sanded to keep it from slipping or tipping. Use extra roller stands, help from another person, or hand pressure on the stock, to minimize potentially hazardous situations.

## Face frames & raised panel doors

It is very important to have the proper abrasive contact when doing this type of sanding. If the machine is set to take an excessive depth of cut, the result can be a gouge or dip as the drum goes from sanding the rails at full width to sanding just a small width on the stiles. To prevent this problem, for example, make sure that when using abrasives finer than 80 grit the drum is in contact with the wood but can still be spun by hand. If there is room, angling the stock on the conveyor belt can also help. Slowing the conveyor feed when coming to a rail in the stock can help prevent a dip or gouge. This allows the abrasive to work the wider width with less effort, and to achieve better consistency of the finished surface.

## Stock feeding angle

Some pieces, because of their dimensions, will need to be fed into the machine at a 90° angle (perpendicular to the drums). However, even a slight offset angle of the stock will provide for more effective stock removal. The optimum feeding angle for stock removal is about 60°. Angling the workpiece for stock removal provides other advantages, such as less loading of certain areas of the drums due to glue lines or mineral streaks in the stock, more even wear of abrasive strips, potentially faster feed rates, and lighter loads on the motor.

Note that to get the best final finish, however, the stock should be fed through the machine so it will be sanded in line with the grain of the wood on the final one or two passes.

## Cleaning abrasive strips

Regularly clean the abrasive strips on the drums with commercially available cleaning sticks. Cleaning sticks are available from your dealer. When cleaning, also brush the stick crumbs from the drum while it is still rotating. **Important:** Wear

eye protection, tight-fitting clothes and keep alert during this operation to avoid injury. Cloth-backed abrasives can be cleaned by soaking in paint thinner or mineral spirits for 20 minutes to 1 hour, then using a brush to remove any build-up or burns. Dry the abrasive strips completely before reuse.

## **Keeping the machine clean**

For best results, make cleaning the machine a regular shop procedure. Allowing excess build-up of dust and debris can adversely affect performance through the loading of the abrasives, slippage on the conveyor table, and/or the accumulation of material inside the drums which can throw off the center of balance. Leave the dust collector on when cleaning dust from the drums. Also brush the conveyor belt after cleaning operations. If not cleaned, the conveyor belt could allow stock to slip during sanding operations.

## **Maintenance**

**Before doing maintenance on the machine, disconnect it from the electrical supply by pulling out the plug! Failure to comply may cause serious injury.**

For best results, perform the following recommended procedures on a **monthly** basis:

- Lubricate conveyor bushings and check for wear.
- Lubricate all moving parts, such as threaded rods, washers, bushings and miter gears.
- Clean dust from the abrasive strip and the conveyor belt.
- Blow dust from motors and switches. Blow dust from inside of sanding drum.
- Check all set screws for tightness on parts such as couplings on conveyor, pulleys, gears for rear drum adjustment and miter gears on transfer rods.

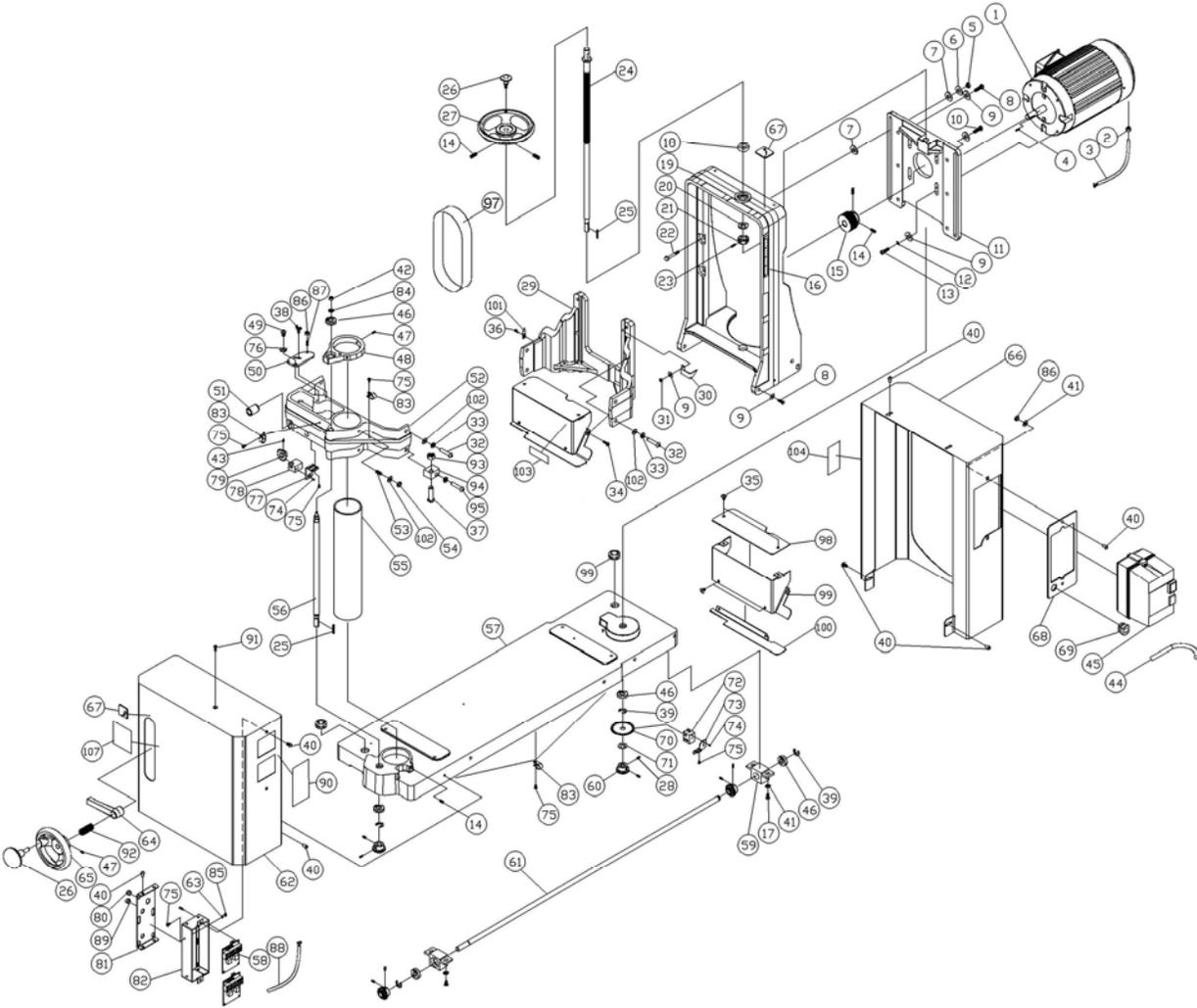
# Troubleshooting

<b>Troubleshooting guide: Motor</b>		
Problem	Possible Cause	Solution
Motors do not start.	1. Main power cord unplugged from receptacle.	Plug in primary power cord.
	2. Circuit fuse blown or circuit breaker tripped.	Replace fuse or reset breaker.
	3. Magnetic starter thermal overload protector tripped.	Reset after allowing cool. Check circuit and/or reduce load or slow feed rate.
Drum motor overloads.	1. Inadequate circuit.	Check electrical requirements.
	2. Machine overloaded.	Use slower feed rate and/or reduce depth of cut.
Conveyor motor oscillates.	1. Motor not properly aligned.	Loosen housing bolts, run motor and retighten bolts.
	2. Shaft collar worn.	Replace shaft collar.
	3. Drive roller bent.	Replace drive roller.
Drum motor or conveyor gear motor stalls.	1. Excessive depth of cut.	Reduce depth of cut; reduce feed rate.
<b>Troubleshooting guide: Machine</b>		
Abrasive strip comes off drum.	1. Slack in abrasive strip on drum.	Remove slack in strip.
	2. Abrasive improperly installed.	Read section on abrasive installation.
Abrasive strip loose.	1. Strip caught on inside edge of slot or on inboard side of drum.	Readjust strip end in slot and/or trim abrasive edge.
	2. Strip not cut properly.	Recut and install abrasive strip.
Abrasive loads up prematurely.	1. Excessive depth of cut.	Reduce depth of cut.
	2. Excessive feed rate.	Use slower feed rate.
	3. Inadequate dust collection.	Increase air flow at dust ports.
	4. Inadequate abrasive.	Use open-coat abrasive.
	5. Stock fed at 90° angle to drum.	Angle stock to avoid resin line build-up.
Conveyor rollers run intermittently.	1. Shaft coupling loose.	Align shaft flats of gear motor and drive roller, and tighten shaft coupling set screws.
Conveyor belt slips on drive roller.	1. Improper conveyor belt tension.	Adjust belt tension.
	2. Excessive depth of cut.	Reduce depth of cut; reduce feed rate.
Board slips on conveyor belt.	1. Excessive depth of cut.	Reduce depth of cut.
	2. Tension rollers too high.	Lower tension rollers.
	3. Excessive feed rate.	Reduce feed rate.
	4. Dirty or worn conveyor belt.	Clean or replace conveyor belt.
Conveyor belt tracks to one side, or oscillates from side to side.	1. Belt out of adjustment.	Readjust belt.
	2. Drive or driven conveyor belt rollers misaligned.	Readjust.
	3. Conveyor belt worn or defective.	Replace conveyor belt.
	4. Roller bushings elongated due to excessive wear.	Replace bushings.
Drum height adjustment works improperly.	1. Improper adjustment of height control.	Readjust height control.

Drum drive belt slips.	1. Improper poly-v belt tension.	Increase belt tension.
Knocking sound while running.	1. Poly-v belt worn.	Replace poly-v belt.
	2. Loose weight in drum.	Glue weight back in place.
	3. Pulleys wobbling or out of round.	Replace pulley.
	4. Set screws loose in pulleys.	Retighten or replace set screws.
	5. Abrasive fastener on drum loose (without abrasive strip in place).	Insert abrasive paper, or replace fastener.
	6. Drum or motor bearing worn.	Replace bearing.
<b>Troubleshooting guide: Operations</b>		
Rippled sanded surface (non-uniform ripples).	1. Uneven feed rate.	Check for these conditions and refer to previous section, Troubleshooting: Machine. 1. See section Selecting feed rates. 2. Conveyor belt slipping on drive roller. 3. Board slipping on conveyor belt. 4. Conveyor gear motor stalling. 5. Improper poly-v belt tension. 6. Set screw loose on shaft coupler between gear motor and conveyor. 7. Conveyor bushings dry; lubricate.
Rippled sanded surface (uniformly spaced ripples).	1. Excessive feed rate.	Reduce depth of cut or reduce feed rate.
	2. Excessive depth of cut.	Reduce depth of cut or reduce feed rate.
	3. Sander vibration.	Check for these conditions: 1. Loose bolts or bearing and pulley set screws; retighten. 2. Dirty drum; clean inside. 3. Excessive belt tension; reduce tension. 4. Worn poly-v belt; replace. 5. Warped driven pulley; replace.
Sniping of wood (gouging near end of board).	1. Tension rollers set too far down.	Reset tension rollers.
	2. Stock not supported properly during infeed or outfeed.	Support stock with roller stands, tables or benches.
	3. Conveyor drive or driven rollers higher than conveyor bed.	Readjust rollers.
Burning of wood.	1. Feed rate too slow.	Increase feed rate.
	2. Excessive depth of cut for grit used.	Reduce depth of cut or increase grit coarseness.
	3. Excess build-up on abrasive strips.	Reduce depth of cut; clean strips or replace.
	4. Abrasive is too fine.	Replace with abrasive of coarser grit.
	5. Abrasive strips overlapped.	Rewrap strip without overlap.
	6. Drum out of alignment.	Realign drum.
Gouging of wood.	1. Conveyor belt is too loose.	Adjust belt tension.
	2. Excessive depth of cut.	Reduce depth of cut.
	3. Wood slipping on conveyor due to lack of contact.	Use alternate feeding procedure.

Gouging of wood. (continued)	4. Abrasive is too fine.	Replace with coarser grit.
Unsanded ridge along length of piece (sandpaper appears clean).	1. Grit has been removed from backing.	Avoid this area of drum, or change abrasive strips.
Digital readout does not work.	1. Sensor or disc is dirty.	Clean sensor and disc.
	2. Sensor and disc misaligned.	Align sensor with the holes on disc.
	3. Circular board burnt out (without any digits displayed the LED display).	Replace with new board.

# Exploded View: Machine Body Assembly



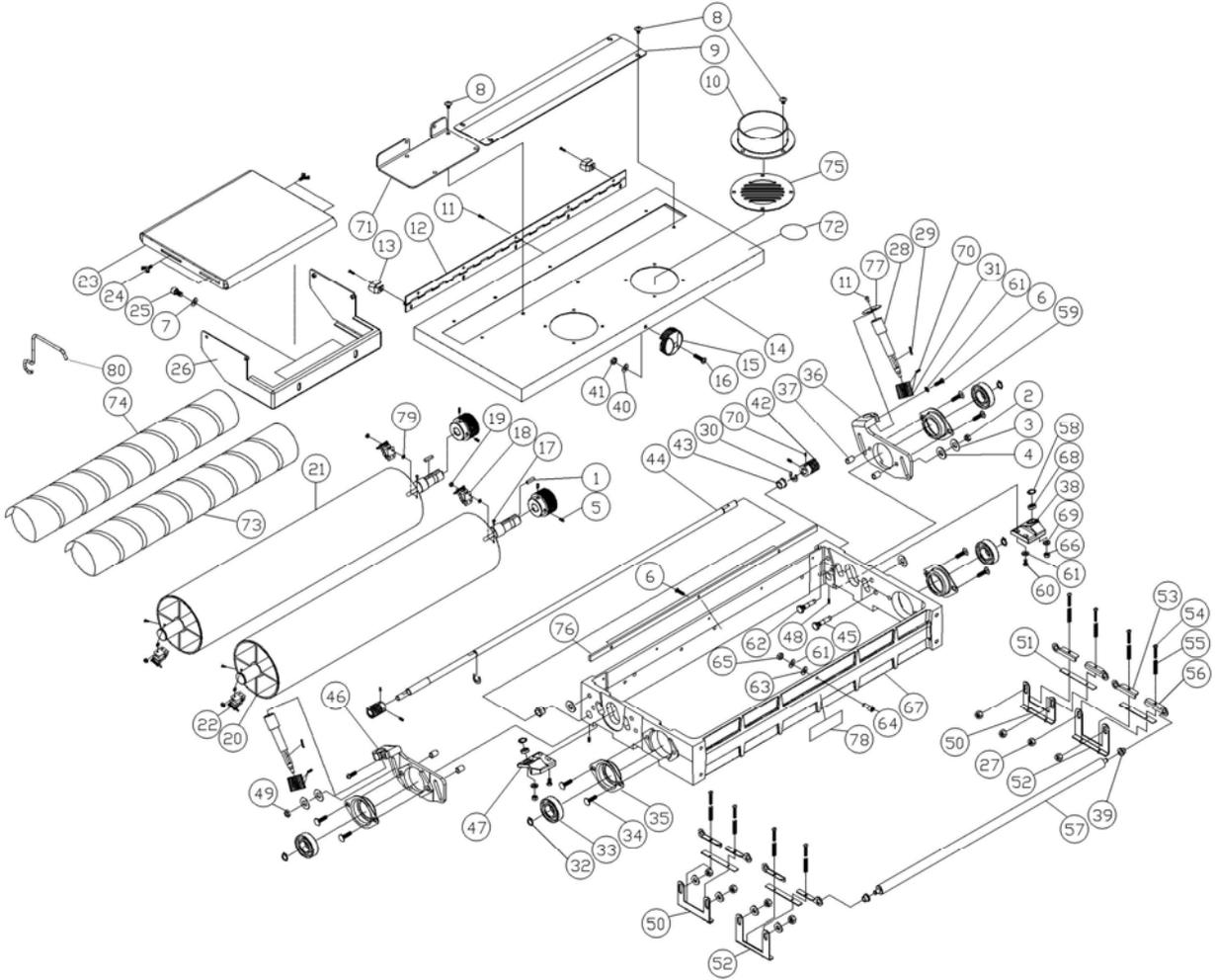
## Part List: Machine Body Assembly

Index No.	Part No.	Description	Size	Qty.
1	635DS-101	Motor	3HP, 1PH	1
	635DS-101A	Motor	5HP, 3PH	1
	635DS-101MF	Motor Fan (not shown)		1
	635DS-101MFC	Motor Fan Cover (not shown)		1
	635DS-101JB	Junction Box (not shown)		1
	635DS-101JBC	Junction Box Cover (not shown)		1
	635DS-101SC	Starting Capacitor (not shown)	3HP, 1Ph only	1
	635DS-101SCC	Starting Capacitor Cover (not shown)	3HP, 1Ph only	1
	635DS-101RC	Running Capacitor (not shown)	3HP, 1Ph only	1
	635DS-101RCC	Running Capacitor Cover (not shown)	3HP, 1Ph only	1
2	480BS-194	Strain Relief	PG-11	1
3	635DS-103	Motor Cord, Motor to Magnetic Switch	3HP, 1Ph	1
	635DS-103A	Main Cord, Motor to Magnetic Switch	5HP, 3Ph	1
4	635DS-104	Key	7x7x40	1
5	480BS-105	Nylon Insert Lock Nut	5/16"-24	4
6	480BS-106	Flat Washer	5/16"	4
7	480BS-107	Oilite Washer		8
8	480BS-128	Hex Cap Screw	3/8"-16x1-1/4"	9
9	480BS-129	Flat Washer	3/8"	15
10	635DS-110	Hex Cap Screw	3/8"-16x1-3/4"	1
11	635DS-111	Motor Plate		1
12	480BS-111	Lock Washer	3/8"	4
13	635DS-113	Socket Head Cap Screw	3/8-16x1-1/4"	4
14	635DS-114	Set Screw	5/16"-18x3/8"	5
15	635DS-115	Pulley		3
16	635DS-116	Label, Depth Gauge		1
17	635DS-117	Round Socket Head Cap Screw	1/4"-20x3/4"	4
18	480BS-125	Thrust Bearing	51103	1
19	635DS-119	Shroud		1
20	635DS-120	Nylon Washer	5/8"	1
21	635DS-121	Collar		1
22	480BS-127	Stud		4
23	635DS-123	Set Screw	5/16"-18x1/4"	2
24	635DS-124	Height Adjustment Screw		1
25	635DS-125	Key	3x3x20	2
26	480BS-120	Knob		2
27	635DS-127	Height Adjustment Handwheel		1
28	480BS-113	Set Screw	1/4"-20x1/4"	8
29	635DS-129	Inboard Support Bracket		1
30	635DS-130	Depth Pointer		1
31	480BS-509	Hex Nut	3/8"-16	1
32	635DS-132	Round Socket Head Cap Screw	5/16"-18x3/4"	7
33	480BS-167	Lock Washer	5/16"	8
34	635DS-134	Screw	M5x0.8x10	2
35	635DS-135	Screw, Phil Pan Head	1/4"-20x3/8"	4
36	635DS-136	Screw, Phil Pan Head	3/16"-24x3/8"	11
37	480DS-174	Bolt		1
38	635DS-138	Wing Screw	M5x0.8x10	1
39	635DS-139	E-Ring	E10	4
40	635DS-140	Screw, Phil Pan Head	1/4"-20x1/2"	14
41	635DS-141	Flat Washer	1/4"	6
42	480BS-169	Nylon Insert Lock Nut	1/4"-20	1
43	635DS-143	Set Screw	M4x0.7x4	1
44	635DS-144	Switch Cord, Switch to Control Box	3HP, 1Ph	1

.....	635DS-144A.....	Switch Cord, Switch to Control Box.....	5HP, 3Ph.....	1
45	635DS-145.....	Magnetic Switch.....	3HP, 1Ph.....	1
.....	635DS-145A.....	Magnetic Switch.....	5HP, 3Ph.....	1
46	635DS-146.....	Ball Bearing.....	R8ZZ.....	5
47	635DS-147.....	Set Screw.....	1/4"-20x3/8".....	5
48	635DS-148.....	Adjusting Screw Support.....	.....	1
49	635DS-149.....	Round Socket Head Cap Screw.....	5/16"-18x1/2".....	1
50	635DS-150.....	Setting Plate.....	.....	1
51	635DS-151.....	Bushing.....	.....	1
52	635DS-152.....	Outboard Support Bracket.....	.....	1
53	635DS-153.....	Set Screw.....	5/16"-18x3/4".....	2
54	480BS-245.....	Hex Nut.....	5/16"-18.....	2
55	635DS-155.....	Column Tube.....	.....	1
56	635DS-156.....	Outboard Height Adjusting Screw.....	.....	1
57	635DS-157.....	Cast Base.....	.....	1
58	635DS-158.....	Digital Board.....	.....	2
59	635DS-159.....	Connecting Seat.....	.....	2
60	635DS-160.....	Miter Gear.....	.....	4
61	635DS-161.....	Connecting Rod.....	.....	1
62	635DS-162.....	Left End Cover.....	.....	1
63	635DS-163.....	Washer, Lock-Int. Tooth.....	M4.....	1
64	635DS-164.....	Locking Handle.....	.....	1
65	635DS-165.....	Rear Drum Handwheel.....	.....	1
66	635DS-166.....	Right End Cover.....	.....	1
67	635DS-167.....	Height Direction Label.....	.....	2
68	635DS-168.....	Switch Plate.....	.....	1
69	480BS-194.....	Strain Relief, Switch Cord.....	PG-11.....	1
70	635DS-170.....	Disc.....	.....	1
71	635DS-171.....	Wave Washer.....	5/8".....	1
72	635DS-172.....	Sensor, Drum Head Height.....	.....	1
73	635DS-173.....	Sensor Bracket, Drum Head Height.....	.....	1
74	635DS-174.....	Self-Tapping Screw.....	.....	4
75	635DS-175.....	Screw.....	M4x0.7x10.....	10
76	635DS-176.....	Wave Washer.....	5/16".....	1
77	635DS-177.....	Sensor Bracket, Rear Drum.....	.....	1
78	635DS-178.....	Sensor, Rear Drum.....	.....	1
79	635DS-179.....	Disc.....	.....	1
80	635DS-180.....	Strain Relief, Sensor.....	SB5M-1.....	2
81	635DS-181.....	DRO Cover.....	.....	1
82	635DS-182.....	DRO Housing.....	.....	1
83	635DS-183.....	Cord Holder.....	.....	5
84	480BS-145.....	Flat Washer.....	1/4".....	1
85	480DS-178.....	Hex Nut.....	M4x0.7.....	1
86	480BS-231.....	Hex Nut.....	1/4"-20.....	3
87	635DS-187.....	Set Screw.....	1/4"-20x1/2".....	1
88	635DS-188.....	DRO Cord.....	.....	1
89	480BS-244.....	Strain Relief, DRO Cord.....	6N-4.....	1
90	635DS-190.....	DRO Label.....	.....	1
91	635DS-191.....	Phillips Flat Head Screw.....	M6x1x30.....	1
92	635DS-192.....	Spring.....	.....	1
93	480DS-173.....	Hex Nut.....	M12x1.75.....	1
94	480DS-172.....	Block.....	.....	1
95	635DS-195.....	Round Socket Head Cap Screw.....	5/16"-18x1-3/4".....	1
96	635DS-196.....	Rubber Bushing.....	.....	2
97	635DS-197.....	Poly-V Belt.....	.....	1
98	635DS-198.....	Upper Pulley Cover.....	.....	1
99	635DS-199.....	Pulley Cover Body.....	.....	1
100	635DS-1100.....	Lower Pulley Cover.....	.....	1

101	.....635DS-1101	.....Pointer	.....	1
102	.....480BS-147	.....Flat Washer	..... 5/16"	9
103	.....480BS-199	.....Rotating Direction Label	.....	1
104	.....635DS-1104	.....Grit Combinations Label	.....	2

# Exploded View: Drum Head Assembly

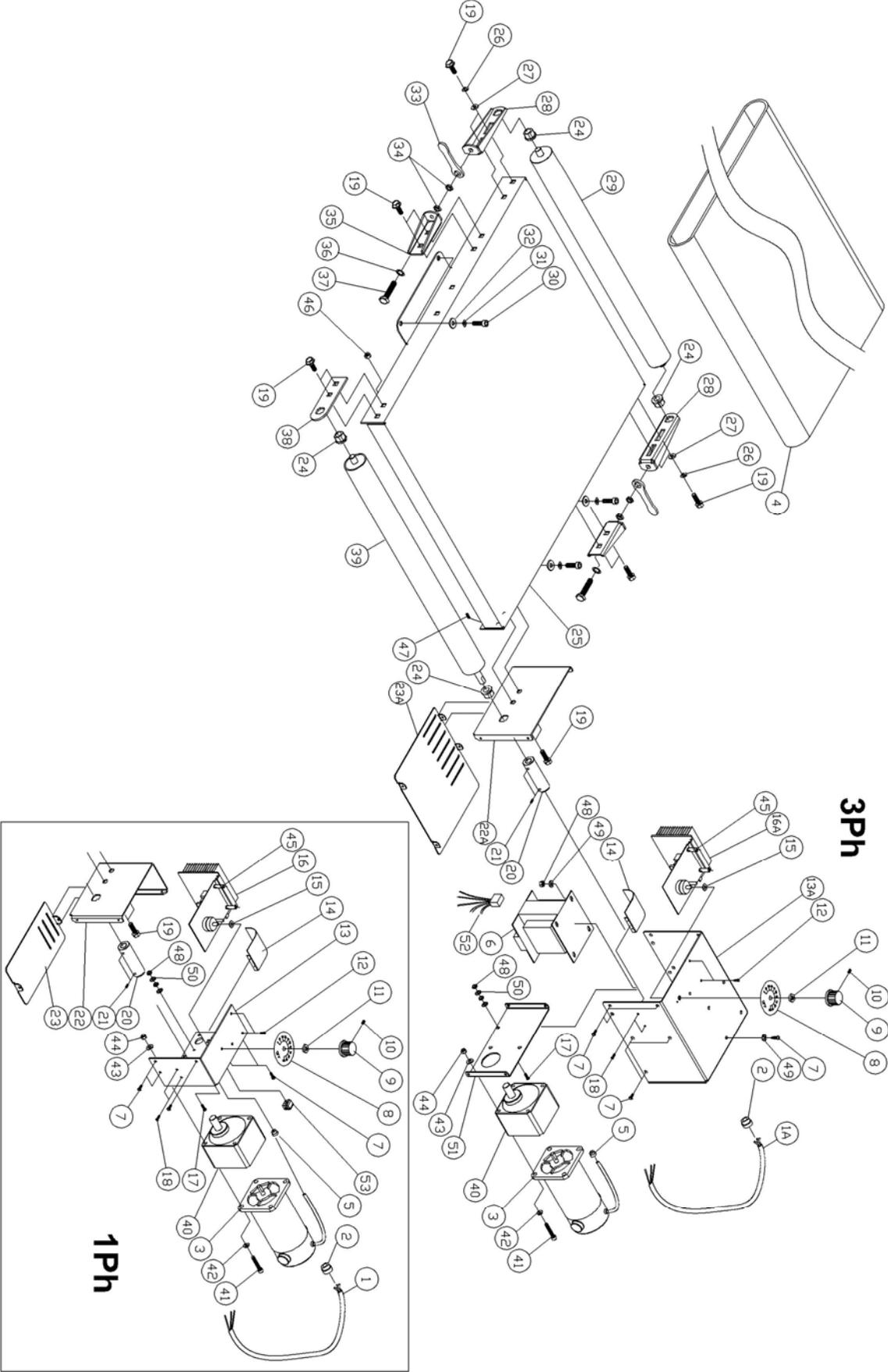


## Part List: Drum Head Assembly

Index No.	Part No.	Description	Size	Qty.
1	635DS-104	Key	7x7x40	2
2	480BS-105	Nylon Insert Lock Nut	5/16"-24	4
3	480BS-106	Flat Washer	5/16"	8
4	480BS-107	Oilite Washer		16
5	635DS-114	Set Screw	5/16"-18x3/8"	4
6	635DS-117	Round Socket Head Cap Screw	1/4"-20x3/4"	5
7	635DS-207	Flat Washer	5/16"	2
8	635DS-135	Screw, Phil Pan Head	1/4"-20x3/8"	16
9	635DS-209	Cover		1
10	635DS-210	Dust Port		2
11	635DS-136	Screw, Phil Pan Head	#10-24x3/8"	11
12	635DS-212	Hinge		1
13	635DS-213	Stop Plate		2
14	635DS-214	Dust Cover		1
15	635DS-215	Knob		1
16	635DS-216	Screw	1/4"-20x1"	1
17	480DS-136	Phillips Flat Head Screw	M3x10	4
18	480DS-139	Inboard Abrasive Fastener		2
19	480DS-138	Nylon Insert Lock Nut	M3x0.5	4
20	635DS-220	Front Drum		1
21	635DS-221	Rear Drum		1
22	480DS-140	Outboard Abrasive Fastener		2
23	635DS-223	Extension Table		1
24	635DS-138	Wing Screw	M5x0.8x10	4
25	635DS-225	Socket Head Cap Screw	5/16"-18x1/2"	2
26	635DS-226	Extension Table Bracket		1
27	480BS-171	Hex Nut w/ Washer	M8x1.25	8
28	635DS-157	Threaded Rod		2
29	635DS-229	Key	4x4x22	2
30	635DS-139	E-Ring	E10	2
31	635DS-231	Worm Gear		2
32	480DS-143	C-Ring	S25	4
33	480DS-142	Ball Bearing	6205ZZ	4
34	635DS-234	Carriage Bolt	M8x25	4
35	480DS-148	Bearing Housing		4
36	635DS-236	Right Sliding Bracket		1
37	635DS-237	Bushing		4
38	635DS-238	Right Supporting Bracket		1
39	480BS-154	Oilite Bushing		8
40	635DS-141	Flat Washer	1/4"	1
41	480BS-169	Nylon Insert Lock Nut	1/4"-20	1
42	635DS-242	Pinion		2
43	635DS-243	Eccentric Oilite Bushing		2
44	635DS-244	Connecting Rod		1
45	635DS-245	Stud		4
46	635DS-246	Left Sliding Bracket		1
47	635DS-247	Left Supporting Bracket		1
48	635DS-147	Set Screw	1/4"-20x3/8"	2
49	635DS-249	Nylon Insert Lock Nut	5/16"-24	4
50	635DS-250	Tension Roller Bracket, Rear Drum		2
51	480BS-159	Rubber Pad		4
52	635DS-252	Tension Roller Bracket, Front Drum		2
53	480BS-158	Left Tension Roller Suspension Bracket		4
54	480BS-156	Screw	#8-32x1"	8

55	480BS-157	Spring, Tension Roller		8
56	480BS-155	Right Tension Roller Suspension Bracket		4
57	635DS-257	Tension Roller		4
58	635DS-258	C-Ring	R18	2
59	635DS-259	Carriage Bolt	M8x40	4
60	480BS-146	Round Socket Head Cap Screw	1/4"-20x1"	4
61	635DS-261	Lock Washer	1/4"	7
62	635DS-262	Stud		4
63	480BS-145	Flat Washer	1/4"	1
64	635DS-264	Stud		1
65	480BS-186	Hex Nut	1/4"-20	1
66	635DS-266	Nylon Insert Lock Nut	M5x0.8	2
67	635DS-267	Drum Carriage		1
68	635DS-268	Bearing	688ZZ	2
69	480BS-188	Flat Washer	M5	2
70	635DS-270	Set Screw	1/4"-20x3/16"	8
71	635DS-271	Fence		1
72	480BS-198	Warning Label, Power		1
73	635DS-273	Abrasive Strip	#80	1
74	635DS-274	Abrasive Strip	#100	1
75	635DS-275	Plate, Dust Port		2
76	635DS-276	Stop Plate		1
77	635DS-277	Rear Drum Height Scale		1
78	480BS-195	Warning Label, Finger		2
79	480DS-134	Lock Washer	M3	4
80	635DS-280	Fastener Tool		1

# Exploded View: Conveyor and Motor Assembly

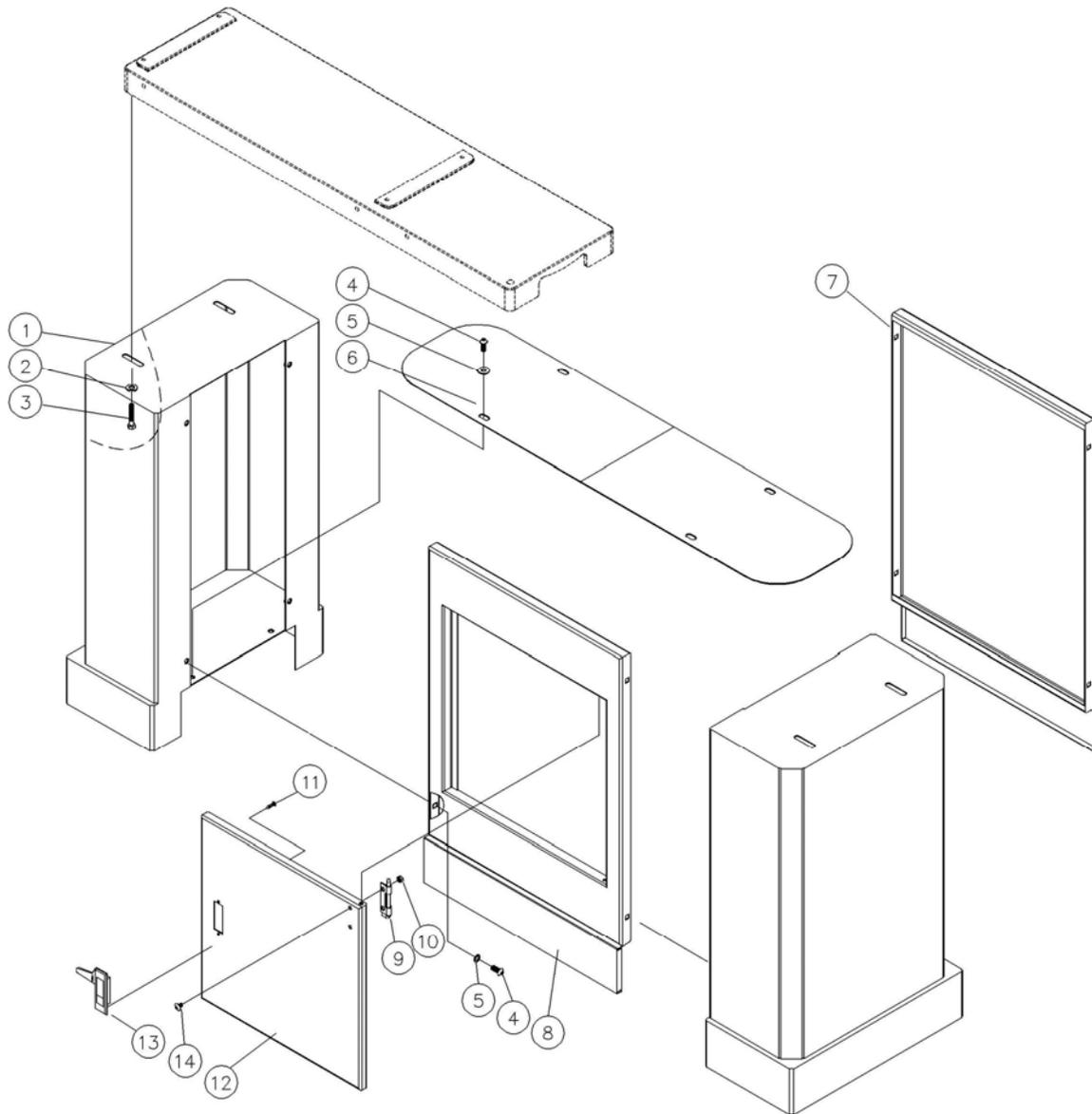


# Part List: Conveyor and Motor Assembly

Index No.	Part No.	Description	Size	Qty.
1	635DS-301	Power Cord	3HP, 1Ph Model	1
1A	635DS-301A	Power Cord	5HP, 3Ph Model	1
2	480BS-194	Strain Relief, Power Cord	PG-11	2
3	635DS-303	Gear Motor	180VDC	1
4	635DS-304	Rubber Conveyor Belt		1
5	480BS-249	Strain Relief, Gear Motor	PG-9	2
6	635DS-306	Transformer	5HP, 3Ph only	1
7	480BS-217	Hex Head-Slotted Screw	#10-32x3/8"	16
8	480BS-208	Speed Adjustment Label		1
9	480BS-207	Knob		1
10	480BS-243	Slotted Set Screw	#8-36x5/16"	1
11	480BS-242	Hex Nut	5/16"-24	1
12	480BS-212	Pan Head Self-Tapping Screw	5/32"x1/2"	2
13	635DS-313	Control Box	3HP, 1Ph Model	1
13A	635DS-313A	Control Box	5HP, 3Ph Model	1
14	635DS-314	Wiring Guard		1
15	480BS-241	Flat Washer	5/16"	1
16	635DS-316	Controller	3HP, 1Ph Model	1
16A	635DS-316A	Controller	5HP, 3Ph Model	1
17	635DS-317	Screw	#10-32x3/8"	1
18	635DS-318	Screw	#6-32x1/2"	2
19	635DS-319	Hex Cap Screw	3/8"-16x3/4"	12
20	635DS-320	Shaft Coupler		1
21	635DS-321	Set Screw	5/16"-18x3/8"	2
22	635DS-322	Bracket, Base- Controller	3HP, 1Ph Model	1
22A	635DS-322A	Bracket, Base- Controller	5HP, 3Ph Model	1
23	635DS-323	Cover, Base-Control Housing	3HP, 1Ph Model	1
23A	635DS-323A	Cover, Base-Control Housing	5HP, 3Ph Model	1
24	635DS-324	Oilite Bushing		4
25	635DS-325	Conveyor Bed		1
26	635DS-326	Wave Washer	3/8"	4
27	635DS-327	Flat Washer	3/8"	4
28	635DS-328	Take Up-Slide Bracket		2
29	635DS-329	Driven Roller		1
30	635DS-330	Socket Head Cap Screw Socket	5/16"-18x3/4"	4
31	480BS-167	Lock Washer	5/16"	4
32	480BS-241	Flat Washer	5/16"	4
33	635DS-333	Wrench		2
34	480BS-245	Hex Nut	5/16"-18	4
35	635DS-335	Take Up-Base Bracket		2
36	635DS-336	Lock-Int Tooth Washer	5/16"	2
37	635DS-337	Hex Cap Screw	5/16-18x3"	2
38	635DS-338	Drive Roller Support Bracket		2
39	635DS-339	Drive Roller		1
40	635DS-340	Gearbox		1
41	635DS-341	Socket Head Cap Screw	M6x1.0x85	4
42	635DS-342	Lock Washer	M6	4
43	635DS-343	Flat Washer	M6	4
44	635DS-344	Hex Nut	M6	4
45	635DS-345	Plastic Support Post		2
46	635DS-346	Nylon Insert Lock Nut	3/8"-16	12
47	635DS-321	Set Screw	5/16"-18x3/8"	2
48	480BS-216	Hex Nut	#10-32	6
49	480BS-188	Flat Washer	M5	8

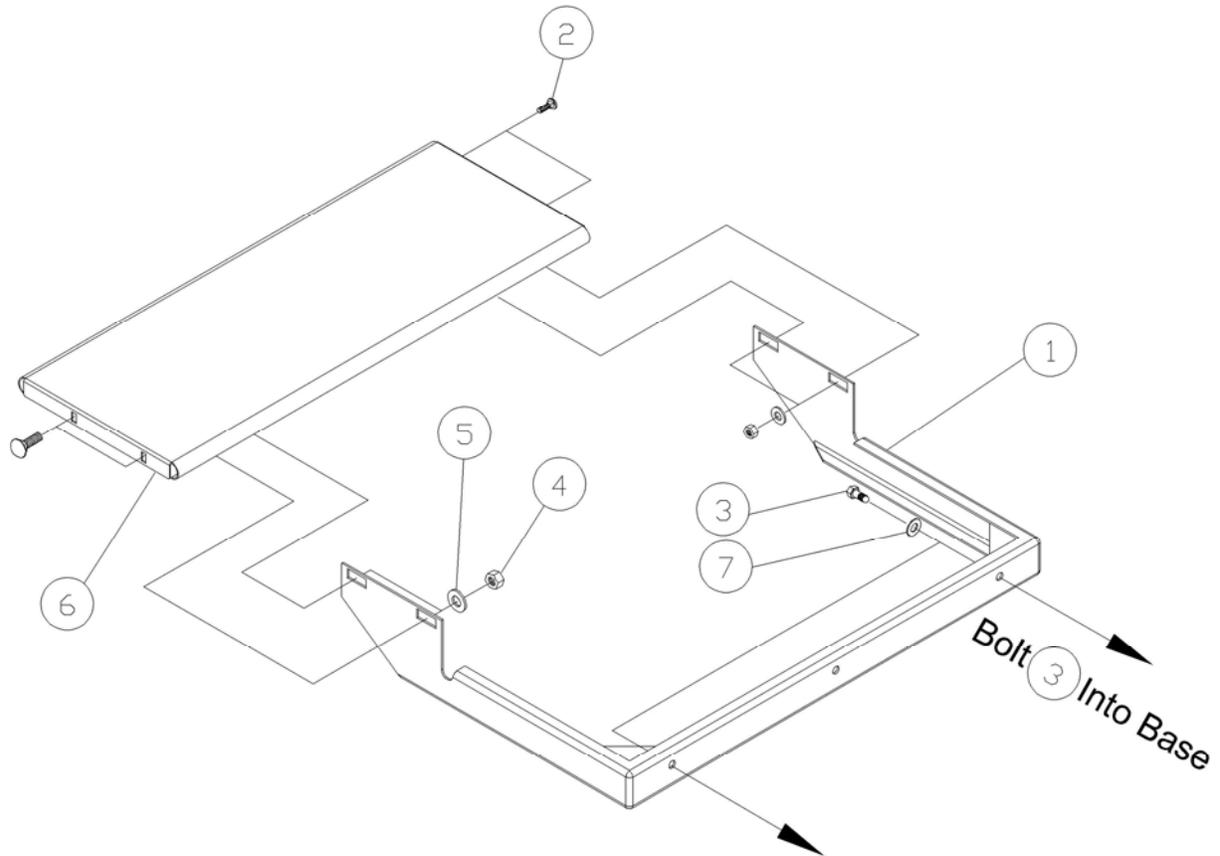
50	635DS-350	Lock-Int. Tooth Washer	M5	2
51	635DS-351	Gear Motor Support Bracket	5HP, 3Ph only	1
52	635DS-352	EMC Filter		1
53	480BS-213	Receptacle	3HP, 1Ph only	1

# Exploded View and Parts List: Closed Stand Assembly



Index No.	Part No.	Description	Size	Qty.
1	635DS-401	Stand		2
2	480BS-129	Flat Washer	3/8"	4
3	480BS-177	Hex Cap Screw	3/8"-16x3/4"	4
4	480BS-304	Hex Cap Screw	5/16"-18x1/2"	12
5	480BS-241	Flat Washer	5/16"	12
6	635DS-406	Bottom Plate		1
7	635DS-407	Rear Panel		1
8	635DS-408	Front Panel		1
9	480BS-309	Door Hinge		1
10	480BS-231	Hex Nut	1/4"-20	2
11	480BS-311	Screw	M3x4	2
12	480BS-312	Door		1
13	480BS-313	Latch		1
14	480BS-314	Screw	1/4"-20x1/2"	2

# Exploded View and Parts List: In/ Outfeed Tables Assembly (Optional)



Index No.	Part No.	Description	Size	Qty.
1	635DS-501	Base Bracket		2
2	480BS-402	Carriage Bolt	1/4"-20x3/4"	8
3	480BS-403	Hex Cap Screw	3/8"-16x1"	4
4	480BS-231	Hex Nut	1/4"-20	8
5	635DS-141	Flat Washer	1/4"	8
6	635DS-506	Table		2
7	480BS-129	Flat Washer	3/8"	4





