CASTLE INC

Owner's Manual

TSM-31/TSM-35 Swing Front Heavy Duty Pocket Cutter

Serial numbers 68270 and above

Table of Contents

1 INTRODUCTION 4

2 MACHINE SAFETY 5

2.1 SAFETY RULES 5
2.2 INVENTORY 6
2.3 MACHINE REQUIREMENTS 7

3 SETTING UP YOUR TSM-31/TSM-35 8

4 OPERATING INSTRUCTIONS 10

5 MACHINE ADJUSTMENTS 11

5.1 WEB ADJUSTMENT 11
5.2 POCKET DEPTH ADJUSTMENT 12
5.3 PILOT DRILL DEPTH ADJUSTMENT 13
5.4 PILOT DRILL HEIGHT ADJUSTMENT 14
5.5 LEFT AND RIGHT PILOT DRILL ADJUSTMENT 14
5.6 LEFT AND RIGHT ROUTER ADJUSTMENT 16
5.7 ROUTER FEED SPEED 17
5.8 DRILL FEED SPEED 18
5.9 DRILL DELAY ADJUSTMENT 19
5.10 DRILL STOP SWITCH 19
5.11 ROUTER STOP SWITCH 21

6 DEFINITION AND DESCRIPTION OF PARTS 23

7 SERVICE AND MAINTENANCE 29

7.1 GENERAL 29
7.2 MOTORS AND BITS 30
7.3 SWING FRONT ACCESS: HOW TO OPEN YOUR MACHINE 31
7.4 SERIAL NUMBER LOG 32

9. WARRANTY INFORMATION 33

1 Introduction

Thank you for making the Castle TSM-31/TSM-35 the latest addition to your shop. Since 1985 our goal has been to manufacture and develop machines that make cabinetmaking and casework easier, faster and more profitable for the woodworker. This machine represents our commitment to your productivity. Castle machines are made in Petaluma, California and are manufactured to the highest standards using local vendors wherever possible.

This instruction manual is intended for use by anyone setting up or servicing this machine. It should be kept available for immediate reference so that all operations can be performed with maximum efficiency and safety.

Your TSM-31/TSM-35 will pocket any material you would normally rout. It is designed for material from 1 ½" to ½". Use of materials thinner than ½" is not recommended. Every TSM-31/TSM-35 machine is factory adjusted and tested with sample material. If you should find a small amount of saw dust in the bottom of your TSM-31/TSM-35, please don't be alarmed.

Note: Do not attempt to perform maintenance or operate this machine until you have read and understand the information contained in this manual.

2 Machine Safety

This machine was carefully prepared for shipment at our factory. Upon receipt of the machine, inspect for shipping damage. Report any damage **IMMEDIATELY** to the freight company, your Castle dealer and to Castle, Inc. **DO NOT** attempt to operate the machine if you observe any physical damage. Please contact Castle, Inc. at 800-282-8338 for instructions.

2.1 Safety Rules

The Castle Model TSM-31/TSM-35 Pocket Machine was designed with operator safety as a priority, which is why Castle highly recommends the following:

1. Always use a qualified electrician in hard wiring your machine to the required **Single phase (TSM-31 230VAC) or 3-phase voltage (TSM-35 230VAC or 460VAC)** electrical power.
2. Do not electrically wire machine until ready to operate.
3. Always wear eye protection when operating or servicing mechanical equipment.
4. Always wear hearing protection when the machine is in operation.
5. Always check for proper tooling tightness prior to use.
6. Do not at any time put hand under the clamp guard, in the path of router bit or drill bit.
7. Familiarize yourself with the clamping action, routing and drilling functions of the machine before electrically wiring the machine to the electrical power supply.
8. **Double check the tag on the electrical box of your machine to be sure it reads the proper Single phase (TSM-31 230VAC) or 3-phase voltage (TSM-35 230VAC or 460VAC) that you are using with your machine.**
9. NEVER ALLOW MACHINE TO GET WET OR BE USED IN A WET ENVIRONMENT.

2.2 Inventory

CASTLE TSM-31/TSM-35 SWING FRONT HEAFY DUTY POCKET CUTTER HARDWARE PACK		
Part #	**Part Description**	**Qty**
S90011	TSM-31/TSM-35 Operator Manual with Warranty Activation Card	1
T30465	Collet Wrench 9/16” for Sioux Drill	1
T30466	Collet Wrench 11/16” for Sioux Drill	1
C35617	Bosch Collet Wrench Set	1
G00234	Bit Gauge	1
S00350	Air Tool Oil for Sioux Drill	1
M00400	Castle Front Door, Black w/ Logo	1
D00720	Female Hinge	2
H00141	Door Handle	1
G00101	Door Spring Clip	1
F14125	¼ - 20 x ¾ Bolt	1

2.3 Machine Requirements

Electricity: **TSM-31** Single Phase 230VAC
TSM-35 3-Phase 230VAC **OR** 460VAC

Warning: **See voltage tag on the machine or wiring diagram inside the voltage box to confirm the electrical requirements for your machine before wiring and running your machine.**

Caution: Always have a qualified electrician do any machine wiring.

Shop Air Supply: 80 PSI minimum, 150 PSI maximum

Dust Collection: The TSM-31/TSM-35 relies on motor cooling from dust collection. A 4" dust collection tube is located in the rear of the machine.

3 Setting Up Your TSM-31/TSM-35

Caution: Always use eye protection when operating power equipment.

1. Remove the machine from the pallet, position and secure your machine in its chosen location.

Note: Holes in the base are for securing the machine to the floor. In some operations the machine should be elevated for better ergonomic operation but it still must be secured in place so that it cannot rock or tip.

2. Remove the brass elbow from the black urethane hose by pushing the floating ring towards the elbow and pulling the hose at the same time.

3. Thread the elbow into the top of the Clamp Cylinder. It is pre-primed and self-sealing. Point it toward the back of the machine and firmly push the hose back into the fitting.

Supply compressed air to the Regulator/ Lubricator Assembly at the front of the machine. The regulator is factory set at approximately 85 PSI. (Check the gauge to confirm this setting.)

Castle suggests that a minimum of 3/8 inch air line should be used to operate this machine.

Quick disconnects are not recommended as they generally restrict the air flow (volume).

Note: Inadequate air supply may cause the machine to malfunction.

4. Remove Lubricator bowl and fill to Maximum Oil Level line with proper oil (supplied), then replace full bowl.

5. Electrically hard wire to correct voltage as tagged on the machine. The voltage tag attached to the gray voltage box will show the voltage. **Single phase (TSM-31 230VAC) or 3-phase voltage (TSM-35 230VAC or 460VAC)**

Caution: Use only a qualified electrician to hard wire your machine.

Note: The machine will not start if the air is off and/or the Case Top is in the lifted position.

6. Connect a dust collection system to the machine. Collection systems clear particles of dust as well as venting heat away from your machine motor.

7. In the event that you are using your TSM-31/TSM-35 for face frames, we have provided adjustable stops for faster, more efficient pocket cutting.

8. Check the rotation direction of the router before operation. The bit should turn counter clockwise. To check direction, start machine by pressing the green Start Button on the gray electrical box at the front of the machine. Press red Stop Button and look into the slot where the bit comes up to make the pocket. As the machine slows to a stop, notice the direction.

Warning: Do not open the lid to check the direction as it will continue to turn for several seconds after the motor has been shut off.

4 Operating Instructions

Caution: Always use eye and hearing protection when operating machinery.

1. With the air on and the Case Top down, press the green Start Button. Note: the red Stop Button must be in the "out" position before the Start Button will activate your machine. If the red button is pushed in, simply turn the button ¼ turn counter clockwise to release.

2. Place stock to be pocketed under the yellow Clamp Guard.

3. To cut a pocket, push in the Safety Buttons under the Clamp Guard with the material to be pocketed and depress the Foot Pedal to activate the machine.

4. The cycle start up must be achieved by both the Foot Pedal AND the Safety Buttons. The Foot Pedal does not have to be released to repeat the machine cycle but the Foot Pedal must be depressed to operate the machine.

5. The machine will extend the Hold-down Clamp, cut the pocket, drill the pilot hole, and then release the Hold-down Clamp when the process cycle is complete.

6. Remove the stock and inspect the pocket. If the pocket and pilot hole look correct, you are ready to proceed with production.

7. A typical machine cycle will take from 1 ½ to 2 seconds to complete if the machine is functioning properly.

8. If the machine fails to cycle properly, call Castle at **(800) 282-8338**.

5 Machine Adjustments

Your TSM-31/TSM-35 comes factory-adjusted to handle typical pocket-hole needs. Some additional adjustment may be necessary after you have satisfied the air and electrical requirements explained above. Your pockets are adjusted at the factory for a 1 1/4" length screw.

Note: For your safety, before making any adjustments please make sure that the red Stop Button is in the OFF position and both power and air are disconnected.

5.1 Web Adjustment

In the event that you wish to experiment with different length screws for different applications, your TSM-31/TSM-35 has what is called a Web Adjustment. This adjusts the distance from the front of the pocket to the edge of the material, as shown below.

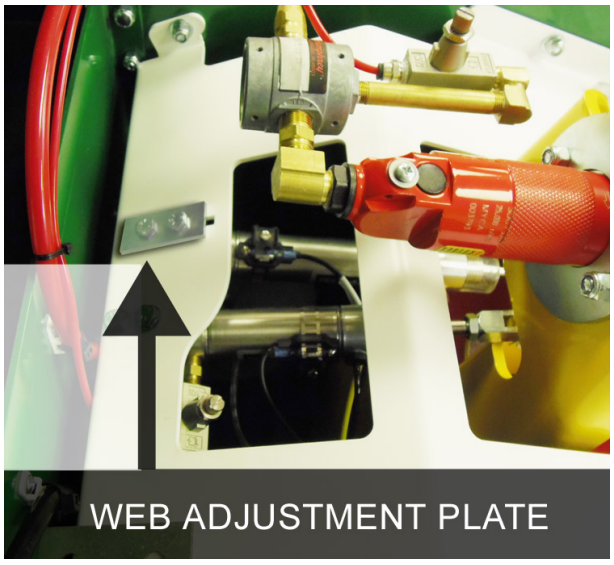


Fig 1

1. **Turn off Air to the machine** and lift the Case Top to its fully opened position.
2. Locate the $^{7}/_{8}$" x 2" plate mounted on the back of the white pallet, to the right of center, behind the air drill motor.

3. Use a $^{7}/_{16}$" wrench to loosen both of the ¼" hex head cap screws on the $^{7}/_{8}$" x 2" plate.

Note: Do not loosen more than ¾ of a turn.

4. Once both bolts are loose the plate can move forward and backward. By moving the plate toward the rear of your machine, your pocket will adjust for a shorter distance from the edge of your material. Moving the plate toward the front of the machine will adjust for a longer distance from the edge of your material.

5. This is a trial and error method and should be moved only a small amount at a time.

6. **After making each adjustment, <u>snug</u> down the ¼" hex head cap screws with your $^{7}/_{16}$" wrench each time.**

Be sure to close the Case Top and turn on air before trying to start your machine. The machine will not start with the Case Top open or with the air off.

5.2 Pocket Depth Adjustment

In the event that you wish to adjust the depth of your pocket for shorter or thicker material, your machine has a Pocket Depth Adjustment.

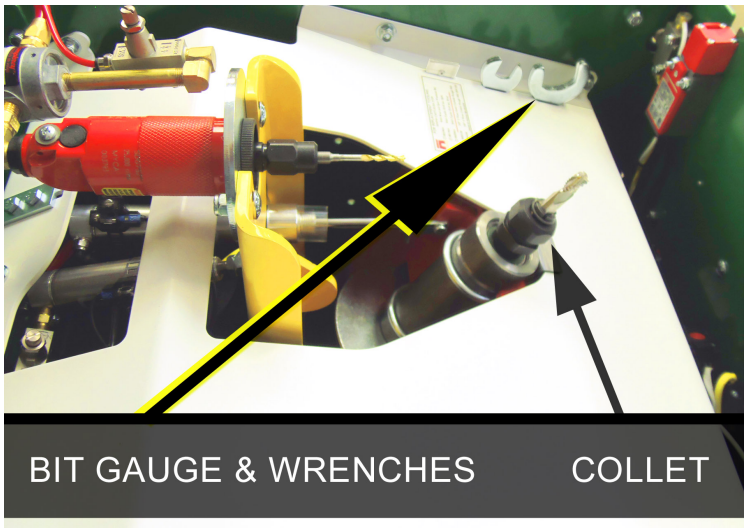


Fig 2

1. **Turn off Air and Electrical power** to your machine and raise the Case Top to its fully open position.

2. With wrenches provided, loosen the collet and move the router bit up or down slightly in the collet. Re-tighten the collet before testing.

3. An aluminum Bit Gauge has been provided so that you may record the depth that is most suitable for your purposes. When optimum height has been achieved, set the edge of gauge on top of the router collet and score a line at the top of the bit near the mark “R” for router bit.

4. Tighten the collet, replace the wrenches and Bit Gauge in the proper slots in the white pallet; and close the Case Top carefully so as not to pinch your hand or fingers. The machine will not start while the Case Top is open.

5.3 Pilot Drill Depth Adjustment

If you change the web of your pocket, (the distance from the pocket to the edge of the material) you may need to adjust how far the pilot hole is drilled into the material to ensure you drill all the way into the pocket.

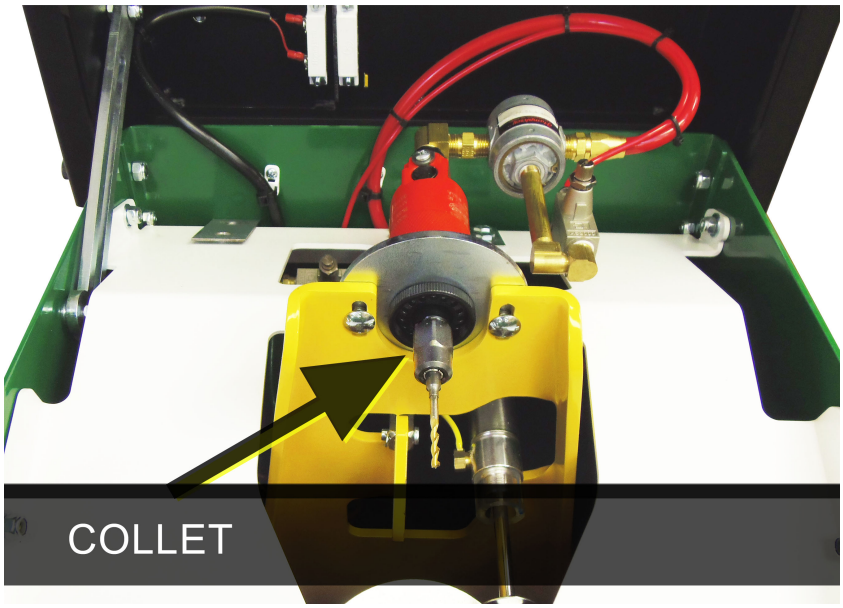


Fig 3

1. **Turn off Air and Electrical power** to your machine and raise the Case Top to its fully opened position.

2. With the wrenches provided in the top of the pallet, loosen the collet on the drill.

3. After the collet has been loosened, move the drill bit in or out of the collet to adjust the depth of the pilot hole. Pull the bit out of the collet for a deeper pilot hole and push the drill bit in for a shallower pilot hole. The drill should just break through into the routed pocket.

4. Once you have found the proper adjustment for your application, place the bottom of the aluminum Bit Gauge against the top of the drill collet.

5. Use a scoring tool to mark a line of reference across the aluminum gauge.

5.4 Pilot Drill Height Adjustment

In some applications you may want to adjust where the pilot hole breaks through into the pocket. Castle recommends $^{5}/_{16}$ of an inch from the surface of the material to the center of the pilot hole, but, for example, if you are cutting pockets in ½ inch material, ¼ of an inch from the bottom of the pocket is a better distance.

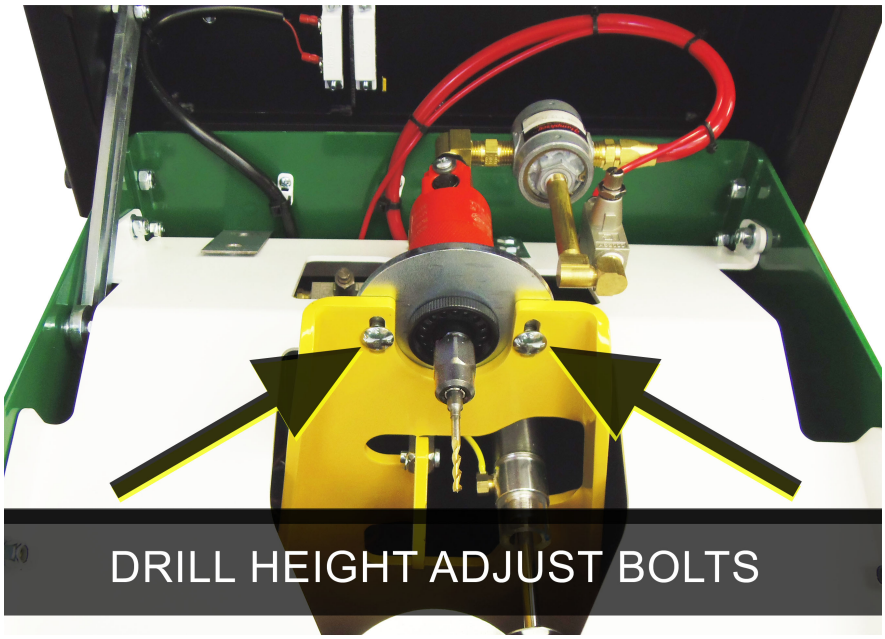


Fig 4

1. **Turn off Electrical power to your machine** and raise the Case Top to its fully opened position.

2. Use a $^{7}/_{16}$" wrench to loosen the carriage bolts on the Drill Mounting Plate.

3. Once the bolts are loose you can raise or lower the Drill Mounting Plate (raising the mounting plate will put the pilot hole deeper into the pocket, while lowering the mounting plate will bring the pilot hole closer to the top of the pocket.)

4. Once you have moved the Drill Mounting Plate tighten the carriage bolts, close the Case Top and test to see if the pilot hole is set to the appropriate height for your particular application.

5.5 Left and Right Pilot Drill Adjustment

If you ever find that the pilot hole has come out of adjustment and is offset to the left or right in the pocket, your TSM-31/TSM-35 has a Left and Right Pilot Drill Adjustment. The ideal

adjustment for the pilot bit is the center of the hole provided in the case top. The following are instructions for adjusting where the centered position is.

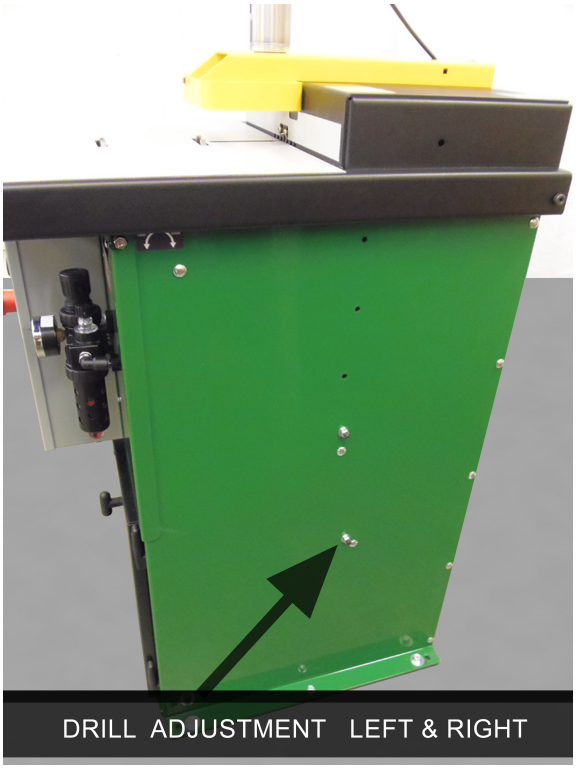


Fig 5

1. **Turn off Air and Electrical power to the machine** and raise Case Top to its fully opened position.

2. There are two Jacking Screws on each side of the machine. The bottom Jacking Screws are for the drill carriage.

3. Use a $^{7}/_{16}$" wrench to loosen the ¼ -20 Nylock nut on each side of the machine.

4. Once the Nylock nuts are loose, use a $^{1}/_{8}$" Allen wrench to move the carriage left or right. Loosen the left side and tighten the right to move the carriage to the left. Loosen the right side and tighten the left to move the carriage to the right.

5. Once you have adjusted the Jacking Screws, apply air and power to the machine and cut a test pocket.

6. If the pilot hole is in the appropriate position for the particular application, use a $^{1}/_{8}$" Allen wrench to secure each Jacking Screw while tightening the ¼-20 Nylock nut with a $^{7}/_{16}$" wrench on both sides of the machine.

5.6 Left and Right Router Adjustment

The ideal location for the router bit is to be directly in the center of the slot provided on the Case Top. If you find that the bit has moved to the left or right of the slot, your TSM-31/TSM-35 has a Left and Right Router Adjustment.

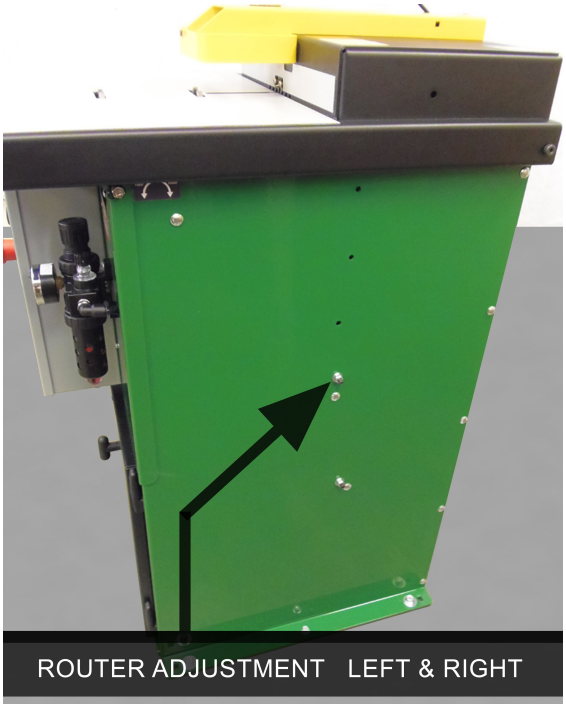


Fig 6

1. **Turn off Air and Electrical power to the machine** and raise the Case Top to its fully opened position.

2. There are two Jacking Screws on each side of the machine. The top Jacking Screws are for the router carriage.

3. Use a 7/16” wrench to loosen the ¼ -20 Nylock nut on each side of the machine.

4. Once the Nylock nuts are loose, use a 1/8” Allen wrench to move the carriage left and right. Loosen the left side and tighten the right to move the carriage to the left. Loosen the right side and tighten the left to move the carriage to the right.

5. Once you have adjusted the Jacking Screws, apply air and power to the machine and cut a test pocket.

6. If the pilot hole is in the appropriate position for the particular application, use a 1/8” Allen wrench to secure each Jacking Screw while tightening the ¼-20 Nylock nut with 7/16” wrench on both sides of the machine.

5.7 Router Feed Speed

Your TSM-31/TSM-35 is equipped with a Router Feed Speed Adjustment to allow you to cut pockets faster or slower depending on the material you are cutting. For example, if you are cutting soft wood, it may be better for your machine to cut faster to avoid having your bit spin in the material too long. This can cause the bit to heat up and become dull. In applications where you are cutting hard wood with your TSM-31/TSM-35, you may want to slow the speed at which your router cuts a pocket. Feeding too fast into hard material can damage your tooling as well.

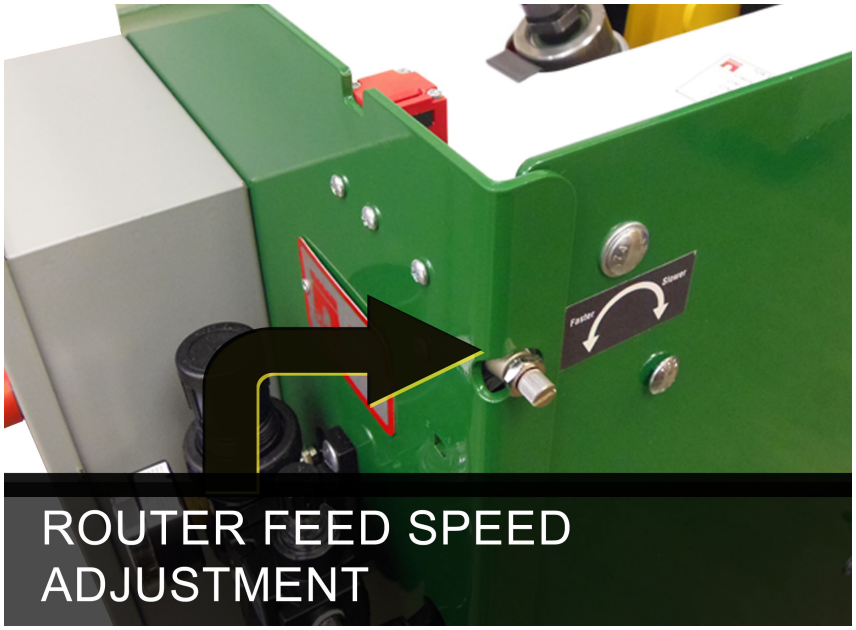


Fig 7

1. The adjustment for the Router Feed Speed is located on the front of the machine in the upper right hand corner below the case top.
2. Turn on the machine and push a scrap of test wood against the safety buttons.
3. Cut a pocket and note the speed of forward thrust during the rout part of the cycle.
4. Adjust the flow control knob counter-clockwise to increase the speed of the forward thrust and adjust it clockwise to slow the speed of the forward thrust.

Note: This only adjusts how fast the router advances.

5. Once the appropriate rout speed has been found, tighten the jam nut on the flow control to ensure that machine stays in adjustment.

5.8 Drill Feed Speed

Drilling into any material too quickly can cause your drill bit to break due to the force of impact. Drilling into any material too slowly can also cause your drill bit to break because it will heat up and lose its tempered strength. In order to prolong the life of your tooling, your TSM-31/TSM-35 is equipped with a Drill Feed Speed Adjustment.

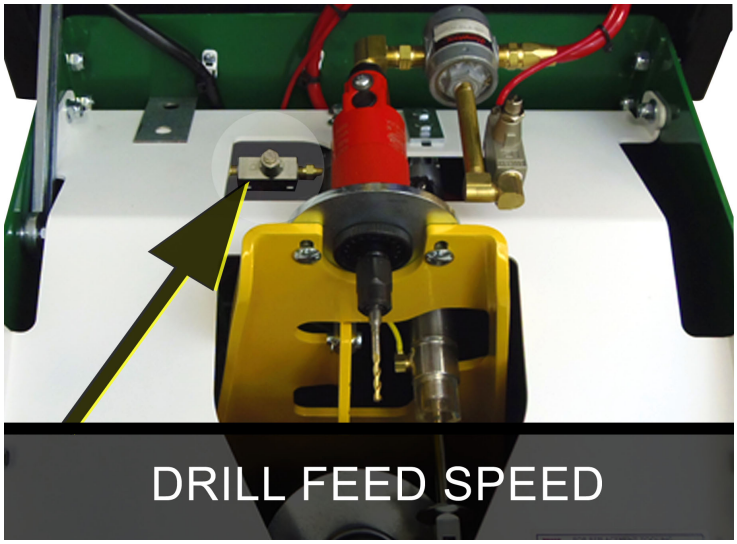


Fig 8

1. Cut a test pocket into the material you plan on working with and take note of the speed of forward thrust during the drill portion of the cycle.

2. **Turn off Air and Electrical power to the machine** and lift the Case Top to its fully opened position.

3. The flow control for the Drill Feed Speed Adjustment is to the rear of the machine, just left of center, and below the white safety pallet.

4. Once you have located the Drill Feed Speed knob, turn it counter-counterclockwise to increase the speed of the forward thrust and clockwise to decrease the speed of the forward thrust. NOTE: This only adjusts how fast the drill advances.

5. After the adjustment has been made close the Case Top and restore air and power to the machine.

6. Cut a test pocket, then repeat this process if needed.

7. Once you have found the appropriate Drill Feed Speed for the particular application, tighten the jam nut on the Drill Feed Speed flow control to ensure your machine stays in adjustment.

5.9 Drill Delay Adjustment

If you find that, in a particular application, your drill bit sticks in the material, a possible cause is that your drill has shut off before the drill bit exits the pilot hole. To test for, and fix this problem your TSM-31/TSM-35 is equipped with a Drill Delay Adjustment.

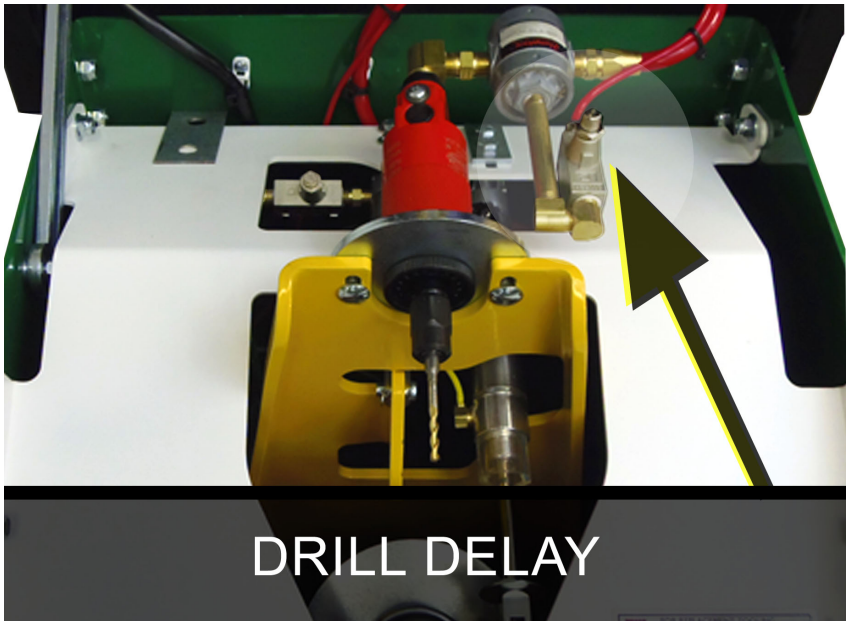


Fig 9

1. **Turn off Electrical power to your machine** and raise the Case Top to its fully opened position.
2. Locate the Drill Delay flow control mounted next to the drill.
3. To keep the drill spinning longer, loosen the jam nut on the flow control, then turn the knob clockwise ½ turn. Please note that this ONLY controls how long the drill stays on during the cycle. The drill should NOT remain spinning indefinitely.
4. Close the Case Top, restore power, and cut a test pocket. Repeat this process if necessary.
5. Once you have found the proper adjustment, tighten the jam nut on the flow control to ensure your machine stays in adjustment.

5.10 Drill Stop Switch

Your TSM-31/TSM-35 has a switch that tells the drill to retract when it reaches its maximum travel. This switch may come out of adjustment and you may find that the drill goes forward, but

does not retract, and the clamp does not release. In this situation you may need to readjust the Drill Stop Switch.

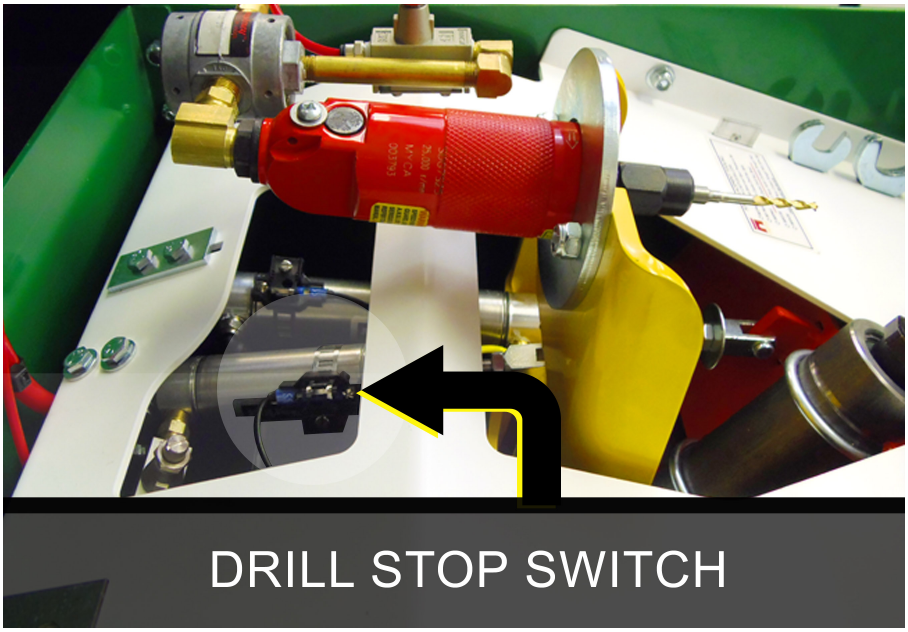


Fig 10

1. **Turn off Air and Electrical power to the machine** and raise the Case Top to its fully opened position.

2. Under the red drill, you will find two cylinders. The cylinder on the left is the cylinder which drives the Drill Carriage.

3. On the Drill Carriage Cylinder there is a magnetic reed switch with a tensioning screw. Use a Phillips screw driver to loosen the screw so that the switch can move freely.

4. Open the door on the Control Box after you are sure that electrical power and air have been shut off to the machine.

5. Use a continuity tester and touch it to pins **9 and 10** on the Control Board Terminal Strip. You might read a few kilo Ohms of resistance.

6. Once touching 9 and 10, pull the Drill Carriage forward until it is approximately $^{1}/_{16}$ inch away from the end of the stroke and hold in place.

7. Slide the Drill Stop Switch until you read NO RESISTANCE and tighten the tensioning screw.

Note: Over tightening this screw may cause the switch to fail.

5.11 Router Stop Switch

Much like the Drill Stop Switch, the Router Carriage also uses a magnetic reed switch to tell your TSM-31/TSM-35 when it has reached the end of its stroke for the router part of the cycle. In the event that this switch comes out of adjustment, your router will come up in the pocket and either return before reaching the end of the stroke, or the router bit will not return at all after cutting the pocket. The Sick switch is equipped with an orange LED when active.

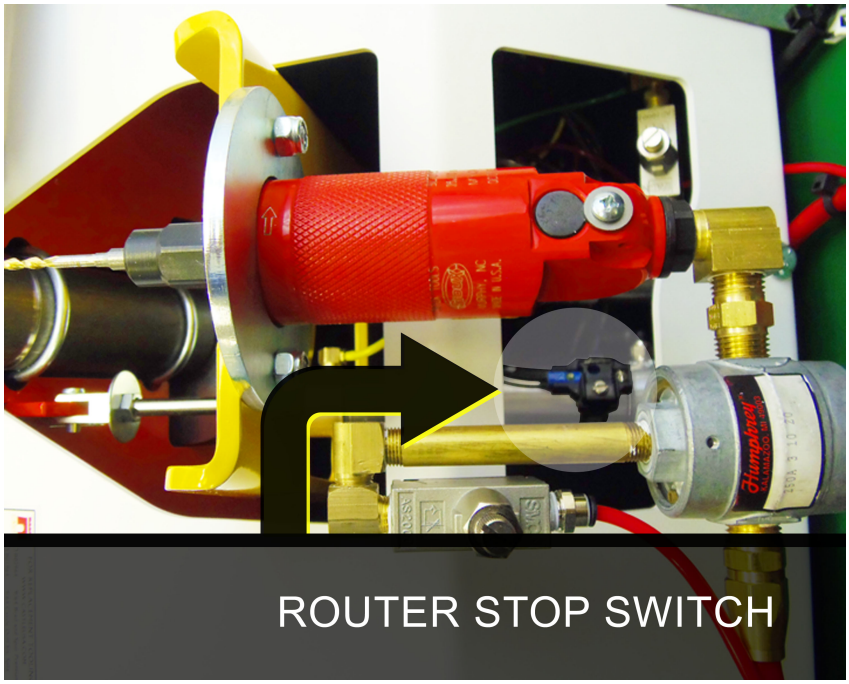


Fig 11

1. **Turn off Air and Electrical power to machine** and raise the Case Top to its fully opened position.

2. Under the drill you will find two cylinders. The cylinder on the right is the cylinder which drives the Router Carriage.

3. On the Router Carriage Cylinder, there is a switch with a tensioning screw. Use a Phillips screw driver to loosen the screw so the switch can move freely.

4. Open the door on the Control Box after you are sure that electrical power and air have been shut off to the machine.

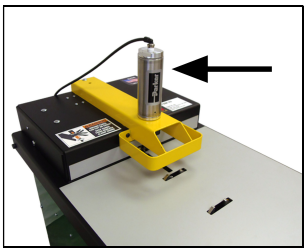
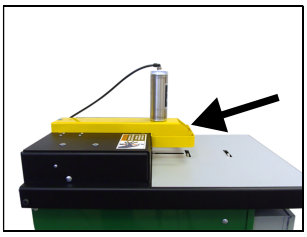
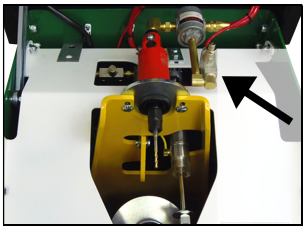
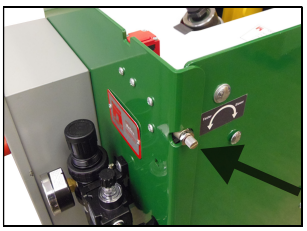
5. Use a continuity tester and touch it to pins **7 and 8** on the Control Board Terminal Strip. You may read a few kilo Ohms of resistance.

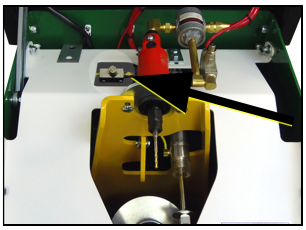
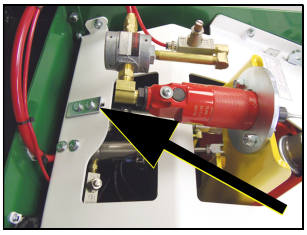
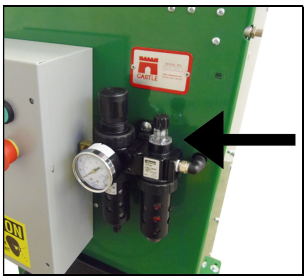
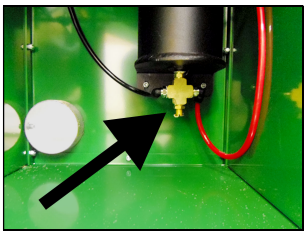
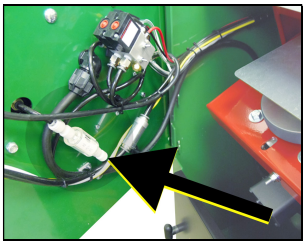
6. Once touching 7 and 8, push the Router Carriage forward until it is approximately $^{1}/_{16}$" away from the black bumper on the Router Cylinder and hold it in place.

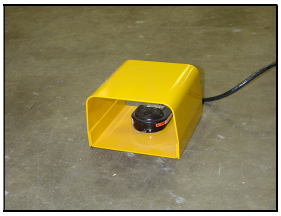
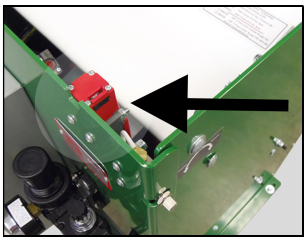
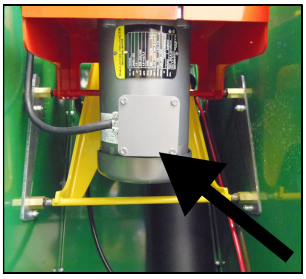
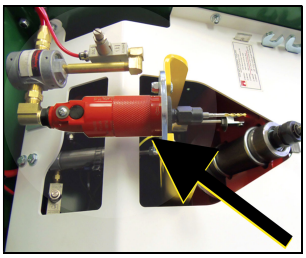
7. Slide the Router Stop Switch until you read NO RESISTANCE and tighten the tensioning screw.

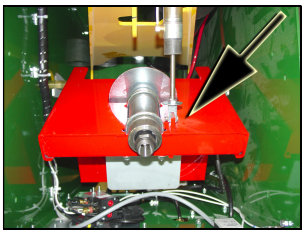
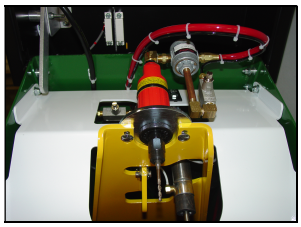
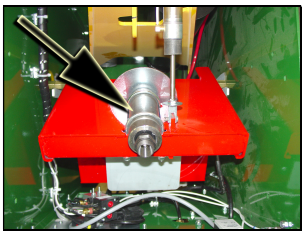
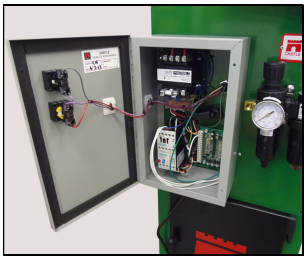
Note: Over tightening this screw may cause the switch to fail.

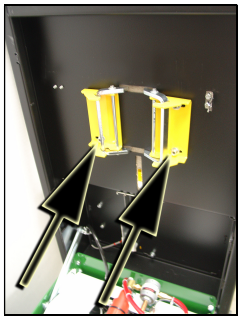
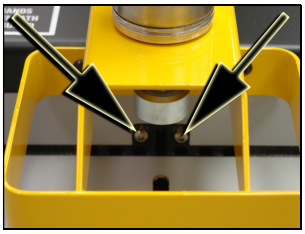
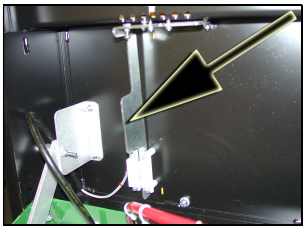
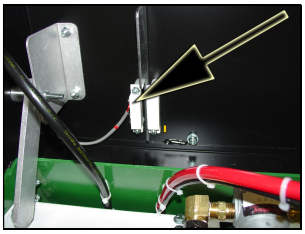
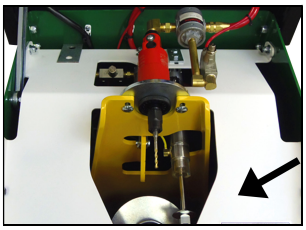
6 Definition and Description of Parts

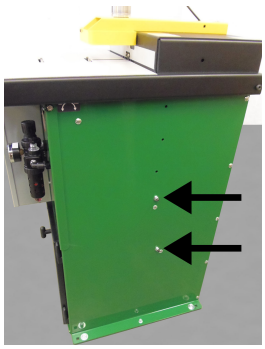
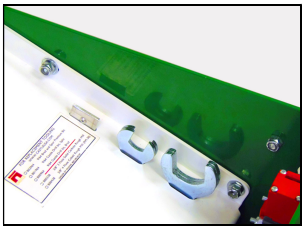
	**Clamp Cylinder:** The large cylinder on the top of the machine acts as a clamp to hold the work safely in place during operation. This is a single acting, spring return, pneumatic cylinder with a padded foot on the end of the cylinder rod. The clamping force exerted is directly proportional to the amount of air pressure measured at the machine's regulator. The Clamp Cylinder is secured by the Clamp Guard.
	**Clamp Guard:** The yellow metal Clamp Guard on top of the machine serves to secure the Clamp Cylinder and to safeguard the operator from the clamping and pocket cutting operation.
	**Drill Delay Valve:** This is the flow control valve located under the Case Top and is plumbed to the right of the Sioux air drill. This valve controls how fast air is released from the pilot valve; the slower the air is released, the longer the drill bit will spin after the drill has cycled.
	**Router Feed Speed:** Located on the top right corner of the machine below the Case Top. The Router Feed Speed valve controls how fast the machine routs a pocket.

	**Drill Feed Speed:** The Drill Feed Speed is the flow control valve located under the Case Top, near the back of the machine, left of center and can be seen through an access hole in the Safety Pallet. The Drill Feed Speed controls how fast the drill comes forward into the material.
	**Web Adjustment Plate:** The Web Adjustment Plate is under the Case Top, mounted at the rear of the white Safety Pallet, just to the right of center. The plate can be identified by the two bolt heads sitting on top of the plate. The position of the plate determines the size of the web.
	**FRL (Filter, Regulator, Lubricator):** The FRL or Filter, Regulator, Lubricator, is located on the front of the machine to the right of the Control Box. The FRL regulates and filters the air going into the machine. It also sends oil to the Sioux air drill.
	**Drain Cock:** Located on the bottom of the Air Reservoir, it can be accessed through the front door of the machine. The Drain Cock allows you to keep the reservoir and the drill free of excess condensation.
	**Inline Filter:** The Inline Filter is located behind the door on the case front. It can be seen hanging down at the top of the door opening. The Inline Filter cleans the air before it goes into the machine's valves.

	**Foot Pedal and Guard:** The Foot Pedal is mounted inside a yellow metal guard and is connected to the machine by an electrical cord. The Foot Pedal will activate the machine cycle only if the Safety Buttons are depressed by the work piece.
	**Safety Interlock Switch:** The Safety Interlock Switch will automatically turn off the machine if the Case Top is opened while the machine is on. The machine will not turn on unless the Case Top is closed and the Interlock Key is in the switch. Take care to keep the Interlock Safety Switch free of sawdust.
	**Router Motor:** The Router Motor is located in the center of the machine and can be accessed through the front door. The motor turns the spindle that routs the pocket.
	**Drill Motor:** The Drill Motor is a custom designed, Sioux air drill mounted to the yellow Drill Carriage. It is located under the Case Top in the center of the white Safety Pallet, and is slightly offset towards the rear of the machine. The Drill Motor is what drills the pilot hole.

	**Router Carriage:** The Router Carriage is the red weldment located inside the machine and holds the Router Spindle and motor in place. This carriage is mounted to the machine with the upper two Jacking Screws which can be found on the side of the machine (one on each side). The carriage is moved back and forth through the rout cycle by a Drive Cylinder which links the carriage to the Web Adjustment Plate.
	**Drill Carriage:** The Drill Carriage is the yellow A-frame weldment inside the machine, to which the Sioux air drill is mounted. This carriage is mounted to the machine with the lower two Jacking Screws which can be found on the side of the machine (one on each side). The carriage is moved back and forth through the drill cycle by the Drive Cylinder, which anchors the carriage to the Safety Pallet.
	**Router Spindle Assembly:** The Router Spindle Assembly is attached to the red Router Carriage, and is what spins the router bit. This spindle has a small pulley on the bottom which connects, via a flat rubberized belt, to the large pulley on the motor.
	**Control Box:** The Control Box is a gray sheet metal enclosure that houses the electrical controls of the machine: Transformer, Overload, Contactor, Control Board, and Pressure Switch. Mounted to the back side of the Control Box are all the pneumatic valves that control the function of the machine's cycle.

	**Indexing Brackets:** The Indexing Brackets are located on the underside of the Case Top. The Indexing Brackets are used for quickly locating a pocket from the edge of the material. This is ideal for indexing face frame stock left and right for maximum productivity.
	**Safety Buttons:** Two small, silver/black button head screws project from the front of the machine under the Clamp Guard. The Safety Buttons push the Safety Blade, which then activates the Safety Switch, allowing the machine to cycle.
	**Safety Blade:** The Safety Blade is an L-shaped, galvanized part mounted to the underside of the Case Top. The Safety Blade activates the magnetic Safety Switch, allowing the machine to cycle.
	**Safety Switch:** This magnetic proximity switch is mounted far back on the underside of the Case Top. The Safety Switch is activated when the Safety Buttons are depressed by a piece of stock.
	**Safety Pallet:** The Safety Pallet is the white sheet metal fixture under the Case Top with a slight bend in the middle. The pallet is what holds the top of the machine together and anchors the Drive Cylinders for the Drill and Router Carriages.

	**Jacking Screws:** The Jacking Screws are located on both sides of the machine. The top Jacking Screws are for adjusting the Router Carriage left and right, and the bottom Jacking Screws are for adjusting the Drill Carriage left and right.
	**Supplied Tools:** Supplied tools are located on the front right side of the Safety Pallet. The tools provided with the TSM-31/TSM-35 are for servicing the machine's tooling.

7 Service and Maintenance

Warning: Electrical hazard: Do not attempt to service Control Box components. Contact Castle, Inc. for the proper service information.

7.1 General

To ensure productivity and longevity for your Castle Screw Pocket Machine, it is essential to follow a few simple steps. How often these steps are performed depends upon the number of hours the machine is operated each day. As a general rule, operators should visually inspect the machine at the start of each work shift in the following manner:

- Check oil level in the drill lubricator.
- Check power cord and Foot Switch cord for wear or damage.
- Check spindle bearings for rough or noisy operation
- Ensure that the router bit and the drill bit are clean, sharp, and undamaged.
- Check belt for wear or damage.
- Keep the router and drill motors free from dust build up.
- Check for proper Safety Switch function. Turn the machine on and press the Foot Switch without a work piece against the Safety Buttons. If the Safety Switch is working properly the machine should not cycle. If you suspect a Safety Switch malfunction, contact Castle, Inc. at 800.282.8338 as soon as possible for corrective action.
- It is recommended that periodically (at least once per 40 hours of operation) you blow out all upper areas of your model TSM-31/TSM-35 by turning off the power supply and lifting the Case Top to its fully open position. Blow out the compartment with approximately 30 PSI compressed air. Pay particular attention to keeping the Interlock Safety Switch free of sawdust.

Caution: Always wear safety goggles when using compressed air.

Note: The model TSM-31/TSM-35 uses bearings that are pre-lubricated. No bearing lubrication is necessary. However, an automatic Lubricator is attached to the Air Regulator. Air tool oil must be kept in the Lubricator at all times.

- The Lubricator should be set so that a slight deposit of oil and dust occurs at the drill motor exhaust. The exhaust is located in front of the drill motor behind the drill motor collet.

- The oil / dust deposit should not occur until the machine has been run for at least 4 hours. If after 4 hours of use you don't see this deposit, adjust the Lubricator knob on the front of your machine counter clockwise about ¼ turn and run the machine again. Keep adjusting until the deposit begins to show.

7.2 Motors and Bits

Because the motors are enclosed in the machine, it is important that the maintenance guidelines provided in the manufacturer's instruction manual be strictly observed.

- Periodically during operation, blow out the air passages on both motors with 30 PSI compressed air.

Caution: Always wear safety goggles when using compressed air.

- To prolong motor life, and avoid costly downtime, dust collection is recommended. A port has been provided on the rear of the machine for this purpose.

- To ensure safe and effective operation, make certain that there is at least 80 PSI air pressure to the machine. Check cycle time of machine for proper duration. A typical cycle under normal conditions will last from $1^1/_2$ to 2 seconds. A cycle significantly longer than this may lead to excessive bit wear.

- Your TSM-31/TSM-35 comes equipped with Castle's premium tooling including the 3/8" three flute solid carbide router bit; Castle Part #**B00338**. The solid carbide bit is universally useful in panel, melamine, mdf as well as for use in solid wood. Your machine also comes with our TiN coated premium drill bit; Castle Part #**B02964**.

- For use general use in solid woods such as maple, oak, ash or alder we recommend the four flute HSS cobalt bit; Castle Part # **B00438**.

- For cleaner pockets in plywood, melamine, and mdf, we recommend our three flute reverse helix (down-cut) solid carbide bit; Castle Part # **B01338**.
- The pilot hole is made with a $^{9}/_{64}$" drill bit, Part #**B02964**, which comes with the machine. Also available are a $^{7}/_{64}$" and $^{3}/_{16}$" size drill bit.
- Feel free to contact your local Castle Dealer or our Parts Department TOLL FREE at 800-282-8338 for information and pricing on tooling and accessory products for your TSM-31/TSM-35.

7.3 Swing Front Access: How to open your machine

Opening the front of your machine allows direct access to service areas for maintenance. Please take the following steps to open your machine correctly.

1. Lockout power and disconnect air.
2. Open the top of your machine.
3. Loosen the six nuts on the sides of the white safety plate. (7/16 wrench)
4. Remove the door at the bottom of the machine by lifting up on hinges.
5. Remove the four bolts that secure the front panel.
6. Pull firmly from the right side of the door to swing the front panel open.

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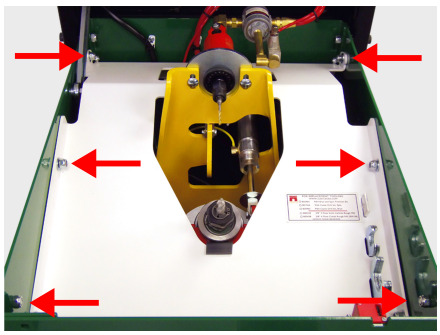

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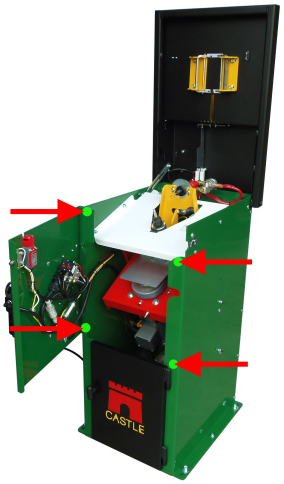

CLOSING the front panel: Ensure that all bolts are in place prior to tightening.

7.4 Serial Number Log

SERIAL NUMBER LOG		
MANUFACTURER	**PART NUMBER**	**SERIAL NO.**
Castle, Inc.	A00031 – TSM-31 Screw Pocket Cutter 230V Single Phase	
Castle, Inc.	A00035 – TSM-35 Screw Pocket Cutter 230v 3 phase	
Castle, Inc.	A00036 – TSM-35 Screw Pocket Cutter 460v 3 phase	
Sioux	P01957 – Sioux SDG75S25FCT Motor	
Baldor	E35131 – TSM-31 Motor, 1 1/2 HP 1 Phase 3450RPM	
Leeson/Marathon	E35502 - TSM-35 Motor, 1HP 3Phase 3550RPM	
PURCHASE DATE:		

9. Warranty Information

Castle, Inc. uses only the highest quality materials available for the construction of our machines. Your TSM-31/TSM-35 is warranted for one (1) full year from the date of purchase against workmanship or material defects under normal use and service. Castle, Inc. is not responsible for failures or injuries due to negligence, misuse, alteration, unauthorized service, or accidents.

Owners of new machines are obligated to contact their dealer AND Castle before contracting for, or attempting warranty repairs or service.

If Castle or dealer technicians determine that reasonably simple adjustments or tests are necessary in delivering remedy to a failed machine, owners of warrantied machines are obligated to exercise due diligence while assisting in the execution of these simple adjustments or tests.

When a problem cannot be resolved via telephone support, Castle will, at its expense, send replacement parts and instructions to the purchaser necessary to cure the defect. Castle will not be responsible for providing labor on repairs that are deemed reasonable for the owner to accomplish. Castle, Inc., at its sole discretion, will elect to either repair (by a Castle technician or dealer technician) or replace a machine in the case of warranty issues that exceed reasonable owner repair expectations. Alternatively, Castle will factory repair any machine provided the machine is returned to Castle, shipping prepaid, within the warranty period.

Castle will not, under any circumstances, be liable for consequential, incidental, special or exemplary damages, or for loss of time, revenue or production. Further, Castle disclaims any warranty, expressed or implied, as to the merchantability or fitness of a Castle product for any particular purpose.

30 Day Refund Policy

Any Castle machine that is un-altered and in almost new condition may be returned by the purchaser, for any reason, within 30 days of the purchase date for a full refund. Please contact your Castle authorized dealer for more information.

For Technical Assistance, Parts & Tooling:

Call 800-282-8338, Monday - Friday, 8:00am - 4:00pm, PST

www.castleusa.com

www.store.castleusa.com

Fax: 707-765-0953