TACH-IT® TWISTERS™

OPERATIONS AND INSTRUCTION MANUAL FOR TACH-IT MODEL #4500 SEMI-AUTOMATIC SELF ADJUSTING TWIST TIE MACHINE

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SECTION 1 CAUTIONS:

1) Before operating this machine, it is very important that the Operating and Instruction Manual is read and understood in its entirety.
2) Prior to plugging this machine into any power outlet, it is important that the voltage selector switch located on the back of this machine matches the power input being supplied to the machine.
3) Never have the power cord of this machine plugged into the power source when any of the covers of this machine have been removed. This machine has a high voltage input, and electrical shocks are possible if plugged in and the covers are removed.
4) This machine requires pneumatic power of 80 p.s.i. sustained to operate. Air used by this machine must be clean and dry. It is recommended that an air filter and dryer is installed in the line leading directly into this machine.
5) Never attempt to move this machine by holding the ring located at the front of the machine. Move the machine only by holding the base.
6) Install and operate this machine only on a flat, level, and dry surface.
7) Always keep hands, clothing, jewelry, and hair away from all moving parts of the machine.
8) Do not operate this machine without the twist tie ribbon being properly loaded and in its proper feeding position.
9) Keep this machine clean and dry at all time. Also, if a small piece of ribbon is found within any of the moving mechanisms of the machine is should be removed immediately.
10) For best results use only twist tie ribbons meeting Tach-It's specifications and standards. Any damage caused to the machine by not using a twist tie ribbon meeting the manufacturer's specifications and standards makes the warranty null and void. Samples of twist tie ribbon can be sent to the manufacturer for testing and approval.
11) Service on this machine must only be performed by factory trained authorized service personnel. Any service not performed by an authorized factory trained service personnel makes the warranty null and void.
12) Never use this machine for other than its intended applications. Use of the machine on unintended applications can cause harm to the operator, the machine, and the product to be tied as well as voiding all manufacturer's warranties. Please contact the manufacturer if there are any questions as to whether this machine can be used for a particular application.

SECTION 2 PARTS IDENTIFICATION

FIGURE 1: CONTROL PANEL:

DESCRIPTION AND USE OF PARTS ON FIGURE 1:

1) On/Off Switch: This toggle switch is used to turn the power On and Off of the machine.

2) Power Indicator: This light will illuminate when the On/Off switch is in the On position showing that the machine has power

3) Twist Head Operation: This toggle switch affects the twist portion of the cycle. In order to avoid the use of clutches in the operating system of this machine, the Twist Head can either twist in 1 direction or can alternate from clockwise to counter-clockwise twists. If the switch is set in the Alternating Direction position, the Twist Head will move in a clockwise than counter-clockwise rotation. If the switch is set in the Single Direction position, the Twist Head will rotate in one direction (either clockwise or counter-clockwise) and reposition itself once the product has been removed from Ring to twist again in the same directional rotation as the previous tie.

4) a. Manual Cut/Reset: When pushed into the upward position, the Manual Cut/Reset switch will cause the cutting blade to engage and reset the computer for the next cycle. This is used if the machine is out of normal sequence, or if there is ribbon in the Ring that needs to be cut and removed.

   b. Manual Mode: When the same switch is pushed to the down position, it allows the operator to cycle the machine one sequence at a time. Each time the switch is pushed down, the next portion of the cycle occurs. This is an important feature if troubleshooting a problem with the machine should ever become necessary.

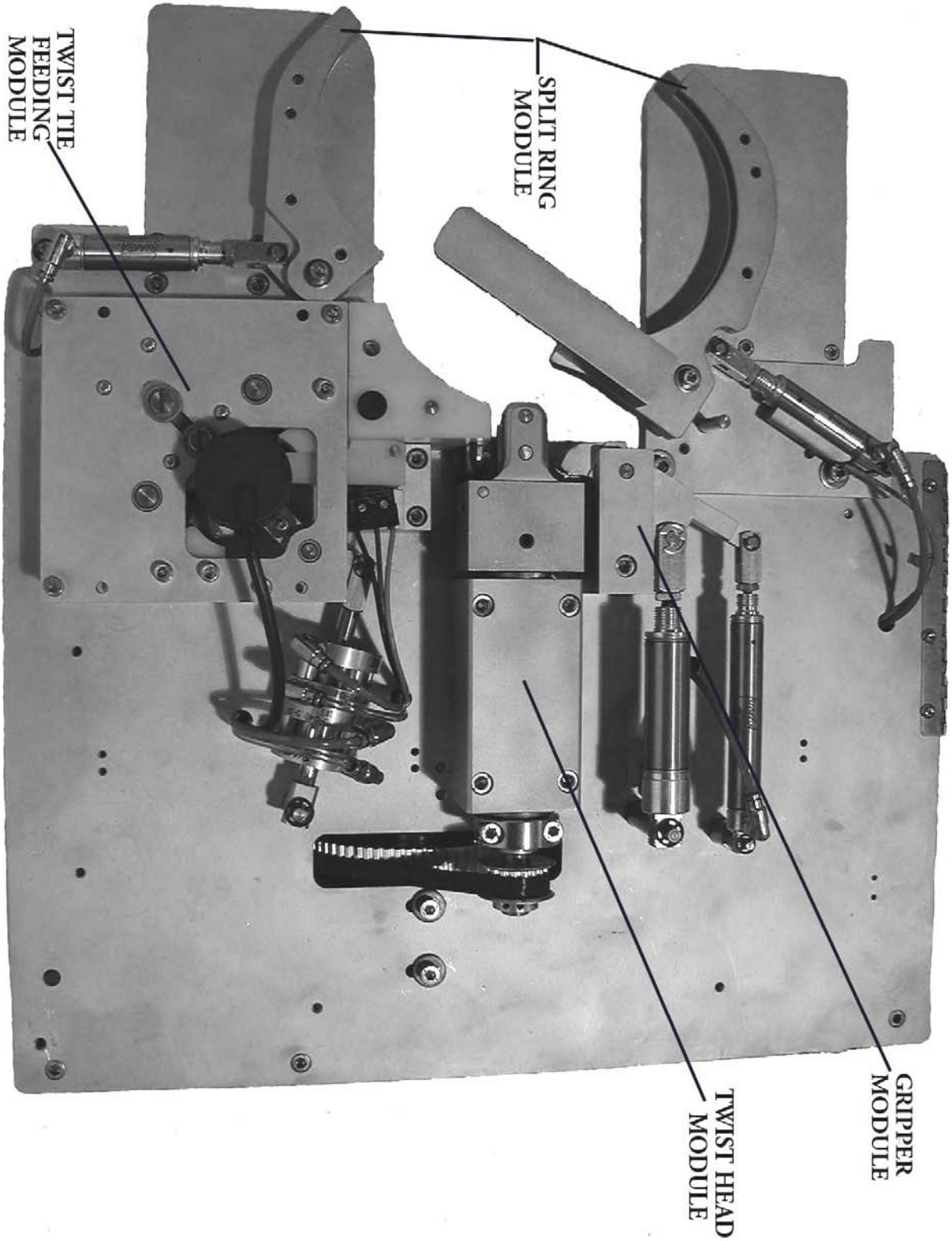
5) Status Indicator: This light will illuminate and flash if there should be a problem with the machine or the cycling of the machine. Depending on the number of times the light flashes, will indicate the possible situation or problem that is occurring within the machine.

6) Tension Adjustment: By turning this knob, the operator can adjust the tension of the tie that the machine is putting around the product. (See Section 8)

7) Cycle Repetition: This function when used in conjunction with the optional Foot Pedal allows a user to apply up to 4 ties onto a coil without having to remove the coil from the machine after each tie. (See Section 7)

8) Foot Pedal Operation: Allows the machine to be cycled by stepping on a Foot Pedal rather than the usual method of just putting the item into the machine. The Foot Pedal is used with the Cycle Repetition feature discussed above.

FIGURE 2: TOP PLATE



DESCRIPTION AND USE OF PARTS ON FIGURE 2:

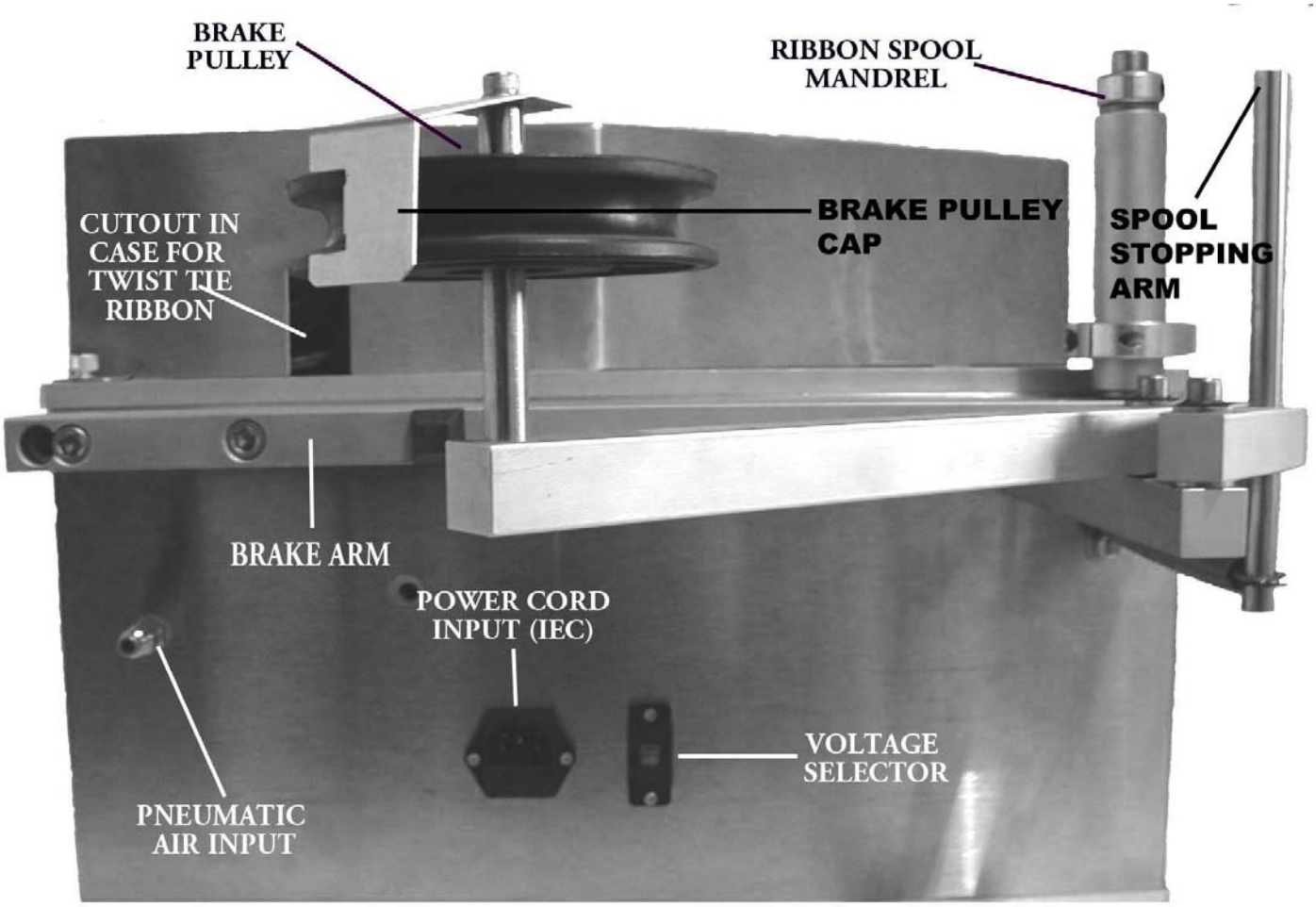
1) Split Ring Module: The Split Ring Module is where the operator will place the item to be tied. As the item is placed within the Split Ring, the Ring will begin to close, at a predetermined point pneumatic system will finish closing the ring around the product. When the twist tie material is fed, it will follow the path of the Ring.

2) Twist Tie Feeding Module: This module controls both the feeding and the retraction of the twist tie material

3) Gripper Module: This unit controls the grippers enclosed within the Twist Head Module. The grippers hold the twist tie ribbon during portions of the cycle allowing for proper feeding, cutting, and twisting of the twist tie material.

4) Twist Head Module: This unit contains the Grippers which will hold the twist tie ribbon during the cycle of the machine. During operation, the Twist Head will rotate 4 complete revolutions creating the twisting of the twist tie material.

FIGURE 3: BACK PLATE



DESCRIPTION AND USE OF PARTS ON FIGURE 3:

1) Ribbon Spool Mandrel: The Ribbon Spool Mandrel holds the spools of twist tie ribbon.

2) Brake Pulley: The Brake Pulley activates Pressure Arm that keeps frictional pressure on the spool of twist tie ribbon to prevent spool overrun and twist tie ribbon entanglement.

3) Cutout in Case for Twist Tie Ribbon: The Cutout in the Case allows the twist tie ribbon to pass into the case and to keep it in a straight line with the Twist Tie Feeding Module. This avoids turns and twists in the twist tie ribbon which can lead to jams and unfed ties.

4) Brake Arm: The Brake Arm holds the Brake Pulley and the Ribbon Spool Mandrel. This arm can be mounted in either a vertical or horizontal position.

5) Pneumatic Air Input: An air source coupling is mounted here. This is where the air is inputted into the machine. NOTE: an air dryer is strongly suggested to avoid moisture in pneumatic system.

6) Power Cord Input (IEC): The Power Cord is connected here. The power cord should be the proper cord for the country and voltage of where the machine is being used.

7) Voltage Selector: This switch must be in the proper position of the voltage in the location of where the unit is to be used. It can be switched if necessary.

8) Pressure Arm: Applies frictional pressure to the rim of the twist tie spool to avoid overruns.

SECTION 3 BASIC THEORY OF OPERATION:

The Tach-It Model #4500 is a pneumatic and electrical powered machine designed to put a reusable twist tie closure around a product ranging in diameter from 0" to 4" without any operator adjustments to the machine. This machine utilizes a PLC controller, electrically controlled pneumatic valves and the best technology available. The Model #4500 can be used in either a vertical or horizontal position and uses a variety of Tach-It twist tie ribbons.

Once connected to a proper power source (110 volt or 220 volt based on position of voltage selector switch located on back panel of machine – see section 2 figure 3 of manual) and to a pneumatic air line (see section 2 figure 3, unit requires 80 p.s.i. of clean, dry, and sustained air pressure) the unit can be turned on by the switch located on the control panel (see section 2 figure 1). At the beginning of the cycle, the two arms of the split ring (see section 2 figure 2) are in an open position to allow for easy placement of the objects to be tied within the ring. Please note the standard ring for this machine will accommodate any item ranging in size from 0" to 4" in diameter. Larger rings are available as an option.

To begin:

- The operator places the product into the Ring and pushes it against the bar located at the base of the Ring.
- The Ring Cylinders closed encircling the product to be tied. Please note an optional Foot Pedal can be used; please see Section 7 of this manual.
- Once the Ring is closed, the twist tie ribbon is fed around the outer circumference of the Ring and then into Gripper #1 of the Twist Head Module.
- Once the leading edge of the ribbon has been gripped by Gripper #1, the ribbon is pulled back out of the Ring until it conforms around the product. This step is controlled by a unique fulcrum arrangement which senses when the ribbon has reached the desired tension set by the Tension Adjustment knob located on the Control Panel.
- Once the desired tension is reached, Gripper #2 actuates holding the end of the ribbon and the Cutter activates cutting the twist tie ribbon.
- Upon completion of the cut, the entire Twist Head rotates 4 complete revolutions forming the twist.
- When this is done, the Grippers open, the item is removed from the Ring, and the machine is now ready for its next cycle.

SECTION 4 SET-UP OF THE MACHINE:

Set-up of the Model #4500 requires the following steps to be taken.

Step 1: It is very important to remove all packaging materials from the machine. This includes any materials that may be holding the Ring (see section 2 figure 2) closed. **Caution: be very careful, at no time should the machine by lifted or moved by holding the Ring or Ring Module.** Only move the machine by lifting it from the bottom.

Step 2: Locate the Pneumatic Air Input on the back plate of the machine (see section 2 figure 3). Insert the proper air connection for your facility into the Pneumatic Air Input. It is very important that clean, dry air is used with this machine. We recommend that an air filter/dryer is installed on the air line prior to input into the machine. The compressor and pneumatic line installed in the machine must be able to sustain 80 p.s.i. of air maintained throughout the duration of the cycle. A drop in air pressure during the cycle may cause the machine to not complete cycle or for it to run at a slower speed than designed.

Step 3: Install the Brake Arm (see section 2 figure 3) onto the back plate of the machine using the enclosed bolts and Transition Block. The Transition Block is only used if the Brake Arm is going to be mounted in a vertical position. The machine is shipped with the Transition Block installed, and must be removed if the Brake Arm is to be used in a horizontal position. The Brake Arm is shipped uninstalled to avoid damage to the part and the machine. The Brake Arm can be installed in either a vertical or horizontal position. This is best determined by the space available, and whether the machine will be used in a vertical or horizontal position. It is important that when installing the Brake Arm in either a vertical or horizontal position that the Brake Pulley (see section 2 figure 3) is aligned with the Cutout in the Case for the Twist Tie Ribbon.

Step 4: Locate the Voltage Selector on the back plate of the machine (see section 2 figure 3). Make sure that this switch is in the proper position relative to the voltage of electricity the machine will be plugged into.

SECTION 5 LOADING THE TWIST TIE RIBBON:

1) Turn the power off of the machine and open the Top Cover by removing the thumb screw located in the back right corner. Please note that if the cover is lifted with the power on, the machine will go into diagnostic mode, the Status Indicator light will illuminate, and the machine must be reset prior to use.

2) Place the spool of twist tie ribbon onto the Ribbon Spool Mandrel so that the ribbon is coming off the bottom of the spool, and when the ribbon is pulled, the spool rotates in a counter-clockwise direction. See Figure 4. Continue pulling the leading end of the twist tie ribbon until it reaches the Brake Pulley. Bring the twist tie ribbon around the Brake Pulley and under the Brake Pulley Cap. See Figure 4 and Figure 5.

FIGURE 4

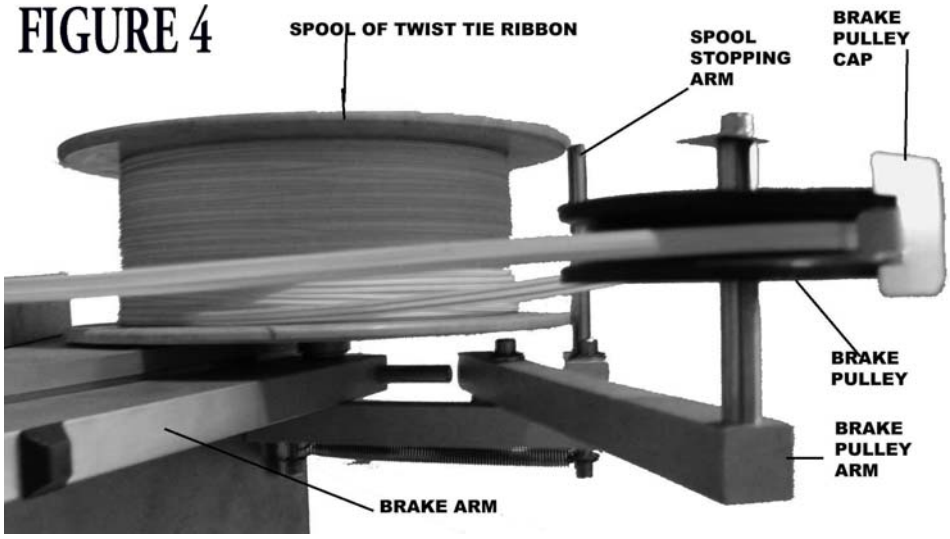
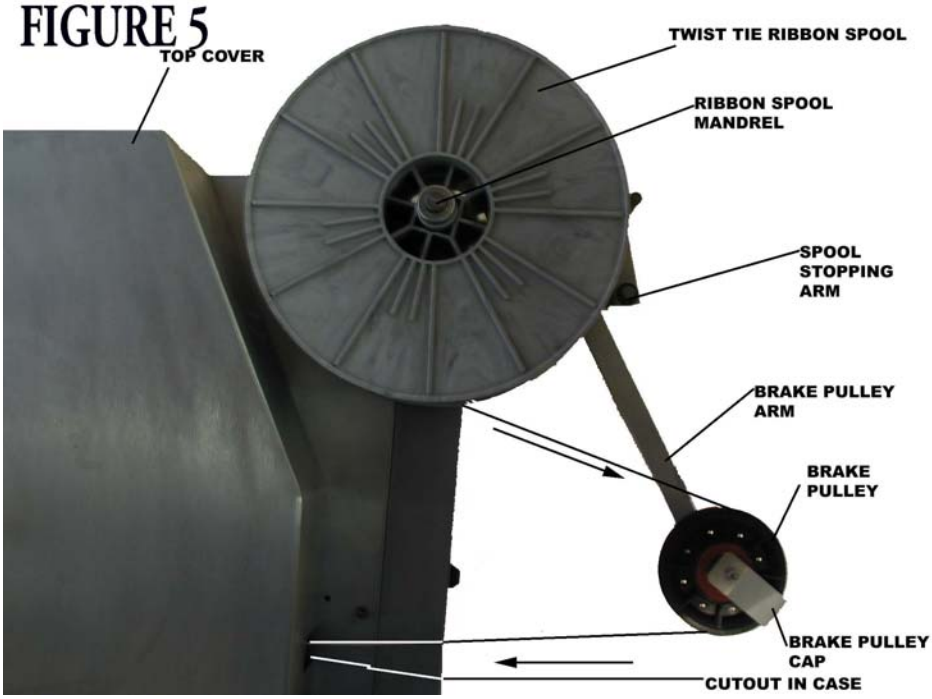
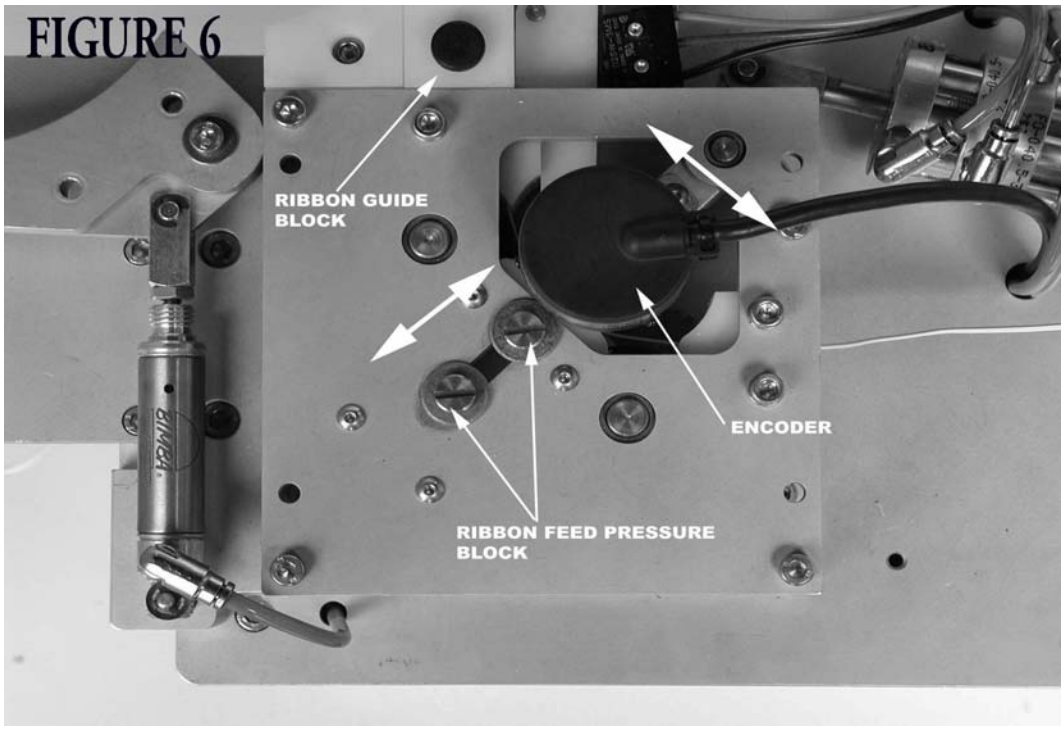
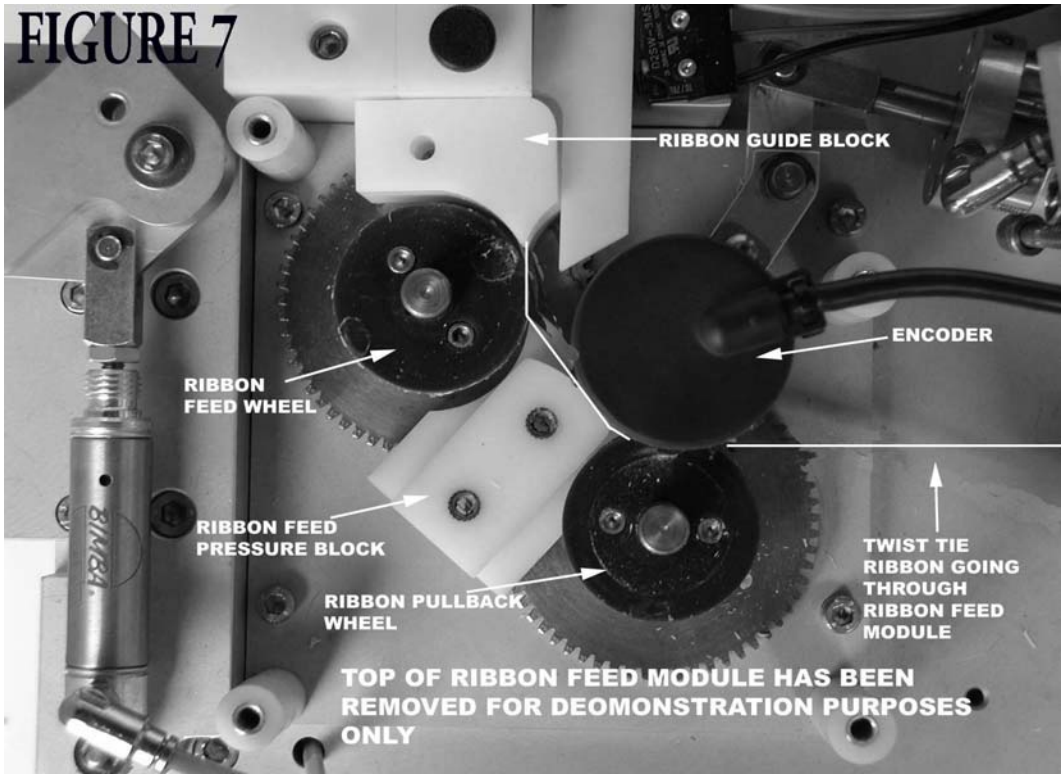


FIGURE 5

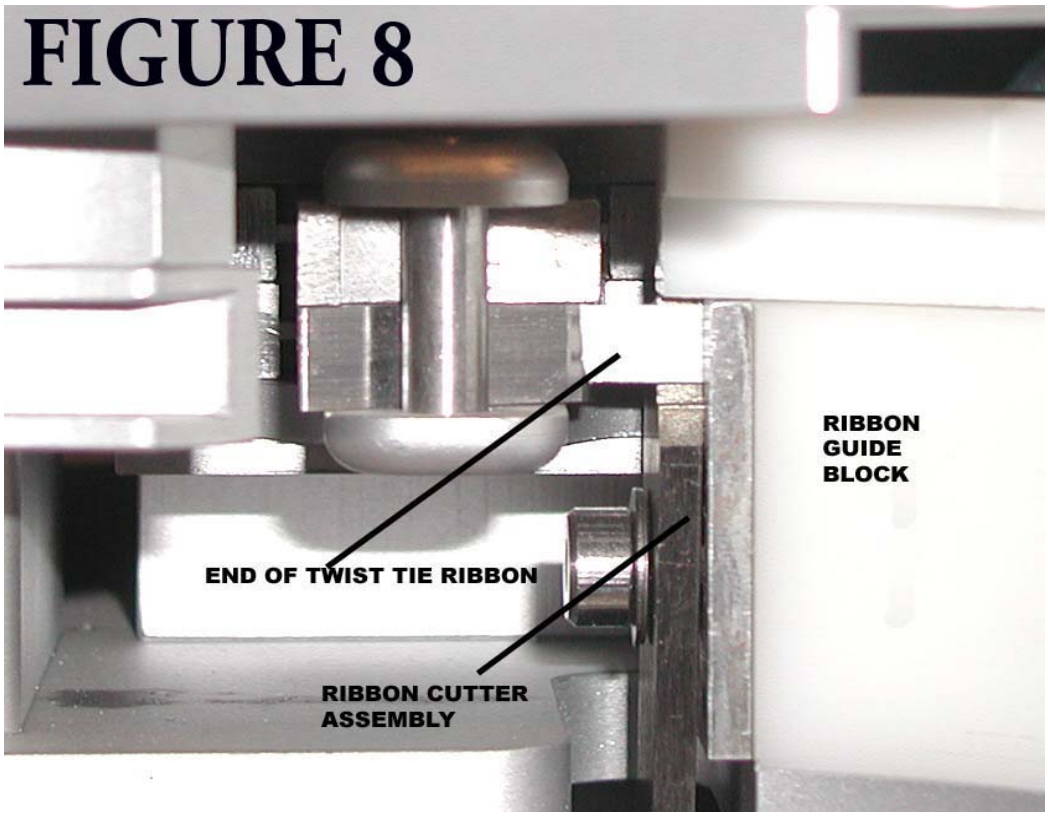


3) Continue pulling the twist tie ribbon until you reach the Twist Tie Ribbon Feeding Module (Ribbon Feeding Module). Locate the Encoder unit mounted on top of the Ribbon Feeding Module. The Encoder unit and the shaft it is mounted on will pivot; pivot the Encoder towards the front of the machine. Begin gently pushing the twist tie ribbon until it reaches resistance. At this point take the Encoder and swivel it in the other direction towards the back of the machine. Continue pushing the twist tie until it enters the Ribbon Guide Block. This may require sticking a small object into the opening on the top Ribbon Feeding Module and helping to guide the ribbon into the chute. If necessary, pull back on the Ribbon Feed Pressure Block to make loading the ribbon easier. See Figure 6 and 7 (Figure 7 is showing the Ribbon Feeding Module with the Top Cover of it removed to show the path of the ribbon).





4) Continue pushing the twist tie ribbon until you see it exit the Ribbon Guide Block at the front of the Twist Module. See Figure 8. If you see the ribbon exit from any other point, or if you have pushed more ribbon into the Ribbon Guide Block than should be necessary, pull the ribbon back, cut a clean end, and begin again.



5) Once the ribbon is in the proper leading position, replace the Top Cover over the machine making sure that the ribbon is inside of the Cutout in Case and insert and re-tighten the thumb screw. Locate the Manual Cut / Reset toggle switch on the Control panel (see Figure 1) and move it in the up position. This will Reset the machine and engage the cutter giving you a clean end.

6) The machine is now ready for use.

SECTION 6 USING THE MODEL #4500 TWIST TIE MACHINE:

The Tach-It Model #4500 will automatically adjust to any size product that can fit within the Split Ring Module when the Ring Arms are closed. The only adjustment that may be necessary will depend on the tightness of the closure desired. This is easily done by simply turning a knob located on the front Control Panel and will be explained in Section 7 of this manual.

1) Load the twist tie ribbon as per the instructions in Section 5 of this manual.

2) Plug the power cord into the electrical outlet. Verify that the electrical outlet and the Voltage Selector on the Back Plate of the machine are set for the same voltage.

3) Turn the power on the machine by locating the Power switch on the front Control Panel and moving it in the upward position. The Power Indicator light on the Control Panel will illuminate when the power is on.

4) Insert the product to be tied into the open Split Ring. Continue pushing the item against the Stop located at the base of the left side of the ring, and the Ring will begin to close. When the operator has pushed the item to be tied far enough, the Ring will close under its own power and the cycle will begin.

5) Once the cycle has ended and the item to be tied has been tied, remove the item and the machine is ready for the next tie.

SECTION 7 USING THE CYCLE REPETITION FEATURE:

The Cycle Repetition feature of the Model #4500 is good for any product that will receive multiple ties or if the operator would rather initiate the cycle of the machine via a Foot Pedal. Instead of having to remove the product from the Ring each time a tie is made, and then reinsert it to start the next tie, the Cycle Repetition feature allows for up to 4 ties per individual product without having to remove the product from the Ring.

Used in conjunction with the optional Foot Pedal (our style #4500FP) the Cycle Repetition feature works as follows:

1) Install the Foot Pedal into the Control Panel by plugging it into the Foot Pedal Operation adaptor (See Section 2 Figure 1).

2) Determine the number of ties desired for the product, and locate the Cycle Repetition Switch on the Control Panel (See Section 2 Figure 1). Rotate the Cycle Repetition Switch to the number of desired ties.

3) Insert the product to be tied into the Ring located at the front of the machine. The Ring will close around the product.

4) Step on the Foot Pedal to activate the machine. After the cycle is complete if another tie is desired, rotate the product to the position where the next tie is needed and step on the Foot Pedal. Continue following this procedure to make the number of desired ties. Once the number of ties applied to the product equals the number set on the Cycle Repetition Switch, the Ring will open automatically and the product can be removed. The next product can now be inserted.

Please note that the Cycle Repetition Feature only works with a Foot Pedal.

For Example: The operator wants to put 3 ties onto a coil each time. First the operator installs the Foot Pedal into Control Panel of the machine. Then the operator turns the Cycle Repetition Switch to 3. As the operator puts the coil into the Ring, the Ring will close. The operator steps on the Foot Pedal and does the first tie. The operator then pulls back on the coil releasing the tie, but not pulling the coil out of the closed ring. The coil is positioned for the second tie and the Foot Pedal is depressed making the cycle for the second tie. The operator pulls the coil out enough to release the completed tie and then positions it for the third tie. Step on the Foot Pedal and the third tie will be completed; now the Ring will open for removal of the product that was tied, and insertion of the next product to be tied.

SECTION 8 ADJUSTING THE TIGHTNESS OF THE TIE:

The tightness of the tie that is completed by the machine can be controlled by turning the Tension Adjustment Knob on the Control Panel of the machine (see Section 2 Figure 1). This adjustment is based upon the application, desired tightness, and properties of the product to be tied. For instance, a 3" diameter product that is compressible may require a different Tension Adjustment setting than a 3" diameter product that is very rigid.

The tightness of the tie is based upon the amount of slack that the machine gives the tie prior to twisting. The less slack, the tighter the tie and too much slack will make a tie loose. If there is not enough slack, the tie will break during the twisting portion of the cycle, and if there is too much slack, the tie will be loose and not hold.

To adjust the tightness of the tie being put on the product, rotate the Tension Adjustment Switch to 1 of the following positions:

1) None: This means that no slack is being left for the twisting portion of the cycle. This setting is normally used with small or very compressible products.
2) Min: This means that a minimum of slack is being left for the twisting portion of the cycle. This setting is normally used with smaller items or items that are somewhat rigid and not compressible.
3) Avg. This means that an average amount of slack is being left for the twisting portion of the cycle. This setting is normally used on product in the middle range of the size capability of the Ring and also for rigid and non-compressible items.
4) Max. This means that the maximum amount of slack is being left for the twisting portion of the cycle. This setting is used for products in the upper range of the machine's size capabilities, and also for products that are very rigid and have no compressible property.

The best way to find which setting is right for your particular application is by trial and error. Try the machine using the guidelines above, and if the tension is not what is desired, change the setting and continue trying the machine till the proper setting is found.

Please note that this setting is the only setting that may need changing when tying different size items.

SECTION 9 STATUS INDICATOR AND MANUAL CUT/RESET AND MAUAL MODE FUNCTIONS:

The Status Indicator is a red light located on the Control Panel of the machine (see Section 2 Figure 1). Should the machine not be able to start or complete a cycle, the Status Indicator will illuminate and blink a predetermined number of times giving an indication to the operator of why the machine did not function properly. This self-diagnostic feature helps determine where service may be needed.

Used in conjunction with the Status Indicator the Manual Cut/Reset toggle switch is located immediately to the left of the Status Indicator (see Section 2 Figure 1). Should the machine not begin or complete its cycle, the Status Indicator will illuminate, blink the number of times to show where the problem is, and the Manual Cut/Reset switch can be toggled up to get the machine back to the beginning of the cycle. If the problem had to do with the ribbon feeding, it is suggested that some ribbon be pulled into the Ring prior to the Manual Cut/Reset switch being activated. This allows for a clean piece of ribbon to be fed during the next feed cycle. Please note, when the Manual Cut/Reset switch is used the Status Indicator will stop flashing its diagnostic code, so that it is important to note the number of flashes before pushing the Manual Cut/Reset switch up.

The Manual Cut/Reset switch is also used when loading the twist tie ribbon. After the ribbon is loaded, push the Manual Cut/Reset switch up to cut the ribbon giving a nice clean straight end. Also, if the Manual Cut/Reset switch is pushed down into the Manual Mode function, the operator can cycle the machine incrementally to see potential problems and help correct them. Each time the switch is pushed down, the machine will progress to the next part of the cycle. This is used mostly in the maintenance of the machine as it will allow for slow progression of the different parts of the cycle.

Below please find a brief description and cause as to why the Status Indicator light may flash. For more detailed information see the Troubleshooting section of this manual.

Number Of Flashes	Cause	Remedy
1	Enclosure Open	• Close the enclosure and fasten it with the thumb screw at the back..
2	Startup Malfunction – machine did not start when ring closed.	• Sensor located on the left ring closing cylinder is not working or out of adjustment. Re-adjust or replace.
3	Tape Under Advance – twist tie ribbon did not reach 1st gripper.	• Check to make sure that twist tie ribbon is loaded properly. Re-load if necessary. • Check to make sure that there are no twists in the ribbon and that it can be pulled from the spool easily. Remove twists or hang-ups and reload. • Spool of twist tie ribbon is empty. Replace. • Make sure the Ring is closing completely without anything that can impede the ribbon during the feed process.
4	Tape Over Advance – twist tie ribbon retracted too much not forming tie.	• Product too be tied is too small for the machine. • Twist tie ribbon fed full amount, but was not gripped by Grippers – Check to make sure grippers and pneumatic cylinders open and closing grippers are working. • Make sure the Twist Head is in the proper home position.

SECTION 9 STATUS INDICATOR AND MANUAL CUT/RESET AND MAUAL MODE FUNCTIONS CONTINUED:

Number Of Flashes	Cause	Remedy
5	Tension Switch Malfunction – the ribbon is pulled tight around the product, but the machine does not proceed to the twist cycle.	• The Tension Switch may not be moving properly – check.
6	Twist Head Malfunction – the Twist Head does not return to its normal home position.	• Check to make sure that nothing is jamming the Twist Head so that it can not spin properly. Remove whatever is jamming the Twist Head. • Check and verify that input air pressure is being sustained at 80 p.s.i. during full duration of cycle. • Check and readjust sensors on rotary actuator.
7	Abnormal Cycle End – Something happened during the cycle that did not allow the cycle to end properly.	• Twist Head did not return all the way and Grippers did not engage.