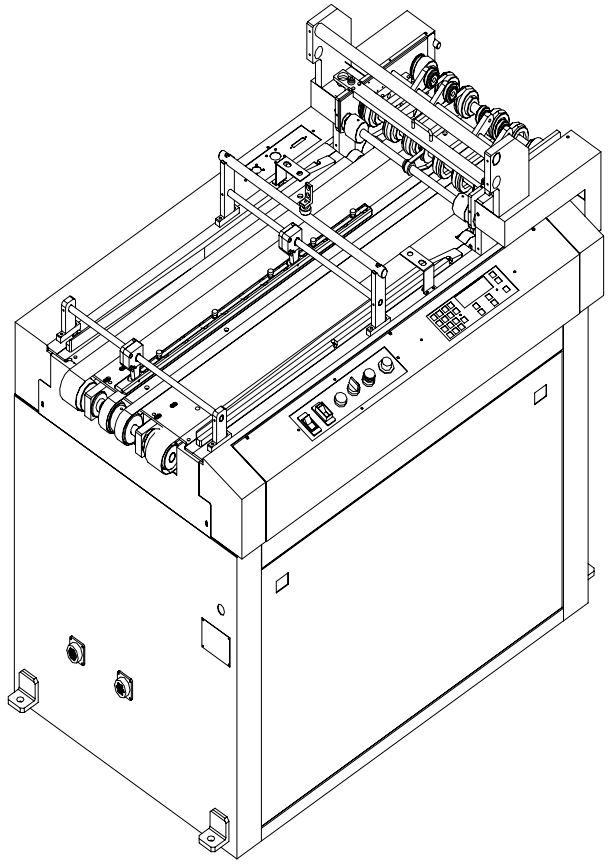
Mechanical Base Drawings



BK530 Tabbing System User's Guide V2.0

By Paul Slack, Roy Kropman, Sunil Nayak, Andrew Farrow, and Ming Ho

Published by:
Buskro Ltd.
1410 Bayly St., Unit #15
Pickering, ON, L1W 3R3
Canada
Tel.: (905) 839-6018
Fax: (905) 839-6023

Second Edition, 1997

Printed in Canada

Table of Contents

Chapter 3
Tabber Head Instructions

Table of Illustrations

List of Tables

Chapter 1

1.1 Description

1.2 Features

- High Speed Production
- BK600 & BK400 Series Compatibility
- Simplified Mechanical Adjustments
- Software Controlled labeling Head Functions
- Construction, Safety Features, and Maintenance
- Tabbing Quality Considerations

1.3 Base Specifications

- Tabber base/system specifications Table
- Tabber Head specifications Table

1.4 Tabber System Drawings

- Tabber Base System Drawing
- Tabber Base Dimensions
- Tabber Head System Drawing
- Tabber Head Dimensions

1.1 Description

The Buskro BK530 Tabbing System is designed to apply pressure-sensitive tabs onto mailpieces and can be used as a wrap-around tabbing unit or as a flat tabbing device (labeler). The system consists of two major components, the transport base which conveys the mailpiece and the tabbing head which applies the individual tabs. The system offers full flexibility in its ability to apply a number of tabs on either edge. Simplified mechanical adjustments and software controlled tab placement functions offer unsurpassed ease of use permitting rapid job setups.

The mailpiece, which is introduced into the system by a feeder, labeling system, or ink jet system, is conveyed and justified against a registration rail resulting in a tightly controlled tab-wrap. In addition, the presence of but a few mechanical adjustments for thickness and edge selection, gives the operator the tools to accurately and rapidly setup for any number of mailpieces.

In keeping with Buskro's philosophy of ease of use, the tabber head is controlled through software via an operator interface that permits rapid selection of the number of tabs dispensed and their placement position. A unique tab sensing feature lets the operator easily adjust the system for various tab backer ribbons and the threading operation is simple and rapid.

All these features, in addition to the manufacturing quality and innovative product design, add up to an extremely functional tabbing system capable of years of reliable, trouble free operation.

1.2 Features

High Speed Production

The tabbing system is capable of high production speeds in excess of 30,000 PPH for single tab operations, 24,000 PPH for double tab operations, and 15,000 PPH for triple tab operations. The unit has been solidly constructed with electrical components capable of delivering reliable, full-day production.

BK600 & BK400 Series Compatibility

The tabbing system is fully compatible with the BK600 and BK400 series inkjet systems. Connection to either inkjet system is made through a 37 pin circular plastic connector, located at the infeed of the base, providing all interface functions including remote start and stopping.

Simplified Mechanical Adjustments

Product size acceptance and compensation is performed on the base through simple mechanical knob controls; one for product thickness and the other for tab edge selection. In addition, some simple adjustments points are located in the tab forming area to fine-tune the tab-wrapping process for improved tab-wrap quality.

Software Controlled Tabber Head Functions

All tabber head functions are controlled through software and uses an operator keypad interface for command entry. Features include tab number and positioning, automatic tab backer sensing, full diagnostics, production counters, and two memory for predefined layout storage.

Construction, Safety Features, and Maintenance

All mechanical and electrical system components, be it in the transport base or tabber head, have been designed for long-lasting, extensive use. Included is a full safety package with feedback through the operator display, monitored by a series of interlocking sensors. The system has been designed to facilitate maintenance, should it be required. The transport assembly including conveying belts, the tabber head, and the tabletops are all easily removable for complete mechanical component access. In addition, front panel and tabber head operator interface are readily accessible through a hinged cover design.

Tabbing Quality Considerations

The tabbing system has been specifically designed for the tabbing process and as such incorporates a number of unique features to optimize tabbing quality. Particular attention was paid to the transport belts for accurate edge positioning, the tab wrap section for the production of consistently tight tab-wraps, and the addition and optimization of the tabbing head software controls for ease of use and superior production speeds.

1.3 Tabber Base Specifications

Table 1.1 *- Tabber base/system specifications*

1.1.1 Product handling			
	Minimum	3.0” X 5.0”	76 mm X 127 mm
	Maximum	16.0” x 17.0”	405 mm X 432mm
	Thickness	Single Sheet to 5/8”	Up to 16 mm
1.1.2 Physical			
	Overall Length	47.5”	1203 mm
	Overall Height *including tabbing head*	60.0”	1520
	Height *tabletop*	34.3” to 36.5”	869 mm to 927 mm
	Overall Width	29.5”	747 mm
	Weight *crated*	550 lbs	251 kg
1.1.3 Production rate			
	Belt Speed	0 to 500 ft/min	0 to 2.54 m/s
	Cycle Speed *single tabs*	0 to 30,000 pph	
	Cycle Speed *dual tabs*	0 to 24,000 pph	
	Cycle Speed *triple tabs*	0 to 15,000 pph	
1.1.4 Electrical requirements			
	Line Voltage	115 ± 15% VAC	220 ± 15% VAC for Europe
	Line Current	10 Amps	5 Amps for Europe
	Power	1.2 KVA	
	Machine Motor	1/3 H.P. DC controller	
1.1.5 Mechanical controls			
	Product Thickness	Rotary adjuster for head and tab forming section	
	Edge Selection	Rotary adjuster for lateral table movement	
	Skidbar	Pressure control for product conveyance	

1.3.1 Tabber Base System Drawing

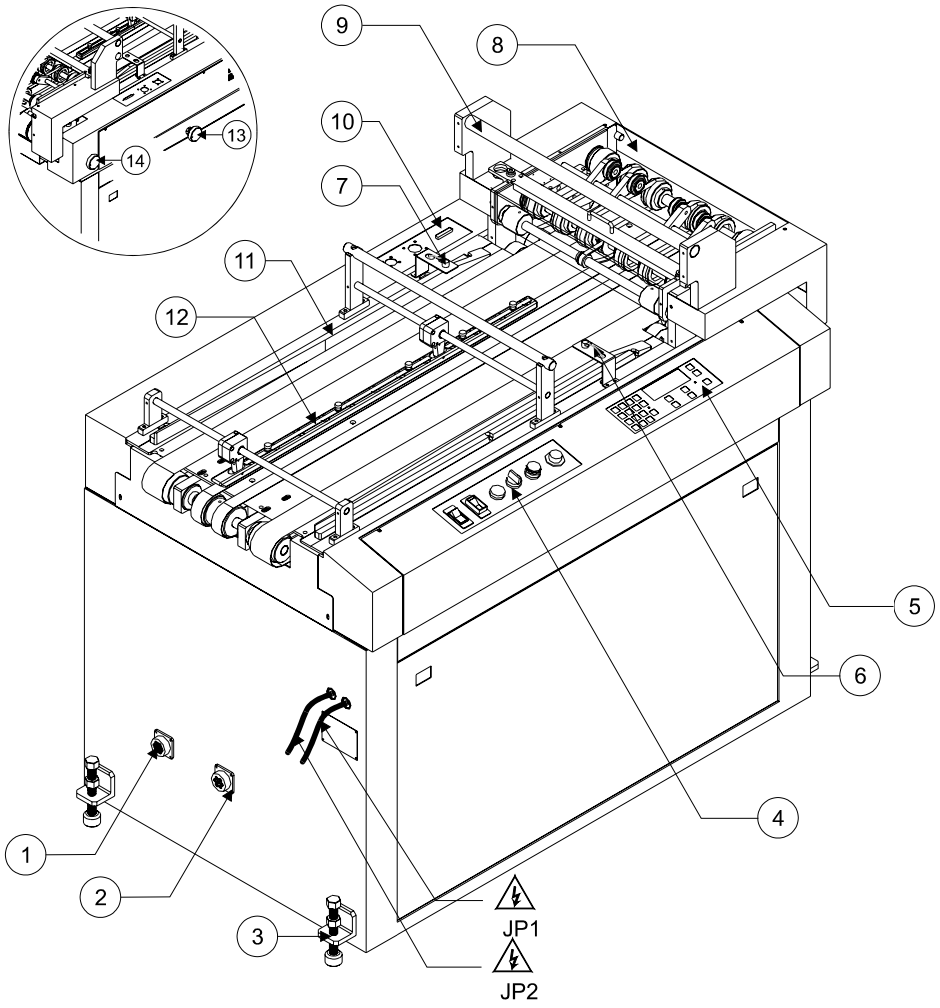


Table 1.2 - Tabber Base Operator Controls, Features, and Installation Points.

Item	Description	Reference
1	Inline Connector	Pages 1-2, 2-6, A1 to A2, C7
2	Conveyor Connector	Pages A1 to A2, C6
3	Base Mounting Foot	
4	Instrument Panel	Pages 2-1 to 2-4, A1 to A2
5	Tabber Head Keypad	Pages 3-8 to 3-26, A1 to A2
6	Right Product Sensor	Pages 3-14, C4
7	Left Product Sensor	Pages 3-14, C4
8	Upper Transport Assembly	Pages 2-13 to 2-14, A1 to A2
9	Tabber Head Positioning Shaft	Page A3
10	Tabber Head Connector Plate	Page C4
11	Registration Rail	Pages 2-12, 2-16, A9 to A10
12	Skidbar	Pages 2-9 to 2-10, A3
13	Edge Selection Handwheel	Pages 2-11 to 2-13, A5
14	Product Thickness Handwheel	Pages 2-13, A11 to A12

1.3.2 Tabber Base Dimensions

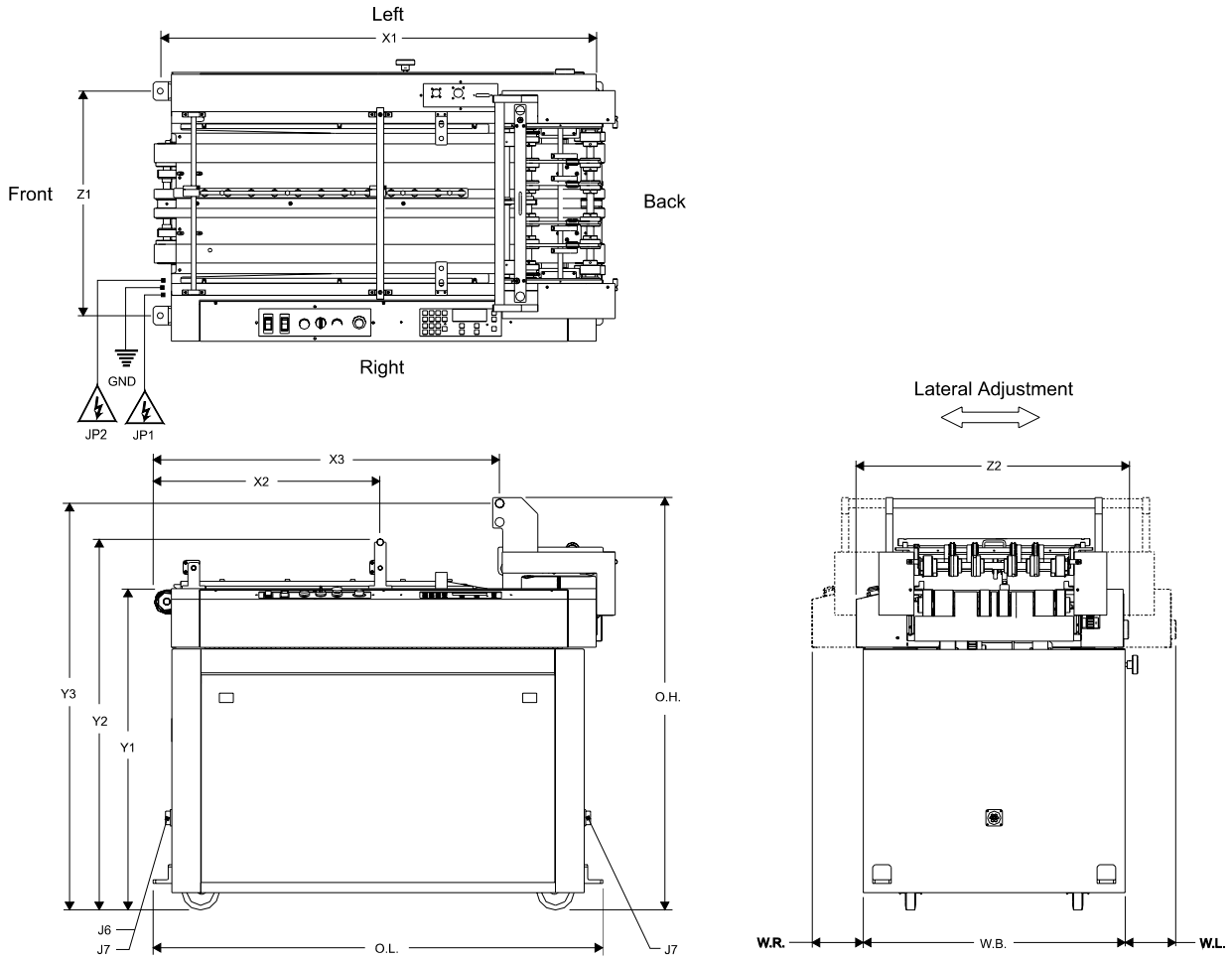


Table 1.3 *- Tabber Base Dimensions and Interface Specifications*

Symbol	Description	Dimensions	
W.B.	Overall Base Width	28.00”	710 mm
W.R.	Right Lateral Extension	6.00”	152 mm
W.L.	Left Lateral Extension	6.50”	165 mm
O.L.	Overall Length	49.75”	1263 mm
O.H.	Overall Height	44.09”	1119 mm
X1	Leveling Foot Length	46.69”	1185 mm
X2	Front Head Mount	24.33”	618 mm
X3	Rear Head Mount	37.12”	943 mm
Y1	Tabletop Height	34.30” - 36.50”	869 mm - 927mm
Y2	Tabber Head Support Height	39.66”	1007 mm
Y3	Head Mount Height	42.05” - 43.44”	1068 mm - 1103 mm
Z1	Leveling Foot Width	24.00”	609 mm
Z2	Upper Transport Width	29.50”	749 mm
J6	Inline Connector *(see Appendix C)*	37 pin CPC Receptacle	*male (AMP p.n. 206306-1)*
J7	Conveyor Connector *(see Appendix C)*	7 pin CPC Receptacle	*female (AMP p.n. 206227-1)*
JP1	Base Power Connector *(see Appendix C)*	Straight Blade Plug, 15A, 125V	*(HUBBELL p.n. HBL5266CCN)*
JP2	Head Power Connector *(see Appendix C)*	Straight Blade Plug, 15A, 125V	*(HUBBELL p.n. HBL5266CCN)*

1.4 Tabber Head Specifications

Table 1.4 *- Tabber Head Specifications*

1.4.1 Tab Specifications			
	Number of Tabs	1,2, or 3	
	Tab Roll Size	Up to 40,000 - 1” (paper)	
	Tab Core Diameter	3.00”	76.2 mm
	Tab Spool Size	19.75”	502 mm
	Tab Length	¾” to 2.0”	19 mm to 51 mm
	Tab Width	Up to 2”	51mm
	Tab Style	Circle, square, rectangle, stamps	
	Tab Type	Clear (c/w engineered backer), Paper	
	Tab Placement	Left, right, or flat tab (gate fold)	
1.4.2 Physical			
	Length *c/w Unwind & rewind spools*	30.5”	775 mm
	Height *c/w Unwind & rewind spools*	35.5”	902 mm
			Overall Width
	13”	330 mm	
	Weight	100 lbs (estimate)	45.5 kg
1.4.3 Software controls			
	Tab Positioning	Positioning of individual tabs ± 0.05” (1.25 mm)	
	Tab Number Selection	1 to 3	
	Tab Backer Sensing	Tab sensor gain setting for opaque and clear	
	Layout Memory	Ability to store a number of predefined layouts	
	Production Counter	Life, job, and production rate	
	Error Reporting	Detects rewind spool full, cover open, and tab out.	
	Product Sensor Selection	Selection of left or right product sensor	
1.4.4 Mechanical controls			
	Head Positioning	Rotary knob control for lateral positioning	
	Head Height product thickness variation	Knob control to raise rear of tabber head for	

1.4.1 Tabber Head System Drawing

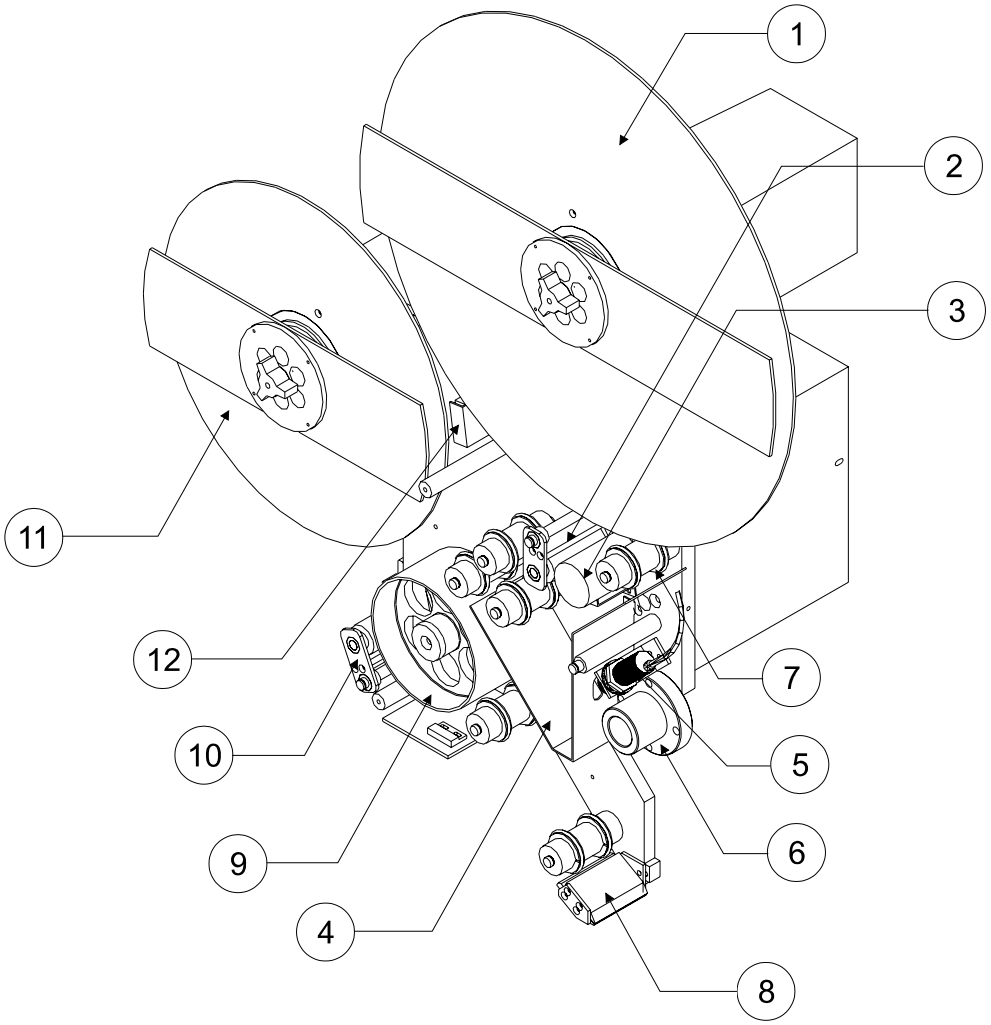


Table 1.5 - Tabber Head Operator Controls, Features, and Installation Points.

Item	Description	Reference
1	Despool Roll	
2	Unwind Roller Idler Assembly	
3	Unwind Roller	
4	Tab Bin	
5	Tab Sensor	
6	Tab Head Mount	
7	Idler Roller c/w Tab Guides (6)	
8	Tab Peel Point	
9	Tab Drive Roller	
10	Tab Drive Idler Assembly	
11	Take-Up Spool	
12	Take-Up Full Sensor	

1.4.2 Tabber Head Dimensions

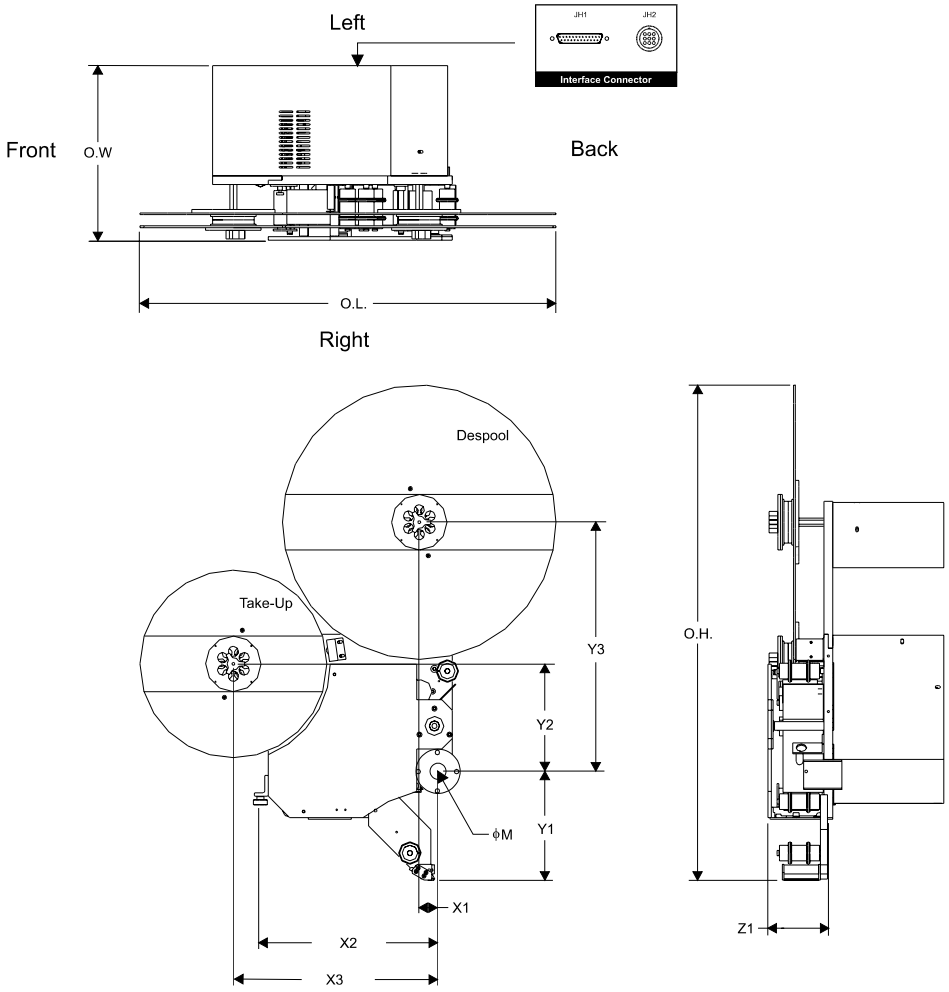


Table 1.6 *- Tabber Head Dimensions and Interface Specifications*

Symbol	Description	Dimensions	
O.W.	Overall Tabber Head Width	35.84”	910 mm
O.L.	Overall Tabber Head Length	30.05”	763 mm
O.H.	Overall Tabber Head Height	12.66”	322 mm
ϕM	Head Positioning Shaft Diameter	1”-5 ACME Thread	
X1	Despool Center Distance	4.31”	109 mm
X2	Leveling Knob Distance	12.78”	325 mm
X3	Take-up Spool Distance	14.74”	374 mm
Y1	Peel Point Height	7.84”	199 mm
Y2	Take-up Spool Height	7.74”	197 mm
Y3	Despool Height	17.94”	456 mm
Z1	Front Face Width	4.35”	110 mm
	Despool Diameter	19.75”	502 mm
	Take-up Spool Diameter	13.50”	343 mm
JH1	Control Connector *(see Appendix C)*	25 pin subminiature “D” - male *(AMP p.n. 747308-2)*	
JH2	Power Connector *(see Appendix C)*	9 pin CPC receptacle	*(AMP p.n. 206705-1)*

Chapter 2

2.1 Instrument Panel Functions

- Power Rocker Switches
- Machine Function Pushbuttons
- Production Speed Regulation Dial

2.2 Inline Installation Instructions

- Alignment with upstream feeding devices
- Attachment of inline cable
- Inline mode switch setting

2.3 Product Setup Instructions

- Skidbar and Material Side Guide Adjustments
- Lateral Adjustment for Tab Edge Selection
- Product Thickness Adjustment

2.4 Advanced Setup Instructions

- Crease and Pinch Roller Adjustment
- Upper Form Plate Adjustment
- Upper Belt Setting

2.5 Maintenance Schedule

2.1 Instrument Panel Functions

The BK530 Tabbing base is equipped with a centrally located instrument panel which displays all the necessary controls to operate the system. The controls can be subdivided into 3 distinct classes of functions which are:

- Main, and Head Power Rocker **Switches**
- Machine Function **Pushbuttons**
- Production Speed Regulation **Dial**

Note: Refer to the main electrical schematic 530ELE01.DWG for further information. *Code in brackets after instrument control refers to the main electrical schematic.*

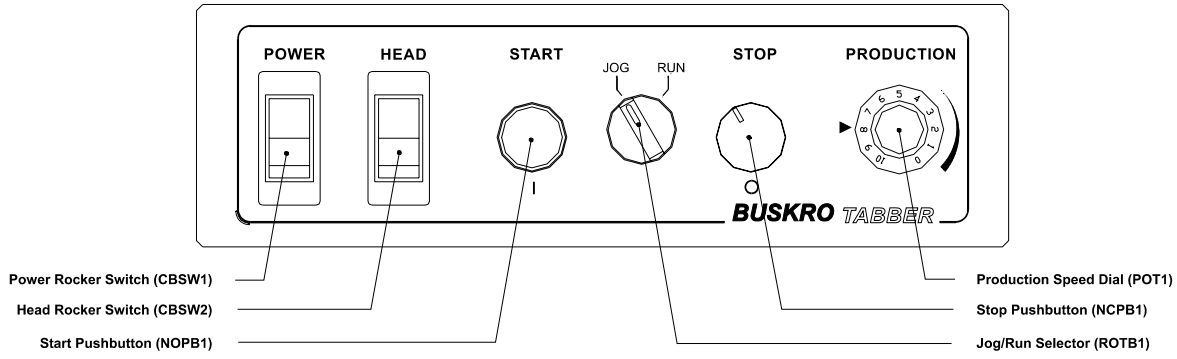


Figure 2.1 *- Instrument control panel illustrating power switches, production speed dial, and machine control pushbuttons.*

2.1.1 Power Rocker Switches

The power rocker switches, the two switches located on the far left of the instrument control panel, provide power to the wide label tabbing system *(Power)* and the labeling head *(Head)*. These switches are equipped with resetable circuit breakers to protect against overload conditions.

POWER Rocker Switch (CBSW1)

Switch which turns on main power to the wide label tabber system. Upon turning this switch ON, the indicator light in the rocker switch should go on indicating that power is now available to all system electrical components including the labeling head. The circuit breaker is rated at 10 Amps @ 120 VAC for the BK530WL wide label tabbing system.

HEAD Rocker Switch (CBSW2)

Switch which supplies power to the labeling head. When this switch is in the ON position, the indicator light in the rocker switch should go on indicating that power is now available to the tabber head's electrical components. The circuit breaker is rated at 5 Amps @ 120 VAC for the BK531 labeling head.

2.1.2 Machine Function Pushbuttons

The pushbuttons and selector knob located on the control panel permit control of the machine's operation. The **Start** *(green)* button and **Stop** *(red)* button allow for engagement and suspension of the wide label tabbing system operation, while the **Run/Jog** selector *(black)* sets the system to run continuously (RUN) or intermittently (JOG) once the START button is depressed.

START Pushbutton (NOPB1)

Pushbutton which turns on machine contactor and applies power to the motor controller. When this button is depressed, the machine will cycle providing that the following conditions have been met,

- The machine **STOP** button is not depressed.
- When the labeling head is powered up and its controller is set to the **Online** mode.
- The inline cable (P.N. 614135A) is not attached and the inline mode switch has not been engaged (UP position). *(see BK530ELE01 electrical schematic and To configure the inline mode switch)*

STOP Pushbutton (NCPB1)

Pushbutton which suspends operation of the tabber system by interrupting the power to the machine DC controller via the machine contactor. This is used mostly as an emergency stop button since depressing this button will cause the machine to stop instantly regardless of the tabber's operating status.

Note: The STOP pushbutton has a locking feature, which when engaged, will prevent the system from cycling. Should this condition occur, twist and release the locking mechanism to allow base operation.

JOG/RUN Selector (ROTB1)

Selector button which permits a choice between continuous and intermittent machine operation. When the **Run** mode has been selected and the **Start** button is depressed, the machine will operate continuously at the speed set by the production dial. In the **Jog** mode, the machine will cycle only as long as the **Start** button remains depressed and at a predefined jog speed as set by the jog dial.

- **Run Mode** - Machine will operate the instant the START button is depressed.
- **Jog Mode** - Machine will operate only while the START button is depressed.

Note: When operating in the Jog mode, the tabber system will do so at the speed set by the Jog dial, located behind the front door. This speed is substantially lower than typical production speeds.

2.1.3 Production Speed Regulation Dial

The production speed regulation dial is the knob located to the right of the machine pushbuttons which permits machine speed adjustment. A clockwise rotation of the speed dial corresponds to a speed increase. Conversely, a counter-clockwise rotation results in a speed decrease.

Production speed dial (POT1)

Production speed dial which permits complete control of the tabber system speed over its full range. The speed range is from 0 *(0)* to 30,000 pieces/ hour*(10)* for the tabber operation. This corresponds to a maximum linear belt speed of 500 ft/min.

2.2 Inline Installation Instructions

The inline installation instructions comprises all the information necessary to properly integrate the tabber system with upstream equipment such as inkjet systems, folders, ancillary feeding devices, etc. Products delivered by this upstream equipment must meet the criteria specified in *Chapter 1, Table 1.1 - Product Handling* for proper tabber operation. Correct installation of the tabber system with other equipment will go a long way to insuring trouble-free operation of the tabbing process. Essentially there are two steps to successful installation, namely, the proper alignment of the base with the upstream equipment for smooth product flow, and integration of the electrical system to coordinate the control of all equipment embodied in the system.

To align the wide label tabbing system with upstream equipment

These instructions cover the alignment and placement of the wide label tabbing system behind upstream equipment.

1. Place the tabber behind the upstream equipment ensuring that the system is aligned with the centerline of the upstream equipment as closely as possible to its delivery section.

2. Raise the wide label tabbing system by individually turning each of the four mounting legs in a clockwise manner. Ensure that the system is level and that the tabletop of the tabber is equal to or slightly below the delivery section of the upstream equipment. Tighten the locking nuts when the system is correctly aligned. *A 1 1/8" wrench will be required for this operation*.

3. The upstream equipment should be positioned such that its delivery section is approximately ¼" (5mm) away from the tabber's infeed rollers. If not, with the aid of some additional personnel, carefully maneuver the tabber into place.

4. Apply power to the tabber base by connecting the black 10 amp, 120 VAC power line to it.

5. Apply power to the labeling head by connecting the gray 5 amp, 120 VAC power line to it.

To provide electrical interface with upstream equipment

These instructions cover the installation of the 37 pin CPC inline cable (P.N. 614135A) from the BK530WL wide label tabbing system to upstream equipment. *(Refer to Appendix C, J6-Inline connector for pin assignments).* An optional tabber connection kit *(P.N. 610003A)*, which includes an installation manual, is provided for the BK400 and BK600 inkjet systems.

1. After following the instructions, as provided in the tabber connection kit, the upstream equipment should be ready for interfacing to the tabber. *Please consult with the factory for any unique or undocumented systems.*

2. Attach the 37 pin CPC inline cable to the tabber connector located centrally in the cabinet at the infeed side of the tabber *(See 1.3.1 Tabber Base System Drawing, item #1).* Do this by aligning the pins and rotating the attachment collar in a clockwise manner.

3. Repeat *step 2*, by attaching the other end of the inline cable to the connection kit cable installed on the upstream equipment. This will permit the systems to shutdown simultaneously, and depending on the level of integration, may permit simultaneous starting of both systems.

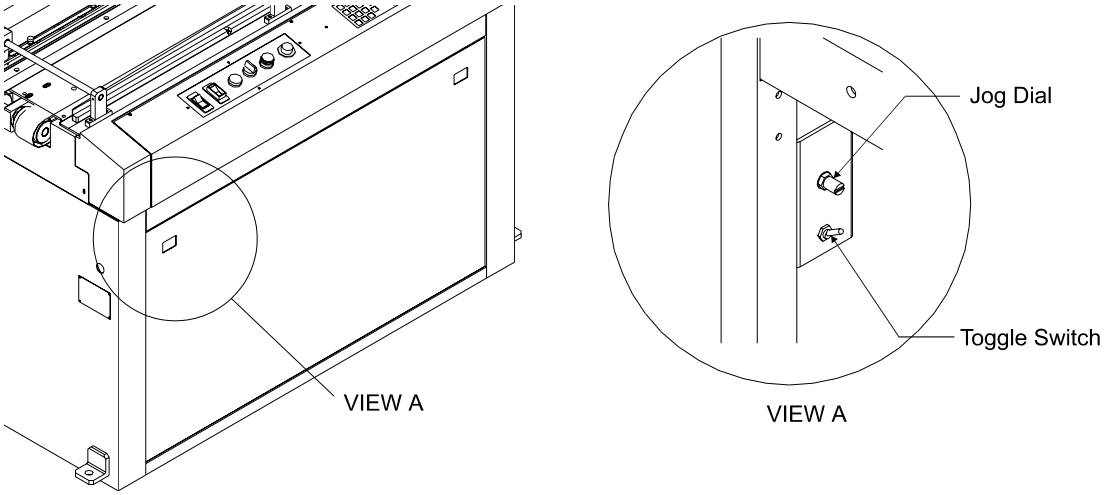


Figure 2.2 *- Location of inline mode switch inside the tabber base's front door shown in the stand-alone position (UP).*

To configure the inline mode switch

Should you wish to omit the installation of the inline cable, the inline mode switch will have to be correctly configured to bypass the stop circuit and permit startup of the tabber unit. This switch, located inside the front cabinet door, is factory set *(UP)* to bypass the stop circuit and must be disabled for the inline cable to function effectively.

1. Remove the front cabinet door exposing the inside of the tabber cabinet. The switch is situated at the upper left of the cabinet. The inline mode switch is the toggle switch located directly below the jog dial.

2. If integration with the upstream equipment is desired and the inline cable is to be used, disable the inline mode switch by placing it in the **DOWN** position.

3. Conversely, if the tabber system is to be operated separately as its own stand-alone unit, the inline mode switch should be in the **UP** position to enable bypass of the stop circuitry.

4. Replace the front cabinet door.

Note : the inline mode switch is factory set to bypass the stop circuit hence it is in the UP position.

2.3 Product Setup Instructions

The product setup instructions encompass all those instructions necessary to ensuring smooth product flow and tab-wrap quality. Included is information pertaining to the lateral positioning of the tabber table for edge selection, adjustments for various product thickness', setting of the skidbar for smooth product conveyance, and upper transport height adjustment for excellent tab wrapping results. In addition, the instructions will cover the setting of the relative tabber transport speed to ensure smooth product transfer between it and the upstream equipment.

All labeling head mechanical adjustments and control settings will be covered in *Chapter 3, labeling Head Instructions.* These instructions will cover the mechanical positioning of the labeling head, tab spool threading, labeling head leveling, and tab application particulars via the operator interface keypad.

To adjust the tabber base speed for smooth product transfer

In order to prevent product buckling at the entry of the tabber transport, it is important that the tabber speed be slightly faster than the upstream delivery equipment.

1. Turn the production knob in a clockwise direction and set it to a speed of "5". This should be relatively high enough to be faster than the upstream equipment, if not, increase it.

2. Setup the base to accept the product for edge selection using instruction *To select tabbed edge using edge selection handwheel*, and product thickness following the instructions *To adjust the skidbar for product thickness* and *To adjust base for product thickness.*

3. Fine-tune the production knob adjustment by ensuring that the gap between products on the tabber transport is between 1" to 2" (25mm to 50mm). A large product spacing will only put undue stress on the tab application process and may result in inconsistent operation with increased product jamming.

2.3.1 Skidbar and Material Side Guide Adjustments

Proper adjustment of the skidbar assembly and material side guides will permit dependable and accurate feeding of the conveyed products so that they are correctly registered against the material guide when presented under the labeling head. The function of the base's transport section is to re-align and register any product which may be delivered in a skewed fashion from the upstream equipment, such that when the labeling head places a tab on the product, it will be correctly and accurately placed along the edge of the product.

As there is no vacuum applied to the transport, it is the skidbar's function to ensure positive product conveyance in this area by forcing the product against the table transport belts. The left and right material guide positions, adjusted by the edge selection handwheel *(see figure 2.4)*, act as registration bars for the product's edge, and, in conjunction with the biased transport belts, assist in the correction of product skew.

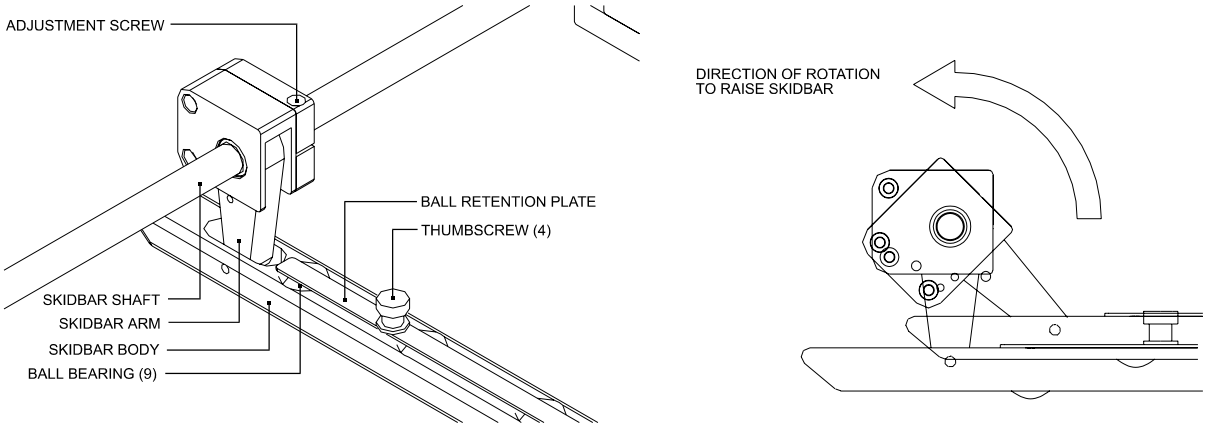


Figure 2.3 - *Skidbar adjustment points including an illustration of the height adjustment method..*

To adjust the skidbar for product thickness *(see Figure 2.3)*

A proper skidbar adjustment is essential in ensuring positive product conveyance along the table.

1. Loosen both skidbar adjuster screws using a 9/64” hex key and raise the skidbar away from the transport belts to ensure unencumbered passage of the product.

2. Place a product completely under the skidbar.

3. Lower the skidbar onto the mailpiece until the skidbar’s ball bearings contact the upper surface and pressure is applied.

4. Exert slight spring tension on the skidbar by holding it down on the product and simultaneously retighten both skidbar adjuster screws.

5. Some of the ball bearings may have to be removed to prevent product buckling at the product exchange point situated at the entry of the tabber transport. To do this, place a product under the skidbar until its trailing edge is fully engaged by the skidbar.

6. Loosen and remove the thumbscrews holding the ball retention plate. Now remove all the ball bearings contacting the surface of the product. If a ball bearing just makes contact with it at it’s lead edge, it may be left in place.

7. Replace and tighten the ball retention plate against the ball bearings by turning the thumbscrews in a clockwise fashion.

Note : An Improper skidbar adjustment may cause inconsistent transportation of the product. If there is sufficient retardation of the product, the tab positioning will be inconsistent and/or the piece will become trapped in the transport section resulting in tabs being placed directly on the pinch roller.

If sufficient balls are not removed and firm pressure is applied to the product, buckling of the mailpiece may occur. This problem may also be alleviated by ensuring the tabber transport speed is faster than the delivery of the product from the upstream equipment.

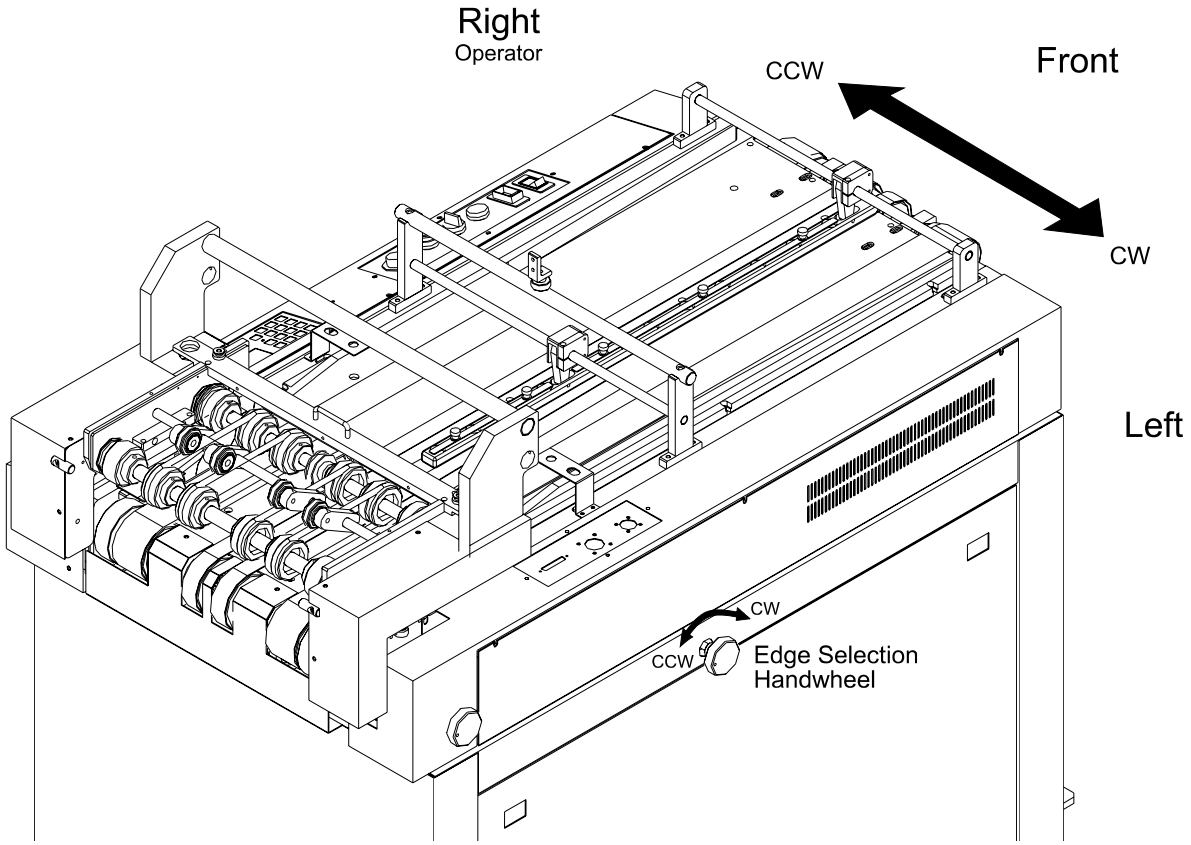


Figure 2.4 *- Left side of the tabber base illustrating the location of the edge selection handwheel for lateral motion control of the transport section.*

To select tabbed edge using edge selection handwheel *(see Figure 2.4 and 2.5)*

1. Determine the side of the product which must be tabbed.

2. For a left side tab placement, rotate the edge selection handwheel counter-clockwise (CCW) until the product is delivered within an 1/8" to ¼" (3 mm to 6 mm) from the left material guide at the entry point, ensuring that the product makes contact with the material guide prior to passage past the labeling head peel point.

- OR -

3. For a right side tab placement, rotate the edge selection handwheel clockwise (CW) until the product is delivered within a 1/8" to ¼" (3 mm to 6 mm) from the right material guide at the entry point, ensuring that the product makes contact with the material guide prior to passage past the labeling head peel point.

Note: Tight registration at the entry point may cause the occasional skewed product to jam against the material guide.

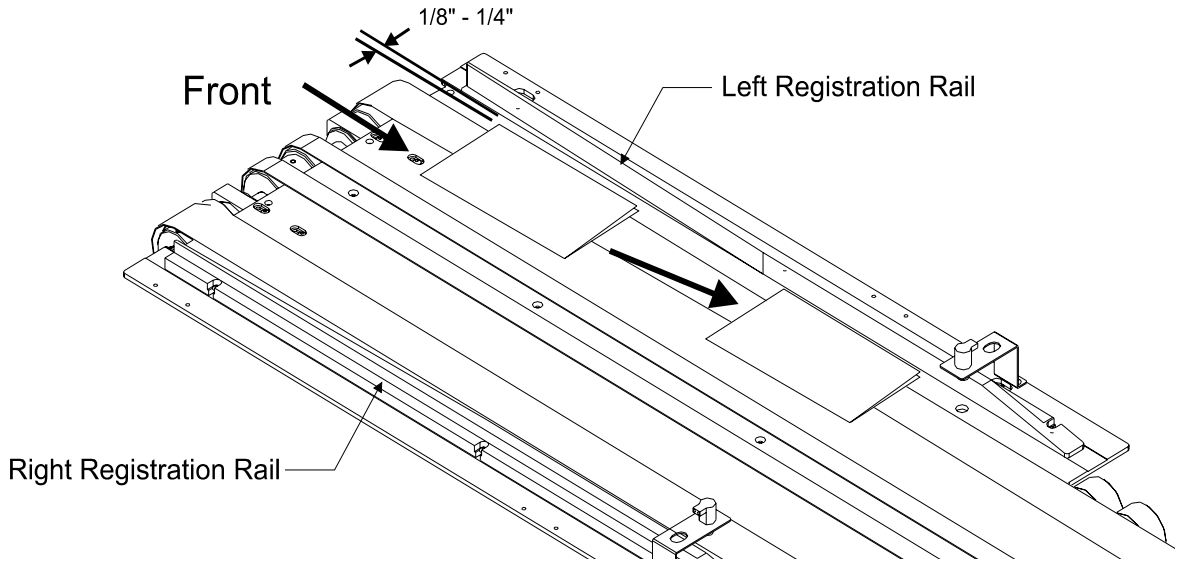


Figure 2.5 - *Illustration of the product flow showing the desired infeed gap distance at the entry of the registration rails.*

2.3.2 Product Thickness Adjustment

When feeding a new product, it may be necessary to adjust the upper transport assembly and the labeling head peel point to accommodate the product's thickness. Adjustments are made by rotating the product thickness handwheel. The labeling head mount is attached to the upper transport assembly so that when the product thickness handwheel is adjusted, it automatically does so for all components sensitive to varying product thickness. Only a slight adjustment of the labeling head leveling knob may have to be made to fine-tune the setting of the labeling head *(See chapter 3.1.1)*. Proper thickness adjustment will ensure that the product is tabbed and conveyed in the tab-wrap section without any hint of skewing.

A skidbar thickness adjustment as outlined in the *To adjust the skidbar for product thickness* should be performed before the aforementioned thickness adjustments to ensure smooth product conveyance prior to setting the labeling head and upper transport assembly section.

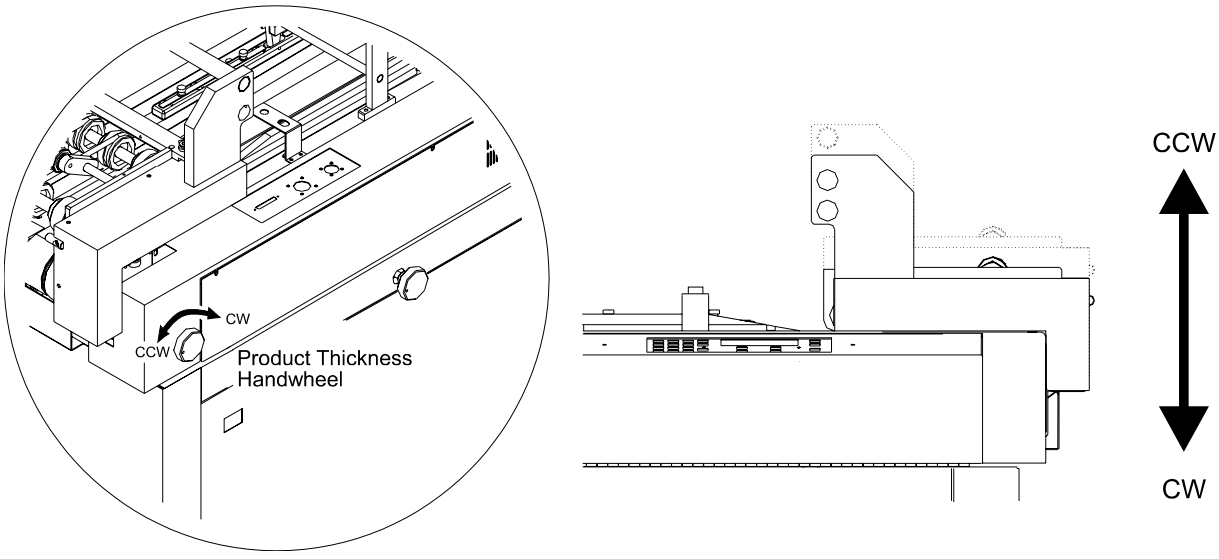


Figure 2.6 - *Product thickness handwheel indicating the location and direction of rotation for correct product thickness adjustment.*

To adjust base for product thickness (*See Figure 2.6*)

To allow smooth passage through the upper transport assembly, a product thickness adjustment is required any time there are dimensional changes to the mailpiece.

1. Ensure the upper transport is closed by locking the two latches on either side of the upper transport cover bar (see *212535A, Upper Transport Assembly, pA7*) into the holes provided on the head support spacer (see *300530A, Tabber Head Mount Assembly, pA6*).

2. Raise the upper transport assembly sufficiently to allow free passage of the product by rotating the product thickness handwheel counter-clockwise (CCW). This handwheel is located opposite the operator side closest to the outfeed section.

3. Place the product between the upper transport assembly's outfeed rollers and the table belt outfeed rollers.

4. Lower the upper transport assembly such that the product is snugly held between the rollers in *step 2*. Do this by rotating the product thickness handwheel in a clockwise (CW) fashion.

5. The upper transport assembly and labeling head peel point height should now be correctly set. To complete the setup procedure, adjust the level of the labeling head following *To adjust head for product thickness* outlined in chapter 3.

Note: Lowering of the upper transport assembly is accomplished by rotating the product thickness handwheel clockwise (CW). Conversely, a counter-clockwise (CCW) rotation of the handwheel will raise the upper transport assembly.

2.4 Advanced Setup Instructions

These instructions comprise all the adjustments necessary to optimize the operation of the tab-wrap section for trouble-free operation and superior tab-wrap quality. Careful attention and diligence should be adhered to when performing these adjustments since even the slightest movement will result in dramatically different results. If you are unsure of the instructions in this section, please contact your representative to ensure correct compliance with these instructions.

Instructions covered here include the setting of the lower pinch rollers and the tab crease rollers. The tabber is equipped with an identical set of rollers and form plate on either side of the base for both left and right tabbing capabilities, hence the instructions must be repeated for both sides to ensure consistent operation of both the left and right side of the tabber.

2.4.1 Crease and Pinch Roller Adjustment

The purpose of the crease/pinch roller combination is to initiate the tab wrap-forming process *(see Figure 2.8)*. The crease roller folds the protruding portion of the tab along the edge of the product with the pinch roller acting as an anvil. As the anvil, it is vitally important that the outer forming side of the pinch roller be closely aligned to the product edge registration line in order to produce a crisp fold line close to the product's edge. So, when adjusting these rollers, the pinch roller setting should be done first, followed by the crease roller setting.

The gap setting between the crease and pinch roller is critically important as it determines the crispness and tab fold location with respect to the edge of the product, ultimately determining the quality of the tab-wrap. If the crease roller is too far away from the pinch roller and the gap is too large, the tabs will skew as the pressure between the two rollers is uneven. Conversely, a tight gap setting will cause the crease roller to act as a knife shearing the tab into two pieces.

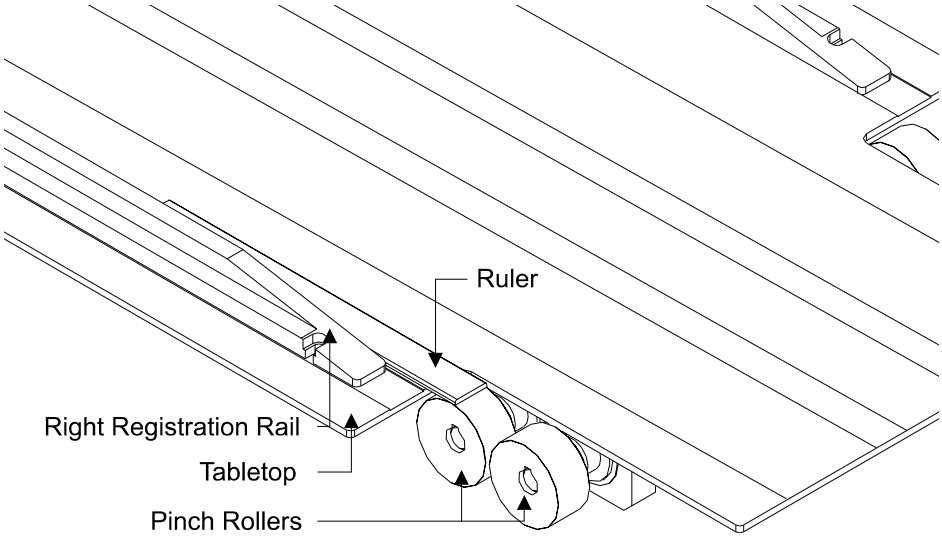


Figure 2.7 *- Pinch rollers situated on the right side of the tabber with a ruler shown against the right registration rail, illustrating the pinch roller alignment method.*

To set the pinch rollers *(see Figure 2.7)*

The objective of this adjustment is to align the outer edge of the pinch rollers with the material side guides to ensure that the tab fold produced by the crease roller is as close to the product's edge as possible.

1. Move the labeling head peel point away from the right side's pinch rollers.

2. Obtain a clear, unobstructed access to the pinch rollers by pivoting the upper transport assembly upwards.

3. Place a ruler or a straight edge against the right material guide's inner edge as per *figure 2.7*.

4. Loosen the 10-32 UNF set screw of both of the right side's pinch rollers using a 3/32" hex key ensuring that they are free to move laterally on the shaft. This set screw is located on the roller's shoulder.

5. Grip the first pinch roller and move it until its outer edge aligns with the ruler. Secure it on the shaft by re-tightening its set screw.

6. Repeat *step 3* for the second pinch roller.

7. Repeat *steps 3 to 6* for the pinch rollers situated on the left side of the tabber.

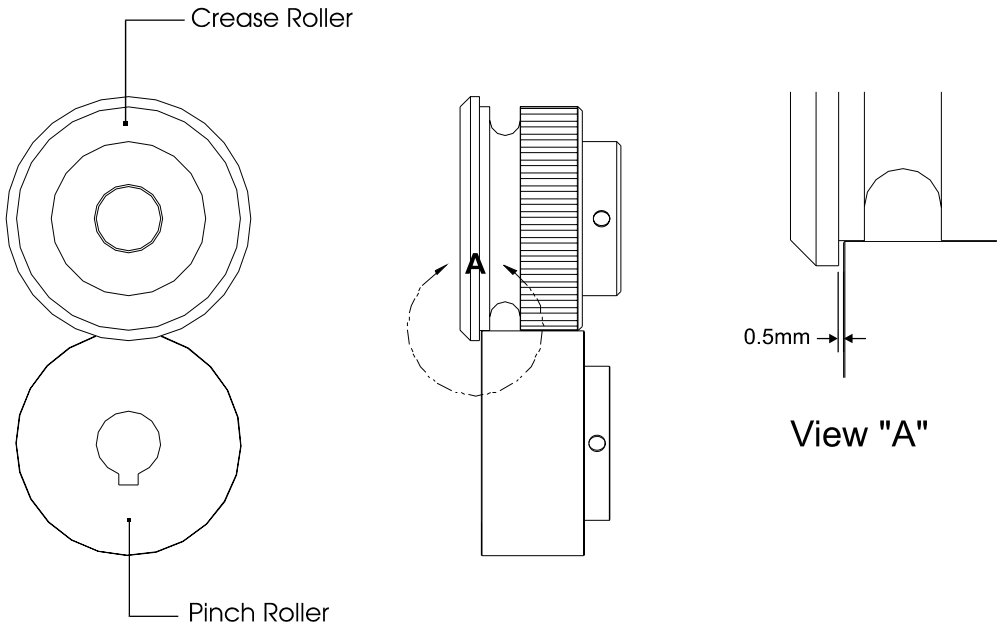


Figure 2.8 - *Illustration of the crease/pinch roller combination showing the roller gap setting of 0.5mm.*

To set the crease roller *(see Figure 2.8)*

1. Access the crease roller by removing the plastic safety cover located on the upper transport assembly.

2. Loosen right crease roller's 10-32 UNF set screw using a 3/32" hex key ensuring that it is free to move laterally on the shaft. This set screw is located on the roller's shoulder.

3. Grip the crease roller loosened in *step 2* and slide it towards the pinch roller *(center of tabber)* until it can no longer advance due to interference with the pinch roller. Back it off slightly by gently nudging it. The best tabbing results are attained when the crease roller is set 0.02" away (0.50mm) from the pinch roller's edge *(See Chapter 4).* The gap can be set by placing a folded 20 bond piece of paper between the crease and pinch roller.

4. Secure the crease roller on the shaft by re-tightening its set screw.

5. Repeat *step 3 and 4* for the left crease roller.

6. Replace the plastic safety cover.

2.5 Maintenance Schedule

The maintenance schedule table below applies to equipment which is operated daily on an 8 hour basis. If the equipment is to be used more frequently than the aforementioned operating standard, please adjust your schedule accordingly.

Table 2.1 - *Maintenance Schedule Table*

Period	Maintenance Function
Daily	Wipe table surface clean of paper, dust and other accumulated debris. Remove the front door and clean any debris which may have fallen into the machine. Remove any tabs which may have settled on the pinch rollers and form plates in the tab-wrap section. Use of Varsol will facilitate the glue removal process. Examine the table belts and rollers for wear. Replace if necessary.
Monthly	Grease gears accessible through the Outfeed Roller Cover (P.N. 700537). See *Appendix A, drawing BK530A (pp A1-A2).* Special Gear Grease Oil Such As **Shell Capac lube** is recommended. Grease the worm gears situated in the gearbox with a special grease oil such as **Shell Capac lube**. See *Appendix A, drawing 330530A (pp A12-A13)* Examine the gears for wear. Replace if necessary.
Semi Annually	Remove tabletops and examine all mechanical drive components including belts, shafts, bearings, and rollers for wear. Replace if necessary. See *Appendix A, drawing 325530A (pp A10-A11).*

Note: Acquiring a small air compressor is recommended as compressed air is useful in removing debris.

Chapter 3

3.1 Mechanical Adjustments

- Tabber Head Leveling
- Peel Point Lateral Positioning
- Tab Spool Threading

3.2 Tab Setup Instructions

- Tab Pitch Setting
- Tab Sensor Adjustment
- Product Counter Resetting
- Life Count Display
- Left /Right Product Sensor Selection

3.3 Tabber System Diagnostics

3.4 Mode

3.5 Tab Placement

- Tab Position Entries
- Number of Tabs

3.6 Operational Controls

- Online/Offline Status
- Product Count, Production Rate and Belt Speed Display
- Error Conditions

3.1 Mechanical Adjustments

3.1.1 Tabber head Leveling

As mentioned in *chapter 2.3.2 Product thickness Adjustment*, the product thickness handwheel will automatically raise the peel point of the tabber head because the tabber head mount, located at the rear, is intrinsically attached to the upper transport assembly. This operation, however, will not raise the front of the tabber causing the peel point to rotate slightly, changing its relative angle to the nip/pinch roller junction.

The tabber head is equipped with a leveling screw to permit adjustment of the front of the tabber head so that the peel point is correctly positioned and angled over the product. As previously mentioned, failure to do a leveling adjustment, will change the peel point's relative position to the nip roller/pinch roller junction resulting in incorrect tab positioning on the product, or worse, a complete lack of adhesion to the product.

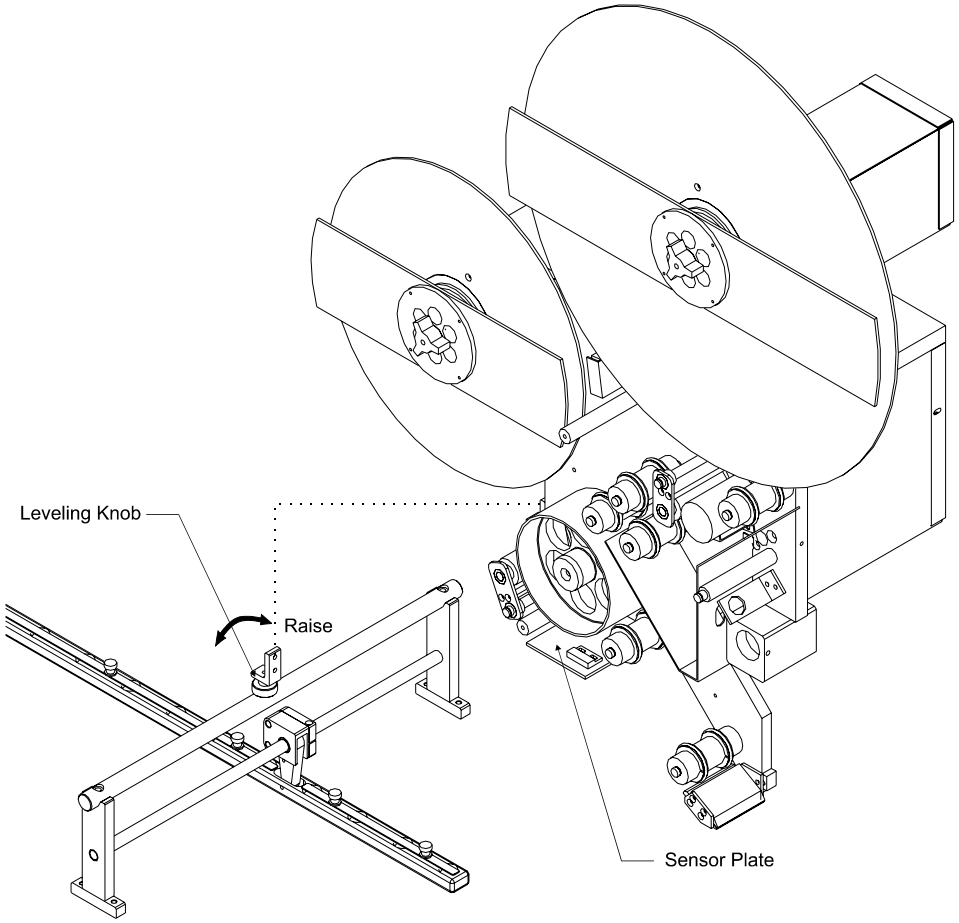


Figure 3.1*- Illustration of the leveling knob and its mounting to the tabbing head.*

To Level the Tabber Head

1. Open the tabber head front protective cover by loosening the two thumb knobs attaching it to the tabber head.

2. Turn the leveling knob sufficiently until the sensor plate is parallel with the tabber base tabletop (*this can be eye-balled*). Turning the knob clockwise raises the front of the tabber head. Alternatively, turning the leveling knob counter-clockwise lowers the head.

3. Close the front protective cover and tighten the thumb knobs to lock the cover into place.

3.1.2 Peel Point Positioning

The tabber head has the ability to be moved from one side of the tabber base to the other in order to place tabs on the left or right side of the product. In addition, the tabber can be operated as a flat labeling device or stamp affixing system by locating the peel point anywhere between the left and right tabbing positions. The head rests on an ACME shaft which permits minute lateral adjustments of the head to achieve the desired tabbing location with effortless movement.

Flat tab sealing operations will require adjustments of the nip roller position such that it is aligned with the peel point to ensure proper tab adhesion. During tabbing operations, lateral positioning of the peel point must compensate for the product's thickness to ensure even tab placement on the upper and lower side of the product. Side-to-side positioning of the tab is accomplished by loosening the head's fastening knob and gently rotating the head positioning shaft in the desired direction.

To Make a Lateral Head Position Adjustment

1. Loosen the tabber head fastening knob.
2. Rotate the head positioning handwheel clockwise to move the tabbing head towards the right side of the tabber. Conversely, rotate the handwheel counter-clockwise to move the tabbing head towards the left.
3. Tighten the tabber head fastening knob loosened in *step 1*.

Note: The product must trigger either one of the two product sensors to enable tab dispensation.

Ensure that the correct product sensor (left (2) or right (1)) has been selected in the head controller to permit correct operation of the tabber. *(see chapter 3.1.5, Left/Right Product Sensor Selection)*

3.1.3 Tab Spool Threading and Lateral Positioning

When initially loading on a new tab spool, it is very important that the centerline of the tabs are aligned to the center of the peel point as shown in *Figure 3.3* and that the threading guide *(see Figure 3.4)* is carefully followed to ensure correct tab placement on the product. The **tab sensor**, which detects the lead edge of the tab, is mounted centrally in the peel point assembly, hence the tabs must be center-justified for true lead-edge detection. Tabs, which are sensed off-center, will result in incorrect tab placement on the product since the tab's relative position to the peel point will change somewhat.

Proper central alignment is initiated by correctly setting the core slot positions, located in the despool and take-up roll shafts, to accommodate the tab backer width. Each core is equipped with a core locator plate that seats itself in one of the lateral positioning slots allowing for overall lateral placement accuracy of ± 1/16" (1.6mm) *(see Figure 3.2).*

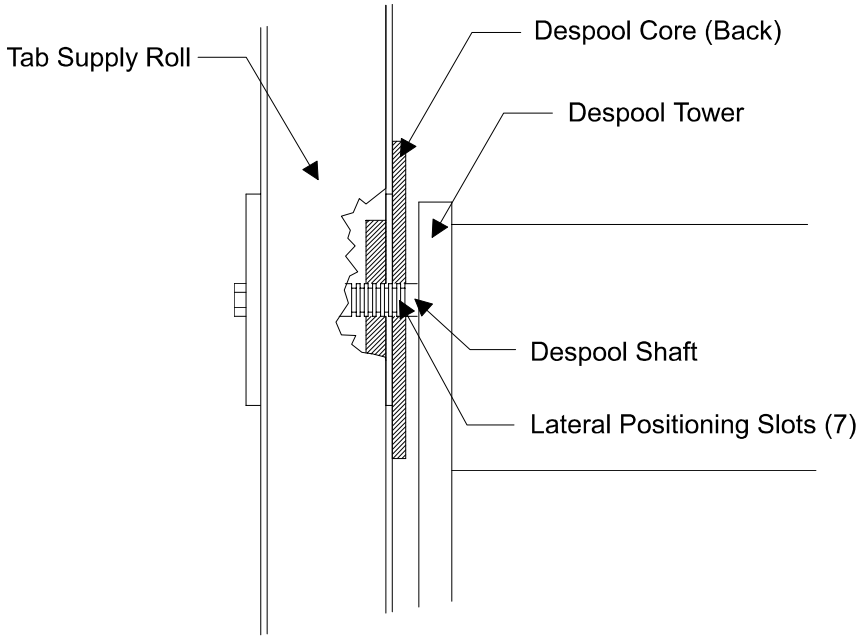


Figure 3.2- *Illustration of the despool roll showing the core slot position locations situated on the despool shaft.*

To complete the lateral adjustment procedure, the position of the idler roller guides will have to be re-adjusted, with the alignment of the tab backer at the peel point and the drive rollers automatically finding its correct position. Correct alignment along the threading path including the idlers, drive rolls, despool roll, take-up roll, and tab sensor assembly will result in accurate tab placement and operation.

To Set the Core Slot Locations

1. Measure the width of the backer and adjust the cores to the slot that locates the backer in the center of the thread path.
2. Carefully load the tabs onto the despool core. Despooling is done in a clockwise direction. Assemble the front core to the tabs and despool core and lock down with the supplied knob.
3. Make sure that the take-up core is set up the same way as the despool core.

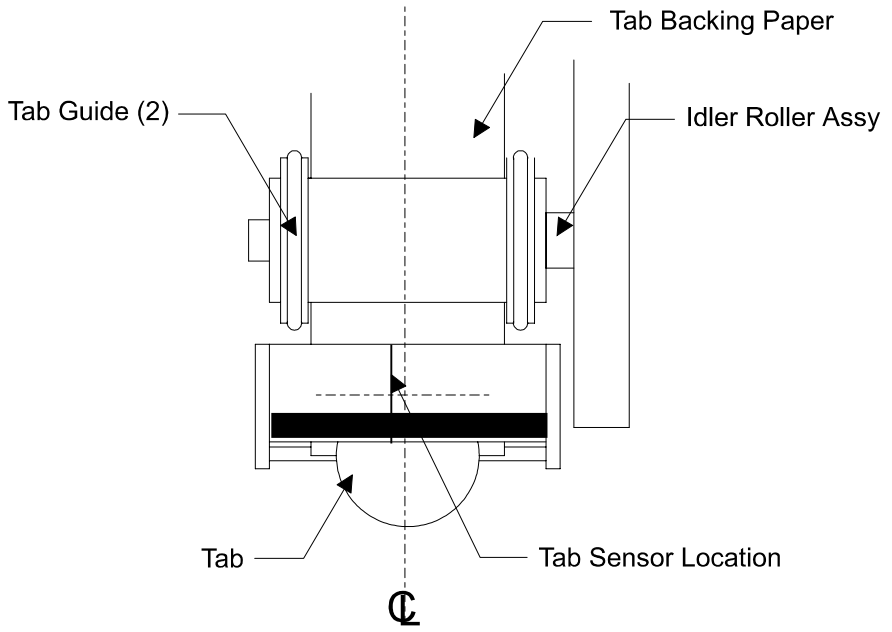


Figure 3.3 - *Top view of the peel point assembly showing its various elements and the tab's alignment with respect to the centerline. (Note: the tab sensor is offset from the center line)*

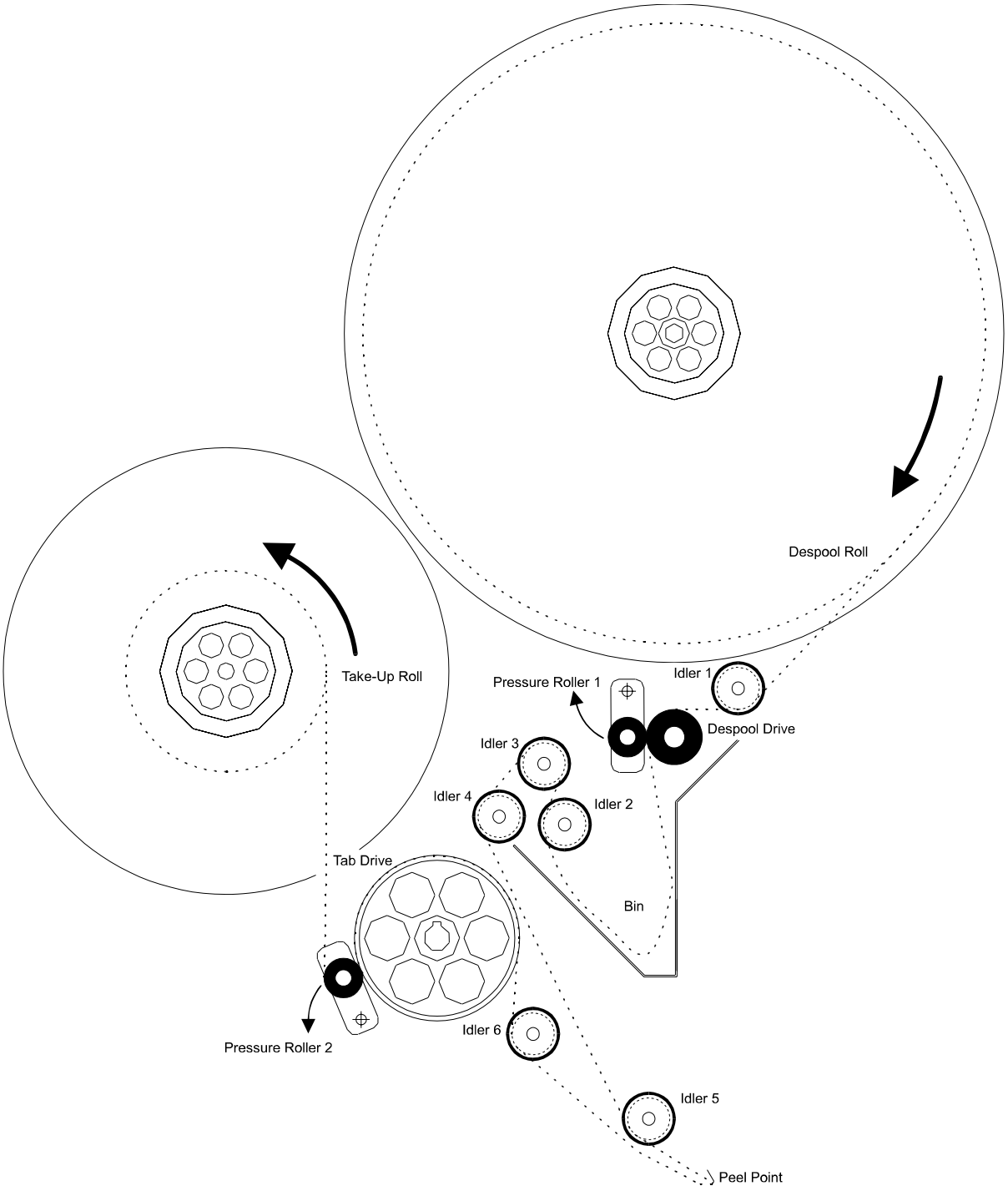


Figure 3.4 - *Side view of the tabber head illustrating the threading path of the tabs.*

To Thread the Tabs *(See figure 3.4)*

1. After following the instructions outlined in *To Set the Core Slot Locations*, the idler roller guides and tab spool core pins should be set. If the tab backer is not centered in the peel point assembly, review the aforementioned instructions.

2. Pull back **Pressure Roller 1** situated at the **Despool Drive** in the direction shown in *figure 3.4*. The locating pin will snap into the pin hole causing the pressure roller to lock in the open position.

3. Pull back **Pressure Roller 2** situated at the **Tab Drive** in the direction shown in *figure 3.4*. The locating pin will snap into the pin hole causing the pressure roller to lock in the open position.

4. Create a leader by removing a number of tabs from the backing material of the roll of tabs located on the despool core (*approximately 18" to 24" worth*). Thread this leader as shown in *Figure 3.4.* Ensure that the individual idler roller guides are not too tightly set.

5. At the **Peel Point**, slide the leader between the upper and lower peel point plates. At this point, with no tabs on the backer, it is an appropriate time to set the Tab sensor gain as outlined in the *To Set Tab Sensor Gain* instructions.

6. Using a tab or tape, affix the backer to a 3" cardboard core on the take-up spool. Double check the thread path ensuring the tab material is capable of moving freely and correctly through the tabbing head.

7. Pull the releasing knob on the **Pressure Roller 1** assembly to remove the locating pin from the locating hole. The pressure roller assembly should release with the pressure roller pinching the tab backer against it and the **Despool Drive**. *Make sure the backer is resting against the Despool Drive prior to releasing the pressure assembly to ensure that the tab backer does not rip.*

8. Pull the releasing knob on the **Pressure Roller 2** assembly to remove the locating pin from the locating hole. The pressure roller assembly should release with the pressure roller pinching the tab backer against it and the **Tab Drive**. *Make sure the backer is resting against the Tab Drive prior to releasing the pressure assembly to ensure that the tab backer does not rip.*

3.2 Tabber Controller Interface

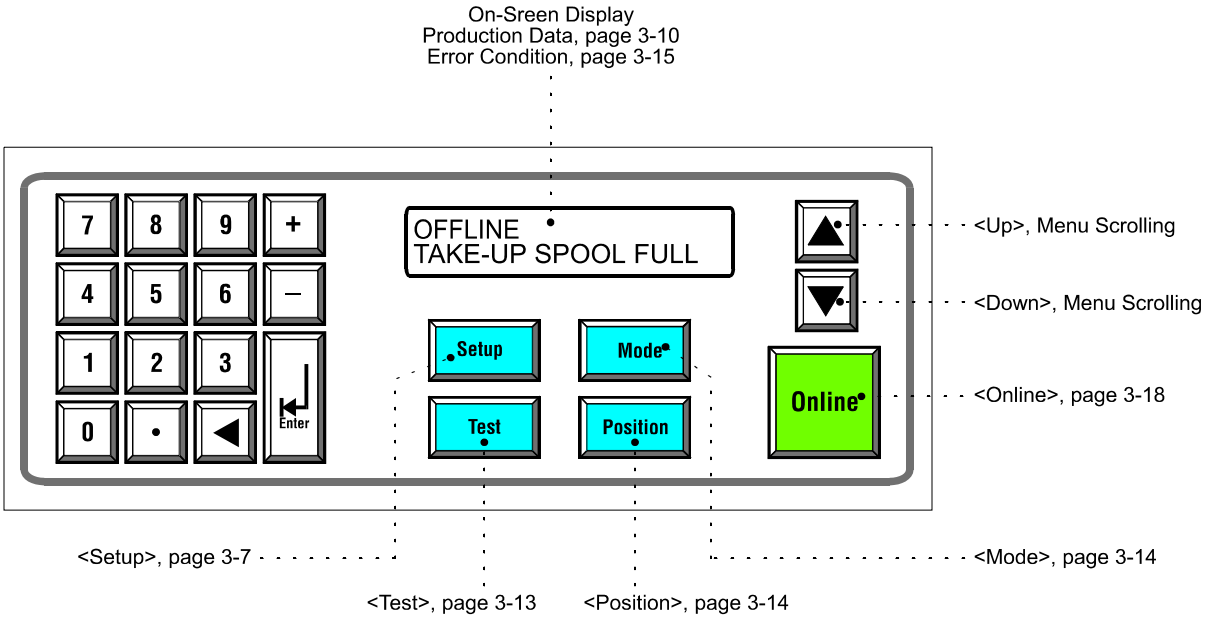


Figure 3.5 *- Illustration of the tabber head control keypad showing the various operator keys and display.*

The previous section, *3.1- Mechanical Adjustments*, delved into all the mechanical adjustments which would have to be performed to permit successful operation of the tabber head. In the following *sections 3.2 to 3.6*, all instructions outlined relate to the tabber head controller and are executed via the operator keypad situated on the right-side of the base, next to the base operating controls.

The operator keypad embodies a numeric keypad on the left side including the <enter> and <backspace> key, four function keys situated below the display, two scrolling keys, and an <online> key. The numeric keys are for numerical data entry, the four function keys configure the tabbing head for a particular job, the scrolling keys are used to navigate through the various menus, and the online key is used to engage and suspend operation of the tabbing system. The display is a two-line, 20 character LCD unit that permits viewing of the setup parameters during the configuration procedure and the production parameters during normal operating conditions.

3.2 Tab Setup Instructions

The **Setup** instructions comprise all those functions which permit adjustment of the hardware components of the tabber head including sensors, and tab drive particulars. In addition the operator may view and reset current production counts. In the case of the sensor setting and selection, as well as the tab pitch entry, it is imperative that these functions be correctly set for they will drastically affect the overall performance of the tabber head, and in some cases, the complete tabbing operation. The **Setup** functions can be summarized as follows :

- Tab Pitch Entry
- Job Memory
- Auto Tab Calculator Size
- Tab Sensor Positional Adjustments
- Tab Sensor sensitivity setting
- Job and Life count management
- Selection of the Product Sensor

3.2.1 Tab Pitch Setting

The controller utilizes the Tab Pitch value to determine how much of an incremental move the tab drive roller has to make between each tab to maintain registration, and ultimately, tab placement. The pitch, which is determined by measuring the distance from the beginning of the first tab to that of the second tab *(see Figure 3.6)*, must be precisely entered into the controller with an accuracy of ± 0.05" to ensure that each successive tab is accurately placed on the product. Failure to set this parameter accurately will result in tab "drift" with tabs being incorrectly placed on successive products.

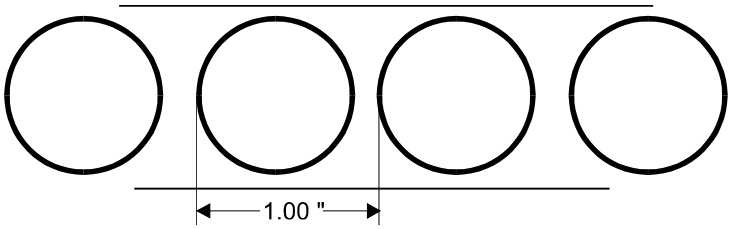


Figure 3.6 - *Illustration of a section of tab ribbon that has a tab pitch of 1.00" as measured from the beginning of the first tab to that of the adjacent one.*

To Set Tab Pitch

1. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Setup>** key to access the setup menu. The display will read *"TAB PITCH: xx.xx>"*.

3. To increase the Tab Pitch press the **<+>** key. To decrease the Tab Pitch press the **<->** key. The Tab Pitch can be incremented by ± 0.05". Once a value has been chosen, press the <**Enter**> key to save it. The tab pitch can also be set by directly keying in a value using the numeric keypad and depressing the <**Enter**> key after a value is chosen. Once selected, the tabber keypad will display the current tab pitch setting.

4. Return the system online by pressing the **<Online>** key.

Note: If the Tab Pitch entry is not accurately set, the result will be that each successive tab applied will drift incrementally on successive products. That is, the first tab may be applied at 1" from the lead edge, with the second applied at 1.05", the third one at 1.1" and so on…

3.2.2 Job Memory

The tabber head controller has the option of saving into memory the two most commonly used job settings. These settings include the job's material size, the tab sensor position, the product sensor side, and the tab pitch. The memory locations are described as M1 and M2 and can be recalled whenever a similar job is run.

To Save a Job to Memory

1. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Setup>** key to access the setup menu. The display will read *"TAB PITCH: xx.xx>"*.

3. Press the **<Down>** arrow once. The display should now read *"SAVE (M1 or M2):>"*. If not, keep pressing the **<Down>** arrow until it does.

4. Select memory location 1 or 2 using the numeric keypad followed by the <**Enter**> key. The setup will confirm that all current settings have been saved into the appropriate memory location by displaying *"Mx SAVED" (x being either 1 or 2).*

Note: Once a memory has been selected, the previous memory settings will be overwritten.

3.2.3 Auto Tab Calculator Size

The tabber head controller can calculate the position of one to three tabs depending on the material size. That is it will find the most symmetrical tab position by simply inputting the material size and the number of tabs.

To Set the Material Size

1. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Setup>** key to access the setup menu. The display will read *"TAB PITCH: xx.xx>"*.

3. Press the **<Down>** arrow twice. The display should now read *"AUTO: xx.xx>"*. If not, keep pressing the **<Down>** arrow until it does.

4. To increase the Auto Size (the material size) press the <+> key. To decrease the Auto Size press the <-> key. The Auto Size can be incremented by ± 0.05". The Auto Size can also be set by directly keying in a value using the numeric keypad and depressing the <**Enter**> key after a value is chosen. Once selected the keypad will display the current number of tabs and their position on the material.

TAB1	TAB2	TAB3
xx.xx	xx.xx	xx.xx

5. Return the system online by pressing the **<Online>** key.

3.2.4 Tab Sensor Positional Adjustment

If the tabs are being placed incorrectly according to the tab position entries (*see 3.5 Tab Placement*) during the tabbing process, it might be necessary to calibrate the tab sensor position, the distance between the product sensors and the tab sensor. This distance might have to be calibrated in order to get accurate tab positioning. Calibration is accomplished by keying in the appropriate distance. This setting is adjusted at the factory and ***shouldn't*** have to be set thereafter unless a factory reset has been executed.

To Set Tab Sensor Position

1. Ensure that the system is offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system off-line.

2. Press the **<Setup>** key to access the setup menu. The display will read *"TAB PITCH: xx.xx>"*.

3. Press the **<Down>** arrow three times. The display should now read *"SENSOR: xx.xx>"*. If not, keep pressing the **<Down>** arrow until it does.

4. To increase the Sensor distance press the <+> key. To decrease the Sensor distance press the <-> key. The Sensor distance can be incremented by ± 0.05". The Sensor distance can also be set by directly keying in a value using the numeric keypad and depressing the <**Enter**> key after a value is chosen.

5. Return the system online by pressing the **<Online>** key.

Note: Depending on the location of the tabs, this setting might have to be readjusted several times before exact tab positioning is achieved. The default value is 6.40

3.2.5 Tab Sensor Adjustment

The tab sensor, encased in the peel point assembly and located ½" from the peel point, is the photo-sensor that detects the presence of the tab's leading edge and causes the tab drive roller to stop upon sensing it. Tab sensor adjustment involves setting the gain such that its beam is strong enough to pass through the tab backer yet weak enough to be blocked by the tab. This adjustment should be made each time a new tab spool is threaded onto the tabber head or if there is a noticeable misalignment in the placement of the tabs on the product. The Tab sensor gain setting is done by presenting the tab backer to the photo-sensor and pressing the **<Enter>** key when the display reads *"ADJUST TAB SENSOR ?"*.

To Set Tab Sensor Gain

1. Ensure that the system is offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system off-line.
2. Press the **<Setup>** key to access the setup menu. The display will read *"TAB PITCH: xx.xx>"*.
3. Press the **<Down>** arrow four times. The display should now read *"ADJUST TAB SENSOR?"*. If not, keep pressing the **<Down>** arrow until it does.
4. Place a portion of tab backer in the peel point assembly ensuring that no tabs are present. Press the **<Enter>** key. The tab sensor gain will now be set.
5. Return the system online by pressing the **<Online>** key.

Note: If the Tab Sensor adjustment is not properly set, the result will be that each successive tab applied will drift incrementally on successive products. That is, the first tab may be applied at 1" from the lead edge, with the second applied at 1.05", the third one at 1.1" and so on…

This setting should be done each time a new tab spool is thread onto the tabber head or if there is a noticeable degradation in the positioning of the tabs on the product.

3.2.6 Product Counter Resetting

The tabber head controller records and displays a product count, which indicates the total number of tabs applied to conveyed products. This resetable counter is intended as a job counter that will record the number of products done for a particular job.

To Reset Product Counter

1. Ensure that the system is offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Setup>** key to access the setup menu. The display will read *"TAB PITCH: xx.xx>"*.

3. Press the **<Down>** arrow five times. The display should read *"RESET COUNT ? 000000"*. If not, keep pressing the **<Down>** arrow until it does.

4. Press the **<Enter>** key. The counter's value should now be reset to "000000".

5. Return the system online by pressing the **<Online>** key.

3.2.4 Life Count Display

The tabber head controller is equipped with a non-resetable counter which records and displays the total number of tabs applied over the course of the system's life. This counter is intended as a service counter and cannot be reset by the operator.

To View the Life Count

1. Ensure that the system is offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Setup>** key to access the setup menu. The display will read *"TAB PITCH: xx.xx>"*.

3. Press the **<Down>** arrow five times. The display should read *"RESET COUNT ? 000000"*. If not, keep pressing the **<Down>** arrow until it does.

4. Press the <+> key five times. The life count should now be displayed to the right of *"LIFECOUNT:0123456789"* as a ten digit number.

5. Return the system online by pressing the **<Online>** key.

3.2.5 Left/Right Product Sensor Selection

The Product sensor(s), a through-beam photo-sensor, detects the presence of a product to be tabbed. They are mounted on both sides of the tabber for left or right tabbing operations with the sensor being located about 7" back from the peel point. The controller will allow the operator to select the sensor that will be detecting the product based on whether the tab will be placed on the right or left of the product. The right product sensor is found closest to the operator side, while the left product sensor is situated at the back of the machine. *(See Chapter 1.3.2 - Tabber Base Dimensions for definitions of left and right).*

The function of the product sensor(s) is to detect the lead edge of the product to initiate the tabbing process. Failure of this sensor to detect will prevent the system from tabbing as the controller will assume that no product is present to be tabbed.

To Select the left or right Product Sensor

1. Ensure that the system is offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the <**Online**> key must be pressed once to place the system offline.

2. Press the <**Setup**> key to access the setup menu. The display will read *"TAB PITCH: xx.xx>"*.

3. Press the <**Up**> arrow six times. The display should read *"PRODUCT SENSOR : RIGHT"*. If not, keep pressing the <**Up**> arrow until it does.

4. To set the product sensor for right tabbing operations (operator side), the display should read *"PRODUCT SENSOR : RIGHT"*. If this is not so, press the <-> key to select RIGHT.

-OR-

5. To set the product sensor for left tabbing operations , the display should read *"PRODUCT SENSOR : LEFT"*. If this is not so, press the <+> key to select LEFT.

6. Return the system online by pressing the <**Online**> key.

Note: If an incorrect product sensor has been chosen, then the system will not detect the conveyed products and no tabs will be dispensed from the tabber head.

3.3 Tabber System Diagnostics

The tabber controller is equipped with diagnostic facilities that allow testing of the various input and output devices. There are a total of fifteen different diagnostic tests that will evaluate the functionality of all sensors, head motors, and stop switches. In order for the tabber to operate properly, the tabber must pass all of them, as failing to do so will affect the overall performance of the tabbing head and in turn the complete tabbing operation. The test functions can be summarized as follows:

- Software Version
- Tab Drive Cycle Test
- Stop Relay Test
- Motor/Brake Test
- Base Jam Switch Test
- Head Cover Switch Test
- Bin Sensor Test
- Take-Up Sensor Test
- Left Product Sensor Test
- Right Product Sensor Test
- Peel Point Tab Sensor Test
- Encoder Test

3.3.1 Software Version

The software version can easily be determined by running this test. It simply displays the version number of the software currently operating the tabber head.

To View the Software Version

1. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Test>** key to access the setup menu. The display will read *"Version: xx.xx"* (xx.xx being the version number).

3. Return the system online by pressing the **<Online>** key.

3.3.2 Tab Drive Cycle Test

This test allows the user to cycle the tab drive motor ensuring its operation. Cycling and braking of the motor is performed over a six second period.

To Run the Tab Drive Cycle Test

1. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Test>** key to access the setup menu. The display will read *"VERSION xx.xx"*.

3. Press the **<Down>** arrow once. The display should read *"TAB DRIVE CYCLE: OFF"*. If not, keep pressing the **<Down>** arrow until it does.

4. Press the **<Enter>** key to begin the cycle. The display will read "TAB DRIVE CYCLE: ON" and the motor should cycle for 2.5 seconds, stop for one second, reverse directions for 2.5 seconds, and then repeat until the <**Enter**> key is pressed, at which point the display will read "TAB DRIVE CYCLE: OFF".

5. Return the system online by pressing the **<Online>** key.

3.3.3 Stop Relay Test

The stop relay is the relay that allows stopping of the tabber base during online operation. This test allows the user to check the stop relay's functionality while the base is cycling by simply pressing the <**Enter**> key. This key stroke should enable the stop relay and shut off the base.

To Test the Stop Relay

1. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Test>** key to access the setup menu. The display will read *"VERSION xx.xx"*.

3. Press the **<Down>** arrow twice. The display should read *"STOP RELAY: OFF"*. If not, keep pressing the **<Down>** arrow until it does.

4. Begin cycling of the base by pressing the Start pushbutton on the tabber's front panel.

5. Pressing the **<Enter>** key should stop the base and the display will then read "*STOP RELAY: ON*". If the base fails to stop cycling suggests the stop relay has failed the test and should be immediately examined.

6. Return the system online by pressing the **<Online>** key.

3.3.4 DC Motor /Brake Test

This test allows the operator to determine whether the take-up and despool motors are operational. Although it is impossible to test the three motors independently of each other as they share the same circuitry, it is still possible to test their full functionality. The motor/brake operation state can be tested by toggling the <**Enter**> key.

To Test the DC Motors and Brake

1. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Test>** key to access the setup menu. The display will read *"VERSION xx.xx"*.

3. Press the **<Down>** arrow three times. The display should read *"MOTOR/-BRAKE: OFF"*. If not, keep pressing the **<Down>** arrow until it does.

4. Pressing the **<Enter>** key should start rotation of both the take-up and despool motors providing the bin sensor is unblocked. The display should read "*MOTOR/-BRAKE: ON*". Alternately, as long as the bin sensor is blocked, the despool motor will be off, with the brake applied. The state of the despool brake should always be the opposite of the despool motor.

5. Pressing the **<Enter>** key again should stop both the take-up and despool motors, with the despool brake being on; that is the resistance on the spool should increase. The display should read "*MOTOR/-BRAKE: OFF*".

6. Return the system online by pressing the **<Online>** key.

3.3.5 Base Jam/Base Cover Switch Test

This test allows the operator to determine the functionality of the infeed jam or base cover. The controller displays the current status of the jam switch and the base cover switch as the two are tied together. Triggering either one of the two should place the tabbing system *"OFFLINE"*. Since the jam switch and base cover trigger the same input, the controller will indicate a *"BASE COVER OPEN"* error if either is tripped.

To Test Base Jam Switch

1. Ensure the jam switch is free of any jams and the upper transport assembly is down in the operating position.
2. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.
3. Press the **<Test>** key to access the setup menu. The display will read *"VERSION xx.xx"*.
4. Press the **<Down>** arrow six times. The display should read *"BASE/JAM: CLOSE NO J"*. If not, keep pressing the **<Down>** arrow until it does.
5. Trigger the base jam switch by lifting the jam switch lever, located at the entry to the transport section . The display should read "*BASE/JAM: OPEN/JAM*".
6. Releasing the jam switch lever will reset the display back to "BASE/JAM: CLOSE NO J".
7. Repeat this operation for the base cover, by releasing the locking latches on either end of the upper transport assembly and lifting the lever.
8. Return the system online by pressing the **<Online>** key.

3.3.6 Head Cover Switch Test

The head cover switch, located on the lexan cover which protects the operator from the tabber head mechanisms, disables operation of the tabber should the cover be opened. In this test the controller will display the current status of the head cover switch when tripped.

To Test the Head Cover Switch

1. Ensure the head cover is securely fastened to the head and is in the closed position.
2. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the <**Online**> key must be pressed once to place the system offline.
3. Press the <**Test**> key to access the setup menu. The display will read *"VERSION xx.xx"*.
4. Press the <**Down**> arrow five times. The display should read *"HEAD COVER: CLOSED"* if the head cover is closed. If not, keep pressing the <**Down**> arrow until it does.
5. Loosen the two thumbscrew locking knobs and open the head cover by rotating it clockwise. As soon as the cover is opened the display should read *"HEAD COVER: OPEN"*.
6. Close the cover by rotating it counterclockwise as far as it can and tighten the locking thumbscrews loosened in *step 5*. The display should read *"HEAD COVER: CLOSE"*. As long as the cover remains closed, the display will read *"HEAD COVER: CLOSE"*.
7. Return the system online by pressing the <**Online**> key.

3.3.7 Bin Sensor Test

The bin sensor is a retro-reflective type sensor which senses the presence of tab ribbon in the tab bin. Presence of tab ribbon will indicate *"BIN SEN: BLOCKED"*. Removing the material will produce a display reading of*" BIN SEN: UNBLOCKED"*.

To Test the Bin Sensor

1. Ensure there no obstructions, such as tabs or backer, between the bin sensor and its reflector.

2. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

3. Press the **<Test>** key to access the setup menu. The display will read *"VERSION xx.xx"*.

4. Press the **<Down>** arrow six times. The display should read *"BIN SEN: UNBLOCKED"*. If not, keep pressing the **<Down>** arrow until it does.

5. By placing material between the sensor and the reflector, the display should read "*BIN SEN: BLOCKED*".

6. Removing the material should reset the display back to *"BIN SEN: UNBLOCKED"*.

7. Return the system online by pressing the **<Online>** key.

3.3.8 Take-Up Sensor Test

The take-up sensor is a reflective type sensor, which is triggered when the take-up spool is full. As the take-up spool fills and the tab backer approaches the sensor, the controller display will indicate a *"TAKE-UP SPOOL FULL"* message and will place the tabbing system offline.

To Test the Take-Up Sensor

1. Ensure there are no obstructions in front of the take-up sensor.
2. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.
3. Press the **<Test>** key to access the setup menu. The display will read *"VERSION xx.xx"*.
4. Press the **<Down>** arrow seven times. The display should read *"TAKE-UP: UNBLOCKED"*. If not, keep pressing the **<Down>** arrow until it does.
5. Place a piece of backing paper approximately 0.50" in front of the sensor. The display should read *"TAKE-UP: BLOCKED"* until the obstruction is removed.
6. Return the system online by pressing the **<Online>** key.

3.3.9 Left and Right Product Sensor Test

The left and right product sensors detect the presence of a conveyed product. The sensors are located on either side of the transport section, permitting product detection when tabbing on the left or right side of the product.

To Test the Right and Left Product Sensor

1. Ensure there are no obstructions under both the right and left product sensors.
2. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.
3. Press the **<Test>** key to access the setup menu. The display will read *"VERSION xx.xx"*.
4. Press the **<Down>** arrow eight times to test the left product sensor. The display should read *"LF PROD: UNBLOCKED"*. If not, keep pressing the **<Down>** arrow until it does.
5. Block the left product sensor by using a product or hand. The display should read *"LF PROD: BLOCKED"* until the obstruction is removed.
6. Press the **<Down>** arrow nine times to test the right product sensor. The display should read *"RT PROD: UNBLOCKED"*. If not, keep pressing the **<Down>** arrow until it does.
7. Block the right product sensor by using a product or hand. The display should read *"RT PROD: BLOCKED"* until the obstruction is removed.
8. Return the system online by pressing the **<Online>** key.

3.3.10 Peel Point Tab Sensor Test

The peel point tab sensor, encased in the peel point assembly and located ½" from the peel point, is a non-reflective type sensor, which detects the presence of the tab's leading edge. The tab sensor is the photo-sensor that detects the presence of the tab's leading edge and causes the tab drive roller to stop upon sensing it. The tab sensor adjustment involves setting the gain such that its beam is strong enough to pass through the tab backer yet weak enough to be blocked by the tab.

To Test the Peel Point Tab Sensor

1. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Test>** key to access the setup menu. The display will read *"VERSION xx.xx"*.

3. Press the **<Down>** arrow ten times. The display should read *"TAB SENSOR:: UNBLOCKED"*. If not, keep pressing the **<Down>** arrow until it does.

4. Feed the roll of tabs through the peel point and ensure the tab center lines up with the tab sensor. (*see To Set the Core Slot Locations*)

5. Every time the sensor encounters a tab, the display will should read *"TAB SENSOR: BLOCKED"*. Similarly when the sensor senses only the backer, the display should read *"TAB SENSOR: UNBLOCKED"*.

6. Return the system online by pressing the **<Online>** key.

3.3.11 Encoder Test

The test checks the functionality of the shaft encoder. Upon entering the encoder test, the count is reset to *"00000"*. Cycling the tabber base will increment the encoder count.

To Test Encoder

1. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Test>** key to access the setup menu. The display will read *"VERSION xx.xx"*.

3. Press the **<Down>** arrow eleven times. The display should read *"ENCODER: 00000"*. If not, keep pressing the **<Down>** arrow until it does.

4. Cycle the tabber by pressing the start pushbutton. The encoder count should increment and be displayed on the keypad LCD.

5. Return the system online by pressing the **<Online>** key.

3.4 Mode

The Tabber Controller has the ability to save into memory the two most commonly used jobs and their settings. These two memories are described as M1 (Memory 1) and M2 (Memory 2). The controller saves the material size, the tab sensor position, the product sensor side, and the tab pitch into one of these memories. The memory settings are saved in the Job Memory under the <**Setup**> menu and can be recalled at any time by entering the <**Mode**> menu.

To Recall a Job in Memory

1. Place the system offline. Do this by checking the upper left line in the display. If it indicates *"OFFLINE"* then no further action is needed. However, if the display indicates *"NORMAL STATUS"* on the second line then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Mode>** key to access the setup menu. The display will read *"MEMORY 1"*.

3. To choose Memory 1 press the **<Enter>** key. The controller will acknowledge your selection by displaying *"MEMORY 1 SELECTED"*.

4. To choose Memory 2, press the **<Down>** arrow once. The display will read *"MEMORY 2"*. Press the **<Enter>** key. The controller will acknowledge your selection by displaying *"MEMORY 2 SELECTED"*.

Note: Once a memory is selected the current settings will be overwritten.

3.5 Tab Placement

The tab placement functions, accessed by the **Position** key, control the location and number of tabs to be placed on a product. Entries are made for each individual tab placement with a positional accuracy of ± 0.05" (1.27 mm). In summary, the **Position** key allows for the following functions :

- Positioning of each individual tab placement
- Selection of the number of tabs to be applied

3.5.1 Tab Position Entries

The controller allows the operator to individually place and locate tabs with a positional accuracy of ± 0.05" (1.27 mm). The tab position entry is defined as the distance from the leading edge of the product to the leading edge of the tab with tab position #1 being closest to the leading edge of the product *(See figure 3.7).* The BK530 tabber system has the ability to place multiple tabs in one pass, if desired. Therefore, the controller has the ability to allow individual tab positions entries for each tab applied.

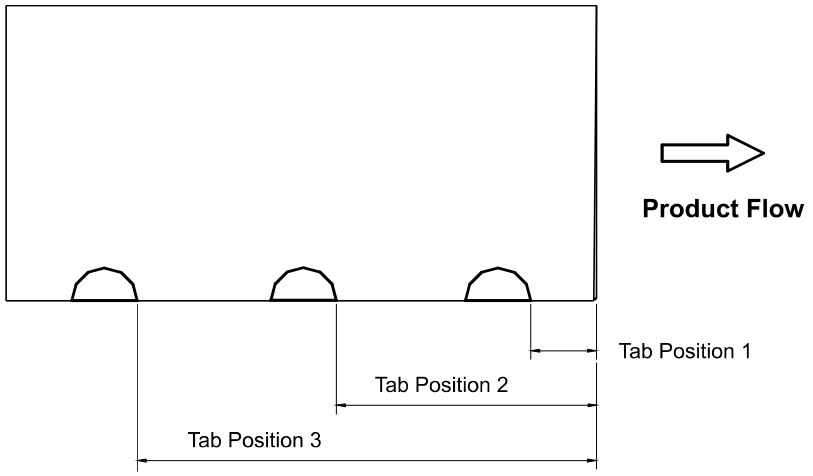


Figure 3.7 - Product with two tabs applied at tab position 1, tab position 2., and tab position 3. Measurements are taken from the leading edge of the product to the leading edge of the respective tab.

To Set Tab Position #1

1. Ensure that the system is offline. Do this by checking the upper left line in the display. If it indicates *"Offline"* then no further action is needed. However, if the display indicates *"Normal Status"* on the second line then the <**Online**> key must be pressed once to place the system offline.

2. Press the <**Position**> key to access the Position menu. The second line of the display will read *"TAB 1: xx.xx"* where xx.xx indicates the current position.

3. To increase the Tab Position #1 from the leading edge press the <+> key until the desired tab position has been achieved.

- Or-

4. Conversely, to decrease Tab Position #1 from the leading edge press the <-> key until the desired tab position has been achieved.

5. The tab position can also be set by directly keying in a value using the numeric keypad and pressing the <**Enter**> key after a value is chosen. Once selected the tabber keypad will display the current tab position setting.

6. Return the system online by pressing the <**Online**> key.

Note: 0.00" is the minimum setting.

To Set Tab Position #2

1. Ensure that the system is offline. Do this by checking the upper left line in the display. If it indicates *"Offline"* then no further action is needed. However, if the display indicates *"Normal Status"* on the second line then the <**Online**> key must be pressed once to place the system offline.

2. Press the <**Position**> key to access the Position menu. The second line of the display will read *"TAB 1: xx.xx"* where xx.xx indicates the current position.

3. Press the <**Up**> key twice to display *"TAB 2: xx.xx"* on the second line of the display. xx.xx represents the current location of tab position #2. If not, keep pressing the <**Up**> arrow until it does.

4. To increase the Tab Position #2 from the leading edge press the <+> key until the desired tab position has been achieved.

- Or-

5. Conversely, to decrease Tab Position #2 from the leading edge press the <-> key until the desired tab position has been achieved.

6. The tab position can also be set by directly keying in a value using the numeric keypad and pressing the <**Enter**> key after a value is chosen. Once selected the tabber keypad will display the current tab position setting.

7. Return the system online by pressing the <**Online**> key.

Note: A tab drive overrun error condition *(see table 3.1)* could occur if the tab positions are set too close together. The result is immediate.

To Set Tab Position #3

1. Ensure that the system is offline. Do this by checking the upper left line in the display. If it indicates *"Offline"* then no further action is needed. However, if the display indicates *"Normal Status"* on the second line then the <**Online**> key must be pressed once to place the system offline.

2. Press the <**Position**> key to access the Position menu. The second line of the display will read *"TAB 1: 01.00"* where 01.00 indicates the current position.

3. Press the <**Up**> key once to display *"TAB 3: xx.xx"* on the second line of the display. xx.xx represents the current location of tab position #3. If not, keep pressing the <**Up**> arrow until it does.

4. To increase the Tab Position #3 from the leading edge press the <+> key until the desired tab position has been achieved.

- Or-

5. Conversely, to decrease Tab Position #3 from the leading edge press the <-> key until the desired tab position has been achieved.

6. The tab position can also be set by directly keying in a value using the numeric keypad and pressing the <**Enter**> key after a value is chosen. Once selected the tabber keypad will display the current tab position setting.

7. Return the system online by pressing the <**Online**> key.

Note: A tab drive overrun error condition *(see table 3.1)* could occur if the tab positions are set too close together. The result is the immediate placement to an Offline status.

3.5.2 Number of Tabs

The BK530 tabber system has the ability to apply a number of tabs on a piece, from 1 to 3 during a single pass. All the operator has to do, is select the number of tabs he/she wishes to apply, and then, following the previous instructions for tab placement *(📝 To Set Tab Position #1, #2, #3)*, position them accurately on the product.

📝 To Set Number of Tabs

1. Ensure that the system is offline. Do this by checking the upper left line in the display. If it indicates *"Offline"* then no further action is needed. However, if the display indicates *"Forms Done"* then the **<Online>** key must be pressed once to place the system offline.

2. Press the **<Position>** key to access the Position menu. The display will read *"TAB 1"*.

3. Press the **<Down>** arrow once. The display should read *"NUMBER OF TABS: 1"*. If not, keep pressing the **<Down>** arrow until it does.

4. To set the number of tabs applied to 1, the display should read *"NUMBER OF TABS: 1"*. If this is not so, press the <-> key until 1 is selected.

-OR-

5. To set the number of tabs applied to 2, the display should read *"NUMBER OF TABS: 2"*. If this is not so, press the <+> key until 2 is selected. If the original selection is 3, then the <-> key will have to be pressed.

-OR-

6. To set the number of tabs applied to 3, the display should read *"NUMBER OF TABS: 3"*. If this is not so, press the <+> key until 3 is selected.

7. The number of tabs can be set by directly keying in 1, 2, or 3 using the numerical keys and pressing the <**Enter**> key. The display should read "x TABS SELECTED", x being 1, 2, or 3 depending on what was selected.

8. Return the system online by pressing the **<Online>** key.

3.6 Operational Controls

The operational controls include all the keys which are used during normal operation of the tabber system. These are keys which allow the user to perform the following tasks:

- Set the system online enabling the tabbing operation.
- Set the system offline suspending the tabbing operation.
- Ability to view production speeds and counts.

In addition the display itself provides useful features by displaying the following information at run time:

- Error Conditions
- Production rate, count, and belt speed

3.6.1 Online/Offline Status

The controller must be placed online if the tabbing operation is to be enabled. Conversely, placing the system offline will result in the suspension of the tabbing operation.

To place the system on or offline, the large **<Online>** key located at the bottom right of the keypad will be used. It functions as a toggle key whereby pressing it changes the system's status from offline to online or vice versa. When the tabber is first powered up, its initial status will be **offline.** In addition, any error conditions encountered during operation will immediately place the system offline. Hence, the three conditions which will place the system offline are as follows:

- Initial power-up condition.
- The detection of an error condition.
- Placing the system offline by pressing the **<Online>** key when the system is online.

To Place the System On or Offline

1. If the system is offline indicated by the *"Offline"* message on the upper line of the display, then pressing the **<Online>** key will place the tabber system to its online status indicated by the *"Online"* message on the upper line of the display.

-Or-

2. If the system is online indicated by the *"Online"* message on the upper line of the display, then pressing the **<Online>** key will place the tabber system to its offline status indicated by the *"Offline"* message on the upper line of the display.

Note: When the system is placed offline, the tabber system will immediately cease operation.

During the threading operation, or if the backer breaks, the take-up spool will continue rotating. In order to arrest the rotation of this spool, place the system Offline.

3.5.2 Product Count, Production Rate, and Belt Speed Display

At any time during the operation of the tabber, current production data is recorded and can be viewed on the keypad display. Under normal operating conditions, the first line of the display on the keypad will indicate one of the following : the product count, production rate, or belt surface speed. When the system is placed online, the default setting of the display will always be the product count. In order to access the two other production parameters, simply press the **<Up>** and/or **<Down>** key until the parameter of choice is displayed.

The product count records the number of products with tabs applied, the production rate indicates the current production speeds in pieces per hour, and the transport belt surface speed is displayed in feet per minute. As previously mentioned, the operator can access any of this information, at any time, simply by pressing the **<Up>** or **<Down>** key.

To View the Product Count, Production Rate, or Belt Speed

1. Ensure that the system is online. Do this by checking the upper left line in the display. If the display indicates *"Online"* then no further action is required. However, if the display indicates *"Offline"* then the <**Online**> key must be pressed once to place the system online.

2. Press the start button on the tabber base to initiate operation of the system.

3. To view the current product count no additional keys need to be pressed as this is the default view when the system is placed online. The first line of the display should indicate *"FORMS DONE : 000000"* where the six digit number indicates the number of forms done during the current tabbing session. If the display is showing one of the other parameters, the <**Down**> or <**Up**> key should be used to scroll the display to obtain the product count parameter.

-Or-

4. To view the current surface speed of the tabber transport, press the <**Down**> key once; The first line should display *"SPEED : 000 FT/M"* where the 3 digit number indicates the belt surface speed in feet/minute. If the display is showing one of the other parameters, the <**Down**> or <**Up**> key should be used to scroll the display to obtain the surface speed parameter.

-Or-

5. To view the current production rate of the tabbing operation, press the <**Up**> key once; The first line should display *"PROD RATE : 00000 PPH"* where the 5 digit number indicates the production rate in pieces per hour. If the display is showing one of the other parameters, the <**Down**> or <**Up**> key should be used to scroll the display to obtain the production rate parameter.

Note: the system's default view is the **Production Count.**

3.6.3 Error Conditions

Should the controller detect a system error during normal operating conditions, the system will be placed offline, resulting in a complete stoppage of the tabbing operation. In addition, the error condition, which is detected and displayed on the keypad, must be cleared before the tabbing operation can be resumed. All the error conditions currently reported by the tabber head controller are listed in *table 3.1*. In addition to a listing of the error, the cause and corrective measure to be taken has been specified for each.

Table 3.1 *- Error conditions reported by the tabber head controller*

Error Condition	Cause	Remedy
Normal Status	All systems are operating normally and no errors are detected	none.
Base Cover Open	The upper transport cover is opened during operation.	Close the upper transport cover.
Take-Up Spool Full	The take-up spool is completely full and cannot accept any additional spent tab backer.	Remove all the spent tab backer from the take-up spool.
Out of Tabs	The tab spool has been completely despooled or the tab backer has ripped.	Install a new tab spool or re-splice the tab backer.
Tab Drive Overrun	The distance between the tab positions is too small. - or - The suggested operating speed has been exceeded.	increase the gap between tab positions. - or - Slow down the tabber system.
Head Cover Open	The tabber head cover is opened during operation.	Close the tabber head cover.
Tab Off Product	This is cause if a product is not completely aligned with the registration rails as it passes under the product sensor.	Adjust the skidbar enough to allow guidance of the product towards the registration rail. - or - Rotate the Edge Selection Handwheel to bring the product closer to the registration rail.

Appendix A

BK530A, Tabber Base Assembly

330540A, Skidbar Assembly

800530A, Motor Assembly

100542A, Edge Selection Shaft Assembly

300530A, Tabber Head Mount Assembly

530004A, Upper Transport Assembly

325530A, Tabber Tabletop Assembly

330530A, Base Mechanical Assembly

300532A, Left Side Frame Assembly

300531A, Right Side Frame Assembly

BK530A, Tabber Base Assembly

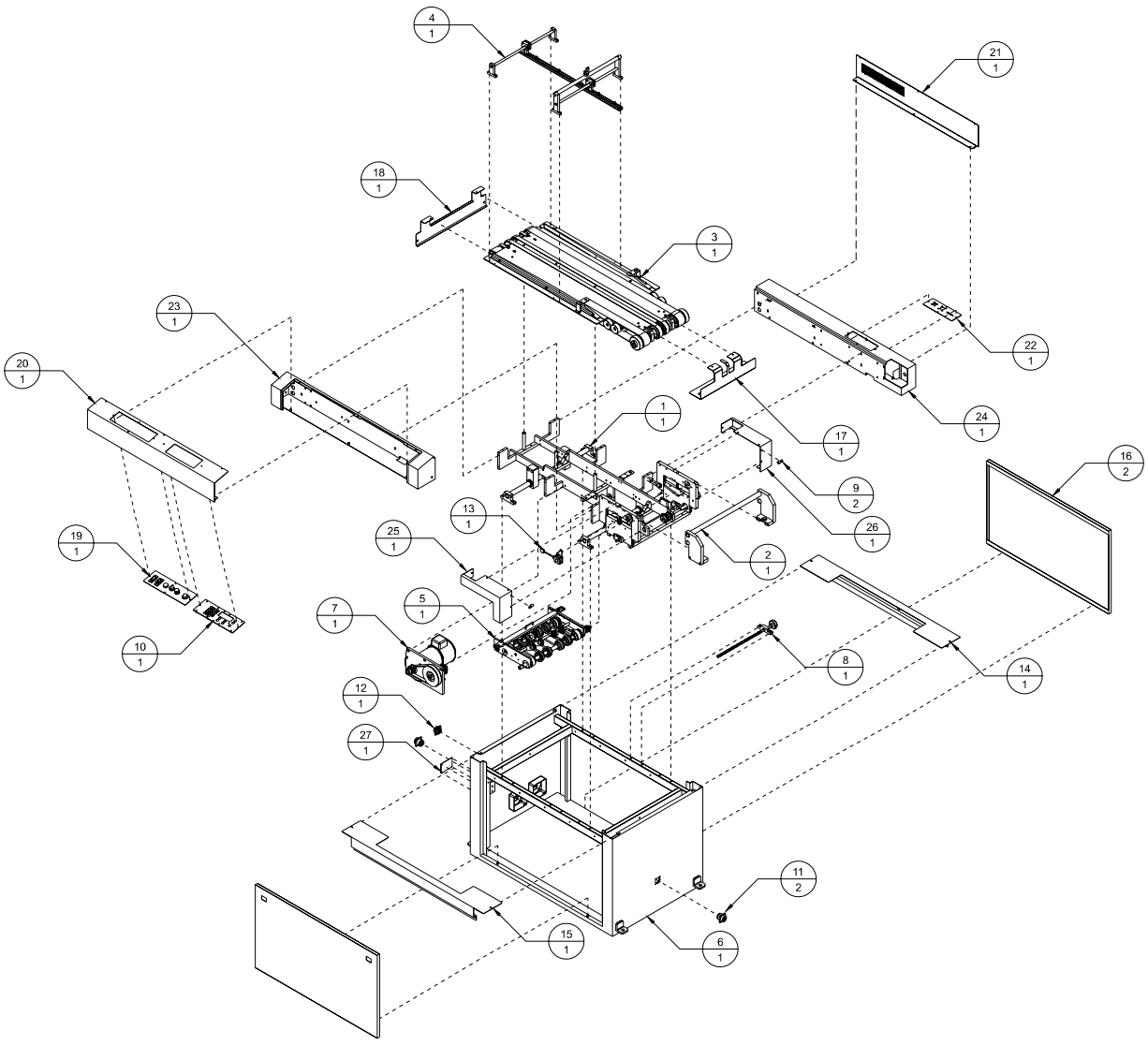


Table A.1 *- Tabber Base Assembly (BK530A)*

Item	Part Number	Quantity	Description	Reference
1	330530A	1	Base Mechanical Assembly	pages A11-A12
2	300530A	1	Tabber Head Mount Assembly	page A6
3	325530A	1	Tabber Tabletop Assembly	pages A9-A10
4	330540A	1	Skidbar Assembly	page A3
5	530004A	1	Upper Transport Assembly	pages A7-A8
6	713530A	1	Tabber Base Cabinet Assembly	
7	800530A	1	Motor Assembly	page A4
8	100542A	1	Edge Selection Shaft Assembly	page A5
9	310531	2	Outfeed Arm Stopper	
10	600530A	1	Tabber Keypad Circuit Board Assembly	
11	606531A	1	Conveyor Extension Cable	
12	614135A	1	Inline Remote Cable	
13	630530A	1	Shaft Encoder Assembly	
14	700534	1	Right Upper Cabinet Cover	
15	700535	1	Left Upper Cabinet Cover	
16	700536	2	Tabber Cabinet Door	
17	700537	1	Outfeed Roller Cover	
18	700538	1	Front Protective Cover	
19	700540A	1	Tabber Base Control Panel	
20	700541	1	Front Panel Access Door	
21	700542	1	Rear Panel Access Door	
22	700543	1	Connector Plate	
23	706540A	1	Front Panel	
24	706541A	1	Rear Panel	
25	706542	1	Right Upper Transport Cover	
26	706543	1	Left Upper Transport Cover	
27	803001	1	Buskro Nameplate	

330540A, Skidbar Assembly

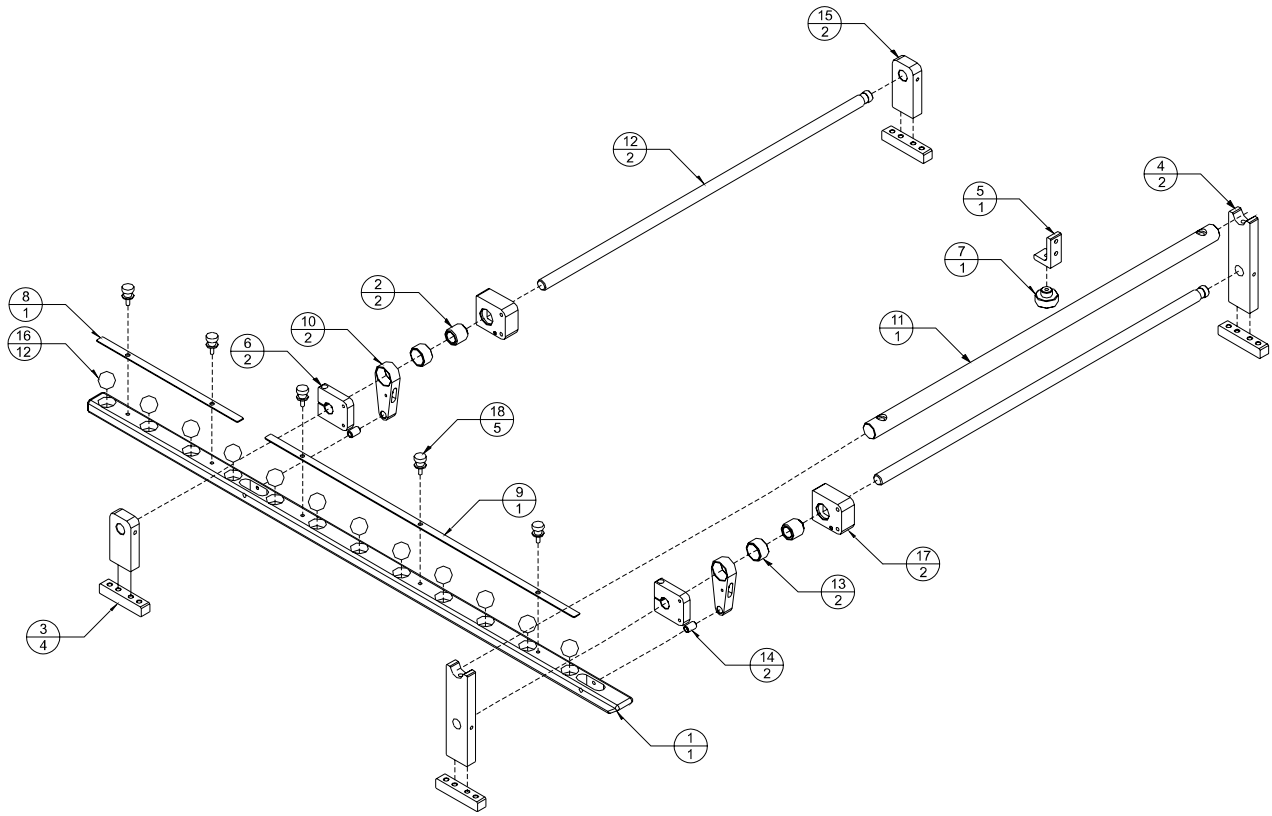


Table A.2 *- Skidbar Assembly (330540A)*

Item	Part Number	Quantity	Description	Reference
1	330540	1	Skidbar Body	
2	100026	2	Shaft, Hollow Skidbar	
3	330304	4	Skidbar Bracket Base	
4	330542	2	Tabber Skidbar Mount	
5	330545	1	Head Support Mount	
6	343006	2	Skidbar Holder Clamp	
7	438110	1	Side Guide Knob	
8	707530	1	Ball Retention Spring Plate, 8.39" X 3/8"	
9	707531	1	Ball Retention Spring Plate, 18.40" X 3/8"	
10	203003	2	Skidbar Arm	
11	100545	1	Tabber Head Support Shaft	
12	100021H	2	Shaft, Front Skidbar	
13	505004	2	Bushing, 3/4" ID X 1/2" Long	
14	505003	2	Bushing, 3/16" ID X 1/2" Long	
15	330302	2	Skidbar Bracket	
16	500211	12	Skidbar Ball Bearing, 3/4" OD	

17	330018H	2	Skidbar Holder Block	
18	438171	5	Thumbscrew, 10-32 UNF X 1/2" Long	

800530A, Motor Assembly

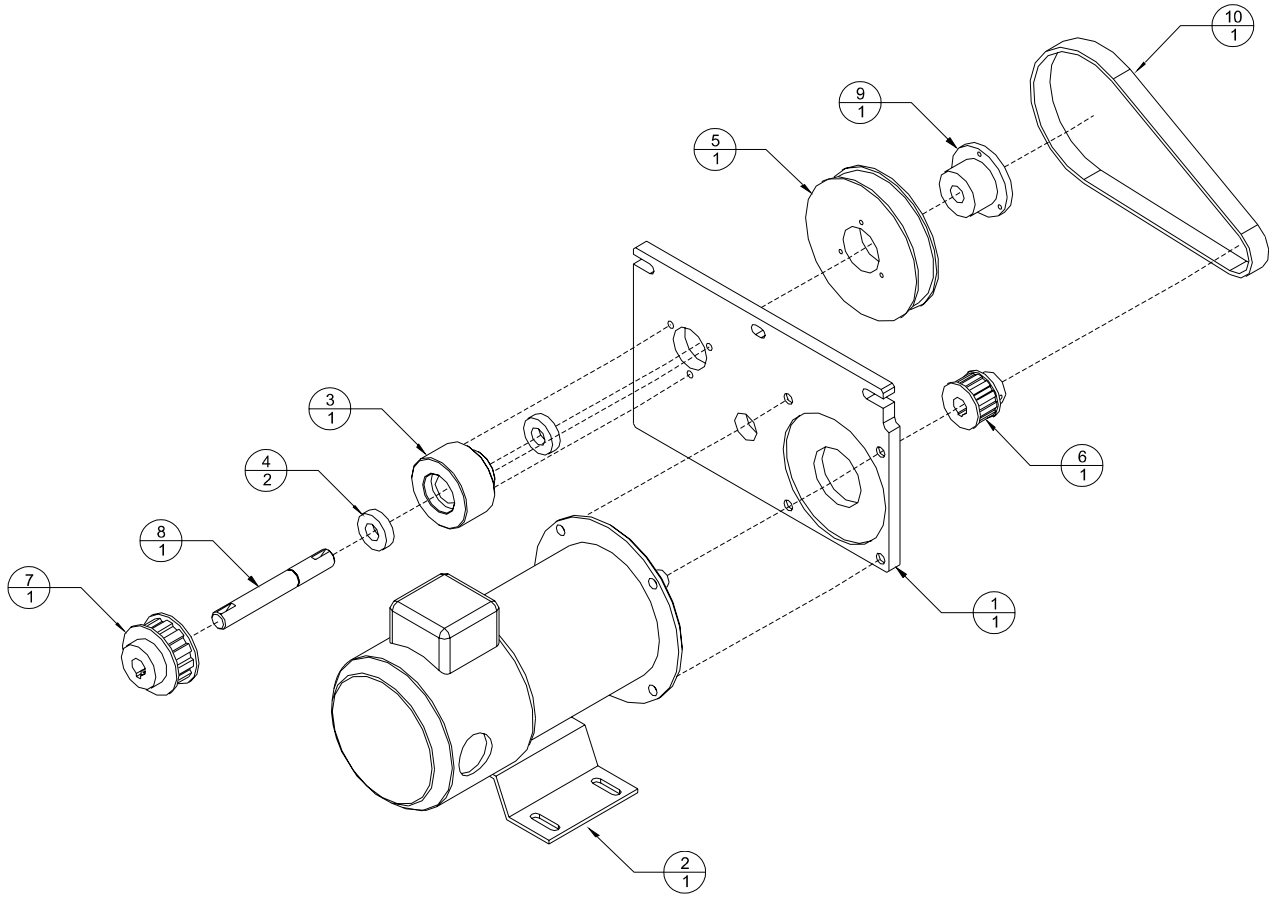


Table A.3 *- Motor Assembly Components (800530A)*

Item	Part Number	Quantity	Description	Reference
1	325533	1	Motor Mount Plate	
2	800530	1	Motor, 1/3 H.P., 90 VDC	
3	330534	1	Mainshaft Housing	
4	500040	2	Bearing, R10, 5/8" I.D.	
5	116538	1	Pulley, 40LH075 X 5/8" I.D.	
6	116537	1	Pulley, 14LF075 X 5/8" I.D.	
7	116302	1	Pulley, 18LB075 X 5/8" I.D.	
8	100539	1	Main Driveshaft	
9	127314	1	Pulley Hub	

10	120326	1	Timing Belt, 240L075	

100542A, Edge Selection Shaft Assembly

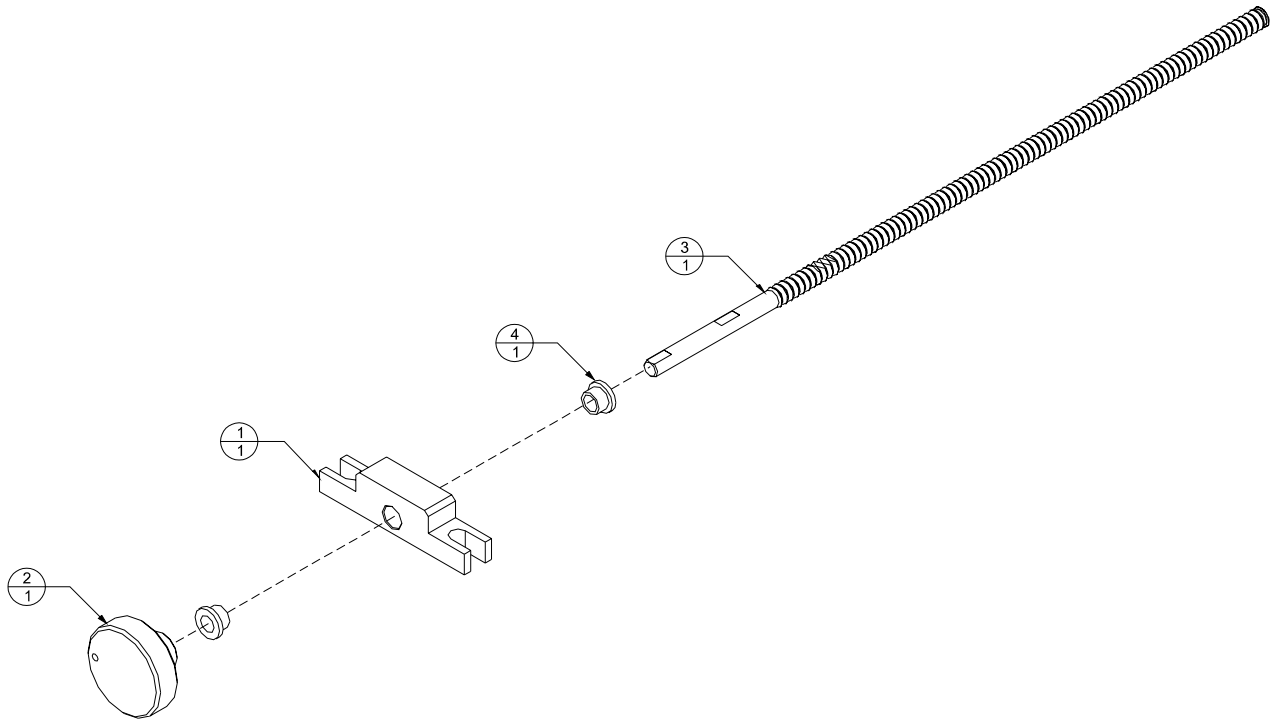


Table A.4 *- Edge Selection Shaft Assembly Components (100542A)*

Item	Part Number	Quantity	Description	Reference
1	330539	1	ACME Screw Block	
2	438311	1	Edge Selection Handwheel	
3	100542	1	ACME Screw Shaft	
4	505384	2	Flange Bushing, 3/8” I.D. X 1/2” Long	

300530A, Tabber Head Mount Assembly

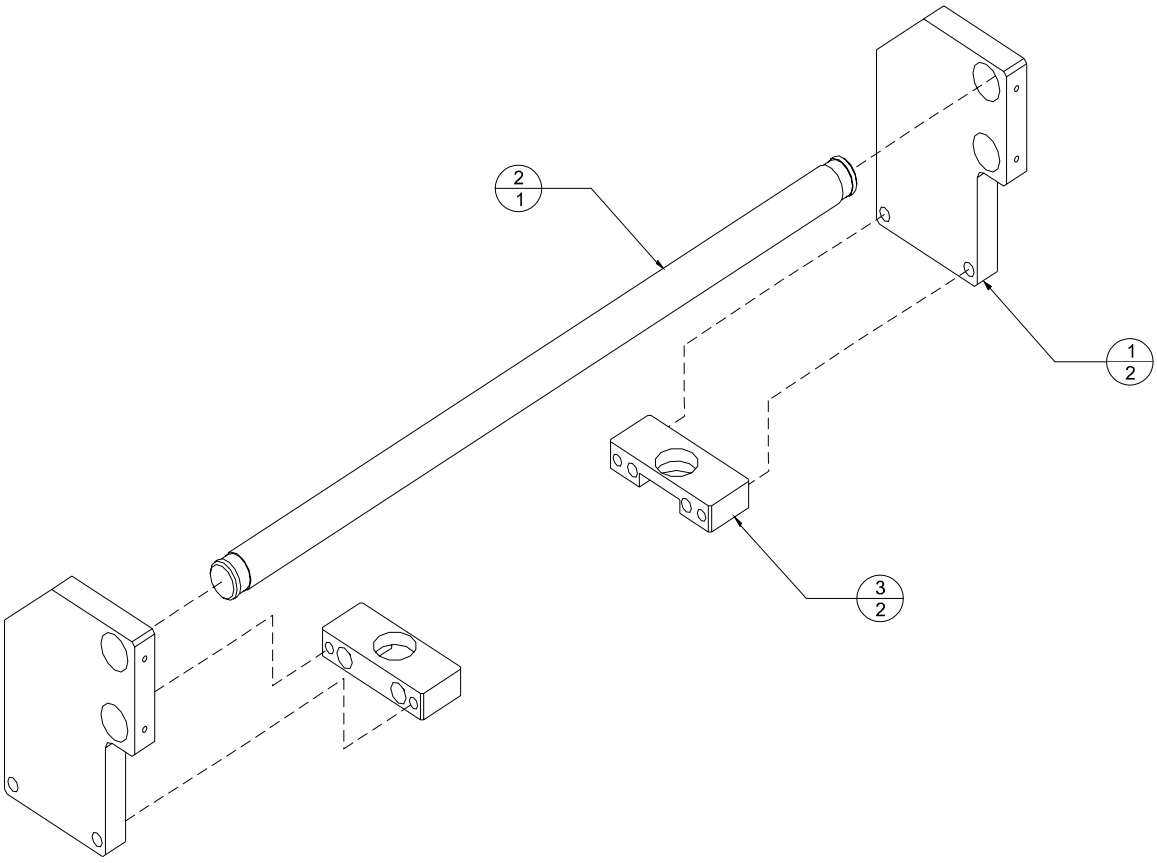


Table A.5 *- Tabber Head Mount Assembly Components (300530A)*

Item	Part Number	Quantity	Description	Reference
1	300530	2	Tabber Head Mount	
2	100537	1	Tabber Head Shaft	
3	320530	2	Head Support Spacer	

530004A, Upper Transport Assembly

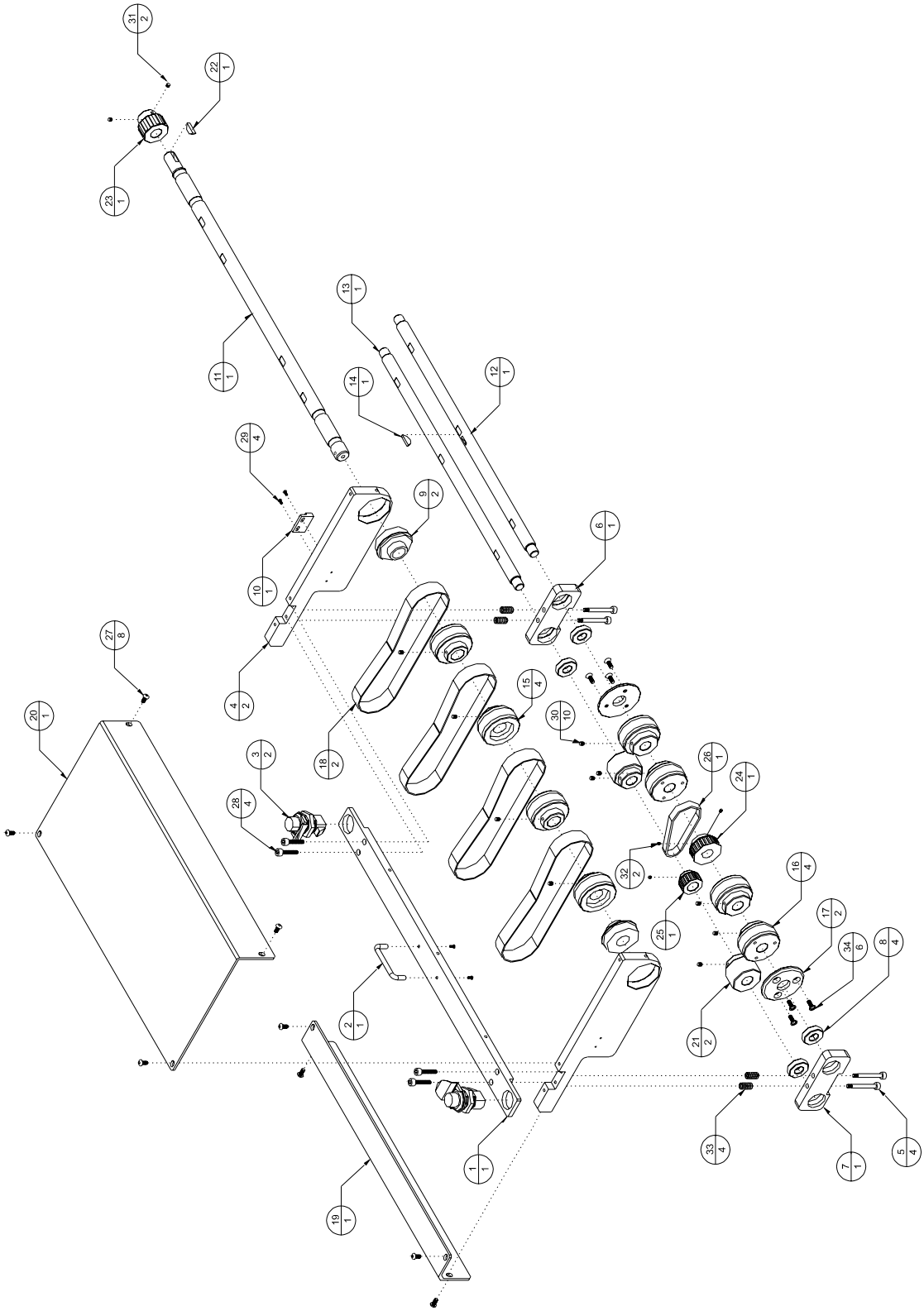

31 2
22 1
23 1
11 1
13 1
14 1
12 1
29 4
9 2
6 1
10 1
4 2
27 8
20 1
15 4
30 10
3 2
18 2
26 1
24 1
28 4
32 2
16 4
25 1
17 2
34 6
8 4
21 2
2 1
33 4
7 1
5 4
1 1
19 1

Table A.6 *- Upper Transport Assembly Components (530004A)*

Item	Part Number	Quantity	Description	Reference
1	212532	1	Left Upper Transport Frame	
2	212531	1	Right Upper Transport Frame	
3	310530	1	Upper Transport Cover Bar	
4	500045	2	Bearing, UBR202-10S, 5/8 I.D.	
5	500055	2	Bearing, UBR204-12S, 3/4" I.D.	
6	500040	2	Bearing, R10, 5/8" I.D.	
7	100533	1	Upper Transport Shaft	
8	100534	1	Upper Transport Pivot Shaft	
9	100535	1	Upper Transport Take-up Bar	
10	100536	1	Nip Roller Shaft	
11	106541	2	Tabber Outfeed Roller	
12	106539	4	Upper Belt Drive Roller	
13	106538	4	Upper Belt Roller	
14	106537	2	Crease Roller	
15	106542	2	Tabber Delrin Roller	
16	120203	4	Polycord Belt, 6mm	
17	212534	4	Upper Belt Arm	
18	500020	8	Bearing, R6, 3/8" I.D.	
19	106236	4	Cart Take-up Roller	
20	116535	1	Pulley, 24XLB037 X 5/8" I.D.	
21	116536	1	Pulley, 18XLB037 X 5/8" I.D.	
22	330543	2	Tab Form Plate Block	
23	330544	2	Upper Tab Form Plate	
24	120209I	1	Timing Belt, 90XL037	
25	116531	1	Pulley, 12LF050 X 5/8" I.D.	
26	421008	2	Knurled Brass Nut	
27	438314	1	Cover Handle	

325530A, Tabber Tabletop Assembly

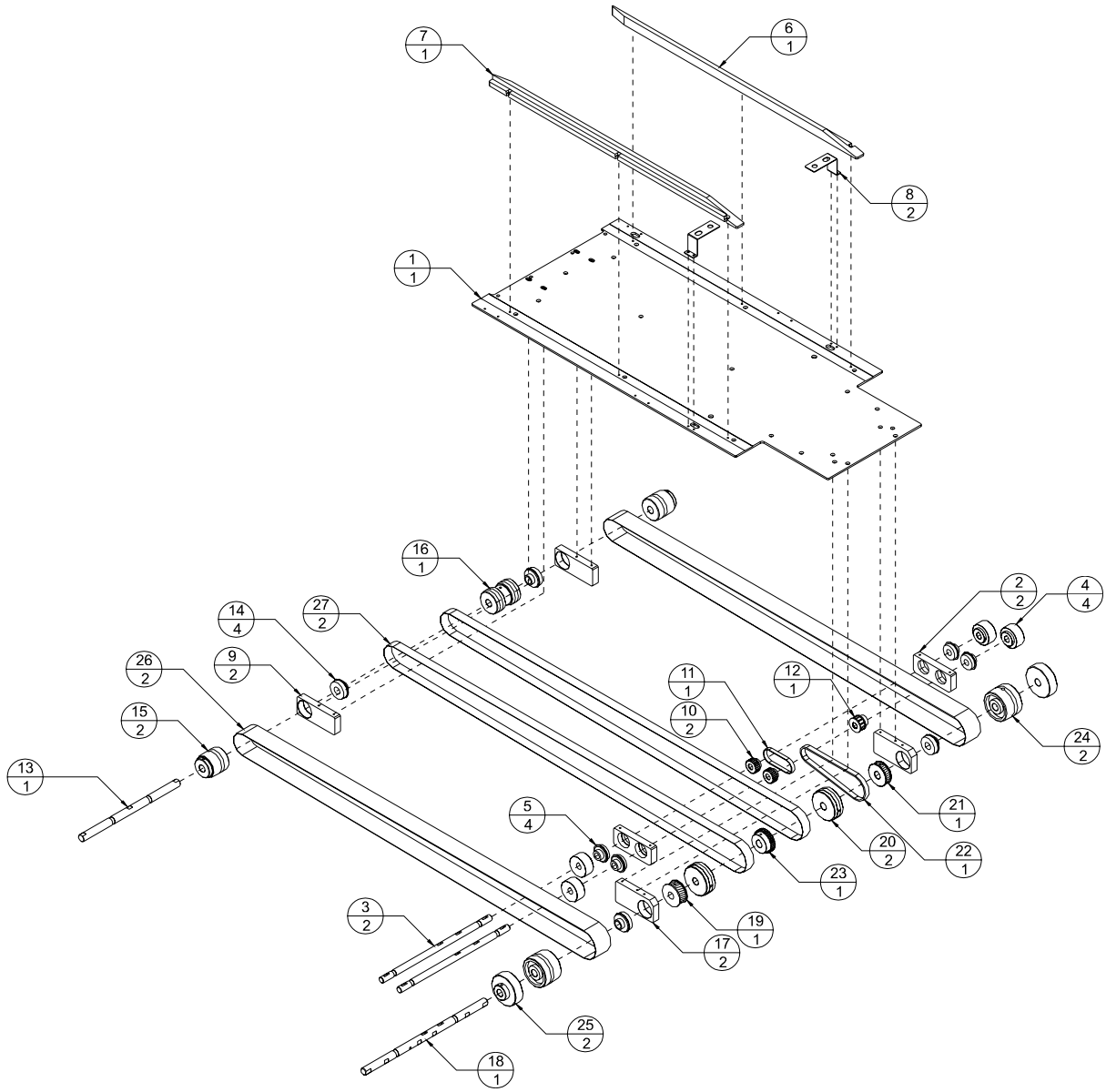


Table A.7 *- Tabber Tabletop Assembly Components (325530A)*

Item	Part Number	Quantity	Description	Reference
1	325530	1	Tabber Tabletop	
2	330532	2	Lower Belt Block	
3	100532	2	Lower Roller Shaft	
4	106532	4	Pinch Roller	
5	500045	4	Bearing, UBR202-10S	
6	212431	1	Left Side Guide	
7	212430	1	Right Side Guide	
8	706533	2	Photo Bracket	
9	330530	2	Take-up Roller Block	
10	116530	2	Pulley, 22XLB037 X 5/8" I.D.	
11	120209	1	Timing Belt, 90XL037	
12	116531	1	Pulley, 12LF050 X 5/8" I.D.	
13	100530	1	Belt Take-up Shaft	
14	500055	4	Bearing, UBR204-12S	
15	106530	2	Outer Take-up Roller	
16	106531	1	Center Belt Take-up Roller	
17	330531	2	Drive Roller Block	
18	100531	1	Tabletop Drive shaft	
19	116309	1	Vacuum Belt Drive Pulley	
20	106534	2	Table Belt Drive Pulley	
21	116532	1	Pulley, 18LB050 X 3/4" I.D.	
22	120317	1	Timing Belt, 187L050	
23	110207	1	Gear, NSS1636 X 3/4" I.D.	
24	106535	2	Vacuum Belt Drive Pulley	
25	106533	2	Outer Pinch Roller	
26	120531	2	Tabber Table Belt, 2"	
27	120530	2	Tabber Table Belt, 1"	

330530A, Base Mechanical Assembly

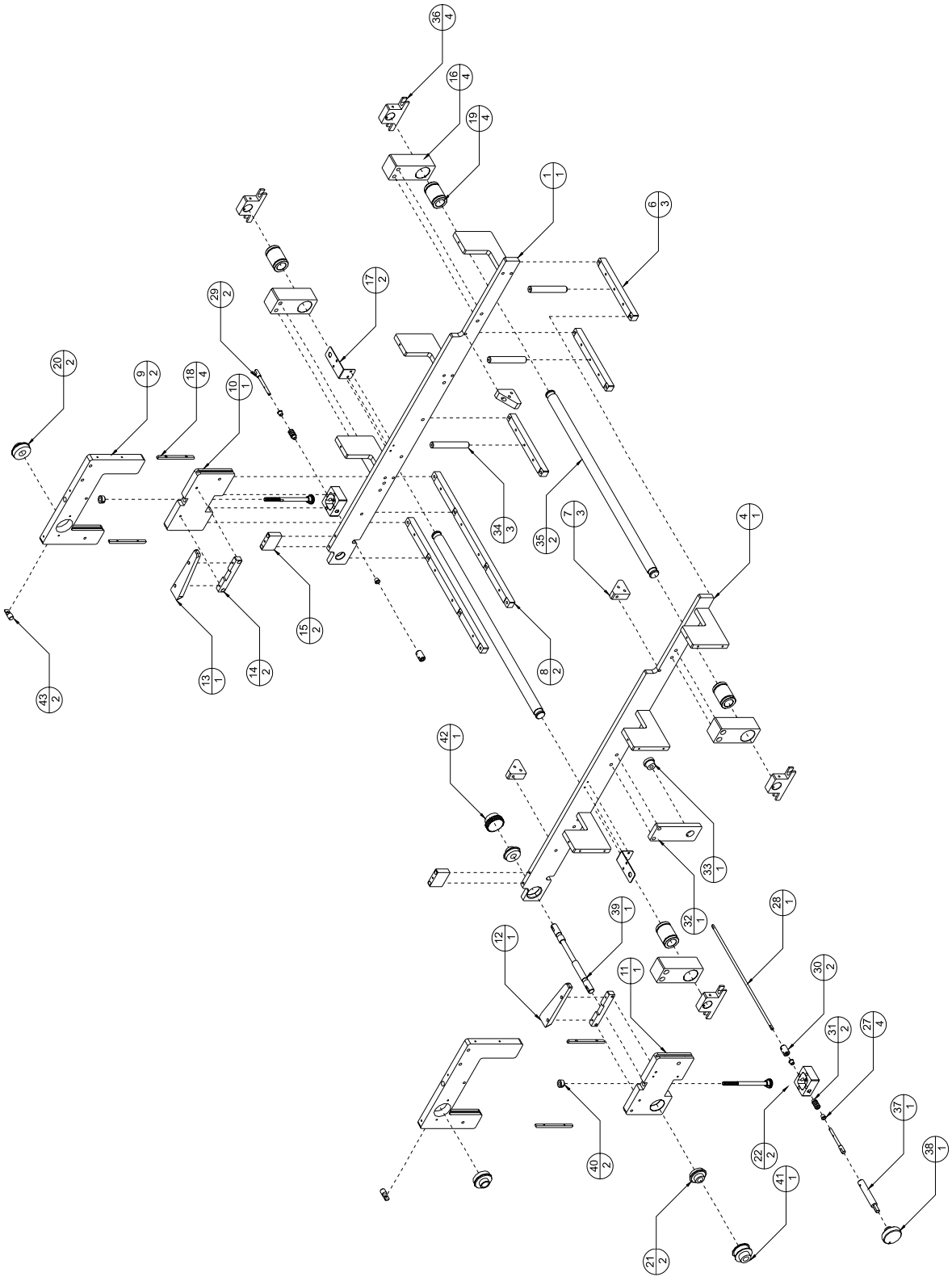


Table A.8 *- Base Mechanical Assembly Components (330530A)*

Item	Part Number	Quantity	Description	Reference
1	300531A	1	Right Tabber Side Frame Assembly	page A15
4	300532A	1	Left Tabber Side Frame Assembly	page A14
6	320531	3	Lower Frame Spacer	
7	310322	3	Angle Bracket	
8	320533	2	Frame / Transport Spacer Bar	
9	212530	2	Upper Transport Slide Frame	
10	300533	1	Right Transport Slide Mount	
11	300534	1	Left Transport Slide Mount	
12	325531	1	Left Tab Form Plate	
13	325532	1	Right Tab Form Plate	
14	330536	2	Form Plate Block	
15	330537	2	Tabletop Block	
16	330535	4	Frame Mounting Foot	
17	706532	2	Photo Reflector Bracket	
18	436530	4	Transport Slide Key	
19	212533	4	Linear Bearing, 1" Dia..	
20	500055	2	Bearing, UBR204-12S	
21	500045	2	Bearing, UBR202-10S, 5/8" Dia.	
22	330315	2	Gearbox Body	
27	505463	4	Flange Bushing, 1/4" I.D. X 1/2" Long	
28	100543	1	Gearbox Coupling Shaft	
29	100310	2	Gearbox Shaft	
30	122201	2	Gearbox Coupling	
31	110310	2	Gearbox Worm, Hardened, 1/4" Bore	
32	330538	1	ACME Screw Bracket	
33	420530	1	ACME Bronze But	
34	320532	3	Tabletop Spacer	
35	100541	2	lateral Shaft	
36	330541	4	Lateral Shaft Mount	
37	100544	1	Height Adjustment Extension Shaft	
38	438311	1	Bridge Handwheel	
39	100538	1	Upper Transport Driveshaft	
40	131020	2	Collar, 3/8" I.D.	
41	116539	1	Pulley, 14LF050 X 5/8"	
42	110530	1	Gear, NSS1628 X 5/8"	
43	310531	2	Outfeed Arm Stopper	

300532A, Left Side Frame Assembly

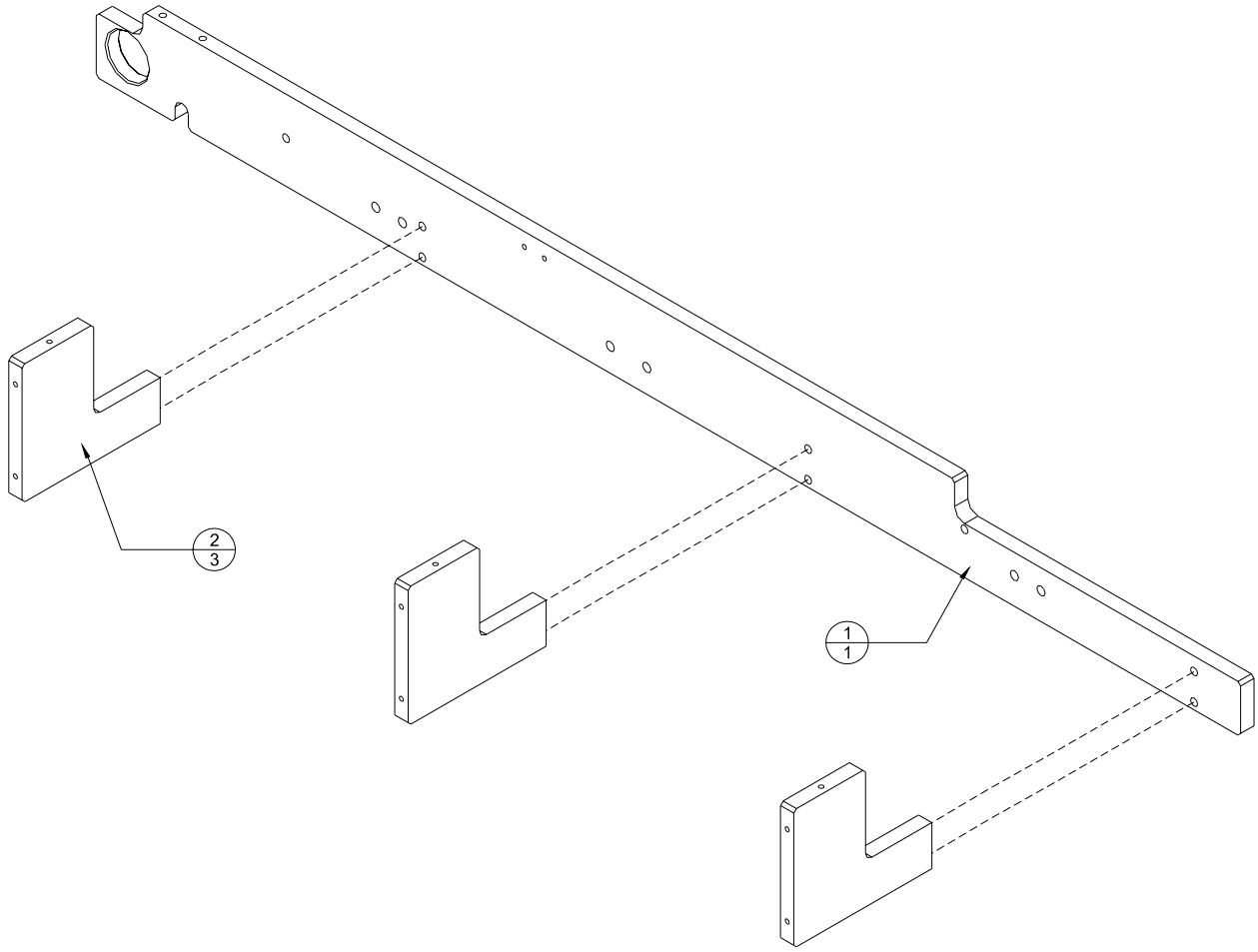


Table A.9 *- Left Side Frame Assembly Components (300532A)*

Item	Part Number	Quantity	Description	Reference
1	300532	1	Left Tabber Frame	
2	330533	3	Tabletop Mounting Bracket	

300531A, Right Side Frame Assembly

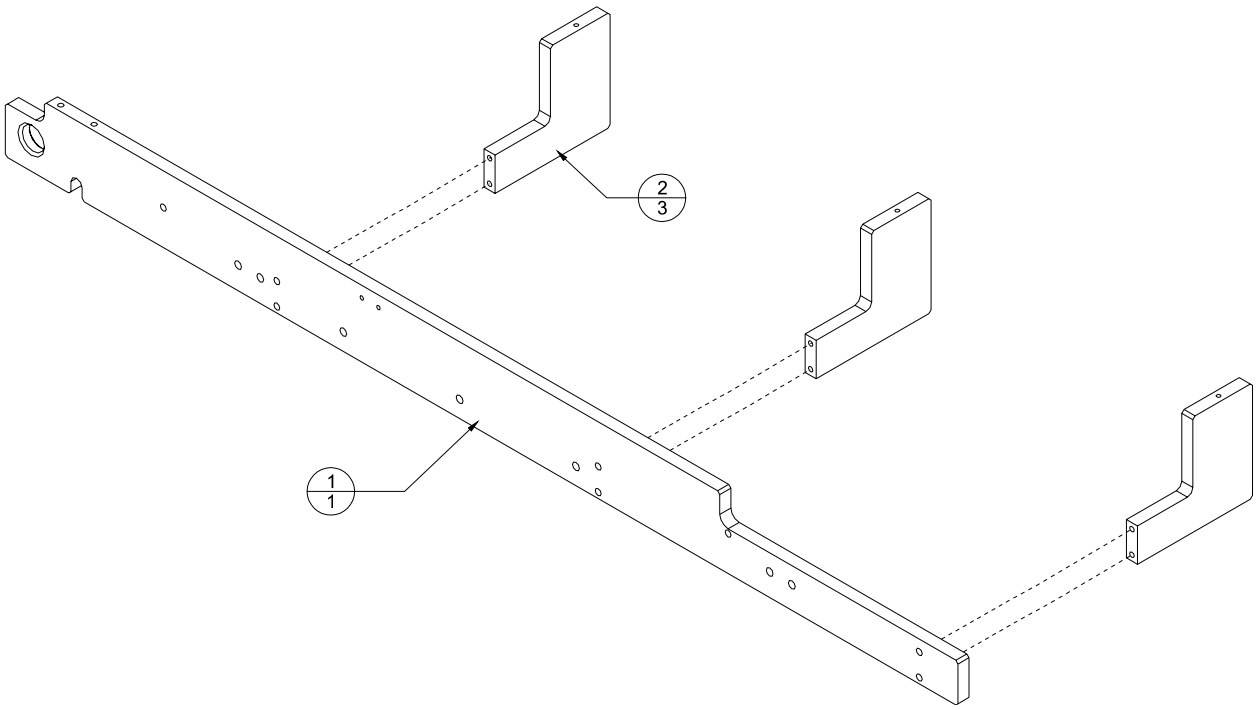


Table A.10 *- Right Side Frame Assembly Components (300531A)*

Item	Part Number	Quantity	Description	Reference
1	300532	1	Right Tabber Frame	
2	330533	3	Tabletop Mounting Bracket	

Appendix B

BK531-2A, Tabber Head Assembly

700563A, De-spool Core Assembly

700573A, Take-Up Core Assembly

700561A, Tab Head Guard Assembly

700562A, Head Mechanical Assembly

100553A, Spring-Loaded, De-spool Drive Idler Assembly

100552A, Spring-Loaded, Tab Drive Idler Assembly

330556A, Tab and Peel Sensor Assembly

BK531-2A, Tabber Head Assembly

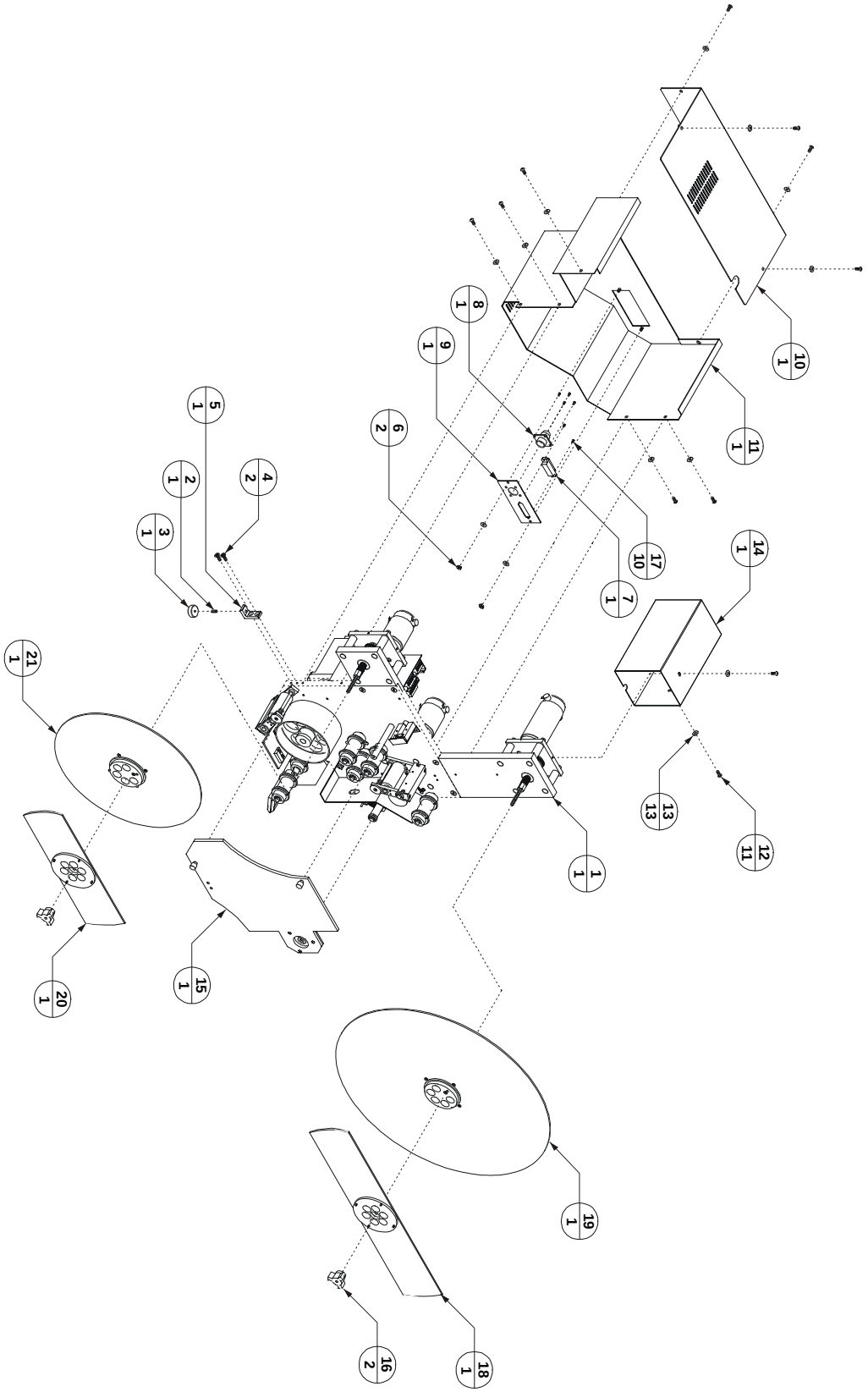

1 1
2 1
3 1
4 2
5 1
6 2
7 1
8 1
9 1
10 1
11 1
12 11
13 13
14 1
15 1
16 2
17 10
18 1
19 1
20 1
21 1

Table B.1 *- Tabber Head Assembly Components (BK531-2A)*

Item	Part Number	Quantity	Description	Reference
1	330563A	1	Head Mechanical Assembly	Page B6
2	405880	1	Screw, SHSS, ¼-20 UNC X 1 ½"	
3	438533	1	Head Leveling Knob	
4	404030	2	Screw, FHCS, 10-32 UNC X ½"	
5	330545	1	Head Support Mount	
6	420008	2	Nut, 10-32 UNF	
7	614325	1	Plug HDF-20, 25 Pin, Male	
8	614124	1	Receptacle, Square Flange, 13-9	
9	706544	1	Connector Plate	
10	700546	1	Top Main Rear Cover	
11	700545	1	Main Rear Head Cover	
12	404510	11	Screw, BHCS, 10-32 UNF X ¼"	
13	440008	13	Washer, No. 10	
14	700544	1	De-spool Brake Cover	
15	700561A	1	Tab Head Guard Assembly	Page B4
16	438530	2	Core Fastening Knob	
17	401510	10	Screw, BHCS, 4-40 UNC X ¼"	
18	700557A	1	De-spool Front Core Assembly	
19	700563A	1	De-spool Core Assembly	Page B2
20	700558A	1	Take-up Front Core Assembly	
21	700573A	1	Take-up Core Assembly	Page B3

700563A, De-spool Core Assembly

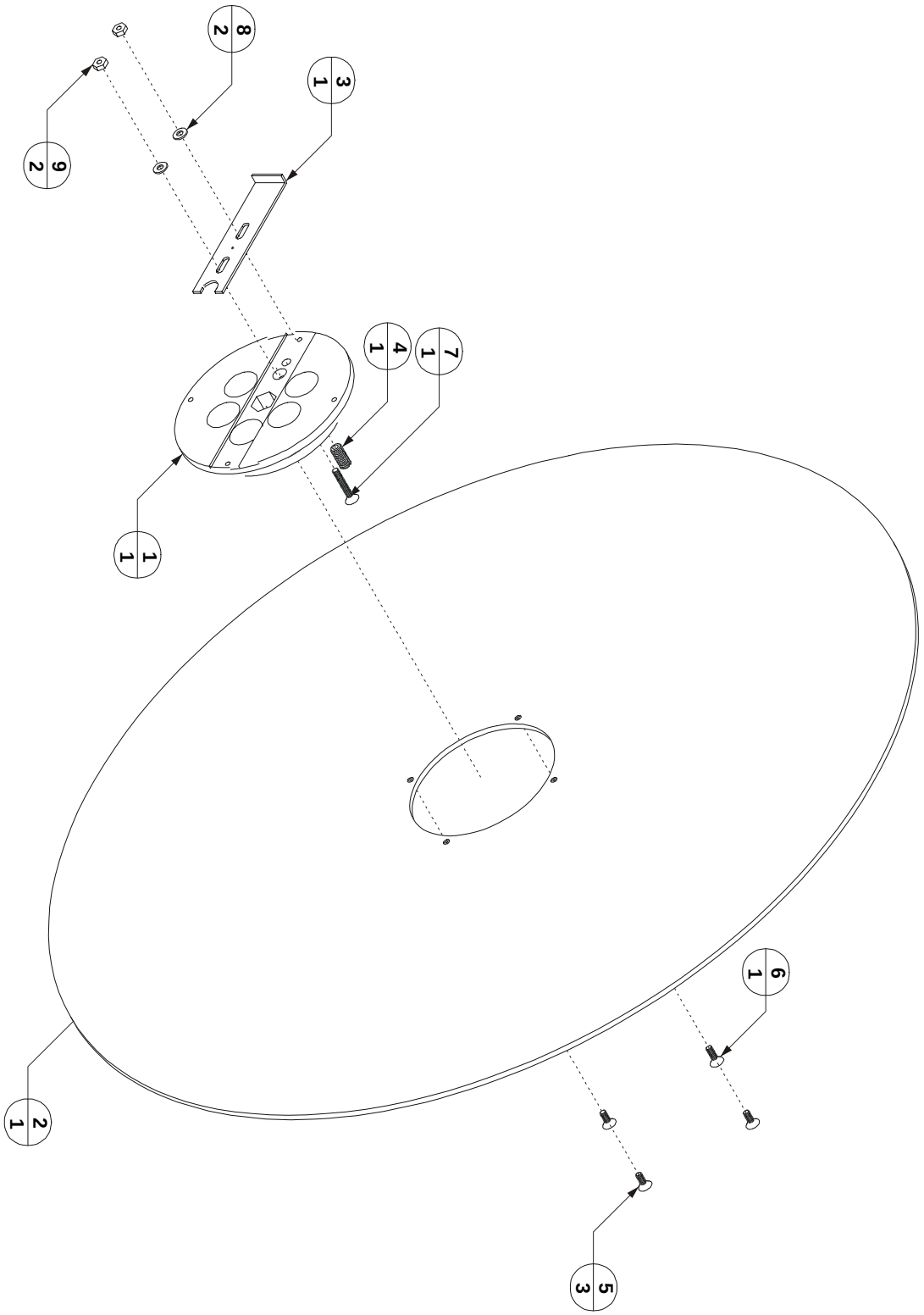

8
2
3
1
9
2
4
1
7
1
1
1
6
1
2
1
5
3

Table B.2 *- Despool Core Assembly Components (700563A)*

Item	Part Number	Quantity	Description	Reference
1	106553	1	Core, Tab , Rear	
2	700572	1	Plate, Tab, Support	
3	700569	1	Plate, Core Locator	
4	455030	1	Plunger Ball, ¼-20 UNF X 5/8”	
5	402010	3	Screw, FHCS, 6-32 UNC X ¼”	
6	402015	1	Screw, FHCS, 6-32 UNC x 5/16”	
7	402050	1	Screw, FHCS, 6-32 UNC x ¾”	
8	440005	2	Nylon Washer, #6	
9	420006	2	Nut, #6	

700573A, Take-Up Core Assembly

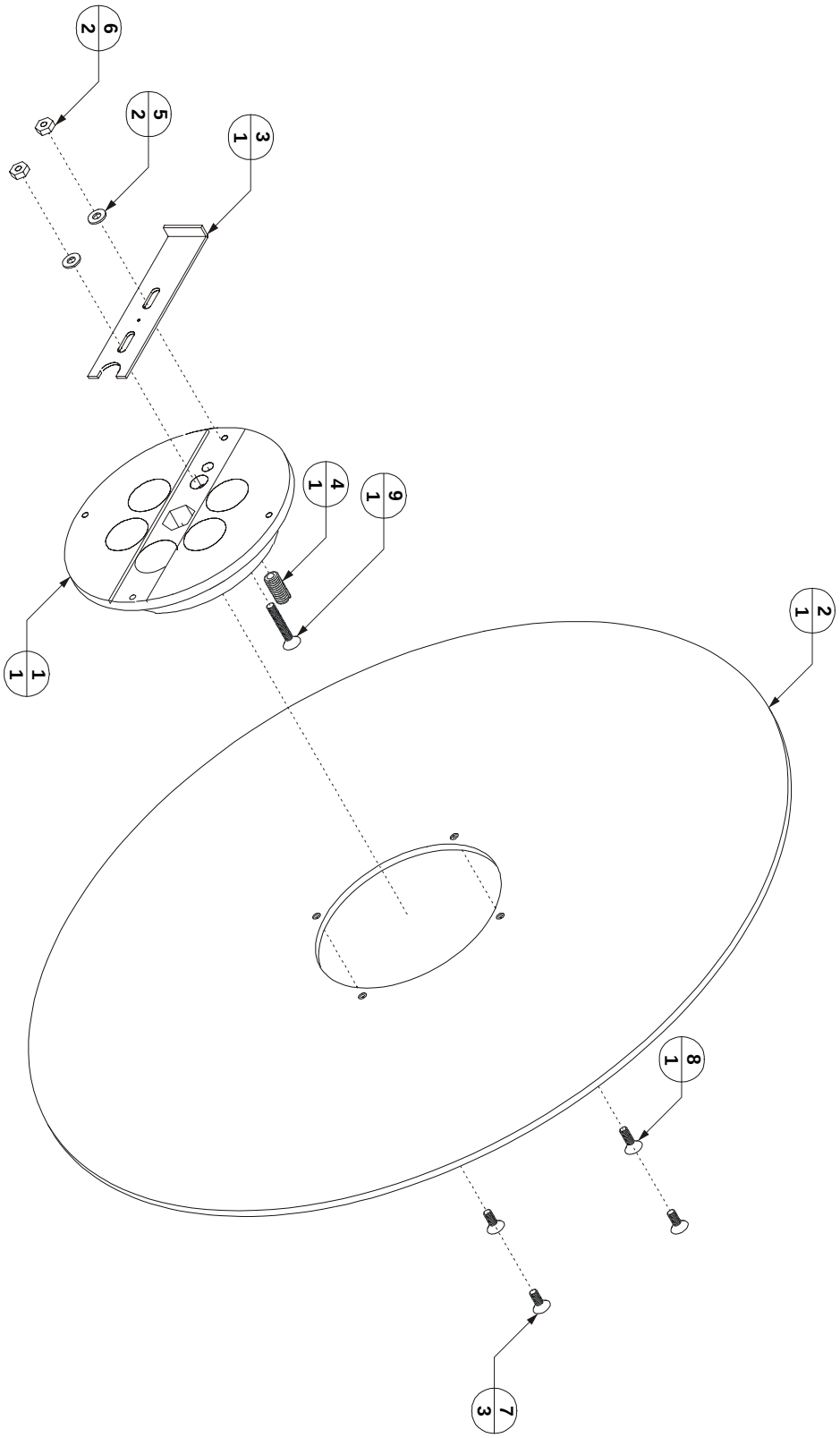

6
2
5
2
3
1
4
1
9
1
1
1
2
1
8
1
7
3

Table B.3 *- Take-Up Core Assembly Components (700573A)*

Item	Part Number	Quantity	Description	Reference
1	106553	1	Rear Tab Core	
2	700573	1	Take-Up Tab Support Plate	
3	700569	1	Core Locator Plate	
4	455030	1	Ball Plunger, ¼-20 UNC X 5/8”	
5	440005	2	Nylon Washer, #6	
6	420006	2	Nut, 6-32 UNC	
7	402010	3	Screw, FHCS, 6-32 UNC X ¼”	
8	402015	1	Screw, FHCS, 6-32 UNC X 5/16”	
9	402050	1	Screw, FHCS, 6-32 UNC X ¾”	

700561A, Tab Head Guard Assembly

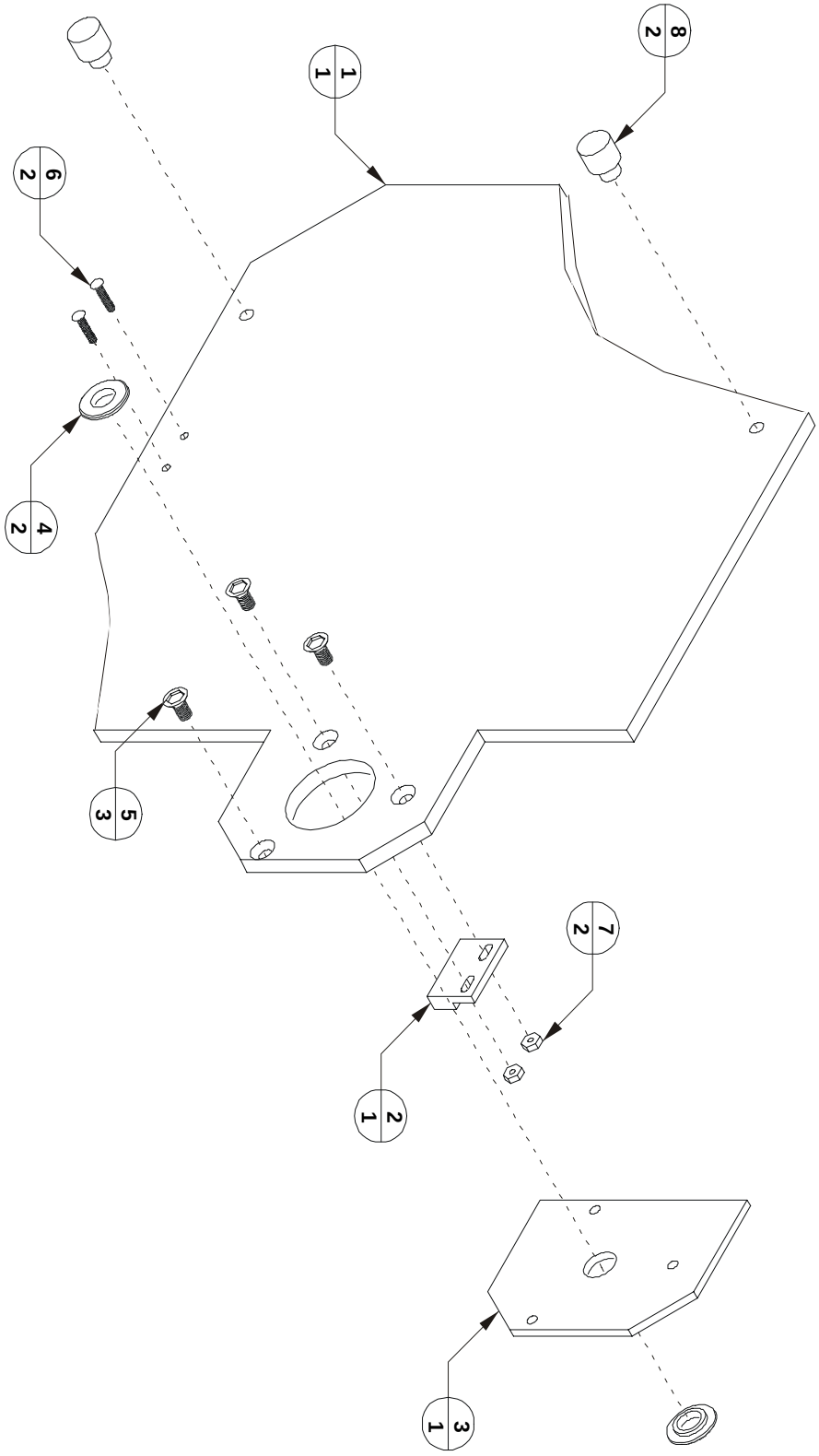

1 1
2 8
2 6
2 4
3 5
2 7
2 1
1 3

Table B.4 *- Tab Head Guard Assembly Components (700561A)*

Item	Part Number	Quantity	Description	Reference
1	700561	1	Guard, Lexan Cover	
2	615533	1	Magnetic Actuator	
3	700563	1	Front Hinge Guard Plate	
4	440531	2	Washer, Molded Shoulder	
5	404010	3	Screw, FHCS, 10-32 UNF X ¼”	
6	401530	2	Screw, BHCS, 4-40 UNC X ½”	
7	420004	2	Nut, 10-32 UNF	
8	438532	2	Receptacle Screw Fastener, 10-32 UNF	

700562A, Head Mechanical Assembly

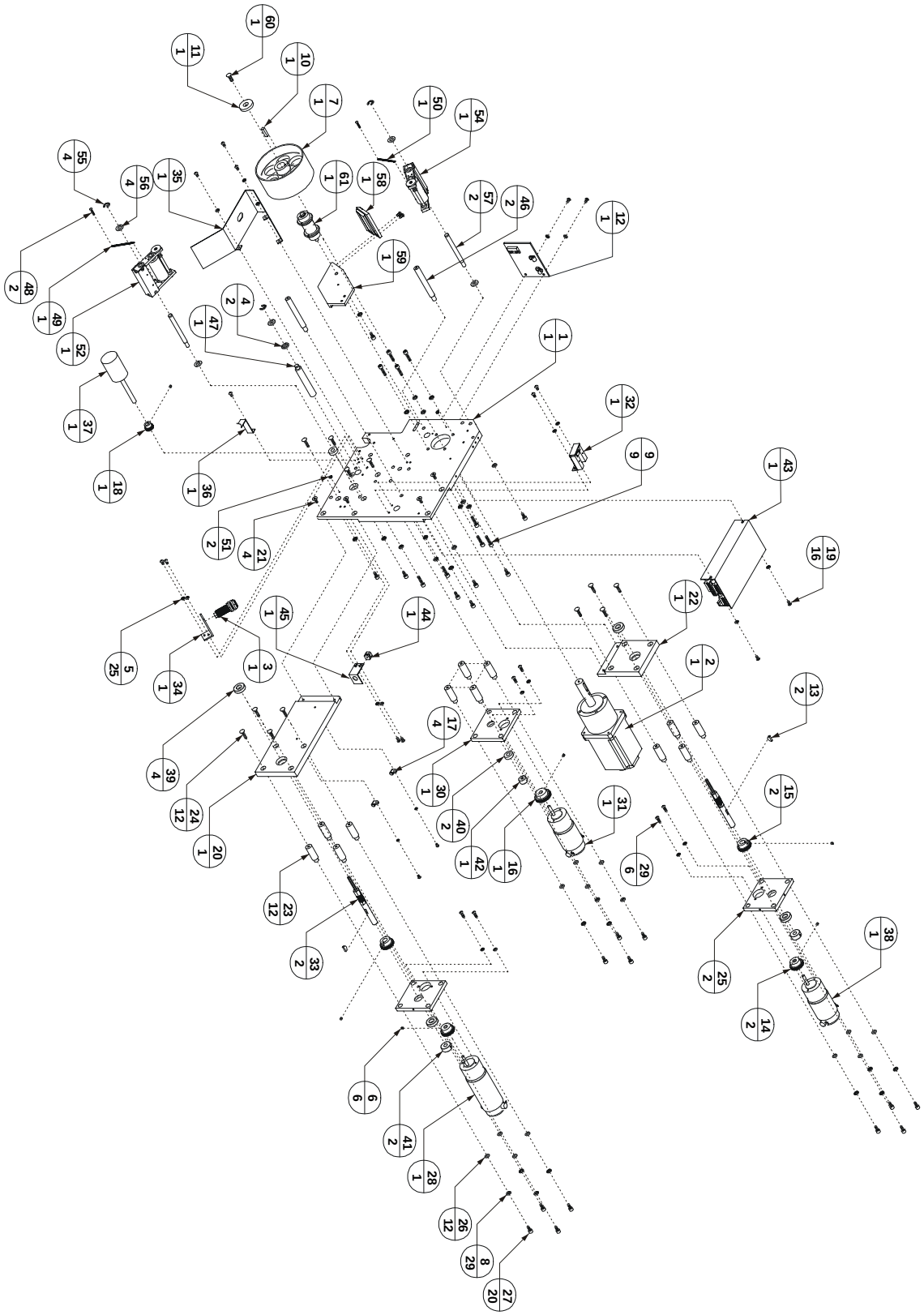

60 1
11 1
10 1
7 1
50 1
54 1
55 4
56 4
35 1
61 1
58 1
57 2
46 2
12 1
48 2
49 1
52 1
59 1
4 2
47 1
1 1
32 1
37 1
18 1
36 1
9 9
43 1
51 2
21 4
19 16
22 1
45 1
44 1
5 25
3 1
34 1
2 1
13 2
17 4
39 4
30 1
40 2
31 1
15 2
24 12
20 1
42 1
16 1
29 6
23 12
33 2
38 1
25 2
14 2
6 6
41 2
28 1
26 12
8 29
27 20

Table B.5 *- Head Mechanical Assembly Components (700562A)*

Item	Part Number	Quantity	Description	Reference
1	330568	1	Main Head Plate	
2	800532A	1	Tab Drive Motor Assembly	
3	600536A	1	Bin Sensor Assembly	
4	440531	2	Washer, Moulded Shoulder	
5	439008	25	Lockwasher, 10-32 UNF	
6	404807	6	Screw, SHSS, 10-32 UNF X 3/16”	
7	106548	1	Grit Wheel	
8	439010	29	Lockwasher, ¼” I.D.	
9	405270	9	Screw, SHCS, ¼-20 UNC x 1”	
10	434160	1	Key Stock, ¼” Wide x 1”	
11	440538	1	Washer, ¼” I.D. X 0.13” thick	
12	615534A	1	Sensor Guard Support	
13	430530	2	Woodruff Key, 5/8” X 5/32”	
14	110534	2	Spur Gear, 24 Pitch, 30 Teeth, ¼” I.D.	
15	110532	2	Spur Gear, 24 Pitch, 30 Teeth, ½” I.D.	
16	110531	1	Spur Gear, 24 Pitch, 36 Teeth	
17	9100291	4	Cable Clamp, Black Nylon, ¼”	
18	110533	1	Spur Gear, 24 Pitch, 18 Teeth	
19	404520	16	Screw, BHCS, 10-32 UNF X 3/8”	
20	330566	1	Main Despool Tower Plate	
21	405020	4	Screw, FHCS, ¼-20 UNC X 3/8”	
22	330562	1	Main Take-Up Plate	
23	100558	12	Standoff, Short	
24	405050	12	Screw, FHCS, ¼-20 UNC X ¾”	
25	330560	2	Despool Brake Plate	
26	440010	12	Washer, ¼” I.D.	
27	405230	20	Screw, SHCS, ¼-20 UNC X ½”	
28	800535	1	Despool Brake Motor, 5.9:1, 540 rpm	
29	439010	24	Lockwasher, ¼” I.D.	
30	330570	1	Despool Drive Plate	
31	800534	1	Despool Drive Motor	
32	600535A	1	Tab Full Sensor Assembly	
33	100559A	2	Hub Mount Shaft Assembly	
34	330548	1	Tab Sensor Bracket	
35	700566	1	Despool Bin	
36	700565	1	Stripper Plate	
37	106554	1	Despool Drive Roll	
38	800533	1	Gearmotor, 30.3 VDC, 5.9:1 ratio, 690 rpm	
39	500030	4	Bearing, R8ZZ, ½” I.D.	
40	500020	2	Bearing, R6ZZ, 3/8” I.D.	
41	131030	2	Collar, ½” I.D.	
42	131536	1	Collar, 3/8” I.D.	
43	600533	1	Tab Drive Motor Controller	
44	505533	1	Bushing, Strain Relief, SR-5N-4	

45	330547	1	Bushing Bracket	
46	100566	2	Front Guard Standoff, Labeler	
47	100553	1	Front Guard Hinge Pin	
48	402350	2	Screw PHMS, 6-32 UNF X ¾”	
49	209535	1	Extension Spring, 1.75” X 0.25” X 0.041”	
50	209536	1	Extension Spring, 1.50” X 0.25” X 0.041”	
51	420006	2	Nut, 6-32 UNF	
52	100553A	1	Spring Loaded, Despool Drive Idler Assembly	
53	700566	1	Bin, Despool, Labeler	
54	100552A	1	Idler Assembly, Label Drive	
55	437530	4	Retaining Ring, 3/8”	
56	440533	4	Washer, 3/8” I.D., 0.06” Wide	
57	100552	2	Idler Pivot Shaft	
58	330574A	1	Tab Sensor Assembly	
59	330572	1	Peel Point Arm	
60	405040	1	Screw, FHCS, ¼-20 UNC X 5/8”	
61	100560A	1	Idler Roller Assembly, Short Shaft	

100553A, Spring-Loaded, Despool Drive Idler Assembly

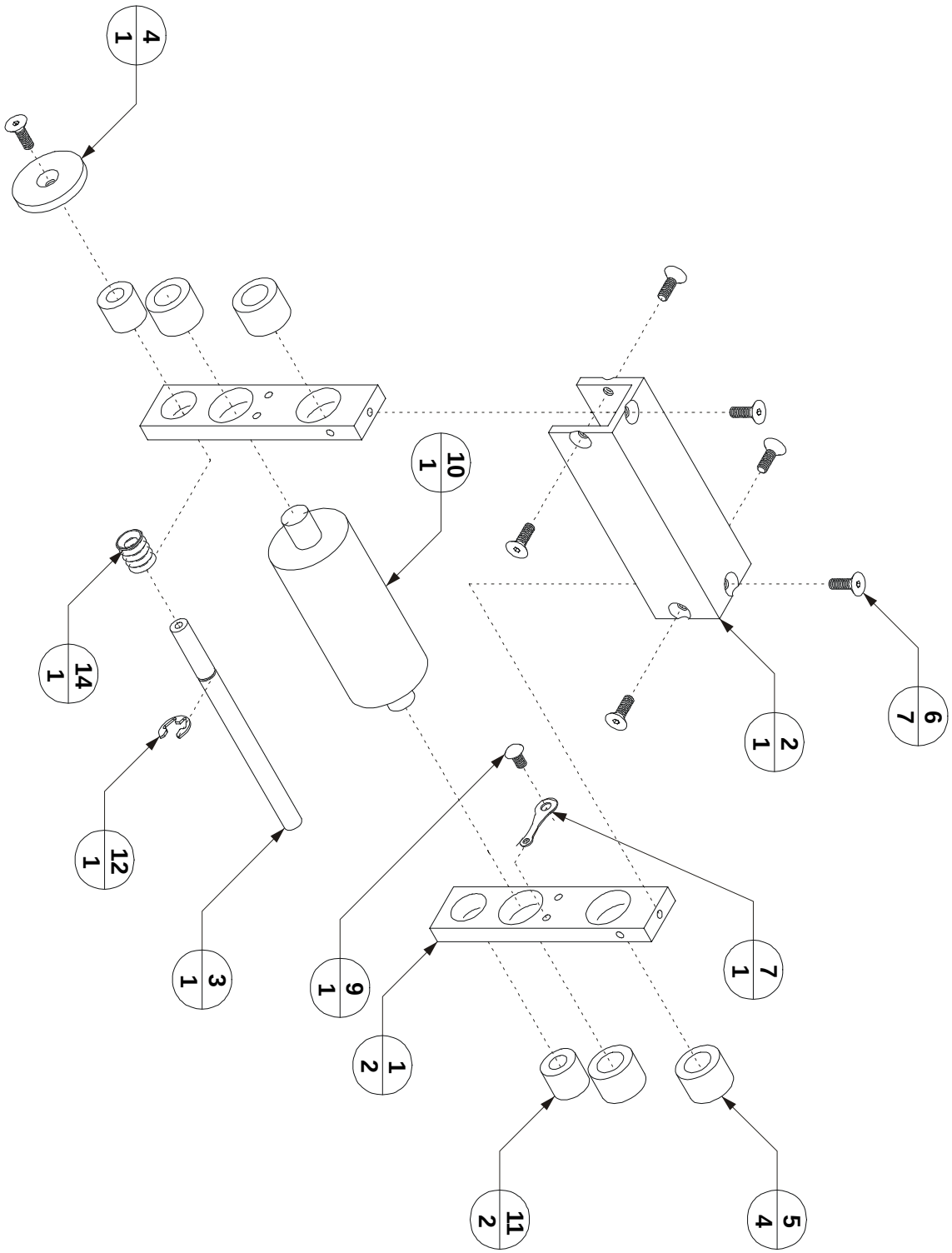

4
1
10
1
14
1
12
1
3
1
9
1
12
7
1
11
2
5
4
2
1
6
7

Table B.6 *- Spring-Loaded, Despool Drive Idler Assembly Components (100553A)*

Item	Part Number	Quantity	Description	Reference
1	330564	2	Plate, Idler, Spring Load	
2	330561	1	Support, Channel, Idler	
3	100559	1	Pin, Plunger, Idler Ass'y	
4	100560	1	Grasp, Pin Plunger	
5	500530	4	Bearing, Oil-Impreg., Brass Press, 3/8" I.D.	
6	402015	7	Screw, FHCS, 6-32 UNC X 5/16"	
7	206530	1	Lug, Soldier	
9	402310	1	Screw, PHMS, 6-32 UNC X ¼", Zinc	
10	106552	1	Idler, Main Drive	
11	500531	2	Bearing, Oil-Impreg., Brass, Press, ¼" I.D.	
12	437534	1	"E" Ring, External, ¼"	
14	209538	1	Spring, Compression	

100552A, Spring-Loaded, Tab Drive Idler Assembly

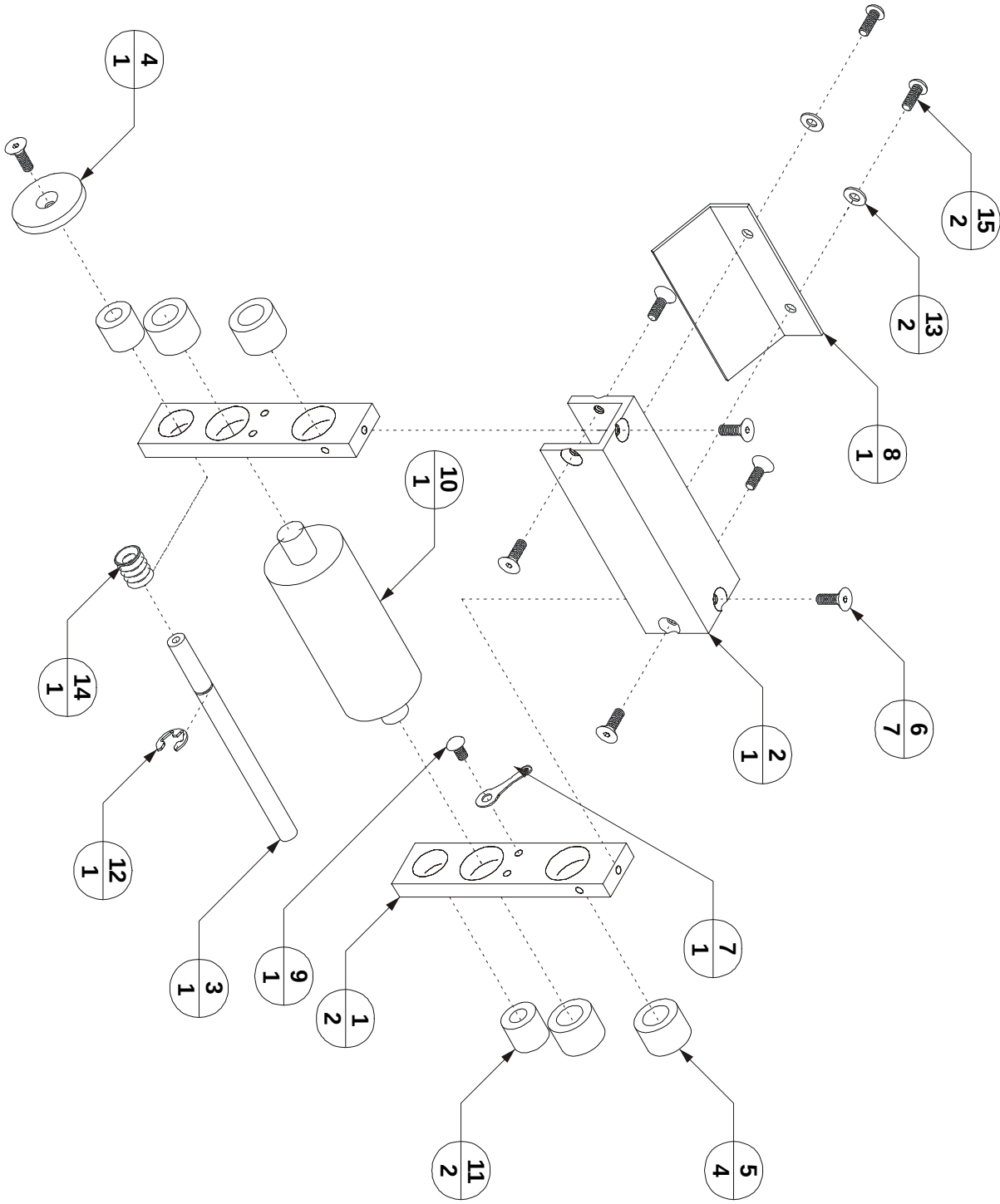


Table B.6 *- Spring-Loaded, Tab Drive Idler Assembly Components (100552A)*

Item	Part Number	Quantity	Description	Reference
1	330564	2	Plate, Idler, Spring Load	
2	330561	1	Support, Channel, Idler	
3	100559	1	Pin, Plunger, Idler Ass'y	
4	100560	1	Grasp, Pin Plunger	
5	500530	4	Bearing, Oil-Impreg., Brass Press, 3/8" I.D.	
6	402015	7	Screw, FHCS, 6-32 UNC X 5/16"	
7	206530	1	Lug, Soldier	
8	700568	1	Plate, Deflector, Tab Drive Idler Ass'y	
9	402310	1	Screw, PHMS, 6-32 UNC X ¼", Zinc	
10	106552	1	Idler, Main Drive	
11	500531	2	Bearing, Oil-Impreg., Brass, Press, ¼" I.D.	
12	437534	1	"E" Ring, External, ¼"	
13	440005	2	Washer, Int Lock, Plain, #6	
14	209538	1	Spring, Compression	
15	402520	2	Screw, BHCS, 6-32 UNC X 3/8"	

330556A, Tab and Peel Sensor Assembly

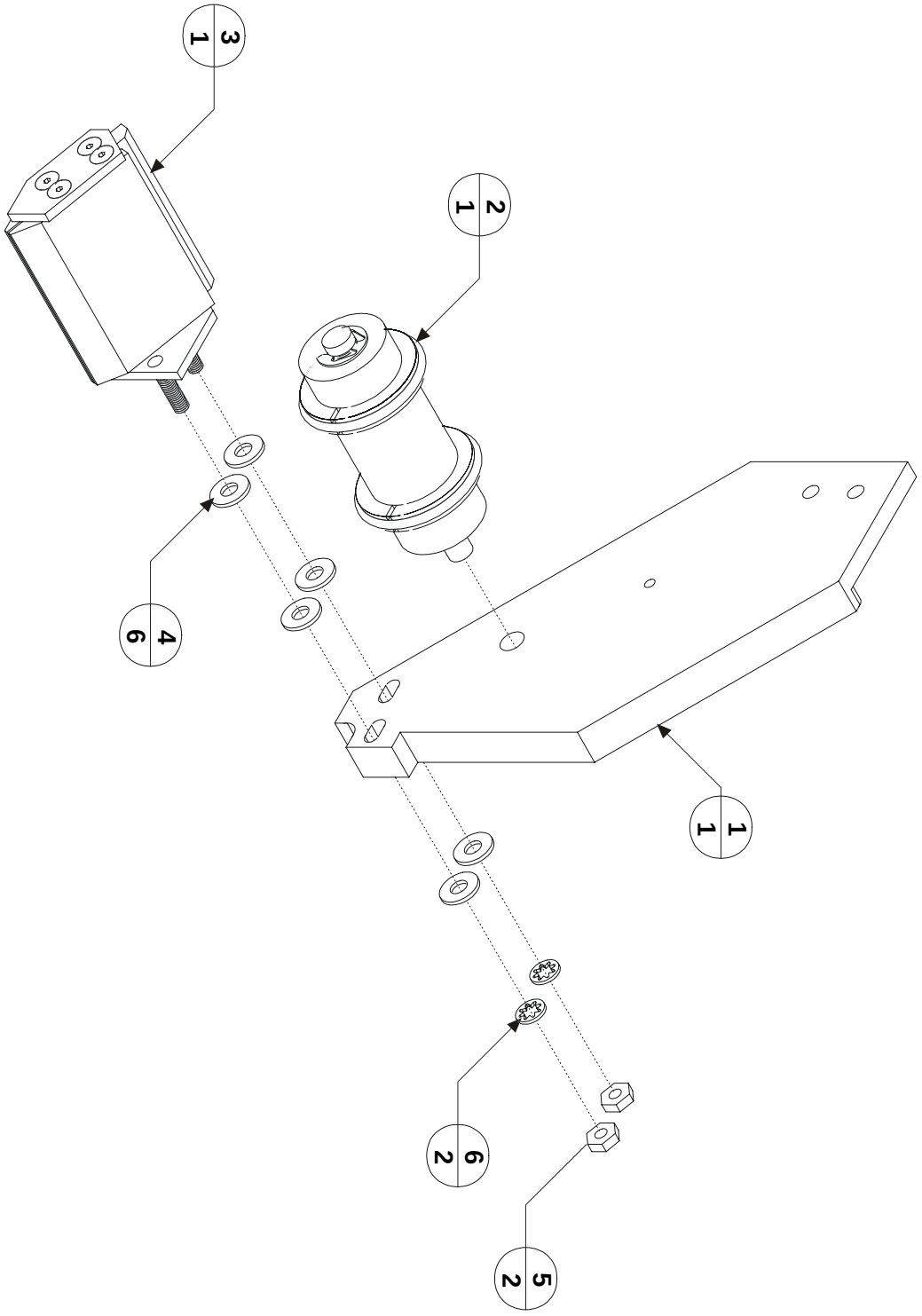


Table B.6 *- Tab and Peel Sensor Assembly Components (330556A)*

Item	Part Number	Quantity	Description	Reference
1	615535A	1	Tab Sensor Assembly	
2	100549A	1	Idler Roller Assembly	
3	615535	1	Peel Point Arm	
4	440008	2	Nut, 10-32 UNC	
5	420008	2	Washer, No.10	

Electrical Components

Terminal Block 1 Assembly

DC Speed Controller Layout

Schematics

Power Circuit Schematic, 530ELE01

Board Drawings

Operator Interface Board, (Rear View) (P/N SE000200)

Tabber Control Board (P/N SE000100)

Tabbing Head Power Supply (P/N SE000300)

Control Connector (P/N PA001000)

Connector Information

J1 - Control Board Connector

J6 - Tabber Inline Connector

P1 - Operator Interface Connector

P2 - Head Control Connector

P3 - Power Connector

P4 - Encoder Connector

P5 - Tab Sensor Connector

P8 - Photocue Sensor Connector

P9 - Head Power Connector

P10 - Base Interlock Connector

TB3 - DC Power Terminal Block

TB4 - Voltage Selection Terminal Block

FB - AC Power Fuse Block

Control Connector

Power Connector

Terminal Block 1 Assembly

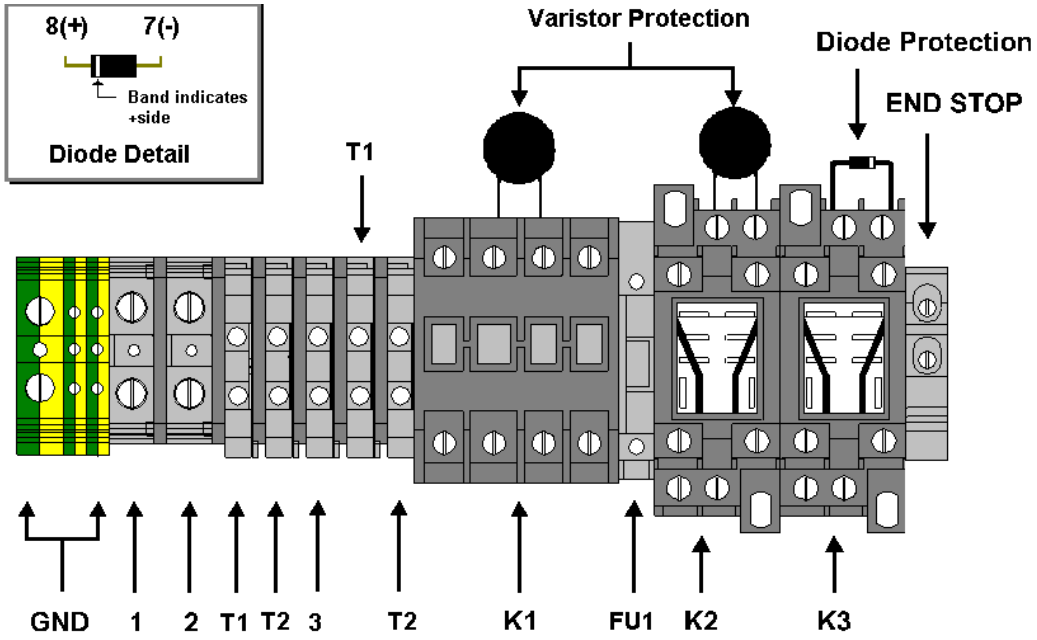
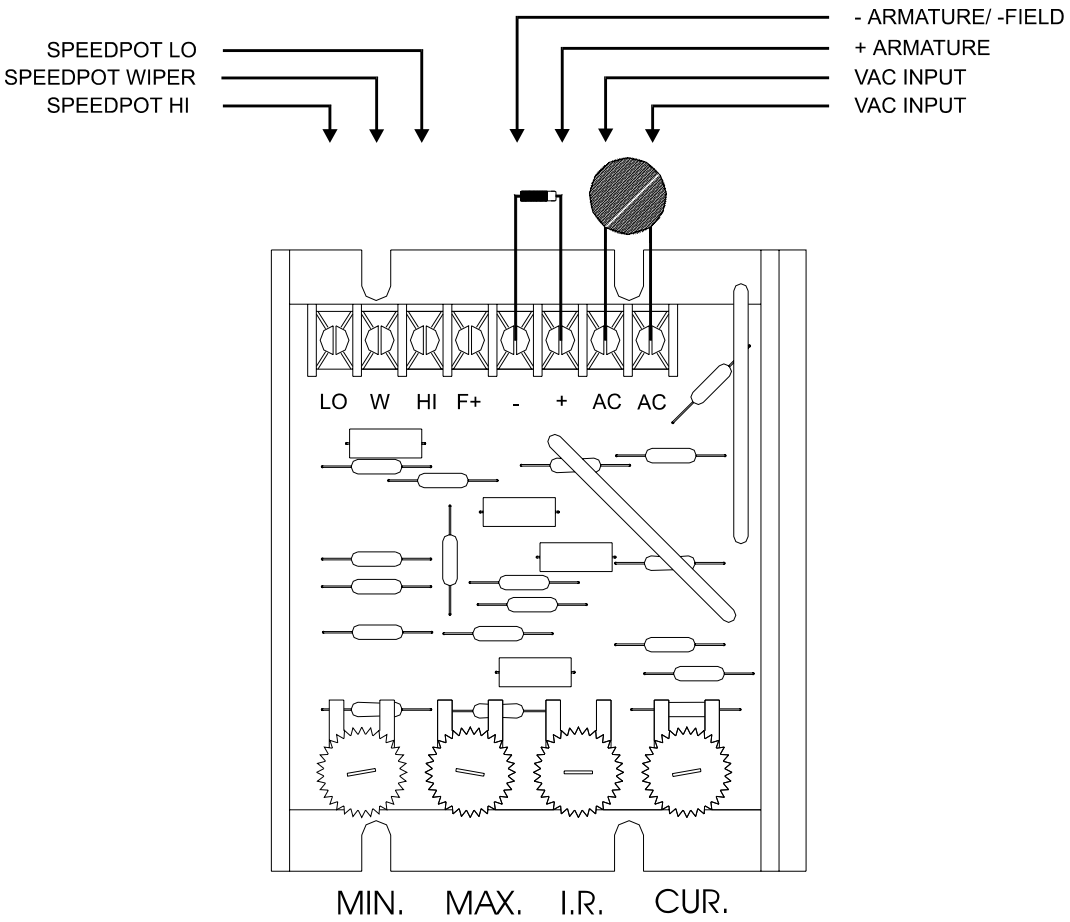


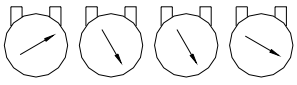
Table C.1 *- Terminal Block 1 Part List*

Symbol	Name	Part Number	Description
GND	Earth Ground	615018	Ground Terminal Block, 10mm
1	120 VAC, Line Power	615003	Terminal Block, Grey, 10mm
2	120 VAC, Line Power	615003	Terminal Block, Grey, 10mm
T1	Power Switch 120 VAC	615002	Terminal Block, Grey, 6mm
T2	Power Switch 120 VAC	615002	Terminal Block, Grey, 6mm
FU1	120 VAC Fuse	615024 646002	Fuse Holder, Grey Fuse, 5 X 20 10A
K1	Machine Contactor	610001 640300	3 Pole Contactor, 9A, 120 VAC Metal Oxide Varistor, 120 VAC
K2	Run/Jog Relay	615004 610100 640300	Relay Base Relay, 120 VAC Metal Oxide Varistor, 120 VAC
K3	Stop Relay	615004 610102 640301	Relay Base Relay, 12 VDC Zener Diode

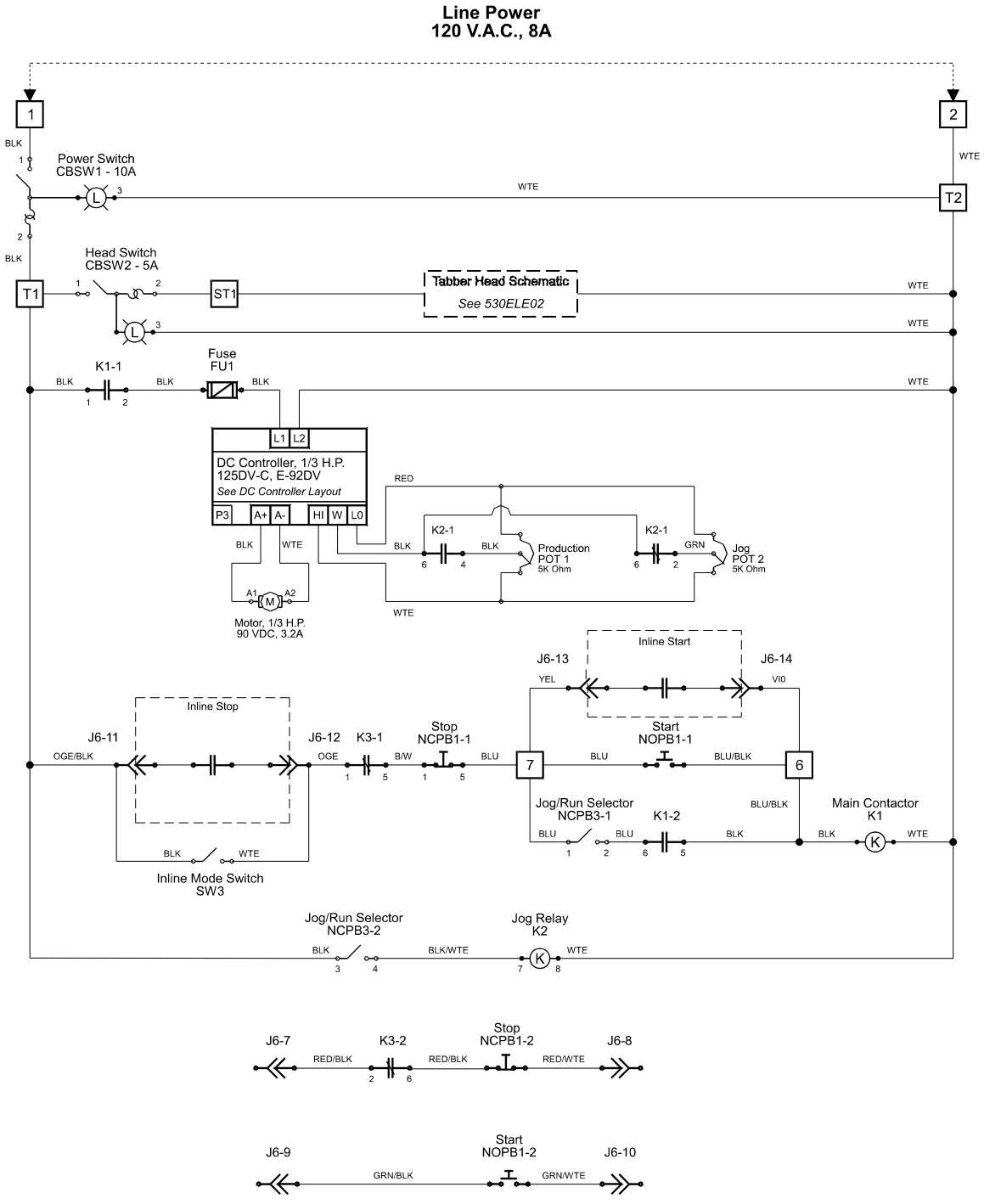
DC Controller Layout



TRIMPOT ADJUSTMENT CHART

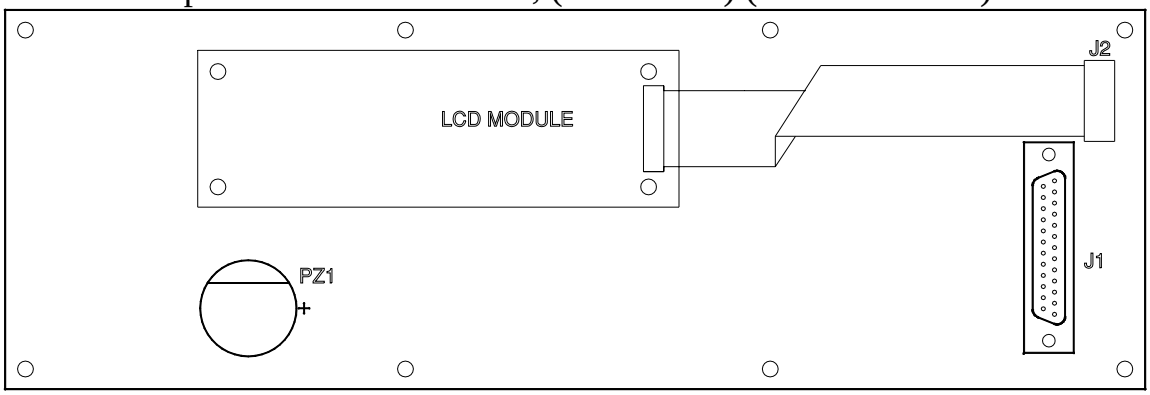
DCC1 - MACHINE CONTROLLER	
	
1/3 H.P..	120 VAC INPUT

Power Circuit Schematic (120 VAC), 530ELE01

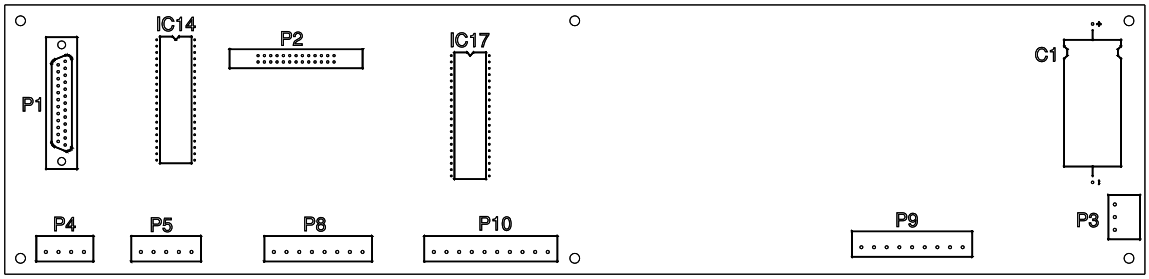


Note : Those items enclosed in dashed line and marked "Inline" are connections made on inline equipment

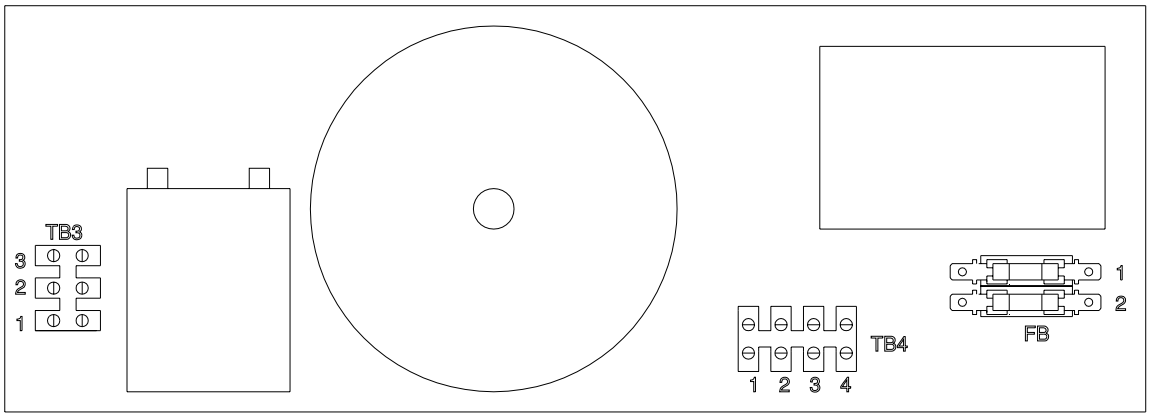
Operator Interface Board, (Rear View) (P/N SE000200)



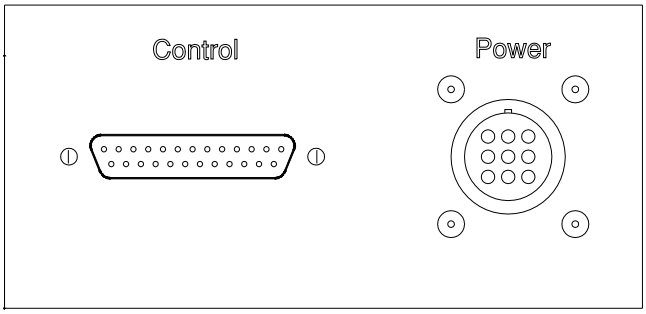
Tabber Control Board (P/N SE000100)



Tabbing Head Power Supply (P/N SE000300)



Control Connector (P/N PA001000)



J1 - Control Board Connector

PART NUMBER:

DESCRIPTION: To provide connection to the Tabber Control Board located on backside of the tabbing system. The Operator Interface Board power, LCD control, and keypad output signals are provided by this connector.

TYPE: 25 pin Subminiature "D" type female Connector.
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: Operator Interface Board

J1 - Control Board Connector Pin Assignment

PIN	FUNCTION
01	Ground
02	+ 5 VDC
03	N.C.
04	LCD Register Select
05	LCD Read/Write
06	LCD Enable
07	LCD/Keypad Data 0
08	LCD/Keypad Data 1
09	LCD/Keypad Data 2
10	LCD/Keypad Data 3
11	LCD Data 4
12	LCD Data 5
13	LCD Data 6
14	LCD Data 7
15	Keypad Encoder Enable
16	Keypad Encoder Data Available
17	Keypad Data 4
18	N.C.
19	N.C.
20	N.C.
21	N.C.
22	N.C.
23	N.C.
24	Ground
25	+12 VDC

Note: N.C. means there is no connection for the pin.

J6 - Inline Connector

PART NUMBER:

DESCRIPTION: To provide an inline connection between the BK530 tabbing system and other inline equipment

TYPE: 37 Pin AMP connector, 206306-1 & 206305-1
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: Inline Connector

J6 - Inline Connector Pin Assignment

Pin	Function
01	N.C.
02	N.C.
03	N.C.
04	N.C.
05	N.C.
06	N.C.
07	Remote Stop
08	Remote Stop
09	Remote Start
10	Remote Start
11	Interlock Stop
12	Interlock Stop
13	Feeder Start
14	Feeder Start
15	N.C.
16	N.C.
17	N.C.
18	N.C.
19	N.C.
20	N.C.
21	N.C.
22	N.C.
23	N.C.
24	N.C.
25	N.C.
26	N.C.
27	N.C.
28	N.C.
29	N.C.
30	N.C
31	N.C.
32	N.C.
33	N.C.
34	N.C.

35	N.C.
36	N.C.
37	N.C.

P1 - Operator Interface Connector

PART NUMBER:

DESCRIPTION: To provide connection to the Operator Interface Board located on the face of unit. All operator interface functions including the operator keyswitch input, and LCD display output are provided by this connector.

TYPE: 25 pin Subminiature "D" type female Connector.
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: Operator Interface Board

P1 - Operator Interface Connector Pin Assignment

PIN	FUNCTION
01	Ground
02	+ 5 VDC
03	N.C.
04	LCD Register Select
05	LCD Read/Write
06	LCD Enable
07	LCD/Keypad Data 0
08	LCD/Keypad Data 1
09	LCD/Keypad Data 2
10	LCD/Keypad Data 3
11	LCD Data 4
12	LCD Data 5
13	LCD Data 6
14	LCD Data 7
15	Keypad Encoder Enable
16	Keypad Encoder Data Available
17	Keypad Data 4
18	N.C.
19	N.C.
20	N.C.
21	N.C.
22	N.C.
23	N.C.
24	Piezo Alarm Power Return (Ground)
25	Piezo Alarm Power (+ 12 VDC)

P2 - Head Control Connector

PART NUMBER:

DESCRIPTION: Connector that provides I/O in connection with the control functions of the tabbing head.

TYPE: 26 pin dual inline header connector
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: Tabbing Head

P2 - Head Control Connector Pin Assignment

PIN	FUNCTION
1	Bin Sensor Ground (Ground)
2	Bin Sensor Input
3	Bin Sensor Power (+12 VDC)
4	Tab Drive Reference (Ground)
5	Tab Drive Control Signal
6	Tab Drive Enable Reference (Ground)
7	Tab Drive Enable
8	Tab Drive Encoder Reference (Ground)
9	Tab Drive Encoder Channel A
10	Tab Drive Encoder Channel B
11	N.C.
12	N.C.
13	N.C.
14	Take-up Sensor Power (+ 5 VDC)
15	Take-up Sensor Input
16	Take-up Sensor Ground (Ground)
17	Take-up Sensor LED Drive
18	Take-up Sensor LED Return (Ground)
19	Head Cover Interlock Input
20	Head Cover Interlock Reference (Ground)
21	N.C.
22	N.C.
23	N.C.
24	N.C.
25	N.C.
26	N.C.

P3 - Power Connector

PART NUMBER:

DESCRIPTION: Connector that provides power to the Tabber Control Board.

TYPE: 3 pin Weidmuller connector
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: DC Power Terminal Block

P3 - Power Connector Pin Assignment

PIN	FUNCTION
1	Chassis Ground
2	Ground
3	+ 30 VDC (Unregulated)

P4 - Encoder Connector

PART NUMBER:

DESCRIPTION: Connector that provides power to the shaft encoder and supplies an encoder signal to the Tabber Control Board.

TYPE: 4 pin Weidmuller connector
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: Shaft Encoder

P4 - Encoder Connector Pin Assignment

Pin	Function
1	0 VDC
2	N.C.
3	Encoder Input A+
4	+ 12 VDC

P5 - Tab Sensor Connector

PART NUMBER:

DESCRIPTION: Connector that provides power to the Tab Sensor and supplies a tab signal to the Tabber Control Board.

TYPE: 5 pin Weidmuller connector
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: Tab Sensor

P5 - Tab Sensor Pin Assignment

PIN	FUNCTION
1	Emitter Power
2	Emitter Ground
3	Detector Input
4	Detector Ground
5	N.C.

P8 - Photocue Sensor Connector

PART NUMBER:

DESCRIPTION: Connector that provides power to the two photocue sensors and supplies photocue inputs the Tabber Control Board.

TYPE: 8 pin Weidmuller connector
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: Photocue Sensors

P8 - Photocue Sensor Connector Pin Assignment

PIN	FUNCTION
1	Emitter Power Photocue 1
2	Emitter Ground Photocue 1
3	Detector Input Photocue 1
4	Detector Ground Photocue 1
5	Emitter Power Photocue 2
6	Emitter Ground Photocue 2
7	Detector Input Photocue 2
8	Detector Ground Photocue 2

P9 - Head Power Connector

PART NUMBER:

DESCRIPTION: Connector that provides power and motor signals to the tabbing head.

TYPE: 9 pin Weidmuller connector
REFERENCE:
ORIGIN: Tabbing Head
DESTINATION: Tab Drive Motor

P9 - Head Power Connector

Pin	Function
1	Waste Take-up Motor Return
2	Waste Take-up Motor Drive
3	De-spool Motor Drive
4	De-spool Motor Return
5	De-spool Brake 1
6	De-spool Brake 2
7	Tab Drive Power (+30 VDC Unregulated)
8	Tab Drive Ground
9	Head Chassis Ground

P10 - Base Interlock Connector

PART NUMBER:

DESCRIPTION: Connector that provides I/O in connection with the base interlock system.

TYPE: 10 pin Weidmuller connector
REFERENCE:
ORIGIN: Interlock System
DESTINATION:

P10 - Base Interlock Connector

PIN	FUNCTION
1	Ground
2	Base Cover Interlock Input
3	N.C.
4	N.C.
5	N.C.
6	N.C.
7	N.C.
8	N.C.
9	Stop Relay Sink
10	Stop Relay Power (+12 VDC)

TB3 - DC Power Terminal Block

PART NUMBER:

DESCRIPTION: Terminal block that provides power to the Tabber Control Board.

TYPE: 3 contact European style terminal block
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: DC Power Supply

TB3 - DC Power Terminal Block

PIN	FUNCTION
1	Chasis Ground
2	Ground
3	+ 30 VDC (Unregulated)

TB4 - Voltage Selection Terminal Block

PART NUMBER:

DESCRIPTION: Terminal block that allows selection of primary power input. (Select 230 V 50-60Hz, or 115 V 50-60Hz).

TYPE: 4 pin Weidmuller connector
REFERENCE:
ORIGIN:
DESTINATION:

TB4 - Voltage Selection Terminal Block

PIN	FUNCTION
1	Primary Winding # 1 Input 1 (Black)
2	Primary Winding # 1 Input 2 (Brown)
3	Primary Winding # 2 Input 1 (Red)
4	Primary Winding # 2 Input 2 (Orange)

Note: For 115 Volt, 50-60Hz operation apply filtered AC power to terminals 1 & 4. Jumper terminals 1 & 3. Jumper terminals 2 & 4. Use 6 or 6.3 Amp fuse

For 230 Volt, 50-60Hz operation apply filtered AC power to terminals 1 & 4. Jumper terminals 2 & 3. Use 3 or 3.15 Amp fuse.

FB - AC Power Fuse Block

PART NUMBER:

DESCRIPTION: Fuse Block that provides current limit protection and AC power input to the Power Supply.

TYPE: 2 terminal .187" x .020" tab male quick disconnect; 2 - 5 x 20 mm fuse block
REFERENCE:
ORIGIN:
DESTINATION:

FB - AC Power Fuse Block Pin Assignment

PIN	FUNCTION
1	AC Power Input (115 V or 230 V) see note below
2	AC Power Input (115 V or 230 V) see note below

Note: It is important that the voltage selector terminal (see above) is wired for the appropriate AC Voltage to be input. For 115 Volt operation use 6 Amp or 6.3 Amp fuse. For 230 Volt operation use 3 Amp or 3.15 Amp fuse.

JH1 - Control Connector

PART NUMBER: 614325

DESCRIPTION: Connector that provides I/O in connection with the control functions of the tabber head.

TYPE: 25 pin subminiature “D” type male connector.
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: Tabber Head

JH1 - Control Connector Pin Assignment

Pin	Function
1	Bin Sensor Ground (Ground)
2	Bin Sensor Input
3	Bin Sensor Power (+12 VDC)
4	Tab Drive Reference (Ground)
5	Tab Drive Control Signal
6	Tab Drive Enable Reference (Ground)
7	Tab Drive Enable
8	Tab Drive Encoder Reference (Ground)
9	Tab Drive Encoder Channel A
10	Tab Drive Encoder Channel B
11	N.C.
12	N.C.
13	N.C.
14	Take-up Sensor Power (+ 5 VDC)
15	Take-up Sensor Input
16	Take-up Sensor Ground (Ground)
17	Take-up Sensor LED Drive
18	Take-up Sensor LED Return (Ground)
19	Head Cover Interlock Input
20	Head Cover Interlock Reference (Ground)
21	N.C.
22	N.C.
23	N.C.
24	N.C.

25	N.C.

JH2 - Power Connector

PART NUMBER: 614124

DESCRIPTION: Connector that provides power and motor signals to the tabber head.

TYPE: 9 pin AMP CPC connector
REFERENCE:
ORIGIN: Tabber Control Board
DESTINATION: Tabber Head

JH2 - Power Connector Pin Assignment

Pin	Function
1	Waste Take-up Motor Return
2	Waste Take-up Motor Drive
3	De-spool Motor Drive
4	De-spool Motor Return
5	De-spool Brake 1
6	De-spool Brake 2
7	Tab Drive Power (+30 VDC Unregulated)
8	Tab Drive Ground
9	Head Chassis Ground