

Industrial Decorating Solutions

U.S. TAX STAMPING EQUIPMENT Manufactured by United Silicone an ITW company

ICC INLINE CASE CUTTER SERVICE & OPERATION MANUAL

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U.S. Tax Stamping Equipment rufactured by United Silicone an ITW Company

Tat	ble of Contents	Page
1.0	Introduction	1
	1.1. Manual Notes	1
2.0	Overview of Operations	3
	2.1. Initial Start-Up	3
	2.2. Case Cutting Operation	4
3.0	Utility/Installation Requirements	6
	3.1. Electrical	6
	3.2. Pneumatic	6
	3.3. Safety	6
4.0	ICC Inline Case Cutter Installation	8
	4.1. Uncrating & Assembly	8
	4.2. Electrical Connections	8
	4.3. Pneumatic Connections	8
5.0	Machine Controls & Operation	9
	5.1. Machine Control Buttons	10
	5.2. Machine Operation Notes	12
6.0	Set-Up & Adjustments	17
	6.1. Depth of Cut Adjustment	17
	6.2. Blade Replacement	19
	6.3. Cut Height Offset	20
	6.4. Recommended Factory Settings	21



Inline Case Cutter Service & Operation Manual

7.0 Operator Menu Screens	22
7.1. Operator Interface Push Button Functions	22
7.2. Main Screen	23
7.3. Manual Menu	29
7.4. Set-Up Menu	31
7.5. Sensor Status Menu	37
7.6. Alarm History	39
8.0 Troubleshooting	40
8.1. Main Alarm Fault Codes	40
8.2. Station 1 Alarm Fault Codes	41
8.3. Station 2 Alarm Fault Codes	42
8.4. Recommended Spare Parts	43
9.0 Warranty	46
10.0 Engineering Drawings	
10.1. Mechanical Drawings	(Attachment 1)
10.2. Electrical Drawings	(Attachment 2)
Appendix A - Supplying Compressed Air	i
Appendix B - NEMA Electrical Plug	vii

Appendix B - NEMA Electrical Plug



1.0 Introduction:

Cigarettes are normally received at distribution houses in cases that hold cartons standing on end in a $5 \times 6 \times 1$ (30 cartons per case) array (referred to as "6M" cases) or in a $5 \times 6 \times 2$ (60 cartons per case) array (referred to as "12M" cases). These cases need to be opened so that the cartons can be removed and tax stamps applied to the individual packs. Typically, the 12M cases are cut along the horizontal center of the case while the 6M cases have their tops cut & removed.

When this operation is performed manually, there are safety, ergonomic, and product damage issues that have a negative impact on a distribution house's profitability. In response to this, U.S. Tax Stamping has developed the ICC Inline Case Cutter that addresses these concerns.

The ICC Inline Case Cutter features:

- 1. Ability to cut cases from nearly all brands and sizes of cigarettes from regulars to 120's without tooling change with:
 - 6M case size between 25.75 x 12.63 x 11.50 (L x W x H) and 14 x 7.75 x 9.75 inches.
 - 12M case size between 25.75 x 12.63 x 23.13 (L x W x H) and 14 x 7.75 x 19.50 inches.
- 2. Ability to "mix & match" 6M & 12M cases without machine stoppages.
- 3. Rates of 7.5 cycles per minute.
- Standard in feed and discharge height of 38 +/- 2 inches for connecting to facility conveyors. (Custom heights are available with optional risers. Contact U.S. Tax Stamping for more information.)
- 5. Discharge sensors that allow for smooth product flow onto existing facility conveyors.
- 6. Small machine footprint of 100" x 50".



Inline Case Cutter Service & Operation Manual



ICC Inline Case Cutting Machine



Inline Case Cutter Service & Operation Manual



Figure 2.0 Station Overview

2.1 Initial Start-up:

When the machine is energized, all mechanisms are reset to their initial or start positions. In this position, they are in the following states:

- All conveyors are energized and cutting motor blades are running.
- Both station stop rollers are extended.
- On the short side cutting station, the vacuum arms are extended out away from the conveyor and retracted towards to the machine in-feed on their linear rails.
- On the long side cutting station, the vacuum arms are extended out away from the conveyor and moved to their home position.



2.2 Case Cutting Operation:

- 1. Customer's conveyor delivers case to infeed end of ICC. Cases are oriented such that a long side is facing the direction of travel on the conveyor. (i.e. short sides will be cut first)
- 2. Infeed conveyor engages leading edge of case and pulls it up against the raised case stop.
- 3. With case against the case stop, the overhead case height sensor reads the case and determines the necessary height for cutting, either 6M or 12M.
- 4. Cutting blades for short side adjust to proper height.
- 5. Suction cups move in to engage case. Vacuum turns on. The suction cups retract slightly to pull out case sides.
- 6. Case stop lowers. Case moves forward via case drive (pulled by the suction cups) and extension of infeed belts. This moves the case past the cutting blades which engage the case at the leading corners of the short side.
- 7. Case continues to move forward by case drive until the short side cut is complete.
- 8. Case drive assembly triggers proximity sensor to release vacuum and cups move to outer position.
- 9. Case drive assembly triggers the advanced limit sensor. Case drive assembly (without the case) returns to home position to await next case.
- 10. The pins for the case turning assembly extend.
- 11. The case is engaged by the case turning assembly drive rollers. A corner of the long side of the case is engaged by the case turning assembly pins.
- 12. The rollers of the case turning assembly continue to drive the "free" side of the case, causing the case to spin 90 degrees such that the short side is now leading.
- 13. As the case turns, it eventually triggers an ultra-sonic sensor that indicates the turn is complete. The case turning assembly pins retract, releasing the case.
- 14. The long side cutting station adjusts to the proper height.
- 15. The case turning assembly rollers drive the case forward, causing it to overbalance slightly and engage the long side cutting station infeed belt.
- 16. The long side drive moves forward to a position to engage the case.
- 17. The infeed belt pulls the case to the case stop.
- 18. The long side drive suction cups move in to engage the case. Vacuum turns on. The suction cups move out slightly to pull out the case sides.



- 19. Case stop lowers. Case moves forward via case drive (pulled by the suction cups) and drive belt. This moves the case past the cutting blades which engage the case at the leading corners of the long side.
- 20. Case continues to move forward by the case drive until the long side cut is complete.
- 21. Case drive assembly triggers proximity sensor to release vacuum and cups move to outer position.
- 22. Case drive assembly triggers the advanced limit. Case drive assembly (without the case) returns to home position to await next case.
- 23. With both long and short sides cut, the case is pushed out by the outfeed drive belts onto the customer's table or conveyor.







3.0 Utility/Installation Requirements:

To assure a correct, safe, and timely installation, the following electrical service must be provided along with sufficient installation time. A minimum Service Access Clearance of 18 inches must be maintained around all equipment and 36 inches in front of the control panel/enclosure.

- **3.1 Electrical:** 220-230VAC, 30 Amps, Single Phase.
 - A 220-230VACsingle phase, 30 amp circuit (conforming to local codes) for connecting to the Case Cutter control panel. Furthermore, a safety switch of the same capacity must be provided outside the equipment. This must be a dedicated circuit - do not connect any other electrical devices to this circuit.
 - When equipped with the optional infeed conveyor the machine requires 220-230 VAC single phase, 40 amp circuit
- **3.2 Pneumatic:** 100 psi, 12 CFM, Clean Dry Air.
 - It is recommended that a minimum 1/2 inch ID rigid copper line be plumbed to the machine from the compressed air source. This will help to ensure that the 100 psi, 12 CFM, clean dry air is always available to the machine and improve its long term performance. See appendix A "Supplying Compressed Air for Your U.S. Tax Stamping Equipment"

3.3 Safety

	WARNING
0	DO NOT PERMIT UNTRAINED PERSONNEL TO
	OPERATE THIS EQUIPMENT.
0	DO NOT PERMIT UNTRAINED PERSONNEL TO
	PERFORM, OR ASSIST IN, THE MAINTENANCE
	OR INSTALLATION OF THIS EQUIPMENT.

This system is designed for safe operation and includes all required safety features to minimize possible injury to personnel. However, you are responsible for providing a safe environment for operating this system and other equipment at your facility. Do not remove any guards or defeat safety devices. Do not reach into the machine at any time while it is in operation. If any additional equipment is used or modifications made to the system, be sure to provide suitable operator protection.

Safety begins with permitting only properly trained personnel to install and/or operate any equipment. All personnel involved in installing, setting up, or maintaining of this system must be fully trained in performing electrical, pneumatic, and mechanical installations.



3.3.1 Safety First:

- 1. Before performing any maintenance on this equipment, become familiar with the controls and know how to operate the machine properly.
- 2. Disconnect and lock-out the electrical power and air sources before performing any troubleshooting or maintenance on the machine. Make absolutely sure all belts and moving parts have stopped. Lock-out Tag-out locations for Electrical and Pneumatic systems are shown in section 5.1 of this manual.
- 3. Do not open the cutter control panel. This should only be serviced by a U.S. Tax Stamping company field service representative or properly trained personnel.
- 4. This system contains 4 rotary cutting knives which are sharp and appropriate protective gear should be used when making adjustments or replacing blades.
- 5. Do not scrape the machine with sharp tools or step on any components while performing any maintenance as damage to the machine may result.
- 6. Regular cleaning of the machine will help to promote safety and ensure trouble free operation of the machine.



4.0 ICC Inline Case Cutter Installation:

4.1 Uncrating & Assembly:

- Remove all plastic wrap and corrugated packaging material.
- Remove any machine banding straps and lag bolts from the skids.
- o Using a fork lift, lift the machine off the shipping skid and install all leveling feet.
- Place the machine in its permanent location and level the machine by adjusting the leveling feet.

4.2 Electrical Connections:

 Connect the main power wiring to the main enclosure. The machine is supplied with a NEMA L6-30P plug for connecting to a customer supplied NEMA L6-30R receptacle. (Reference Appendix B) Consult your local electrical codes for proper cable size and ratings. If equipped with an optional infeed conveyor the machine will be supplied with a 2P3W plug.

Caution: Incorrect voltage will cause severe damage to the equipment. For the protection of the operation personnel, the equipment must be electrically grounded.

4.3 Pneumatic Connections:

• Connect the main air line to the shut-off valve on the pneumatic panel.

A U.S. Tax Stamping company field service representative should be present at the time of installation. The service representative will supervise the machine installation and start-up procedure.



Inline Case Cutter Service & Operation Manual



Fig 5.0

5.0 MACHINE CONTROLS & OPERATION:

Prior to operating the machine it is important to familiarize yourself with the location and function of all machine controls. The primary ones are located on the electrical enclosure and consist of an operator interface, emergency stop, and main power. In addition to the E-stop button on the electrical enclosure there are E-stops at the infeed end of the machine and safety interlocks on the access doors that will E-stop the machine when opened. A light stack mounted to the top of the electrical panel is provided to assist operators in identifying the machine status.



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5.1 Machine Controls: (Ref Figs 6.1 & 6.2)

- OPERATOR INTERFACE PANEL A combination push button and touch screen control panel that allows the operator to start, stop, view machine status messages, make setting changes, and reset faults. Accessibility to the various screens on the operator interface is broken into 3 levels:
 - Level 0 or "Normal User" Allows access to Start, Stop, Reset, and Manual Buttons.
 - Level 1 or "Supervisor" (password protected) Allows access to Alarm History & Setup Buttons in addition to all Level 0 screens.
 - Level 2 or "Factory" (password protected) Allows access to Service screens in addition to all Level 0 and Level 1 screens.
- EMERGENCY STOP By pressing this button, the machine immediately stops all operations and de-energizes all motors and pneumatic actuators on the machine. It does not however, de-energize the Operator Interface Panel.
- STATUS LIGHT The lit color on the stack indicates the state of the machine:
 - Green Automatic mode, machine is ready to or is processing cases.
 - Yellow Machine stopped with no alarms or faults.
 - Red Machine stopped with an alarm/fault.
- MAIN POWER This switch de-energizes the machine including the control panel and all pneumatic actuators. When the switch is in the off position, squeezing the handle allows for the red portion of the handle to lift out and a lock inserted.



Inline Case Cutter Service & Operation Manual

• PNEUMATIC LOCK-OUT VALVE - This is a manual gate valve that will dump the compressed air from the machine when turned off. It has provisions for a lock when closed and is located on the pneumatic panel adjacent to the electrical enclosure.



Figure 5.1.1 Pneumatic Lock-Out Valve



5.2 Machine Operation Notes:

All personnel operating & servicing this machine need to be familiar with the following screens on the operator interface panel (Ref Section 8 for a complete listing of all screens, their button function and description):

• MAIN SCREEN- This is the top menu which displays machine status messages and allows the user to navigate to other menus. Touching the button on the screen will bring up the menu written on the button.



• CURRENT ALARM - This menu displays the description of the current alarm(s) along with the alarm number. The alarm number is helpful in troubleshooting the machine.





 FAULT RECOVER - This menu displays the location of a case in the machine in the machine memory. In the event of a machine fault it may be necessary to physically remove cases that are in process from the machine. When this is done it is necessary to "tell" the machine that a case(s) has been removed. This is accomplished by pressing the CLEAR button in this menu for the station from which the case has been removed. This will change the status button message to "None" from either "Half Case" or "Full Case".



• SETUP - This menu allows the user to "enable" the Half Case Processing only and also provides access to the STATION OFFSETS MENU.



 STATION OFFSETS - This menu allows the user to adjust gripper out time and the cut height offset. The out time allows for the adjustment of the expansion of the cardboard away from the product. The offset allows for the adjustment of the cut position of the two stations.





 CYCLE COUNTS - This feature allows the operator to track the number of cases that have been processed thru the machine. The "Shift Cycles" is not time dependent and will continue the count the number of cases that have been processed until it is reset to zero by pressing the "CLEAR" button. Disconnecting the power will also reset this count. The "Life Cycles" is a non-resettable total count of machine cycles.

	Shift Cycles	
Half Case	0	
Full Case	0	
Total	0	
	CLEAR	NEXT >

	Life Cycle Info
Half Case	0
Full Case	0
Total	0



Although it is possible to run the case cutter unattended, it is recommended that an operator be present to monitor the process and correct any issues that may come up during operation. While monitoring the process they should:

- Inspect the incoming product and remove any excessively damaged cases, loose paper or other items attached to the sides of the case that may prevent the proper operation of the vacuum cups or interfere with the cutting operation.
- Monitor the cut so that the blades can be replaced when required. The standard cutting blade should remain serviceable for 25,000 to 35,000 cutting cycles depending on care of the blades and the thickness of the cardboard it is cutting. Contact with other materials (staples for example) will shorten this life considerably.
- Monitor the depth of cut so that the case walls are cut and the internal product is not damaged.
- Monitor the cut height alignment between the long side and short side cuts. A slight off-set (1/8 to 1/4 inch) of the cut height between the first or long side cut (Station 1) and the second or short side cut (Station 2) will help to hold the case together while it is being transferred thru the post cut processing section of the machine. Too much of an offset will prevent the lid from separating properly from 6M cases, or cause problems for 12M cases being split apart.
- Clear any faults & reset the machine.



Inline Case Cutter Service & Operation Manual

6.0 SET-UP & ADUSTMENTS:



Fig. 6.1

6.1 Depth of Cut Adjustment:

Adjustment Procedure:

(Ref. Fig. 6.1) The depth of cut that the rotary blades protrude into the case is adjustable to accommodate various case wall thicknesses.

To adjust the depth of cut, first loosen the two Adjustment Locking Handles, then the Knurled Locknut. Next, adjust the depth of cut using the Knurled Adjusting Knob. Turn the knob clockwise for a shallower cut and counterclockwise for a deeper cut. Tighten the Knurled Locknut, followed by tightening the two Adjustment Locking Handles.



Inline Case Cutter Service & Operation Manual



Fig 6.2

Note: It is important that the blades rotate towards the in-feed side of the cutter assembly. This will insure that a consistent depth of cut is maintained. If the blade rotates incorrectly, damage to the case contents is likely to occur, especially near the corners of the case.



6.2 Blade Replacement:

Replacement Notes & Procedure:

- The rotary blades are sharp and sufficient care must be exercised when handling the blades to prevent operator injury or damage to the blade itself. Always use appropriate protective gear when handling the blades.
- Shut down the machine using the lockout/tag-out procedure.
- (Ref. Fig. 6.3) The blades are secured to the motor shaft by either RH or LH ³/₈-24 threaded hex nuts. The thread direction is labeled on the top of the motors.
- For optimal machine performance it is recommended that the cutting blades be replaced in pairs.
- Insert a 3/16 diameter rod or 5/32 hex key into the shaft locking pilot hole. Using a 9/16 wrench on the ³/₈-24 hex nut, slowly turn the blade shaft until the 3/16 diameter rod or hex key engages into the locking hole in the motor shaft. Then remove the ³/₈-24 hex nut and spring washer which will allow the blade to drop off the shaft. It is neither necessary nor recommended to remove the blade guard when changing the blades.
- Install the new blade and reinstall the hex nut and spring washer. Tighten the hex nut until the spring washer flattens out. Remove the 3/16 diameter rod or hex key that is locking the motor shaft.
- After the blade is installed, check to make sure the blade does not interfere with the guard when it is retracted.





6.3 Cut Height Offset:

Adjustment Notes & Procedure:

- The location of the cut on each case is adjustable relative to either the top of the box (for 6M cases) or the mid point (for the 12M cases). This offset height is set on the "Station Offsets" screen of the operator interface with each cutting station adjusted independent of each other.
- From the Main Screen on the operator interface press SETUP and then STATION OFFSETS to bring up the Station Offsets screen.
- It is desirable to have a slight off-set (1/8 to 1/4 inch) in the cut height between the first
 or long side cut (Station 1) and the second or short side cut (Station 2). For the 12M
 cases, it will help to hold the case together until it reaches the case split and standup
 section. For the 6m cases, keeping the long side cut taller (when looking at the lid)
 improves the lid removal process on the machine by preventing the lid from getting
 caught in the gaps between the conveyor rollers.
- The Gripper Out Time controls the amount that the sides of the case are pulled out by the vacuum cups for the cutting operation. This value is adjusted depending on the wall thickness of the case with the ideal time found by running product thru the machine.
- Too much pull and the vacuum cups will separate from the case and create incomplete cuts.
- Not enough pull and the knife will travel too far into the case and possibly damaging the product inside.



Figure 6.4 Station Offsets Screen



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6.4 Recommended Factory Settings:

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CASE CUTTER RECOMMEN	NDED FACTORY SETTINGS
DESCRIPTION	SETTING
Main Air Pressure Regulator (Pneumatic Panel)	90 PSI
Main Pressure Switch (Pneumatic Panel)	70 PSI
Station 1 Gripper Regulator (Reg1411)	60 PSI
Station 2 Gripper Regulator (Reg1510)	60 PSI
Station 1 Gripper Blade Depth Station 2 Gripper Blade Depth	7 7 7
Station 1 Gripper Carriage Speed (POT216)	7
Station 2 Gripper Carriage Speed (POT237)	7
Station 1 Gripper Out Time (Station Offsets Set-up Screen)	175 ms
Station 2 Gripper Out Time (Station Offsets Set-up Screen)	125 ms
Delay After Conveyor Roller Sensor is CLEAR/OFF (Unload Set-up Screen)	0 ms (Unless Cases on Bypass Conveyor are coming from this side of machine - then adjust accordingly)
Delay After Frame Post Sensor is CLEAR/OFF (Unload Set-up Screen)	0 ms (Unless Cases on Bypass Conveyor are coming from this side of machine - then adjust accordingly)



Inline Case Cutter Service & Operation Manual

7.0 Operator Menu Screens

The following pages describe the buttons and touch screen menus that appear on the Operator Interface Panel.



7.1 Operator Interface Push Button Functions:

These buttons are located on either side of the interface screen.

- MAIN Brings up the MAIN screen (See section 7.2)
- MANUAL Brings up the STATION 1 MANUAL screen. (See section 7.3)
- SETUP Brings up the SETUP MAIN screen (See section 7.4)
- SENSOR STATUS Brings up the SENSOR 1 screen. (See section 7.5)
- START This button starts the automatic cycling of the machine and changes the stack light to yellow from green.
- STOP This button stops the machine after all in-process cases have completed processing thru the machine. When the machine stops, the yellow status light is lit to indicate that the machine has stopped, and is ready to resume the automatic mode.
- ALARM HISTORY This menu is password protected and will bring up the LOGIN screen if not logged or the ALARM HISTORY screen if logged in. (See section 7.6)
- RESET This button clears the controller of current alarms. When this button is pressed the stack light will change to yellow provided all alarms/faults have been cleared.
- BACK, NEXT Scrolls the machine to the previous or next screen in the current menu displayed.



U.S. Tax Stamping Equipment Inline Case Cutter Service & Operation Manual

7.2 Main Screen





Inline Case Cutter Service & Operation Manual

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7.2.1 CURRENT ALARM

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	Current Alarm
Group/Alarm#	<u> Alarm Text</u>
4 00 MAC	HINE IS IN E-STOP
Function	Description
Group/Alarm#	Displays a chronological listing of current alarms. This screen is cleared when reset button is pushed.
FAULT RECOVER	Brings up the FAULT RECOVER menu



7.2.2 FAULT RECOVERY (CC-612 ONLY)

	Fault Recovery
Case In Station 2	2: None CLEAR
Function	Description
Case in Station 2	Displays None, Half Case, or Full Case. Display reflects machine memory of a case on the transfer conveyor between station 1 and station 2 Press CLEAR to set machine memory to "None". The machine must be out of emergency stop and all faults clear to change the status of the case.



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7.2.3 CYCLE COUNTS

	Shift Cycles
Half C	ase 0
Full Ca	ase 0
T	otal 0
	CLEAR NEXT>
Function	
	Description
Half Case Shift Cycles	DescriptionDisplays number of Half Case cycles the machine has processed. Number continues to increment until "cleared".Press & Hold for CLEAR button for 3 seconds to clear.
Half Case Shift Cycles	DescriptionDisplays number of Half Case cycles the machine has processed. Number continues to increment until "cleared".Press & Hold for CLEAR button for 3 seconds to clear.Displays number of Full Case cycles the machine has processed. Number continues to increment until "cleared".Press & Hold for CLEAR button for 3 seconds to clear.Press & Hold for CLEAR button for 3 seconds to clear.
Half Case Shift Cycles Full Case Shift Cycles NEXT >	DescriptionDisplays number of Half Case cycles the machine has processed. Number continues to increment until "cleared".Press & Hold for CLEAR button for 3 seconds to clear.Displays number of Full Case cycles the machine has processed. Number continues to increment until "cleared".Press & Hold for CLEAR button for 3 seconds to clear.Displays number of Full Case cycles the machine has processed. Number continues to increment until "cleared".Press & Hold for CLEAR button for 3 seconds to clear.Press NEXT Button to bring up the Life Cycle Info Screen
Half Case Shift Cycles Full Case Shift Cycles NEXT >	DescriptionDisplays number of Half Case cycles the machine has processed. Number continues to increment until "cleared".Press & Hold for CLEAR button for 3 seconds to clear.Displays number of Full Case cycles the machine has processed. Number continues to increment until "cleared".Press & Hold for CLEAR button for 3 seconds to clear.Press & Hold for CLEAR button for 3 seconds to clear.Press & Hold for CLEAR button for 3 seconds to clear.Press NEXT Button to bring up the Life Cycle Info Screen
Half Case Shift Cycles Full Case Shift Cycles NEXT >	DescriptionDisplays number of Half Case cycles the machine has processed. Number continues to increment until "cleared". Press & Hold for CLEAR button for 3 seconds to clear.Displays number of Full Case cycles the machine has processed. Number continues to increment until "cleared". Press & Hold for CLEAR button for 3 seconds to clear.Press & Hold for CLEAR button for 3 seconds to clear.Press & Hold for CLEAR button for 3 seconds to clear.Press NEXT Button to bring up the Life Cycle Info Screen
Half Case Shift Cycles Full Case Shift Cycles NEXT >	Description Displays number of Half Case cycles the machine has processed. Number continues to increment until "cleared". Press & Hold for CLEAR button for 3 seconds to clear. Displays number of Full Case cycles the machine has processed. Number continues to increment until "cleared". Press & Hold for CLEAR button for 3 seconds to clear. Press & Hold for CLEAR button for 3 seconds to clear. Press & Hold for CLEAR button for 3 seconds to clear. Press & Hold for CLEAR button for 3 seconds to clear. Press NEXT Button to bring up the Life Cycle Info Screen



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Inline Case Cutter Service & Operation Manual

7.2.3.1 Life Cycle Info:

		Life Cycle Info
	Half Ca	ase 0
	Full Ca	ase 0
	Te	otal 0
F	Function	Description
Half Case Lif	e Cycles	Displays number of Half Case cycles the machine has processed.
Full Case Life	e Cycles	Displays number of Full Case cycles the machine has processed.
Total Life Cy	cles	Displays the total number of both Half and Full Case Cycles



U.S. Tax Stamping Equipment Inline Case Cutter Service & Operation Manual

7.2.4 LOGIN MENU:





Inline Case Cutter Service & Operation Manual

7.3 MANUAL MENU (STATION 1)

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	Station 1 Manual
RAISE Ra	ise Carriage OPENED Case Gripper
LOVVER Lov	wer Carriage OFF Vacuum Cups
FVVD Ca	rriage Fwd EXTENDED Case Stop
REV Ca	rriage Rev RETRACTED Case Pivot
STATION #1	Manual Mode NEXT >
Function	Description
RAISE CARRIAGE	Raises Cutter Carriage as long as button is pressed or limit is reached. The limit is a mechanical stop. Moving the carriage into the stop will cause damage to the machine
LOWER CARRIAGE	Lowers Cutter Carriage as long as button is pressed or limit is reached. The limit is a mechanical stop. Moving the carriage into the stop will cause damage to the machine
CARRIAGE FWD	Moves Carriage towards station 2 (forward) as long as
CARRIAGE REV	Moves Carriage towards in-feed (reverse) as long as button is pressed or limit is reached.
CASE GRIPPER OPENED	Toggles the case gripper arms between OPENED & CLOSED.
VACUUM CUPS OFF	Toggles Gripper Vacuum Cups ON & OFF.
CASE STOP EXTENDED	Toggles the in-feed Case Stop Roller between EXTENDED & RETRACTED
CASE PIVOT RETRACTED	Toggles the Case Pivot assembly between Retracted and Extended.
Manual Mode	Toggles between ON/OFF
NEXT	Brings up the STATION 2 MANUAL screen.



Inline Case Cutter Service & Operation Manual

7.3.1 STATION 2 MANUAL MENU

	Station 2 Manual
RAISE	Raise Carriage OPENED Case Gripper
LOWER	_ower Carriage OFF Vacuum Cups
FWD	Carriage Fwd EXTENDED Case Stop
REV	Carriage Rev
STATION #	#2 Manual Mode
RAISE CARRIAGE	Raises Cutter Carriage as long as button is pres
WER CARRIAGE	Lowers Cutter Carriage as long as button is pre limit is reached.
ARRIAGE FWD	Moves Carriage towards the case exit (forward) button is pressed or limit is reached.
ARRIAGE REV	Moves Carriage towards Station 1 conveyor (re long as button is pressed or limit is reached.
ASE GRIPPER OPENED	Toggles the Station 2 case gripper arms betwee OPENED & CLOSED.
CUUM OFF	Toggles Station 2 gripper vacuum cups ON & C
ASE STOP RETRACTED	Toggles the Station 2 in-line case stop roller be EXTENDED & RETRACTED.
lanual Mode	Toggles between ON & OFF



Inline Case Cutter Service & Operation Manual

7.4 SETUP MAIN MENU (Requires Supervisor Level Password to Access)





7.4.1 STATION OFFSETS MENU





Inline Case Cutter Service & Operation Manual

7.4.2 OPTIONAL ENTRY TIMER SCREEN

	EntryTimer		
Machine Entr Set to the Desir Has Entered St Conveyor (Reco Cylinder)	ry Stop Timer (ms): 0 red Stop Time After Case ation1 (Optional Entry mended Oms) or Case Stop		
Function	Description		
Machine Entry Stop Timer (ms)	Allows for adjusting the delay of the Machine Entry Stop. Enter value in milliseconds.		



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7.4.3 PANEL PROPERTIES MENU





Inline Case Cutter Service & Operation Manual

7.4.3.1 DATE/TIME MENU





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7.4.4 SERVICE MENU (Requires Factory Level Password to Access)

	Service	
CALIBRATE STATIONS	FACTORY SETUP MACHINE INFO	
Function	Description	
CALIBRATE STATIONS	TATIONS Brings up Calibrate Stations Menu	
FACTORY SETUP	Brings up Factory Setup 1 menu	
MACHINE INFO	Brings up Machine Info menu	
LOGOUT	Logs out user from password protected menus	



Inline Case Cutter Service & Operation Manual

7.5 SENSOR STATUS MENUS

These screens display the status (on/off) of the sensors on the case cutter and are used as an aid in troubleshooting the machine. Pressing "NEXT" advances to the next status screen.

7.5.1 SENSORS 1



7.5.2 SENSORS 2





U.S. Tax Stamping Equipment Manefactured by United Silicone an ITW Company Inline Case Cutter Service & Operation Manual

7.5.3 SENSORS 3





7.6 ALARM HISTORY (Requires Supervisor Level Password to Access)

		Alarm History	
	Date / Time Group	#Alarm # Alarm Text	
	12/09/2011 18:27:08 004	00 MACHINE IS IN E-STOP	
	12/09/2011 18:27:05 000	0 02 System Init	
	12/09/2011 17:31:17 004	00 MACHINE IS IN E-STOP	
	Scroll Down Scroll Up List List	Delete History Export	
	Function	Description	
Scroll Down List		button is pressed.	
Scroll Up List Scrolls the Alarm History list up as I button is pressed.		Scrolls the Alarm History list up as long as button is pressed.	
Delete History		Deletes all Alarm messages from History	
EXPORT		Allows Alarm history to be exported (saved) to a remote memory. History is exported via an USB port on the back of the controller in a CSV format.	



8.0 Troubleshooting:

Warning: Observe all Operating Safety Procedures while troubleshooting the machine.

The U.S. Tax Stamping model ICC case cutter has built in diagnostics to assist the operator or service personnel in understanding why the machine is not functioning properly. The tables below list the codes and text descriptions.

8.1 Main Alarm Fault Codes

Alarm Number	Alarm Text		
0	MACHINE IS IN E-STOP		
1	STATION 2 GUARD DOOR IS OPEN		
2	UNLOAD GUARD DOOR IS OPEN		
3	X2X LINK NOT OK - VALCON713 NOT DETECTED - Communication Link to Valve Connector Block 713 not detected.		
4	X2X LINK NOT OK - PICO1311 NOT DETECTED - Communication Link to PICO M8 Connector Block 1311 not detected.		
5	X2X LINK NOT OK - PICO1301 NOT DETECTED - Communication Link to PICO M8 Connector Block 1301 not detected.		
6	X2X LINK NOT OK - VALCON712 NOT DETECTED - Communication Link to Valve Connector Block 712 not detected.		
7	X2X LINK NOT OK - PICO1211 NOT DETECTED - Communication Link to PICO M8 Connector Block 1211 not detected.		
8	X2X LINK NOT OK - PICO1222 NOT DETECTED - Communication Link to PICO M8 Connector Block 1222 not detected.		
9	X2X LINK NOT OK - VALCON711 NOT DETECTED - Communication Link to Valve Connector Block 711 not detected.		
10	X2X LINK NOT OK - PICO1201 NOT DETECTED - Communication Link to PICO M8 Connector Block 1201 not detected.		
11	X2X LINK NOT OK - X20BT9100 NOT DETECTED - Communication Link to I/O Block X20BT9100 in Electrical Panel not detected.		
12	X2X LINK NOT OK - X20PLC1022 NOT DETECTED - Communication Link to I/O Block X20PLC102 in Electrical Panel not detected.		
13	X2X LINK NOT OK - X20PLC1001 NOT DETECTED - Communication Link to I/O Block X20PLC1001 in Electrical Panel not detected.		
14	X2X LINK NOT OK - X20PLC922 NOT DETECTED - Communication Link to I/O Block X20PLC922 in Electrical Panel not detected.		
15	X2X LINK NOT OK - X20PLC901 NOT DETECTED - Communication Link to I/O Block X20PLC901 in Electrical Panel not detected.		
16	X2X LINK NOT OK - X20BR9300 NOT DETECTED - Communication Link to I/O Block X20BR9300 in Electrical Panel not detected.		
17	AIR PRESSURE LOW		



8.2 Station 1 Alarm Fault Codes

Alarm Number	90 Alarm Text		
0	ST1 GENERIC CYCLE TIMEOUT FAULT		
1	ST1 HOMING DID NOT COMPLETE. GRIPPER IS NOT HOME		
2	ST1 HOMING DID NOT COMPLETE. CASE STOP IS NOT EXTENDED		
3	ST1 HOMING DID NOT COMPLETE. CARRIAGE IS NOT HOME		
4	ST1 SIMPLE POSITIONING ERROR {ST1SimplePos}. PRESS E-STOP TO RESET		
5	ST1 MOVE ERROR (ST1doMove). PRESS E-STOP TO RESET		
6	ST1 HOMING ERROR {ST1doHoming}. PRESS E-STOP TO RESET		
7	ST1 MOVE REQUEST DID NOT COMPLETE		
8	ST1 MOVE DID NOT COMPLETE		
9	ST1 DID NOT START TO CYCLE AFTER SIZING. GRIPPER IS NOT HOME		
10	ST1 DID NOT START TO CYCLE AFTER SIZING. CARRIAGE IS NOT HOME		
11	ST1 CASE INDEX DID NOT START. ST2 CARRIAGE IS ADVANCED		
12	ST1 CASE INDEX DID NOT START. CASE STOP NOT RETRACTED		
13	ST1 CASE INDEX DID NOT START. CASE PRESENT AT ST2 ENTRY		
14	ST1 CASE INDEX DID NOT START. ST2 DID NOT COMPLETE OR IS NOT CLEAR		
15	CUT FAILED. ST1 CARRIAGE DID NOT REACH CASE RELEASE POSITION		
16	CUT FAILED. ST1 CARRIAGE DID NOT REACH FULLY ADVANCED POSITION		



8.3 Station 2 Alarm Fault Codes

Alarm Number	Alarm Text		
0	ST2 GENERIC CYCLE TIMEOUT FAULT		
1	ST2 HOMING DID NOT COMPLETE. GRIPPER IS NOT HOME		
2	ST2 HOMING DID NOT COMPLETE. FLIPPER IS NOT RETRACTED		
3	ST2 HOMING DID NOT COMPLETE. CARRIAGE IS NOT HOME		
4	ST2 SIMPLE POSITIONING ERROR (ST2SimplePos). PRESS E-STOP TO RESET		
5	ST2 DO MOVE ERROR (ST2doMove). PRESS E-STOP TO RESET		
6	ST2 DO HOMING ERROR {ST2doHoming}. PRESS E-STOP TO RESET		
7	ST2 MOVE REQUEST DID NOT COMPLETE		
8	ST2 MOVE DID NOT COMPLETE		
9	ST2 DID NOT START TO CYCLE AFTER SIZING. GRIPPER IS NOT HOME		
10	ST2 DID NOT START TO CYCLE AFTER SIZING. CARRIAGE IS NOT HOME		
11	SPARE ALARM (ST2)		
12	CASE NOT SEEN ENTERING ST2		
13	CASE DID NOT MAKE COMPLETE TRANSISITION FROM ST1 TO ST2		
14	ST2 CARRIAGE DID NOT PICKUP CASE. CARRIAGE DID NOT ADVANCE		
15	ST2 CASE INDEX DID NOT START. CASE PRESENT AT TIP ROLLERS (CC-612 ONLY)		
16	ST2 CASE INDEX DID NOT START. TIP ROLLERS ARE NOT UP (CC-612 ONLY)		
17	ST2 CASE INDEX DID NOT START. FLIPPER IS NOT RETRACTED (CC-612 ONLY)		
18	ST2 CASE INDEX DID NOT START. UNLOAD DID NOT COMPLETE OR IS NOT CLEAR		
19	ST2 CASE INDEX DID NOT START. FLIPPER STOP NOT EXTENDED FOR FULL CASE (CC-612 ONLY)		
20	ST2 CASE INDEX DID NOT START. FLIPPER STOP NOT RETRACTED FOR HALF CASE (CC-612 ONLY)		
21	ST2CARRIAGE DID NOT REACH CASE RELEASE POSITION		
22	CUT FAILED. ST2 CARRIAGE DID NOT REACH HOME POSITION		
23	ST2 DID NOT RESET AFTER CUT. GRIPPER IS NOT HOME		
24	ST2 FLIP FAILED. FLIPPER DID NOT FULLY EXTEND FOR FULL CASE (CC-612 ONLY)		
25	ST2 FLIP FAILED. NO CASE FOUND AT FLIPPER (CC-612 ONLY)		



Inline Case Cutter Service & Operation Manual

8.4 Recommended Spare Parts

Occasional parts replacement may be required due to normal wear and aging. By stocking these parts, minimal downtime should be experienced in case of equipment malfunction.

QTY	Part Number	Description
1	M409007	Drive Belt (white) Sta. 1
1	M408941	Drive Belt (white) Sta. 1
1	41170111	1/4 Flow Control
1	41259024	Belt
1	41259025	Belt
1	M409128	Suction Cup
1	M409150	Vacuum Pump
1	M409634	Drive Belt (white) Sta. 2
2	M41259028	Clear Large Belt
1	41259029	V-Belt
2	41259026	Clear Small Belt
1	M158890	Drive Belt Black
1	41124043	Proximity Switch
1	41291009	Cutter Blades
1	MDA-5	Fuse
1	MDA-4	Fuse
1	MDA-1	Fuse
1	FNQ-20	Fuse
1	FNQ-5	Fuse
1	LPCC-5	Fuse
1	LPCC-2	Fuse
1	LPCC-15	Fuse
1	LPCC-1	Fuse



The troubleshooting process can be greatly simplified by referencing the alarm tables. Most error conditions that can occur on the ICC are alarmed and noted with reference given to the failure that originated the alarm.

Replacing Fuses

Fuses are located inside the main electrical box.

Retro-reflective Sensors

Retro-reflective sensors emit a beam of invisible light that is reflected off a surface. When the reflection of this beam is detected by the sensor the sensor is "made" or "on" and a small indicator light on the sensor will illuminate. Many of this type of sensor will have a "sensitivity" adjustment for near or far targets. This type of sensor can be tested by blocking the beam with a small scrap of paper or cardboard. Objects that are very dark in color (flat black for example) may not be sensed.

Through-Beam Sensors

Similar to the Retro-Reflective sensors, Through-Beam sensors emit a beam of invisible light to detect a target. But in this case, the receiving side is mounted separately from the sending side. Thus, the target interrupts the light beam, causing the sensor to change state. When checking this type of sensor, the indicator light will be illuminated when the beam is NOT interrupted and will go dark when the beam IS interrupted. This is a very reliable sensor method, but can be difficult to align and set up.

Magnetic (or Hall-Effect) Sensors

These sensors work by detecting the presence of ferrous (iron type) metals inside their sensing range. The sensors that detect the position of pneumatic cylinders on the ICC are of this type. They will have a small indicating light to show when they are made.

Ultra Sonic Reflection sensors

Similar to the Retro-reflective sensors mentioned above but instead of light, this sensor uses an inaudible sound wave to detect objects. They perform better when the color of the target object is widely varied or very dark. However, they can "miss" a target if it is off angle or not flat. Like the other sensors, there is a small light that indicates when the sensor is "made".

E-Stop System

The E-Stop can be activated by any of the mushroom buttons at various points on the machine. It may also be activated by opening the access door to the machine. Mounted on the access door is a red prong switch that will match up with a sensor mounted to the machine rail. Either of these items will force the safety module, located inside the electrical panel, to remove power from parts of the ICC and shut off the air.



Something should have moved and didn't.

There may be a number of possible problems:

□ It may have moved, but the movement wasn't detected. Check the associated sensors.

 \Box It is possible that the sensor shows that it is made, but the signal didn't reach the controller. Be sure to check sensors on the "Sensor Status" screen.

□ It may be bound mechanically. Check for free movement of the mechanism.

□ It may be contaminated. Clean the mechanism and try again.

□ There may be a problem with the output from the control. Check the associated output module.

 \Box Some outputs are fused electrically. Check the fuses. If blown replace, but also check to see if the motion is bound. Something blew the fuse. Clear any binding motion before trying again. Another possible cause of a blown fuse would be if the signal is electrically shorted or grounded. Ensure neither is the case before re-energizing the output.

 \Box If the motion is pneumatically activated, check for sufficient air pressure with no leaks. Some motions are equipped with flow regulators on the cylinder fittings. These may need to be adjusted to provide smooth motion.

Something moved that shouldn't have.

Possible problems include:

□ There may be a problem with the output from the control. Check the associated output module.

There may be a problem with a sensor that initiates the movement. Check the associated sensors.

□ The mechanism may have become loose or broken. Check the mechanism and correct.



9.0 WARRANTY

United Silicone Equipment Warranty Coverage Statement

United Silicone (Seller) warrants new U.S. Tax Stamping branded equipment to be free of any defects in material and workmanship. The Seller's sole obligation under this warranty is limited to replacing or repairing (at the Seller's discretion), FOB Lancaster, New York, any part of its product which, under normal and proper use and maintenance, is proven defective in material or workmanship within one year after delivery to Buyer or Lessee, provided that notice of any such defect and satisfactory proof thereof is promptly provided to the Seller, and thereafter such part is returned to the Seller within 30 days, with transportation charges prepaid, and the Seller's examination confirms such part to have been defective.

U.S. Tax Stamping Brand Tax Stamping Equipment's vertical glue pot used in the VL-10 and VL-10HP Tax Stamping Machine carries a separate warranty for the life of the lease or 60 months, whichever comes first, when the customer uses *only* the U.S. Tax Stamping specified low-melt glue (part number M168768). The

vertical glue pot was designed for use with the low-melt glue for its stability, consistency, and purity. These three features make low-temp glue perfect for distributors who want to stamp at high efficiency with reduced down-time due to glue-pot clogs or clean-up.

What this Warranty Does NOT cover

¹ This warranty does not cover consumable and normal wear parts such as springs, filters, or gaskets that are consumed during the operation of the machine. If you have questions about what is considered a consumable or normal wear part, please contact your sales or parts representative.

² This warranty applies to United Silicone-manufactured equipment only. If a major component of the equipment is made by other manufacturers such as the Air Compressor System, the original equipment manufacturer's warranty applies, unless otherwise specified. Please contact your sales or parts representative for a copy of the warranty for your particular item.

³ This warranty does not extend to product failures or defects caused by, or associated with, but not limited to: failure to maintain the machine correctly, unsuitable physical or operating environment, accident, neglect, natural disasters, hazards, misuse, electrical supply, unauthorized repair, contaminated air, modification or alteration or the use of non-United Silicone recommended parts, accessories or consumables. United Silicone will not accept any liability or responsibility under the terms of warranty expressed herein for, but not limited to: negligence, loss of profit or either material or personal. Mandatory liability shall be restricted to the replacement of the defective component or assembly. This warranty may be voided if the covered assemblies or components have been repaired or altered by other than an authorized United Silicone service representative in any way which, in the sole judgment of United Silicone, affects the performance or purpose for which the equipment was manufactured. This warranty does not constitute a service agreement. Any warranty visits for assemblies or components deemed not to be defective in the sole judgment of United Silicone may be billable.



Appendix A: Supplying Compressed Air for your U.S. Tax Stamping Equipment

Several of U.S. Tax Stamping's Machines require a source of compressed air in addition to electrical power. The quality and quantity of compressed air you supply to this equipment will affect the reliability of the equipment, the frequency and cost of service calls and downtime on this equipment, as well as the initial cost and ongoing energy costs of the compressed air equipment you select.

Key Questions for you to consider:

1) How Much Compressed Air Capacity Do I Need ?

The values listed in table 1 show the volume of compressed air at 90 psi which is necessary to be available on a *full-time continual basis* while each piece of equipment is operating.

Equipment	Compressed Air at 90 psi Required per single head machine
M120 stamp machine w/ cold glue	2.0
M120 stamp machine w/ hot glue	3.7
SSM stamp machine	5.1
SSMP stamp machine	5.5
LSM stamp machine	2.0
Pneumatic Case Packer	5.7
Universal Case Packer	10.5
CC-612 Case Cutter	12.0
HCC-612 Case Cutter	8.0

The first step is to add together these requirements for each piece of stamping equipment you intend to operate simultaneously. A worksheet has been provided at the end of this document. Next add in any equipment which you expect you are likely to add within the next 3-5 years. Most air delivery systems have significant leaks and losses within them. Even a small leak at a fitting, for example, can result in a large loss of compressed air. For new, high quality piping systems which have a total line length less than 25 feet, of large diameter, solid copper lines with few bends and connections, we recommend that you add at least 20% margin on top of your computed total air requirements. If your lines are old, longer, threaded pipe and or contain multiple quick-disconnect or other type fittings, you should add at least 30-40% margin on top of your calculated total air requirements.

For example, if you have a cold-glue M120 stamp line with a Case Packer, no plans to add additional equipment and an air run of threaded pipe 50' from your compressor to stamping equipment, you should select a compressor which can supply at least $1.30 \times (2.0 + 5.7) = 10$ CFM of compressed air at 90 psi. If you are planning to use a reciprocating air compressor, it is typical practice to size the output of the compressor to be 1.5 to 2.0 times larger than the amount of air you expect to consume on an ongoing basis. In this way, the compressor will not need to run continuously.

Following the example of the cold-glue M120 with a Case Packer, you would need to specify 15 to 20 CFM of compressed air at 90 psi to allow your compressor to run at a reduced duty cycle. Reciprocating compressor manufacturers often recommend that running on a reduced duty cycle will extend the life of your reciprocating compressor. (Scroll style compressors, on the other hand, are more commonly run 100% of the time and as a result, it is not necessary to include this extra factor when selecting a scroll compressor. Still, specifying a larger compressor always allows for future compressed air capability.)



When selecting an air compressor, it is important to note that the volume of air it can provide, usually stated in SCFM or CFM depends upon what pressure you are supplying the air at. For the purposes of selecting a compressor system to drive your U.S. Tax Stamping Stamping equipment, you need only be concerned with how much air the compressor can supply at 90 psi. If a compressor is specified for an air output at a higher pressure, for example, 19 scfm @ 135 psi, you can estimate the amount of air this compressor will deliver at 90 psi by multiplying as follows: 19 scfm x (135 psi / 90 psi) = 28 scfm.

2) <u>Can I use a shared source ("shop air") of compressed air for the Stamping Equipment ?</u>

While some customer facilities already have an available source of compressed air, typically known as "shop air", U.S. Tax Stamping strongly recommends **against** using these sources of compressed air for operating our stamping equipment. Typically "shop air" is shared among multiple uses within a facility and the available volume of compressed air varies from moment to moment and day to day. Each time the available air volume on these shared systems drops below the levels required by our equipment, the stamping equipment will begin to perform irregularly. In addition, "shop air" is typically intended for low performance machines such as air-operated hand-tools. The air used to operate these lower performance machines typically has much higher levels of air line contamination (from grit, water and oil) than can be well tolerated within the precision machinery of the U.S. Tax Stamping Equipment. U.S. Tax Stamping recommends dedicated, clean, dry air for use with our equipment.

3) <u>What about moisture, dirt and oil in the compressed air system?</u>

The quality of the air supplied to your stamping equipment is important. The three most common contaminants in compressed air supplies are water, grit and oil. Water is the most common contaminant. Water typically enters the system as incoming air is compressed. Air can "hold" less and less humidity as it is compressed. The humidity which is "squeezed out" of the air as it is compressed condenses within the compressor, tank and air lines. This is particularly common if the relative humidity of the incoming air is high such as in facilities near lakes, rivers and oceans. In addition, cold air holds less humidity than warm air. Air leaving a compressor is typically warm – often on the order of 150F or more. If this air is rapidly cooled, for example, if the air line leaves the compressor and then travels thru a cold warehouse or passes between two buildings, moisture can condense out and collect inside the air lines. Compressed air delivery systems need to be designed to remove excess moisture from the air and air lines. This is typically accomplished with a piece of equipment known as a dryer. Two types – desiccant dryers and refrigerated dryers are commonly used.

Most air compressors have built in air filters designed to remove dirt and grit from incoming air. Standard industrial grade air compressor filters typically remove all particles greater than 1 micron in diameter and are sufficient for use with all U.S. Tax Stamping equipment.

Some compressed air systems are designed to ADD lubricant to the compressed air to reduce the wear and improve the performance of certain types of machinery. Other air delivery systems contain air/oil separators to remove oil from the compressed air. All U.S. Tax Stamping equipment is designed to operate on clean (no particles or oil); dry (no water) air although the 12M case cutter can also accept lubricated compressed air.



All U.S. Tax Stamping machines which utilize compressed air contain their own, integral coalescing filter bowls which are designed to remove oil, water and dirt which may have passed thru the primary systems in the compressed air delivery system, but these systems are intended only to remove occasional contaminants and do NOT eliminate the need for properly filtered and dried air delivery systems.

4) What Compressor and Related Equipment Do I Need?

Most compressed air systems include each of the following components:

Compressor & Storage Tank

The primary choices among compressor types are piston/reciprocating vs. rotary/screw. Among the piston compressors you will select between single and dual head compressors and lubricated vs. oil-les. Screw compressors are generally more expensive but significantly quieter, usually less than 70 dBA at a distance of 3 feet from the compressor (a level of sound typical on a busy downtown street) while reciprocating compressors are often above 80 dBA (a level of sound similar to that near a typical residential gasoline powered lawn mower.) The level of sound-output is an important consideration and should not be overlooked. Since it is desirable to have the compressor located near the stamping equipment it should be noted that it is difficult to converse and sometimes distracting to work in the particularly noisy environment surrounding a reciprocating compressor. Ideally the compressor can be moved around a corner, behind a wall, or one floor above or below the area where operators will be working - but keep in mind that it is also important to try to have the compressor, delivery lines and stamping equipment all at nearly the same temperature as described elsewhere in this document. Screw compressors have fewer wearing components and generally require a simpler maintenance schedule. Screw compressors also deliver cleaner air with no oil in the air. This generally extends the life of the stamping equipment by reducing buildup inside of cylinders and air valves. If a reciprocating compressor is used it is important to select a high quality oil-coalescing filter to try to remove as much oil as possible from the compressed air stream. The number of heads (1 or 2) on a piston compressor relates to the total amount of air output. Generally dual head compressors will handle larger CFM requirements (typically 30+ CFM at 90 psi). As mentioned earlier, rotary compressors are usually designed to run a 100% duty cycle while most reciprocating compressors are usually used on a 50%-66% duty cycle. As such, it is usually necessary to specify a larger capacity reciprocating compressor in order to provide the same output as a rotary compressor.

A storage tank is designed to allow the compressor to not have to run full time to supply all of the necessary air flow. Typically a tank is sized to be 2-4 gallons per CFM output from the compressor (example, a 20 CFM compressor typically has a 40-80 gallon tank). In many cases, water will condense inside portions of the compressed air circuit – including the compressed air tank. These tanks are designed with drains so that the water can be removed regularly (typically daily). Keep in mind that a significant amount of water can be removed, so it is important to have a drain or other means to remove the collected water from your facility.



Inline Case Cutter Service & Operation Manual

<u>Aftercooler</u>

The aftercooler is used to bring the temperature of the compressed air to sufficiently low temperatures so that it can be properly dried by either a desiccant dryer or refrigerated dryer. In some systems, the aftercooler and dryer are integrated into a single system. Most aftercoolers are similar to automobile radiators consisting of a heat exchanger and a fan which forces room air past the heat exchanger to cool the compressed air.

Dryer

Under typical warehouse operating conditions, a dryer is needed which has a throughput (SCFM) equal to or greater than the total anticipated compressed air requirement. Drying capacity is specified in units of "Dew Point". A typical refrigerated dryer supplies air with a maximum dew point of around 37F meaning that the air exiting the dryer would not be expected to condense out moisture if it were kept above a temperature of 37F. When selecting a dryer for a facility where the ambient temperatures are expected to fall below the dew point of the dryer, U.S. Tax Stamping recommends consulting directly with a compressor dryer manufacture to discuss the specific details of the installation. Special Desiccant Dryers are available that can produce very low dew points if needed. Regardless of which type of dryer you use, note that depending upon the conditions of operation, significant quantities of water may be removed by the dryer. It is usually necessary to have a floor drain or other provision near the dryer to allow easy removal of the condensed water from your facility.

Delivery Piping

Delivery piping is often overlooked in the system design and problems with too small line diameters and too long piping runs can cause significant operational difficulties. Common problems to avoid include:

- Use large diameter piping. All piping should be a minimum of ½" dia for 0-30 CFM and ¾" dia for 30-60 CFM. Above 60 CFM, U.S. Tax Stamping Equipment recommends a custom piping plan be designed or reviewed by your chosen compressor equipment manufacturer.
- Use short piping runs between the compressor and the equipment. Maintain all piping runs of ½" tubing to less than 40 feet and ¾" tubing to less than 75 feet. The maximum distance from the compressor to all pieces of stamping equipment should be less than 75 feet.
- Avoid serial placement of equipment along a single piping run instead use a central manifold with individual branches to each piece of equipment. (Otherwise the last piece of equipment on the piping run may become "starved" as equipment upstream consumes the air before it reaches the last piece.)
- The temperature of air surrounding the compressed air delivery system is very important. The simplest arrangement is when the compressor, all delivery piping and the stamping equipment all remain at nearly the same temperature. If you are planning to locate the compressor in a different room, or in an outdoor shed, or if the delivery piping will pass thru walls between areas of different temperature (for example, if the compressor is in one building and the delivery piping goes outside and then into the next building before reaching the stamping equipment) U.S. Tax Stamping Equipment recommends that you work with a qualified local compressor company to address the specifics of your installation in a custom piping plan.



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5) <u>What about compliance with local laws / codes?</u>

U.S. Tax Stamping equipment is used in many different jurisdictions and regulatory environments. While we endeavor to provide safe and reliable equipment and installation recommendations which represent generally accepted industry practice, the end user is ultimately responsible for selecting, installing and plumbing the compressed air system in such a manner so as to meet all local ordinances and applicable safety and plumbing codes. U.S. Tax Stamping recommends that each customer work with a locally licensed contractor and/or plumber to ensure that the completed final system is in full compliance. U.S. Tax Stamping takes no responsibility in this regard and makes no representation that the recommendations in this document and those of our field service technicians and other employees are necessarily in complete compliance with our customers' site-specific regulatory and/or safety requirements.



U.S. TAX STAMPING EQUIPMENT AIR REQUIREMENT WORKSHEET

Step 1:

Complete this table ...

	Equipment	COLUMN A	COLUMN B	COLUMN C
		Compressed Air at 90 psi Required per single head machine	Number of these machines at your facility, include any extra equipment you may add within 5 years	Multiply each row in Column A by the quantity in Column B
	M120 stamp machine w/ cold glue	2.0	-	
	M120 stamp machine w/ hot glue	3.7		
	SSM stamp machine	5.1		
	SSMP stamp machine	5.5		
	LSM stamp machine	2.0		
	Pneumatic Case Packer	5.7		
Step	Universal Case Packer	10.5		
Total	Case Cutter	12.0		

2: all of

the values in Column C = _____ CFM at 90 PSI

Step 3: Review Key Question #1 from this document and use this information to select

an appropriate margin percentage based upon your specific site, piping type and length. The minimum recommended margin is 20%, but you may need a larger factor depending upon your facility. Enter your percentage on the line below. Write the value as a decimal number, for example, if your margin is 20%, write 0.20 on the line below.

Margin = _____

Step 4: If you are going to use a reciprocating compressor enter 1.75 on the line below. If you are going to use a rotary compressor enter the value 1.00 on the line below.

Compressor Factor =

Step 5: Multiply the values you wrote in steps 2, 3 and 4 together and write your answer on the line below. This is the minimum number of CFM your compressor will need to supply at 90 psi.

(Step 2 Total) x (Margin) x (Compressor Factor) = _____ CFM @ 90 psi

Step 6: Now select an aftercooler, dryer and air line hose and air circuit layout which can all accommodate at least this amount of air thru-put.



Inline Case Cutter Service & Operation Manual

Appendix B

Electrical plug drawing 30amps 220vac



Receptacle NEMA L6-30R

Plug NEMA L6-30P