# TIDLAND SLITTING SOLUTIONS



Control Series Electronic Knifeholder Class I User Manual





MI 270047929

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# INTRODUCTION

1 Introduction	
1.1 About this manual	These operating instructions contain important information on operating the Control Series Knifeholder Class I safely, properly, and efficiently. Observing these instructions helps to avoid dangers and increase the service life of the knifeholder.
1.2 Additional manuals	See the Control Series Knifeholder Class I Installation and Maintenance manual for for details of setup and spare parts.
1.3 Language	These are the original instructions, written in English.
1.4 Operating principle	The Control Series Knifeholder Class I uses motors for overlap and side force adjustment. The knifeholder comes configured with a default overlap of 0.035" and 2 lbs. of side force.
	The keypad and display screen allow operators to calibrate, engage, and disengage the knifeholder. Tap or long press keys to switch different functions and menu options, such as side force and overlap adjustment, fault history, and other settings.

### SAFETY

2 Safety



#### Warning

Knife blades are sharp.

Can cause serious injury to hands.

Do not remove safety guards.

Use only recommended tools when handling knife blades.



### Warning

Pinch point.

Keep hands away from moving knifeholder parts.



#### Information

Disconnect power while working with knifeholders on the beam or servicing the knifeholder cabinet.

**Safety equipment** With a Blade Guard Cartridge installed, the blade is side guarded(180° Blade Guard) or fully guarded(360° Blade Guard)when the knifeholder is disengaged.

If the electrical power fails, the blade will stop and remain in that overlap and side force position.

All replacement parts used on this product shall be made to original Maxcess specifications.

### 3 Knifeholder components

#### Class | shown



- 1 Brake knob
- 2 Power/communication cable
- 3 OLED and membrane keypad
- 4 Status LED
- 5 Guide bar mount assembly (gib)
- 6 Cant key
- 7 Knifeholder bellows
- 8 Control body to cartridge dovetail interface
- 9 Taper lock
- 10 Safety latch pin
- 11 Blade cartridge
- 12 180° Blade guard

## 4 Display definitions

### Table 1. Fault codes - first digit

First digit	Description
н	Fault occurred while disengaging
С	Fault occurred while calibrating
E	Fault occurred while engaging

Second digit	Description
0	No fault
1	Unexpected anvil touch
2	Anvil not detected
3	Cannot achieve side force
4	Cannot achieve overlap
5	Problem finding home sensor
6	Problem leaving home sensor
7	Action aborted by user
8	Knifeholder not calibrated
9	EEPROM memory error
10	Cut Error
11	Check Cartridge Problem
12	Unable to reach ASF range

### Table 2. Fault codes - second digit

### Table 3. Status LED

Color	Mode	Knifeholder status
	Steady	Knifeholder disengaged
	Blinking	Knifeholder disengaging
	Steady / green flash	Knifeholder disengaged; ready to engage
Red	Blinking / yellow flash	Knifeholder disengaging; will calibrate when complete
	Blinking / green flash	Knifeholder disengaging; will engage when complete
	Steady / white pulses	Knifeholder disengage error
	Steady	Knifeholder calibration complete
	Blinking	Knifeholder calibrating
Yellow	Blinking / red flash	Knifeholder calibrating; will disengage when complete
	Blinking / green flash	Knifeholder calibrating; will engage when complete
	Steady / white pulses	Knifeholder calibration error
	Steady	Knifeholder engaged/slitting
	Blinking	Knifeholder engaging
Green	Steady / white pulses	Knifeholder engage error
	Alternating green/orange	Knifeholder engaged and blade use alarm condition
	On	Knifeholder in manual/jog mode
Blue	Alternating blue / yellow	Knifeholder in manual/jog mode and blade is touching anvil

### 5 Overview

5.1 Working mode



When the knifeholder is powered on, the Sideforce, Overlap and Status are displayed alternately on the OLED, indicating that it is in working mode.

**Long** press (approx. 3s) to switch to the setting screen (Sideforce).

**Short** (momentary) press to switch to the **Jog mode(5.2)** screen.

**1** "<sup>®</sup>" - when the password is set and the PIN prompt is on ,this icon will be displayed after the "STATUS" indicating a PIN is required to enter Setting mode.

See **5.3.7 PIN**, **5.3.8.1 SET PIN** for security and password setting.



Short press to disengage the knifeholder.

After pressing, the blade will move away from the anvil, and then retract until it reaches the HOME position. When complete, "HOME" is displayed on the screen.

Use prior to moving the knifeholder to a new slit position.



Do not move the knifeholder on the guide bar with extended cartridge except for calibration setup.



Short press to calibrate the knifeholder

The status LED will blink yellow during calibration, "CAL" is displayed on the screen, while the knifeholder automatically follows the sequence below.

- a) The blade will move vertically away from the anvil.
- b) The blade cartridge will fully side-stroke.
- c) Move down until blade just touches the top of the anvil blade.
- d) Move up to clear the anvil.
- e) Side-disengage to zero point.
- f) Move down to desired overlap.
- g) Side-engage until it just touches the side of the anvil blade.

Side-disengage to zero point, and then will wait for the next command (LED will become steady yellow).



Short press to engage/extend the knifeholder

"ENG" is displayed on the screen.

- Depending upon commanded engage state, extends blade cartridge to programmed overlap, and then moves side-stroke to the programmed side force.



Use buttons with extreme caution.

Keep hands clear of knife blades at all times.

See icons may displayed on the STATUS "screen in the table below.

lcon	Name	Description
$\wedge$	Armed	Appears when the engage button has been pressed. If this icon is active, the knife is either engaged or can be engaged via the remote engage switch or by a PC/serial command.
₩	Communication	Appears when the knifeholder is connected to a PC or other device via the RS-422 serial network.
Ô	Locked	Appears when the knifeholder is locked by a PC/serial command.
•`•	Remote Engage Off	Appears when the remote engage switch is OFF.
P	PIN On	Appears when the PIN entry is turned ON. If this icon is active, the knifeholder will require a PIN code to be input before opening Settings mode.

### 5.2 Jog mode



"JOG" is displayed on the screen.

- The mode is not available when calibrating/engaging/disengaging.
- Does nothing when the knifeholder is calibrated or slitting.
  - **1** Long press (approx. 3s) to switch to the Setting mode(Sideforce).

Short (momentary) press to return to the Working mode.

**1** "<sup>®</sup>" - when the password is set and the security is on ,this icon will be displayed after the "JOG" indicating a PIN is required to enter Setting mode..

See **5.3.7 PIN**, **5.3.8.1 SET PIN** for security and password setting.



Jog up.

**3** Calibrate knifeholder.



### 5.3 Setting mode

All the settings available can be controlled by 4 color buttons (blue, red, yellow, and green). The top line on the screen displays the active setting option. When setting name is flashing, pressing the red (page up) or green (page down) button can scroll through all available settings. Or user can press the blue button to exit and return to the Working mode or Jog mode screen.

To change settings, scroll until the setting name flashes on the screen, then press the yellow button to select it, and follow the instructions below.

#### 5.3.1 Sideforce setting



Side Force (SF) is the amount of pressure that the knife blade applies to the anvil when engaged.

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.

Sideforce range is 0.1 to 6 lbs.



O

Cancel changes and do not save;

- 2 Increase the sideforce.
  - Save the value and exit editing.
- 4 Reduce the sideforce.

#### 5.3.2 Overlap setting



Overlap is the depth of the knife below the anvil when engaged.

Overlap setting range is 0.01" to 0.125".

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.



Cancel changes and do not save;

Press again to exit and return to the previous mode

- 2 Increase the overlap.
- 3 Save the value and exit editing.
- 4 Reduce the overlap.

### 5.3.3 Add (ID)



Addresses can be manually assigned to the knifeholder.

#### (range 0-256)

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.



ß

Cancel changes and do not save;

- 2 Increase the Add (ID).
  - Save the value and exit editing.
- 4 Decrease the Add (ID).

#### 5.3.4 Maintenance

<u>n 11</u> ↔	<u>₩ ↔</u> ☆^;∎'

Maintenance mode is used by Maxcess staff or technically trained users to diagnose and potentially resolve problems with a knifeholder.

Call Maxcess for assistance if you cannot solve a problem using the Error Code or Troubleshooting information.

When "M" is flashing on the top line, press the yellow button to select. At this time, the arrows on the top line start flashing to indicate the active movement direction.

0

Exit and return to the previous mode.

- **2** Jog retract (when Vertical Movement is active) or side-stroke disengage (when Horizontal Movement is active).
- Switch the active movement direction between Horizontal or Vertical.
- Jog extend (when Vertical Movement is active) or side-stroke engage (when Horizontal Movement is active).

lcon	Name	Description	
€	Horizontal Home	This icon appears whenever the knifeholder is at the Home position in the horizontal axis.	
<b>♠</b> ‡	Vertical Home	This icon appears whenever the knifeholder is at the Home position in the vertical axis.	
∎′	Anvil Touch	This icon appears whenever the blade is in contact with the anvil.	
+	Sidestroke active	This icon flashes indicate the knifeholder can be manually moved in the disengage/engage directions by the red/green button.	
tt.	Vertical stroke active	This icon flashes indicate the the knifeholder can be manually moved in the retract/extend directions by the red/green button.	

### 5.3.5 FAULTS



This menu is for displaying the fault code history. The fault code history is remembered between power cycles, is limited to 10 faults, and the oldest faults are deleted as new faults listed (1 is newest, 10 is oldest).

When the operator reaches the FAULTS mode in the menu tree, the word "FAULTS" is flashing on the screen, and the most recent (01.) fault is displayed. If there is no fault in the history, the error code should be blank: " 07 "

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.





Page up to the next error .



A Pag

Page down to the previous error .

#### 5.3.6 BTIME



This mode shows the hours of blade use (time engaged) since the alarm was set, or since the blade was last changed (timer was last reset).

The system does not automatically detect the presence of a new blade. The operator must re-set the timer manually each time a blade is replaced.

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.



Cancel changes and do not save;

- Switch between showing the current blade use time, and the "RESET?" prompt .
- **3** When "RESET?" is shown on the screen, this button confirms and resets the B TIME to 0.



#### 5.3.7 PIN



This menu is for turning ON or OFF the password security for the knifeholder.

The screen displays "PIN off" or "PIN on ( with key icon)" when entering this menu. The factory default is "PIN off".

#### Note:

- 1) a PIN must first be created with the SET PIN menu before turning on the PIN security.
- 2) Up to 30 seconds to enter a PIN, or it will return to the PIN screen.
  - Exit and return to the previous mode.



- Turn on/off the password security.
- A N/A
- " PIN off "  $\rightarrow$  " PIN on ":
- When the top line "PIN" flashes, press the yellow button to select. At this time, the current setting of "Off" (bottom line) starts flashing to indicate that it is ready for changes.
  - Press the yellow button again, and the prompt "PIN ?" will appear on the screen. Enter the PIN to confirm the setting change.

(PIN " $\sqrt{}$ ") will appear if the entry was correct and password security was successfully turned On.

(PIN "x") will appear if the entry was incorrect and password security remains Off.

See **5.3.8.1 SET PIN** on page 14 for password settings.



or

- " PIN on"  $\rightarrow$ " PIN off ":
- When the top line "PIN" flashes, press the yellow button to select. At this time, the current setting of "On" (bottom line) starts flashing to indicate that it is ready for changes.
- Press the yellow button again to turn off the password security. No PIN entry is required (this was already entered when accessing Settings mode, or turning On the PIN security).

#### 5.3.8 ADV(Advanced)



This is another level down in the menu tree, include some less frequently used options: SET PIN, CNDCT, ASF, Plunge, Balarm, STF(lb), QH, QI, Relay, Unit, Rotate, FW.

**Note**: ASF and STF(lb) are only available in the E-kniferholder Class I Plus version.

When the top line "ADV" flashes, press the yellow button to select. At this time, the bottom line starts flashing to indicate the lower menu option can be selected.

Use the Red and Green buttons to scroll between the lower menu options, then press yellow again to select the desired option. Once the lower menu option is opened, the red and green buttons can still be used to scroll between the options, the yellow button to select, and the blue button to go back.

#### 5.3.8.1 SET PIN



This menu is used to change the PIN.

When the top line "SET PIN" flashes, press the yellow button to select. At this time, the bottom line "NEW" starts flashing to indicate that it is ready to change.

With the bottom line "NEW" flashing, press the blue button to cancel, or the yellow button to select and enter a new PIN.

Enter the desired 6 digit PIN code by pressing any of the (4) color buttons, in any order. Repeat the same sequence to confirm the new PIN.

(NEW PIN " $\sqrt[n]{}$  ) will appear if the entries matched and the PIN change was successful.

(NEW PIN "×") will appear if the entries did not match and the PIN change was not successful.

**Note**: Incomplete entry after 30 seconds will cancel the change, and and return to the previous screen.

The PIN code must be 6 keystrokes long, and may use any of the four color keys.

Example:

- The operator opens the "NEW PIN" prompt

- The operator enters the password "Red-Red-Red-Green-Green-Green"

- After a 6 key entry, then the screen will prompt "REPEAT"

- If the same key sequence is re-entered, the NEW PIN will be saved successfully. If the second entry does not match, the NEW PIN is not saved.

### 5.3.8.2 CNDCT(Conductivity)



If the knife blade touches conductive web material before touching the anvil, or the knifeholder cartridges touch each other before touching the anvil, an 'unexpected anvil touch' error occurs.

Use this setting to enable/disable conductivity mode (CNDCT) in order to avoid unnecessary error prompts when slitting conductive web material.

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.

Cancel changes and do not save;

Press again to exit and return to the previous mode

- 2 Turn CNDCT on or off.
- Save and exit editing.
- 4 Turn CNDCT on or off.

The default status of CNDCT is "off ", and should be used for most applications.

CNDCT must be turned "ON" for the following situations:

- plunge-cutting a conductive material
- narrow width slitting equal to 1 in (25.4mm).

#### 5.3.8.3 ASF



When ASF is enabled, the knifeholder makes automatic corrections when the measured side force is  $\pm$  0.5 lbs more than the set side force.

(Only available in the E-kniferholder Class | Plus version)

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.

0

Cancel changes and do not save;

Press again to exit and return to the previous mode.

- 2 Turn ASF on or off.
- 3 Save and exit editing.
- 4 Turn ASF on or off.

The ASF status shows "ON" when it is enabled.

#### 5.3.8.4 Plunge



When the plunge cut feature is enabled (time greater than 0), the knifeholder uses maximum side force to penetrate the web, and then adjusts to the target side force after the set plunge time (in seconds).

The plunge cut setting allows the user to set the interval, in seconds, that maximum side force is held.

Plunge cutting is disabled if the interval is set to zero (default).

If Auto Side Force (ASF) is also enabled, the plunge cut feature will override it until the knifeholder reaches the target side force for normal slitting. Then ASF will resume monitoring and adjusting the side force.

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.



Cancel changes and do not save;

Press again to exit and return to the previous mode.

- Increase the plunge time.
- Save and exit editing.
- Decrease the plunge time.

#### 5.3.8.5 B alarm



This mode shows the current setting for the blade use hours that will elapse before the alarm is activated.

If the B ALARM is set to 0, then the alarm is inactive.



Cancel changes and do not save;

- Increase the B ALARM time
- 3 Save and exit editing.
- Decrease the B ALARM time

### 5.3.8.6 STF(lb)



View actual real-time sideforce values (strain - STF) of the knifeholder.

(Only available in the E-kniferholder Class I Plus version)



Exit and return to the previous mode.



N/A

5.3.8.7 QH



The half-stroke travel distance of the knifeholder is controlled with the "QH" setting.

Changing this value is useful when the blade must engage between a narrow gap in the anvil. For proper function, the gap in the anvil is usually recommended to be larger than the sum of the blade width and half-stroke travel distance QH. If a different size blade is replaced or the anvil clearance is changed, reset the QH value.



The default value is 30000.

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.

Cancel changes and do not save;

- 2 Increase the value.
  - Save the value and exit editing.
  - Decrease the value.

### 5.3.8.8 QI



QI

80000

The QI variable limits full-stroke travel during calibration to prevent the blade from passing over the top of the anvil blade and into the next gap.

The default value is 80000.

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.



Cancel changes and do not save;

Press again to exit and return to the previous mode.

- **2** Increase the value.
- 3 Save the value and exit editing.
- 4 Decrease the value.

#### 5.3.8.9 Relay



The anvil touch relay is normally OFF, unless the knifeholder is actively calibrating, engaging, in JOG mode, or in maintenance mode.

#### 5.3.8.10 Unit



Set the display units of measure to in/lbs, mm/kg, or mm/N

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.

0

Cancel changes and do not save;

Press again to exit and return to the previous mode.

- 2 Page up.
- 3 Save and exit editing.
- A Page down.

#### 5.3.8.11 Rotate



The knifeholder supports two screen display orientations, with text rotated by 0 or 180 deg.

When the setting name (top line) flashes, press the yellow button to select. At this time, the setting value (bottom line) starts flashing to indicate that it is ready for changes.



Cancel changes and do not save;

- 2 Rotate the screen to 0 degrees.
- **3** Save the value and exit editing.
- A Rotate the screen to 180 degrees.

### 5.3.8.12 FW



The firmware version is displayed on this screen.

- Exit and return to the previous menu.
- 2 Page up to switch to the next setting item.
- **B** N/A
- Page down to switch to the last setting item.

### 6 Operation

6.1 Knife holder operation (working mode)



### Warning - danger due to cutting

Do not put hands between the knife blade and the web material at any time during operation.

Severe bodily injury may occur.



#### Warning - danger due to crushing

Keeps hands away from all moving knifeholder parts during blade cartridge retraction.

Severe bodily injury may occur.

6.1.1 No remote engage switch installed If there is no remote engage switch installed in your system, the buttons function as described below in working mode.

Button	Action
Blue	Switch to Settings mode (long press), or switch between Working and Jog mode (short press)
Red	Disengages the knifeholder
Yellow	Starts the calibration process
Green	Engages the knifeholder for slitting
	If pressed during calibration, the knifeholder enters the 'armed' state and will engage when calibration is complete.

### OPERATION

### 6.1.2 Remote engage switch installed

To engage or disengage the knifeholders remotely, you must wire an external engage switch into the knifeholder interface cabinet.

Refer to the electrical drawings supplied with your system.

#### Remote engage switch ON

The user can engage or disengage any knifeholder using the red and green buttons on the OLED keypad. The knifeholders will function as they do with no switch installed.

#### Remote engage switch OFF

Turning the remote engage switch OFF during the slitting operation automatically disengages and retracts the knifeholder.

The knifeholder remains 'armed' (ready to engage)status.

The buttons function as described below in working mode:

Button	Action
Blue	Switch to Settings mode (long press), or switch between Working and Jog mode (short press).
Red	Disarms the knifeholder
Yellow	No action
	Knifeholder remains disengaged until the remote engage switch is turned ON.*
Green	The knifeholder state is 'armed'.
	When the switch is turned ON, the knifeholder will engage.

\*The status LED will be steady red with an intermittent green flash until the remote engage switch is turned ON.

### OPERATION

### 6.2 Setting up the knifeholder

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Important - make sure that electrical continuity requirements were met during installation.

Make sure the power/communication cable is plugged in and that the knifeholder is disengaged and disarmed.



Warning - danger due to cutting

Do not put hands between the knife blade and the web material at any time during operation.

Severe bodily injury may occur.



Warning - danger due to crushing

Keeps hands away from all moving knifeholder parts during blade cartridge retraction.

Severe bodily injury may occur.

#### Position the knifeholder



1. Short press the red button to retract the knifeholder.

2. Loosen the brake knob and move the knifeholder close to, but not directly above the anvil.

3. With the knifeholder in retracted position, **short** press blue button to switch to Jog mode screen, then short press the green button to manually extend the blade cartridge to the approximate cutting depth.

4. Move the knifeholder along the guide bar until the blade just touches the side of the anvil. The LED will flash yellow-blue.

5. Tighten the brake knob.



	DEFINITIONS
7 Definitions	
Calibrate	<b>Short</b> press the yellow button to begin the calibration sequence. The status LED will blink yellow during calibration. When calibration is complete, the LED will become steady yellow.
Engage to slit	<b>Short</b> press the green button: the knifeholder will engage after successful calibration is achieved.
	The status LED will blink green while engaging.
	Note: You can push the green button during the calibration process; the knifeholder will engage when calibration is complete.
Retract	<b>Short</b> press the red button to disengage the knifeholder. The status LED will blink red while knifeholder is disengaging and will become steady red when completely disengaged.
1	If you are using the optional PC control software, the user interface will update to reflect that a button on the knifeholder has been pressed.
Faults (errors)	If a fault occurs during normal operation, an alphanumeric code of the fault will be displayed on the screen.
	The status LED will be in a steady color state with an intermittent white flash: the steady color corresponds to the knifeholder function at the time of the fault.

### 8 Additional functions

8.1 Knifeholder

faults (errors)



When a fault occurs, the fault code and a short description of the fault are displayed on the Active Fault screen. The last 10 fault records can be reviewed in the **5.3.4 Faults** menu.

Refer to the fault code tables on page 4.

**Long** press the blue button or **short** press the red button to clear the fault and resume operation.

### 9 Service

If you have any questions about the products in this document or need to speak with a Customer Service representative, please use the contact information below.



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