

# flagler

## General Operating Instructions For Flagler Cleatfolder Model EC-30 & EC-36



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Important: Disconnect Power Before Removing Covers for Any Reason

## Installation

The standard machine is powered by 230 Volt 3 phase power. Have an electrician supply power to the main control panel and connect the leads to T1, T2, and T3 marked in the panel. Also be sure to ground the power. After power is installed, turn the main disconnect switch to ON with the enclosure door open.

## **Check Rotation**

The machine is equipped with a Pilz Phase Sequence Monitor.



If the Red fault light comes on upon startup, the phase rotation is incorrect and the machine will not operate.

Disconnect incoming power and change any 2 of the incoming leads to correct the phase.



If the phase is correct upon electrical connection the Pilz Phase Sequence Monitor will have a green light on.

Once rotation has been determined to be correct, close the panel. Push the main power button on, the button will light. Now push the foot pedal down to cycle the machine.

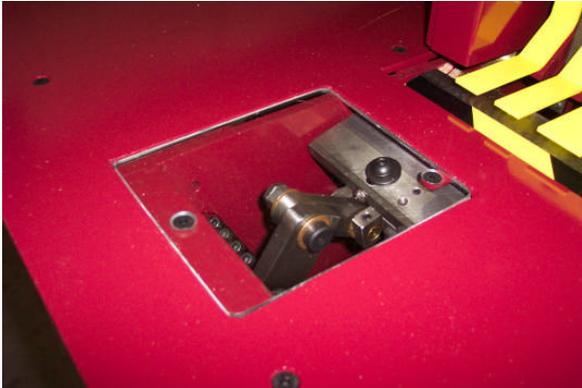
*MACHINE COVER MUST BE IN PLACE WHEN IN OPERATION*

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The Electric Cleatfolder Machines are sensitive to incoming voltage. The machines are tested using voltage information given at the time in which the machine was ordered from Flagler.

To ensure proper operation of the machine it may be necessary to adjust timers in the Micro PLC upon startup.

To do this the machine has a sight glass in the table top which shows the linkages for the clamping table. At rest these linkages are facing upwards as displayed in the picture below.



To calibrate the machine to the supply voltage upon installation: Monitor in this window and cycle the machine. The linkages shown must be straight in order to form a good cleat as shown below.



If these linkages are not straight then it may be necessary to adjust a couple of timers in the micro PLC. If the linkages are still pointing upwards in mid cycle then the incoming power is a bit low and the TT1 and TT3 timers must be adjusted slightly. (See Micro PLC instructions on specific instructions)

Only adjust the timers by 0.01 at a time and recheck linkages. The TT1 timer controls how far in the linkages go and the TT3 timer adjust the return. The TT3 timer should always be 0.01-0.02 more than the TT1 timer to ensure the clamping table returns to the home position.

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## Micro PLC Controller instructions

The micro PLC controller is designed to be able to control each motor individually. Please note: Power button must not be light in order to use the jog features of the micro PLC.

The buttons operate the following when the power button is not light.

◀	▼	▲	▶
Table Motor Reverse	Main Motor	Cycle Count	Table Motor Forward

### Electric Cleat Folder V2.1 Adjusting Timers in the Zelio Controller

The electric cleat folder uses 4 timers to operate.

Timer	Description	Default value (seconds)
TT1	Table Forward timer	0.16
TT2	Proximity switch bypass	0.75
TT3	Table Reverse timer	0.18
TT4	Table Reverse wait timer	0.68

These timers are set from the factory. **They may differ from the above listed values.**

**Prior to changing any timers, write down the timer values.**

When the Zelio controller is running, use the following procedure to make adjustments to the time values;

- 1) Press the "Ok" button. The screen will display "Monitoring, Parameter, Run/Stop and Version" options.
- 2) Use the up/down arrows to scroll until "Parameter" is flashing and press "Ok".
- 3) The cursor will be flashing on the current parameter being edited (each timer is considered a parameter). Use the up/down arrows to scroll to the timer to be adjusted.
- 4) Press the left/right arrows until the timer value displayed at the bottom of the screen is flashing. Now use the up/down arrows to change the value of the timer.
- 5) Press "Ok" when finished.
- 6) The Zelio will ask "Confirm Changes?" Select "Yes" and press "Ok".
- 7) Press "Ok" again to exit to the main screen.

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## Operating Instructions

The EC-30 or 36 is rated at maximum 20 Ga. Mild Steel – 30” and 36” long respectively. Over capacity of the machine or running anything other than a flat piece of sheet metal will cause major machine failure and will void all warranties stated or implied.

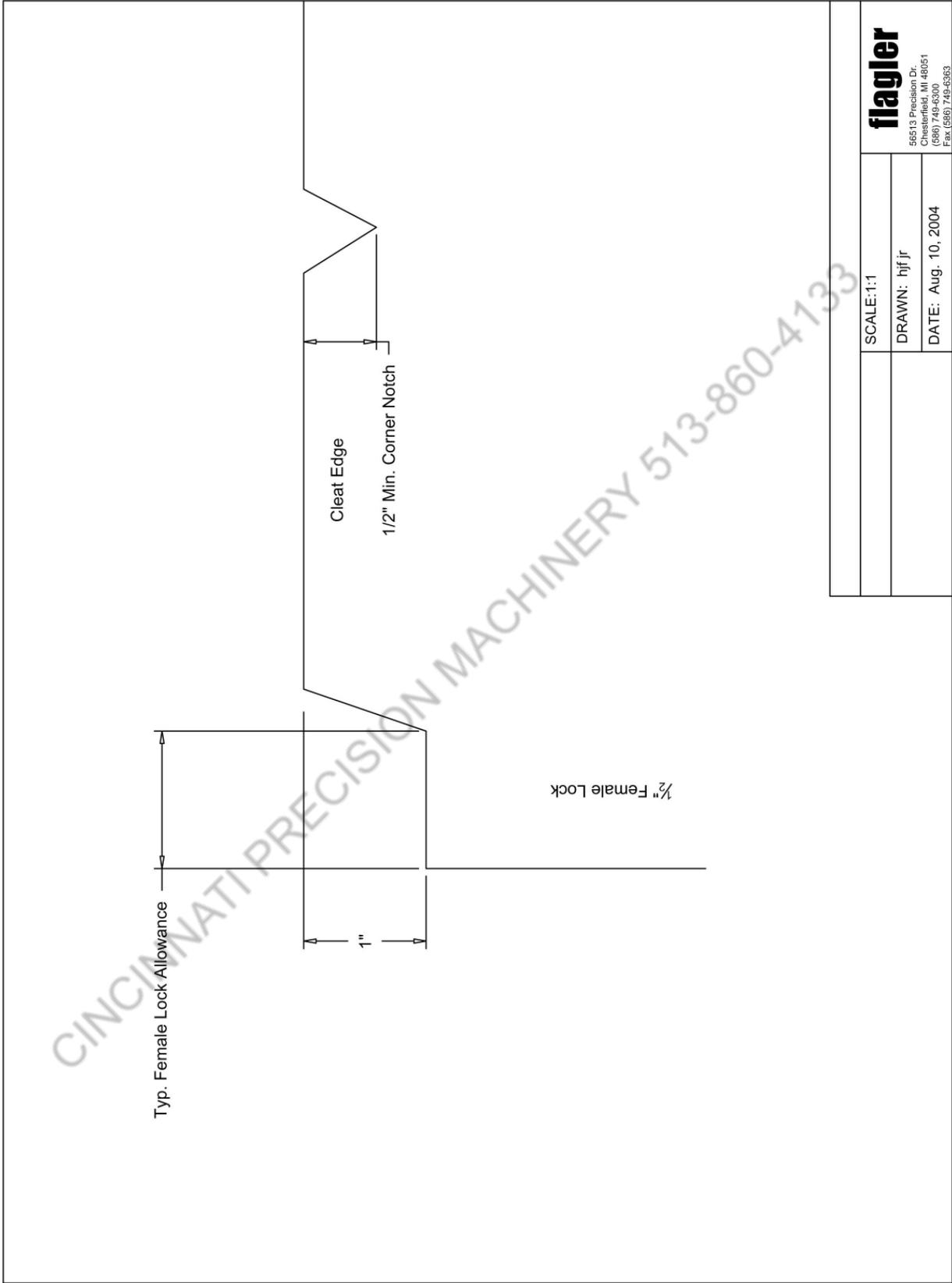
The EC-30 and 36 is an open throat design. This allows the operator to run pieces of duct before or after being bent. Regardless of which method is used, the sheet should be notched and the longitudinal lock seam (if used) should be formed prior to installing the cleat edge.

When forming the cleat edge on ductwork prior to bending the 90 degree bend, the sheet must be notched first. The notch depth for a 7/16” cleat edge is approximately 1/2” on a corner notch and 1” on the end where the longitudinal seam is. Place the center of the notch at one end of the throat or the other with the edge to be formed in the machine.

When forming the cleat edge on ductwork that has already been notched and bent 90 degrees, simply place the 90 degree edge through one of the notches in the machine.

**NOTE: The longitudinal seam (Pittsburgh or Button Lock) must be notched back 1” minimum from the edge to be formed in the cleatfolder. The clamping gap that holds the material is 0.010-0.015. If a lock seam is less than 1”, the machine will try to compress the excess folder material and will not function properly.**

See following page for illustration.



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SCALE: 1:1

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DATE: Aug. 10, 2004

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## Adjustments

The EC-30 and 36 are equipped with (2) gauge adjustment knobs.

The machine has 2 settings for different gauges of sheet metal; a heavy gauge setting (20-22 Ga.) and a light gauge setting (24-28 Ga.). To adjust between different gauges, proceed to follow these steps;

1. Loosen the (3) front bolts that hold the top clamping bar in place.
2. Turn the Gauge Adjustment Knobs to the desired setting indicated by the arrow on the top of the machine cover. (Note: To remove backlash from the adjustment screws you must first turn the adjustment knob  $\frac{1}{2}$  turn in the opposite of the desired direction then back to the setting required)
3. Retighten the bolts.
4. *Please note that when changing gauges you may also have to adjust the length of the hem. Heavy gauges require slightly more material. If this is necessary then go on to the next steps.*

To adjust the length of the hem you will need an 11/16" open end wrench and a 1/4" Allen wrench.

1. Loosen the (3) front bolts that hold the clamping bar in place.
2. Loosed the 2 setscrews on either side of the stationary bar using the wrenches mention above.
3. For a shorter leg length, tighten the setscrews which will pull the stationary bar towards the operator and retighten the jam nuts. For a longer length, the opposite applies.
4. Retighten the (3) front bolts.

Short piece instructions:

It is recommended that when running shorter pieces, favor the pieces to the middle or left side of the machine as depicted below.



The left side of the machine is where the clamping motor is connected to thus it is the stronger side of the machine.

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## **Lubrication**

All of the moving components are lubricated prior to shipping. There are a couple of areas that should be lubricated about once a month. The lubrication to use is #2 Lithium grease. The 2 areas to grease are the chain channel and the bronze pivot rings.

We recommend that these areas be greased after ever 40 hours of operation

The chain channel is located in the center of the machine and the bronze rings are located on the top front of the machine at the throat. These can all be greased at one time using the following steps:

1. Run a half cycle of the machine. To do this, press the foot pedal followed by the red emergency stop button to make the folding arm stop in the bottom position.
2. Disconnect power from the machine. This machine moves very fast so it is important to disconnect the power prior to removing any covers or guards.
3. Push the emergency stop button in, just to ensure that the foot pedal is deactivated.
4. Remove the large cover on the top of the machine exposing the folding beam (now in its lowest position).
5. Apply grease to the ½" wide channel which is exposed due to the folding beam being lowered.
6. Reinstall top cover.
7. Go to the front of the machine and remove the small rectangular box covers on the left and right hand sides of the throat. This will expose the bronze pivot rings mentioned above.
8. Apply grease to the bronze rings.
9. Reinstall covers.
10. Reconnect power and cycle the machine.

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