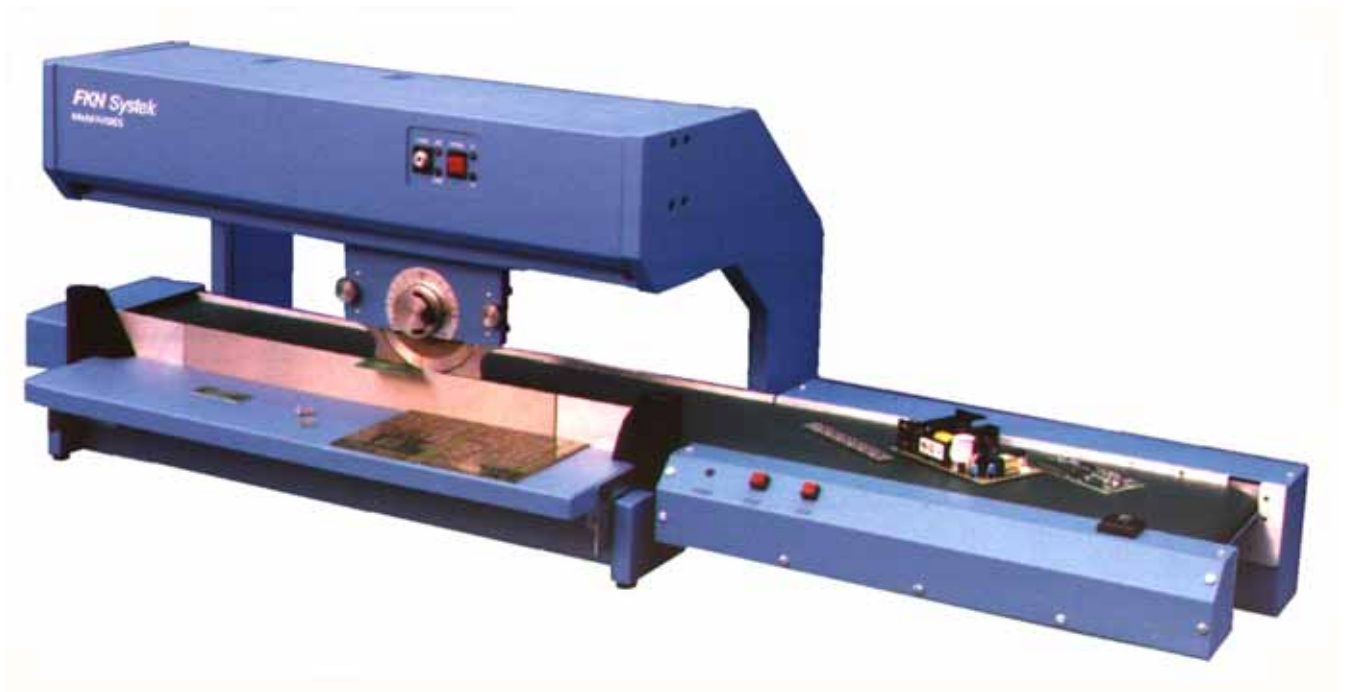


# K4000 PCB Separator

## Users Guide



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## 5. Setup

1 Place the machine on a clean well lit workplace and connect the power input cable.

2 Plug in the foot switch and place it on the floor beneath the work table.

3 Make sure the rear table is in the desired position for receiving the singulated panels. This table can be set into one of two positions (low /high) by placing the supporting thumb screws in the appropriate holes.

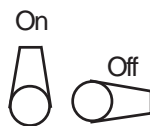
4 Mount the front table in low medium or high position for the most comfortable work support for your operator. For shipping purposes the table is packed separately and not assembled at the factory. If the machine includes the laser safety beam, this table can only be set in the low position.

5 Check Blade Alignment. The gap between the top and bottom blades is set at the factory so that a piece of standard copy paper will freely rotate the circular blade as it passes through.

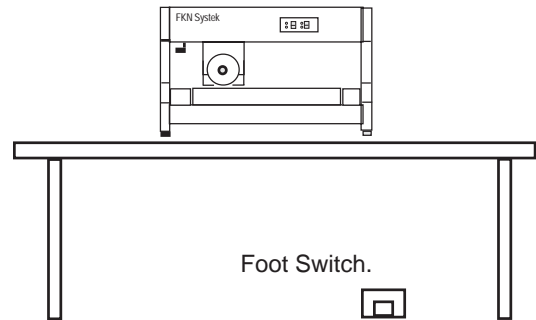
6 If your K4000 includes a laser safety beam make shure the emitter targets the center of the receiver when using this feature. (See section 7)

When using the K4000 for the first time it is recommended that a soft cloth be used to wipe away any film or oil remaining on the blades.

Clutch is **Off** when turned to face the right side of the machine. **On** when handle is facing back of machine.



### 1. Set on Clean Workplace



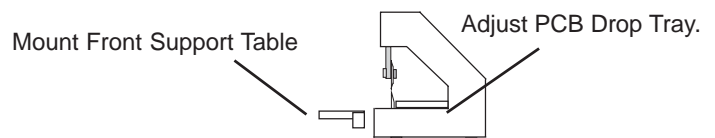
### 2. Plug in power & foot switch

Place foot switch underneath work table for easy access by operator.

### 3. Adjust support tables\*

Mount front table brackets to blade support bar.

\* Mount conveyor belt if applicable.



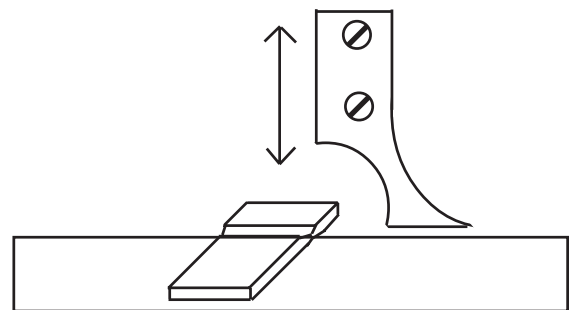
### 4. Check blade alignment.

Set clutch off. Move Circular blade carriage right and left to see that gap remains constant.



### 4. Check blade guards.

Place PCB Scoreline on linear blade and bring blade guard down so that PCB slides freely underneath blade guard.



### 5. Singulate PCB Panels,

Select mode and speed. Place PCB scoreline on linear blade and step on foot switch to operate

## 6. Blade Guard Adjustment.

The right and left blade guards can be adjusted so that they act as a gate for the PCB scoreline. If the blade guards are adjusted so that they sit inside the scoreline, the PCB will be pushed aside if the scoreline is not placed directly over the linear blade. To bring the blade guards up or down, loosen the two holding screws, and reset when the blade guards are in the desired position.

## 7 . Changing Blades

**Note: Before changing blades or making any other adjustment to the machine, be sure to disconnect the power cord.**

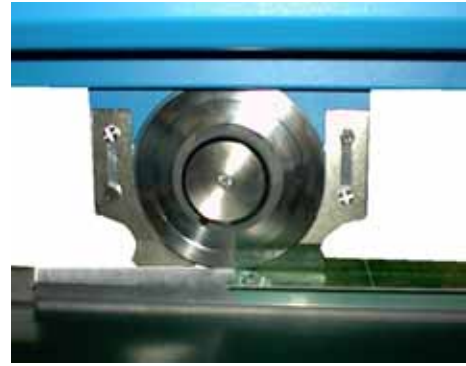
The circular blade holder can be disconnected from the drive belt by turning the clutch switch mounted on the left side of the machine underneath the drive motor. ( when viewed from the front)

To replace the upper blades, remove the blade cap by taking out the flat head screw holding it in place. Pull off the old blades and replace them with a new blade. Use flat spacers provided with the blades to align the top and bottom blades.

The bottom blades can be aligned by loosening the holding screws and the right pivot screw. First remove the inside support table so that the linear blade can be accessed from the back of the machine.

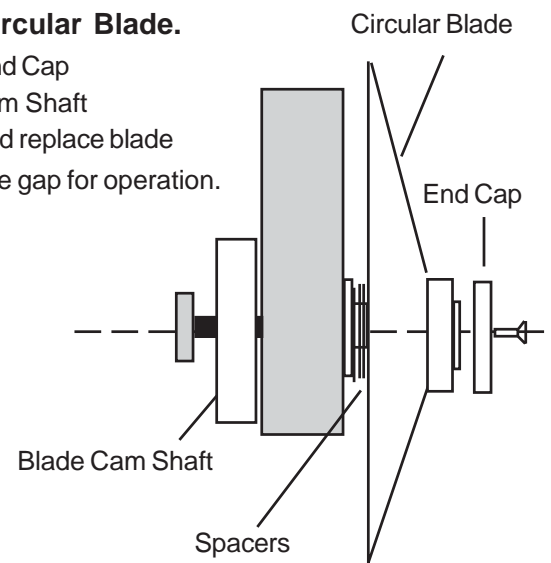
Turn the left cam screw to pivot the blade up or down so that the circular blade keeps a constant gap when traveling from one end to the other. When the correct position is reached, tighten the holding screws and the right pivot screw.

Final adjustment for correct cutting depth is done by loosening the set screw on the top blade cam shaft and turning the shaft so that the wheel rotates when a piece of typing paper is placed on the linear blades. The circular and linear blades should be exactly lined up and should not make contact.



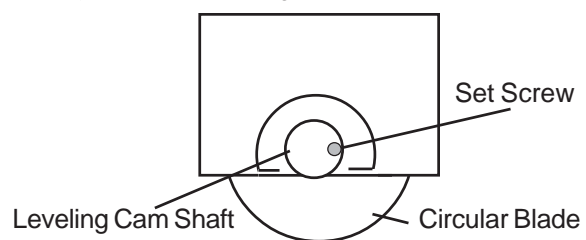
### Replace Circular Blade.

1. Remove End Cap
- 2 Pull out Cam Shaft
- 3 Remove and replace blade
- 4 Adjust blade gap for operation.



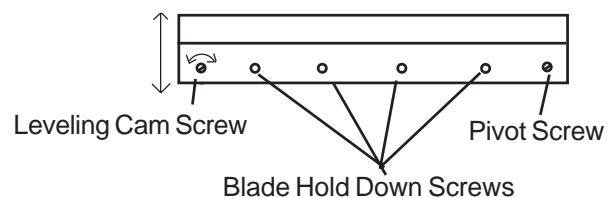
### Adjust Circular Blade.

1. Loosen set screw.
2. Turn wheel cam shaft to bring blade up or down.
3. Adjust for paper thin gap between circular-linear blade.



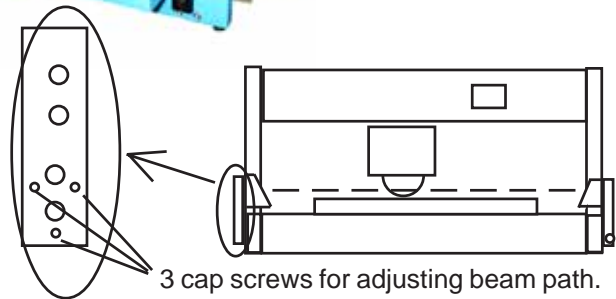
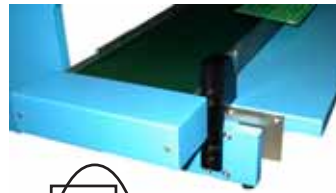
### Replace and Adjust Linear Blade.

1. Loosen Hold Down Screws and Pivot Screw
2. Turn Leveling Screw to bring left side of blade up/down



## 8. Laser Safety Beam Adjustment (optional)

Turn machine power on. Set to slow speed and continuous mode. Step on foot pedal. If blade carriage moves, laser is correctly aligned. If blade carriage fails to move, adjust 3 set screws on emitter side (left side) to aim light direct center to receiver side (right.) When light is correctly aimed, the blade carriage will move.



## 9. Operation

Turn on the power to the machine on the back input panel and select the operating mode on the front control panel.

There are two operating modes and speeds which can be selected by pressing the rocker switch on the front panel.

### Operating Mode.

1. *Continuous*: Step on the foot pedal and the blade will travel from one side to the other.

2. *Intermittent*: The blade will travel as long as pressure is applied to the foot pedal. Upon release and reactivation the blade will return in the other directions.

### Speed

*High or Low.*

The low speed can be adjusted by qualified personnel by using a small screwdriver inserted in the opening on the rear power panel to turn the potentiometer up or down. High speed is adjusted at the factory.

Adjust the top blade guards so that the PCB can pass between the blade guards and the linear blade.

Place the score-line onto the linear blade and step on the foot switch to bring the blade across the scored section.



Front Panel Switch Selection



## 10. Output Conveyor

The K4000 is available with an optional output conveyor. The conveyor is mounted so that singulated PCB panels will travel to the right side of the machine.

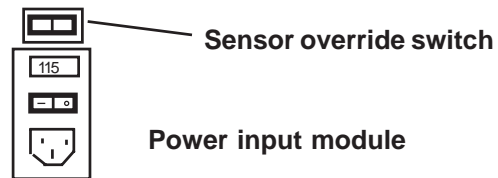
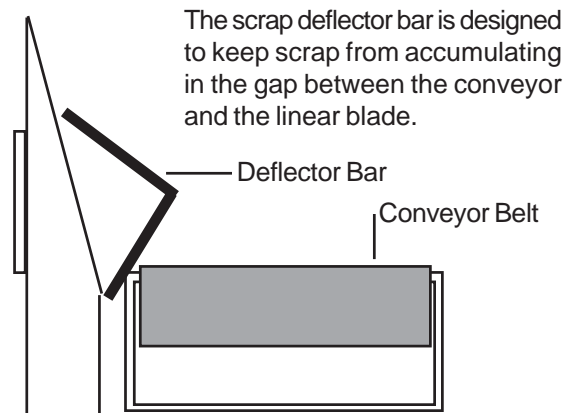
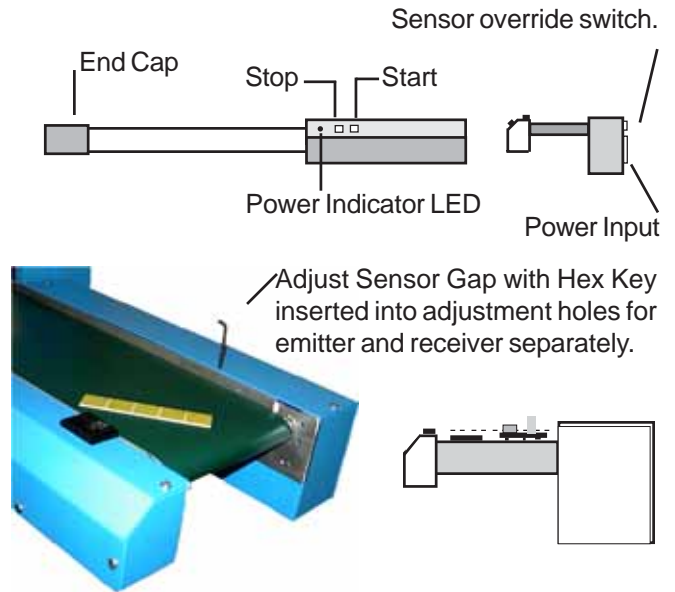
An infrared sensor across the end of the conveyor belt can be set so that only scrap will pass underneath and drop into a container. Loaded PCB panels will trip the sensor and stop the conveyor. When the operator picks up the PCB panel, the conveyor will begin running again. A sensor override switch next to the power input module allows the sensor to be switched off so that loaded boards can travel on to a continuing conveyor.

### Mounting the conveyor:

1. Loosen the clutch for the K4000 Circular blade Carriage and set the carriage to the left.
2. Make sure conveyor mounting rails are on the K4000.
3. Insert conveyor from right side, slide blade carriage to right and place conveyor on inside railings of K4000. Fasten with screws.
4. Place end cap on left side of conveyor.
5. Clip the Scrap Deflector Bar between conveyor and the K4000 linear blade protectors. This is designed to keep thin/small pieces of scrap from lodging between the conveyor and the Linear blade.

### Conveyor Input Power

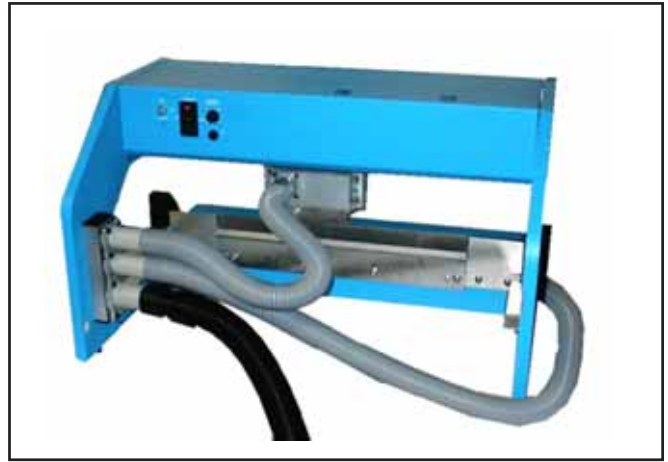
The conveyor has a universal power supply which accepts 120 or 240 V AC. Be sure that the correct fuses are in place for your application.



## 11. Vacuum System

The K4000 is available with optional dust vacuum provision that allows vacuum nozzles in front of the linear blade and on the circular blade carriage to pull away any dust created by the cutting process. A Nilfisk vacuum machine and dust filters are also available if your factory does not have central dust extraction facilities.

The vacuum hoses for the front extractor bar and for the blade carriage are attached to a plenum on the back of the machine. After setting up the machine, attach the vacuum hose from the central dust extraction system, or from the appropriate vacuum machine for operation.



## 11. Safety Precautions.

1. The K4000 is to be used only for separating prescored printed circuit cards. Use of the equipment for any other purpose may cause damage to the machine and create a safety hazard for the operator. Be sure to follow all safety precautions.
2. When separating panelized PCBs using the K4000 it is recommended that protective gloves be worn by the operator to prevent injury from the sharpened blades.
3. Any repairs or adjustment other than changing the blades or setting the blade and PCB guard gaps as described in this manual, should be made by trained authorize personnel.
- 4 When operating the machine, be sure that any loose items such as jewelry clothing or hair are kept clear of the rotating blades.