



CF-10

Radial Component Lead Forming Machine

User Guide

Version 3.0
January 3, 2011

Prepared by
GPD Global® Documentation Department

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Specifications, descriptions, and all information contained in this manual are subject to change and/or correction without notice.

Although reasonable care has been exercised in the preparation of this manual to make it complete and accurate, this manual does not purport to cover all conceivable problems or applications pertaining to this machine.

Safety Instructions

Symbol samples and definitions for the WARNING, CAUTION, IMPORTANT and NOTE safety notices used in this document are as follows:

**WARNING**

Warning notices are used in this document to emphasize chance of injury, harm to life or limb due largely to something beyond one's control.

**CAUTION**

Caution notices are used in this document to alert one to avoid danger or harm and where equipment might be damaged if care is not taken.

**IMPORTANT**

Important notices are used in this document to call attention to imperative information.

NOTE

Note is used in this document to call attention to information that is especially significant in understanding and operating the equipment.

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Introduction

This document is intended for use by those who install, operate, and maintain the GPD Global® CF-10 Radial Component Lead Forming machine (Part No. CF10.BASE.120 or CF10.BASE.230).

CF-10 Radial Component Lead Forming Machine

The CF-10 is designed to form a wide variety of loose/bulk radial-leaded components, such as capacitors, LEDs, transistors (i.e. TO-220s, TO-92s, etc.), and thermistors, into a variety of forms and dimensions. This lead forming machine is capable of processing up to 6,000 components per hour with its variable speed motor. The tooling and shuttle are easily replaced in minutes, minimizing changeover time from one type of component to another.

Components are fed automatically or manually into an in-line feeder track and then shuttled into position and captured by a belt clamping mechanism. Each component is transported past a component counter sensor and indexed into the first of three die stations. These die stations determine how the leads are formed and are independently adjustable up or down depending on the lead form required. Upon completing a cycle, the machine indexes and presents the next component to be formed. Formed components are collected in a component bin and waste leads are removed through an exit mechanism or by means of a vacuum system.

CF-10 Lead Forming Dies

The CF-10 offers unique versatility through the use of a large selection of dies. The CF-10 operates on a system of dies and die blocks. Each die combination is designed to form a specific lead configuration. Numerous standard and special CF-10 Lead Forming Die sets are available to provide a variety of component forms and lead configurations. Many different die sets are available for a variety of hole patterns.

A minimal amount of preparation time is required to reset the machine for processing different component forms. Dies and shuttles are easily replaced within minutes.

The GPD Global® CF-10 dies are precisely manufactured using a unique die construction process. Most dies are built with a sectional, laminated construction method for exceptional wearing ability. Before lamination, all dies are buffed and polished to exacting smoothness, particularly in the actual forming and cutting areas.

Function

CF-10 Radial Component Lead Forming Machine

The CF-10 performs the following functions:

- Forms and cuts up to 6,000 loose/bulk radial components per hour with a variable speed motor.
- Accommodates a wide variety of loose/bulk radial-leaded components such as capacitors, LEDs, transistors (i.e. TO-220s, TO-92s, etc.) and thermistors.
- Produces a variety of lead forms and dimensions.
- Controls accuracy and repeatability through the use of a solid gear train, cam, and cam follower indexing system.

Most cutting and forming needs are covered with the standard dies we offer. Some of the most common component forms the CF-10 produces are illustrated in the *Common CF-10 Lead Forms* appendix.

CF-10 Lead Forming Dies

CF-10 Lead Forming Die sets are available to perform the following functions:

- Produce both common and special configurations. GPD Global® is pleased to design custom dies for you. If you have unusual requirements, your GPD Global® representative will be happy to assist you with any custom die orders.
- Form 2-leaded components with up to .600" (15.24 mm) center-to-center dimensions.
- Form 3-leaded TO-92 transistors.
- Form 3- and 5-leaded TO-220 package styles.
- Offer unique versatility through the use of a large selection of different dies to form a wide variety of component shapes.

NOTE

All CF-9 dies work on the CF-10 Component Lead Former.

CF-10 Lead Forming Stations

The CF-10 has three forming and cutting stations to provide you with the flexibility to produce forms on a variety of component styles. Each forming and cutting die consists of two pieces (top and bottom). All dies are stamped and color coded indicating installation position.

The die stations themselves are each adjustable as a unit for positioning the dies and knives at the desired dimensions. The first station (0) is normally used as a cutting station for TO-220 style packages in conjunction with the Venturi vacuum installed in the safety shield. This station is also used to spread the leads of TO-92 style packages if necessary. The second station (1) and third station (2) are used as cutting and forming stations. All or part of the stations may be used depending on your forming requirements.

Theory of Operation

The CF-10 performs the following steps during a cycle:

1. The operator sets up the machine for the style of component to be processed:
 - a. The operator installs the shuttle and die sets required for the desired component form and dimensions.
 - b. The operator selects the mode of operation: Normal, Single Feed Delay, or Low Track.
 - c. (Optional) The operator powers on and presets the component counter.
 - d. The operator turns on the power for both the machine and linear feed track.
 - e. The operator sets the speeds for both the machine and linear feed track.
2. The operator feeds components into the machine:
 - Loose radial components with 2 or 3 leads are fed manually.
 - A tube feeder is available to feed TO-220 style packages automatically, or they can be hand fed with the mode of operation set to Low Track.
3. Components travel down the vibratory linear feed track until they reach the shuttle.
4. The shuttle, a timing device, travels back and forth and transfers the components from the linear feed track into the belt clamping mechanism.
5. The opposing belts for the belt clamping mechanism grip the leads or heat sink (component type dependant) and indexes the component into a position so it is aligned for the first of the three die stations.
6. The belts index the component past a sensor for the pre-settable component counter. If powered on, the component counter will shut the machine off when the preset count is reached, i.e. when the last component passes the counter sensor.
7. The belts index the component through each of the three die stations where it is formed and cut.
8. At the last die station, the component is either cut and ejected with a blast of air into the component bin or released from the belt into an exit mechanism that empties into the component bin (component type dependant).

Identification of Parts

The principal machine elements of the CF-10 are illustrated and then defined for you in the following sections:

- Front View
- Control Panel
- Top View
- Vibratory Linear Track
- Back View
- Component Counter
- Die Block Assembly
- Die Markings
- Forming Style Series
- Installation Marking
- Installation Color Dot

NOTE

- Definitions are listed alphabetically in each section.
- Parts may be pointed out in several different illustrations, however, the definition for that part accompanies the illustration where the part is first identified.

Front View

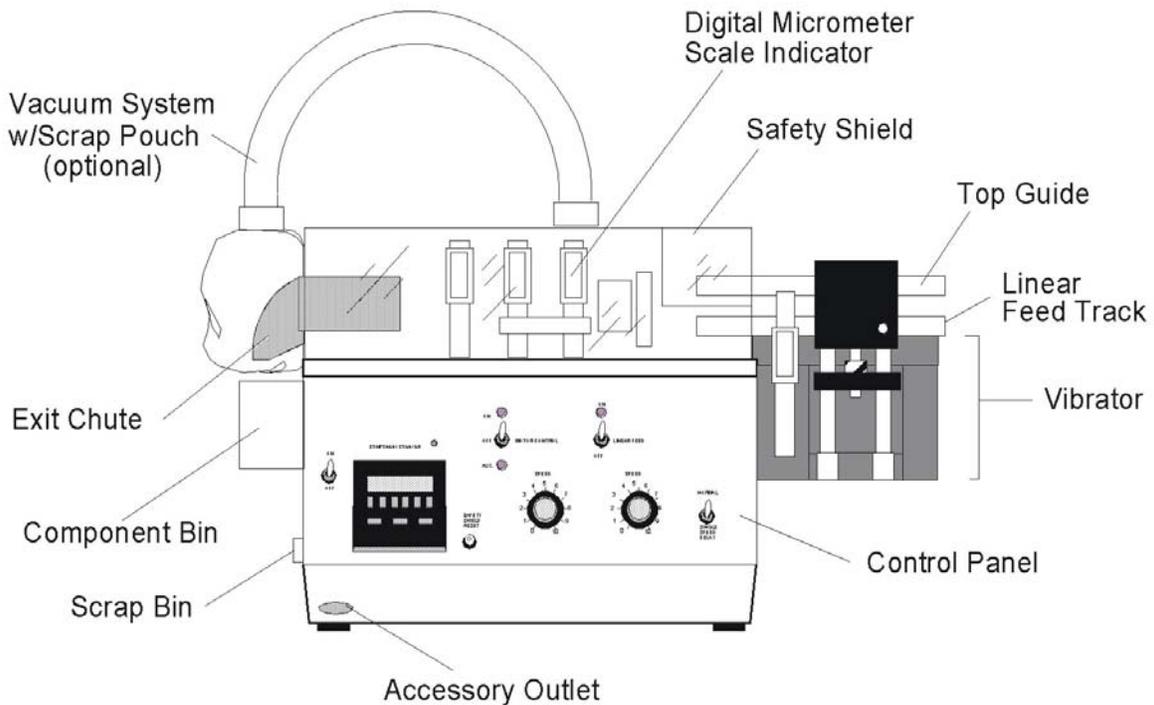


Figure 1 CF-10 Front View

Accessory Outlet	An optional foot switch can be plugged into this outlet.
Component Bin	Catches processed components as they exit the machine.
Digital Micrometer Scale Indicator	The scale mounted on each die station makes the lead cut length and forming adjustment operation quick, easy, and highly accurate to .0005" (0.0127 mm). Responds to and displays die block position. One is also mounted on the vibratory linear feed track.
Exit Chute	Guides components into the component bin as they exit from the linear feed track. Replaces the blow-off chute when you're processing TO-220s.
Linear Feed Track	Components are moved down the length of this track to the shuttle mechanism by means of vibration.
Safety Shield	The safety shield must be in place during machine operations. Machine operations cease whenever the shield is opened.
Scrap Bin	Scrap leads created at Station 2 are captured in this scrap bin.
Top Guide	An adjustable component guide above the linear feed track. It keeps components vertically oriented when fed with their leads down. When components are fed with their leads up, it acts as a slotted guide for the leads.
Vacuum System with Scrap Pouch	An optional vacuum system mounted in the safety shield above Station 0 to vacuum trimmed leads when components are oriented with leads up. Scrap leads are captured in the scrap pouch.
Vibrator	Moves components down the length of the linear feed track to the shuttle mechanism. The speed at which the linear track vibrates is controlled by the Linear Feed Speed Control.

Control Panel

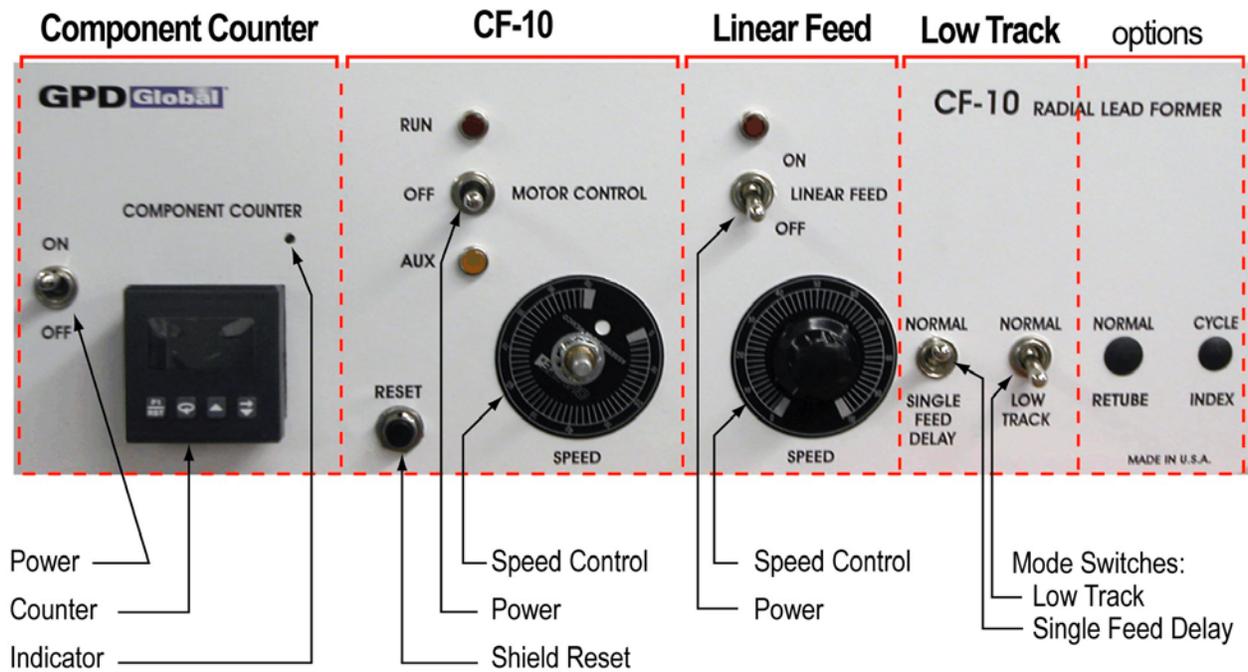


Figure 2 CF-10 Control Panel

COMPONENT COUNTER

Power	Controls on/off power to the component counter. This switch affects only the counter. Preset to a number not equal to zero or the machine won't run.
Counter	Counts components as they pass beyond the counter sensor and displays total part count. Pre-settable. When the last part passes the sensor, the counter shuts the machine off. Preset to a number not equal to zero or the machine won't run.
Indicator	Lights to signify that the counter is turned on and has a useable signal. It blinks off as components pass the counter sensor.

CF-10

Speed Control	Controls the speed at which the CF-10 indexes components.
Power	Controls on/off power to the CF-10. When in the AUX mode, the machine only runs when the optional foot switch is depressed.
Shield Reset	Resets the machine. As a safety feature, power is not automatically restored when the safety shield is closed. If the safety shield has been opened, the machine won't operate again until you press the safety shield reset button.

LINEAR FEED

Speed Control	Controls the speed at which the linear track feed vibrates.
Power	Controls the on/off power to the vibrator located below the linear feed track. Power switches are independent of each other.

LOW TRACK

Mode Switches	Selects the normal or optional machine operation modes: <ul style="list-style-type: none">• Single Feed Delay mode, used for two-leaded components, enables the operator to synchronize single component loading and processing, and automatically resets the CF-10 for the next processing cycle.• Low Track mode, used for TO92 or TO220 components, prevents the misfeeding of components by stopping the shuttle when a minimal quantity of components is detected in the linear feeder track.
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Top View

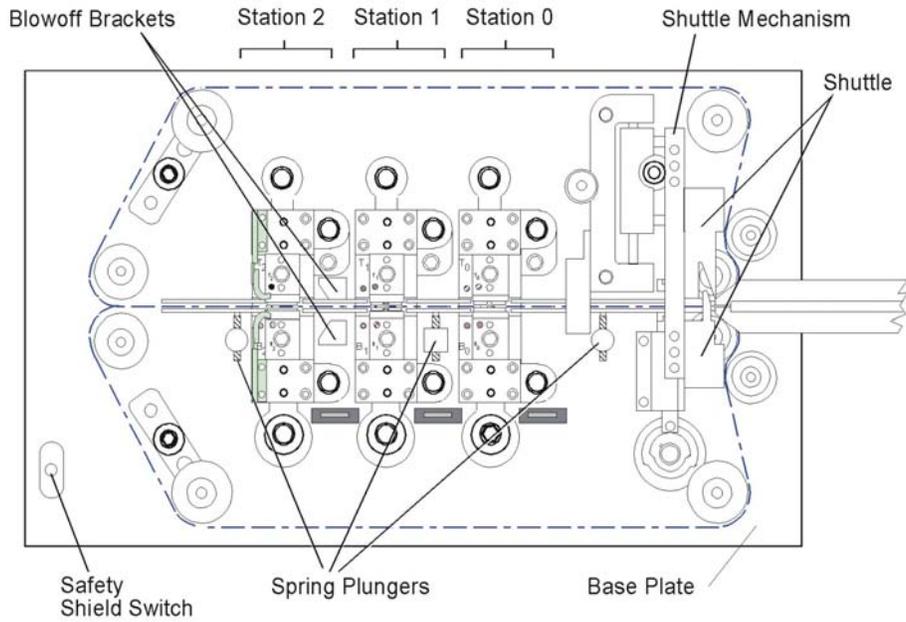


Figure 3 CF-10 Top View - Illustrated Guide (Part 1)

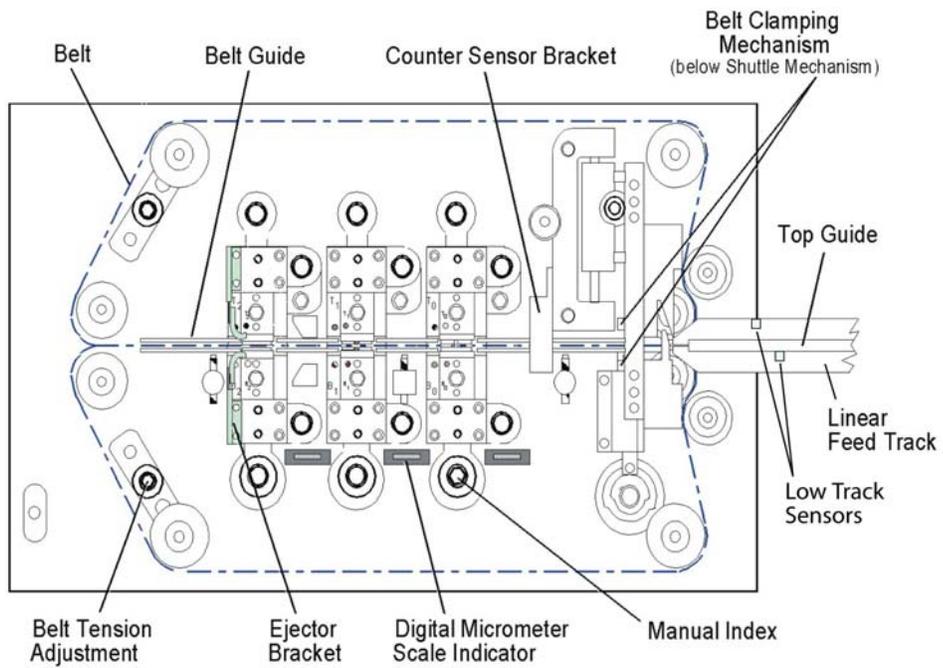


Figure 4 CF-10 Top View - Illustrated Guide (Part 2)

Belt	Two opposing, pulley-driven belts that move components from the linear feed track to the exit chute.
Belt Clamping Mechanism	Located below the shuttle mechanism. Clamps component leads (2- or 3-leaded) or heat sinks (TO-220s) between the two belts.
Belt Guide	A set of belt guides keep tension on the opposing belts so they can carry components through the machine. Spring plungers maintain pressure on the belt guide.
Belt Tension Adjustment	Enables you to adjust belt tension as needed.
Blowoff Brackets	Air blowing from these brackets ejects the formed components from the cut station and is guided by the blowoff chute into the component bin. These brackets are located between stations 1 and 2 and are used for all applications except when processing TO-220s.
Counter Sensor Bracket	Holds the component counter sensor in position behind the shuttle arm support.
Ejector Bracket	The ejector brackets are required for certain component forming applications. Located on Station 2. See die catalog for forms requiring these brackets.
Low Track Sensors	Stops the shuttle when a minimal quantity of components are present on the linear feed track (no components at the sensor location).
Manual Index	A socket head screw that enables you to manually index (open and close) the die stations.
Safety Shield Switch	Any time the safety shield is opened, this switch automatically stops machine operations. You must press the safety shield reset button before operations will resume.
Shuttle	A timing device that travels back and forth and transfers the components from the linear feed track into the belt clamping mechanism. The shuttle times each component's position between the opposing belts so it arrives centered in the forming/cutting stations.
Shuttle Mechanism	Consists of an arm and two mounting pins for mounting each shuttle half.
Spring Plungers	Three spring plungers maintain pressure on the belt guide to hold components securely between the belts.
Station 0	Used primarily as a cutting station for TO-220s. The optional Venturi Vacuum option is located on Station 0 to vacuum trimmed leads.
Station 1	Adjustable and normally used as a forming station.
Station 2	Adjustable and normally used as a final cut station for 2- and 3-leaded components carried through the machine with their leads captured in the opposing belts. More complex forms may require Station 2 to complete the forming function prior to cutting the component leads, or special flattening blocks can be inserted if additional dimple alignment is required.

Vibratory Linear Feed Track

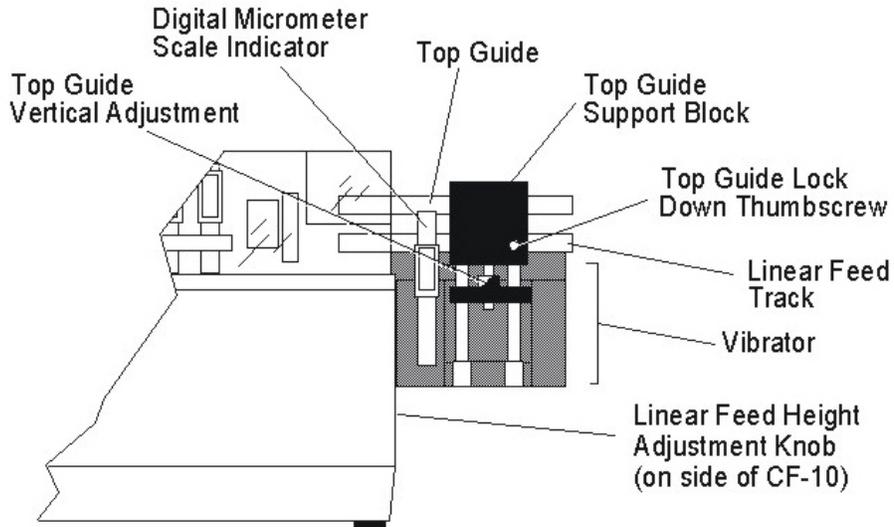


Figure 5 *Vibratory Linear Feed Track*

- | | |
|-------------------------------|---|
| Top Guide Support Block | Provides support for the linear feed track's top guide. On models built after June, 1993, the top guide support block is also home to the top guide lock down thumbscrew. |
| Top Guide Vertical Adjustment | Adjusts top guide height (vertical position). |

Back View

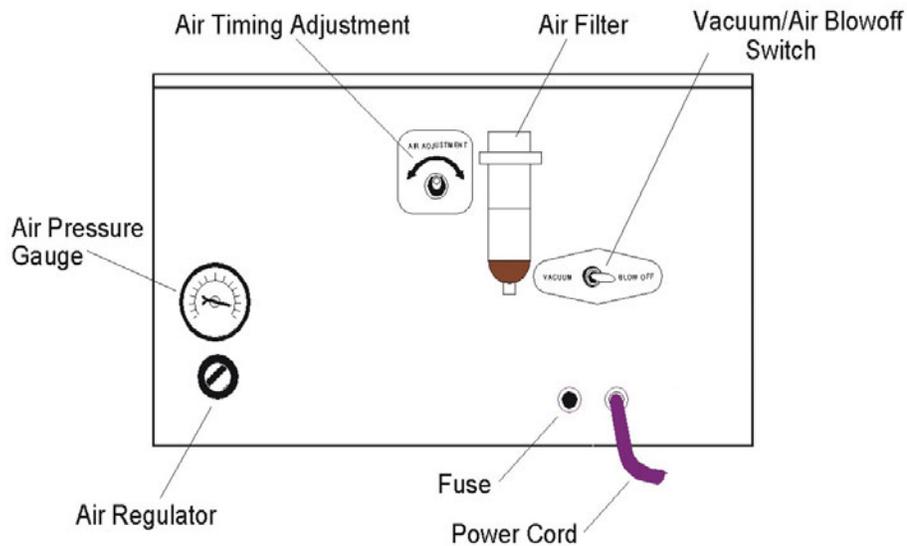


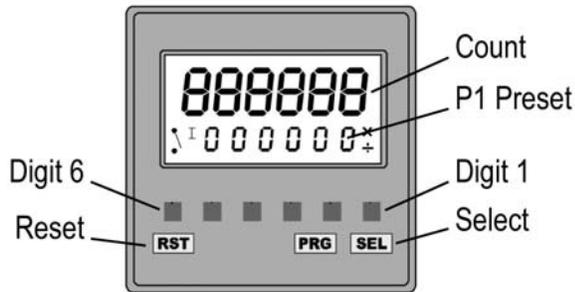
Figure 6 CF-10 Rear View

Air Filter	Filters the incoming air supply.
Air Pressure Gauge	Measures and displays the incoming air supply.
Air Pressure Regulator	Controls the incoming air supply.
Air Timing Adjustment	Determines when to turn the air on during the machine cycle. Ideally, the air turns on just as the knife blades contact the component leads or just prior to cutting the component leads. Turn the air timing adjustment in the "Retard" direction to delay the air until later in the cycle. Turn it in the "Advance" direction to turn the air on earlier in the cycle. The air timing adjustment can be used with both the air blowoff and the optional vacuum system.
Vacuum/Air Blowoff Switch	Determines how the scrap leads are removed from the machine during component processing. If turned to Air Blowoff, scrap leads are created at Station 2 and collected in the scrap bin. If the CF-10 is equipped with the optional vacuum system with scrap pouch, then the trimmed leads are vacuumed at Station 0 and captured in the scrap pouch when the Vacuum/Air Blowoff switch is turned to Vacuum.

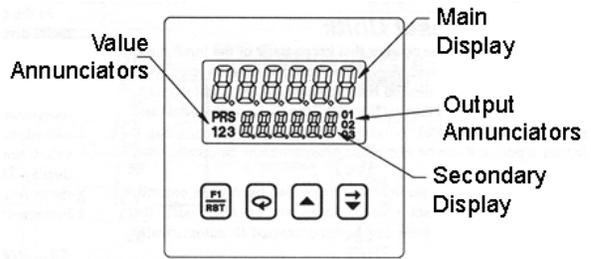
Component Counter

Either of the following counter models may be used by your CF-10 unit:

Count Model A



Counter Model B



- Count Displays the number of components processed through the machine.
- Digit buttons Use digit buttons 1 through 6 to set the P1 Preset value.
- P1 Preset The number of components you want to process (minimum value possible is 000001). When the Count value matches the value preset in P1 Preset, the machine stops.

The P1 Preset value can be set at any time. To set a P1 Preset value, first press Select, use the Digit buttons to set a preset value, and then press Select **twice**.
- Reset Resets the Count to zero. (To activate the reset mode, press Select, then press Reset, and then press Select again.)
- Select Select must be pressed at the beginning and end of the value setting and reset processes.

- Value Annunciators Indicate which value is being viewed or modified.
- Main Display Displays count value.
- Secondary Display Displays the prescaler, preset, output time, or batch/total count values.
-  Resets the count value to zero.
-  Enters changes to data values.
-  Increments data value in selected position of secondary display.
-  Allows changing of the data value viewed in the secondary display.

Die Block Assembly

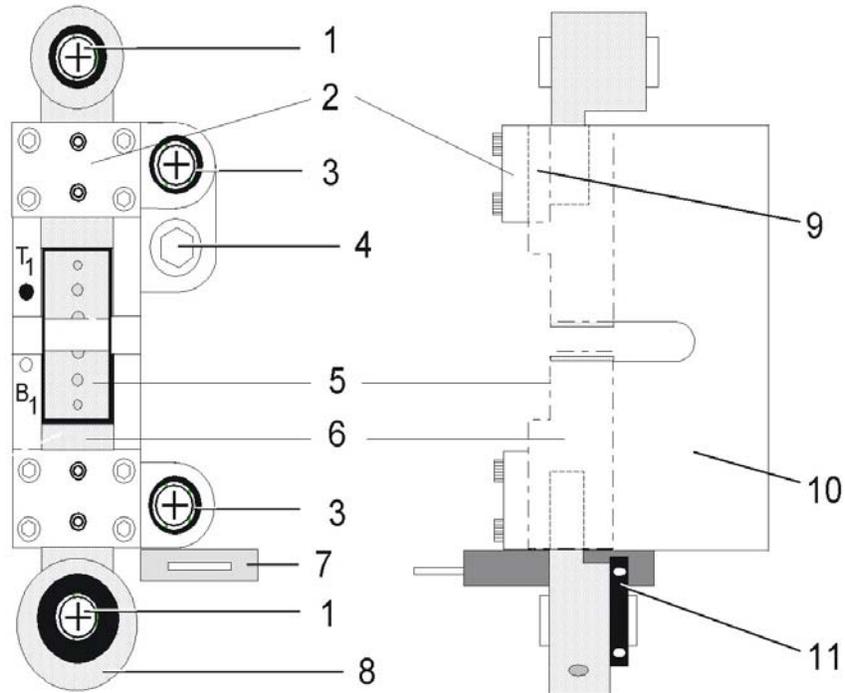


Figure 8 Die Block Assembly

- | | | |
|---------------------------------|--------------------------|------------------------|
| Item 1 Crank Shaft | Item 5 Die Mounting Area | Item 8 Eccentric Crank |
| Item 2 Cover Plate | Item 6 Die Block Slide | Item 9 Wear Plate |
| Item 3 Die Station Guide Shaft | Item 7 Micrometer Scale | Item 10 Die Block |
| Item 4 Die Block Adjusting Bolt | Indicator | Item 11 Crank Adjuster |

Die Markings

Dies and knives are paired and stamp marked with the following symbols so each can be readily identified and installed in the correct station position:

- Forming Style Series Number
- Installation Marking
- Installation Color Dot

Forming Style Series

The forming style series is stamped on the right hand side of each die and knife. Refer to the Die Information appendix for specifics.

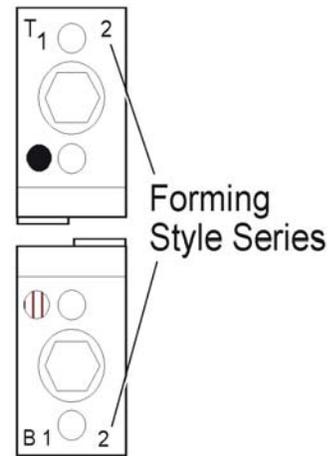


Figure 9 Die Forming Style Series

Installation Marking & Installation Color Dot

Characters are stamped on the left hand side of each die half (Item 1) to indicate proper die position in the forming and cutting stations.

Corresponding markings are stamped on each station's stationary plate (Item 2).

A color dot (Item 3) associated with installation location is also stamped on each die half and stationary plate.

Marking	Color Dot	Location
T0	White	Top die, Station 0
B0	Blue	Bottom die, Station
T1	Black	Top die, Station 1
B1	Red	Bottom die, Station 1
T2	Yellow	Top die, Station 2
B2	Green	Bottom die, Station 2

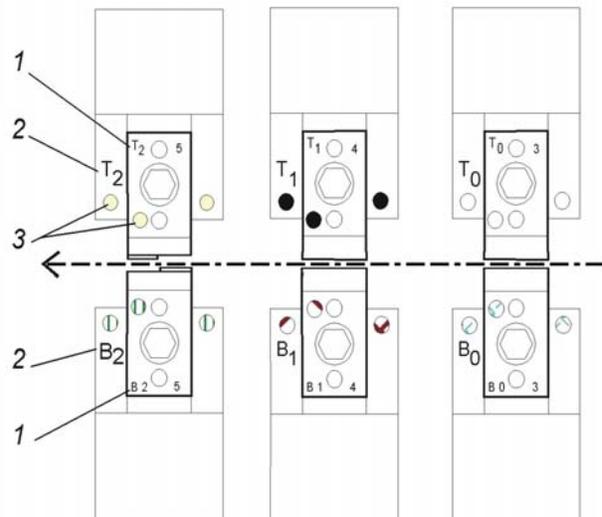


Figure 10 Die & Station Markings

Initial Installation

1. Carefully unpack and check your CF-10 for possible shipping damage. If any obvious damage is observed, contact the GPD Global® Service Department prior to operating the machine.
2. Identify the equipment you've received:
 - a. Standard equipment:
 - 1 Standard Shuttle
 - 1 Standard Die Set
 - 1 Standard Knife Set
 - 1 LCD Micrometer Adjustment Package
 - 1 Anti-static Shield
 - 1 Tool Kit
 - 1 User Manual
 - 1 Die Catalog
 - b. Optional equipment:
 - Vacuum
 - Bowl Feed
 - Single Feed Delay
 - c. Identify tooling received using the *CF-10 Component Forming Die Catalog*:
 - Match dies to the lead forms you want to produce.
 - Match shuttles to your component types.
3. Position the CF-10 on a level, stable working surface that provides:
 - Adequate access to all sides of the machine.
 - Support for a minimum of 200 pounds (90.72 kg).
 - Access to proper line voltage. See *Specifications*.
 - Access to clean dry air. See *Specifications*.
4. Prior to connecting power, manually operate the machine to verify that it indexes freely:
 - a. Using the provided 1/4" T-handle wrench in the 1/4" socket head screw on the first drive shaft, manually index the machine.
 - b. If the machine does not index freely, contact the GPD Global® Service Dept. before connecting electrical power to the machine.
 - c. If the machine indexes freely, continue with the next step.
5. Install the safety shield and component bin.
6. Install any accessory equipment such as the vacuum and foot switch options. Refer to the *CF-10 Accessories* appendix for installation instructions.
7. Check the linear feed track gap for centered alignment to the opposing belts.
8. Connect electrical power per your local electrical code and machine specifications.

**WARNING**

Make sure the power supplied is of proper voltage and is fused at the proper amperage. This information is recorded in *Specifications* and on the serial number plate located on the power cord side of the machine.

9. Connect the air supply per machine specifications. See *Specifications*.

Operating Instructions

 **WARNING**
 For operator and machine safety, keep fingers, clothing, and foreign objects away from the machine's moving mechanisms while in operation. Failure to do so may result in bodily injury or damage to the machine.

 **IMPORTANT**
 Read this manual before turning the power on. The operator should be thoroughly familiar with all operating procedures and safety precautions prior to using this machine. Failure to follow the instructions in this manual could result in damage to the machine and/or dies.

Setup

1. Turn the CF-10 power switch to OFF.
2. Set the CF-10 speed control to zero (0).

 **IMPORTANT**
 Before powering on the machine, always set the speed control to the zero (0) position to avoid unnecessary loads.

3. Turn on and zero out the digital micrometers scale indicators for linear feed track height and Stations 0, 1, and 2.
4. Select component to be formed.
5. Set the vacuum/air blowoff switch on the back panel:

If processing:	then set the vacuum/blowoff switch to:
2- or 3-leaded components	blowoff
TO-220s	vacuum

6. Install the appropriate exit chute:

If processing:	install:
2- or 3-leaded components	blowoff chute
TO-220s	exit chute

7. Adjust linear feed track height:

If processing:	set track height to:
2- or 3-leaded components	approximately 3/4" to 1" (19.05 to 25.40 mm) above the belts
TO-220s	.0050" on the digital micrometer

8. Verify that components slide freely down the linear feed track. If necessary, adjust the width of the gap in the linear feed track:
- Place a component at each end of the track.
 - Loosen the three button head screws on the left half of the linear feed track.
 - Adjust the width of the gap between the tracks and then tighten the screws.
 - Adjust the linear track's top guide:

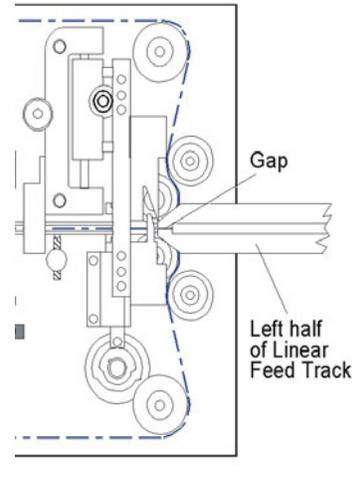


Figure 11 Adjust Track Gap

If processing:	set track height to:
2- or 3-leaded components	<ol style="list-style-type: none"> Loosen the top guide lock down thumbscrew. Adjust the linear track's top guide downward to just above but clearing the component body to keep it from tipping. Tighten the screws.
TO-220s	<ol style="list-style-type: none"> Loosen the top guide lock down thumbscrew. Adjust the top guide so component leads are captured in the top guide's groove. Tighten screws.

9. If you'll be using the tube feeding option, install the tube feeder adapters.

10. **FOR TO-220s ONLY:** Verify that the components' heat sinks are held firmly in the belts. If necessary, alter belt guide tension by adjusting the spring plungers.

11. Select the appropriate dies, knives, and shuttle to achieve the form and dimensions you require. Refer to the *CF-10 Component Forming Die Catalog*.

12. Install the shuttle and dies in the appropriate die stations according to the following installation instructions.

Shuttle Installation

1. Adjust the shuttle mechanism:

If processing:	then adjust shuttle mechanism so shuttle mounting pins are:
2- or 3-leaded components	below the linear feed track
TO-220s	above the linear feed track

2. Snap the selected shuttle onto the shuttle mechanism.
3. Adjust the shuttle:

If processing:	then adjust the shuttle so it:
2- or 3-leaded components	is close but not touching the linear feed track
TO-220s	clears the component body

4. Turn the CF-10 power switch to ON.
5. Manually index several components through the shuttle to insure that components transfer smoothly from the linear feed track to the belt clamping mechanism.

Die Installation

To properly position the dies in Stations 0, 1, and 2 and insure efficient machine use, follow the die installation steps below. Be sure to test all adjustments with the manual index to verify that the component body will not be damaged by forming dies or knives and that the component is centered between the die station tooling.

1. Select shuttle and dies. Refer to the *CF-10 Component Forming Die Catalog*.
2. Clean dies and die slide locating surfaces per *Preventive Maintenance "Daily"* instructions.
3. If performing a cut operation, install the appropriate knife set:

If processing:	install the knife set in:
2- or 3-leaded components	Station 2
TO-220s	Station 0

4. Install forming dies in Station 1 and/or Station 2 as the process dictates.
 - a. Refer to *Die Markings* (page 13) for proper locations.
 - b. Carefully place each die on the proper die mounting surface (Figure 12, Item 1) and bolt in place with a 10-32 x 5/8" (15.75 mm) screw. Then manually index the machine until the die block slides (Figure 12, Item 2) are in their fully closed position.

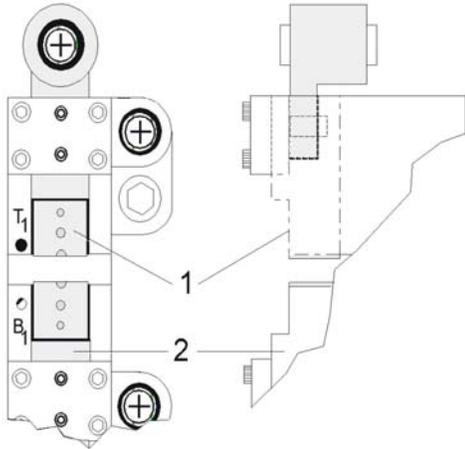


Figure 12 Die Mounting Surface & Die Block Slide

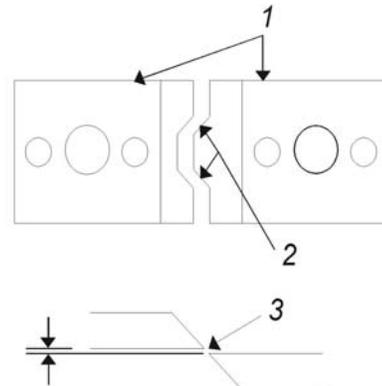


Figure 13 Die Alignment & Knife Clearance

- c. Visually inspect alignment of die forming area to insure equal spacing on both sides (Figure 13, Item 2).
 - d. Properly align die edges (Item 1) in relation to each other, centering each die and knife in its station.
 - e. Adjust air gap clearance between dies (Item 3) to an even distance.
5. Check die alignment with the manual index prior to powering on the machine.



IMPORTANT

The manual index can be used to move mechanisms **IN REVERSE** only during setup and only when there are no components are loaded in the machine.

6. Adjust the die stations as necessary to obtain desired form and cut by aligning components with dies and adjusting each station's height per the following adjustment instructions.

Station Adjustment

The CF-10's die stations are independently adjustable to control forming and cutting locations. The action performed on component leads by each die station can be relocated from a zero (0) position. GPD Global® suggests setting the zero (0) reference point at the machine's base plate.

Backlash is eliminated during station adjustment by three (3) beveled washers located on each station adjusting bolt.

The standard micrometer scale attached to each station indicates the distance from where the component meets the top edge of the belt guide to the point of station action on the component lead. These scales are accurate to .0005" (0.0127 mm).

Cut Lead Length	Station Position	Station Action Location
Longest	Fully retracted	Zero (0) position - the point where the component meets the top edge of the belt guide.
Shortest	Fully extended	The point as near as possible to the component body. Each extension movement of station position creates a correspondingly shorter lead length.

To Adjust Die Stations:

- For 2- or 3-leaded components, go to *2- and 3-Leaded Components* on page 20.
- For TO-220 components, go to *TO-220 Components* on page 21.

2- and 3-Leaded Components

Station 2 performs the cut operation and trimmed leads collect in the scrap bin.

1. Reset all micrometer scales to zero (0).
2. Manually index a component into the first station to be used in your process, Station 0 or 1.
3. Adjust die position to clear the component body. To adjust station position (die vertical position):
 - a. Open the safety shield.
 - b. Adjust (manually index) the die station using the supplied 1/4" T-handle wrench in the station die block adjusting bolt.
 - To extend the station, turn wrench **counter-clockwise**.
 - To retract the station, turn wrench **clockwise**.

NOTE

When processing 2- or 3-leaded components, adjust the die station to a vertical position **BELOW** the component body in order for the die to clear the component body.

- c. Record the micrometer setting. Refer to the *Set Up Sheet* appendix.

4. Adjust die position for the remaining stations:
 - a. Manually index a component into the station.
 - b. Adjust station dies to desired point that clears the component body using the procedure listed in step 0 above.

NOTE

When adjusting the die in the cut station (Station 2), it's a good idea to start with a long lead length and then make adjustments as needed. Adjust the micrometer setting close to 0.0000" for the first cut.

5. Inspect the resulting form and adjust the setup settings as needed:
 - a. Inspect and measure the formed component leads with a micrometer.
 - If the form is too close to the component body, lower or raise die position.
 - If the lead cut length is too short, lower die position.
 - b. When desired form is achieved, record micrometer settings on setup sheet.

TO-220 Components

Station 0 performs the cut operation and trimmed leads are captured by the vacuum option located above Station 0.

1. Reset all micrometer scales to zero (0).
2. Manually index a component into Station 0.
3. Adjust die position in Station 0 until it's fairly close to the tips of the leads.

To adjust station position (die vertical position):

- a. Open the safety shield.
- b. Adjust (manually index) the die station using the supplied 1/4" T-handle wrench in the station die block adjusting bolt.
 - To extend the station, turn wrench **counter-clockwise**.
 - To retract the station, turn wrench **clockwise**.

NOTE

When processing TO-220s, adjust the die station to a vertical position ABOVE the component body in order for the die to clear the component body.

- c. Record the micrometer setting. Refer to the *Set Up Sheet* appendix.
4. Adjust the vacuum system so the vacuum tube just clears the component leads.

5. Verify that the trimmed leads were vacuumed out of the machine:
 - a. Close the safety shield.
 - b. Turn the CF-10 power switch to ON.
 - c. Push the safety shield reset button.
 - d. Using the CF-10 speed control, run a component through Station 0 and stop it before it reaches Station 1.
6. Adjust die position in Station 1:
 - a. Open the safety shield.
 - b. Manually index a component into Station 1.
 - c. Adjust Station 1 dies to desired point that clears the component body using the procedure listed in step 0 above.
7. Adjust die position in Station 2 (if used in your process):
 - a. Manually index a component into Station 2.
 - b. Adjust Station 2 dies to desired point that clears the component body using the procedure listed in step 0 above.

NOTE

When adjusting the die in the cut station (Station 2), it's a good idea to start with a long lead length and then make adjustments as needed.

8. Inspect the resulting form and adjust the setup settings as needed:
 - a. Manually index the formed component out of the belts.
 - b. Inspect and measure the formed component leads with a micrometer.
 - If the form is too close to the component body, lower or raise die position.
 - If the lead cut length is too short, lower die position.
 - c. When desired form is achieved, record micrometer settings on setup sheet.

Component Alignment

The CF-10 is factory set to index exactly 1" (25.40 mm). Component position is relative to the centerline of Station 0 and is controlled by the shuttle mechanism.

NOTE

Testing component position relative to dies **MUST** be done prior to automatic machine operations.

Ejector Bracket Adjustment

Install and adjust ejector brackets **if required**. Required usage is indicated for each die, when appropriate, in the *CF-10 Component Forming Die Catalog*. Certain complicated lead forms require ejector bracket installation to insure that component does not remain in die.

If ejector bracket installation and adjustment is not required, skip to Power On on page 24.

Two sets of two-part ejector brackets are factory mounted on die Station 2 (Figure 14). The ejector bracket base (Item 1) mounts to the Station 2 die block assembly with two screws (Item 3). The ejector bracket hook (Item 2) slides onto the ejector bracket base.

Suggestion: To simplify die installation, remove the ejector bracket hooks when not required for process.

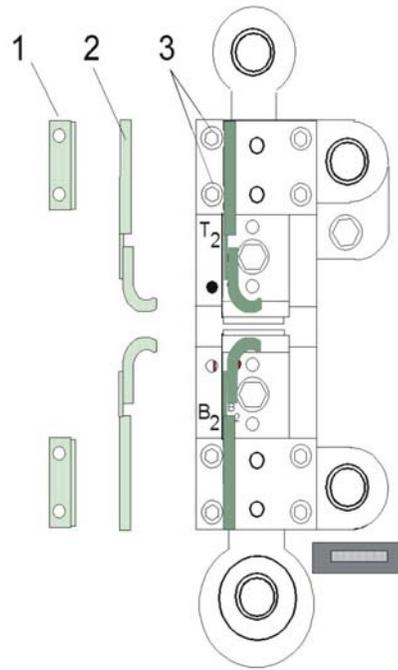


Figure 14 Ejector Bracket installation

Adjust for Component Body Thickness

- Loosen screws (Figure 14, Item 3).
- Adjust each ejector bracket base (Item 1) to obtain an air gap of approximately 1/32" (0.794 mm) as illustrated in Figure 15.
- Tighten the screws.

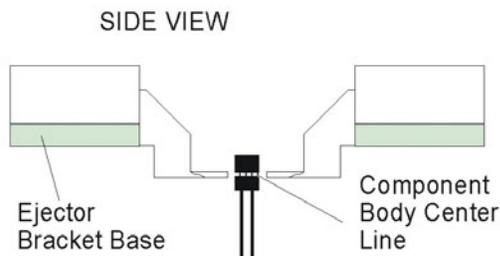


Figure 15 Adjust Ejector Bracket Base

Adjust for Component Body Height

Slide the ejector bracket hooks as needed to align the centerline of the component body between them as illustrated in Figure 16.

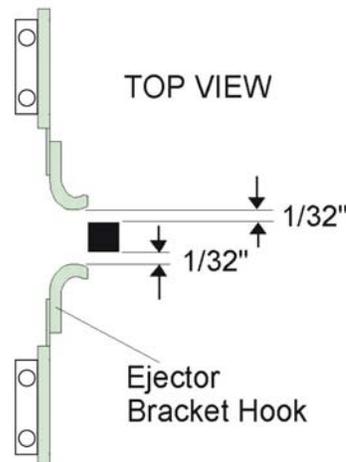


Figure 16 Adjust Ejector Bracket Hooks

Power On

**IMPORTANT**

Read this manual before turning the power on. Failure to follow the instructions in this manual could result in damage to the machine and/or dies.

To power on the CF-10:

1. Perform *Setup* procedure.

**CAUTION**

Verify proper fit and alignment for tooling in the die stations before processing components in the machine. If machine is not adjusted properly, damage to components and dies may result.

2. Verify that the following conditions exist:
 - a. Machine is clear of obstructions.
 - b. Shuttle is installed properly.
 - c. Die station tooling is properly aligned.
 - d. Adequate belt tension exists.
 - e. If you will be using the Single Feed Delay option, remove the CF-10 top guide and install the CF-10 foot switch.
3. Close the safety shield.

**WARNING**

For operator safety, do not operate the machine with safety shield removed or safety switch overridden.

NOTE

As a safety feature, power is not automatically restored when safety shield is closed. Normal operations resume when the reset button is pushed.

4. Select a mode of operation: Normal, Single Feed Delay, or Low Track.
5. (Optional) Set up the component counter:
 - a. Turn the counter power switch to ON.
 - b. To preset the desired count value (the number of components to be formed), follow the instructions pertinent to the counter model (refer to page 12) installed on your CF-10:

Counter Model A: First, press the Select button on the counter, then use the Digit buttons to set a P1 Preset value, and then press the Select **button twice**.

Counter Model B: First, press  on the counter, then use the same key to select the digit to be changed, and the  key to increment the digits. After you have finished entering the desired preset value, press .

6. Turn on the Linear Feed speed control switch. Also set the speed control to the zero (0) position.

 **IMPORTANT**
 Before powering machine on, always set the speed control to the zero (0) position to avoid unnecessary loads.

7. Set the CF-10 power switch to ON.
8. Press the safety shield reset button.
9. If using the Single Feed Delay option, skip to the next step; otherwise, load the linear feed track with components and run the machine slowly at first to verify proper adjustment and that components transfer smoothly from the linear feed track into the belts. Make further adjustments if necessary to achieve desired results.

 **CAUTION**
 Testing component position relative to the dies **MUST** be done prior to automatic machine operations.

NOTE

Some types of components feed better if stacked, i.e. types with body-to-body contact such as TO-220s and TO-92s. (Use the Low Track mode for TO-220s or TO-92s.)
 Others types of components feed best when they arrive at the shuttle one at a time because the leads extend beyond the edge of the component body, such as dipped capacitors and thermistors.

10. For Single Feed Delay only; for all other modes, skip to the next step. To process components using the Single Feed Delay option:
 - a. Press and release the foot switch. The foot switch activates one component cycle; one component exits normally.

NOTE

Foot Switch Operation: Hold the foot switch down to run the machine continuously (for example, to clear components from track). Release the foot switch to stop the machine - it will stop at the end of the next cycle (with die sets in open position).

- b. Release the foot switch. The machine resets for the next cycle.
 - c. Repeat this step as often as necessary to process all components.
11. Increase the speed rates to desired settings and process components.

Speed Control	Suggested Initial Setting
Linear Feed Speed	8
CF-10	4

12. To process a different component form or type, step through the Setup procedure again.

Power Off

1. Set the CF-10 speed control to zero (0).
2. Turn the CF-10 power switch to OFF.
3. Remove all dies and clean with a rust inhibitor and lubricate machine mechanical moving parts per *Preventive Maintenance*.

Machine operations stop automatically if the:

- preset value for the component counter is reached.
- safety shield is raised.
- CF-10 is equipped with the optional vibratory bowl control sensors and the linear feed track contains three or fewer components. The CF-10 automatically stops operations until the linear feed track is refilled with components.

NOTE

TO-220 OR TO-92 ONLY: When processing TO-220s or TO-92s, maintain a minimum of three (3) components in the linear feed track at all times. When ready to process the last three components, reduce the CF-10 speed control setting to insure that these last components transfer smoothly through the shuttle to the belts.

Preventive Maintenance

The CF-10 is constructed so that pulleys, belts, and bearings should not need to be replaced for many years, provided the machine is used according to instructions.

CAUTION  The preventive maintenance steps in this section are intended primarily for the machine operator, however, only qualified service or maintenance personnel should perform the steps requiring access to the machine's cabinet interior.

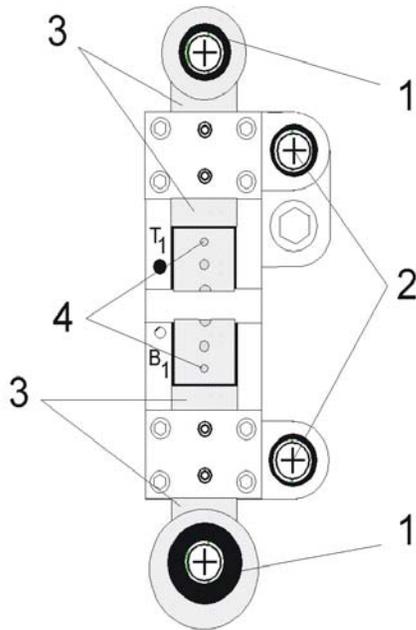


Figure 17 Die Block Assembly Lubrication

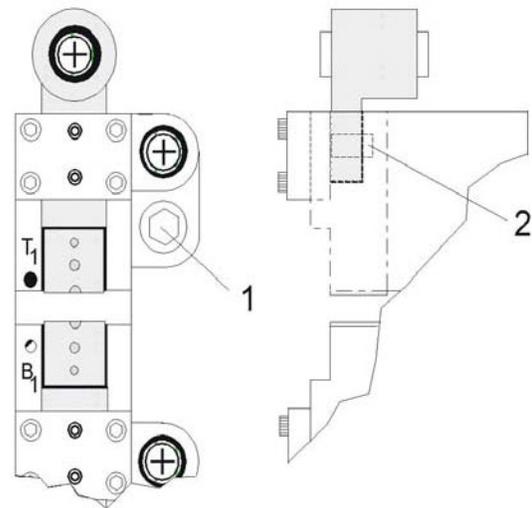


Figure 18 Die Block Assembly Maintenance

Preventive Maintenance Schedule

Interval	Location	Action
Daily or every 10 hours	Air Regulator Water Trap	Inspect, and if necessary, drain condensation from bowl.
	Dies/Knives	Remove all dies/knives, inspect for wear, and clean with rust inhibitor.
		Inspect for foreign matter or dust build-up. Brush clean.

Interval	Location	Action
	Die Block Assembly	Inspect and lubricate eccentric shafts and bushings (Figure 17, Item 1) and die block guide shafts (Item 2) with a light machine oil (3-in-1). Place a drop of light machine oil (3-in-1) on slide surfaces (Figure 17, Item 3) and in lubrication hole (Item 4). Apply oil to each of the two crank pins (Figure 18, Item 2) per die block assembly.
	Drive Belt	Inspect cogs for wear.
	Scrap Bin	Empty scrap leads.
Weekly or every 40 hours	Belts	Inspect belt tension and, if necessary, adjust. Refer to <i>Belt Tension Adjustment</i> (page 32).
	Belt Clamping Mechanism	Inspect for proper clamping tension on components. If necessary, clean excess dry grease and lubricate cam with light grease.
Monthly or every 160 hours	Belt Guide Spring Plungers	Inspect and, if necessary, adjust or replace.
	Die Block Assembly	Clean die block adjusting bolt (Figure 18, Item 1) with solvent and apply a small amount of oil to its thread near machine base plate.
	Inside Cabinet	Spray molly grease on gears. Wipe off excess oil. Lightly grease cam lobes and cam follower rollers. Wipe off excess grease. Check motor flexible coupling set screws for tightness. Check motor brushes.
Annually	Air Lines	Inspect for leaks.
	DU Bushings	Inspect for wear.
	Safety Shield	Apply a drop of light machine oil on each safety shield hinge. Wipe off excess oil.

Troubleshooting

The CF-10's manual index is a useful troubleshooting feature enabling you to manually move all mechanisms. It can be used to move mechanisms **IN REVERSE** *only during setup and only when there are no components are loaded in machine.*

 **CAUTION** The troubleshooting steps in this section are intended for qualified service or maintenance personnel. Only these qualified personnel should perform the steps requiring access to the machine's cabinet interior.

Troubleshooting Guide

Problem	Possible Cause	Action
Dies, knives, and/or bushings damaged or wearing prematurely.	Incorrect setup.	Verify that proper tooling is being used. Refer to die catalog for correct die/knife and application combination. Verify dies/knives are properly matched. Verify that tooling is properly adjusted per <i>Setup</i> .
	Die/knife striking component.	Inspect and set per <i>Die Installation</i> .
	Ejector brackets not installed.	Install ejector brackets per <i>Die installation</i> instructions.
	Foreign matter, dust build up.	Inspect and clean per <i>Preventive Maintenance</i> .
	Incorrect slide gap.	Check gap with gauge block per <i>Slide Travel</i> .
	Incorrect die alignment.	Inspect and set per <i>Die Installation</i> .
	Incorrect slide clearance.	Inspect and set per <i>Slide Clearance</i> .
	Incorrect size screw securing die.	Secure die with correct size screw.
Component not transferring from linear feed track to belt clamping mechanism.	Incorrect shuttle.	Install shuttle to suit component.
	Belts not gripping component leads/heat sink.	Inspect and, if necessary, adjust tension of spring plungers in belt clamp.
	Vibratory control for linear track feed not operating.	Check linear feed power and speed controls for operation.
	Shuttle mechanism not centered.	Realign linear feed tracks.
	Shuttle installed backwards on shuttle arm or mismatched.	Correct shuttle position. Check shuttle to match sets.
Incorrect shuttle for component center-to-center distance.	Change shuttle to suit component center-to-center distance.	

Problem	Possible Cause	Action
Belt clamping mechanism not clamping properly.	Spring plunger fatigued.	Change spring plunger.
	Spring plunger not adjusted.	Adjust spring plunger.
	Belt tension too tight.	Adjust belt tensioner.
Components not feeding in linear feed track.	The gap in the linear feed track is too narrow or too wide.	Adjust the gap to suit components. Refer to step 8 of <i>Set Up</i> .
	Top guide too close to component body.	Raise top guide.
	Faulty components.	Check for and remove flawed components.
Machine performance generally poor.	Foreign matter, dust build up.	Inspect and clean per <i>Preventive Maintenance</i> .
	Inadequate lubrication.	Oil per <i>Preventive Maintenance</i> .
	Worn parts or dies.	Inspect and replace as necessary.
	Incorrect die alignment.	Inspect and set per <i>Die Installation</i> .
	Incorrect size screw securing die.	Secure die with correct size screw.
Machine cutting improperly.	Slide clearance too large.	Reset slide travel per <i>Slide Clearance</i> .
	Incorrect slide gap.	Set gap per <i>Slide Travel</i> .
	Worn eccentric shaft bushing.	Replace bushing.
	Worn dies.	Replace or repair dies.
	Incorrect size screw securing die.	Secure die with correct size screw.
No machine movement.	Preset counter set to zero.	Set preset counter to a value not equal to zero.
	Preset counter not being used in process but powered on.	Turn counter power switch to off.
	Broken drive belt.	Replace drive belt.
	Blown fuse.	Replace fuse. NOTE: As a preventive measure, turn speed control to zero before turning machine on.
	Power not restored after closing safety shield.	Press reset button.
	Machine not plugged in.	Plug machine in per <i>Specifications</i> .
	Machine not turned on.	Turn machine on per <i>Power On</i> .
	Speed control set to zero (0).	Set speed control to appropriate operating speed.
Incorrect size screw securing die.	Secure die with correct size screw.	

Belt Clamping Mechanism Removal

To remove the belt clamping mechanism:

1. Turn off and unplug the machine.
2. Remove the safety shield.
3. Remove the shuttle mechanism and linear feed track.
4. Remove the two socket head cap screws (shown at right).
5. Loosen belt tension. Refer to *Belt Tension Adjustment* (page 32).
6. Remove pulley (shown at right). Loosen the set screws in the cam and remove the cam.
7. Slide the belt clamping mechanism away from the belts.

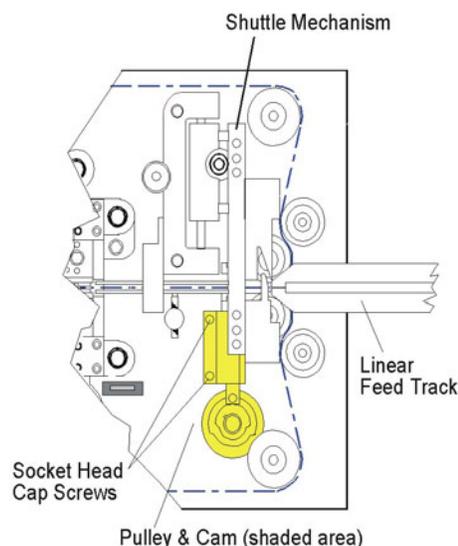


Figure 19 Belt Clamping Mechanism Removal

Belt Guide & Belt Replacement

To remove the belt guide and belts:\

1. Turn off and unplug the machine.
2. Remove the shuttle mechanism and linear feed track.
3. Remove the blow-off or exit chute.
4. Remove the counter sensor bracket.
5. Remove the dies from all three die stations.
6. Loosen the belt tensioner's socket head cap screw and swing the belt tensioner away. Refer to *Belt Tension Adjustment* (page 32).
7. Loosen the spring plungers. Remove the four retaining rings from the belt guide posts and slide the belts and guides off of the posts.

To install new belts and replace belt guide:

1. Insert the new belts in the belt guides and replace on posts. Replace the retaining rings and tighten the spring plungers to correct tension.
2. Replace the belts on the pulleys and adjust the belt tension with the belt tensioner.
3. Replace the dies.
4. Replace the blow-off or exit chute.
5. Replace the shuttle mechanism and counter sensor bracket.
6. Replace the linear feed track and safety shield.

Belt Tension Adjustment

To adjust the tension of the two opposing belts that move the components from the linear feed track to the exit chute:

1. Loosen the belt tensioner's socket head cap screw for the belt needing adjustment.
2. Pivot the belt tensioner into the desired position.
3. Tighten the socket head cap screw.

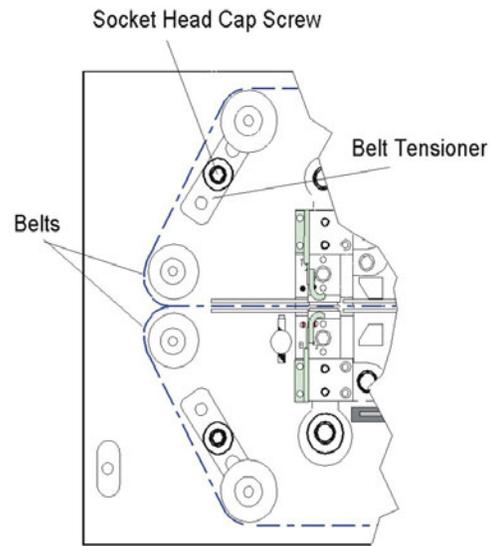


Figure 20 Belt Tension Adjustment

Slide Travel

To adjust slide travel:

1. Unplug the machine.
2. Insert the provided 1.934" gauge block (Figure 21, Item 1) while manually indexing the machine until the die block slides (Item 5) are fully closed.
3. Check for gauge block movement. If movement **does not** occur, proceed to *Slide Clearance*. If movement **does** occur, adjust the crank adjuster (Item 3):
 - a. Loosen crank set screws (Item 2).
 - b. Use the wrench in the crank adjuster holes (Item 4) to rotate crank adjuster until the gauge block no longer moves.
 - c. Tighten the eccentric crank screws.
 - d. Replace the bushings if movement cannot be eliminated through adjustment.

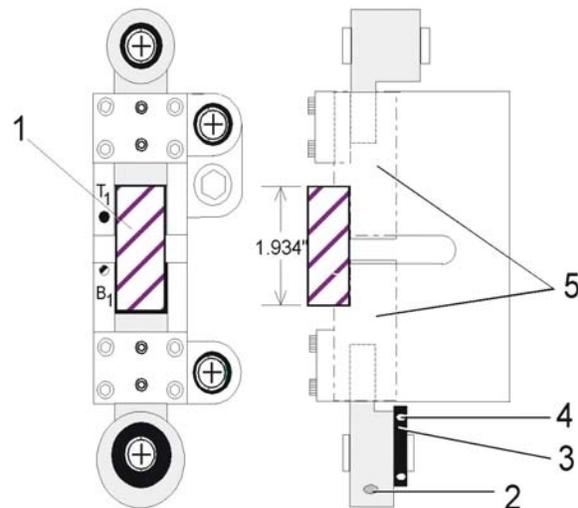


Figure 21 Die Block Assembly Slide Travel

Slide Clearance

To adjust slide clearance:

- 1 Remove die block assembly. Station 1 die block assembly is illustrated in Figure 22.
 - a. Remove belt guide and opposing belts.
 - b. Raise die block approximately 1" (25.40 mm) from machine base plate using machine's die block adjusting bolt (Figure 22, Item 3).
 - c. Remove the mounting screws from the micrometer scale's lower mounting block.
 - d. Turn the die block adjusting bolt until the die block no longer moves and then slide the die block straight off the machine.
- 2 Clean parts.
 - a. Remove and discard the set screws from the cover plate (Figure 22, Item 6).
 - b. Remove the slide (Item 9) from the die block.
 - c. Use a degreaser (brake cleaner) to remove all oil from the slide, die block, and wear plate (Items 9, 8, and 7).

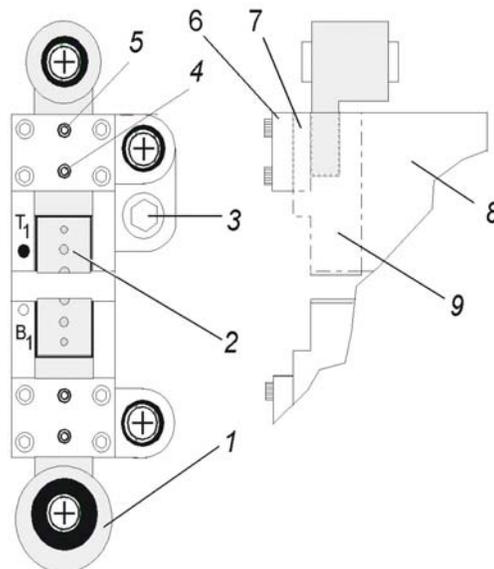


Figure 22 Die Block Assembly Slide Clearance



CAUTION

Do not expose the micrometer scales to degreaser (brake cleaner) as it clouds the clear face plate.

- d. Measure all surfaces for wear and inspect for scratches and gouges. Replace parts if raised material is visible on the working plane.
 - e. Lightly stone all surfaces.
 - f. Blow dry all parts.
3. Reassemble the die block.
 - a. Install the slides in the die block.

NOTE

Position the slide with the eccentric bushing in the eccentric crank (Item 1) in the die block's top half (T0, T1, or T2).

- b. Slip the wear plate face up between the cover plate and the slide.
- c. Align the wear plate counter sunk holes with the cover plate set screws.
- d. Install the new set screws and lightly tighten.
- e. With the slides in their closed position, locate a dial indicator on the die mounting surfaces (Item 8) and compare heights. For mated dies to function together properly, replace the dies and/or slide blocks if heights are not within .0005" (0.0127 mm) of each other.

- 4 Set clearance.
 - a. Loosen the cover plate's inner set screw (Figure 22, Item 4) approximately a quarter turn.
 - b. Slowly loosen the outer set screw (Item 5) just until the slide moves freely.
 - c. Tighten the inner set screw until a slight drag is felt.
 - d. Install die screw in the slide to prevent slide from slipping out of the die block.
 - e. Position the slide flush with the back side of the die block.
 - f. Locate a dial indicator on the slide's die mounting surface and set the clearance to .0007 - .001" (.0178 - .0254 mm) by pulling up on the die screw. After clearance is set, verify that the slide moves freely.

NOTE

If the slide does not move freely, loosen the outer set screw slightly. Recheck the clearance.

- g. Secure the screws by applying a modest amount of penetrating thread locker (Loctite #290).
 - h. Repeat step 0. for the remaining slides.
- 5 Lubricate parts.
 - a. Generously apply 5 weight oil (3-in-1) to all sides of the slide and crank pin (Figure 23, Item 3), working in thoroughly.

CAUTION
 DO NOT USE A PENETRATING OIL (WD-40) AS THIS WILL CAUSE DIE BLOCK SEIZURE.

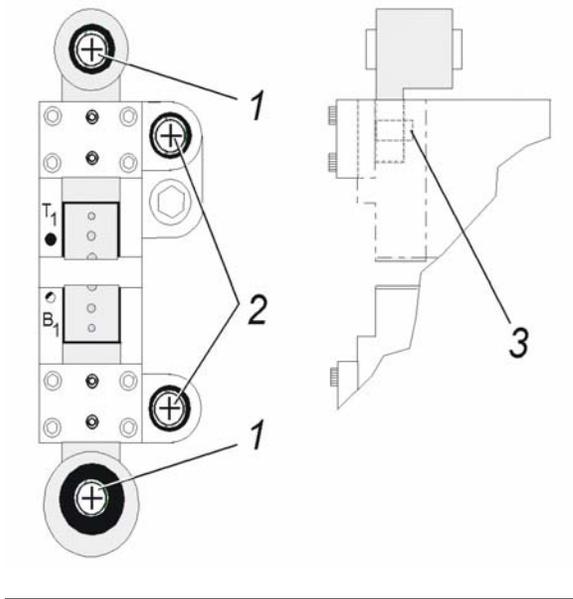


Figure 23 Die Block Assembly Lubrication

- b. Sparingly apply oil to the eccentric crank shafts (Item 1) and die block guide shafts (Item 2).
- 6 Reinstall the die block assembly.
 - a. Slide the die block assembly straight onto the machine until the die block adjusting bolt reaches the hole.
 - b. Thread the die block adjusting bolt into the hole.
 - c. Replace the mounting screws for the digital scale's lower mounting block.
 - d. Position the die block assembly approximately 1" (25.40 mm) from the machine base plate using the die block adjusting bolt.
 - e. Run the machine in this position for approximately one (1) hour to allow oil to distribute evenly. During this time period, slowly increase machine speed and check the cover plate and die block for heat.

CAUTION
 IF EXCESSIVE HEAT IS DETECTED OR A SQUEAK IS HEARD, STOP THE MACHINE. REPEAT THE COMPLETE SLIDE CLEARANCE PROCEDURE.

- f. Reassemble the following:
 - Digital scale lower mounting block screws
 - Belt guide
 - Opposing belts (Adjust so belts are taut.)
 - Die screws
- g. Reset slide travel adjustment - refer to *Slide Travel* on page 32.

Low Track Sensor Adjustment

To adjust the fiber optic, through beam, low track sensor:

1. For older CF-10 models, the sensor trimmer and indicator light are located on the control panel; skip to the next step.

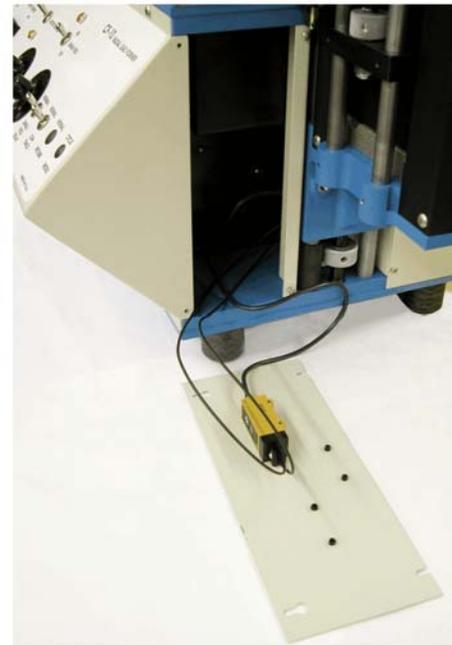
For newer CF-10 models, access to the sensor trimmer and indicator light requires removal of a panel from the machine (refer to Figure 24):

- a. Remove the four (4) corner Allen head screws from the side panel.
- b. Remove the side panel by sliding it forward (toward the control panel) and then, without pulling on the attached wires, lay the side panel down.

1 - Remove corner screws.



2 - Lay panel down to reveal sensor.



2. Be sure the light source and receiver are physically aligned in an approximately straight line.

Figure 24 For newer CF10s, remove panel to access sensor

3. In the presence of the object to be detected, turn the trimmer clockwise and find point A (refer to Figure 25) of the trimmer at which the red LED (operation indicator) lights.
4. In the absence of the object, turn the trimmer counterclockwise and find point B at which the LED goes off.
5. Set the trimmer midway between points A and B.

If present, the sensor's green light (stability indicator) should always be illuminated regardless of the red light's condition.

6. If previously removed during step 1, install the side panel back on the machine.

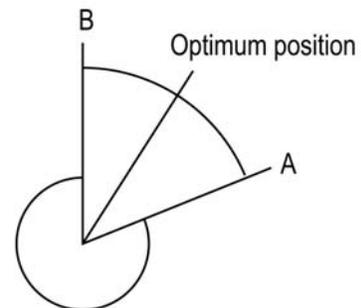


Figure 25 Adjusting Low Track Sensor

Specifications

Dimensions

Dimension	Stand-alone CF10	CF-10 with Work Station & Vibratory Bowl
Height	17.00" (431.80 mm)	50" (1,270.00 mm)
Length	24.50" (622.30 mm)	40" (1,016.00 mm)
Width	11.75" (298.45 mm)	30" (762.00 mm)

Weight

Stand-alone CF-10	120 lbs (54.43 kg)
CF-10 with Work Station & Vibratory Bowl	275 lbs (124.7 kg)

Power Requirements

120 VAC, 60 Hz or 230 VAC, 50 Hz

Air Requirements

Air must be dry, filtered, compressed air with no oil.
 Recommended pressure 80 PS

Capacities

Production Rate

The CF-10 is capable of forming and cutting up to 6,000 components per hour.

Micrometer Scale

Display increments to .0005" (0.0127 mm)
 +/- .002" Repeatability
 230 VAC, 50 Hz

Specifications are subject to change without notice.

Suggested Spare Parts

The following suggested spare parts listing is for those customers in locations where next day delivery service from the USA is not available.

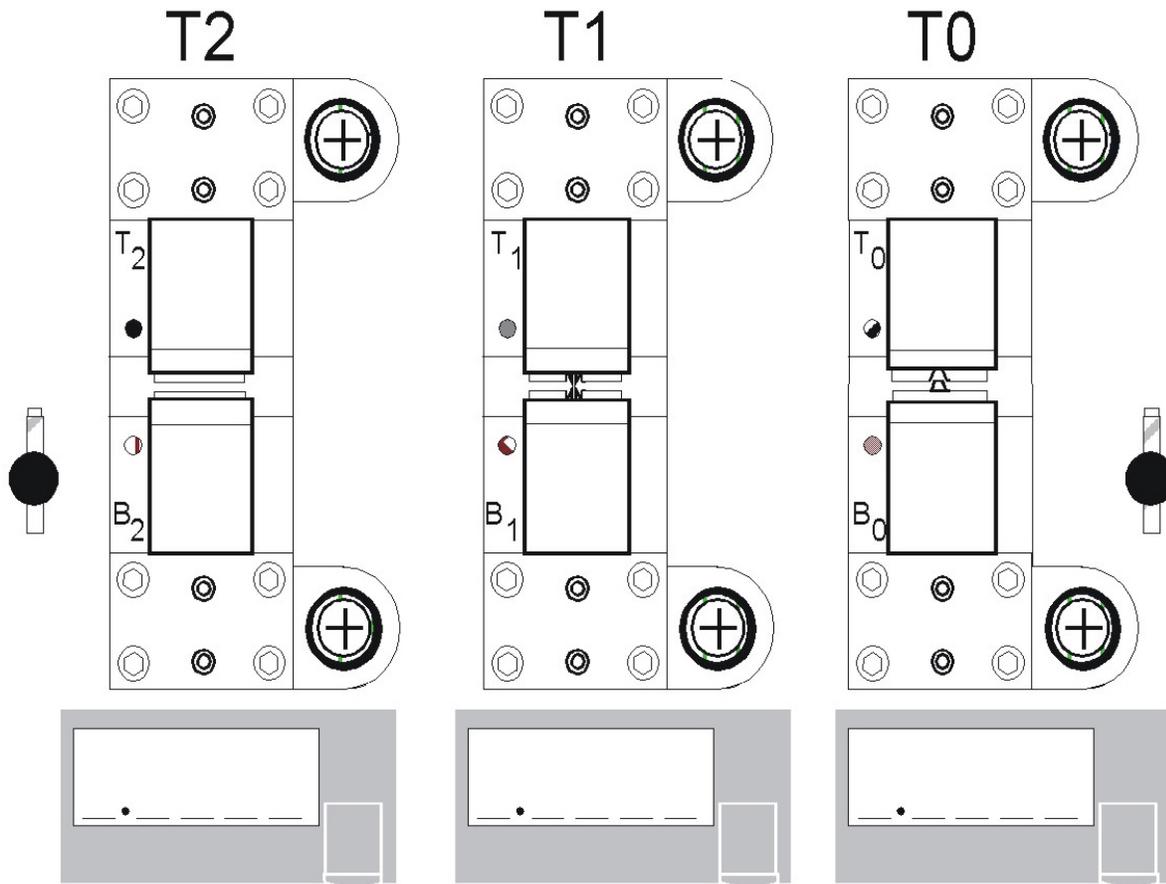
GPD Part No.	Part Description	Quantity
1010-1-100	120V 60 Hz Spare Parts Kit <i>includes the following items:</i>	
D0005	Transfer belt	2
G1003	Retaining clip	10
S5002	Spring plunger S50P	1
S5003	Spring plunger S52P	4
S6001	Vlier wrench (for plunger S5002)	1
S6002	Vlier wrench (for plunger S5003)	1
SABAN0632037	Allen flathead screw	6
SACAN1032062	Die screws	6
1006-2-3	Cam follower roller sleeve	2
1008-4-3	Linear feed track assembly, left	1
1008-4-4	Linear feed track assembly, right	1
4300-0005	5 amp fuse (for stand-alone unit)	1
4300-0014	Non-time delay fuse	1
821-4-12	Circlip pliers	1
1010-1-101	230V 50 Hz Spare Parts Kit <i>includes the following items:</i>	
D0005	Transfer belt	2
G1003	Retaining clip	10
S5002	Spring plunger S50P	1
S5003	Spring plunger S52P	4
S6001	Vlier wrench (for plunger S5002)	1
S6002	Vlier wrench (for plunger S5003)	1
SABAN0632037	Allen flathead screw	6
SACAN1032062	Die screws	6
1006-2-3	Cam follower roller sleeve	2
1008-4-3	Linear feed track assembly, left	1
1008-4-4	Linear feed track assembly, right	1
4300-0032	3 amp fuse (for stand-alone unit)	1
4300-0022	6 amp fuse (for table unit)	1
821-4-12	Circlip pliers	1

APPENDICES

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CF-10 Set Up Sheet

Component Part No:	
Part Description:	
<ol style="list-style-type: none"> 1. Set machine speed to zero (0). 2. Adjust infeed track gap if necessary. 3. Adjust track height to _____. 4. Install shuttle number _____ above / below track. 5. Adjust shuttle height. 6. Install dies as shown below. 7. Adjust die stations to digital settings shown below. 8. Manually turn machine to check alignment of dies. 9. Install ejector bracket if required. 10. Adjust track vibrator speed to _____. 	<ol style="list-style-type: none"> 11. Load parts. 12. Adjust spring plungers as required. 13. Manually turn machine until first part exits machine. 14. Check component for proper form. 15. Fine tune digital settings for proper form as necessary. 16. Start machine. 17. Adjust machine speed to _____. 18. (Option) Set vibratory bowl speed to _____. 19. Set CF-10 air pressure regulator to _____. 20. (Option) Set vibratory bowl air regulators: Set #1 to _____ and #2 to _____.



Appendix B - Die Information

Forming Style Series

The forming style series is stamped on the right hand side of each die and knife:

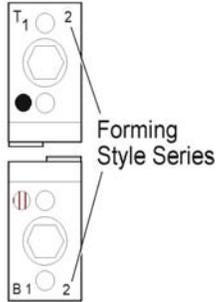


Figure 25 Forming Style Series

Number	Description
1	Die, 3 Lead Radial (typically TO-92)
2	Die, 2 Lead Radial, Stand-Off, Opposing Dimple
2C	Die, 2 Lead Radial, Lock-In Stand-Off, Opposing
3	Dimple
4A	Die, 2 Lead Radial, Lock-In Stand-Off
4B	Die, 2 Lead Radial, Spreading
5	Die, 2 Lead Radial, Reducing
7 *	Knife
8A	Die, 2 Lead Radial, 90 degree Bend
8B	Die, 2 Lead Radial, Spreading, Lock-In Stand-Off
10	Die, 2 Lead Radial, Reducing, Lock-In Stand-Off
11	Die, 2 Lead Radial, Stand-Off Lock-In
	Die, 2 Lead Radial, Flush Mount Lock-In

* GPD Global® has an **adjustable** 90 degree bend 7-style die available. For details, contact GPD Global.

CF-9 Die Numbers

When using CF-9 dies, use the following example as a guide. For further die specification details, refer to the *CF-9 Component Forming Die Catalog*.

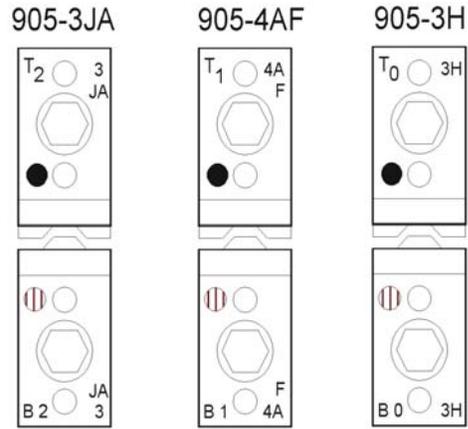
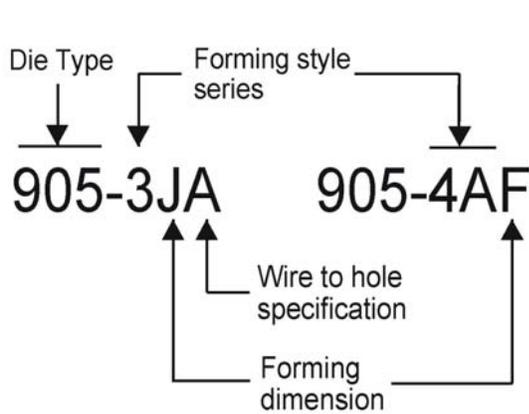


Figure 26 Examples of CF-9 Die Numbers

Figure 27 Examples of CF-9 Die Number locations

CF-10 Die Numbers

When using CF-10 dies, use the following example as a guide. For further die specification details, refer to the *CF-10 Component Forming Die Catalog*.

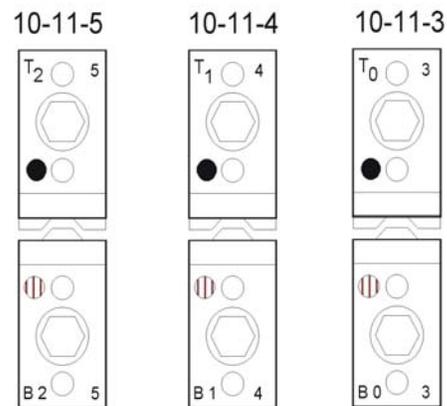
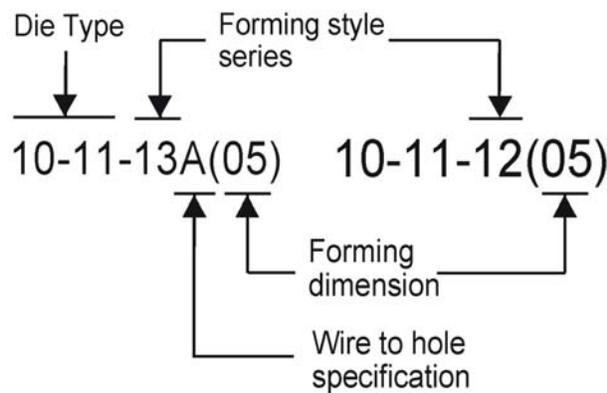


Figure 28 Examples of CF-10 Die Numbers

Figure 29 Examples of CF-10 Die Number locations

Appendix C - Common CF-10 Lead Forms

Some examples of the most common component forms produced by the CF-10 are shown below.

Form	Die Number	Form Description	Form	Die Number	Form Description
	905-1	Middle Lead Offset with Lock-In		905-4A	Spread
	905-1A	Middle Lead Offset		905-4B	Reducing
	905-1CA	Inline Lock-In Stand-Off		905-7	90 Degree Angle Bend
	905-1H4 905-1H5 905-1L4	Middle Lead Offset with 3-Lead Lock-In		905-8A	Spread with Lock-In Stand-Off
	905-2	Stand-Off with Opposing Dimple		905-8B	Reducing with Lock-In Stand-Off
	905-2C	Lock-In Stand-Off with Opposing Dimple		905-10	Low Profile Stand-Off Lock-In
	905-3	Lock-In Stand-Off		905-11	Flush Mount Lock-In

Appendix D - CF-10 Accessories

The following optional accessories for the CF-10 are specifically designed to help you increase production and profit.

Lead Forming Dies

The CF-10 offers unique versatility through the use of a large selection of dies. The CF-10 operates on a system of dies and die blocks. Each die combination is designed to form a specific lead configuration. Numerous standard and special CF-10 Lead Forming Die sets are available to provide a variety of component forms and lead configurations. Many different die sets are available for a variety of hole patterns.

A minimal amount of preparation time is required to reset the machine for processing different component forms. Dies and shuttles are easily replaced within minutes.

The GPD Global® CF-10 dies are precisely manufactured using a unique die construction process. Most dies are built with a sectional, laminated construction method for exceptional wearing ability. Before lamination, all dies are buffed and polished to exacting smoothness, particularly in the actual forming and cutting areas.

Each die is clearly identified and color coded. This color coding, in combination with the roll pins, insures against installation mistakes. Changing dies is a matter of one screw. Remove the die you wish to change and replace it with a new die.

Standard dies are secured in place with 10-32x5/8" screws - these accompany the machine. When a special die requires a longer screw, it is supplied with the die.

Most cutting and forming needs are covered with the standard dies we offer. However, if you have unusual requirements, GPD Global® will be pleased to design custom dies for you. Your GPD Global® representative will be happy to assist you with any custom die orders.

Foot Switch

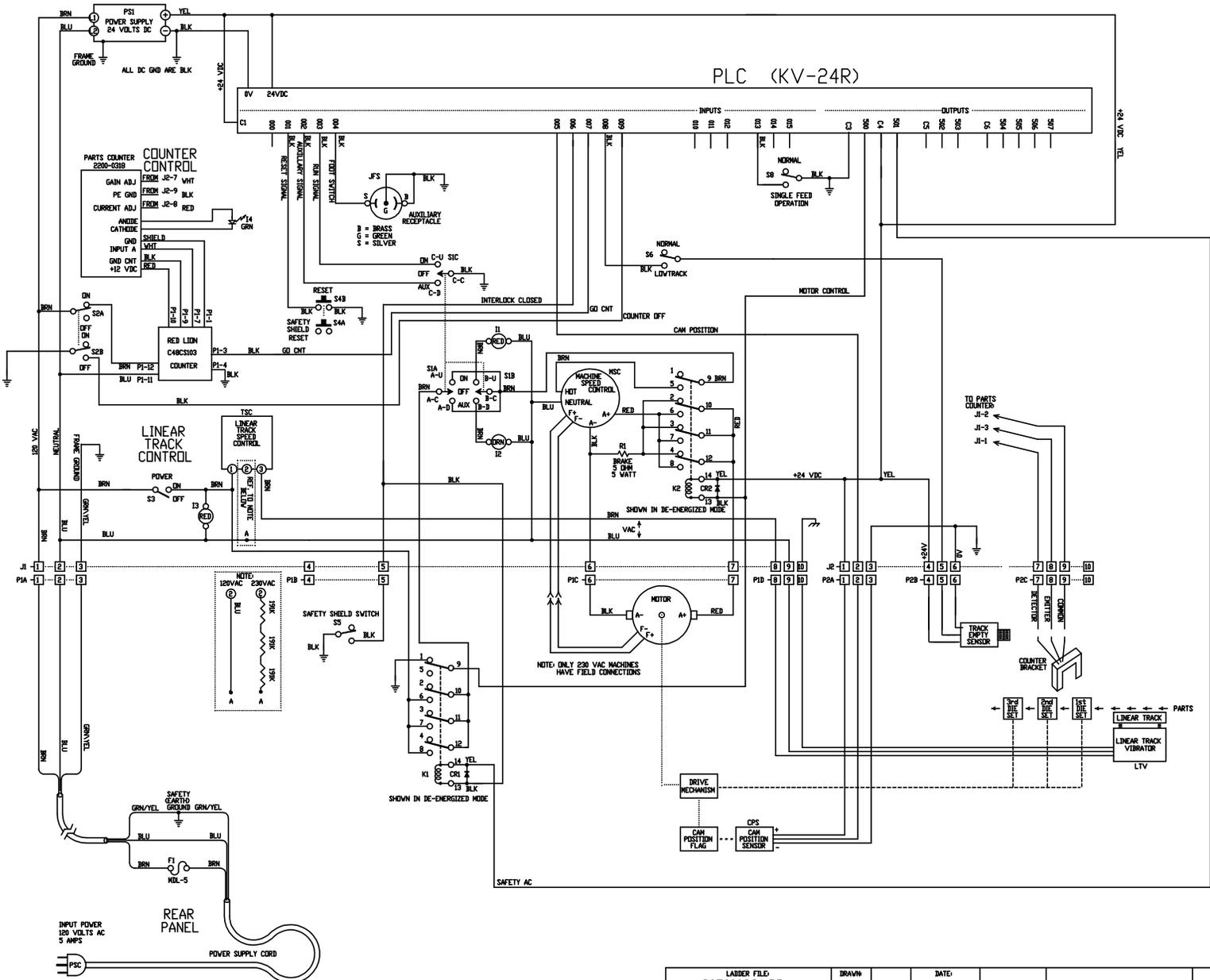
The foot switch is a real operator convenience. After easily installing the foot switch, the operator need only position the CF-10 power switch to AUX, set the speed control to the desired setting, and then depress the foot switch to single step machine operations.

Foot switch installation:

1. Turn the CF-10 power switch to OFF.
2. Set the CF-10 speed control to zero (0).
3. Insert the foot switch plug into the accessory outlet located on the control panel and turn **clockwise** to lock it in place.
4. Set the CF-10 power switch to AUX.
5. Set the CF-10 speed control to the desired operating speed.

Appendix E - Electrical Schematics

<u>Drawing Title</u>	<u>Drawing Number</u>
CF-10 Electrical Schematic	10028-010-001-02
CF-10 Electrical Schematic	00018-010-001-07
CF-10 Speed Control Assembly	00018-010-002-00
Counter Interface Assembly	30016-008-002

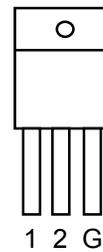
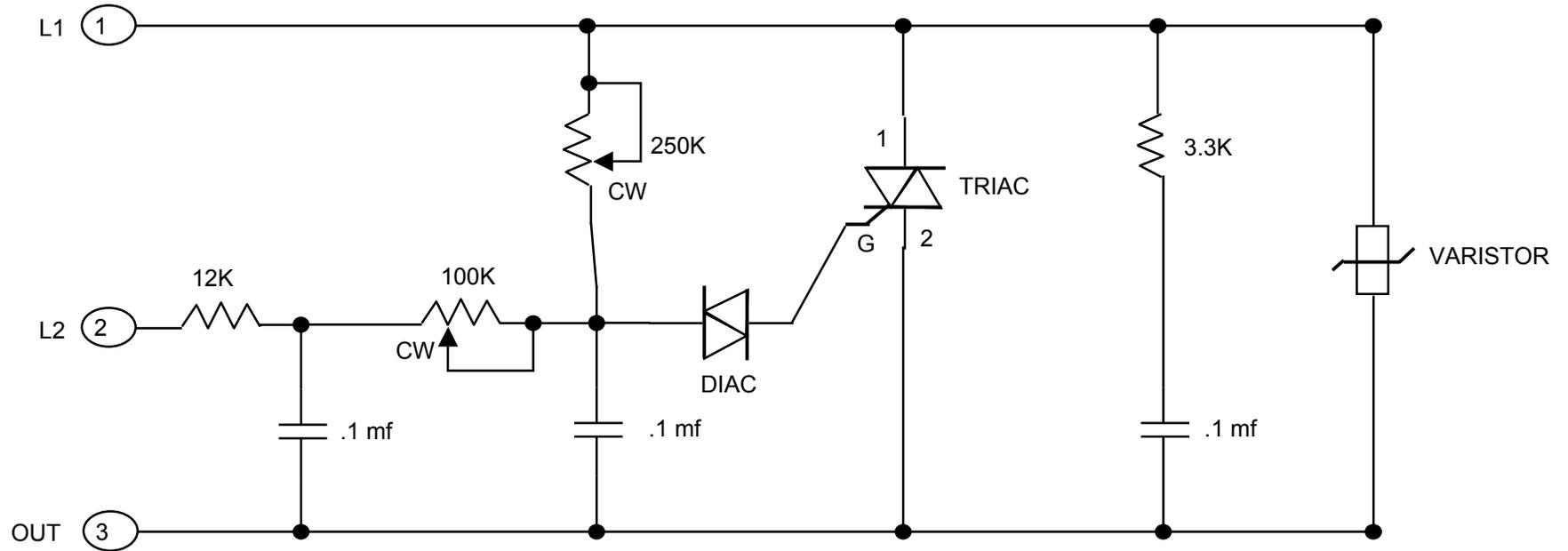


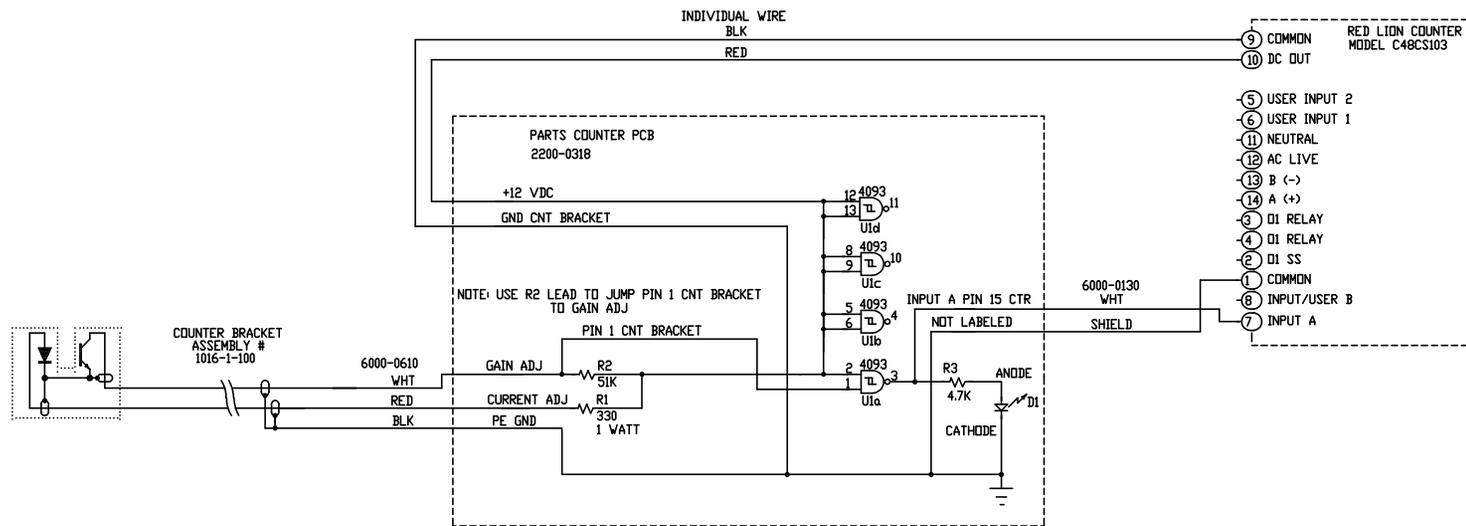
PLC (KV-24R)

GPD GLOBAL®

LABOR FILE: 20500028.LDR	DRAWN: SAH	DATE: 12-27-10	NAME: CF-10 ELECTRICAL SCHEMATIC	DRWG NUMBER: 00018-010-001-07
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2200-0056=120VAC
2200-0072=230VAC





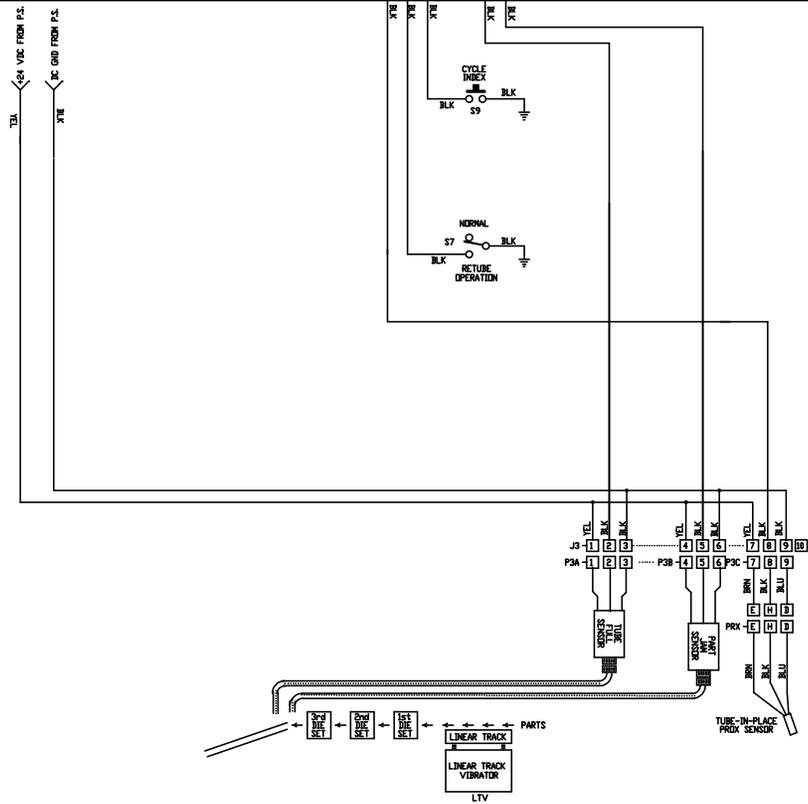
GPD GLOBAL®

DRAWN: SAH	USED ON: CF10	DATE: 12-27-10	NAME: PARTS COUNTER	DRWG NUMBER: 30016-008-002-00
------------	---------------	----------------	---------------------	-------------------------------

PLC (KV-24R)

0V 24VDC									
INPUTS									
CI	08	09	10	11	12	13	14	15	16

OUTPUTS									
CO	01	02	03	04	05	06	07	08	09



Appendix F - PLC Ladder Logic

<u>Title</u>	<u>Number</u>
PLC Ladder Logic	20500028.LDR(KV24(40)A/D)
with text labeling (pages 46-47)	
with numeric labeling (pages 48-49)	

with TEXT Labels

