

# Instruction Manual

MANCC-60-XX

Rev. A122322

## CC-60-XX CHIP CHANGER



Serial Number: \_\_\_\_\_



**EDDYCO.COM**

**Eddy Company**

13590 Niabi Road

Apple Valley, CA 92308

Phone: 760-961-8457 Fax: 760-961-8458

Internet: [www.eddyco.com](http://www.eddyco.com)

NOTE:

THE INFORMATION AND DATA IN THIS MANUAL IS SUBJECT TO CHANGE. PLEASE CONTACT THE EDDY CO. FOR THE MOST UPDATED VERSION

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## BASIC DESCRIPTION

The CC-60-XX Chip Changer uses 0.85” square BK7 chips that are 0.06” thick. Each chip is staggered 45° from each other and rotates 1/8 turn for each chip drop. The stack is supported by the bottom chips corners. When the stack rotates the corners fall through the square shaped opening and the stack is then caught by the next chip by it’s corners. The chips are loaded into a magazine and each one can hold 45 chips. A glass shield covers the chip stack allowing the heat in but keeping them, and the mechanism, from being coated.

## CHIP CLEANING

**ATTENTION**

Witness Chips must be thoroughly cleaned. They should be cleaned as well as the parts you are going to coat. We recommend an ultrasonic cleaning for a min of 5 min., a DI water rinse, then dip in alcohol vapor to dry.

## LIMITED WARRANTY

This CC-60-XX Chip Changer is warranted against defects in materials and workmanship for a period of one year from the date of shipment to the original purchaser. This warranty will be void if the instrument is not properly operated under conditions of normal use and if normal and accepted maintenance protocols are not performed.

Defects resulting from, or repairs necessitated by, improper installation, misuse, negligence, accident or corrosion of the equipment or any cause other than defective materials or workmanship are not covered by this warranty. No other warranties are expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Eddy Company is not liable for consequential damages resulting from the use of this equipment.

Purchaser's sole and exclusive remedy under the above warranty is limited to Eddy Company, at its option, repairing or replacing any item which proves to be defective during the warranty period provided the item is returned to Eddy Company together with a written statement of the problem encountered. Any such obligation on the seller's part is subject to the following requirements: 1) Defect must be promptly reported to the seller, 2) If so advised by the seller, component must be returned to the seller, no later than seven (7) days after the end of the warranty period, and 3) On examination by the seller the part or component must be found to comply with the above warranty. Any item claimed to be defective during the warranty period must be returned to the builder with the transportation charged prepaid. Return transportation charges will be paid by the purchaser. In the event that the seller elects to refund the purchase price, the instrument shall be the property of the seller and shall be promptly shipped back to the seller at the seller's expense. Eddy Company reserves the sole right to determine whether service is covered by the warranty.

If there are any questions about any of the equipment, parts or service call Eddy Company. For all repairs, whether or not they are covered by the warranty, call Eddy Company service line or our internet address.

Phone Number: 760-961-8457

Internet: [www.eddyco.com](http://www.eddyco.com)

If the equipment needs to be returned for any reason you will be given a Return Material Authorization (RMA) number.

## UNPACKING

1. Completely unpack the instrument. Your CC-60-XX was released to the carrier in good condition and properly packed. It is essential to examine the contents of the shipment to ensure that no damage occurred during transit.
2. Compare the shipped materials to the packing list. Items included with your CC-60-XX Chip Changer are:
  - a. CC-60-XX Chip Changer.
  - b. Power Supply/Interface Cable 20ft.
  - c. (4) 6-32 1-1/4" Mounting Screws
  - d. (1) 2-133 O-ring
  - e. Chip Removal Tool
  - f. (1) Glass Shield Tubes
  - g. Glass Shield Holder
  - h. (3) Boxes of Square Chips - 65 ea.
  - i. Chip Magazine Alignment Tool (Not Pictured)
  - j. Line Cord



3. Call Eddy Company first if there are any problems.

Phone: 760-961-8457

Fax: 760-961-8458

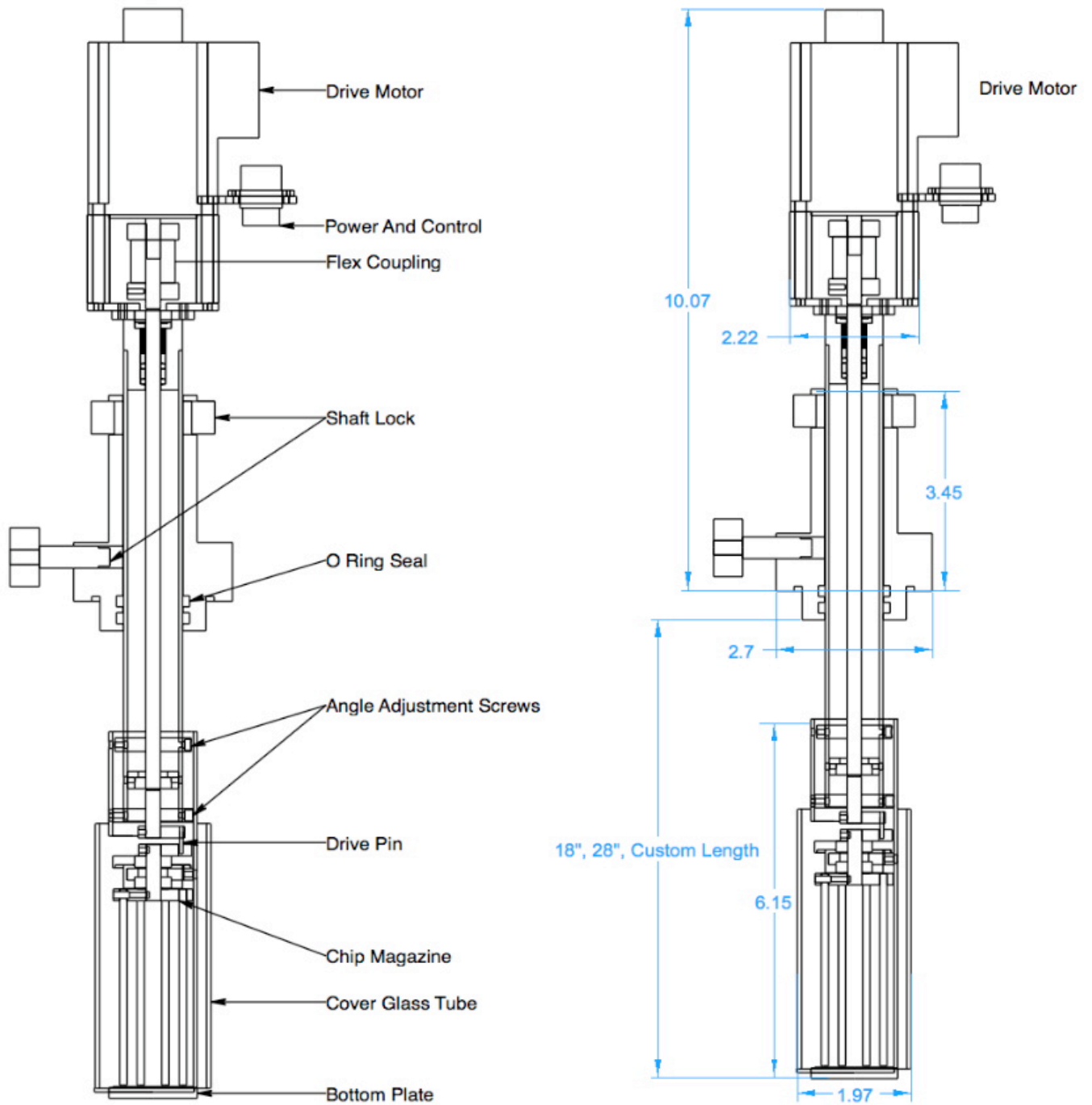
Email: [tech\\_support@eddyco.com](mailto:tech_support@eddyco.com)

## USER RESPONSIBILITY

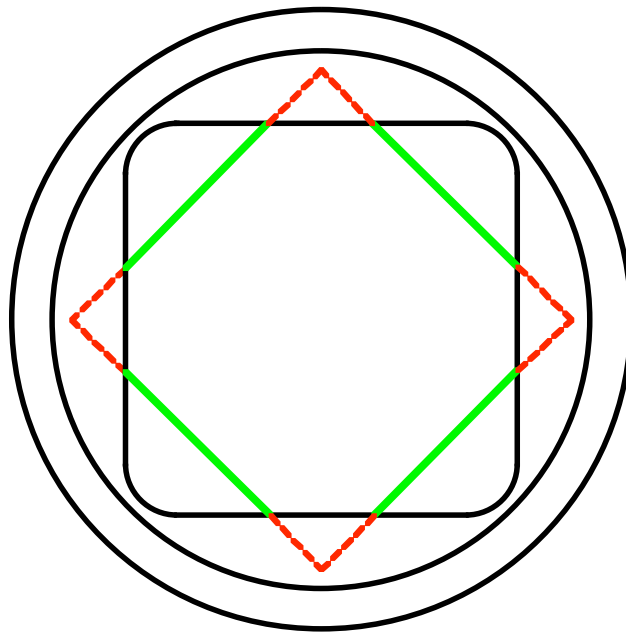
The equipment will perform in accordance with the instructions and information contained in the user's manual when the equipment is installed, operated, and maintained in compliance with the instructions. Equipment should be checked periodically, routine maintenance performed and broken or non-working parts replaced immediately.

The user/purchaser shall have sole responsibility for any malfunctions resulting from their improper use or lack of maintenance of the equipment.

# CC-60-XX Description

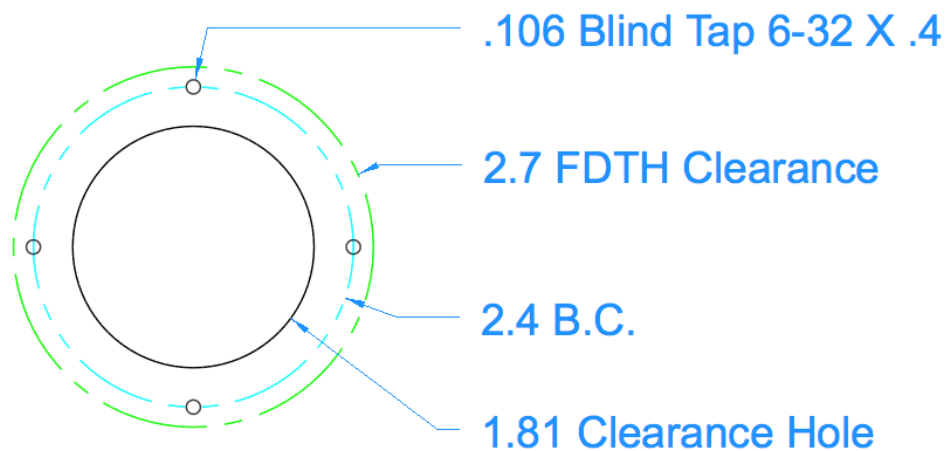


## CC-60-XX Description



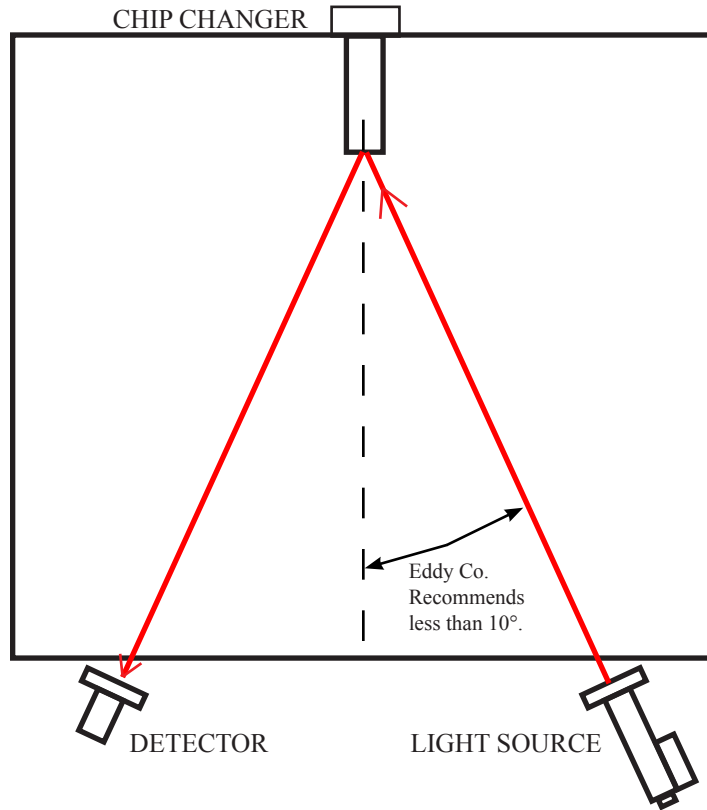
Bottom Plate as seen  
from underneath.

This drawing shows how the chip sits on the bottom plate. The chip is in green and the red dashed corners are where the chip is held. As the motor turns the chip the corners will match the corners of the square hole allowing the chip to drop through. The chip behind it will then fall and its corners will hold it and the entire stack of chips in place. Each turn is  $45^\circ$  and 8 chip drop cycles is 1 full rotation. It is recommended that the chip be set so that when it reaches the dropping point the chip drop motor will move past the  $45^\circ$  off mark. This helps to insure that there is enough motion to properly drop a chip and it does not become stuck. It is really easy to adjust. With power to the motor OFF set the chip just as seen in the image above. Now turn the power to the motor ON and carefully turn the motor adjust knob clockwise, as seen from the top, two clicks. This will advance the chip by roughly  $14^\circ$ . This makes it so that there is less than  $45^\circ$  of travel to the drop point and virtually eliminates chip jams.

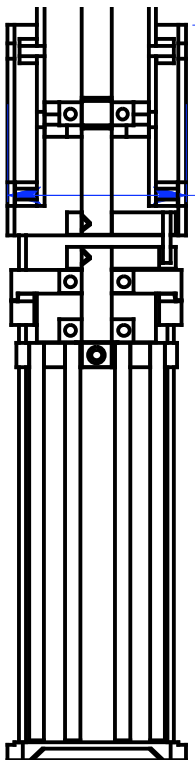


To install the CC-60-XX you will need to have the following hole pattern. The screw holes should be 0.4" deep and the screws should 6-32 x 1 1/4" long.

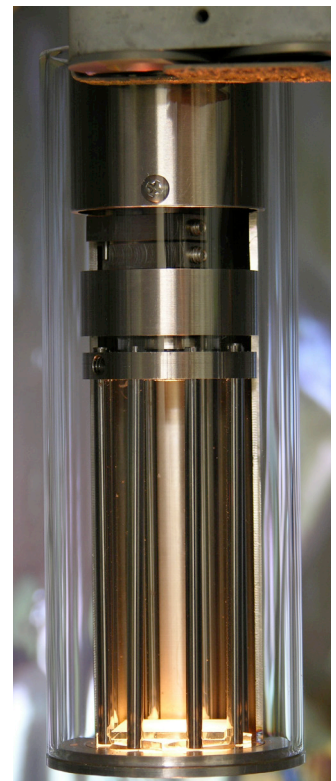
## TYPICAL SETUP



Minor adjustments to the angle of the chip changer head can be made using 6 screws located just above the chip magazine. Once the right angle has been achieved carefully go over all the screws to make sure they are tight. Heating and cooling cycles may loosen these screws if not tightened properly.



The portion of the chip changer as seen in the drawing to the left and the image to the right is called the chip changer head.



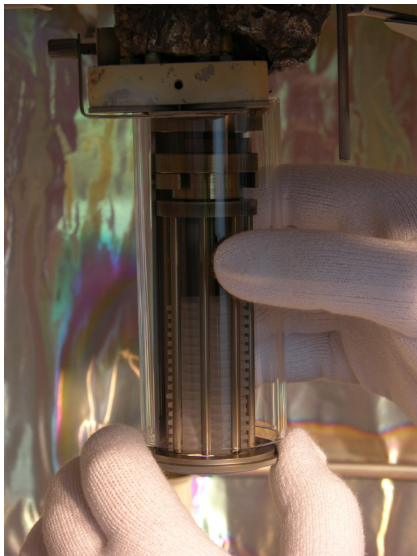


## HOW TO USE

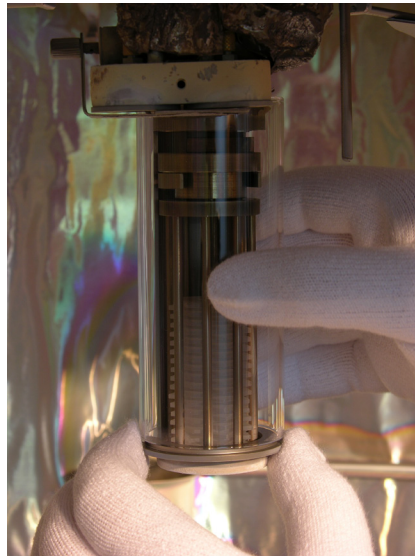
First step is to remove the glass shield. To do this lift the glass shield up about 1/4" up. Then lift the glass shield holder up and then pull toward you. Now you can drop the glass shield straight down.

Second step is to get your chip removal tool and using a finger gently push up from the bottom of the stack to raise the chips up just enough to insert the tool. Once the tool is in gently raise it up until the chips reach the top and push the whole chip magazine up about 1/8" then pull out gently. Make sure to keep your other hand on the magazine so that it does not slip off the removal tool.

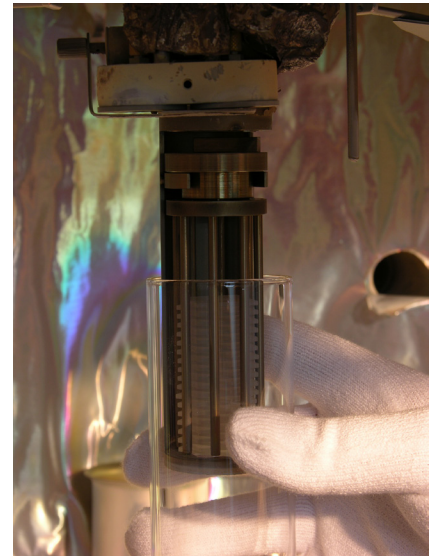
Now if there are any chips in the magazine you must remove the one that was last exposed. This chip is most likely coated but don't throw it away, we will need to put it back in later. Before removing the chip removal tool use the screw hole in the plate that the rods are welded into as a reference so that when we are ready to put the magazine back in the notch in the top of the magazine will be able to align properly with the pin. So add your chips, up to 45, and the last chip should be the coated one you removed before. Make sure that when you put the chip removal tool back in when you are ready to load the magazine into the chip changer that the chip is being held by its corners.



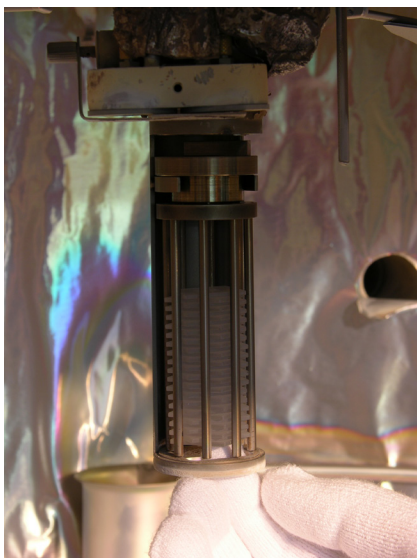
Lift glass tube and grab holder.



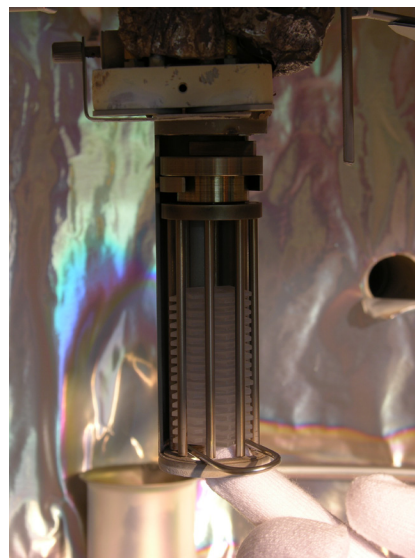
Lift holder and pull straight out.



Drop glass tube down.



Lift chip stack with finger.



Insert chip removal tool.



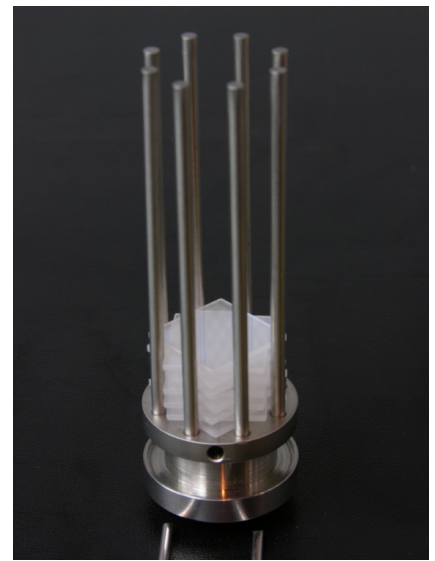
Lift chip stack and lift magazine, then pull straight out.



Set magazine upside down.



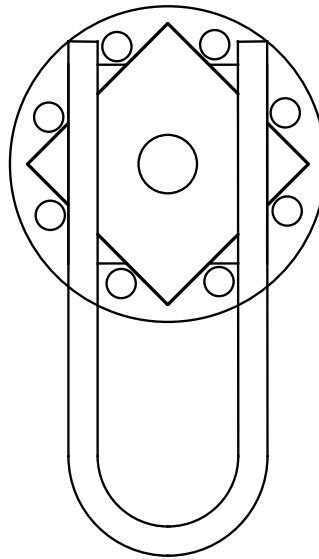
Remove tool and coated chip.



Add more chips.



Place coated chip back and then put in the removal tool.



Removal tool orientation to chip stack in magazine.

To return the magazine back to the chip changer follow the steps in reverse order.

First hold the magazine and the removal tool. While keeping the chips pressed toward the plate turn over. Insert into the chip changer, line up the notch with the pin and ensure that the magazine sits in the groove. Slowly move the stack down and then quickly remove the chip tool. Slide the glass shield over the chip changer head and insert the shield holder. Make sure the holder sits flush with the end of the chip changer head and that the glass shield sits flush on the shield holder.

Change the glass shield as needed. This will vary depending on the coating being applied. Some coatings may block the IR energy from passing through. The glass shield protects the chips as well as allows the chip stack to be heated by the heater lamps and not a secondary heat source.

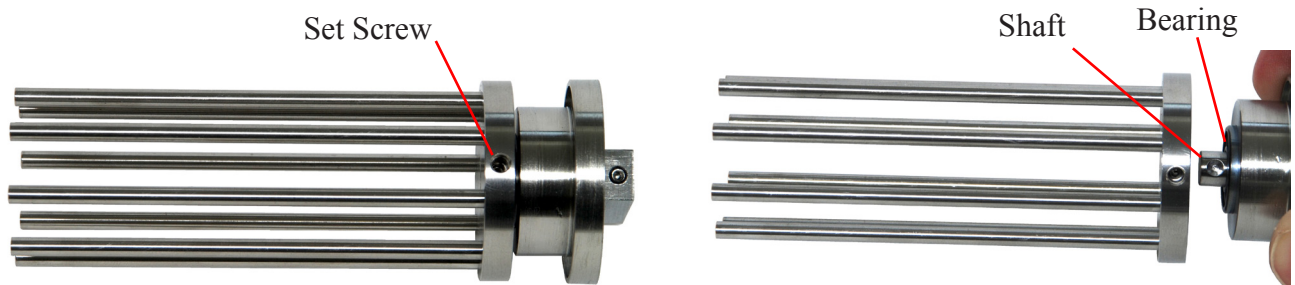
## Chip Magazine Alignment Tool

The rods on the chip magazine will occasionally need adjustment from getting squeezed, or dropped. The rods must be aligned as well as possible so as not to grab the witness chips or touch the back wall of the chip changer head.



Chip Magazine Alignment Tool with Thumb screw and washer.

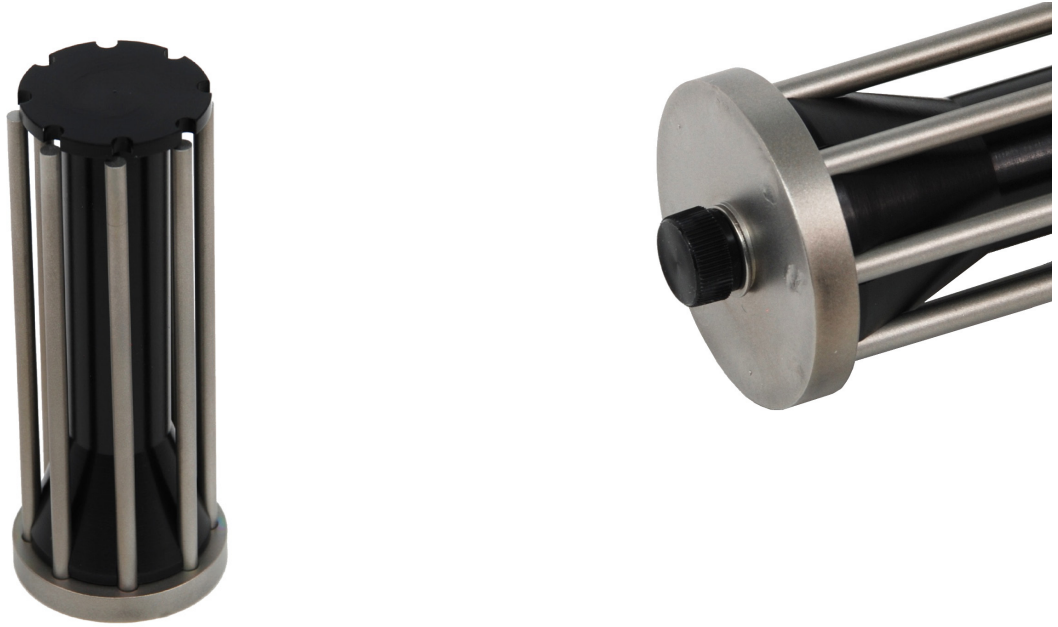
First step is to remove the section with the rods from the bearing assembly. You will need a 0.050 or a 1/16 Allen Key to loosen the set screw. Once loose, gently pull the rod half off of the center shaft. Be careful not to drop the ceramic bearing.



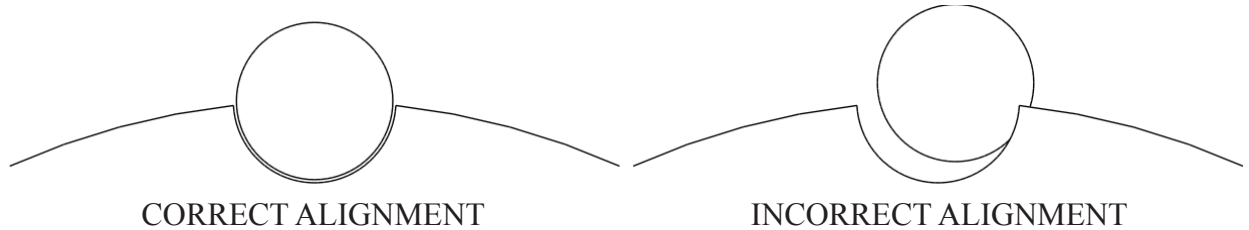
Now that the rod section is off set it down on a flat surface. Take the adjustment tool and at an angle start three to four rods in the indents on the thick end. Once you have a few rods started work your way around until you get all the rods aligned with the indents.



With all the rods in the indents push the tool all the way down. Then take the thumbscrew and washer and screw it into the end of the chip magazine. Make sure it is snug and always handle the chip magazine by the disc that the rods are welded into. Do not exert force on the rods while handling.



With the tool and chip magazine secured we may now check the alignment of the rods. In the illustration below there are two examples one that is correct and one that is incorrect. When looking at the end of the rods they want to be centered in the indents at the end of the tool. If they are not centered then they need to be pulled into place so they appear as the correct example.



Below is an example using a chip magazine and alignment tool. You can see that the one on the left has many rods out of alignment and the image on the right is after they were corrected.



To correct rods that are out of alignment you will need to hold the tool and chip magazine in one hand without touching the rods. Using your other hand you will pull and push on one rod at a time to get it into the correct alignment. We recommend that you start by pulling or pushing just a little so you can see how much force it will take to get the rod in place. Little steps are better than trying to move it too much at one time. They do not need to be perfect, just get them as close as you can.

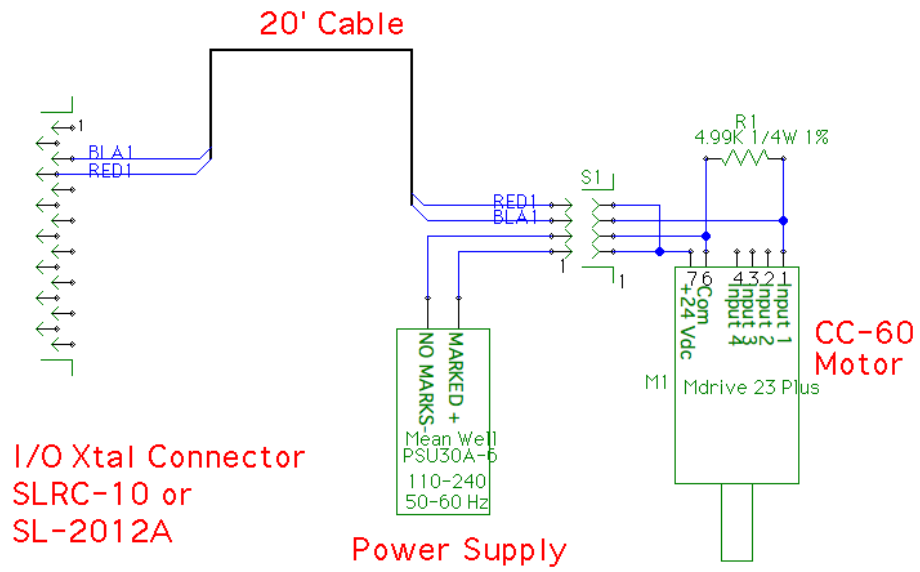


Once you have aligned all of the rods you can carefully remove the alignment tool and place the chip magazine back onto the bearing assembly. We recommend that this be done every 1-2 months. This would also be a good time to sandblast the coating buildup on the chip magazine.

**NOTE: Always sandblast prior to aligning.**

We also offer to align the chip magazine for you if you would prefer. We will sandblast and align the chip magazine for free, you just pay S/H charges.

# SCHEMATIC



To trigger the motor simply close, then open, the RED & BLA wires on the 20' cable.  
The motor will make a 1/8 turn and stop.

## TROUBLESHOOTING

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- Chip did not drop

Check to make sure that the chip is sitting at an angle of less than 45° to the drop hole. If it is exactly 45° it may not drop. See Pg. 5

There may be a contaminant such as coating buildup on the underside of the bottom plate.

Chip magazine rod(s) may be bent.

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- Low signal

Check for debris on the bottom plate. Debris on bottom plate will cause mis-alignment in your light path.

Check the six gimbal adjustment screws and make sure they are tight.

Check your optical path alignment.

Check to make sure that the chip is sitting at an angle of less than 45° to the drop hole. If it is exactly 45° it may not drop. See Pg. 5

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- Motor Issues

If you are having any issues with the pre-programmed motor please contact the Eddy Co. for assistance.

Here is a copy of the motor program.

PG 100

LB SU

A=1000

S1=0,1,1

S5=9

A 100

D 100

LB Wa

BR M1,I1=1

SL=0

BR Wa,I1=0

LB M1

H 500

MR -6400

H 10000

BR Wa

E

PG