CH-CM0206 Double Servo Auto-Cut CNC Carbide Rod Cut-Off Machine - Single Rod

Operation Manual

Machine Serial No. 202107-92

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1. Basic Machine Information

1.1 Product Description

The CH-CM0206 Double Servo Automatic Cut-Off Machine is used to execute cut-off function. It is used for cutting tungsten carbide bar, hardened steel and Carbon tube. **Other uses are strictly prohibited. It is not applicable to process flammable materials such as magnesium and rubber, wood, and poisonous materials, etc.**

A full cover with a metal plate is provided to protect the operator's safety. Conversational program settings and a touch screen allows the operator to easily set up parameters to achieve the ideal working condition.

1.2 Material Characteristics

Steel derives its mechanical properties from a combination of chemical composition, heat treatment, and manufacturing processes. While the major constituent of steel is iron, the addition of very small quantities of other elements can have a marked effect upon the properties of the steel. The strength of steel can be increased by the addition of alloys such as manganese, niobium, and vanadium. However, these alloy additions can also adversely affect other properties, such as ductility, toughness, and weldability.

1.3 Product Features

- Automatic loading and unloading; no collision of workpiece end face; no need for manual loading or unloading.
- Executes precise cut-off.
- User-friendly interface: numerical values for processing can be changed quickly.
- Wheel wear of the outer diameter can be compensated to ensure grinding size consistency.
- X-Y table controlled by servo motor.
- High precision grinding spindle.
- Material operation in V tray provides an excellent after-cut surface of bars.

1.4 Machine Specifications

Machine Dimensions: 2000mm L x 1300mm W x 1880mm H; 800 kg weight

Machine Capacity:

Item	Dimension (mm) min - max	Dimension (inches) min – max
Bar OD	1.4 – 40	0.055 - 1.57
Bar Length	80 – 420	3.15 – 16.54
Min Cut Length	5	0.197

Pneumatic Requirements:

Rated Pressure	6.0 bar
Humidity	Compressed air must be dried.
Compressed Air Cleanliness	Compressed air must be filtered.
Compressed Air Consumption	50 L/min.

Electrical Requirements:

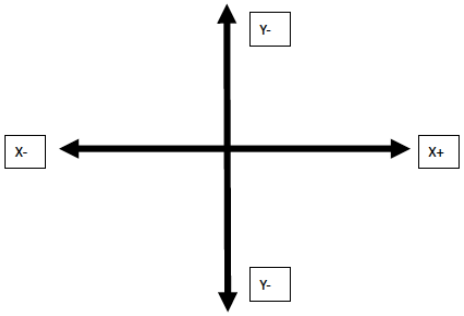
Input Voltage	3Ø 220V AC
Frequency	60 Hz
Power Consumption	4.5KW
Current	20A
Breaker Capacity	20A
Wire Size	12 AWG

Environmental Requirements:

- Machine should not be under direct sunlight.
- The ambient humidity must be less than 95% and free of condensation. Excessive humidity must be avoided due to many sensitive electronic parts.
- The ground of the shop floor must be flat for machine installation. Unstable installation may lead to poor quality of control and other side effects from coolant and lubrication system.
- The machine must not be subject to chips scattered from other machines or airborne dust.
- Required maintenance space must be reserved. The door should be able to open freely. The chip bucket and coolant tank can also be pulled out from the machine without interference.
- The ground must be capable of absorbing the vibrations of other machines.
- If vibration problems cannot be solved and still transfer to machine, then it should be quantified by using a vibrometer. The vibration level must be lower than 0.5G.

1.5 Definition of Axis

X-Axis: Feeder
Y-Axis: Cutting Wheel



2. Safety Regulations

The CH-CM0206 is equipped with safety devices to protect the operator from harm. The operator must have proper accreditation and training and must read the operating instructions carefully before using the machine. The following risks may occur due to operator error:

- Injury to the operator.
- Damage to company machinery or other tangible assets.
- Reduced machine efficiency.

Any machine modification made without permission is prohibited, as modification would affect the equipment and personnel safety. The operations, services, and maintenance situations described in this manual must be strictly obeyed.

Added devices should not impact the safety regulations/operation manual.

Emergency safety switches must be able to operate by touch.

2.1 Noise Generation

Continuous noise generation by the CH-CM0206 Cut-Off Machine is below 70 dB (A), not including those from the optional oil mist collector.

The figures quoted are emission levels and are not necessarily safe work levels. While there is a correlation between emission levels and exposure levels, this cannot be used reliably to determine whether further precautions are required. Factors that influence the actual level of workpiece exposure include the duration of noise (i.e., the number of other adjacent machines). **The permissible exposure levels can vary from country to country.**

2.2 Dangerous Points

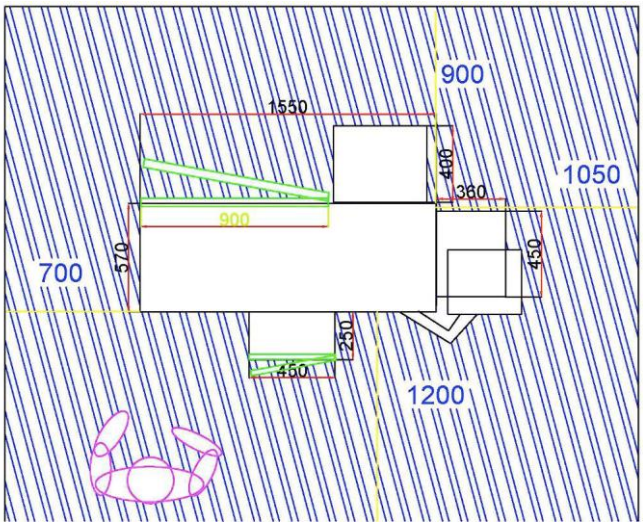
CH-CM0206 uses a high-precision grinding spindle. Maximum speed is as high as 2300 RPM. Contact with the rotating spindle may cause injury to the operator from friction or tearing.

Debris particles may spring off rotating defective objects and hurt eyes that are not protected.

Stop equipment operation before maintenance and cleaning.

2.3 Work Area

The work area is in front of the machine where you can see the user interface.



Do not stand or lean on the machine while it is operating. Do not sit on the electricity distribution box of the loader.

2.4 Qualified Operator

Only qualified operators should use the CH-CM0206 Cut-Off Machine. This responsibility of operating the machine must be clearly regulated and limited. The company who operates this equipment must designate a responsible person to run the CH-CM0206 and must make sure that the operator has read the manual completely and understands how to use the machine. Unclear responsibilities will induce risks.

2.5 Personal Protective Devices

Put on goggles while operating the machine to avoid being hurt by spattering micro-particles, especially when the machine is operated in automatic mode or with the safety door open. **Do not clean the machine with an air hose. Do not remove chips with hands. Use a hook or similar device and make certain that all machine movements have ceased.**

2.6 Safety Measures at the Installation Site

The CH-CM0206 Cut-Off Machine must be installed on a stable, level, and fixed ground. The working environment must always be kept clean and open.

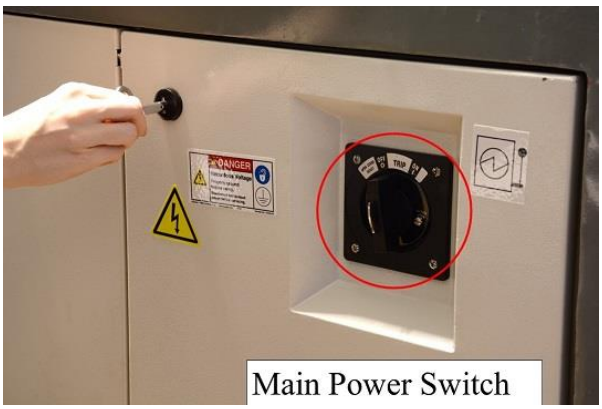
2.7 Safety Devices

The CH-CM0206 Cut-Off Machine will stop by the following switches:

- Emergency safety switch
- Front safety door lock

❖ Machine main power switch

Emergency Stop Button



Main Power Switch

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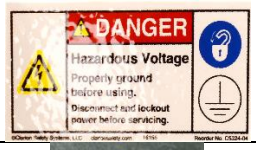
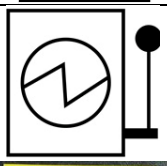
Internal Inspection Schedule:

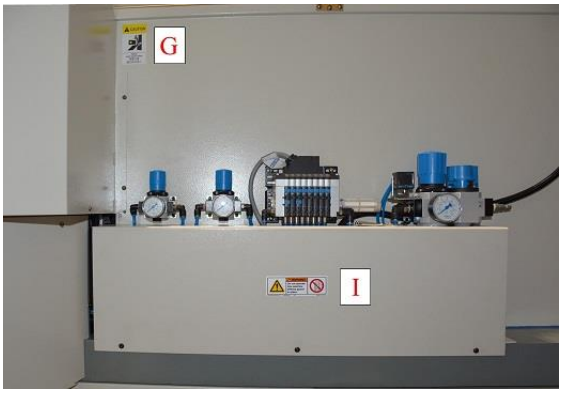
- ❖ At each restart (after operation is interrupted)
- ❖ Once every week while machine is in operation
- ❖ After each maintenance or repair

Safety Door Switch

2.8 Safety Labels

Safety Sign	Description	Mark
	Position of fork lifter fork	A
	Caution label asking operator to use eye protection	B
	Danger! Hazardous voltage	
	Warning! Electric Shock	D
	Marking of inlet/drain port for oil	E
	Main Power Switch	F
	Safety sign to ask operator to avoid putting hand in	G
	Motor rotation direction	H
	Warning about operating machine without guard in place	I

2.9 Position of Safety Labels



2.10 Emergency Handling and Operation

When the emergency and safety function is started, the machine (including the motor) will be stopped and all commands reset.

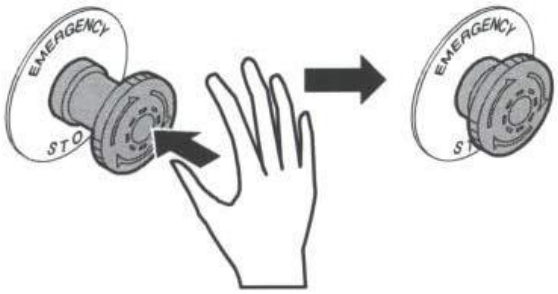
In case of an emergency stop with the emergency switch, the main magnet contactor inside the main power distribution box is shut off. Unless the power on the factory side is turned off, the main breaker and the primary side of the main magnet contactor has been still energized. So, be sure to turn off the main breaker on the system and factory side. **Touching terminals may cause fatal electrical shock.**

The emergency stop switch has the following features:

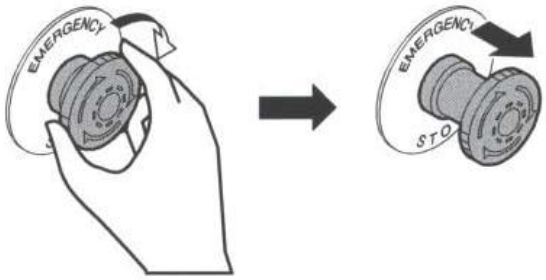
- The emergency stop circuit is independent.
- Pressing the emergency stop switch shut off all power to the system.
- When resetting the emergency stop condition, turn the switch right. Resetting the switch enables the user to turn on the power of the system.

Operation procedure:

1. Press the emergency stop switch when danger is recognized.



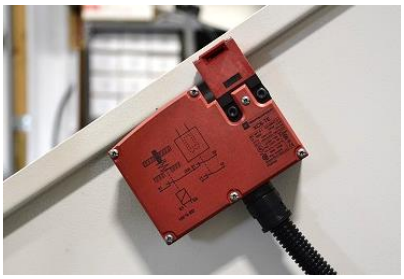
2. After pressing the emergency stop switch, keep it in the off position. To turn on the power, turn right and reset the emergency stop switch again. The emergency stop switch becomes on and enables the operator to turn on the power.



2.11 Door Interlock Device

Door open procedure:

1. Turn the mode key selector to setting mode.
2. Open the interlock door.
3. When the guard is opened, the machine will stop moving.



Keep the door open:

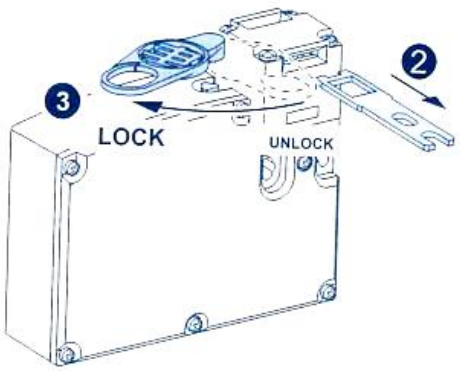
- When the machine power is on
- When using the key to turn to the open position (Interlock function off)
- If you need to cancel the safety function from system parameters

Keep the door closed:

- When the machine is running, the door is locked and cannot open
- When the power is off, the door is locked

Reset the safety door lock:

- When the system safety door lock function is on, turn the switch below unlock position



2.12 Grinding Wheel Protective Device

Each machine will attach a wheel cover to protect the operator. The cover should not be taken off without the permission of the machine supplier.

2.13 Treatment of Waste

The disposal of wastes (such as oil coolant and chips) must comply with local regulations.

Item	Treatment
Cooling Oil and Coolant	Ask the supplier to recycle
Waste of material powder (Carbide and HSS)	Ask qualified powder recycling company to handle the waste

2.14 Environmental Illumination Requirements

Keep area around machine well-lit (>300 lux) and dry. This will protect the operator and provide a sufficient working condition.

2.15 Andon Colors Indicated Light Meaning

Color	Meaning	Explanation
Green	Normal	The green light will be lit when the machine is in normal operation. Program edits may not be made at this point.
Yellow	Program End	After operation, the yellow light will be lit, and program edits can be made.
Red	Emergency	The red light will flash twice per second when the machine is signaling an alert. The red light will also be lit when the emergency button is pressed.

2.16 Release Procedure

If the personnel is trapped by axes movement, then follow this release procedure:

Power ON:

1. Press the EMG STOP button to stop all movements.
2. The power of spindle and axis movement will be removed.
3. The interlocking doors (front door, magazine door) can then be opened.

Power OFF:

1. Make sure the EMG STOP is pressed.
2. Turn on the main breaker switch.
3. The interlocking doors (front door, magazine door) can then be opened.

3. Moving and Installation

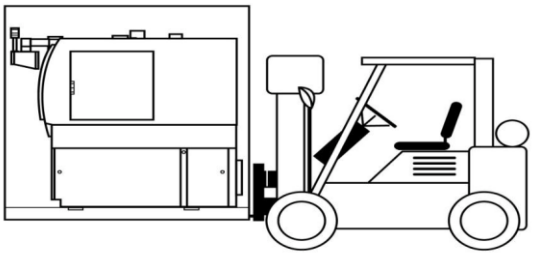
3.1 Moving the Wooden Case

The CH-CM0206 Cut-Off Machine arrives fixed in a wooden case; total gross weight is 1020 kg.

To move the wooden case, please use a forklift and follow these instructions:

- Keep machine upward during delivery and transportation.
- Do not shake the machine or let it fall. Watch for the position of the center of gravity.
- Only move the machine with a forklift.
- Minimum lifting weight for the forklift is 2000 kg.
- Watch your surroundings while moving the machine.

The center of gravity is around the central position.



The forklift truck should have a minimum capacity of 2 tons.
The lifting forks' extension length minimum is 2.5 m.

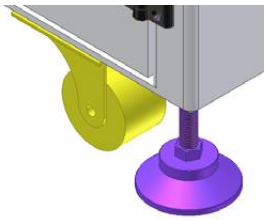
3.2 Dismantling

Once the machine is ready to be removed from the crate, please dismantle the wooden case then move the machine by forklift to the exact position for operation. Then take off all wrap and protective film.

3.3 Installation and Connections

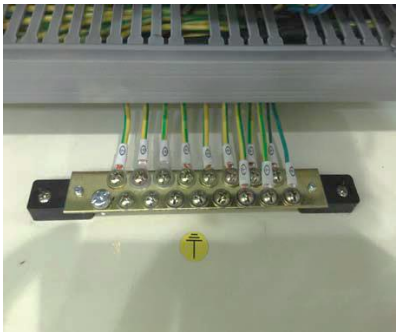
The CH-CM0206 Cut-Off Machine must be installed on stable and fixed ground.

1. Use 4 base screws for level adjustment.



2. Install power connections (qualified electrical technicians only): 220V 3-phase 60 Hz

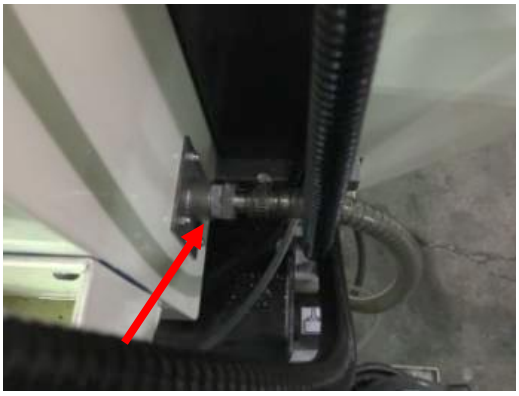
Power Connection



Earth Ground Terminal

3. Install pneumatic source connection lines at the connection points behind the machine.
    a. Pressure: 6 bar
    b. Pneumatic Inlet: 90º copper fitting, 3/8” female thread type; 3/8” male thread type plus C type quick fittings 3/8” male PT thread

4. Install the inlet hose of coolant and outlet pipe of return coolant, as well as the coolant motor power.



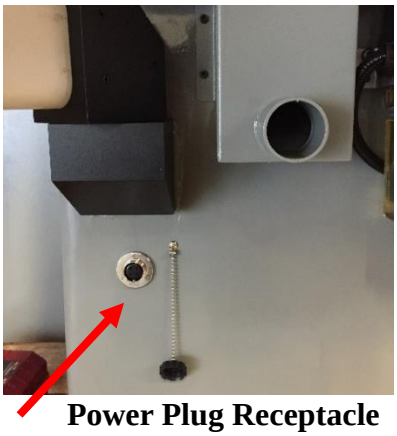
Coolant Inlet

Coolant Outlet

5. Connect the pipe of oil mist exhaust and power. The outlet of the hole is 100mm out diameter.

6. Place coolant outlet hose with attached filter in the drain grate.

7. Connect the filter pump plug to power receptacle on the machine.



Power Plug Receptacle

Filter Pump Line/plug

8. Fill coolant tank with 27 gallons of water and rust inhibitor. Refer to 100L filtration manual for full details.

4. Basic Operation

4.1 Machine Check Before Operation

Before daily operation, check the following:

- ❖ Appearance of the machine to see if there are any abnormal conditions.
- ❖ Inside of the machine, especially the X axis (feeder) and Y axis (Cut-off wheel) position
- ❖ Appearance of the cut-off wheel (rotate the wheel by hand with gloves) to see if there is any chip on it. If the wheel is not in good condition, the wheel needs to be changed.

4.2 Machine Start and Stop

Machine Start:

1. Connect the 3-phase wire power.
2. Turn on the power switch.
3. Turn on the panel power switch.
4. After program start, release the emergency button.
5. Press the cutting button to return all axes to home position.

Machine Stop:

1. Switch to manual mode.
2. Press the emergency button.
3. Turn off the panel power switch.
4. Turn off the main power switch.
5. Disconnect the 3-phase wire power.

4.3 Material Load and Unload

Material Load:

1. Measure the material total length and diameter.

2. Put material into the load box, making sure the material is against the right side.

3. Adjust the loading box fork to make sure the fork's depth is good for the material OD.

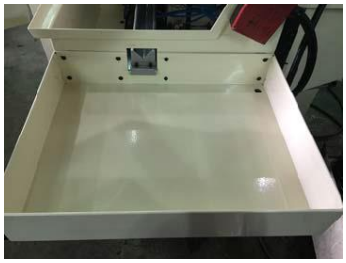
4. In manual mode, check the load function of the machine.

5. Check to make sure the fork can lift the material.

6. Check to make sure that load box can filter bar to let only one bar go up to waiting position through the load box screws (or spring ball).

7. Check that the bar will stop at standby position by the proximity switch.

Material Unload:



1. Material will be pushed out into the unload box with offcuts. Collect the finished material from the unload box.

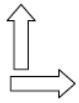
4.4 Control Panel Diagram and Descriptions

Main Power: On/off switch for machine.

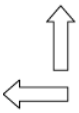
Mode Switch: Switch to Manual/Single/Auto mode. Control by key; single mode can control the machine light as well.

Motor: On/Off for the cut-off motor. When the machine cover is open, the motor will not function, even if the motor is switched to on.

F-R / U-D: Switch to control the Y axis (move Feeder forward/backward) and X axis (move saw up/down) in Manual mode



Moves the cutting wheel up/down (Jog mode) when controlling X axis in Manual mode



Moves the feeder forward/backward (Jog mode) when controlling Y axis in Manual mode

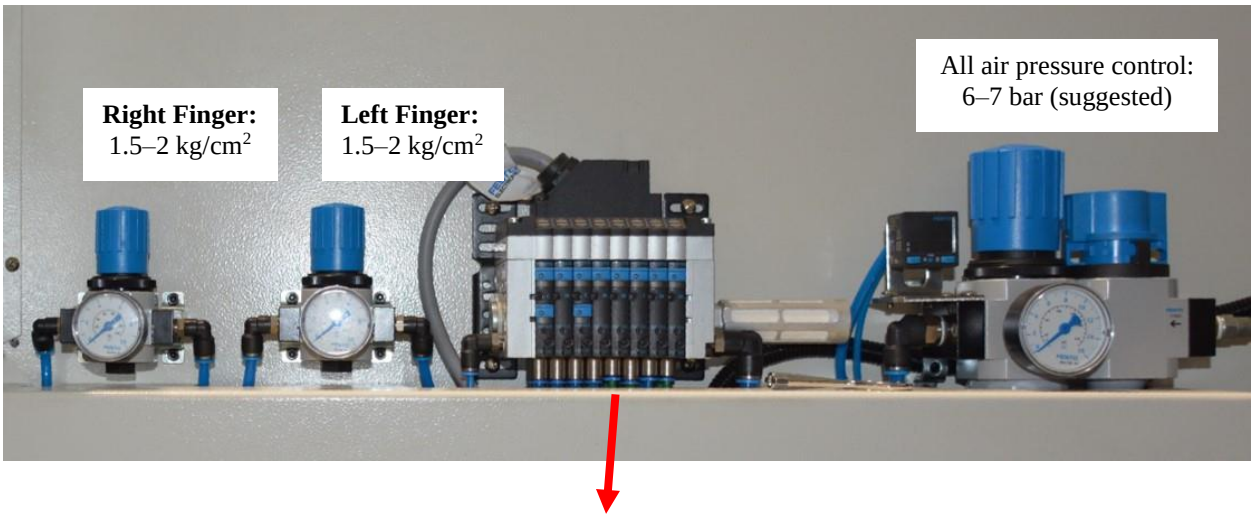
Emergency Stop: Press when you need to stop the machine immediately.

Cut Speed: Control the cut-off speed when the machine is working.

Charge In / Single: Load the material manually. Single mode can turn on the light.

Cutting: Switch to Auto mode and press this button to start auto cutting immediately. When the machine is open for the first time to start work, press this to return all axes to home position.

4.5 Solenoid Valve



Solenoid Valve 8 Sets (Left to Right)							
1	2	3	4	5	6	7	8
Left Finger	Right Finger	Load Cycle	Wheel Detect	Wheel Spindle / Clamping	Short Material Load	Load Cushion Cylinder	Off Cut Blow Out

4.6 Lubrication Equipment (Slide-Way Lubrication)

Centralized Lubrication Device
When equipment is activated (power is ON), the centralized lubrication device will start to function. The buzzer will sound and send warning signals.

Oil tank capacity: 2 L
Oil supply pressure: 7 bar (max.)
Lubrication time: 10 sec. each time per 180 min.

4.6.1 Operating Instructions

Oil Supply Pressure: The rotating screw in front of the lubricating device can be used to adjust the oil pressure (works together with the Instant Supply Oil button). Oil supply pressure will be shown only when lubricating. During intermittence, the pressure gauge shows 0.

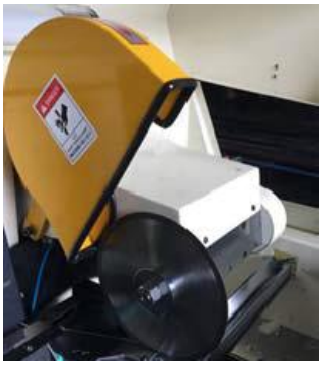
Instant Supply Oil: Press this button ("F") to immediately supply lubricating oil.

Oil Return Tank: Oil in the return tank must be discharged daily to avoid spills from excessive oil and contaminating the ground. You can observe the oil return situation to understand whether the lubricating device and return oil pipelines are functioning normally. When there is no oil coming out from the back, please notify the manufacturer to find out the cause.

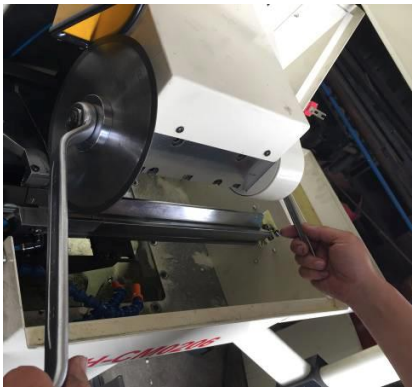
4.7 Wheel Replacement and Detection

The wheel must be replaced if the diamond wears out or there is a rupture on the out diameter.

1. Move the wheel cover upward.



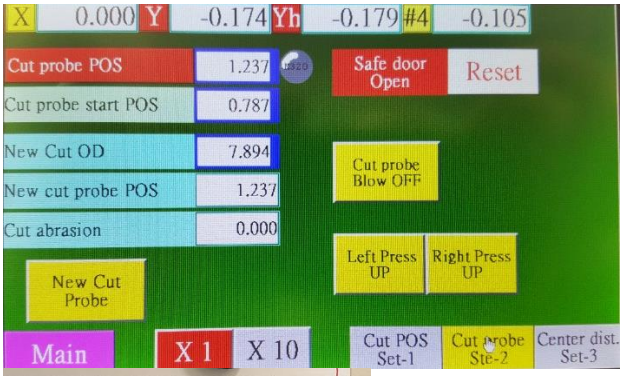
2. Use a wrench to loosen the screw nuts (26 and 14 mm) clockwise. It is a left-handed thread.



3. Measure the diameter of the new wheel and lock on the machine.

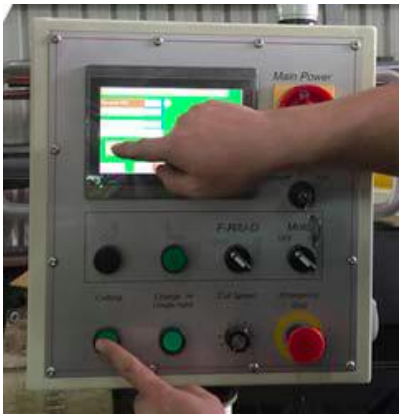
4. Advance to Saw Probe set page.

5. Input the actual cutoff wheel diameter to “New Cut OD parameter”



6. Turn on the motor.

7. Press the “New Cut Probe” and “Cutting” button to re-detect the wheel edge.



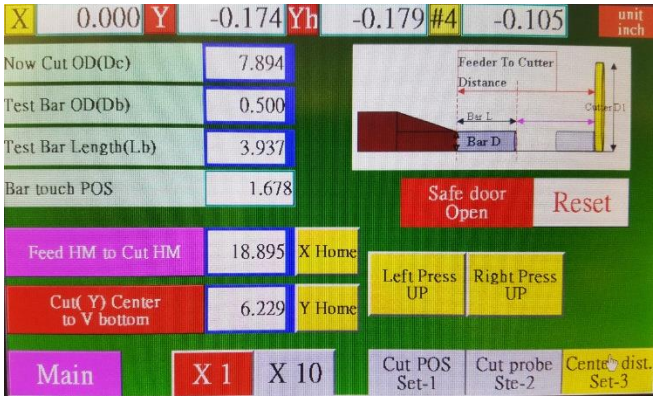
8. Please follow Step 7 three times.

4.8 Contact Position Setup

X Axis Setup:

1. Take a bar and measure the length, then put into Cutting V tray.

2. Input the bar length on Cutter distance Set 3.



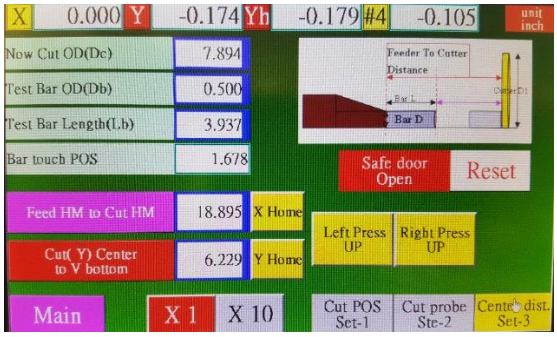
3. Switch to control Y axis (up/down). Move cutoff wheel downward to the V tray cutoff position by hand wheel.

4. Switch to control X axis (feeder). Move the feeder with bar until it touches the surface of the cutoff wheel. Pressing “Left Press Down” and then “Left Press Release” clamp fingers will raise to view wheel position relative to material.

5. Press “Feed HM to Cut HM” button to input the center position record to system. Finish the position setup.

Y Axis Setup:

1. Measure bar OD and Saw OD and input dimensions. Put bar into V tray cutting position.
   ⚠ **Test bar must have a diameter smaller than 7mm for this procedure.**



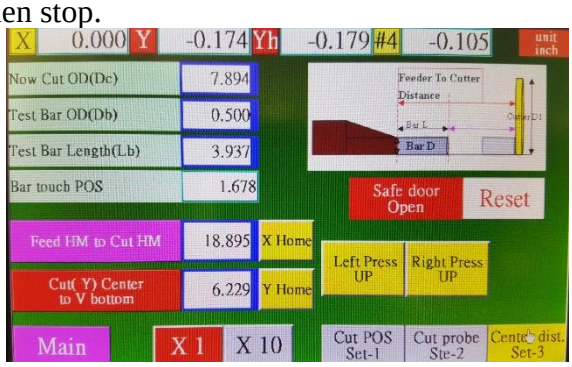
2. Input the bar length.

3. Turn motor on.

4. Switch to control the Y axis, using the hand wheel to move saw downward (X1 move speed suggested).

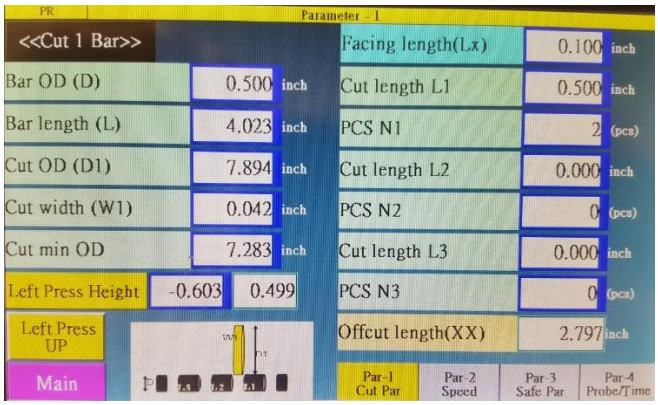
5. Make the wheel OD contact the bar OD, then stop.

6. Press “Cut (Y) Center to V bottom” to input the position.

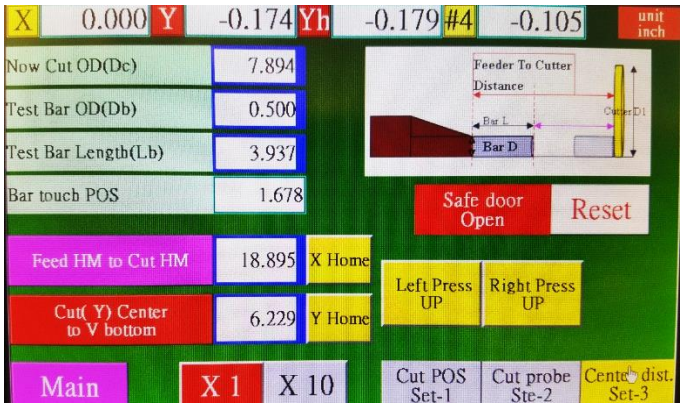


4.9 Length Compensation

❖ If each piece is incorrect, please check wheel width parameter first. If actual value is 1mm, please set as 1.05–1.08 to take the wheel run out into consideration.



❖ If only the last piece is incorrect, please adjust the feeder position. If less than actual value, decrease. If more than actual value, increase.



4.10 Set-up for large diameter rods over 1 ¼" (32mm)

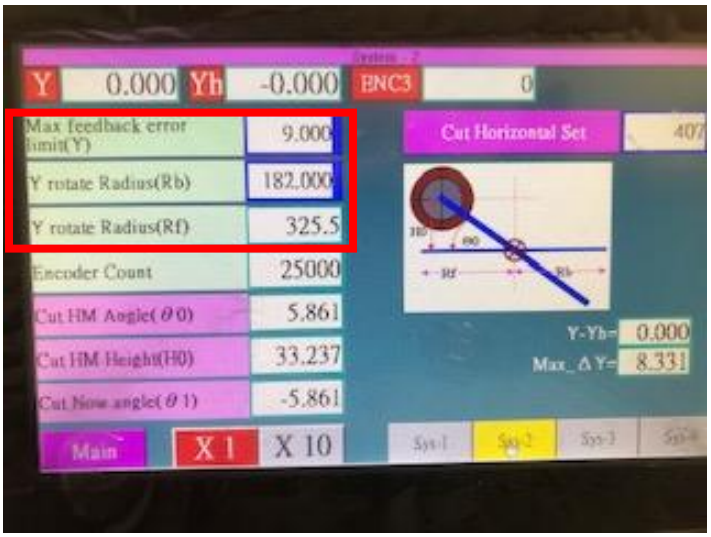
Note: Any time you're cutting a rod over 32mm (1.25") in diameter you need to remove the fingers from the clamping arms and remove the splash guard.

Finger

Clamping Arm

Splash Guard

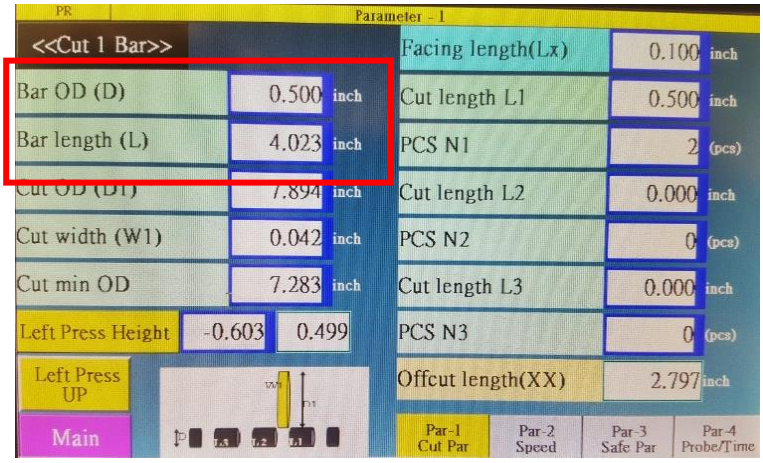
1) Navigate to Systems Set screen sys-2. Change "Max feedback error limit (Y)" from 2.500 to 9.000 and Y rotate Radius (Rb) from 212.000 to 182.000



2) Perform Contact POS Y Axis Setup.

Y Axis Setup:

A) Navigate to Parameter Set page 1.
B) Enter the Cut wheel OD, Rod OD and Rod length and enter in appropriate boxes. Rod OD needs to be 7mm (0.250”) or less.



C) Navigate to Manual Mode page 1

D) On the control panel, switch to Y axis control and Manual mode.

E) Use the hand wheel to move the saw downward until the saw just touches the bar OD (X1 speed suggested).

F) Navigate back to Parameter Set page 3 and press the RED “Cut Y center to V bottom” button.

3) Remove the fingers from the clamping arms.

4) Place 38.08mm (1.5”) test bar in the V tray just to the left of the cutting slot so the saw will not actually cut the rod.

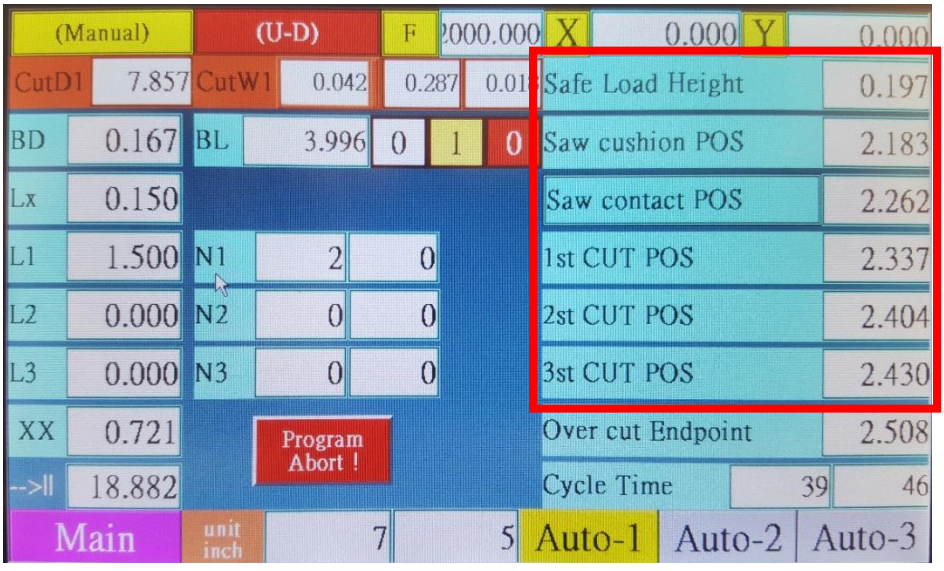
5) Navigate to Parameter Set page 1.

6) Enter the Cut wheel OD, Rod OD and Rod length and enter in appropriate boxes.

7) Navigate to the Auto Mode page1 and note the values for the 1st, 2nd, and 3rd Cut POS.

8) Navigate to the Manual Mode page1 and using the hand wheel lower the saw blade until the Y axis has reached the 3rd Cut POS position noted previously. Check to make sure that the saw blade depth has just reached the bottom of the test rod.

9) Without moving the saw, navigate back to the Auto Mode page1 and checked that the 1st, 2nd, and 3rd Cut POS have all completed and have turned RED.



10) If all Cut POS's are RED, then all the cuts have been completed.

11) If the saw blade is not to the bottom of the test rod, then make the Radius Rb in the System parameters (previously set to 182.000) a little larger and try the Manual test cut again. If the saw blade has gone below the test rod before the 3rd Cut POS has turned RED and completed, then make the Radius Rb a little smaller. It is recommended to change the radius by 0.5-1.0 degree at a time. If you get a "34 Over Cut POS feedback limit" error, then increase the "Max feedback error limit (Y)" by 0.5 at a time and try the test cut again.

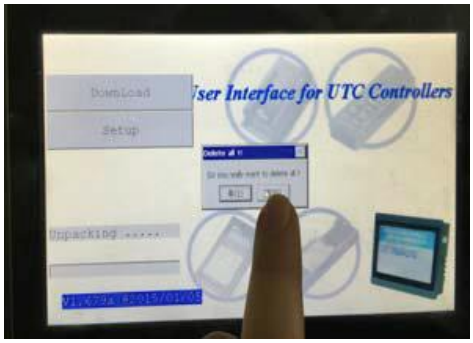
4.11 Program and Page Update

1. Save program on the USB and plug into the port on the screen backside.

2. Open machine and choose "Download"

3. Choose "No" on the box that says, "Do you want to remove it all?"

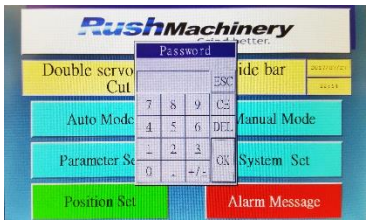
4. Choose “No” on the box that says, “Do you want to delete it all?”



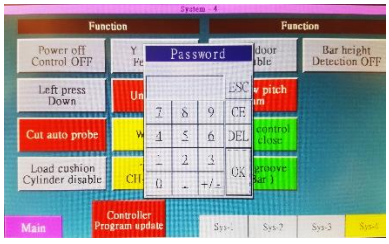
5. Choose the dlz file you need to download and press “Download”

6. Go into system Set.

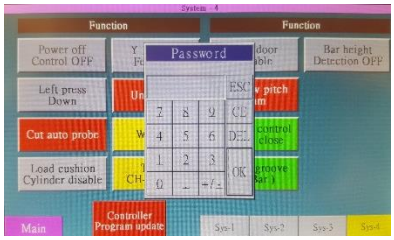
7. Input password: 89823631



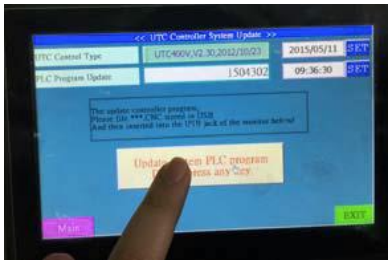
8. Page 4: choose “Controller Program update”



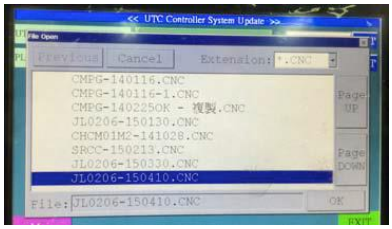
9. Input password: 89823635



10. Choose “Update PLC program, do not press any Key”



11. Choose the file you want to download.



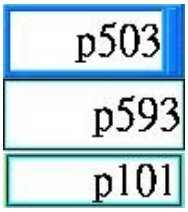
12. Reopen the machine when the download is finished.

13. Confirm if this is the right version of the program.

5. Menu

5.1 Input Parameter

This is a touch screen. Press and choose the desired function.



This button can press and input parameters.

This button just displays the value.

This button just displays the value.

5.2 Front Page

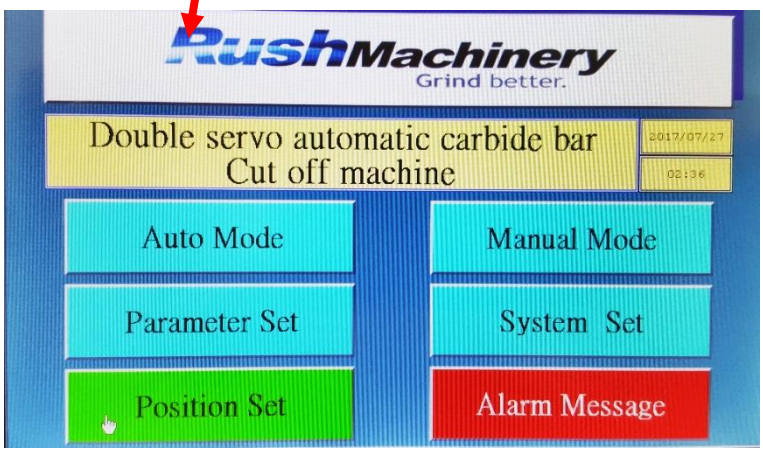
Switch between English and Chinese

Display program no.

5.3 Start Page

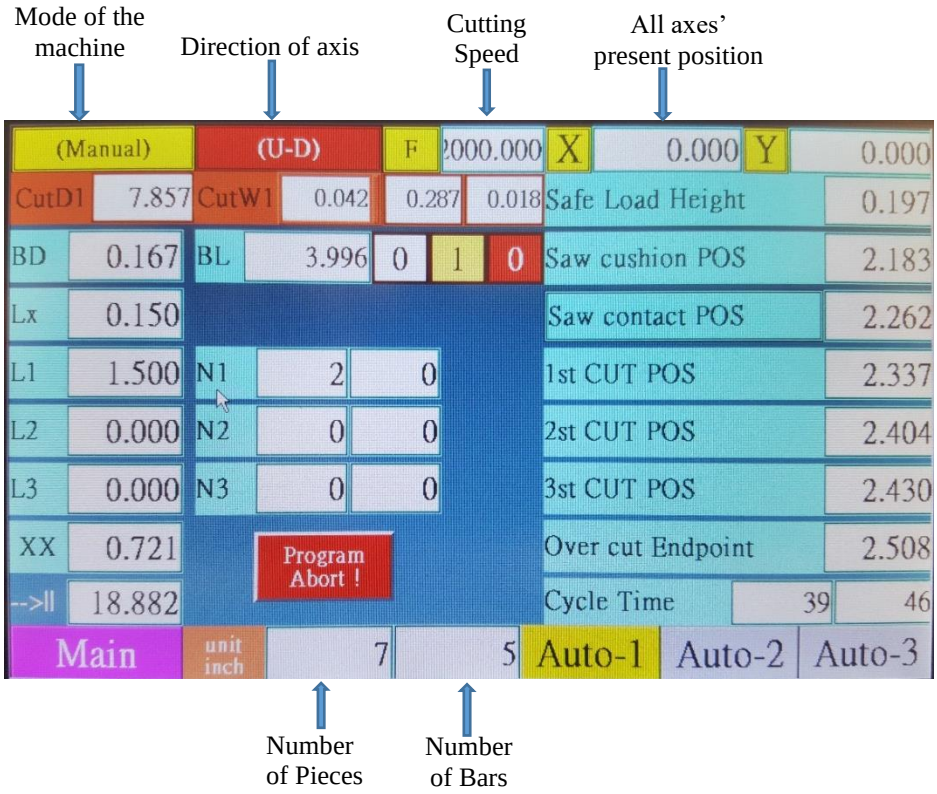
Press this to get back to the front page.

Whenever you open the machine, press the green “Cycle Start” button to return all axes to home position. Please be aware that whenever they go back to home position, it should be executed in Manual mode.



Auto Mode: Enter auto mode.
Manual Mode: Enter manual mode.
Parameter Set: Go into parameter setting page and set up the basic processing parameter.
System Set: Enter system parameter setting page and set up system parameters.
Position Set: Enter position setting page and set up the working position.
Alarm Page: Enter alarm message and check the alarm record.

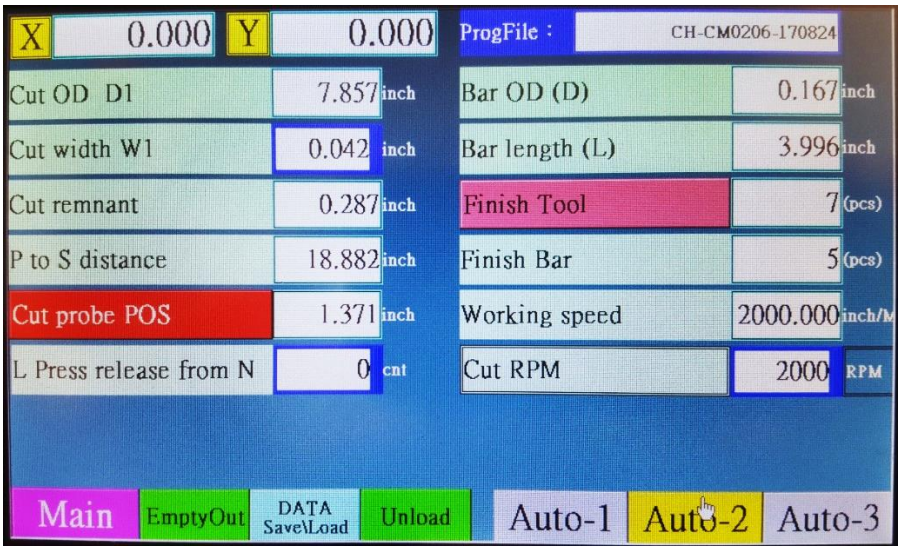
5.4 Auto Mode Page 1



BD	Bar OD			
BL	Bar length			
LX	Facing length			
L1	First cut length	N1	L1 quantity	Includes Current Cut
L2	Second cutoff length	N2	L2 quantity	Includes Current Cut
L3	Third cutoff length	N3	L3 quantity	Includes Current Cut
xx	Offcut			

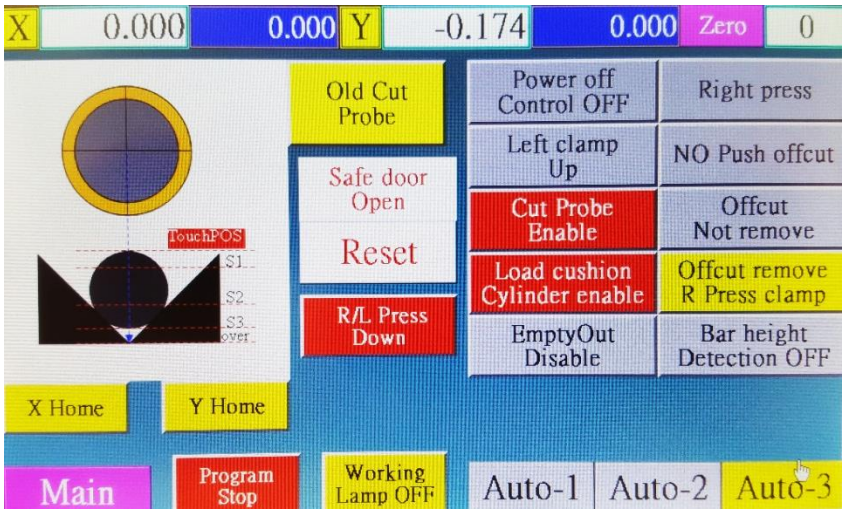
Safe load height		Safety height of Saw when feeder pushes in material		
Cut cushion POS		Cushion distance of cutting wheel before touching bar		
Cut contact position		Position when the wheel touches the bar		
1st cut position	See picture below	Cycle Time	One Cut Cycle Time	Whole Bar Cycle Time
2nd cut position				
3rd cut position				
Wheel position display will be red when achieved		➡	Distance between feeder to saw, left side	Detect Count: work how many cuts you need, then the machine will check wheel diameter automatically

5.5 Auto Mode Page 2



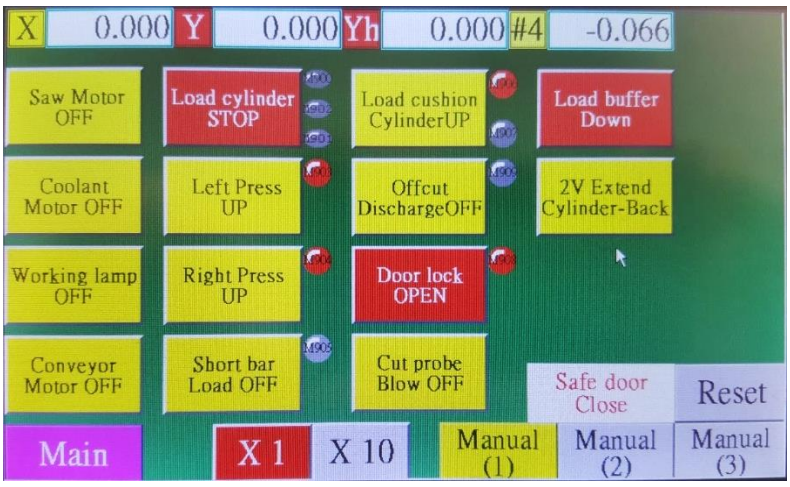
Cut OD D1	Display the cutting wheel diameter
Cut width W1	Display the cutting wheel width
Cut remnant	Display the amount of the wheel that can still be used
Cut compensation	Display the wheel compensate amount
P to S distance	Display distance between wheel and feeder
Cut probe POS	Display the position of cut off wheel
Bar OD (D)	Display the cutting bar diameter
Bar length	Display the cutting bar length
Finish TOOL	Display how many pcs. have been cut
Finish Bar	Display how many bars have been finished
Working speed	Display present feed speed
Cut RPM	Display the speed of the cut off wheel

5.6 Auto Mode Page 3



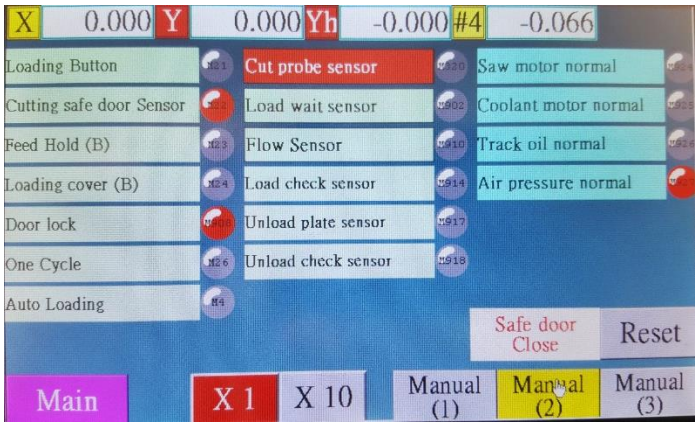
Power off Control: Power on/off control.
Left clamp Down/Release: Choose left finger movement Down/Release.
Cut probe Disable/Enable: Open/close wheel detection function.
Load cushion Cylinder enable: Open/close load cushion cylinder movement.
Skip 1st Right press: Choose 1st cut right finger, do not press function
NO Push offcut: Choose to push offcut or not.
Offcut not remove: Choose the offcut remove function start or close.
Offcut remove R Press clamp: Offcut blow function open, the right finger clamp or not when this function is working.

5.7 Manual Mode Page 1

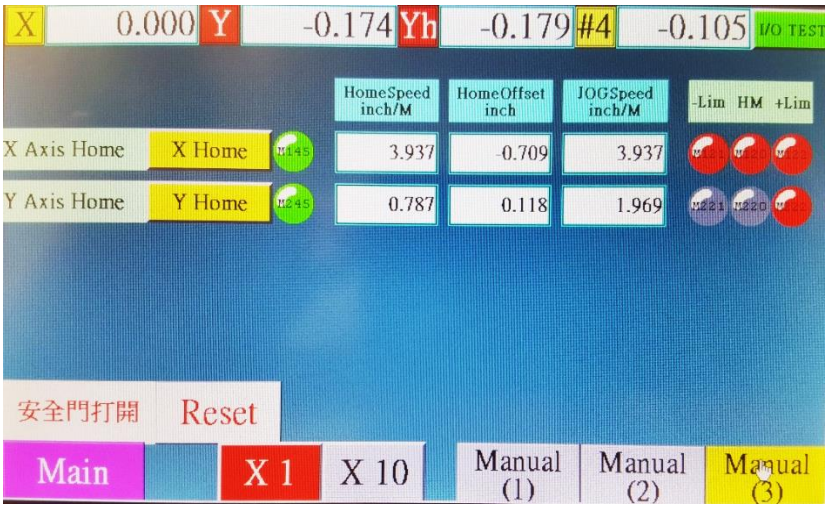


In this page, you can manually check all sensor functions and cylinder condition.

5.8 Manual Mode Page 2



5.9 Manual Mode Page 3



In this page, you can check the X and Y axis position.

5.10 Parameter Setting Page 1

Bar OD (D)	Input bar diameter
Bar length (L)	Input bar length
Cut OD (D1)	Input cutoff wheel diameter
Cut width (W1)	Input wheel width
Cut min. OD	Input minimum diameter with which the wheel can be used
Facing length (Lx)	Input facing length
Cutting length L1	Input 1st cutting length
PCS N1	Input how many pcs. you need for L1
Cutting length L2	Input 2nd cutting length
PCS N2	Insert how many pcs. you need for L2
Cutting length L3	Input 3rd cutting length
PCS N3	Input how many pcs. you need for L3
Off cut length	Calculate automatically by program

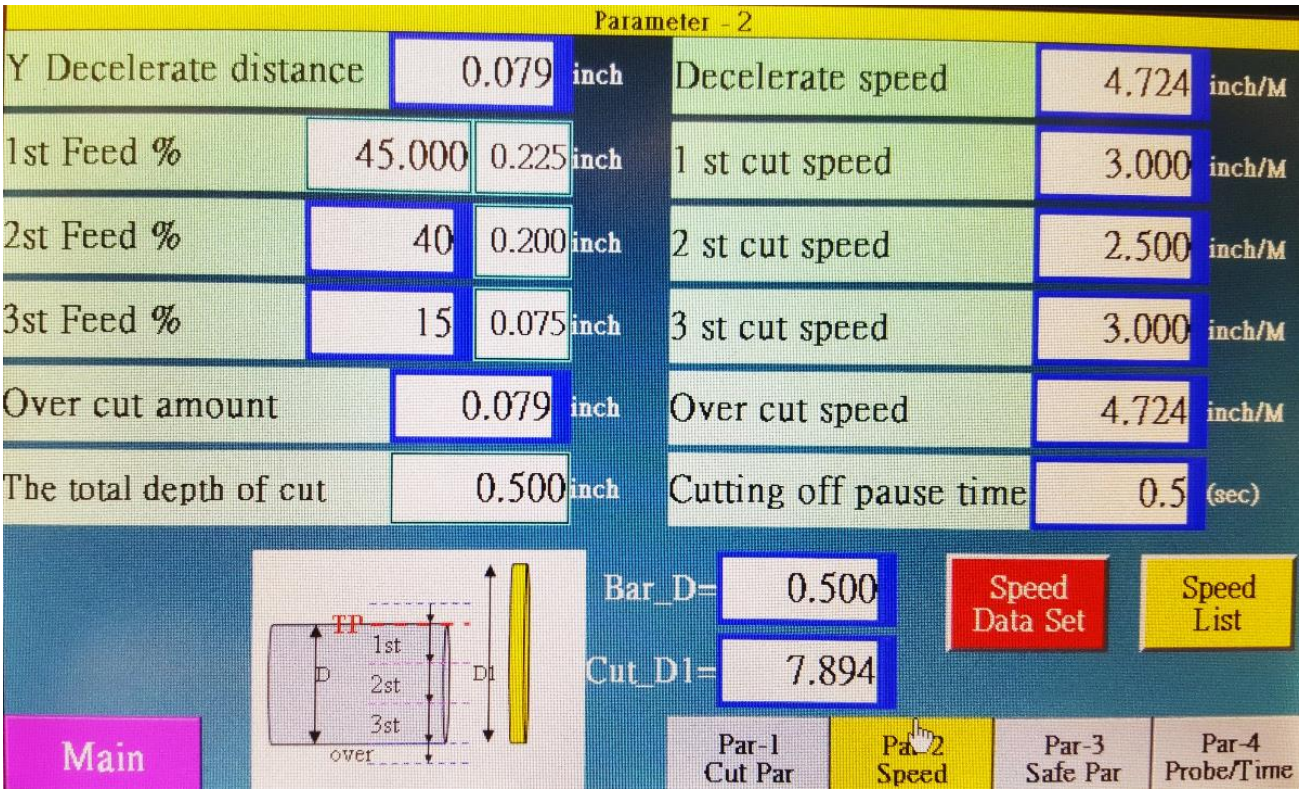
Formula:

1. Calculate how many pieces you can cut off. Input LX and L1; the program will generate N1 and xx automatically.

2. Divide the bar average. Input the LX and N1; the program will generate L1 and xx automatically.

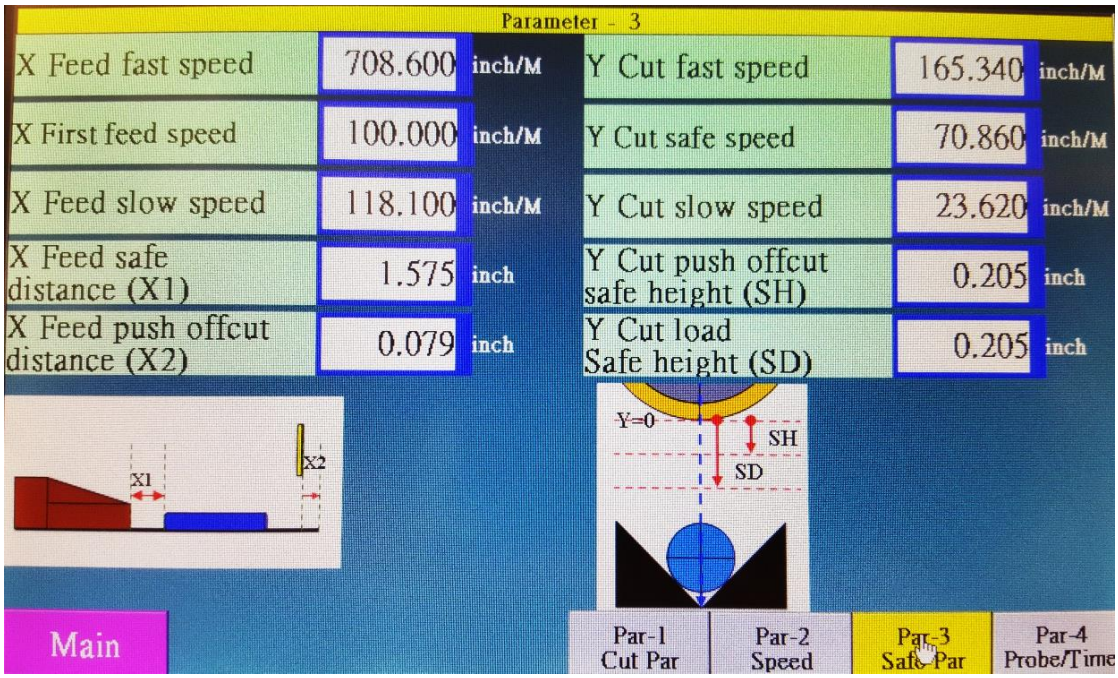
3. No remain material mode. LX=0; input the L1 and N1. The program will automatically let the material that remains to be the facing length.

5.11 Parameter Setting Page 2



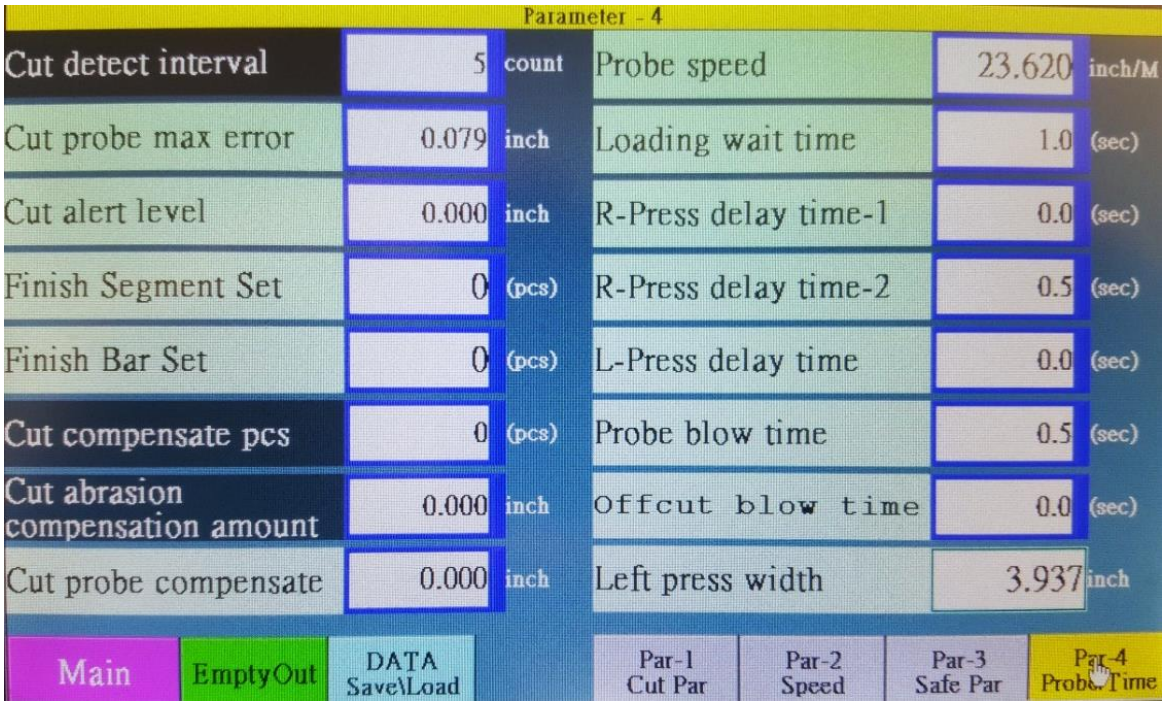
Y Decelerate distance		Set up the saw and turn at slow speed until touch position distance	
1st Feed amount		Feed amount 1st (see picture)	
2nd Feed amount		Feed amount 2nd (see picture)	
3rd Feed amount		Feed amount 3rd (see picture)	
Over cut amount		Set up overcut distance	
Total depth of cut		Set up total depth of cut	
Decelerate speed		Set up saw downward speed in cushion distance	
1st Cut speed		Set up 1st feed speed	
2nd Cut speed		Set up 2nd feed speed	
3rd Cut speed		Set up 3rd feed speed	
Over cut speed		Set up over cut feed speed	
Cut off pause time		Set up pause time at finish position	
Cut D		Bar D	

5.12 Parameter Setting Page 3



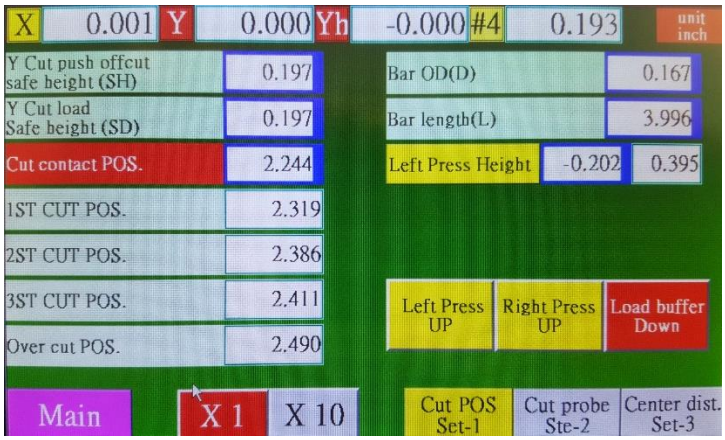
X feed fast speed	Feeder (X axis) fast move speed
X first feed speed	
X feed slow speed	Feeder (X axis) slow speed when push material
X feed safe distance (X1)	X1
X feed push offcut distance (X2)	X2
Y Cut fast speed	Saw (Y axis) fast move speed
Y cut safe speed	
Y cut slow speed	
Y cut push offcut safe height	Saw position avoid feeder crash when push the offcut
Y cut load safe distance SD	Saw position avoid feeder feed bar and crash

5.13 Parameter Setting Page 4

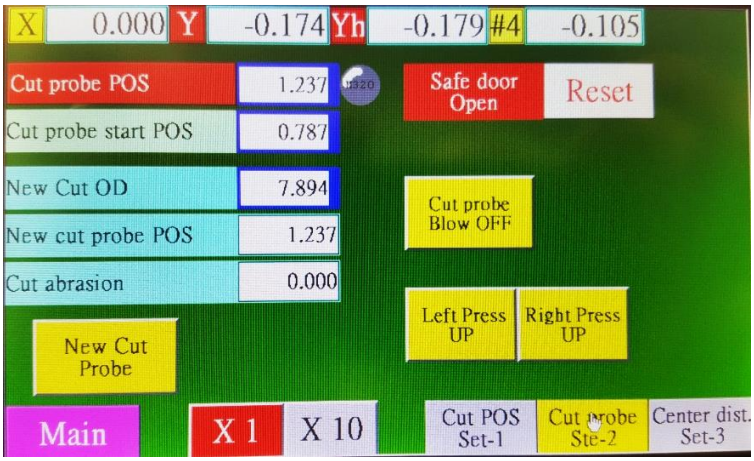


Cut detect interval	Set up to cut how many times wheel will do detection; check the OD once
Cut compensate pcs.	Set up to cut how many times the wheel will compensate to make sure it can cut through the bar
Cut abrasion compensation amount	Set up compensate amount
Cut probe max error	Set up the detect difference max. value
Cut alert level	Set up the offcut amount that machine will show alarm
Cut probe compensate	
Finish Tool set	Set up to cut number of pieces; will stop when finished
Finish bar set	Set up to cut number of bars; will stop when finished
Probe speed	Set up the wheel detect movement speed
Loading wait time	Set up the load box wait time; should be longer until the feeder push bar to go home
Right press delay time	Set up right finger move delay time
Left press delay time	Set up left finger move delay time
Probe blow time	Set up the wheel detection blow off time
Offcut blow time	Set up the offcut material blow off time

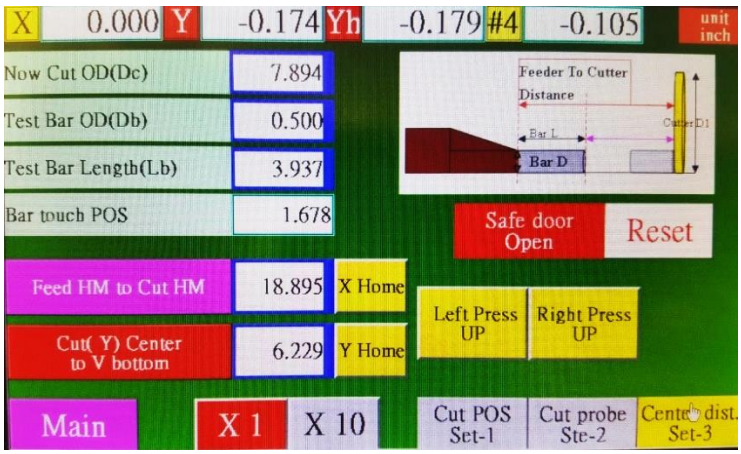
5.14 Position Setting Page 1



5.15 Position Setting Page 2

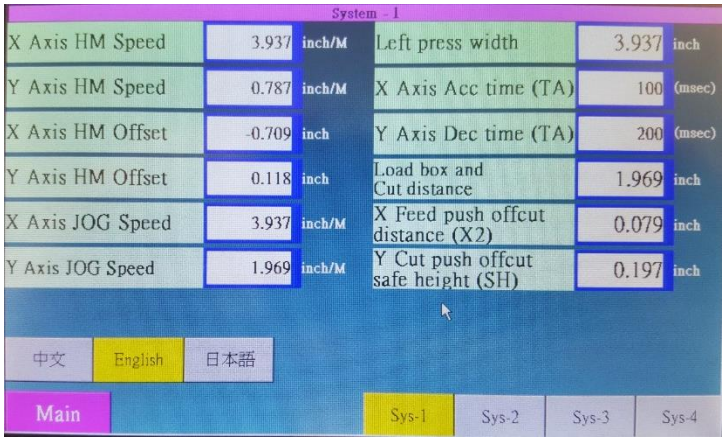


5.16 Position Setting Page 3

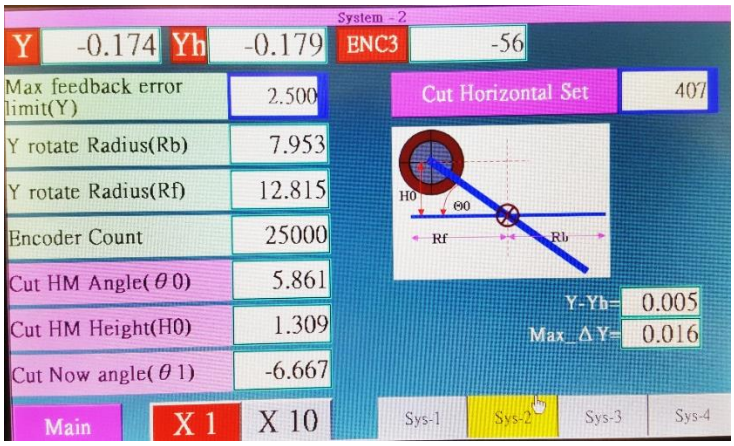


5.17 System Parameter Page 1

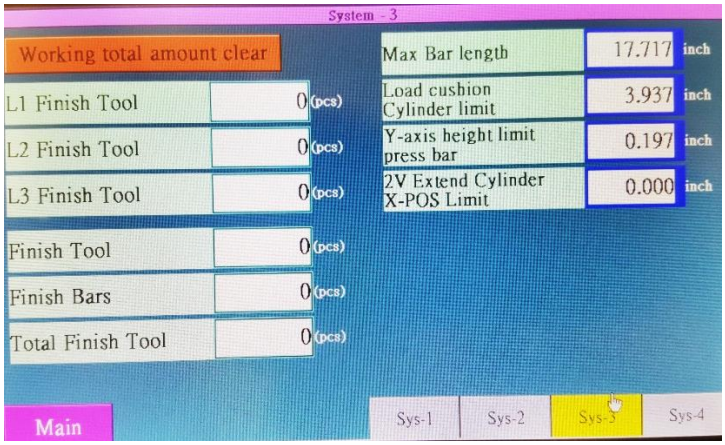
(Password: 89823631)



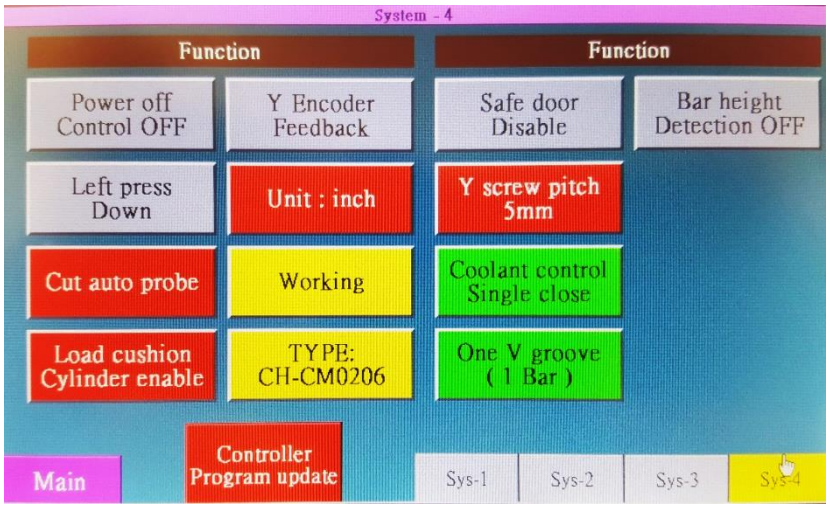
5.18 System Parameter Page 2



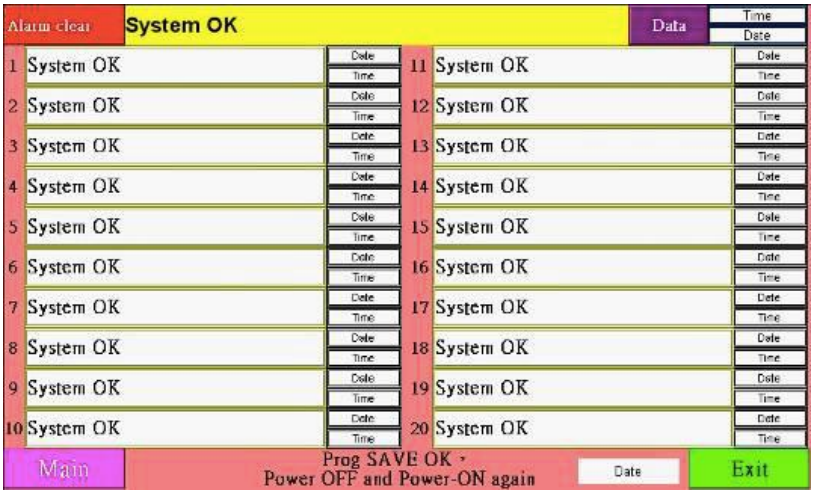
5.19 System Parameter Page 3



5.20 System Parameter Page 4



5.21 Alarm Message



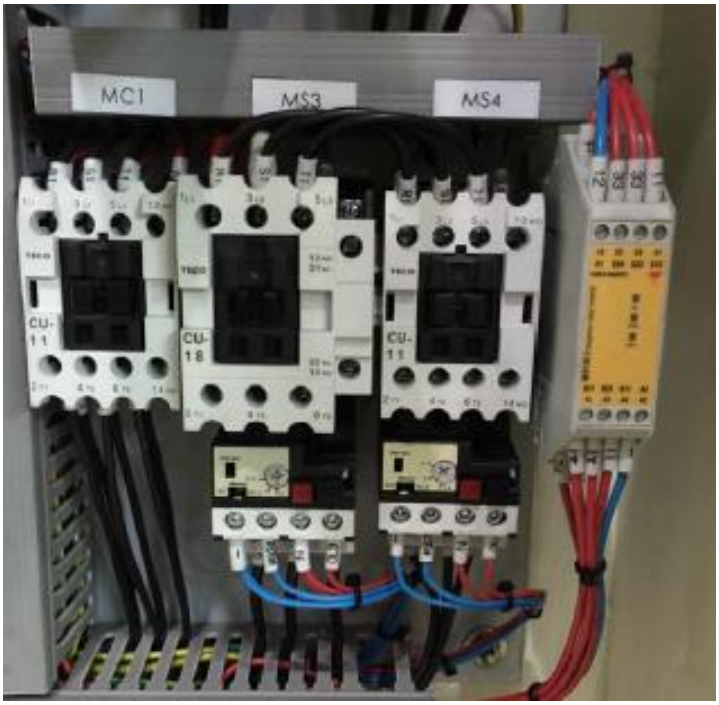
5.22 Alarm Troubleshooting

No.	Alarm Code	Solution
1	Emergency stop	Release EM button
2	Saw cover Open	Set cover to work position
3	X Axis Servo alarm	Check the alarm code at 400w amplifier and reference table A
4	X Axis follow error	Check if anything at X axis is loose. Close machine and restart; make X home and try again.
5	X Axis back HM alarm	Check if anything sticks. Check X axis home sensor.
6	X Axis +LIM/-LIM alarm	Check X Axis +/- sensor in Manual page.

7	Reserved	
8	Y Axis Servo alarm	Check alarm code from 100w amplifier and reference table A
9	Y Axis follow error	Check if anything at Y axis is loose. Close machine and restart; make Y home and try again.
10	Y Axis back HM alarm	Check if anything sticks. Check Y axis home sensor.
11	Y Axis +LIM/-LIM alarm	Check Y Axis +/- sensor in Manual page.
12	Reserved	
13	Cut motor alarm	Check the solenoid switch if it is tripped (over load) MS3
14	Coolant motor alarm	Check the solenoid switch if it is tripped (over load) MS4
15	Track oil insufficient	Check if there is lubrication oil in the tank
16	Air pressure insufficient	Check the air pressure connection
17	Load up alarm	Check load up sensor M900
18	Load down alarm	Check load down sensor M901
19	Load wait alarm	Check load standby sensor M902
20	Right press alarm	Check right finger sensor M904
21	Left press alarm	Check left finger sensor M903
22	Short material cylinder alarm	Check short material sensor M905
23	Load cushion cylinder alarm	Check load cushion cylinder sensor M906 and M907
24	Door lock alarm	Check safety door lock M908
25	Offcut discharge alarm	Check the offcut discharge sensor M909
26	Coolant flow check alarm	Check the flow check sensor M910
27	Coolant level alarm	Check the coolant level sensor M911
28	Sensor / Cut probe sensor alarm	Check probe sensor M320
29	Cut probe error	Re-detect the wheel diameter
30	X Axis +Limit	Check the X axis and Y axis limit sensor
31	X Axis –Limit	
32	Y Axis +Limit	
33	Y Axis –Limit	
34	Over cut position feedback limit	Re-detect
35		Check wheel detect sensor
36		Re-detect wheel edge
37	Cut position is too low, cannot feed	Check wheel position
38	Reserved	
39	Reserved	
40	Reserved	

Reference A:

YASAKAWA AC SERVO MOTOR ALARM TABLE
Reference B:



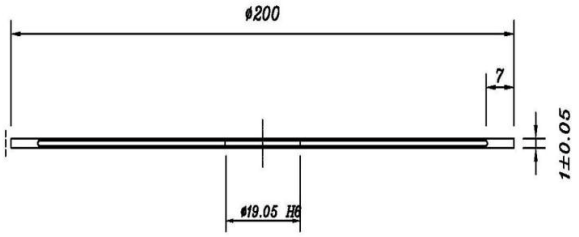
6. Maintenance

No.	Item	Work	Interval	Notes
1	Cutting V tray	Clean	Weekly	Clean and lubricate as needed.
2	Coolant Tank	Clean and discharge	Weekly	Take precipitation power outside
3	Coolant	Check	Daily	Check coolant quality with refractometer.
		Check	1 month	Use mobil Vactra #2 or equivalent.
4	Lubrication Device	Check	Daily	Check on the track oil surface; less than 1/3 surface height, add
5	Return Coolant Tank	Discharge	Daily	Discharge oil in return tank
6	General Clean	Clean	Weekly	
7	Y Axis Guideway	Check	Weekly	

6.1 Coolant Oil Specifications: Material Safety

Recommended Coolant Oil for CH-CM0206: Grindex 10

6.2 Grinding Wheel Diagram and Photograph



6.3 Tool Box List

1	12” Adjust. Wrench	11	MUI wrench – 12
2	– screw driver (big)	12	MUI wrench – 13
3	– screw driver (small)	13	MUI wrench – 14
4	+ screw driver (big)	14	MUI wrench – 17
5	+ screw driver (small)	15	MUI wrench – 19
6	Hex wrench	16	MUI wrench – 26
7	MUI wrench – 6	17	Door key
8	MUI wrench – 7	18	Electric cabinet key
9	MUI wrench – 8		
10	MUI wrench – 10		

6.4 Other Machine Parts

1	Coolant tank
2	Wire with pump
3	Tube ½”
4	Tube 50mm
5	Plastic Tank
6	4mm Lubrication Outlet Tube

A. Operational manual
B. Coolant Tank with pump

6.5 I/O Table

UTC-400V				
J7	+V			
	M01	Saw Motor		ACSSR
	M02	Coolant Motor		ACSSR
	M03	Servo Axis Drive Power		ACSSR
	M04	Coolant Solenoid Valve		ACSSR
	M05	Light		ACSSR
	M06	Conveying Belt		ACSSR
	M07	Power OFF control		ACSSR
	M08			ACSSR
	COM			
J5	+V			
	M11	CUT		Press button
	M12	EM		Press button
	M13	(ON/OFF) Saw		Switch
	M14	Bit-0	M14/M15 ON/ON OFF/ON ON/OFF OFF/OFF	Switch
	M15	Bit-1		
	M16	Jog Switch: X axis feed / Y axis saw		Switch
	M17	Jog: Right/Downward		Press button
	M18	Jog: Left/Upward		Press button
	COM			
J6	+V			
	M21	Load Button		Press button
	M22	Saw Cover Sensor		Sensor
	M23			Input
	M24			Input
	M25			Input
	M26			Input
	M27			Input
	M28			Input
	COM			
J8	+5V			
	DA1			
	DA2			
	-12V			
	+12V			
	AD1	Cutting speed adjust. VR		M105
	AD2			M205
	PWM1			
	PWM2			
	0V			

J9	**+5V**	+5V Power	LGT-201-100 (Sumtak)
	A	A Phase Output	
	A/		
	B	B Phase Output	
	B/		
	0V	0V	
D1	**+LIM**	X Axis (feeder) + Limit	M122
	-LIM	X Axis (feeder) – Limit	M121
	HMF	X Axis home	M120
	+V		
	COM		
D2	**+LIM**	Y Axis Saw downward Limit Sensor	M22
	-LIM	Y Axis Saw Upward + home Sensor	M221
	HMF	Saw Detect Sensor	M220
	+V		
	COM		

A0170			
IN1	+13V		
	M900	Load cylinder Up sensor	Sensor
	M901	Load cylinder Down sensor	Sensor
	M902	Load cylinder Standby sensor	Sensor
	M903	Right press cylinder Up sensor	Sensor
	M904	Left press cylinder Up sensor	Sensor
	M905	Short material cylinder sensor	Sensor
	M906	Load cushion cylinder Up sensor	Sensor

	M907	Load cushion cylinder Down sensor	Sensor
	+13VG		
IN2	+13V		
	M908	Safety door lock sensor	Sensor
	M909	Offcut remove cylinder sensor	Sensor
	M910	Coolant flow check sensor	Sensor
	M911	Coolant water level alarm sensor	Sensor
	M912		Input
	M913		Input
	M914		Input
	M915		Input
	+13VG		
IN3	+13V		
	M916		Input
	M917		Input
	M918		Input
	M919		Input
	M920		Input
	M921		Input
	M922		Input
	M923		Input
	+13VG		
IN4	+13V		
	M924	Saw motor alarm	Input
	M925	Coolant motor overload alarm	Input
	M926	Track oil insufficient	Input
	M927	Air pressure insufficient	Input
	M928		Input
	M929		Input
	M930		Input
	M931		Input
	+13VG		
OUT1	+13V		
	M932	Load cylinder Up	DCSSR
	M933	Load cylinder Down	DCSSR
	M934	Left cylinder Down	DCSSR
	M935	Left cylinder Up	DCSSR
	M936	Right clamping cylinder ON down: OFF UP	DCSSR
	M937	Short material cylinder	DCSSR
	M938	Load cushion cylinder	DCSSR
	M939	Offcut blow out	DCSSR
	+13VG		

OUT2	+13V		
	M940	Safety door lock	DCSSR
	M941	Wheel detect blow	DCSSR
	M942	Spindle blow	DCSSR
	M943		DCSSR
	M944		DCSSR
	M945	Red	DCSSR
	M946	Yellow	DCSSR
	M947	Green	DCSSR
	+13VG		
J7	GND		
	+5V		
	+13VG		
	+13V		

6. Rush Machinery Warranty

For one year from date of delivery of the CH-CM0206 Double Servo Auto-Cut CNC Carbide Rod Cut-Off Machine – Single Rod, provided that the machine is installed and operated in accordance with the instruction manual, Rush Machinery will repair or replace any mechanical or electrical part(s) for the machine, if defective in material or workmanship, at no charge. To obtain service under this warranty, contact Rush Machinery, and, at our option, the defective part(s) may have to be returned with shipping charge prepaid by the user. Rush Machinery will, without charge, repair or replace defective part(s). This warranty does not apply to the following: shipping damage, damage or problems caused by abuse, accident, alteration, negligence, or failure to follow operating instructions. In no event will Rush Machinery, Inc. be liable for incidental or consequential damages.

Warning: the use of coolant oil or mixed coolants without proper fire suppression and mist collection is flammable and not recommended. The use of unapproved liquids may void the warranty.

For any maintenance, service, or parts needs, please contact the service department at:

Rush Machinery, Inc.
4761 Route 364
Rushville, NY 14544 USA

Tel: 800-929-3070 (Toll Free - USA & Canada)
or +1 585-554-3070
Fax: 585-554-4077

Email: mail@rushmachinery.com
Website: www.rushmachinery.com

Appendix A: Recommended Spare Parts List

Part #	Quantity	Description
CHL02001	2	One Way Flow Control Valve with Fittings
CHL03005	1	Loading Tray Material Proximity Sensor
CHL03044	1	Fiber Optic Line for Banner Sensor
CHL04051	1	Sawing Belt (Model CH-CM0206)
CHL02034	2	Clamping Cylinder (Model CH-CM0206)

Appendix B: Optional Accessories

100L Filtration System

Dimensions: 23.75” W x 33.128” L x 43.5” H (604mm x 841.5mm x 1105mm)
Flow capacity: 0–17 gpm at 58–26 (0–65 lpm at 4–1.8 bar)
Tank capacity: 26.4 gallons (100 Liters)
Pump HP: ¾ HP (0.5 KW)
40 µ Filter roll: 19.25” W x 164’ L (49cm x 50m)
5 µ Filter bag: 4” diameter x 13.75” L (10cm x 35cm)
Supply Hose: 6.5’ L (2m)

Fire Suppression System

Recommended when oil coolant is used
Automatic Thermal Sensor Detection
Manual Emergency Override
Electrically connected to Emergency Stop circuit
3M Novec 1230 Fire Protection Fluid
Manufacturer warranty applies

Mist Collector

Activated by Auto-Cut electronics
500 cfm
97.8% efficient
3-stage filtration
Water or oil collection
Manufacturer warranty applies

Mounting Options:
*Pedestal Stand with adjustable height (min. 65.5” to bottom of unit, max of 120” for top of unit) (P/N
*Ceiling Mount
*Wall Mount