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MC-360NFA-DR

OPERATION INSTRUCTION

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SAFETY INSTRUCTIONS

TO THE OWNER OR SUPERVISOR

You must remember that this machine is designed to cut metal with a sharp tool, and you are responsible to see that the machine is in top operating condition and that it is operated **IN A SAFE MANNER!**

YOU MUST :

1. Make sure the machine is properly installed, anchored to floor, and electrical installation is proper.
2. Be sure you are familiar with all operating, safety, and applications information before operating this machine or turning it over to one of your employees.
3. See that all who operate this machine are properly trained and fully aware of all safety practices.
4. Be aware of all unsafe practices that may occur. (See operator safety precautions and applications information)
5. Insist on proper personal protective equipment and practices.
6. Maintain all factory installed safety devices and insure that these are never removed or altered or restricted in any way.
7. Insure that your operators have a safe and orderly work area, with adequate light and operating room.
8. Be certain that your machinery receives responsible and competent maintenance and that your machinery is inspected on a regular basis.

YOU ARE RESPONSIBLE

SAFETY INSTRUCTIONS

TO THE MACHINE OPERATOR

You must read and understand all operating, safety, and applications information before attempting to use this machine.

1. Always wear proper eye protection.
2. Never operate machine unless all guards are in place.
3. Never insert hands or arms into or near cutting area while machine is running.
4. Never load or unload machine while blade is running.
5. Never wear loose clothing, long sleeves, gloves, jewelry, or any other items that may be caught. Confine long hair.
6. Always disconnect power at source when performing maintenance or making adjustments, other than those necessary for the normal operation of machine.
7. Keep cutting area clear of tools or other loose objects.
8. Before starting a sawing cycle, be sure vise is securely clamped and machine set-up is correct.
9. Never use this machine to cut workpieces larger than the stated capacity.
10. Never modify a blade to fit arbor.
11. Never use a blade larger than the machine is designed for.
12. When cutting very short pieces, make sure they do not jam between the blade and the slot in the Clamping Jaws.
13. Be aware that the pneumatic vises close automatically and to
KEEP HANDS CLEAR!

CATION: If blade becomes jammed, immediately turn off power, loosen vise, extract workpiece from blade, and inspect blade for cracks or broken teeth.

ALWAYS OPERATE MACHINE SAFELY, USING COMMON SENSE AND ALERTNESS

Specifications

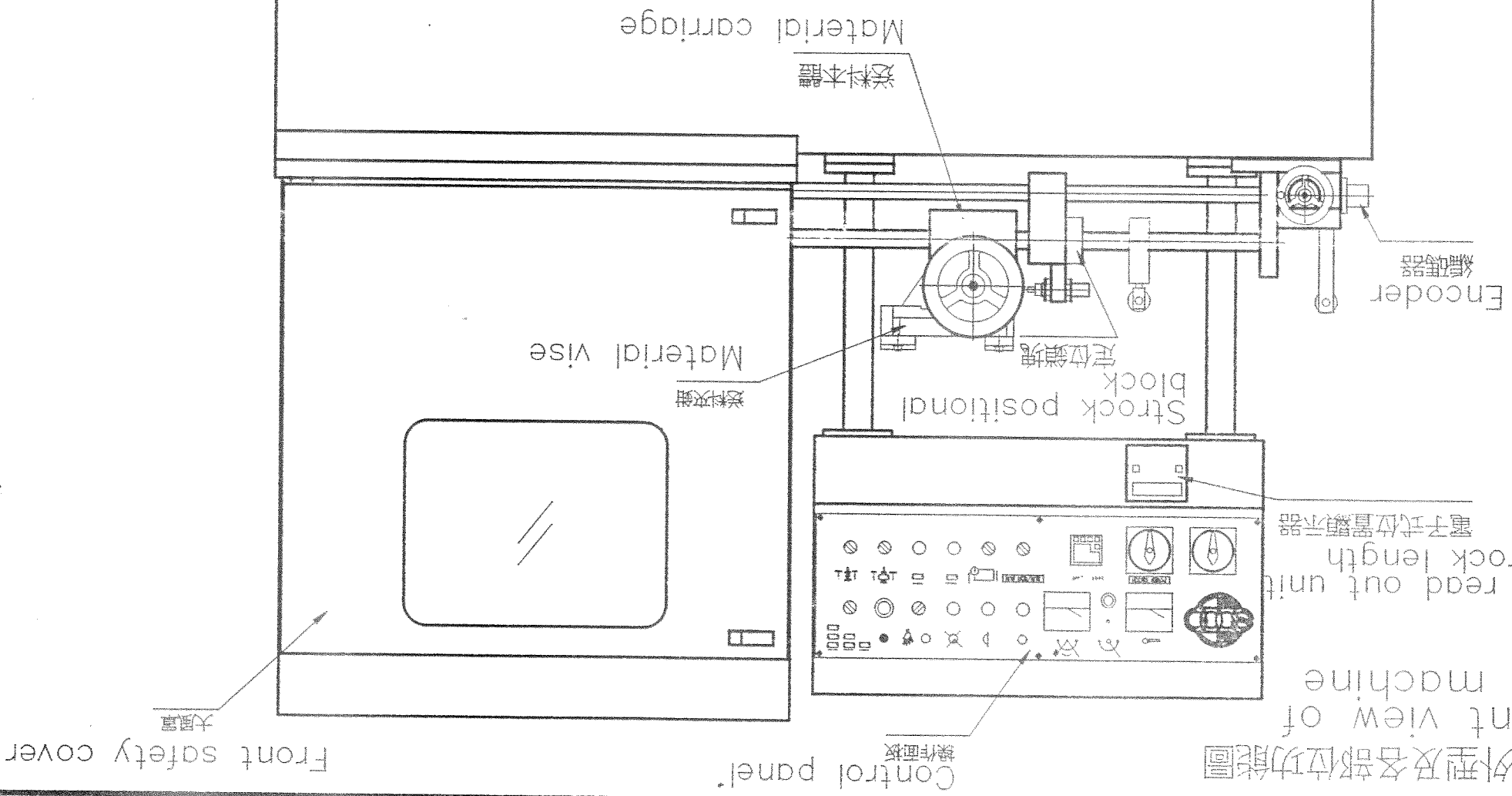
model MC-360NFA-DR

Item	Specification	
Cutting Capacity (Aluminium material)		φ 90mm
		90×90mm
		170X50mm
		φ 110mm
Material feeding length		multiple pieces. with special jaw
Main motor		6~600mm×1 or 2 or 3 time
Saw Blade		* 5 or 7.5 Hp
Arbor RPM		T.C.T. Blade φ 355mm
Cooling System		3500RPM(on 60 Hz electrical power)
Pressured Air		* Air-oil mist system, or Auto-circular cooling system
Optional Accessories		5—9Kg/cm ² , Consume 250NL/min
		① Chips Vacuum collector ② Power inverter for Arbor speed changing
Power requirements		220 volts/3 phase/60 cycles or Specified order Voltages

- * The special Jaw has to be order as an optional accessories.
- * 7.5 Hp motor has to be order specially.
- * Cooling system can be choosed, while order.

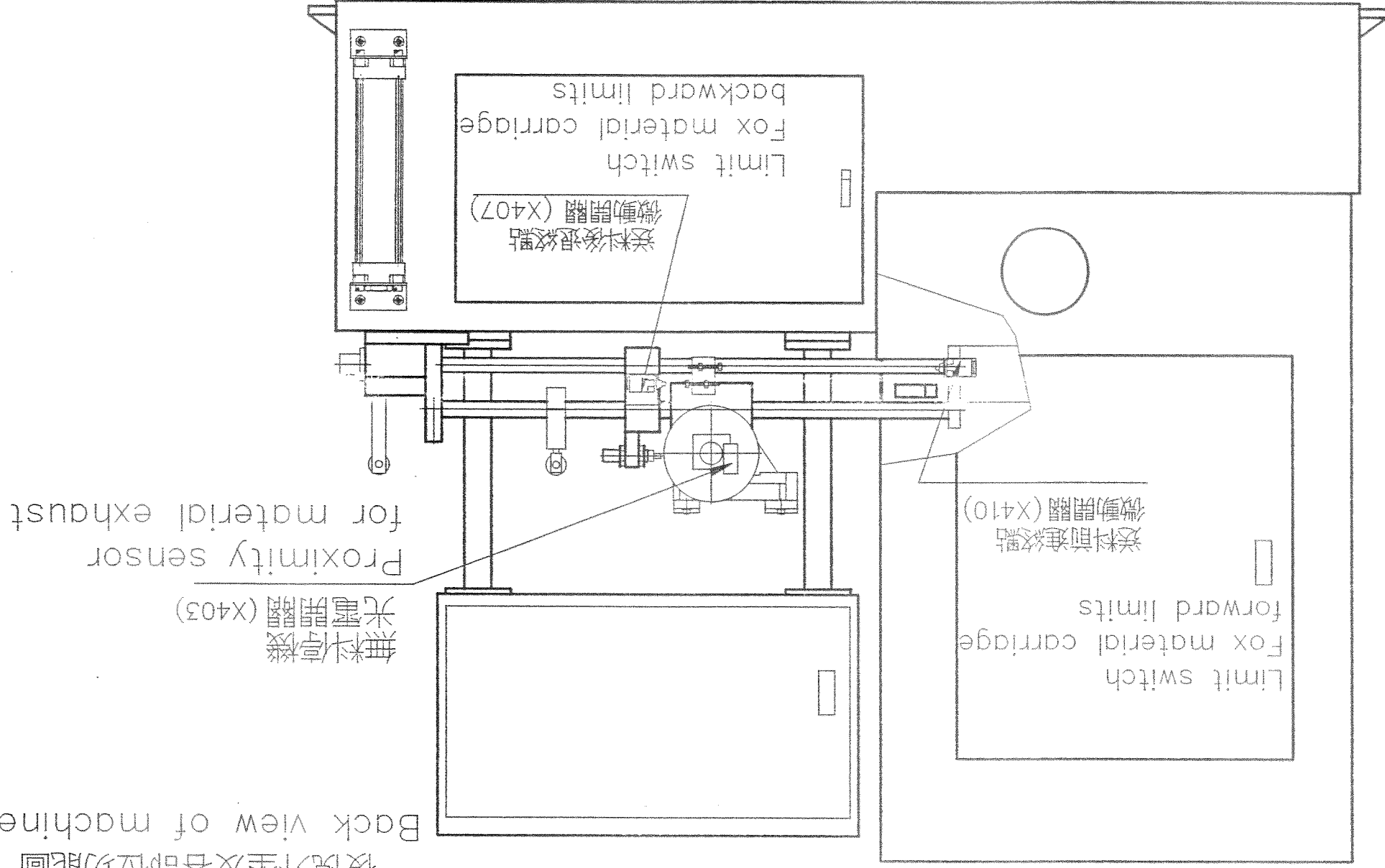
正視外型及各部位功能圖
Front view of the machine

Digital read out unit for stroke length
電子式位置顯示器

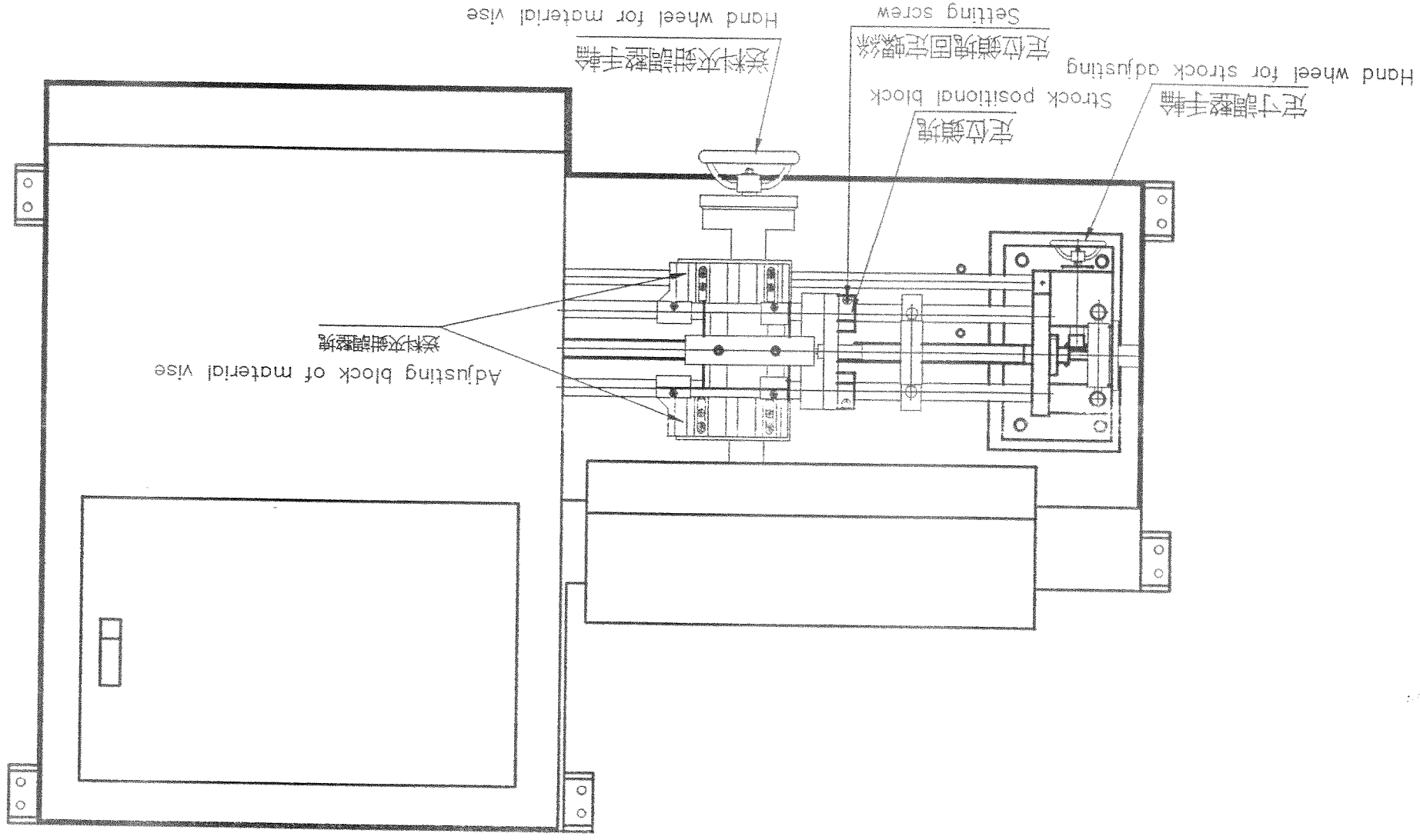


後視外型及各部位功能圖

Back view of machine



上視外型及各部位功能圖
Top view of the machine



Installation

3.1 Machine Installation

The first step after uncreating your machine is to see that all items are present and that there is no apparent damage to any part of the machine. You will need a fork lift or a over head crane to quickly and easily unpackaged and put this machine in Location.

Select an installation site that is clean of traffic and obstructions, suitable for proper machine operation and maintenance, including adequate light and clearance.

For best performance, we recommend that your machine be anchored to the floor though the holes provided in base.

after installation, all rust preventive must be completely removed from the machine (using rosin or similar agents), This step is quite important and necessary.

3.2 ELECTRICAL CONNECTION

Electrical connections should be done only by a qualified electrician! and make sure your power supply matches the machine. All machines are designed in a specific operating voltage and cannot be changed.

It is recommended that the machine be on a circuit that is properly fused, and the machine must be properly grounded to comply with your state electrical codes.

After connecting to 3-phase supply, Check the machine for proper rotation By following Steps **Caution! Don't put any**

Blade on the machine.

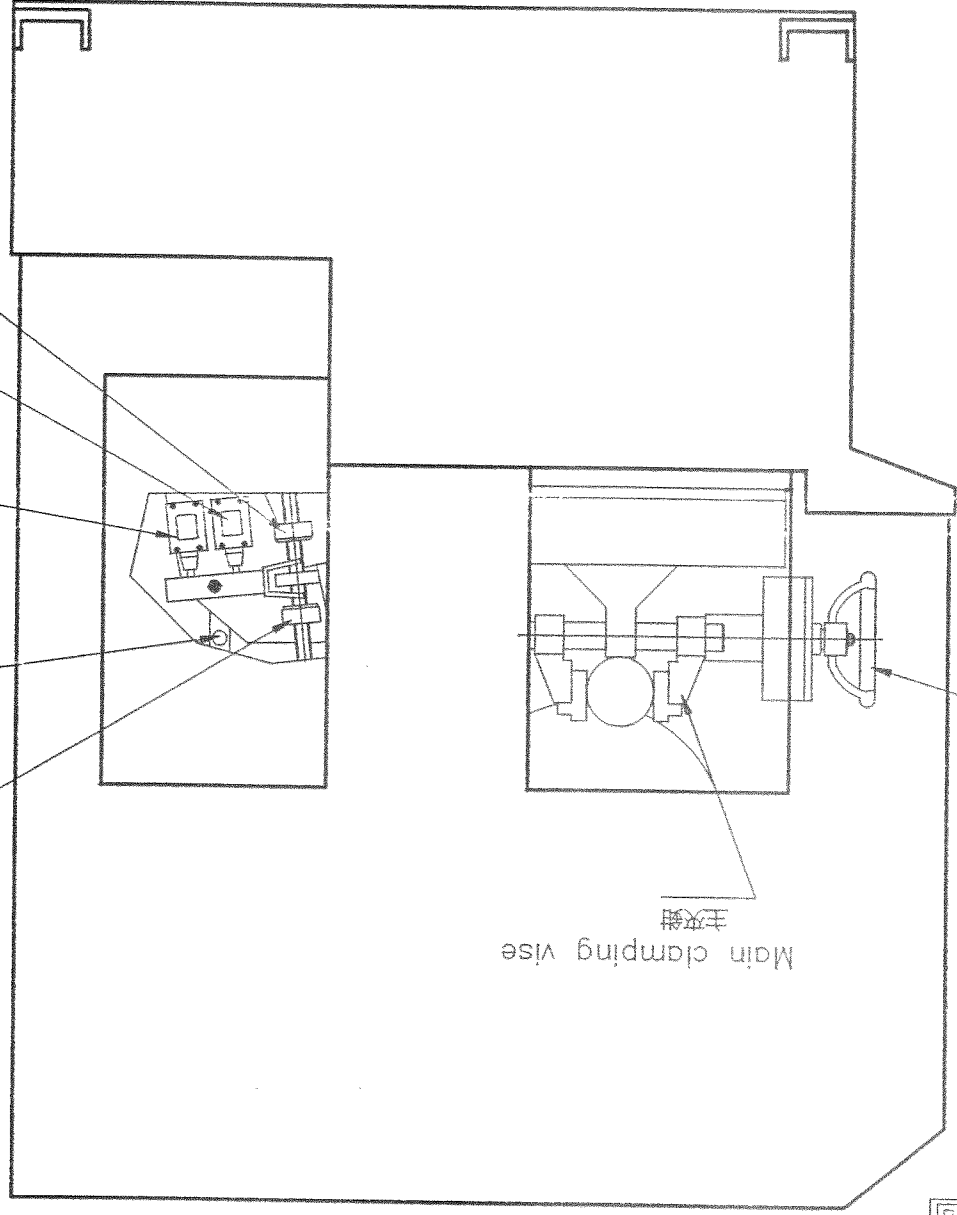
- a. Switch on power switch (Item 12 of control panel)
- b. Turn on/The Main motor Power switch (Item 10)
- c. Turn The Item 7 selection switch to "Auto" side
- d. Push The Item 5 Semi-auto function Button, Than Check The

Spindle rotation direction is clockwise or not. if it is not, just change any two of The Three power leads at point of connection Test it again to make sure the spindle rotation is in clockwise.

右側外型及各部位功能圖
Right side view
of the machine

Hand wheel of main vise
主夾鉗調整手輪

Main clamping vise
主夾鉗



Adjusting nut for saw
head down limits
機頭下死點調整螺帽

Flow control for saw
head feeding speed
進刀速度控制閥

Saw head up-limits switch
上死點微動開關(X405)

Saw head down-limits switch
下死點微動開關(X406)

Adjusting nut for saw head up limits
機頭上死點調整螺帽

3.3 Air Connection

Connect the air line supplied to the fitting, which is located at rear of machine. The pressured air should keep its pressure are in between of 5 Kg/cm² to 9 Kg/cm² and supply Volume in 250NL/min rate.

Your air supply will certainly contain some moisture which is unavoidable in any plant air supply.

This water can rust the internal parts of air tools, control and cylinders. For this reason that we suggest the installation of an air dryer in the supplied line.

3.4 coolant

This machine can provide three different coolant way. a use Air-oil mist system or b. use Air-coolant jet system, or coolant pumping system. We will follow your order to equip one cooling way on the machine.

For a.) Air-oil mist system, use Vegetable oil as the coolant.

b.) Air-oil jet system, use water solubles oil mix water in 1:10 ratio.

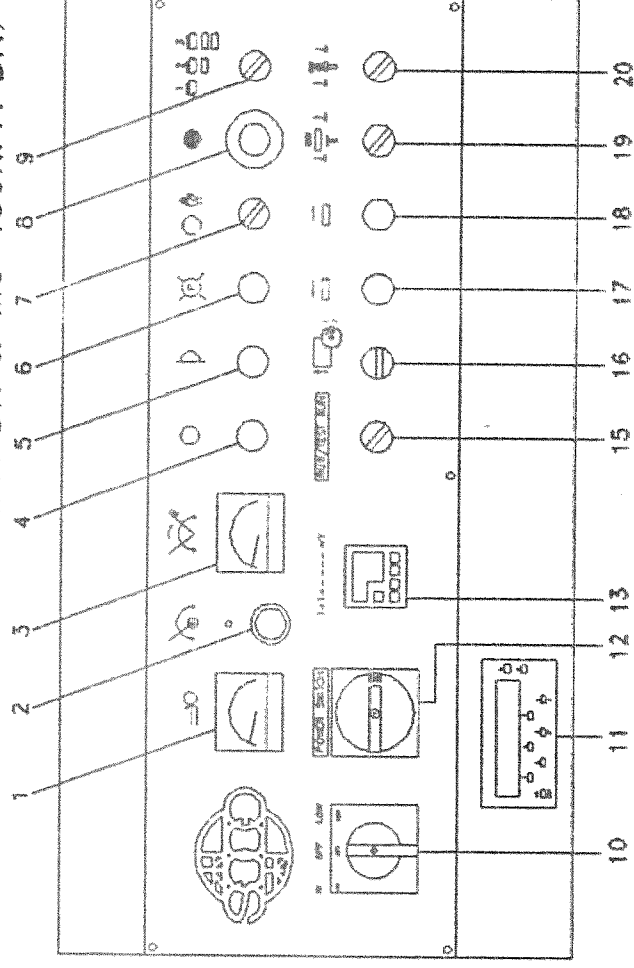
c.) Coolant pumping system, use water solubles oil.....

3.5 install the chip collector

In order to prevent the aluminum chips (or Bronzen chips) fly all the sky, it is necessary to install a chip collector to the machine. For the factory has their own central collecting system, just need to connect its duck to the machine chip outlet nozzle, which in the machine rear side. The other factory need to buy an optional independent chip collector from some dealer or other dealer, and connect the collector's duck to the machine chip outlet nozzle.

CONTROL PANEL DESCRIPTION

(MC-360NFA-DR & MC 450NFA-DR)



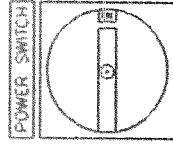
NO.	DESCRIPTION
1.	Ampere meter
2.	Power load setting knob
3.	Ampere meter, pre-set Load Ampere
4.	Auto-cycle push button
5.	Semi-autocycle push button
6.	Power indicator
7.	Auto/manual select switch
8.	Emergency stop
9.	1/2/3 material feeding stroke
10.	Blade Rotation ON/OFF switch
11.	Digital read out unit for stroke positional block
12.	Power switch
13.	Cutting number counter
15.	RUN/TEST RUN select switch
16.	Manual-saw head(up or down) select switch
17.	Manual-bar returning button
18.	Manual-bar feeding button
19.	Manual-material vise close or open select switch
20.	Manual-main vise close or open select switch

4.00 DESCRIPTION OF CONTROL PANEL

4.01 POWER SWITCH & POWER LAMP

NO.12 : POWER SWITCH

Power switch(12) has two direction, turn switch lever to a horizontal direction, then the power is engaged from source immediately and power lamp(6) lights on simultaneously.



4.02 AUTO/MANUAL SELECTION SWITCH

NO.7 :

Turn the switch to right side to test manual operation and turn to left to run semi-auto or auto cycle.



4.03 MANUAL OPERATION

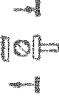
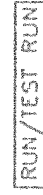
NO.16 : move blade up or down selection switch.

NO.17 : move material feed carriage backward pushbutton.

NO.18 : move material feed carriage forward pushbutton.

NO.19 : material feed vice clamp or release selection switch.

NO.20 : main vice clamp or release selection switch.



4.04 SEMI-AUTO and AUTO OPERATION

NO.4 : auto running pushbutton

NO.5 : semi-auto running pushbutton

Switch no. 7 to left, then just push down no.4 or no.5 for auto or semi-auto cycle running.

4.05 1/2/3 MATERIAL FEEDING (AUTO OPERATION MODE)

NO.9 : selection switch for 1 or 2 or 3 strokes material carriage feed



4.06 EMERGENCY STOP(AUTO OR SEMI-AUTO OPERATION MODE)

NO.8 : pushbutton for emergency stop reset by turning it right(User usually forget to reset this button and just can not start the machine again).

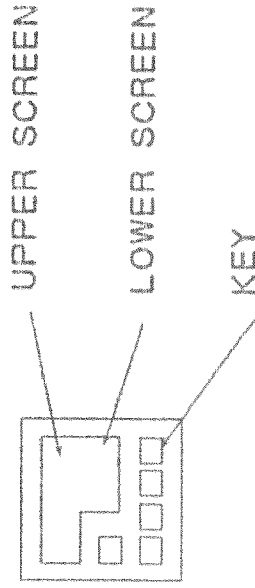


4.07 COUNTER (AUTO OPERATION MODE)

NO.13 : Cutting number counter

There are two screens of display, the upper one digit counting automatically by machine cut. the lower one shows operator's setting number (press key down will increase number in each parallel position of the lower screen), whenever the upper number reach to the presetted number on lower screen, machine will stop automatically and the number of upper screen reset itself to zero at the same time.

1+1+-----=Y



4.08 AMPERE METERS & LOAD SETTING (AUTO & SEMI-AUTO MODE)

EXCELLENT FUNCTION TO PREVENT SAW BLADE FROM DAMAGE

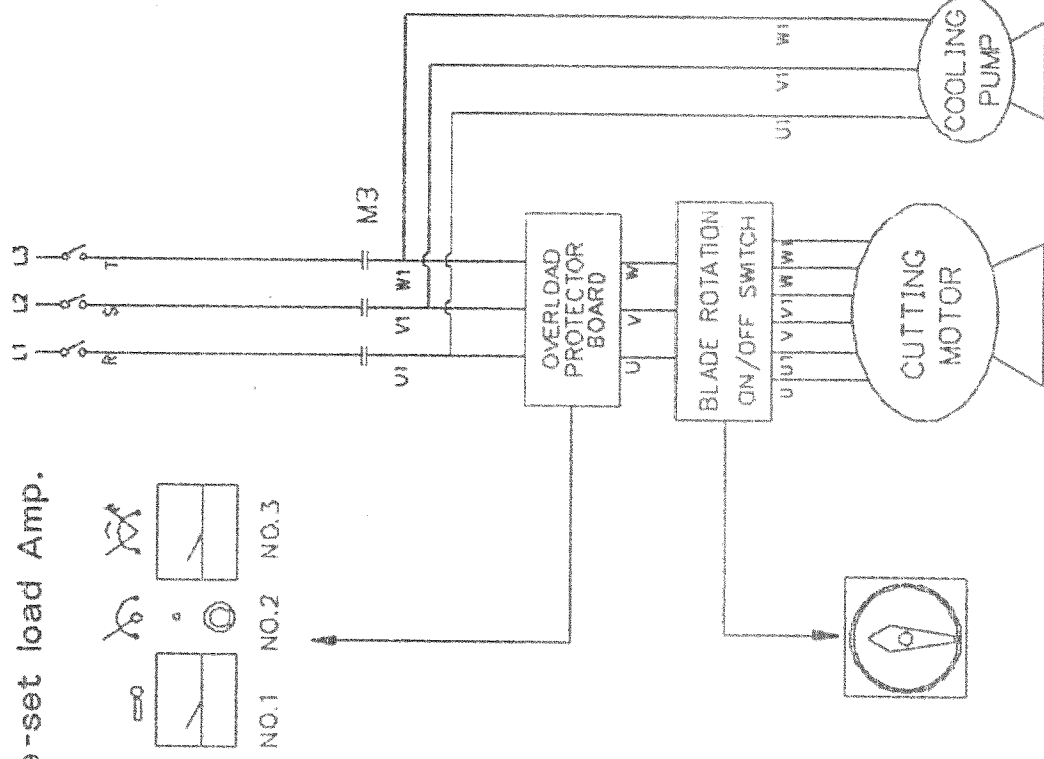
NO.1: actual load of cutting (main motor)-----M3

NO.2: load pre-set knob

NO.3: display for load pre-set

These two ampere meters are under control by a high sensitivity electronic board (drawing of electric board wiring), which detects & response within 16/1000second whenever overload happens, that can stop cutting and move head back immediately, so as to avoid breaking off of the saw blade.

Normally, We recommend 130% to 150% Amp of actual Load pick Amp as the pre-set load Amp.



4.9 Blade Rotation Switch (AUTO OR SEMI-AUTO MODE)

NO.10 : SWITCH

4.10 RUN/TEST RUN

NO.15 : Selection switch for run or test run

Whenever we run auto cycle in real cutting, the material vice always clamp the material and the proximity sensor will not sense out "no material" condition, so machine continue to run until the last cut that the material vice clamps nothing, this sensor will detects "no material" and let plc to get the signal, then to trip running for the out of material.

In case we need to run auto cycle without any material on material carriage, so we disconnect the proximity sensor with the control line by turning this switch to "TEST RUN" side, such that we can test auto running all the way. Please don't forget to return this switch to "run" side if you want to place workpiece again on real cutting.

RUN/TEST RUN



OPERATION

5.01 Saw Blade

This machine was recommend to use Tungsten carbon tooth blade only.

The blade Bore Hole 25.4m/m ϕ and out side diameter 355 m/m ϕ or 305 m/m ϕ

The blade Rotating speed is about 3600 RPM Under 60HZ power supply.

5.02 Mounting The Saw Blade

1.) Turn off the power switch **Caution! this step very important for the safety!**

2.) According to the size of cutting material section area, select a correct tooth pitch t.c.t. Saw Blade.

3.) Remove the out side clamping flange from the saw arbor

4.) With a rag, clean the inside clamping flange free from any dirt or chips. also clean the clamping area on the saw blade itself.

5.) Mount saw Blade on the Saw arbor with the teeth pointing down. (Please take care the direction arrow sign on the safety cover) then tighten the flange set screw head.

5.03 cutting depth adjust

Note! During the adjustment, do not put the workplace Between the main vices on the outting line.

1.) Turn on the master power switch (No.12)

2.) Close up flow control valve

3.) Put saw blade Rotation on/off switch to "OFF" position (No.10)

Caution! this step very important for the safety!!

4.) Push semi-auto button (No.5)

5.) Open flow control valve a small degree to let the saw head down ward very slowly and as soon as the saw blade near reach to the support table, close the flow control value entirely.

6.) Set depth stopper, which beside the saw head of the machine. adjust this screw up or down to place saw head at proper depth for cutting. Ref to page 15. drawings.

7.) On the same concept, you can set up the upper bound of the saw head. the correct upper position of saw blade is the position of saw blade leave the work piece of about 15 mm to 25mm. (ref to page 15drawing) It is obviously that this adjustment must be made each time you change the saw blade size or change the cutting material size.

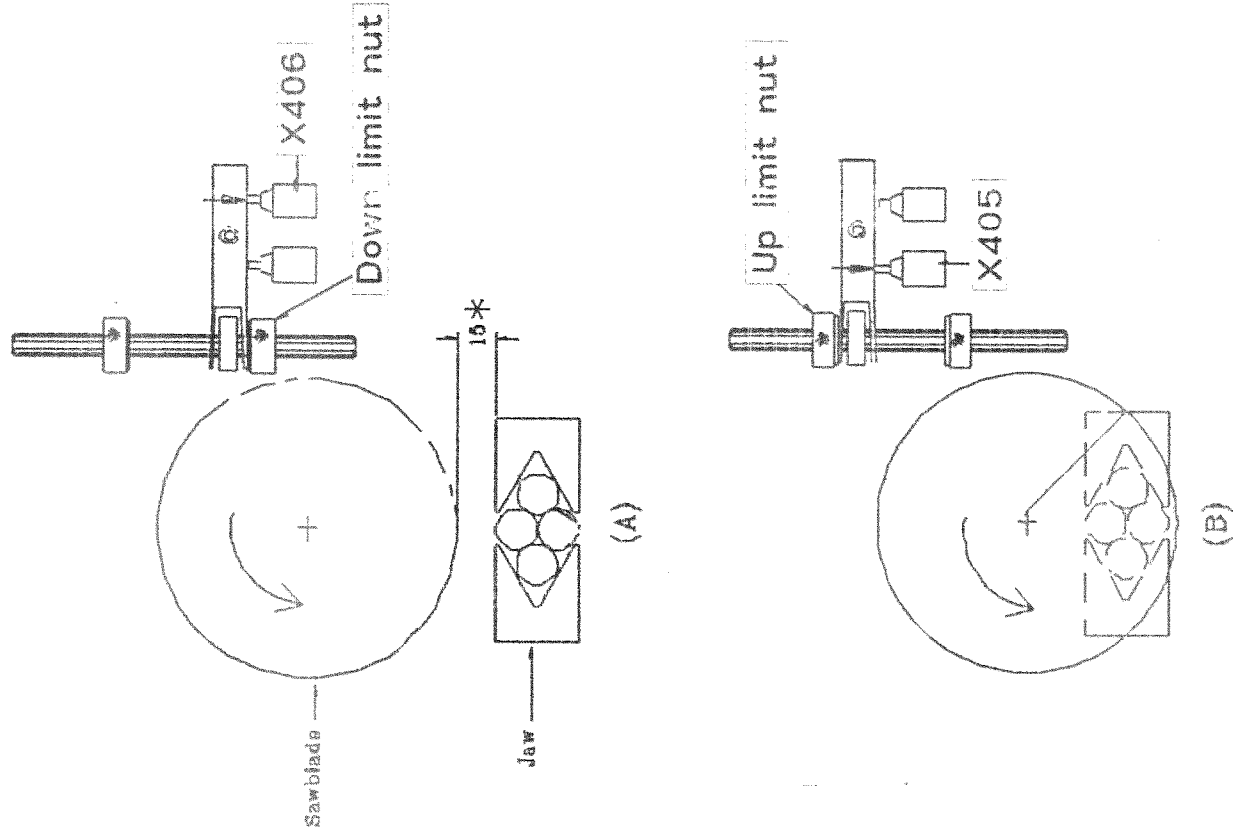


Fig. Adjustment of Head (or Sawblade)

(A) Head Up Limit

(B) Head Down Limit

* For motor have enough time to work, 15mm is the suggestive minimum Distance.

5.04 Cutting speed adjust

By turning the flow control valve (see the right side view of machine), you can get a suitable cutting head down feed speed. Remember this down feed speed must be suitable, too fast will cause the jam of sawblade, and make the saw blade has broken risk. also the cutting surface will be very rough.

5.05 Length of feeding

5.05.01 cutting Length adjustment

Ref to page 17 drawings

a.) Release the set screw in stroke positional block.

b.) Turn switch 7 to right, hand position

C.) Push switch 18 to move material carriage away from the stroke limiter and reach to the front dead point.

d.) Drive handle wheel to move the stroke limiter forward to reduce cutting length or backward to enlarge the cutting length.

e.) Stop driving the handle wheel when the display digital has reach the length that you are wish.

f.) Secure the set screws

g.) Turn switch 7 to left, auto-position.

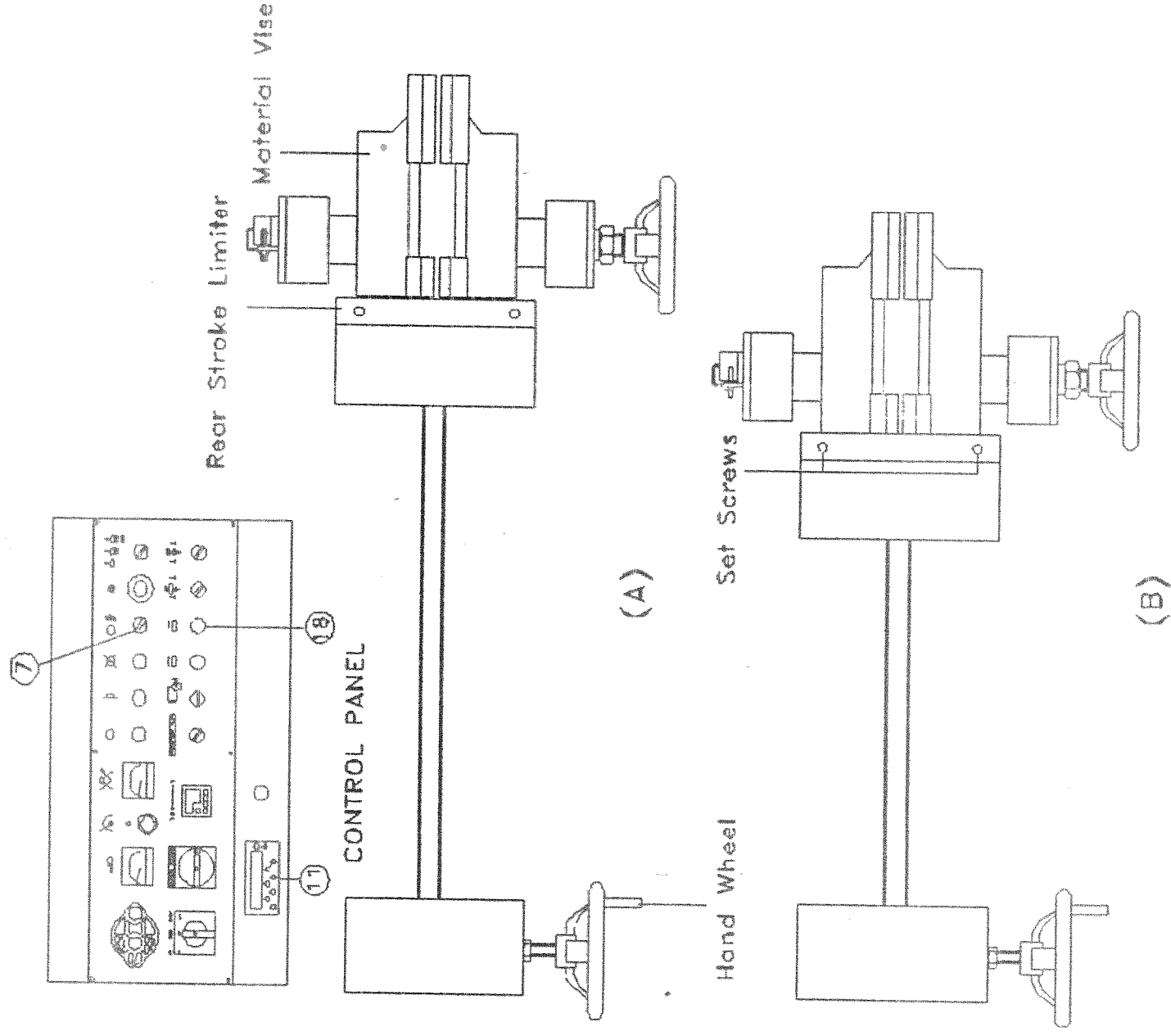


Fig. Adjustment of Cutting Length

5.05.02 digital display unit

1.) DISPLAY PARAMETERS

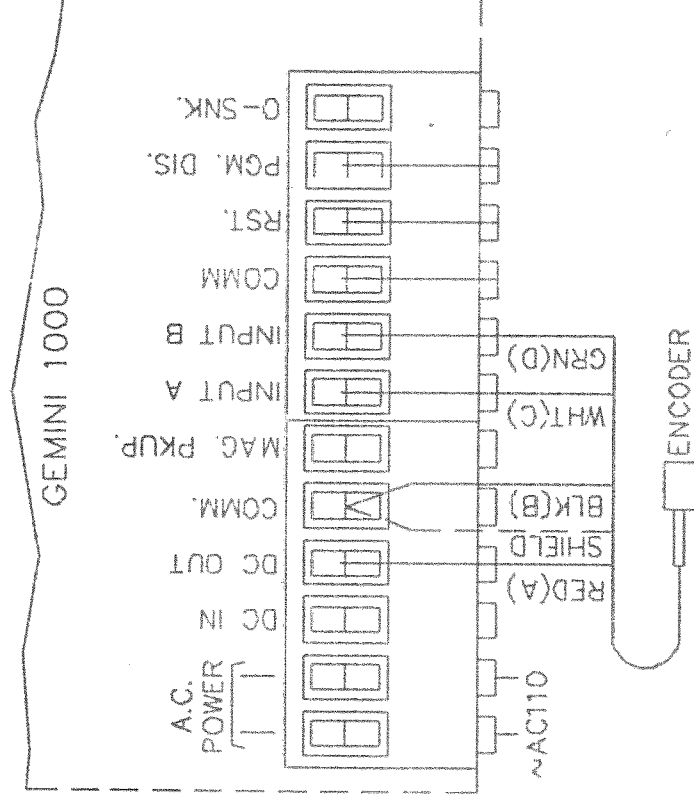
The parameters in GEMINI-1000 display were all pre-setted in the factory, please don't touch any key on the panel.

In the case of un-predicted trouble happen that cause this display won't work, Please urgently call our serviceman to treat it for you,sometimes we can easily solve the problem with discussion in the phone call or just simply by a fax.

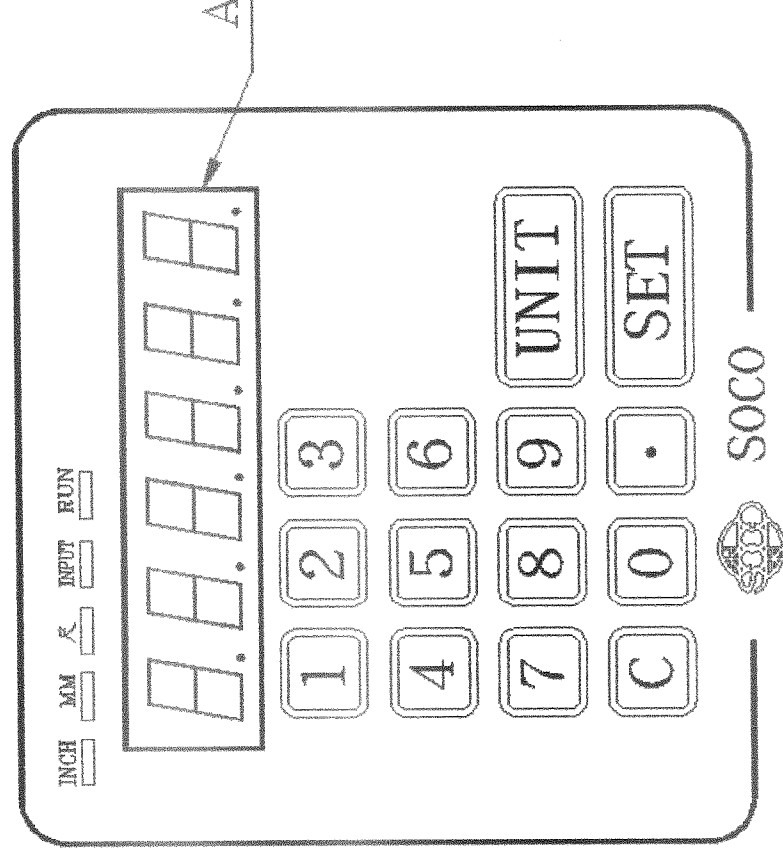
But in some area we can not support sufficient service or without any dealer in local, you still can solve the problem with the following guides :

A. WIRING CHECK

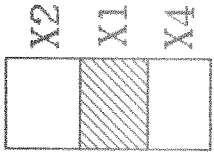
Check the wiring between GEMINI-1000 and encoder should be solidly connected as shown below. Take care the line color must be fixed in correct position. If you re-operate the length setting with moving material carriage and find the counter display direction wrong , then change the green and white line each other.



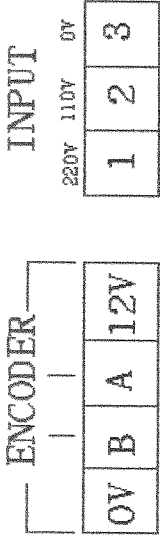
Digital read out unit



1. Push the **UNIT** button, There is lighting will be on **INCH** or **MM** or **R** so if the light on mm the read out unit will be in metrical mm system.
2. In order to change or correct or re-set the figure on the A screen. push **SET**, The A screen figures will be flush. edit new figure. push **SET** again and hold about 3 second, The new figure will be enter the A screen.
3. When you edit new figure, if there are any mistake. push **C**, all screen figure will be clean to become zero. You can re-edit new figure again.
4. When the unit in **MM** system the screen figure will show xxxx.xx
When the unit in **INCH** system the screen figure will show xxxx.xx

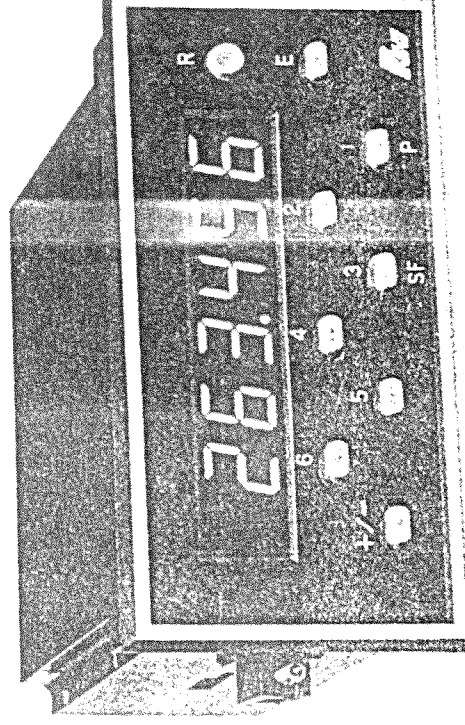


(Switch on X1 location)



(Input connect 1 & 2 to control transformer 110V)

Back side view



GEMINI PROGRAMMING DATA

FUNCTION CODES DATA VALUES

41(1)	51(1)	61(4)	SF_(0000)-mm
42()	52(3)	62()	SF_(3937)-inch
43(5)	54()	63()	P_()
44(1)	56()	64()	P_()
44(1)		65()	53()
46(3)		66(3)	55()
--()	--()	--()	

MARK ALL MODE IDENTIFICATIONS AND DATA VALUES. ATTACH STICKER IN CONVENIENT LOCATION FOR REFERENCE.

2.) INPUT NEW DATA (PARAMETERS)

There is a data table beside GEMINI-1000 which is used for guiding user's operation in reset new data.

a. RESET

Turn switch 7 to right, push 18 button to move material carriage to front end. Use handle wheel drive the stroke limiter to the front end then press down the reset button on the GEMINI-1000 panel, screen digit will be reset to zero.

b. Entering function & mode is easily accomplished by pressing the appropriate digit key as indicated by the embossed number above it. for the personality function, you would enter 41 by pressing the front panel key 4. The press the front panel key 1. The leftmost

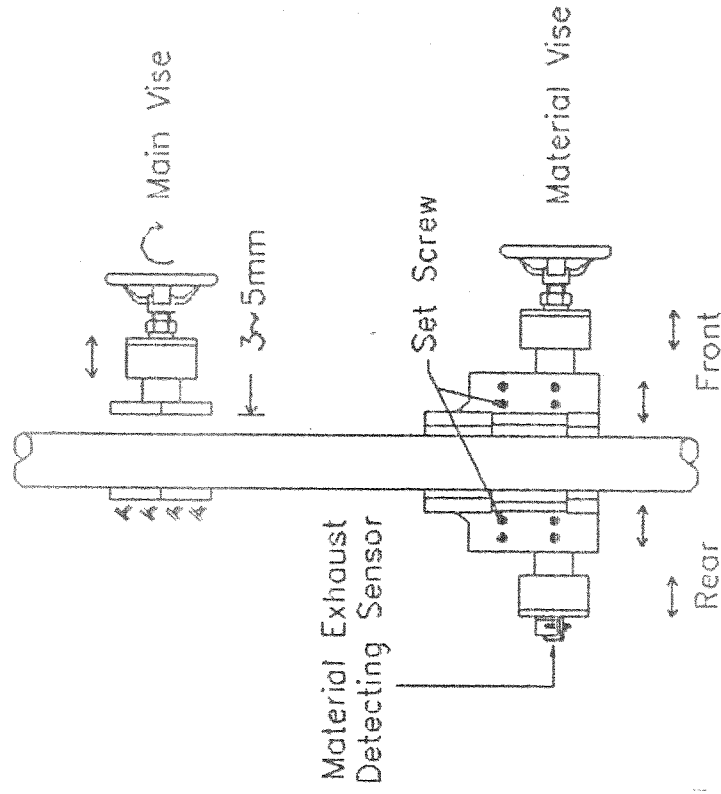
LED's show the function. the rightmost is the present mode. A new mode selection is made by entering a new number. On some of the entries you have the option of a plus(+) or minus(-) sign. In the cases where a (+) sign is required, no sign will be displayed. if you do enter a "-" sign (using the +/- key), a minus sign will be displayed. Pressing the "E" key finalizes the change. the display will now show the count value immediately. If you don't press the "E" key finalizes the change. the display will remain for 15 seconds, and then return to normal operating mode using the old function and mode setting. (NOTE: The reset button "R" if enabled is always active. pressing reset will immediately abort the function selection and reset the instrument.) All the other functions and modes will be finished by the same operation

c. Inch/mm change

To change the scale factor, press the "SF" (3) key. The display will then show you the present scale factor value. The scale factor can be set from -5.9999 to +5.9999. in our case only two value shall be set. That is 1.0000 for mm cutting and 0.3937 for inch cutting. Changing the digits can be done by repeatedly pressing the key beneath the digit position you wish to change or by merely holding it down. The new value will be entered when the "E" key is pressed. This key must be held down until the display has blanked, after which the unit will return to normal display mode.

5.06 adjustment of vises

Caution ! during the adjusting, Turn the saw Blade rotating switch (NO.10) to OFF position and turn the flow control valve to close position.



Ref to the above drawing, the main vise rear side has no moving , while the cylinder working. So choose this rear side of main clamping vise as the common fixed line.

a.) place a working material on the machine, let one side against the rear side of main vise.

b.) use hand turn the main vise handle wheel let the front vise has 3 to 5 mm clearance to the material.

c.) turn the selecting switch No. 7 to right, hand position, and turn the switch No. 20 to left to actuate the cylinder and tighten holding the material.

d.) use hand turn the material vise hand wheel let Both side clamping vises Close to the material, than push Both side vise jaw to against the material.Tighten those set screws.

f.) turn the material vise hand wheel back to leave 3 to 5 mm clearance to the material.

g.) use selection switch No. 19 to test the material can be tighten Holding by the material vise.

h.) use No. 20 switch to open the main vise, than push No. 18 button to feed material forward and push No.16 button to take material back-ward and see is it in smooth moving or not? Otherwise repeat above steps, until it can move smoothly.

5.07 FIRST CUT & AUTOMATIC CYCLE RUNNING

FIRST CUT :

Before cutting process make sure switch 19 20 has been turned to left.

Turn switch 7 to "AUTO" position and 15 to "run" position. Place the workpiece in the position for first cut. After selecting the right blade and the correct speed, the workpiece is securely clamped. Push the semi-auto button(5), then the cutting cycle will start.

CAUTION ! At any time, if the cutting has anything wrong, push the emergency stop button (8) to stop the operation.

FULL AUTO CYCLE:

MATERIAL SUPPLY LENGTH ADJUSTMENT -----OK
CUTTING DEPTH ADJUSTMENT -----OK
MAIN & MATERIAL VICE ADJUSTMENT -----OK
MATERIAL SUPPORT ROLLER GUIDE ADJUSTMENT -----OK
CUTTING SPEED (FLOW CONTROL VALVE) ADJUSTMENT -----OK
SAWBLADE ROTATION SPEED SELECTING -----OK
SAWBLADE HAS BEEN CORRECTLY SELECTED & MOUNTED -----OK
COUNTER PRE-SET READY (NEVER SET TO 0) -----OK
CONTROL PANEL SWITCH (7,9,11,15)ARE READY -----OK
1/2/3 MATERIAL FEEDING IS SET TO 1 -----OK

If the above pre-checks are all ok, then just push the full auto button(4), the automatic cutting cycle will start.

AUTO CYCLE STOP:

There are 4 cases that will cause machine stop running:

1. Until no sufficient material can be holding by material vice, then the operation will be stop automatically by proximity sensor x412 (as described in 4.10 page 12), and the machine is waiting for you to feed another material in the machine.
2. In case of overload happens, it stop automatically by electronic protector. In this case, you should check:
 - a. if the sawblade is dull?
 - b. if blade down feed too fast?
 - c. if the load pre-set too low?
3. Counter upper screen number has reached to the pre-setted number
4. Emergency stop operated by user.

Maintenance

6.01 Vise

Keep vise clean at all times. Blow chips away, with compressed air if possible.

6.02 Saw Blades

Keep blades sharp and avoid cutting with dull blades. Proper blade selection will always improve the overall operation of this machine. Remember the saw blade is the "weakest link".

6.03 Lubrication

- a. Spindle must add grease periodically
- b. Screw in the vise and all leading bar must add lubrication oil periodically.

6.04 Spare Parts

Please order spare parts by number from the enclosed drawings and parts list.

IMPORTANT!! SAW BLADE MAINTENANCE

This machine will perform only with saw blades that are sharpened properly, and always using right sawing oil.

Trouble shooting

A. CHECK THE INITIAL INPUT AND OUTPUT OF THE PLC & PLC TROUBLE SHOOTING

a.7.01 INPUTS TESTING

LIMIT SWITCHES : (AROUND THE MACHINE)

Use your finger to actuate the sliding rod on the top of the switch repeatedly and check indicating lamp is flashing on and off alternately. this means those switches are in good condition and functioning nicely.

Including :

1. head down limit switch-----plc code x406
2. head up limit switch-----plc code x405
3. material carriage front end limit switch-----plc code x407
4. material carriage back end limit switch-----plc code x410

PROXIMITY SENSOR : (LOCATED ON THE MATERIAL CARRIAGE'S REAR CYLINDER)

1. proximity sensor for material check-----plc code x412

Using a ferrous bar (such as a screw driver) to touch the sensing head slightly. Check plc panel, if lamp x412 is on that means the sensor is ok.

SELECTION SWITCHES AND PUSH-BUTTONS : (CONTROL PANEL)

1. emergency stop button-----plc code x402
2. auto push button-----plc code x400
3. semi-auto push button-----plc code x401
4. 2 material feedings selection switch-----plc code x404
5. 3 material feedings selection switch-----plc code x411

Testing these switches or push button, you should operate the switches to expected direction stated in 4.04 firstly. you have better let the saw blade rotating switch in "off" position and close flow control valve to dead end, and check plc input lamps with the same procedures stated above.

a.702 OUTPUT TESTING

MAGNETIC CONTACTOR : (CUTTING MOTOR)-----PLC CODE
Y431

TEST STEPS :

1. Turn switches (7,19,20)to left.
2. Close flow control valve.
3. Turn saw blade Rotating switch to on position.
4. start semi-auto(5) button
5. Machine start running and plc lamp Y431 will be on.

SOLENOID VALVE :

MAIN VICE-----PLC CODE Y432
BLADE DOWN-----PLC CODE Y433
BLADE UP-----PLC CODE Y434
MATERIAL VICE-----PLC CODE Y435
MATERIAL CARRIAGE MOVE FORWARD-----PLC CODE Y436
MATERIAL CARRIAGE MOVE BACKWARD-----PLC CODE Y437

For the testing those solenoid valve, you only turn manual/auto switch to right side and directly operate switches from 16 to 20 with the same checking plc lamps at the same time.

a.7.03

MC-360NFA-DR I/O Configuration

Model A1-20MR

INPUT		CODE
1	Auto	X400
2	Semi-Auto	X401
3	Emergency Stop	X402
4	Reach to Pre-set Number of Cutting	X403
5	2 Times Feeding	X404
6	Head Up Limit Switch	X405
7	Head Down Limit Switch	X406
8	Carriage Return Limit Switch	X407
9	Carriage Forward limit Switch	X410
10	3 Times Feeding	X411
11	Proximity Sensor of Material Checking	X412
12	Semi-Auto	X413

OUTPUT		CODE
1	Counting	Y430
2	Cutting Motor	Y431
3	Main Vise	Y432
4	Blade Down	Y433
5	Blade Up	Y434
6	Material Vise Close	Y435
7	Material Feeding Forward	Y436
8	Material Feeding Backward	Y437

B.CHECK OTHERS

b.7.01 Machine will not start

a. Check power supply.

b. Check transformer, located in electrical control box, which was on the back side of machine. **CAUTION! Before removing this cover please make sure the power is disconnected.**

Test with volt Meter to make sure it is working.

c. Check to make sure the counter record is not larger than the number. Just take off the cover of counter and check the lower numbers.

d. Check to make sure the pre-set peak load is not too low, such that the motor cannot running.

b7.02 Motor will not start only makes "BUZZING NOISE"

a. Check main power supply to be sure all (3) legs of current are working and check main fuses. This condition is "single phasing" and motor is not receiving all(3) phase of current.

b. Check all leads and connections.

C. Check coil relay to make sure it put out all (3)phases.

b7.03 Saw blades breaking or chipping

a. Check out sawblade whether has been tighten or not.

b. Wrong blade selection---too many teeth or not enough teeth.

c. Poor, incorrect saw sharpening. (wrong geometry on teeth)

d. Dull saw blades.

e. Check out vise whether has been used correctly.

b7.04 Too much vibration or noise

a. Wrong blade selection.

b. Parts not properly clamped or vise jaws not positioned(all 4-jaws) up to the saw blade.

c. Machine not level or not sitting on solid foundation. Bolt machine to the floor with holes provided in base.

**ALL OTHER QUESTION OR PROBLEMS : REFER TO YOUR
LOCAL DEALER.**

Model : MC-360NFA-DR Trouble Shooting Guide

Problems	Sources	Solutions
1. Machine will not start	a. Main power cable is not connected to the power source. b. Power indicator light is not on. The transformer is shorted and broken. c. The safety fuse is broken. d. The Emergency Switch is not returned to the original position.	a. Check power supply. b. Use multi meter to test the transformer. If the output value is incorrect, the transformer is broken. Replace it when needed. c. Replace the safety fuse if needed. (May test with multi meter). d. Turn the Emergency Switch toward the direction as shown by the instructing arrow, to return it to the original position.
2. Machine stops running during work process	a. The Pre-set Safety Limit Amp is set too low. b. Out of material and the machine is set to "RUN" mode. (When set to "RUN" mode, the machine automatically stops when it's out of material). c. Dull blade. This will further burdens the machine and increases the electric current to reach the Pre-set Load Amp. d. The number of machine cuts has reached the pre-set number. (Please check the upper screen on the Cut Number Counter). e. The Clamp Vise has not secured the work piece properly. This will burden the machine and cause the electric current to reach the Pre-set Load Amp. f. The control wire is not properly connected.	a. Adjust the Pre-set Safety Limit Amp. b. If out of material, reload material. Also, if the Material Vise does not secure the material properly (opens too wide), the sensor may interpret it as "no material". Adjust the Material Vise if this happens. c. Replace the blade. d. Restart the machine. e. Adjust the distance of which the Material Vise opens up to, and the tightness of the Vise, to avoid breaking the blade. f. Check the 110V control wire. Secure the electric terminal if it is loose due to the machine vibration.
3. Motor will not start	a. One or more of the 3 phases of the main power is not connected. b. The Current Adjusting Panel is shorted. c. The Solenoid Switch is not well connected. (One or more of the	a. Use multi meter to test if all of the 3 phases are connected. b. Use multi meter to test the Current Adjusting Panel. If any of the input or output current is not normal, the panel is broken. c. Use multi meter to test the Solenoid Switch.

	connecting wires is not connected). d. The Motor Switch is shorted or broken. e. The motor is shorted or broken. f. The Fixing Stick for securing the Spindle is not removed from the pin.	If one or more of the connecting wires is not connected, replace the Solenoid Switch. d. To test, connect power supply directly to the motor to see if the switch is broken. Replace when needed. e. Use multi meter to test the 3 phases of the main power. If all 3 phases are normal, the motor may be broken. Replace it when needed. f. The Fixing Stick should be in the pin to secure the Spindle when changing the blade. Remember to remove it from the pin before turning on the motor. The attempt to turn the motor without the Fixing Stick removed might damage the motor.
4. Coolant Pump Not Working	a. Inadequate coolant. b. The Coolant Pipe Check Valve is clogged. c. The Coolant Nozzle is clogged. d. Coolant pump is reversed or burned.	a. Refill coolant (up to 8/10 of the tank). b. Clean Coolant Pipe Check Valve, or replace it. c. Clean Coolant Nozzle or replace it. d. If the coolant pump is reversed, switch any 2 of the 3 phases. Replace the coolant pump if it is burned.
5. Broken or Chipped Blade	a. Incorrect selection of the blade (incorrect number of teeth). b. The blade is dull, and the Overload Protection is set too high (over the safety limit amp). c. The work piece is loose, and the locking nut in front of the handle is loose. d. The vise is worn out and loose. e. The cutting speed is too fast and unstable air pressure. f. Unstable cutting speed. The Air Cylinder is leaking. g. The blade (the position of the Cutting Head) is too close to the work piece. Since it takes a while for the blade to run at the full speed, when it is placed too close to the work piece, it may	a. The selection of the blade and the number of teeth on the blade depend on the material of the work piece. Please consult our service centers for the correct selection of the blade. b. Replace the dull blade. Adjust the Overload Protection to be within the safety limit amp. c. Make sure the work piece is properly secured, and the locking nut in front of the handle is properly placed and tightened. d. Replace the vise. e. Adjust the cutting speed and air pressure (6-8kg/cm). f. If the Air Cylinder is damaged or leaking, replace the Oil Seal or the Air Cylinder. g. The blade must be at least 10m/m away from the work piece. h. When installing the blade, make sure the sharpened end of its teeth faces the correct direction. Please follow the arrow instruction.

	reach the work piece running and cutting UNDER the desired speed. h. The blade is installed facing the wrong direction (The sharpened end of the teeth must face the same direction toward which the blade rotates). i. The blade is loose.	i. Make sure the blade is properly secured.
6. Inaccurate Cutting Size	a. The blade vibrates too much. b. The fixing screws (2 screws) on the Feeding Process Stopper are loose. c. Improper alignment between the Main Clamping Vise and the Material Clamping Vise. d. The material stand (table) is not horizontally aligned with the machine. e. Unstable air pressure. f. The Cushions that slow down the Stopper at the front and rear ends of the Feeding Process Sliding Rail are not properly adjusted. g. The screws that contact the Front and Rear Limit Switch are not properly placed (the screws should be able to touch the Limit Switches.) h. The Feeding Process Sliding Rail is damaged. i. Accumulated metal chips around the Stopper (Adjusting Block). j. Damaged or poor-quality Clamping Jaws (if using). k. The Material Vise is damaged and loose.	a. Turn on the Multi-Speed Switch. b. Secure and tighten the screws (2 screws). c. To avoid interference, align the Material Clamping Vise to be 0.1mm to the front of the Main Vise. d. If using a material stand or table, make sure the surface of the stand is horizontally aligned with the material feeding line. e. Adjust air pressure to be 5.5-6kg. f. Adjust the two Cushions (front and rear end) often, according to the feeding amount. g. To adjust the screws: Switch to the Manual Mode and loosen the screws. Move the Feeding Seat forward until a “click” sound occurs (the screw touches the Limit Switch). Tighten the screw at this point. Same for adjusting the Rear Limit Switch. h. Replace the Sliding Rail if it is damaged. i. Use air-spraying pistol to clean up the chips. j. Replace the Clamping Jaws. k. Replace the Clamping Vise set.

7. Cutting Head is not ascending	a. The Lowermost Limit Switch is broken, or the screw that contacts the Limit Switch is not properly placed (the screw should be able to touch the Limit Switch.) b. Inadequate air pressure. c. The Air Cylinder bearing is twisted and out of shape. d. The O-Ring of the Air Cylinder is damaged.	a. Adjust the contacting screw (the one that should be able to touch the Limit Switch). Replace the Limit Switch if it is broken. b. Increase air pressure. c. Replace the Air Cylinder. d. Replace the O-Ring when needed. If the wall of the Air Cylinder is damaged, replace the Cylinder.
8. Cutting Head is not descending	a. The Cutting Head Speed Control Valve is not open. b. The Cutting Head Solenoid Valve is clogged, or the coil is burned, or the Cutting Head Solenoid Valve Control Wire is disconnected.	a. Open the Cutting Head Speed Control Valve. b. Take off the Solenoid Valve. Clean or replace the valve. Also checks the power connection.
9. Non-stop Cutting Head Ascending and Descending action, with No Feeding Action	a. One of the Feeding Limit Switches (for moving forward or backward) is damaged or shorted. b. The Semi-automatic Button is stuck or broken.	a. Light 410 and 407 on the PLC should NOT be on simultaneously. When feeding forward, light 407 should NOT be on. Otherwise the Rear Limit Switch is broken or shorted. When moving backward, if light 410 is on, the Front Limit Switch is broken. If the Switches are shorted due to humidity, air-dry the Switches. b. Replace the Semi-automatic Button if it is stuck or broken.
10. No Action when set to Semi-Auto or Fully-Auto (Functions normally under Manual Mode)	a. No program in the PLC. b. The PLC is broken. c. When the Machine Head is ascending, the screw that contacts the Uppermost Limit Switch is not properly placed (the screws should be able to touch the Limit Switch.) As a result, the Clamping Vise cannot be opened and loses the fully-auto functionality.	a. The PLC battery will be dead if the machine is set idle for a certain period of time, and the program in the PLC will disappear. Replace the battery when the BATT. V light is on. If the RUN light on the PLC is NOT on, there is no program in the PLC. Re-enter program to the PLC or insert pre-loaded ROM. b. The PLC432 light should be on when switching to the Auto Mode. If not, the PLC is damaged and should be replaced or repaired. c. Adjust the screws and nuts to be able to touch the Limit Switch.

11. Machine Head Not Moving Smoothly and Vibrates.	a. The Cutting Air Cylinder is damaged and leaks. b. Inadequate or unstable air pressure.	a. Replace Oil Seal or the Air Cylinder. b. Adjust air pressure to 6-8kg.
12. Machine making too much Vibration and Noise	a. The floor (foundation) on which the machine is placed is uneven (bumpy). Or the machine is not properly placed on the foundation. b. Inadequate oil in the tank for the Air Cylinder. c. Wrong selection of the blade or the blade is dull. d. The work piece is loose or the Clamping Vise is loose. e. Improper adjustment of the Speed Reducing Valve (for the Feeding Air Cylinder).	a. Adjust the machine to be horizontally parallel to the floor (foundation), and make sure it is secured. b. Refill oil for the Air Cylinder. c. Select proper blade with correct number of teeth on the blade. Sharpen or replace the blade. d. Make sure the work piece is properly clamped. Adjust the screws on the Clamping Vise to make sure the vise moves smoothly (not too tight or too loose). e. Adjust the valve to the proper speed to avoid vibration. The fixing screws on the Air Cylinder may be broken due to the vibration.
13. Spindle making Loud Noise	a. The Spindle Bearing is damaged. b. The fixing screws on the Spindle or Motor Belt Roller are loose.	a. If the Bearing is making the noise, it may be broken. Replace when needed. b. Tighten the fixing screws on the Belt Roller.