

Simple Instruction Manual

PLC Double-acting Hydraulic Deep Drawing Machine

Contents:



- Attentions&Warning
- Machine Assembly and components name
- Tools with machines
- New machine preparation and installation
- Machine starting
- PLC operation
- Tooling installation
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Attentions&Warning



Danger:



WARNING

- Don't put hands and objects into the gaps of two sides of working table in order to avoid hurt and damage.
- the motor mask of oil pump can't be removed in order to avoid hurt, change the blade in time if damage to avoid damaging motor.
- In order to avoid mistake and electric shock, forbid removing the plug when machine is working.
- It's strictly required that only one person can operate one machine.
- The motor should stop working when repairing and changing dies and tools.

Attentions&Warning



Warning:



- The power uses three-phase & four-wire system, which makes sure that the ground connection is reliable, firm and safe, and the section area of ground wire should not be less than the section area of phase wire.
- The entrance wires must be equipped with Leakage Protector
- The volume of power cord and power plug should meet the requirement of the overall machine-using electricity in order to avoid fire, pay attention to and avoid attrition and breakage which may cause the accidents of leakage and cause the electric shock
- If the breakdown or uncommon situation takes place, shut off power immediately and stop machine to check, working with problems is not allowed.
- Use the equipment with infrared photoelectric protectors, please check if they are in good working conditions and whether they are nimble and complete.
- Don't remove the motor mask in order to avoid the accident of putting hands into the shaft coupling.
- Don't remove casually the high pressure oil pipe in order to avoid hydraulic oil spaying from the position of connector and hurting body.
- Stop motor completely and power off when inspecting hydraulic system.
- Don't remove the small window behind machine in order to avoid dangers.



Attentions I:



- **Equipment installation:** the machine nstallation is very easy , the basic requirement is not high, but pay attention to adjust working table to horizontal position, and fix the bolts on the ground foot.
- **Don't start machine** without understanding the machine performances and operation procedures clearly and before reading the instruction manual carefully.
- **In order to avoid losing original precision,** don't install and uninstall the dies and tools willfully.
- **In order to avoid program mistake,** don't open the electrical controlling board and try to disassemble and change the units and paths .
- **Don't start machine** before installing dies and tools correctly、 evenly adjusting the slide block、 stroke to meet he requirements of work pieces.
- **Don't adjust and overhaul** the dies and tools when the machine is in the working condition.
- **It should calculate carefully** the practical pressure needed, forbid overloading to run.
- **In working condition,** don't operate every button and directive when the body part such as head、 hand is close to working district in order to avoid body hurt.
- **In order to avoid damaging** the machine and components,don't deeo drawn or extrude when the working table does not arrive at highest position.



Attentions II:



- The hydraulic oil temperature should be controlled under 75°C, and take cooling measures when necessary.
- Please read Instruction Book carefully before operating.
- Operator just can run the machine after professional training.
- The staff in charge of maintenance and debugging must be equipped with professional knowledge, then operate.
- After placing machine, setup safety zone , non-operator is not allowed to enter the zone, the height of machine is over 3 meters, don't hurt and damage objects and equipments when transporting.

Machine Assembly & components name I



Front Side



Left Side



Right side



Front Details



Operation Buttons



Electric box

Machine Assembly & components name II



Top cylinder



Top Table



Center screw



ColumnsX4 clamping table



Safety sensor



working table



small oil tank



big oil tank



Touch screen



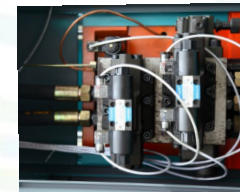
Operation Buttons



Electric box



Motor



Valves

Tools with machine



Two-head Wrench



Hook wrench



Socket head wrench



Die-installation screw

Two-head wrench: to assemble or disassemble the oil pipes

Hook wrench: to adjust the locking screws of top cylinders

Socket head wrench: to fix or loose the screws of hydraulic valves, frame screws

Die-installation screw: to install the dies

New machine preparation and installation I



1, New machine package



Wooden box



Iron pallet

Note:we always take use of wooden box or iron pallets to pack the machine

1. when the new machine arrives at your factory,please open the box or disassemble the iron pallet
2. please stand the machine with crane (be careful,don` t damage the machine)
3. If your machine is very big,please dig the base to place the machine so that your workers can operate easily
4. **Please reprepare the 46# hydraulic oil and 3 phase cord with enough length**

New machine preparation and installation I



1, Filling into oil

1. Hydraulic oil 46#
2. Volume of oil needed (220L/Barrel)

Model	YF30	YF46	YF65	YF80	YF100	YF120	YF160
Oil cap.	2.5	3	4	5	5	6	5/6

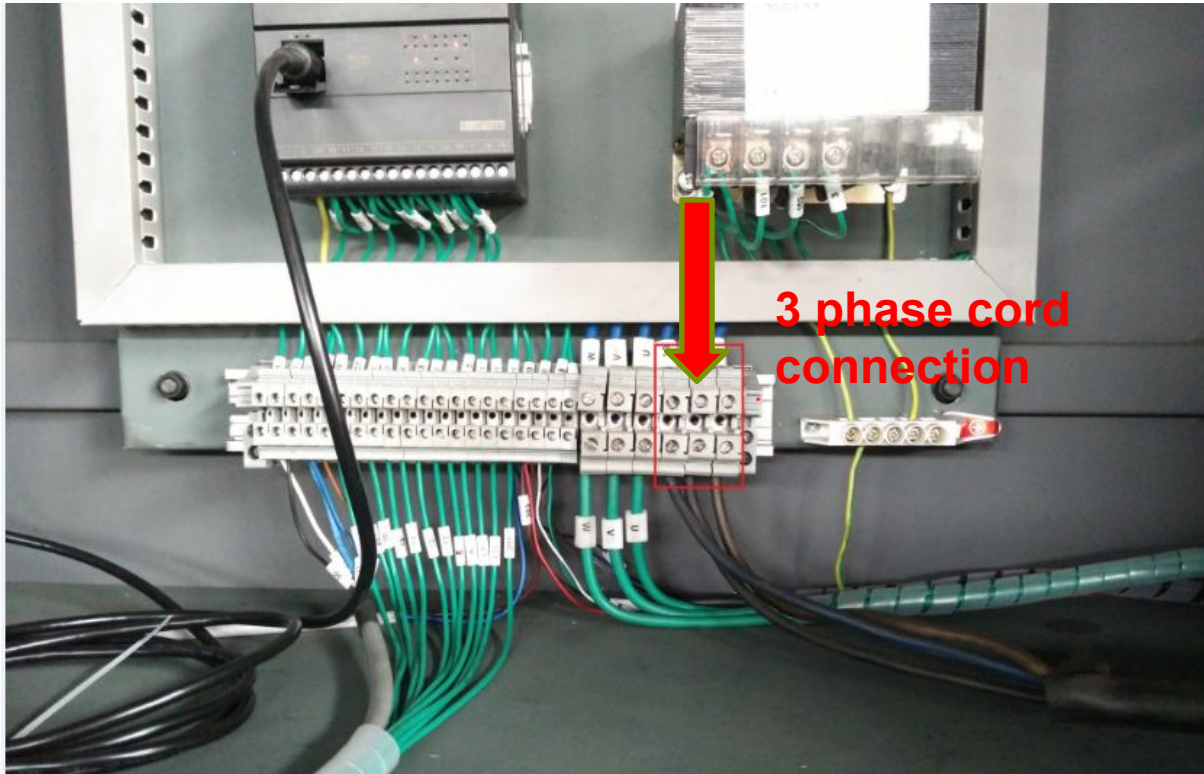


46#, 170Kg/barrel

New machine preparation and installation II



1, Power cord connection



1. Voltage:380V
2. Cord:3phase
3. Please connect the cord connector with mark L1.L2L3
4. **After connecting power sucessful,please push the start button and confirm whether the motor rotate closewisely,if not please exchange any 2 pcs of 3 phase cord to connect.**



Machine starting I

1, Buttons introduction I



Motor running indicator

Motor stop Indicator



From left to right

Clamping

deep drawing

back

die-open



Automatically

Emergency

Machine starting II



1, Buttons introduction II

- **Motor running indicator:** when motor starts, the indicator will be on (green)
- **Motor stop indicator:** when motor stop running, the indicator will be on (red)
- **Clamping button:** push this button, the working table driven by the lower cylinder will move up to clamp the dies
- **Deep drawing button:** push this button, the male die will start deep drawing that is driven by the top cylinder
- **Back:** push this button, the male die will be go back after deep drawing which is also driven by the top cylinder.
- **Die-open:** Push the working table will move down and the dies will open, too, which is driven by the lower cylinder
- **Note:** all above buttons will be useful under **MANUAL** condition, so operate one by one
- **Automatically:** push this button, all actions will be finished automatically



Motor running indicator

Motor stop Indicator



From left to right

Clamping

deep drawing

back

die-open



Automatically

Emergency

PLC Operation I



1, PLC Home page



- there two languages to choose: Chinese and **English**
- You can touch "**English**" to enter the detailed pages



1, PLC Operation page

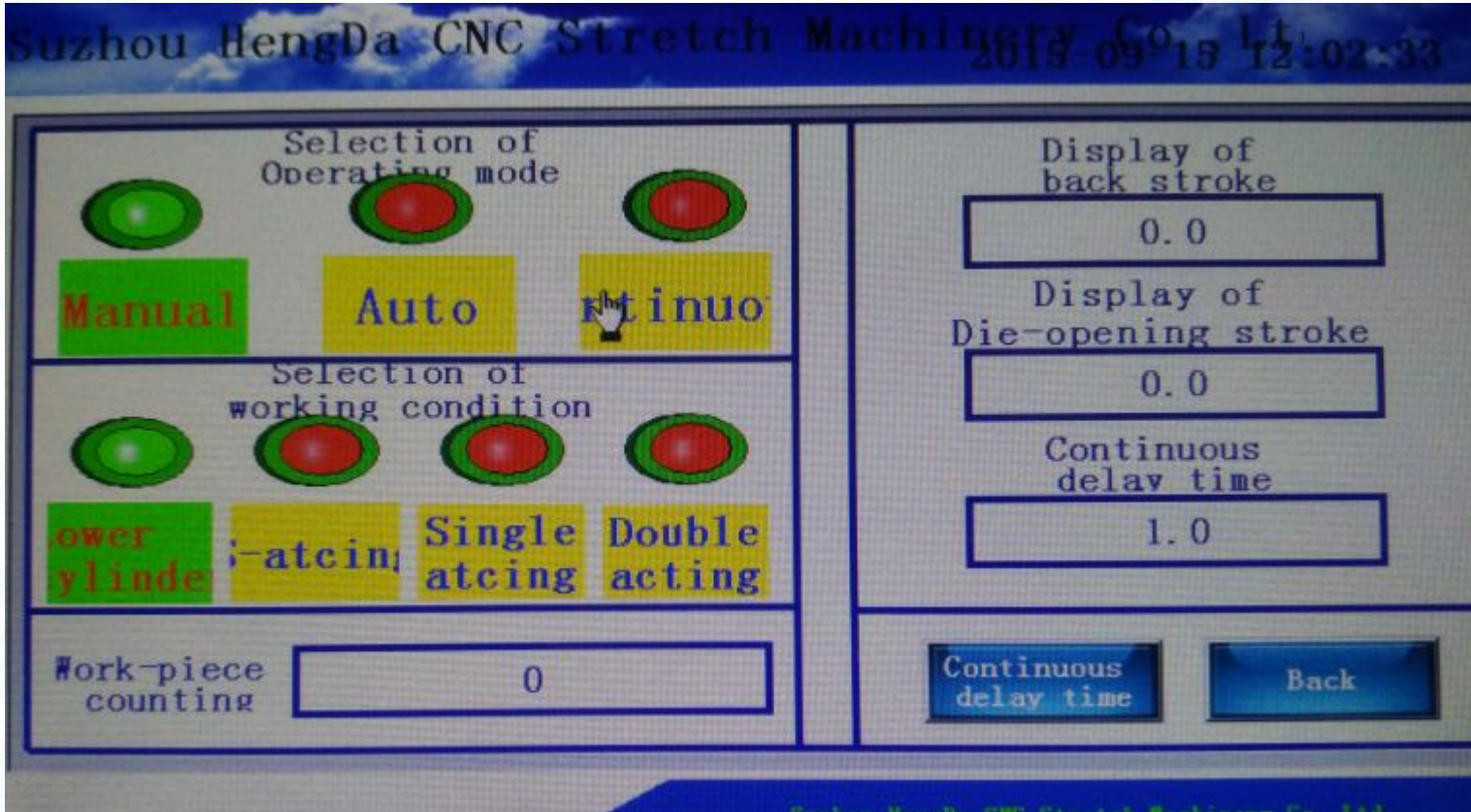


- Always only use **"Condition Monitoring"** and **"Parameter Setting"**

PLC Operation III



1, PLC Condition Monitoring page I

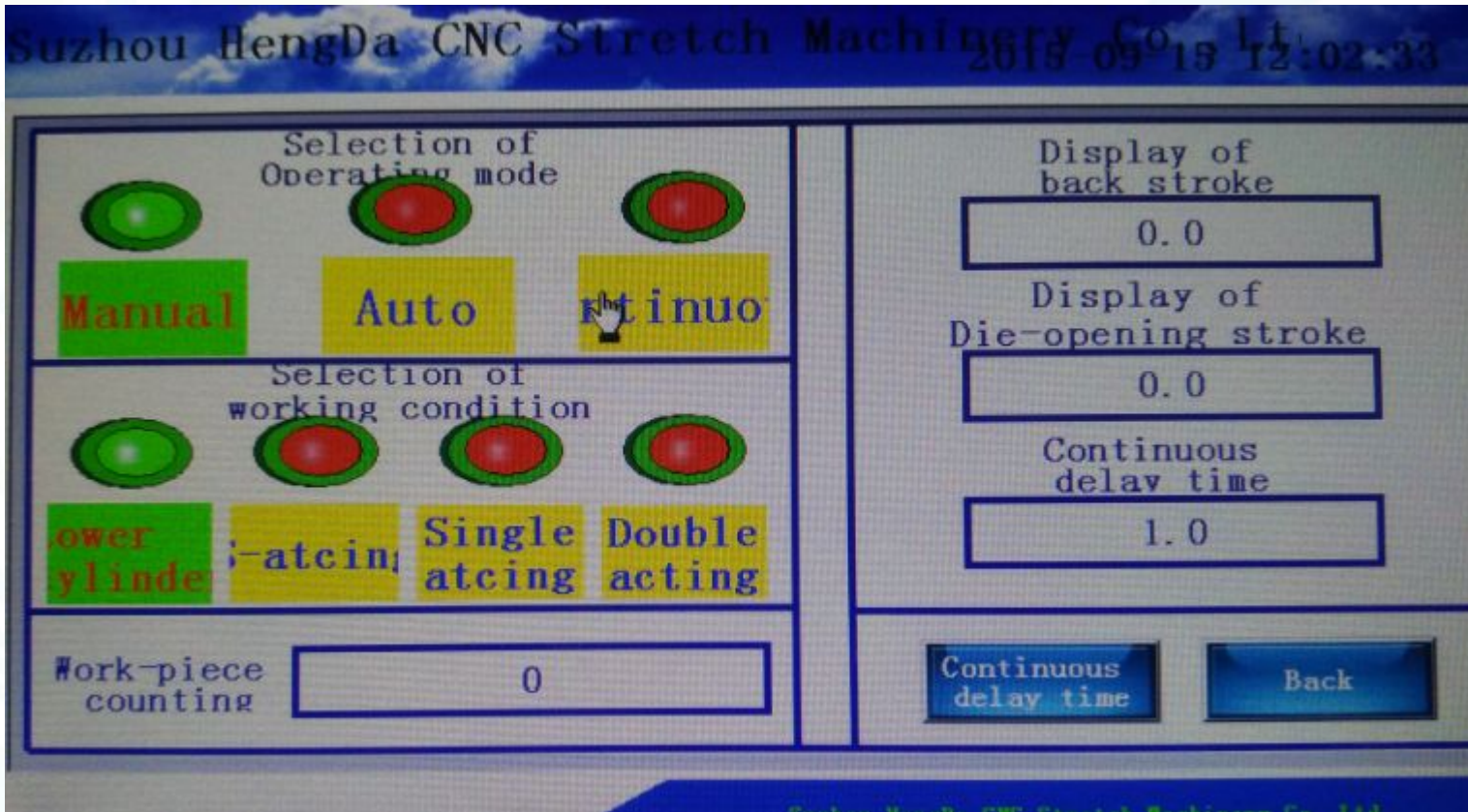


- Operation Mode:
 1. **Manual:** For dies setting, choose this mode, to push the buttons "Clamping, Deep Drawing, Back, Die-opening"
 2. **Auto:** For mass production, only push the button "**Automatically**", all actions will finish automatically

PLC Operation IV



1, PLC Condition Monitoring page II

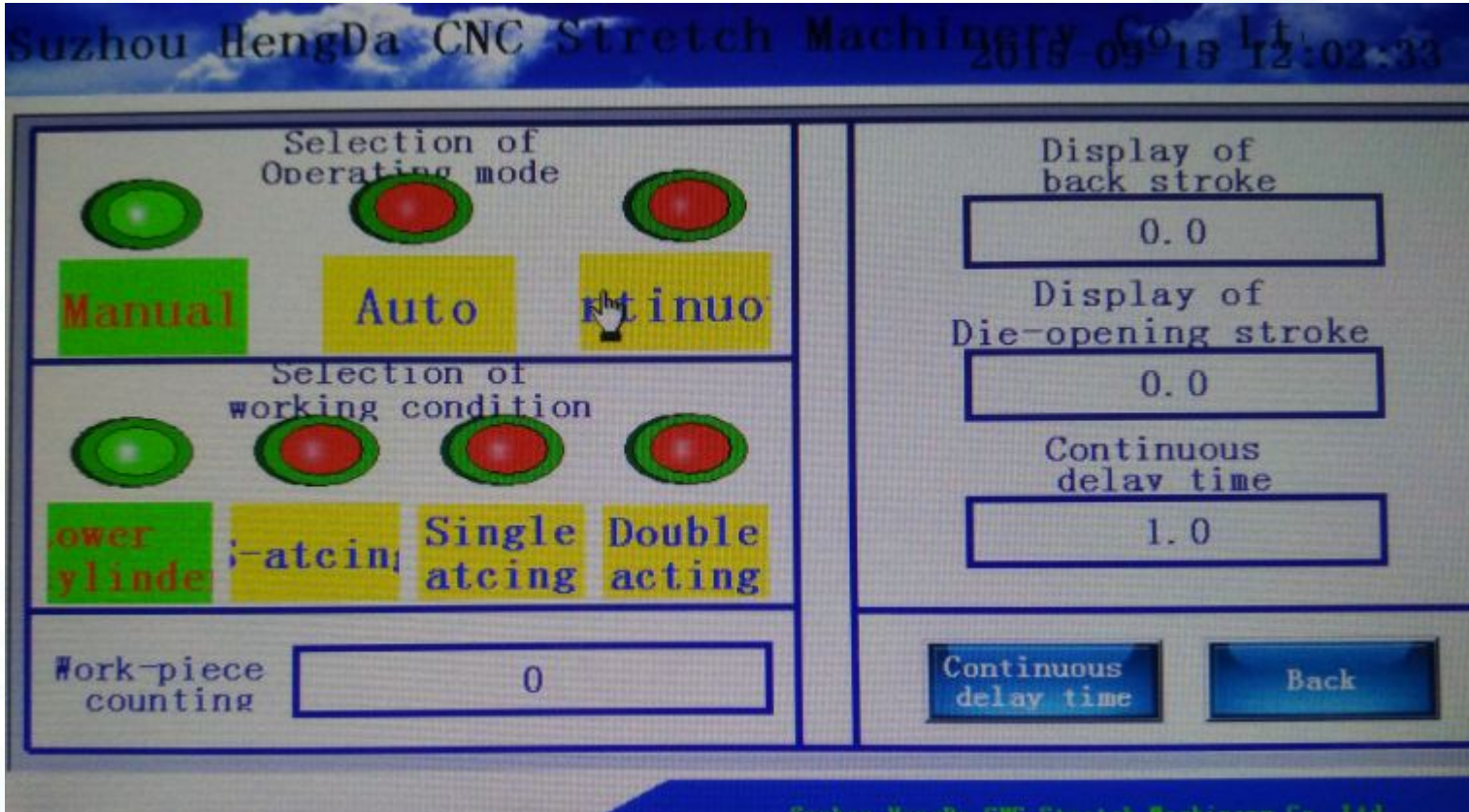


- Working Condition (from left to right):
 1. **Lower cylinder:** Touch this, only working table works, the top cylinder stop working, this is function is for piercing, blanking, trimming, etc.
 2. **Top cylinder:** Touch this, only top cylinder works, the lower cylinder will stop work, this function for is deep drawing, forming, piercing of bottom

PLC Operation V



1, PLC Condition Monitoring page III

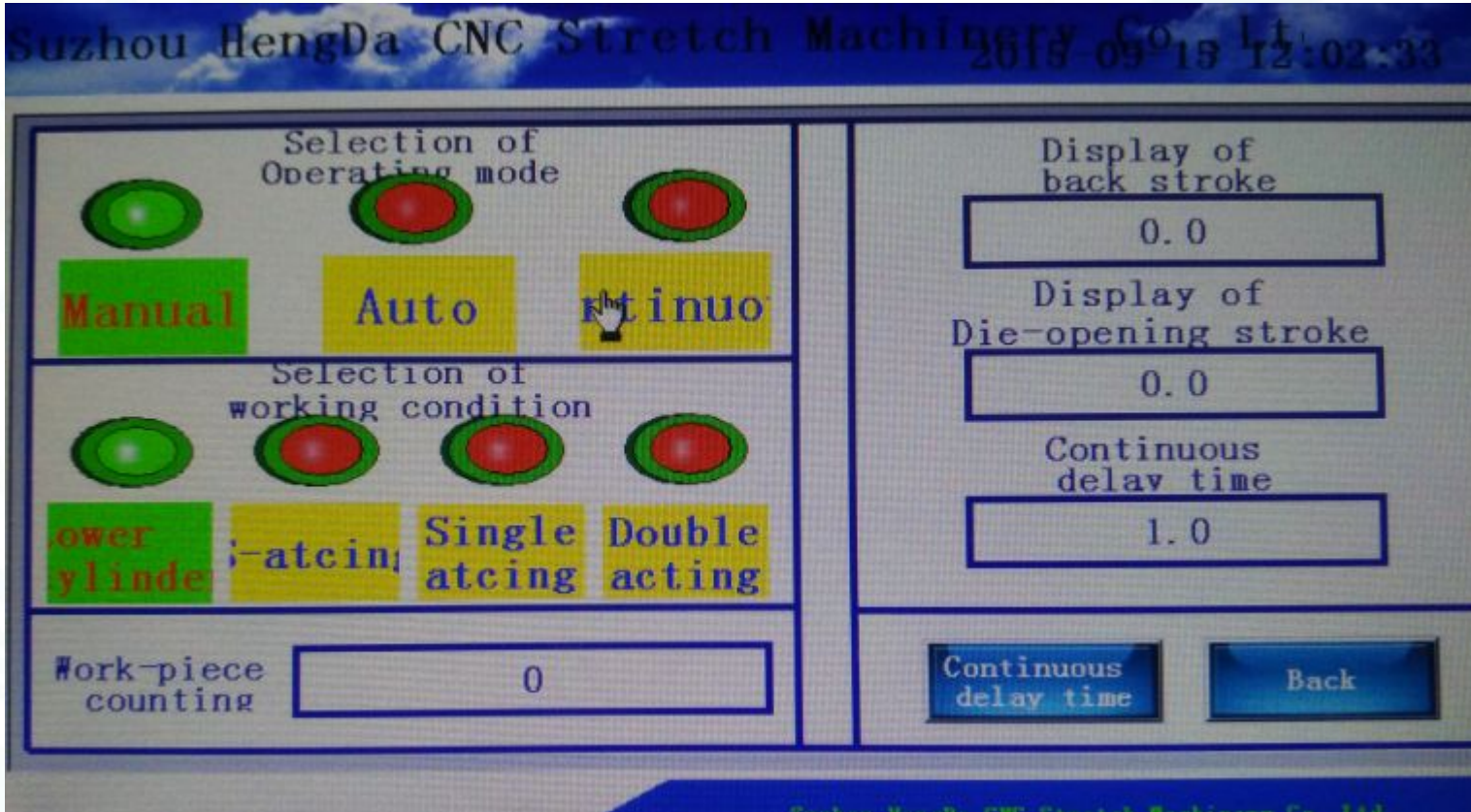


- Working Condition (from left to right):
 1. **Single acting**: touch this, all actions will finish one by one (clamping, deep drawing, back, die-opening)
 2. **Double acting**: touch this, the actions of back and die-opening will work at same time

PLC Operation VI



1, PLC Condition Monitoring page IV



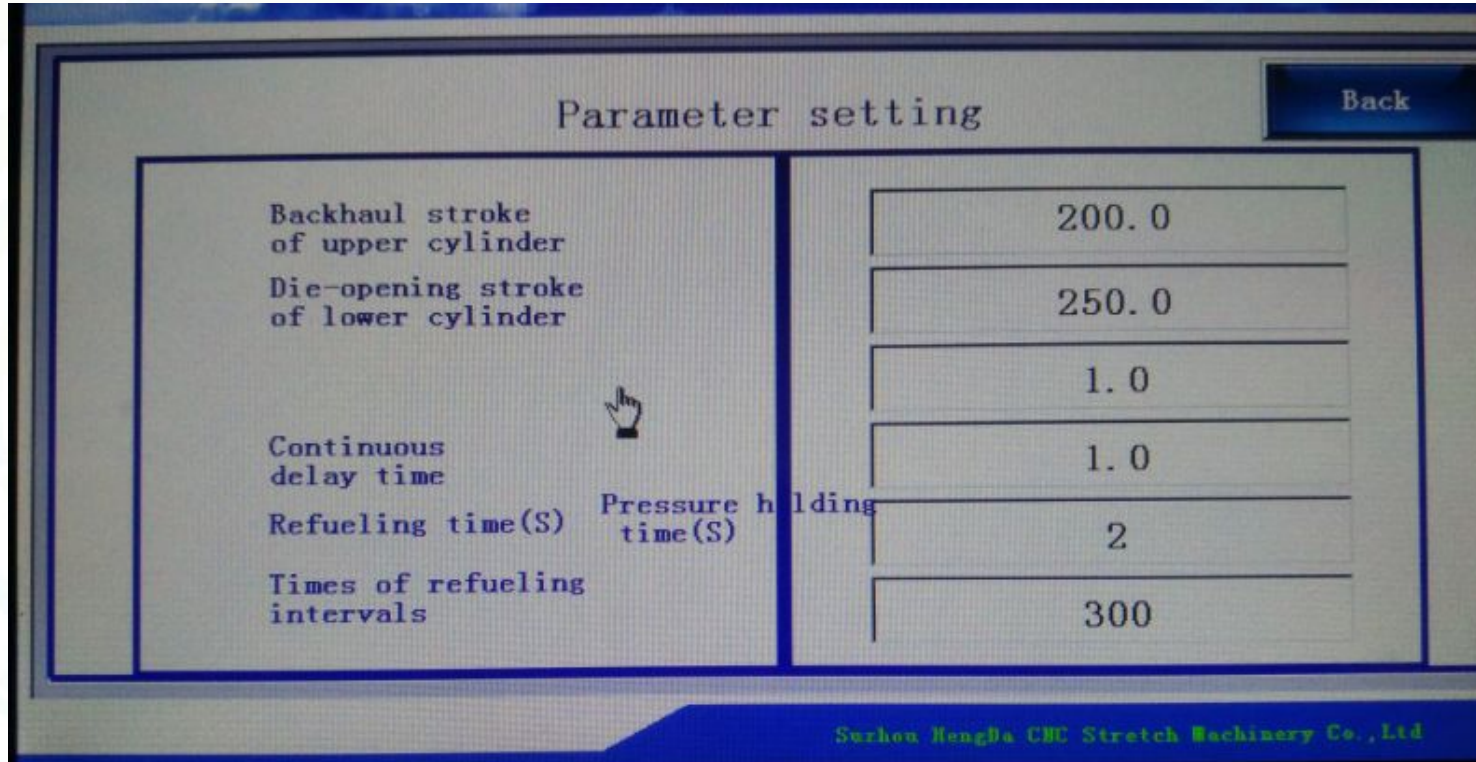
Data display :

1. **work-piece counting**: to count how many pcs to finish per day
2. **Display of back stroke**: top cylinder stroke showing
3. **Display of die-opening stroke**: lower cylinder stroke
4. **Continuous delay time**: the pressure keeping time

PLC Operation VII



1, PLC Parameter Setting Page



- **Stroke of upper cylinder:** to change the stroke of upper cylinder according to your machine standard troke, his functon for die setting or increase production efficiency
- **Stroke of lower cylinder:** to change the stroke of lower cylinder according to your machine his functon for die setting or increase production efficiency
- **Pressure keeping time:** to change the pressure time,from 1s to
- **Continuous delay time:**
- **Refueling time:** this function is for supplying with lubrication of oil,you can change the time to less
- **Times of refueling intervals:** this function is to decide how long to supply with the the lubrication oil,300 pcs or 100000pcs,you can adjust

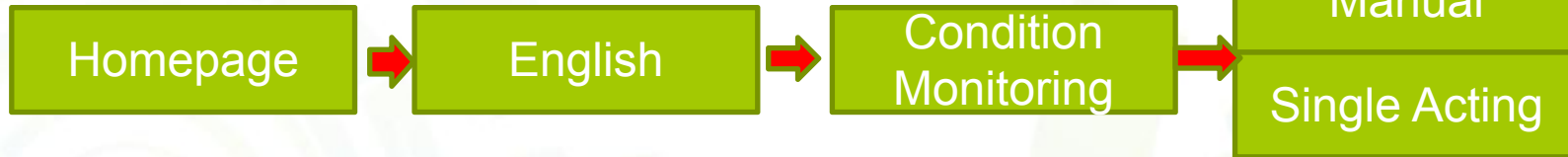
Dies Installation I



1, Under the working mode of MANUAL



Operation as below:



2, Push button "Clamping" to move the working table to highest position



Push this button



Move the working table to the highest position

Dies Installation II



3, Male die installation I



- Place the female die on the working table first
- Place auxiliary mat (rubber mat) on the female die,
- Place male die on the auxiliary mat
- Push “deep drawing” button, make the screw rod of die-Installation of center screw to match the inside thread of male die slowly.



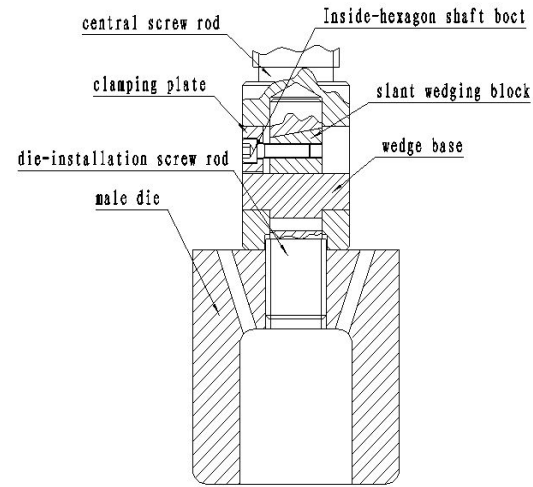
Touch slowly "deep drawing" button to let the die-installation screw match the center screw very well

Attention: not push for a long time, only touch, touch, touch....

Dies Installation IV



3, Male die installation II



die installation drawing

Take the auxiliary mat away, then fasten the block with hexagon screw, as following drawing

Dies Installation V



4, Female die installation and adjust the die gap I



- Push “Deep Drawing” button, move down the the male die of top cylinder, match primarily the female die enter.



- clamp the female die with clamping plate (not tight),as th left fig.

Dies Installation VI



5, Clamping die installation and adjust the die gap II



- loosen the four nuts above the edge-clamping table, as following

Note: this step is very very important



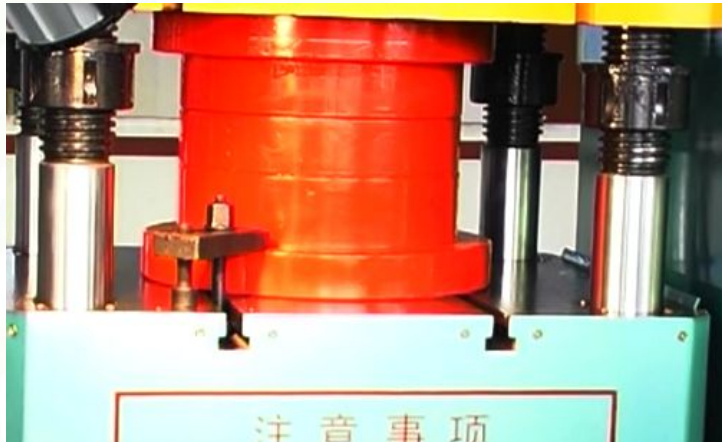
- push “back” button to move up the top cylinder
- push “Die-opening” button to move down the working table
- put the clamping die on the female die



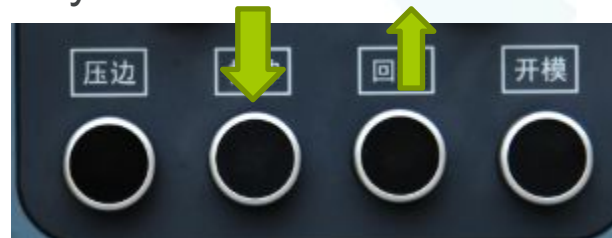
Dies Installation VII



6, Clamping die installation and adjust the die gap III



- push "Clamping" button,
- move slowly the working table to the highest position
- adjust the position of clamping table,
- then fix clamping die to the clamping table with lock plate
- adjust the slit between edge-clamping die and male die slightly
- fasten the screw of lock plate of edge-clamping die.
- Touch " deep drawing" and " back" button for several times to ensure that the female dies can go out and in for several times, without any stuck.



Dies Installation VIII



7, Adjust pressure of deep drawing



- Rotate up the four screws a little (toward) to avoid that there is not enough space to move up the clamping tample



- Place one pc of circles (blanking material) on the female die
- Push "clamping" button to move the working table to highest level
- Confirm the dies to close tightly



Dies Installation VIII



8, Adjust pressure of deep drawing



- fasten the four crews tightly(downward)



- loosen the four nuts under the Blanking table,
- push “die-opening” button, slowly move the working table down, the blanking table is also moving down .



Dies Installation VV



9, Adjust pressure of deep drawing



- switch the four screws slightly(downward).all four screws should be adjusted at same level.
- the range switched down should be decided according to the material thickness, namely adjust the deep drawing pressure.



- fasten the four screws under the edge-clamping table,

Dies Installation VVII



9, Adjust pressure of deep drawing



- Push " Clamping" button to move the working table to the highest level
- Push "deep drawing" button for deep drawing a little



- Push "die-opening" button to check whether the pressure at four corners are balanced, **no wrinkles**.
- If no wrinkles, you can make the mass production; if not, have to adjusted the pressure as above

Dies Installation VVIII



If the deep drawing stroke is not enough, you can adjust as below



- push “Clamping” button, raise the working table to highest point.
- loosen big nut and stopping nut, as left fig.
- Rotate the adjustable screw, adjust primarily the length of center screw , control deep drawing stroke, (clockwise increases stroke , anticlockwise reduces stroke), as the left fig.
- Finish adjusting depth, then tighten big nut and stopping nut



Machinery Maintenance and repairin of small problems I



1、 maintenance

- recommend using N32 and N46 hydraulic oil which is lowly congealable.
- fill the oil into tank after filtering strictly.
- shafts、 belt rod、 piston rod should be free from dust and be always clean.
- forbid running machine when overloading.
- check and correct the pressure gauge half a year.
- when machine has been out of work for a long time, the processing surface should be clean, paint anti-rust oil, the working table should be kept at the down end point.
- Clean the dirty of machine everyday
- Once found there is the dirty or scrap on the dies, please clean

Machinery Maintenance and repairin of small problems II



2、 safety operation procedure

- don't start machine without understanding the structure performance and operation procedure of machine.
- Don't adjust and overhaul the dies and tools when machine is in the working condition.
- when uncommon situation happens, stop operating to check machine, forbid working with illness.
- don't move the photoelectric protector away, and ensure that the protector is working well everyday
- the electrical equipment should be grounded reliably.
- forbid putting hands and head into the gap between edge-clamping table and working table when the machine is running.

Machinery Maintenance and repairin of small problems III



3、 Common issues I

Serial No.	Breakdowns	Causes	Solutions
1	No actions	<ul style="list-style-type: none">a. hydraulic pump damageb. motor is out of workc. solenoid controlled pilot operated directional valve、 valve core are stuck in the center position.d. low oil level in tanke. valve damage or low pressuref. the circuit of electromagnetic valve is burned.g. check whether the pressure is lowh. the contact of small relay is burned.	<ul style="list-style-type: none">a. changeb. check power sourcec. clean and install valve core, make sure the core is nimble in valve bushing, no leakage.d. add hydraulic oile. change or increasef. changeg. increase pressureh. change small relay
2	Edge-clamping cylinder is nota in the position	<ul style="list-style-type: none">a. valve leakageb. the seal at the entry of cylinder damagec. the seal of piston damaged. the seal of pipe damagee. no signal of encoder	<ul style="list-style-type: none">a. changeb. changec. changed. changee. check the signal of encoder

Note: For new machine,if no action after connecting power,please disassemble the oil hose under the oil pump to remove the air left inside of hose.

Machinery Maintenance and repairin of small problems III



3、 Common issues II

3	the drawing pressure of main cylinder is not enough	a. valve leakage b. low pressure c. the seal of cylinder damage d. the seal of pole cavity cover damage e. low pressure of spurting oil of oil pump	a. change b. increase c. change d. change e. change
4	Loud noisy	a. with air in system b. low oil level in tank c. pump components match inappropriately d.jamming of the entry of oil e. filter fell	a. check the seal at the entry of oil b. add oil c. change d. clean e. reinstall
5	Display uncommon	a. check whether the lad wire of encode is opening b. every kind of plug is loose c.low voltage, unstable	a. check the lead wire of encoder b. fix plug c. check power source

Machinery Maintenance and repairin of small problems III



3、 Common issues III

6	unstable back distance	Check whether the synchronous belt of encoder is loose Adjust the synchronous belt
7	Common pressure, not work	Whether the opening of Valve core of electromagnetic valve is small, or jamming clean



Thank you

Please check all screws,connectors before using the new machine