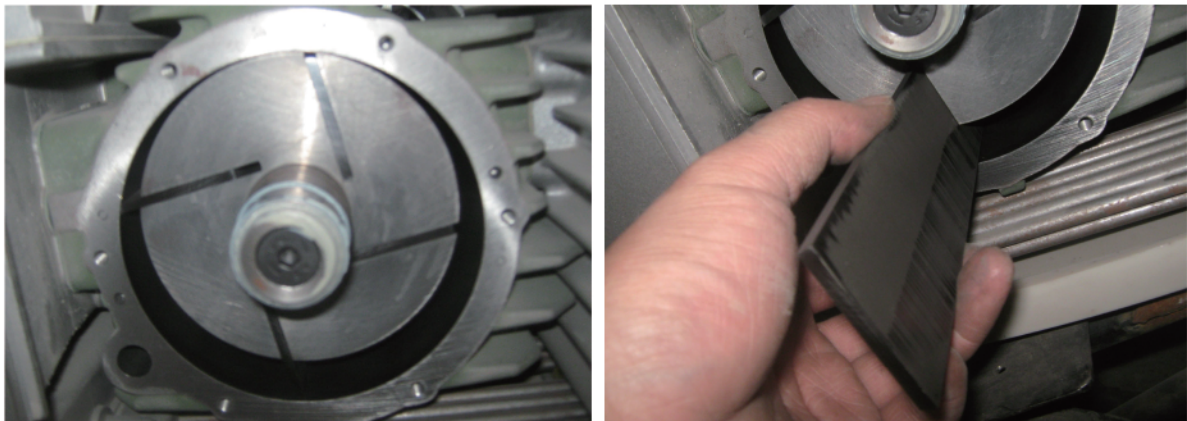
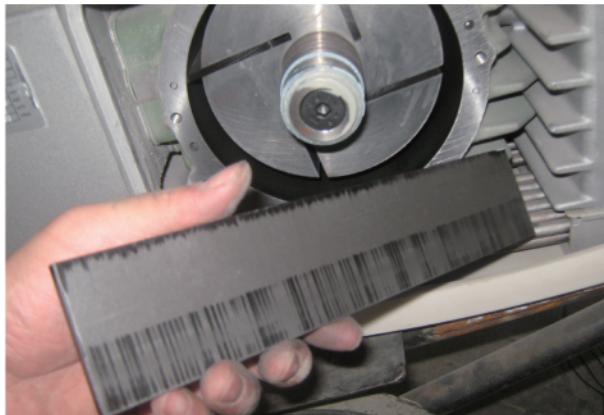


- 4 Remove the bearing' s cover with the help of the screw.
- 5 Take out the graphite sheet.



- 6 Check whether the graphite sheet is damaged (the intact one is as shown below). If damaged, please replace it with a new one.



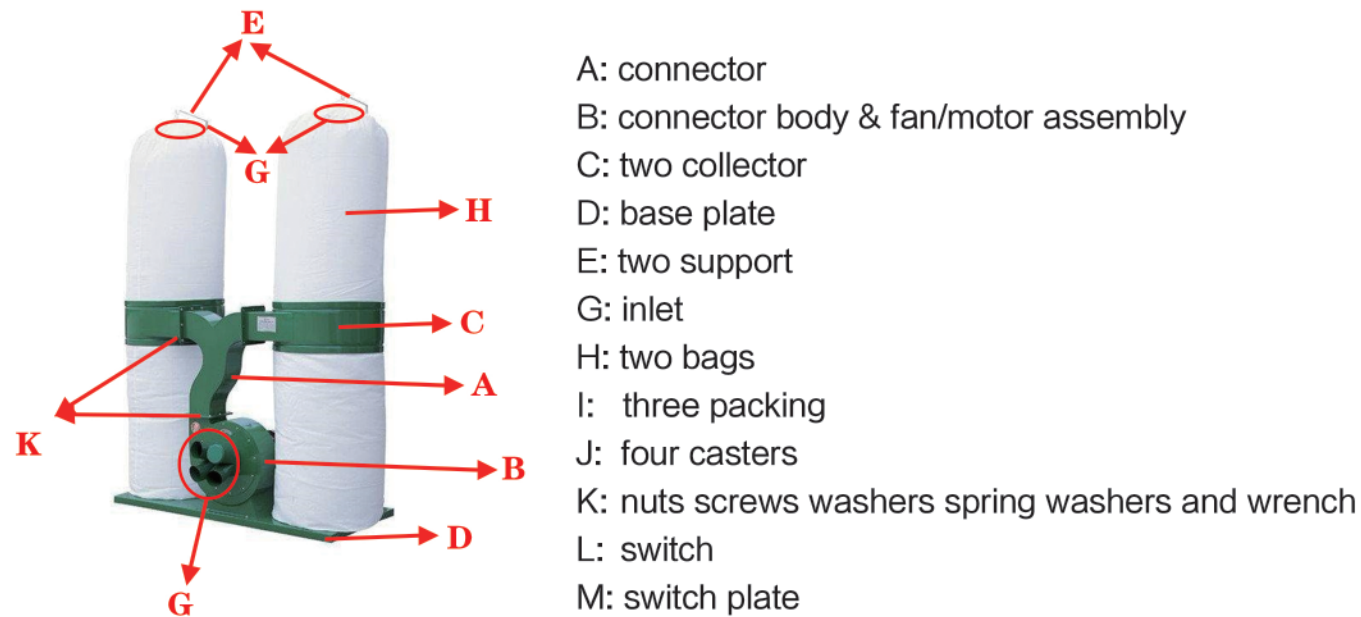
5

Vacuum device maintenance and maintenance

- 1 Dust brush: check the brush every month. If it' s damaged, please replace it with a new one.



- 2 Dust collector: if you buy the dust collector together with the machine, please empty it from time to time.



TECHNICAL DATA

Motor power (HP/Watt)	3/2200
Inlet diameter (inch/mm)	4/100 × 3
Fan diameter (inch/mm)	12/305
Bag capacity (cubic meter)	0.3
Collection capacity(cubic meter/hr)	6000
Overall size (LWH) (MM)	1400 × 600 × 1960
Weight (kgs)	59

6 Safety Notes of Tool Setting Gauge

- The tool setting gauge should be installed on a clean, even and straight working table. Make sure the tool setting surface is parallel with the table.
- The gauge should have good ground connection to avoid being interfered by static electricity.
- When being set, the tools must be vertical to the tool setting surface, not horizontally.
- The speed must be set between 50 to 200mm/min.
- The rated value is DC24V. 20mA (Max).
- The electric wires should bear the pulling with force within 30N.
- The bend radius of the electric wires should be less than R7.
- Do not remove the tools after touching the tool setting surface to avoid damaging the interior structures of the gauge.
- The pressure of the air blowing the tools should be kept between 2 to 3kgf/cm².
- Please use the compressed air to clean the tool setting gauge twice a day.
- Under normal usage, our company provides lifelong maintenance of the tool setting gauge(including one year warranty for unintentional damages).

7 Other Maintenance

- Clean the filter of the coolant every day to keep up the cooling performance.
- Keep the tool magazine clean from chips and dust to avoid affecting changing tools of the tool holder.



MACHINE TROUBLESHOOTING

1

Common system errors and solutions

Alarm ID	Alarm Content	Possible Causes	Solutions
3	X axis hasn't return to origin	X axis doesn't search the origin	Execute "X axis searches the origin"
11	Y axis hasn't return to origin	Y axis doesn't search the origin	Execute "Y axis searches the origin"
19	Z axis hasn't return to origin	Z axis doesn't return to origin	Execute "Z axis searches the origin"
49	Inverter alarm	1、 Inverter gives an alarm. 2、 Alarm circuit goes wrong. 3、 System hardware goes wrong.	1、 Check the inverter and eliminate the alarm. 2、 Check and change the circuit. 3、 Replace the system hardware.
70	Invalid operation of manual spindle during processing	Press the spindle start/stop button during processing.	This is not allowed during processing.
74	Unclamping failure alarm	1、 Unclamping solenoid valve doesn't react. 2、 Unclamping signal error or signal circuit error 3、 Under-air pressure causes incomplete unclamping	1、 Check whether the unclamping solenoid valve reacts normally. 2、 Check the unclamping signal switch and circuit. 3、 Check whether the air pressure is enough.
75	Clamping failure alarm	1、 Clamping solenoid valve doesn't react. 2、 Clamping signal error or signal circuit error 3、 Under-air pressure 4、 No tools clamped	1、 Check whether the clamping solenoid valve reacts normally. 2、 Check the clamping signal switch and circuit. 3、 Check the air pressure 4、 Check whether the spindle has no tools clamped
79	Under-air pressure alarm	1、 Current air pressure is low 2、 Air pressure monitor switch error or circuit error	1、 Check whether the current air pressure is enough 2、 Check the relevant signal wires
81	No tools on the spindle	1、 There are currently no tools on the spindle. 2、 Unclamping signal error or circuit error	1、 Check whether the spindle has no tools clamped. 2、 Check the unclamping signal and signal circuit
82	Big error of between the drive and the driven	1、 Deflection of the gantry 2、 System parameters were set incorrectly	1、 Confirm the level of the gantry 2、 If there is no problem with the level, reset the parameters of 886. See the steps below

Alarm ID	Alarm Content	Possible Causes	Solutions
86	The brush failed to rise	1、 Solenoid valve does not operate 2、 Detect switch faults or circuit problems 3、 The air pressure is low	1、 Verify that the solenoid valve is operating normally 2、 Check the rise detection signal and circuit 3、 Check the pressure
91	Emergency stop	1、 Emergency stop switch action 2、 Line problems 3、 System hardware	1、 Check whether the emergency stop switch is photographed or has problems 2、 Check whether the emergency stop line is normal 3、 Replace the system hardware

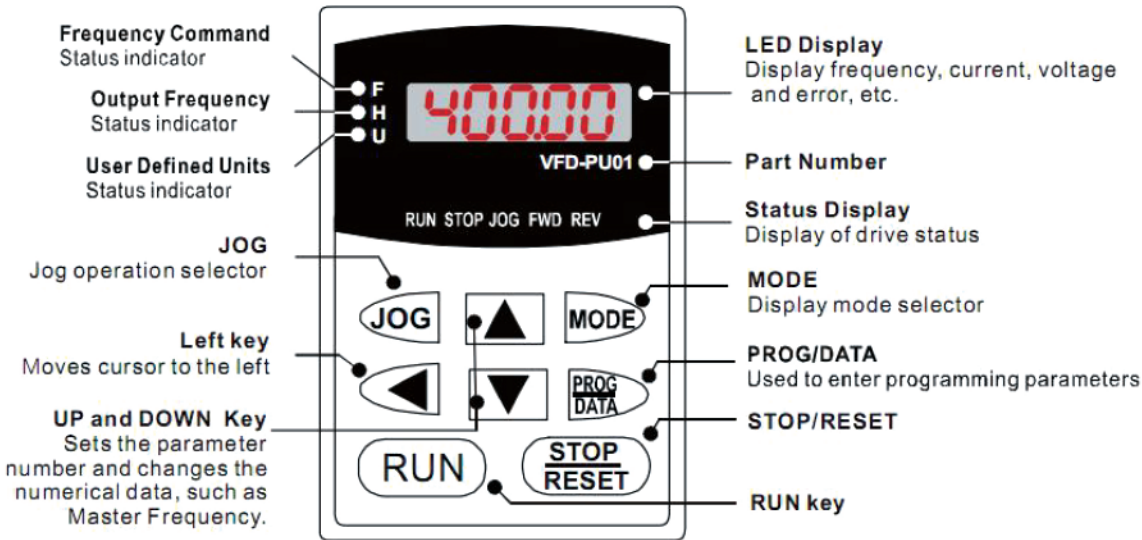
- Notes:**
- When setting G54 coordinates, external coordinate offsets X, Y, Z, and C should all be zero.
 - Z of G54 must be zero, or else it will be added to the values of T1, T2, T3, T4...When running, there will be alarm of Z axis exceeding negative travelling size limit.
 - When clamping tools on the tool plate, the spindle tool number in the F4 processing materials is the same with the one from the empty slot in the tool magazine.
 - Sometimes false operation might lead to controller alarm (exceeding the machine's hard limit might cause serious following errors with the AUX7 light on). Cut the power off and restart the machine. Do not return to the origin position and use hand wheel mode. Long press the AUX7 button and run the three axes to the opposite directions. Then the alarm is lifted.

2

Common errors and solutions of inverter

VFD-B Inverter Parameter Setting

Parameter No.	9KW	
00-00	4772	
00-02	10	Reset (used when inverter goes wrong)
00-03	1	Boot screen
00-09	0	Control mode
01-00	800	Set maximum operation frequency
01-01	800	Set rated frequency
01-02	380	Set rated voltage
01-09	5	Set first acceleration time
01-10	5	Set first deceleration time
01-23	0	Acceleration/deceleration time unit
02-00	1	Source of first command
02-01	2	Source of operating command
02-04	1	Prohibit motor reversing
02-10	1	
02-15	800	Keypad frequency command
07-00	65	Set rated current
07-04	2	Motor pole number
08-00	90	
08-01	3	
08-02	3	



Keypad Appearance

Main display area: display the frequency, current, voltage, revolving direction, self-defined unit, abnormality, etc.

Jog operation: operate the machine with jog frequency

Up & Down: set or change parameter values

Left Move: convenient for changing values of larger numbers

Left Move: convenient for changing values of larger numbers

Manipulator Model

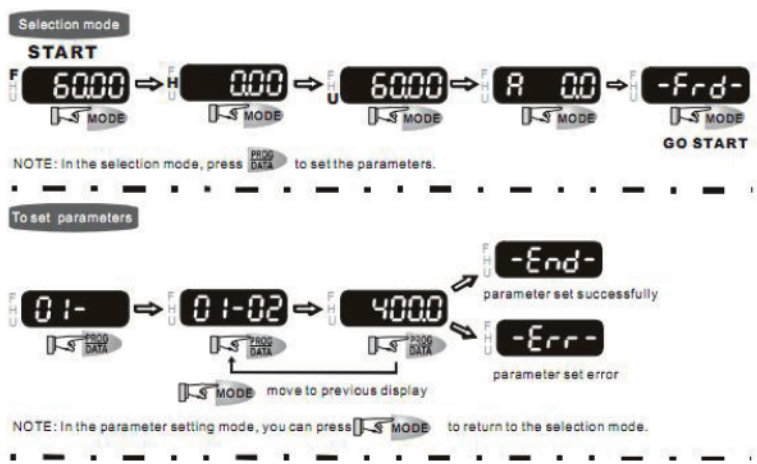
Status display area: display the status of the drive: run, stop, inch, forward, reverse, etc.

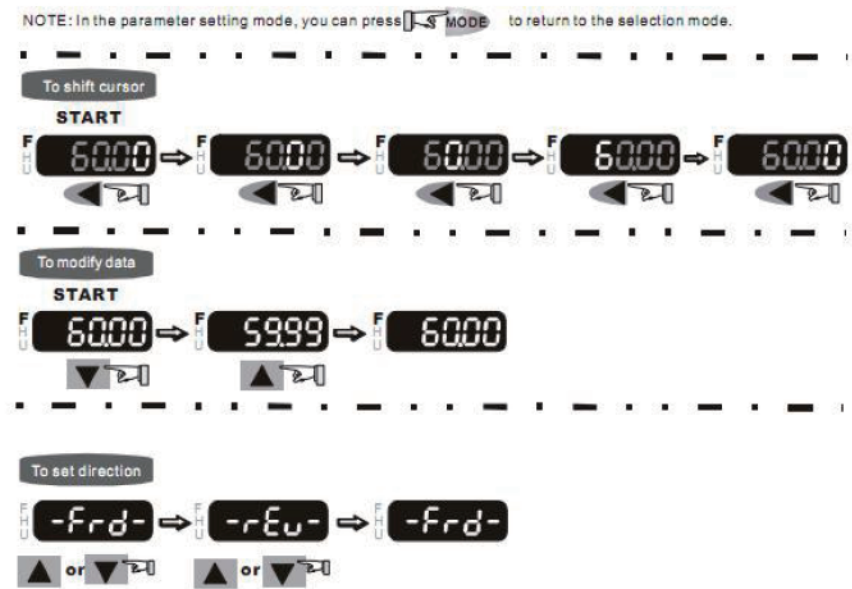
Mode: press this key to show each mode

Program data: set each parameter value of the drive

Stop/reset: stop or reset the drive

Run: Run the drive





Keypad operation procedure

Mode selection

Key: press “prog/data” to enter parameter setting

Parameter setting

Move downward to the previous display

Move upward to the previous display

Key: press “mode” to go back to mode selection

Digit selection

Digit alteration

3 Warnings and Solutions

Display	Abnormity	Solutions
OCC	AC motor drive detects abnormal overcurrent on the output side	Check whether the rated current of the motor is matched with the AC motor drive’ s rated current. Check whether there are short circuits between U, V and W of the AC motor drive. Check whether the wires connecting to the motor have short circuits or earth connection Check whether the screws on the AC motor drive and motor are loose. Prolong the acceleration time. Check whether the motor is overloading.

Display	Abnormity	Solutions
ou	AC motor drive detects overvoltage on the high voltage direct current side on the inside.	Check whether the input voltage exceeds the rated voltage of AC motor drive, and monitor the appearance of surge voltage. Prolong the deceleration time or add brake resistance (alternative) if the overvoltage is cause by motor inertia.
oh	AC motor drive detects internal overheat above the protection level.	Check whether the environment temperature is too high. Check whether the cooling fin is obstructed and the fan stop spinning. Check whether there’ s enough ventilation room in the AC motor drive.
lu	AC motor drive detects low voltage on the high voltage direct current side.	Check whether the input power supply voltage is normal. Check whether the load has sudden upsurge. Check whether the single phase power supply of the three phase model has input or lacks phase.
ol	Output current exceeds the maximum of AC motor drive. As long as 60 seconds of the maximum 150% of the rated current can be taken.	Check whether the motor is overloaded. Reduce (07.02) the torque and set a higher value of the rated current. Increase the output capacity of the AC motor drive.
ol 1	The protection of the interior electronic thermal relay.	Check whether the motor is overloaded. Check (07.00) whether the motor’ s rated current value is proper. Check the setting of electronic thermal relay functions. Increase the motor capacity.
ol 2	The motor is overloaded.	Check whether the motor is overloaded. Check the setting of detection level of over torque (06.03~06.05).
HPF.1	Abnormity in the controller hardware protection circuit.	Abnormity in the GFF hardware protection circuit. Please send the machine back to the original factory.
HPF.2	Abnormity in the controller hardware protection circuit.	Abnormity in the CC (current clamp) hardware protection circuit. Please send the machine back to the original factory.
HPF.3	Abnormity in the controller hardware protection circuit.	Abnormity in the OC hardware protection circuit. Please send the machine back to the original factory.

Display	Abnormity	Solutions
HPF.4	Abnormity in the controller hardware protection circuit.	Abnormity in the OV hardware protection circuit. Please send the machine back to the original factory.
bb	If the external multifunctional input terminal (MI1~MI6) is set at this function, AC motor drive stops export.	Clear the signal source.
ocA	Overcurrent in the process of acceleration.	Check whether the screws on the AC motor drive and motor are loose. Check whether the wiring between U-V-W and the motor has insulation fault. Increase the acceleration time. Reduce (07.02) torque and set a higher value of the rated current. Change for an AC motor drive with bigger output capacity.
ocd	Overcurrent in the process of deceleration.	Check whether the wiring between U-V-W and the motor has insulation fault. Increase the deceleration time. Change for an AC motor drive with bigger output capacity.
ocn	Overcurrent in the process of operating.	Check whether the wiring between U-V-W and the motor has insulation fault. Check whether the motor is blocked. Change for another AC motor drive with bigger output capacity.
EF	When the external EF terminal closes, AC motor drive stops export.	Press RESET after clear the failure source.
EF 1	If the external multifunctional input terminal (MI1~MI6) is set as Emergency Stop, AC motor drive stops export.	Press RESET after clear the failure source.
cF 1	Abnormal read-in of IC information on the internal memory.	Send the machine back to the original factory for repair.
cF2	Abnormal read-in of IC information on the internal memory	Press RESET to restore factory setting. If invalid, send the machine back to the original factory for repair.
cF3.3	Abnormity in the AC motor drive detection circuit	U-phase current sensor abnormity. Please send the machine back to the original factory for repair.
cF3.4	Abnormity in the AC motor drive detection circuit	V-phase current sensor abnormity. Please send the machine back to the original factory for repair.

Display	Abnormity	Solutions
cF3.5	Abnormity in the AC motor drive detection circuit	W-phase current sensor abnormity. Please send the machine back to the original factory for repair.
cF3.6	Abnormity in the AC motor drive detection circuit	Abnormity in the DC-BUS detection circuit. Please send the machine back to the original factory for repair.
cF3.7	Abnormity in the AC motor drive detection circuit	Abnormity in the Isum analog/digital circuit. Please send the machine back to the original factory for repair.
cF3.8	Abnormity in the AC motor drive detection circuit	Temperature sensor abnormity. Please send the machine back to the original factory for repair.
OFF	Ground connection protection line. When AC motor drive detects the output terminal has ground connection and the ground current is higher than 50% of the rated current of AC motor drive. Note: this line is for the protection of AC motor drive, not human body.	Check whether the motor connecting lines have short circuit or ground connection. Check whether the IGBT power module is damaged. Check whether the output lines have defective insulation.
cFA	Auto acceleration/deceleration mode failure.	Check whether AC motor drive matches with the motor. Excessive load rebound inertia Sharp load changes
cE-	Communication abnormity	Check whether the communication signals have reverse connection (RJ11). Check whether the communication format is correct.
Ccode Pcode	Software protection enabled	Display “CcdoE” , send the machine back to the factory for repair. Display “PcodE” , the password is locked.
AnLEr PGErr	Analog signal error PG feedback signal error	Check parameter setting (Pr 10-00) and AVI/ACI circuit Check for all the possible errors (Pr 10-08) that might occur during system reaction time and feedback signal detection time. Check whether PG card connection is correct
PHL	Lack phase protection	Check whether it is three phase input power supply.
cEF	When the external counter amounts to the set value, external abnormity error occurs.	Check the trigger signal of the external counter. Check the parameter settings of Pr 03-39, 03-11.

Display	Abnormity	Solutions
ALUE	Auto-detected motor parameter errors.	Check whether the motor connection is correct. Retry.
Lc	Low current	Check the load current. Check the parameter settings of Pr 06-12, 06-15.

4 Other common problems and solutions

Adjust tool magazine' s position in Syntec control system

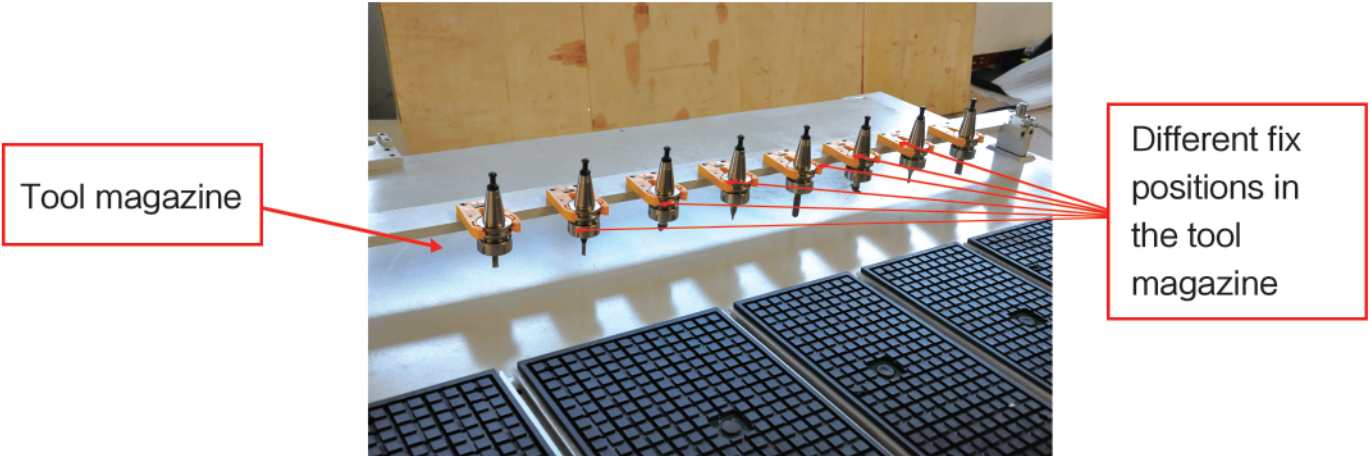
To protect the spindle, please use the air filter correctly.
The QL-series air filter has water-oil separator and filter cartridge that can remove the dust, rust, coagulum and moist from the air.

Step 1

- 1 Select  (HOME)key in the panel, then press  (Cycle start) key to make the three axis to go home.
- 2 After the machine is going home, then install a tool into the spindle.
- 3 Select  (MPG)key in the panel, then move the three axis using the hand wheel and make the tool holder to the fix positions in the tool magazine.

(Note: When you moving the tool holder to the tool magazine, it will be ok if you can rotate the tool hoder smoothly only use little strength)

Then you can write down the machine coordinates of current position.



Step 2

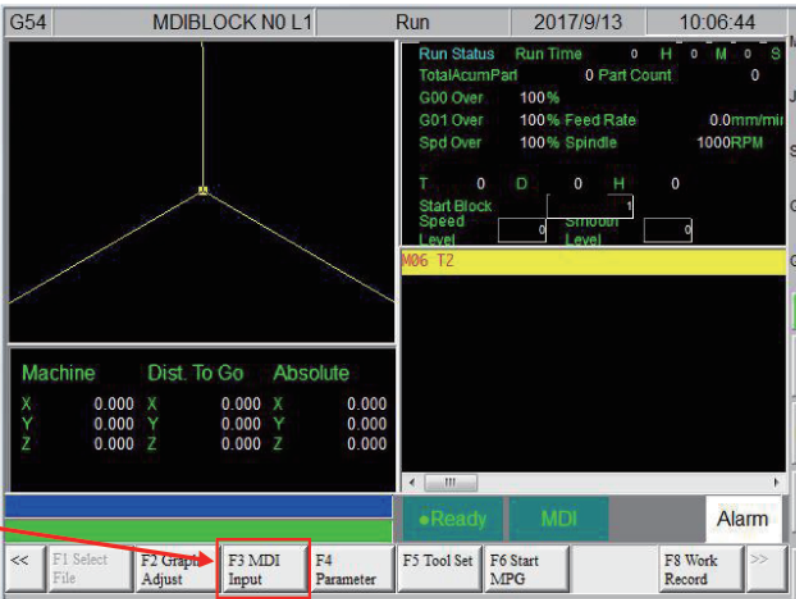
- 1 Select “MDI” key in the panel at first, then select “Monitor” menu →select “MDI Input” , then input the following messages into the dialog box: G991T#

(Notes: “#” is the number of the tools in the tool magazine.)

- 2 Then press “OK” key → press  “Cycle start ” and the system status on the screen changes from “Ready” to “Processing” . Then the machine coordinates of current position in the tool magazine will be stored into the system memory automatically.

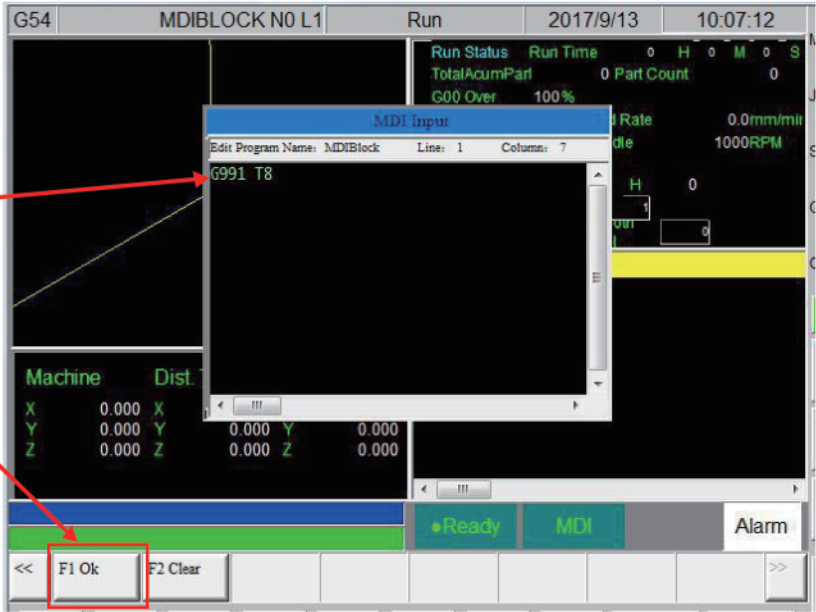


Select “MDI” key in the panel ,then select “Monitor” menu



Select “MDI Input”

Input "G991 Tx" here, then press "OK" key



Step 3

Check whether the machine coordinates of different position in the tool magazine are stored in the memory correctly.

Select "Diagnose" → "PLC Status" → "PLC Register" on the screen and press "Page Down" in the keypad and change the number to 200. The values from 200 to 223 items are different position' s machine coordinates of T1 to T8 tools.

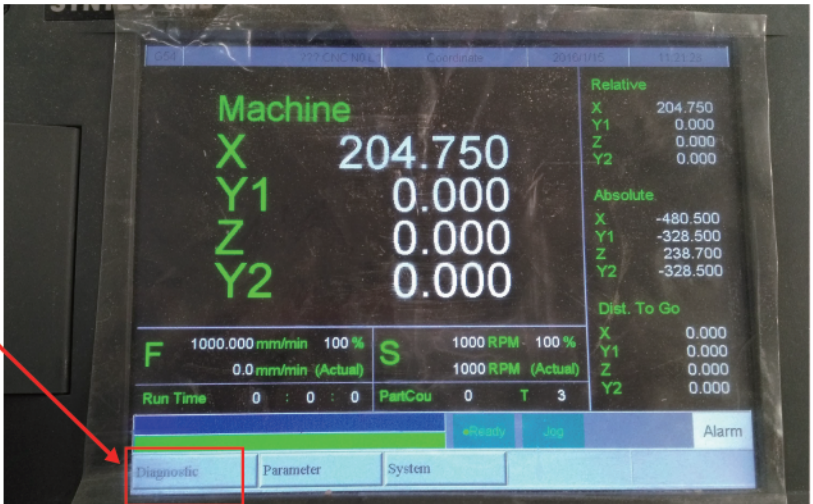
If the coordinates of the tool magazine-to-be-adjusted are not same to the displayed values, then the storage of tool magazine' s coordinates into the memory is not successful and should be redone.

(Note: The machine coordinate' s unit is "nm" , so the value has no decimal point.)

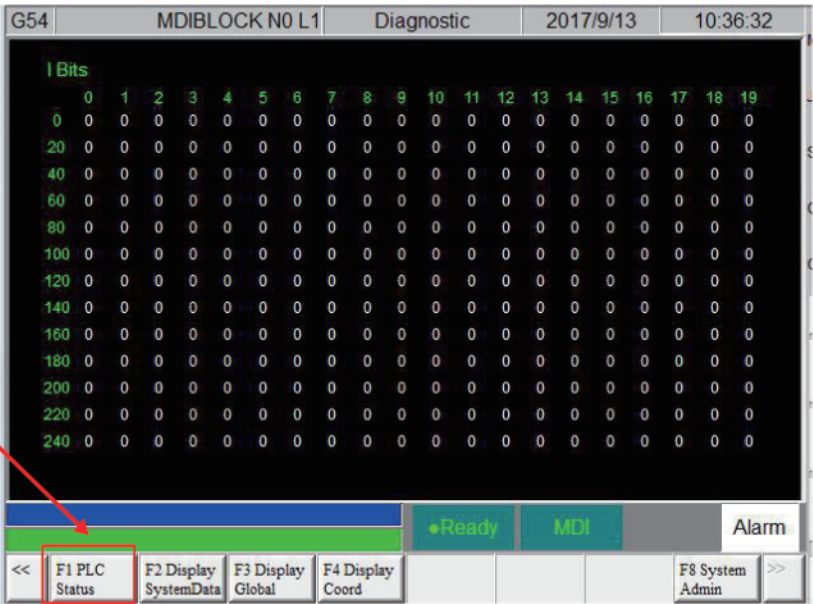


Press this key and you can find "Diagnostic" menu

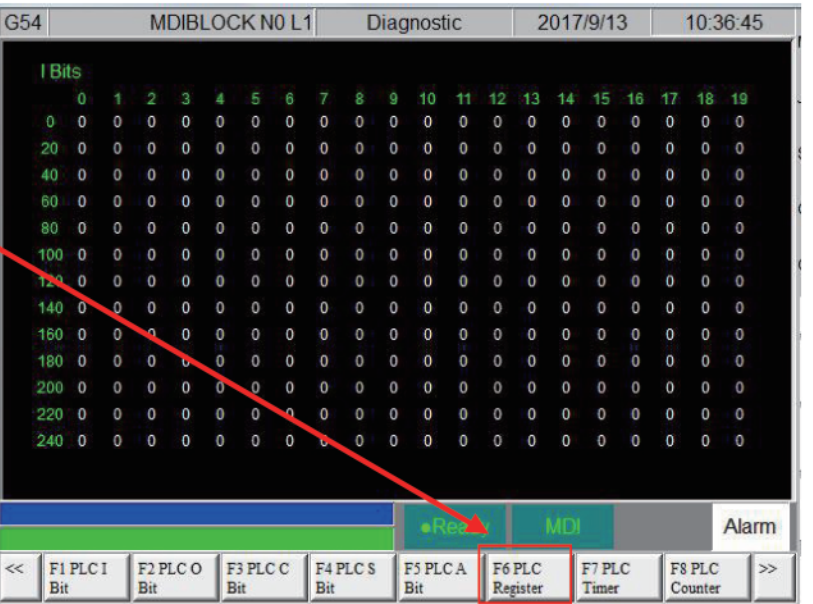
You can find "Diagnostic" menu

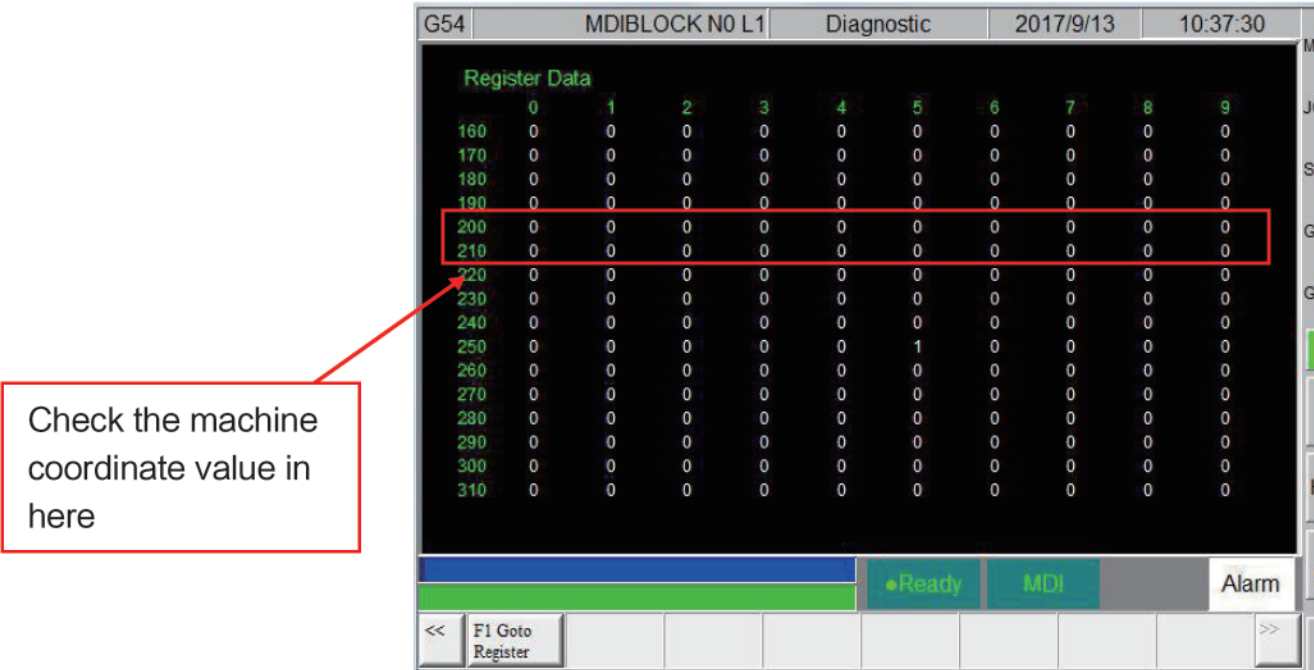


Select "PLC Status" menu



Select "PLC Register" menu





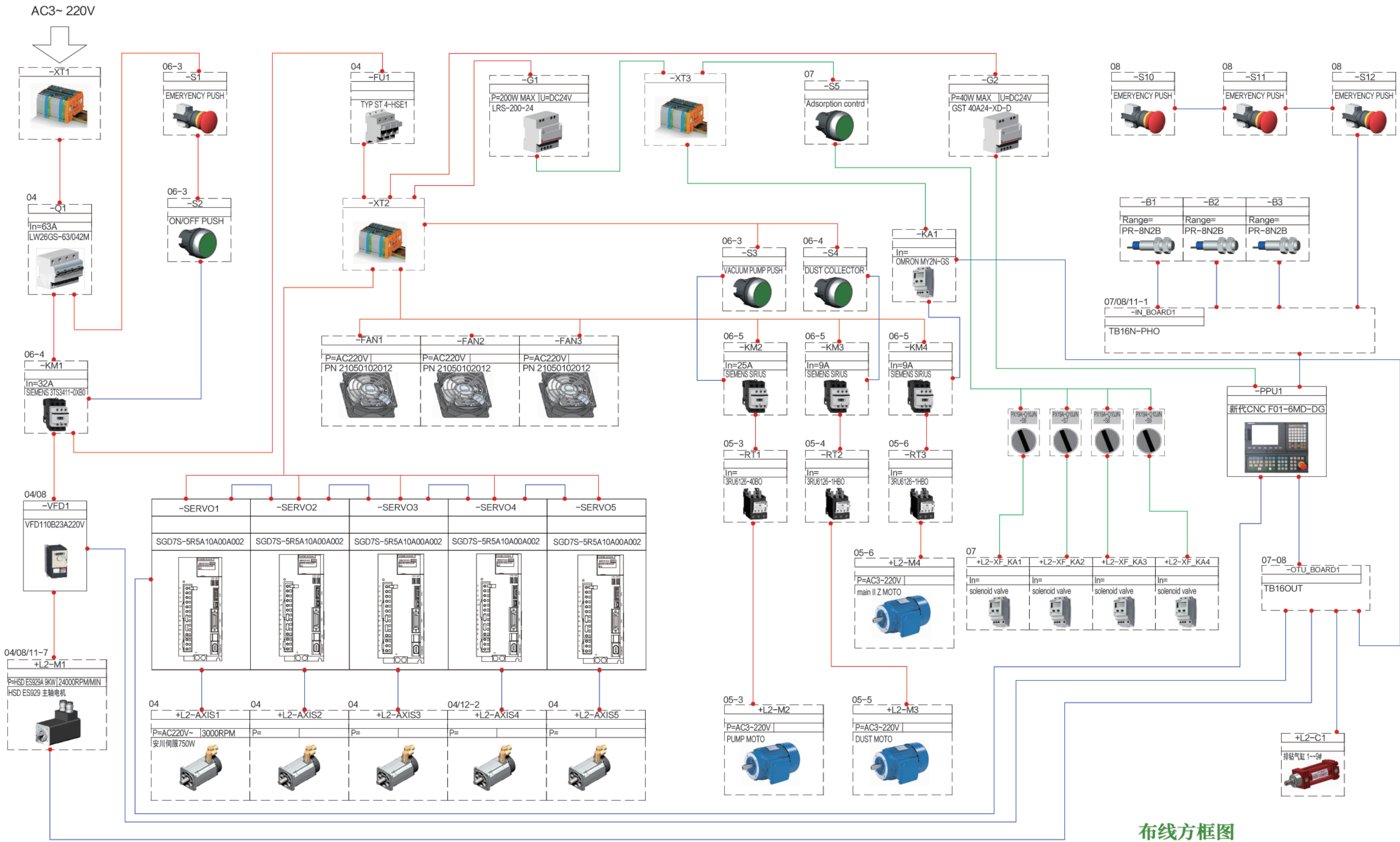
Step 4

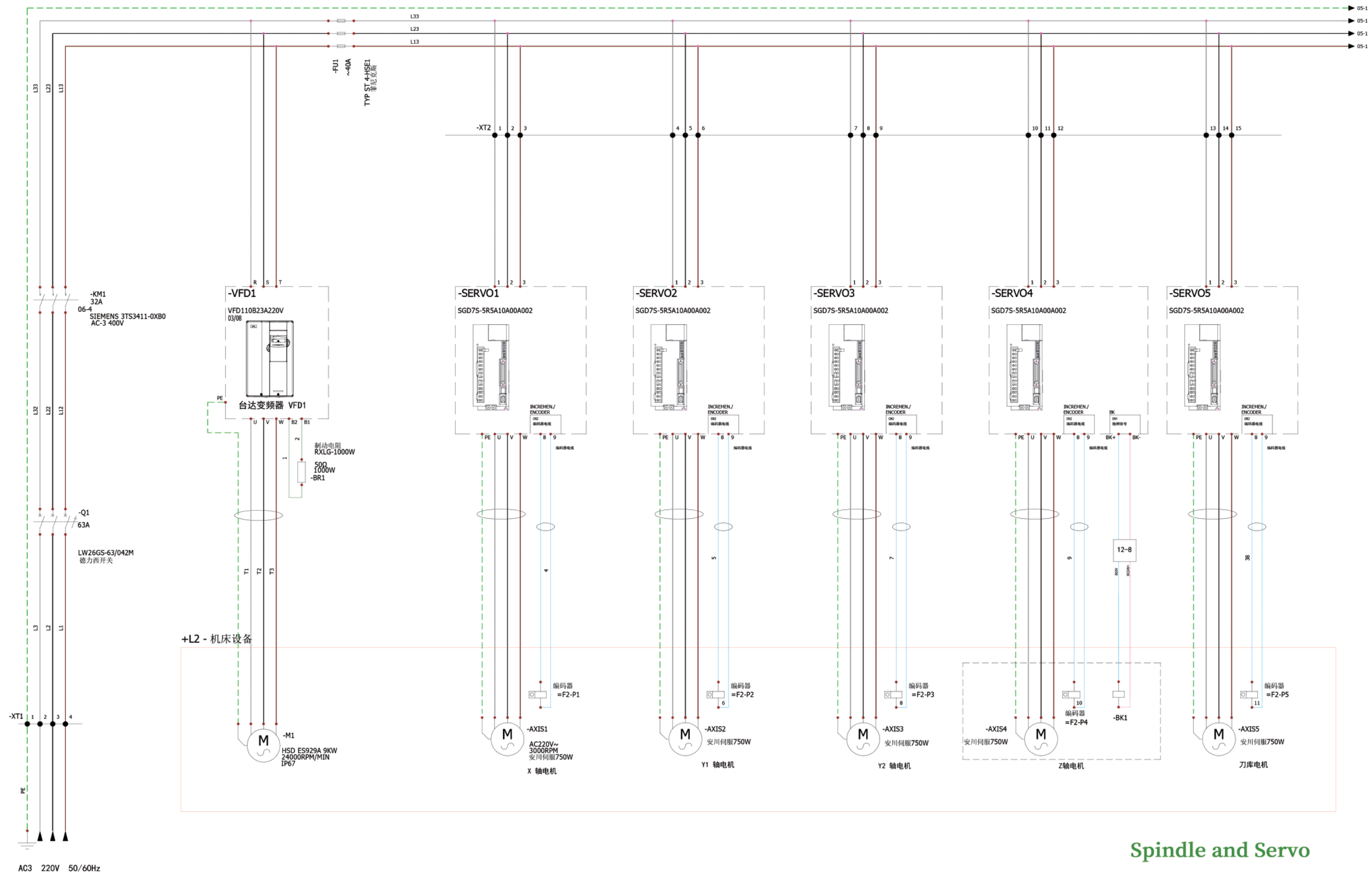
Repeat the above procedure and store other different coordinates into the memory with only T code changed.

○新代换刀原理图○

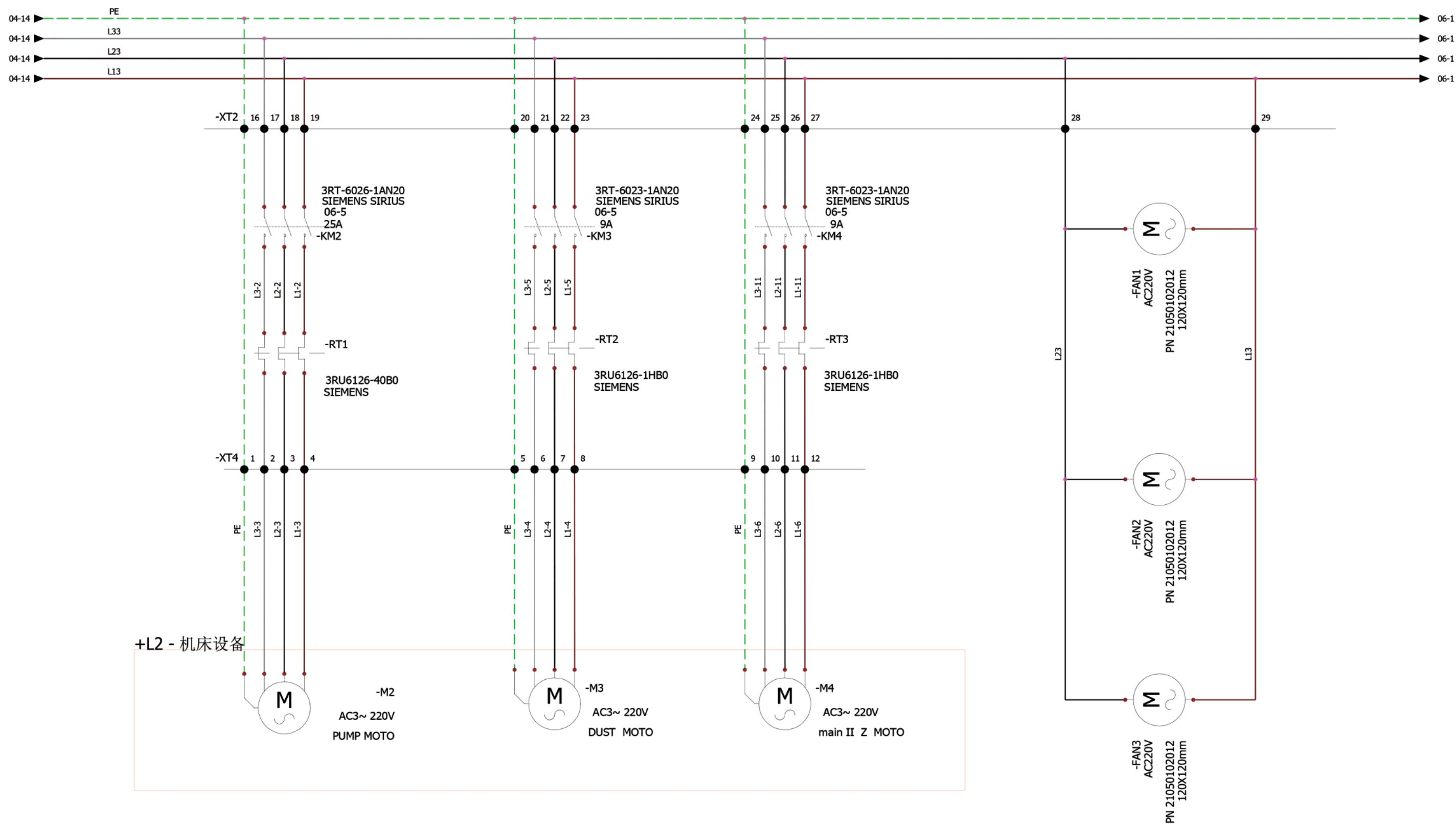
SCHEMATIC DIAGRAM OF NEW SUBSTITUTION KNIFE

Drawing list	+CABINET/3
Wiring block diagram	+CABINET/4
Electrical schematic-1 Spindle and Servo	+CABINET/5
Electrical schematic-2 Motor & Fan	+CABINET/6
Electrical schematic-3 Button and control	+CABINET/7
Electrical schematic diagram-loo pIII	+CABINET/8
CNC-VF1Inverter connection diagram	+CABINET/9
Wiring diagram of tool setter	+CABINET/10
CNC connection diagram	+CABINET/11
HSD spindle system connection diagram	+CABINET/12
Servo connection diagram	+CABINET/13
Syntec cabinet for PWORKS PATC1325 machine	+CABINET/14

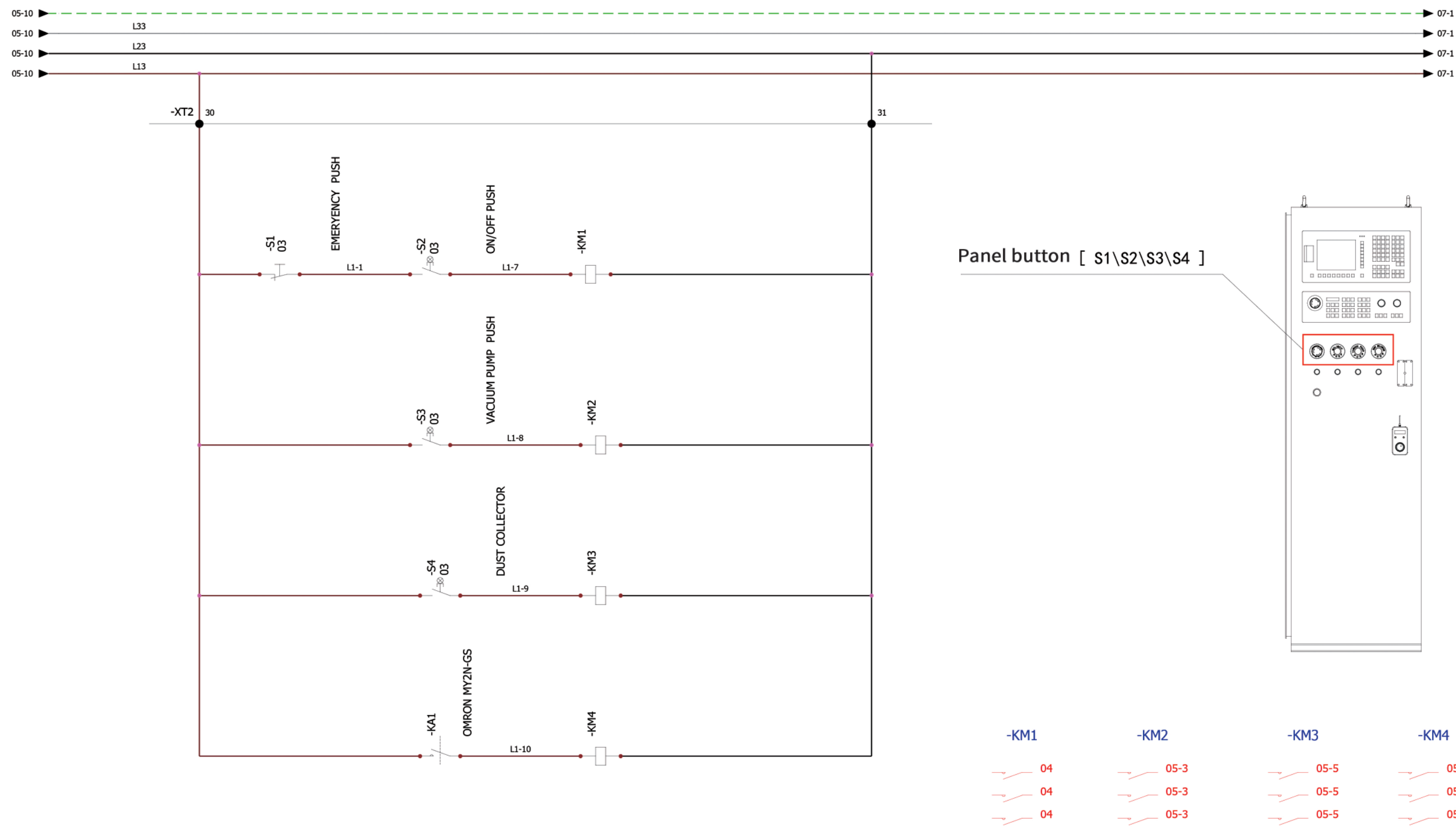




Spindle and Servo

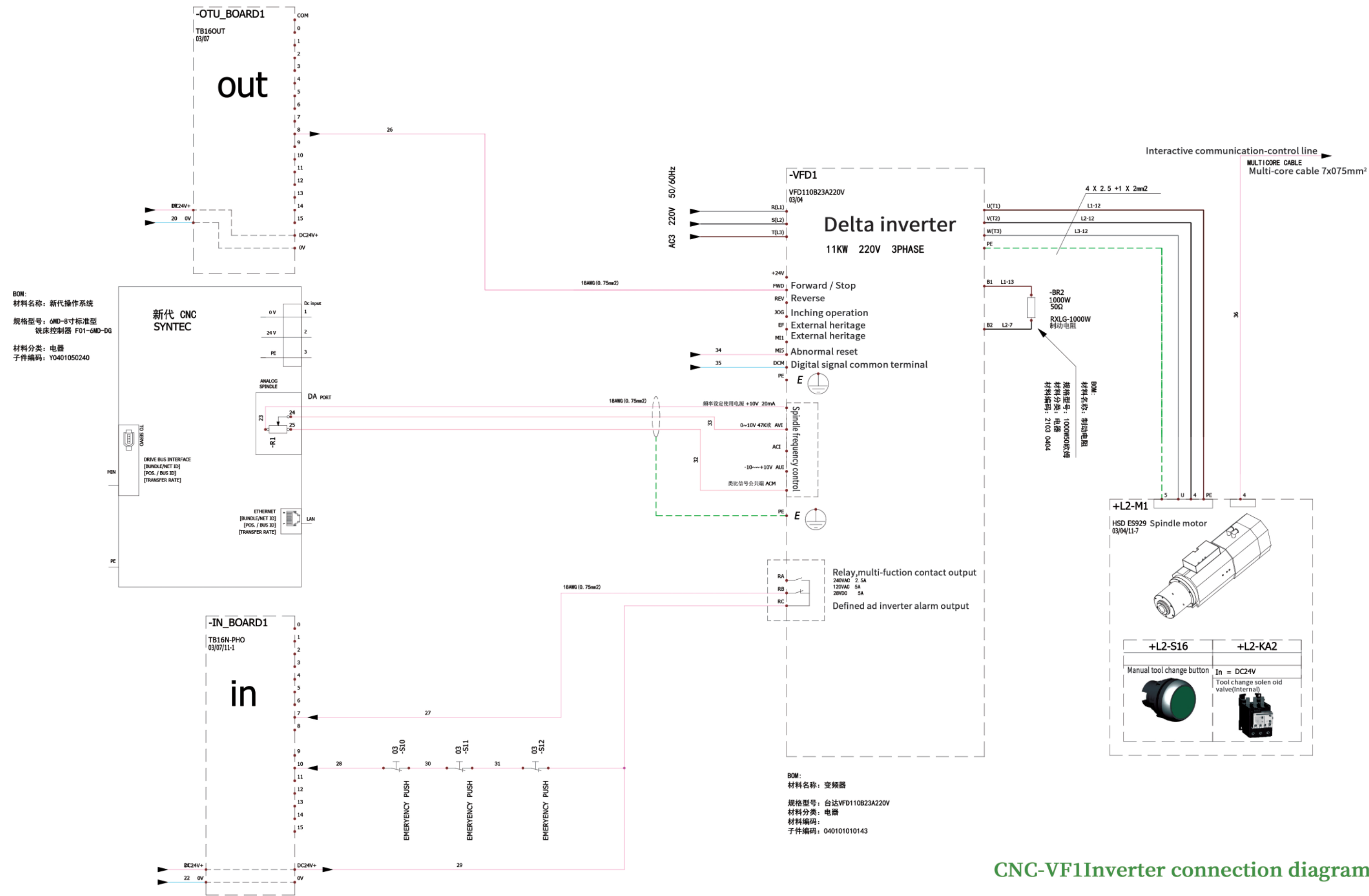


Motor & Fan



Button and control

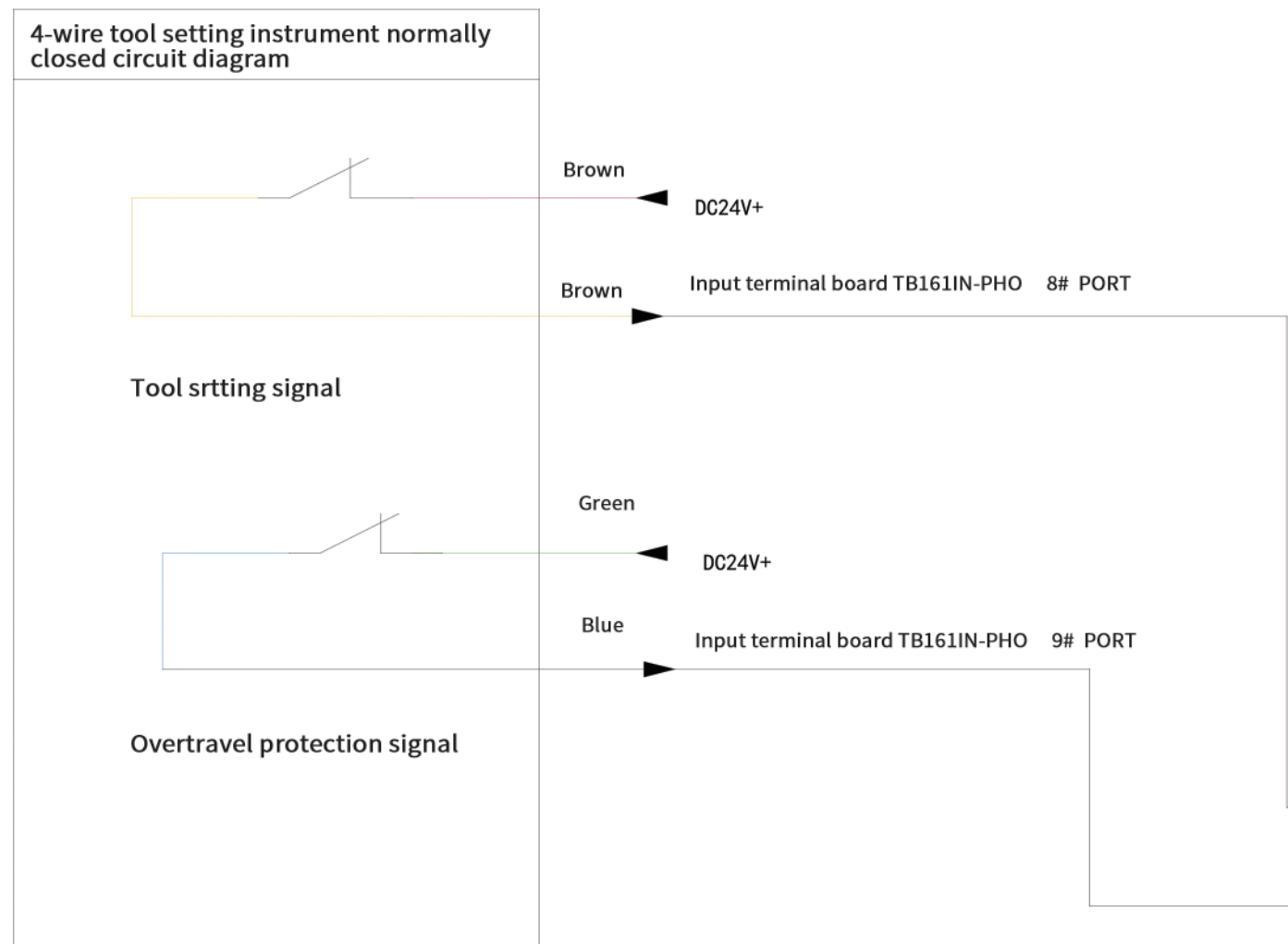




CNC-VF1 Inverter connection diagram

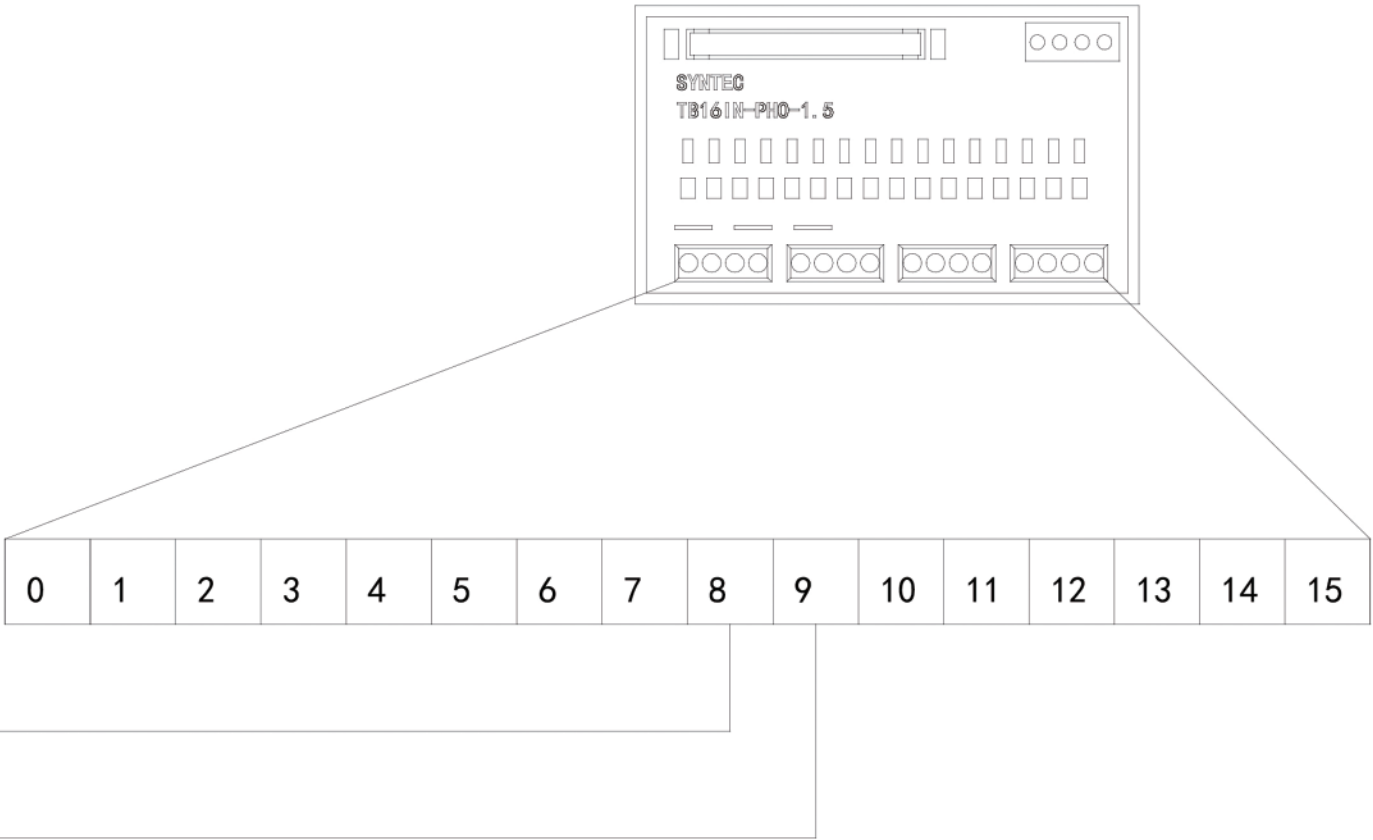
BOM:
材料名称: 对刀仪
规格型号: JS-55RY

材料分类: 电器
材料编码:
子件编码: Y0314500505

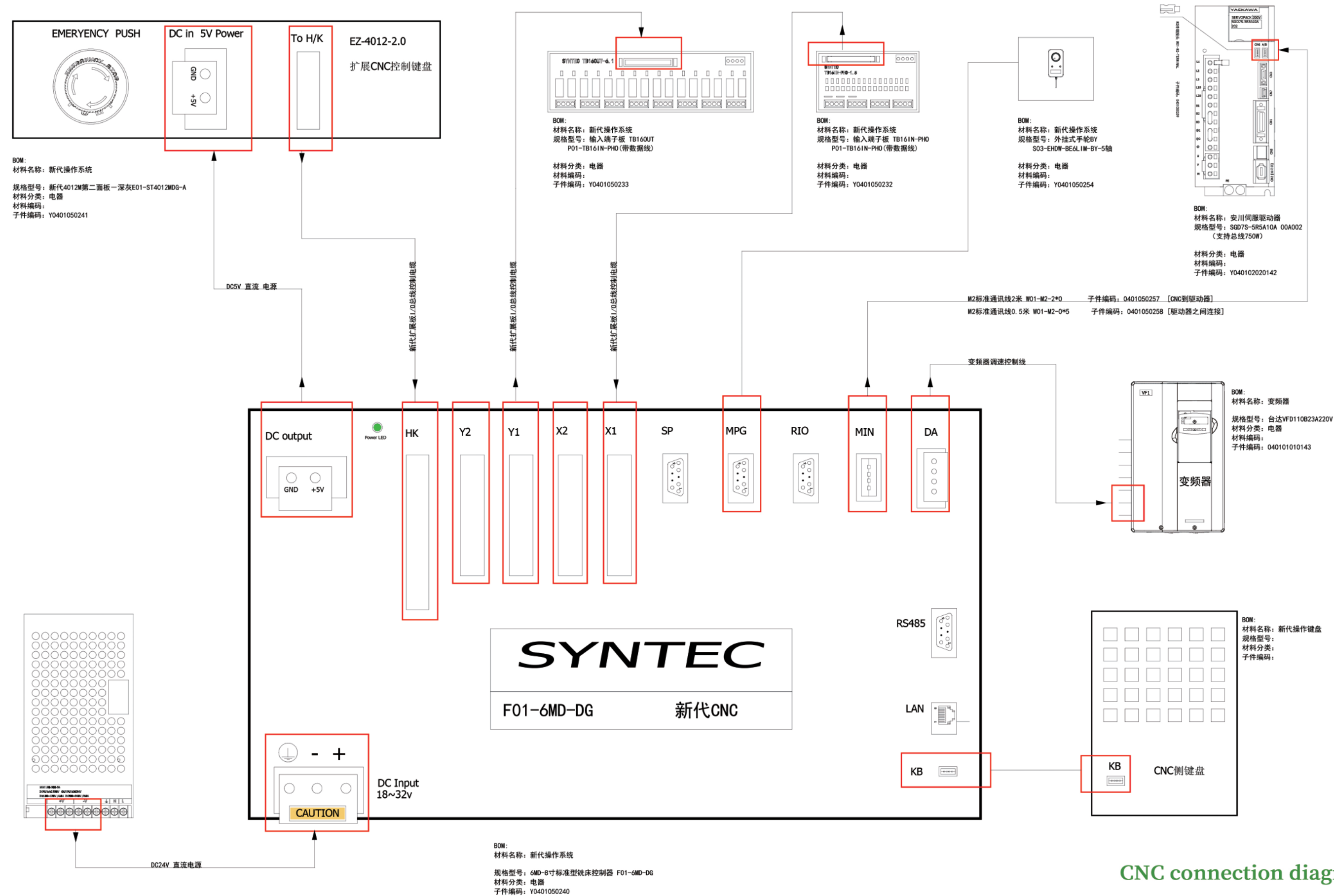


BOM:
材料名称: 新代操作系统
规格型号: 输入端子板 TB161IN-PHO
P01-TB161IN-PHO (带数据线)

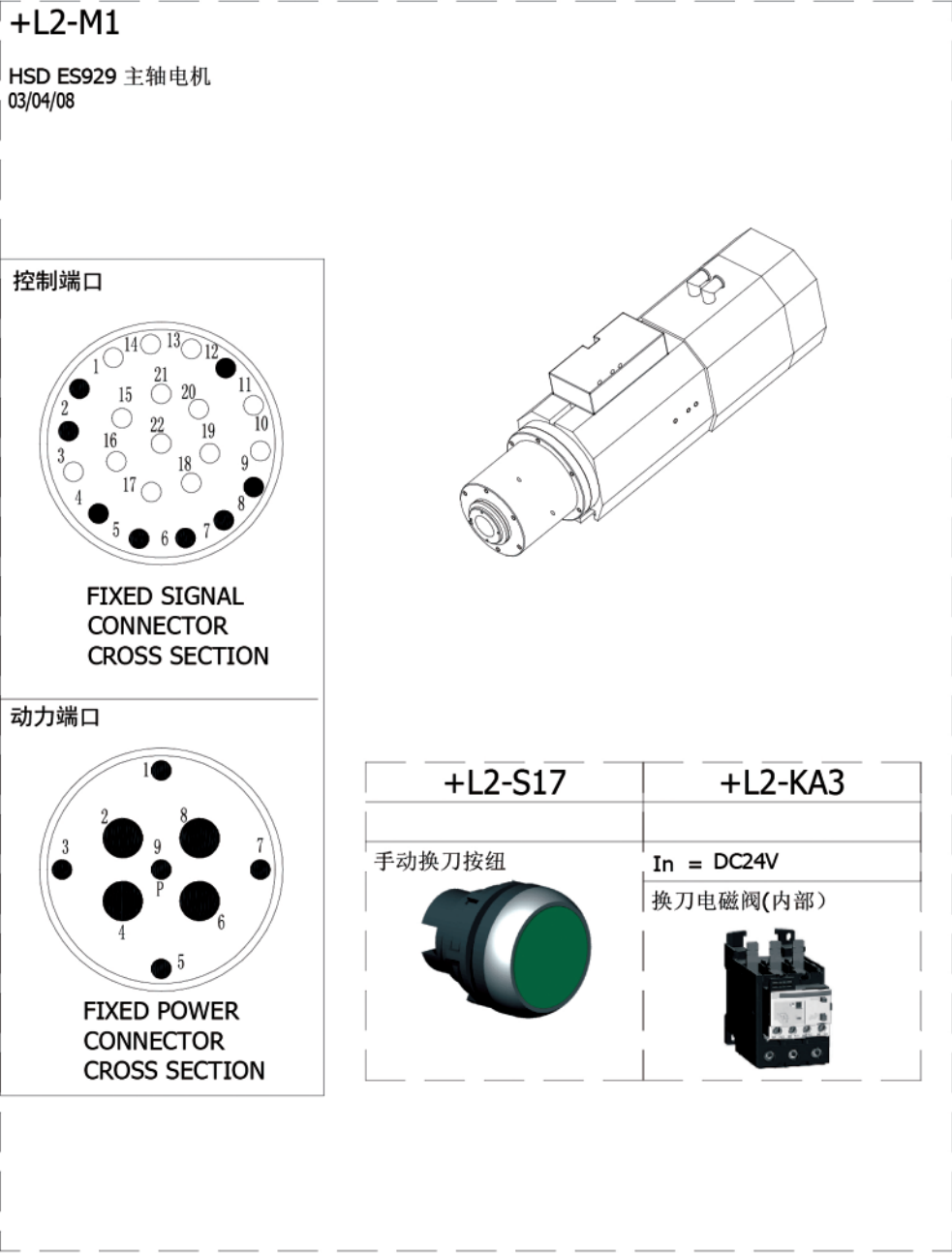
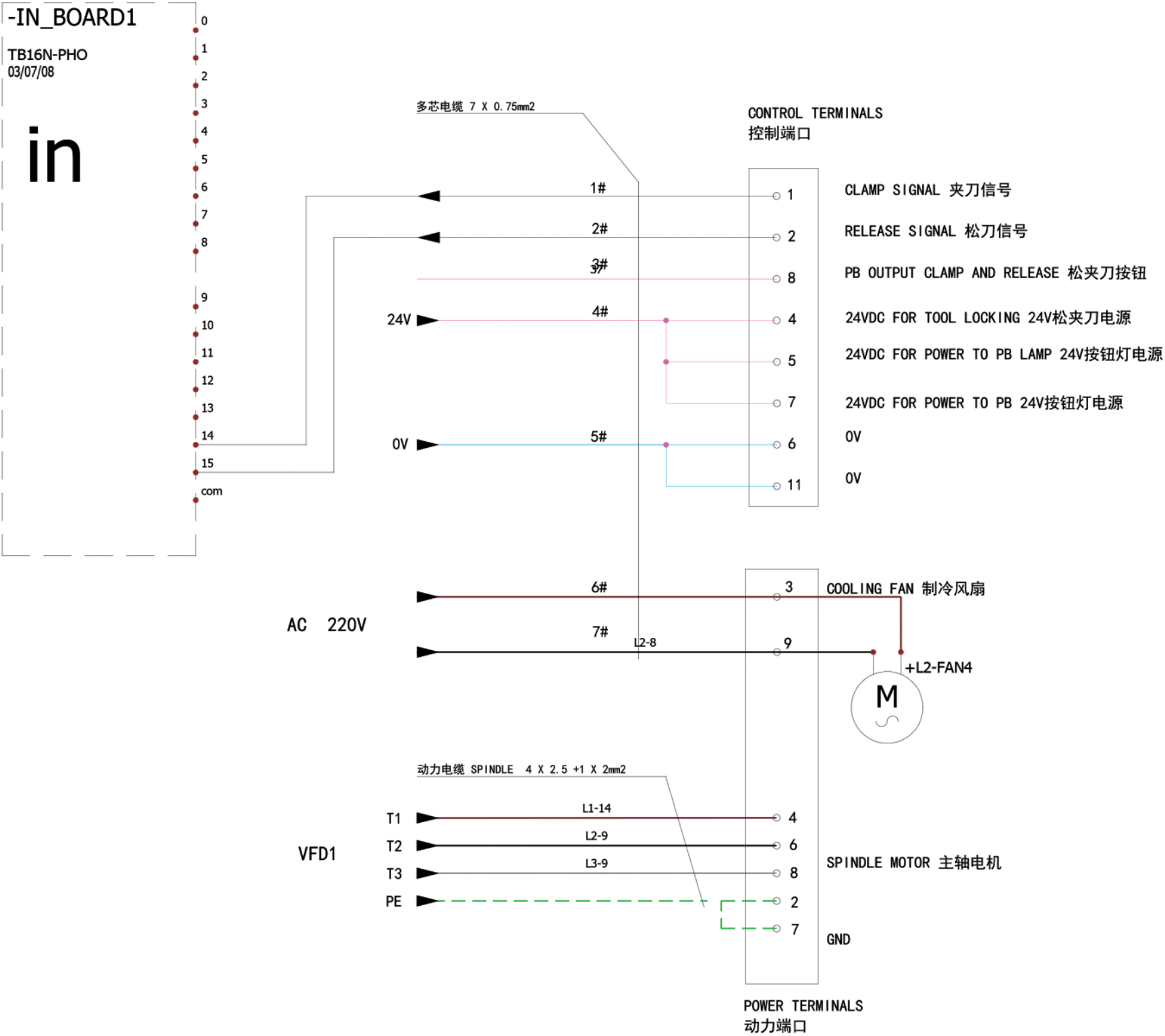
材料分类: 电器
材料编码:
子件编码: Y0401050232



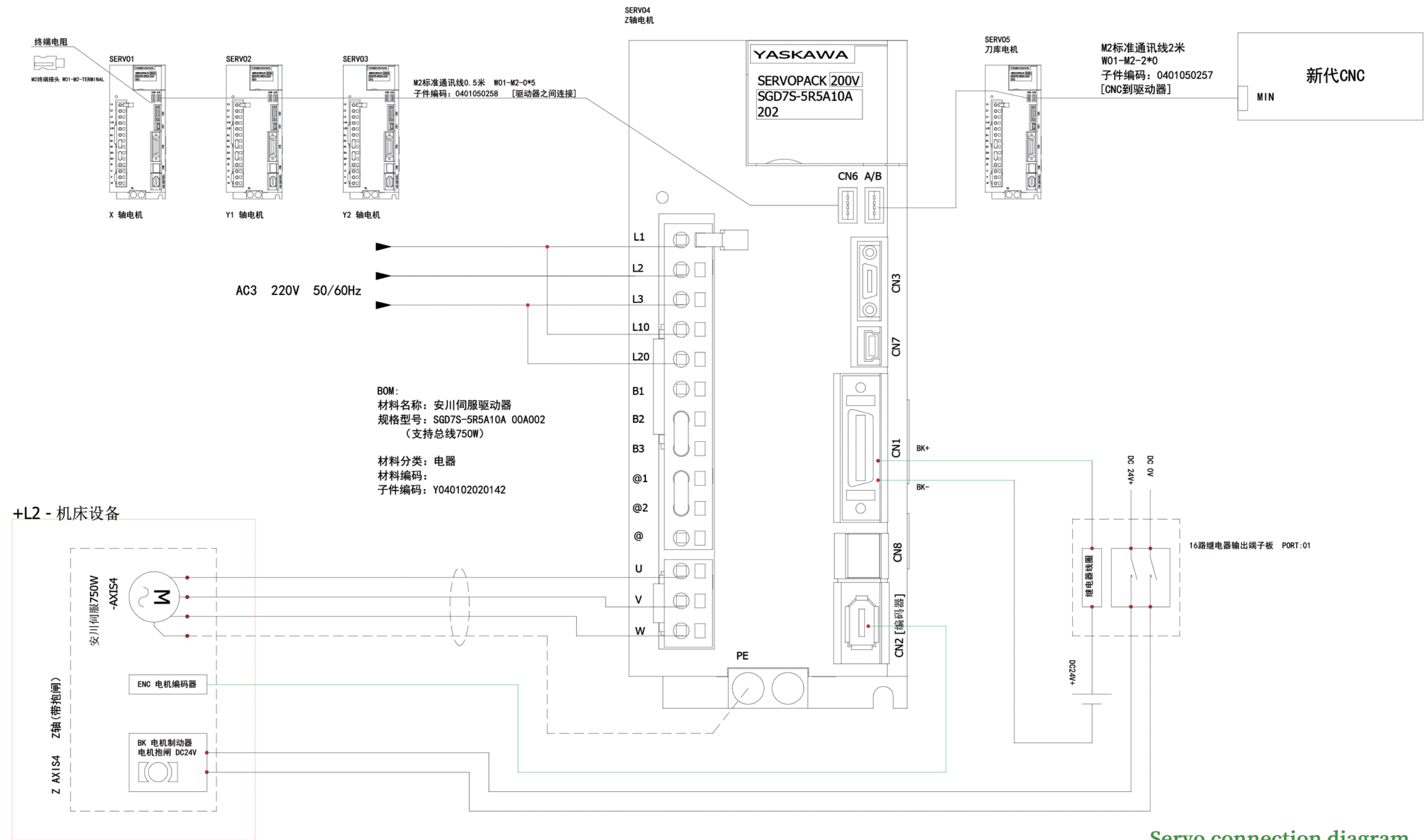
Wiring diagram of tool setter



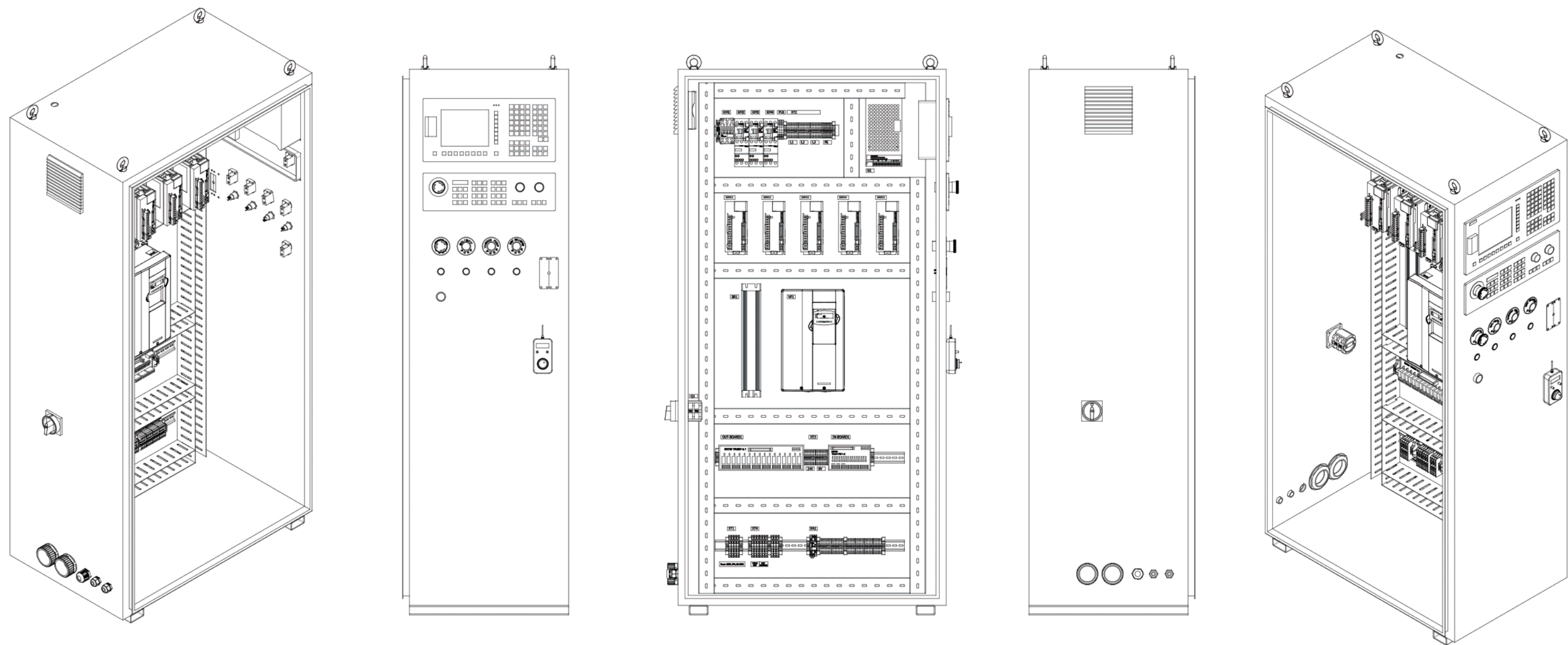
CNC connection diagram



HSD spindle system connection diagram



Servo connection diagram



Syntec cabinet for PWORKS PATC1325 machine