

120TD18Z5.5A  
120TD18Z5.5AV  
Spindle

# Instructions

120TD18Z5.5A 120TD18Z5.5AV

# Instruction

## 1. Overview

This type of electric spindle is automatic loose & broach electric spindle which installed with BT30 tool holder. The model of the tool holder rivet is BT30-45° . The spindle are using two sets of 7008C / P4 ceramic ball bearings in front, this kind of bearings are of high precision and best rigidity. Loose & broach air cylinder uses double cylinder structure which is of high strength broach. , it has hollow blowing style tool cleaning function, and installed with loose state sensor and broach state sensor which are connected with the cnc machine and realize the loose & broach etc. function.

The spindle is cooled by water with grease lubrication, it has a hermetic seal structure in the front end.

The air cylinder is a floating cylinder with single-acting which is convenient and reliable for use.

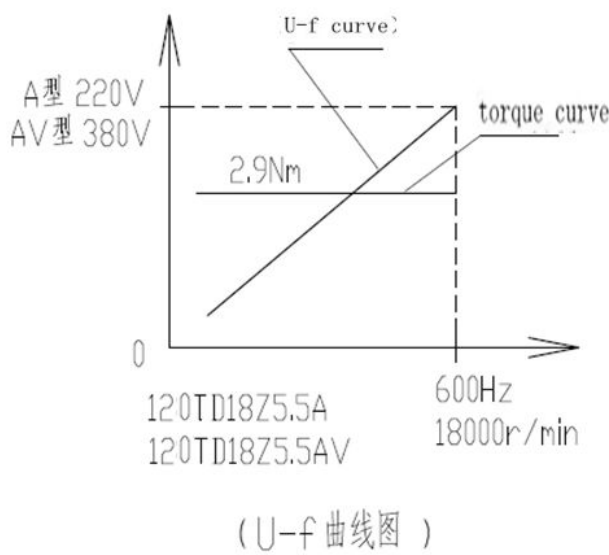
The item 120TD18Z5.5A,120TD18Z5.5AV,their difference is only the voltage: 120TD18Z5.5A is of 220V and 120TD18Z5.5AV is of 380V.

## 2. The technical data

Type	120TD18Z5.5A(120TD18Z5.5AV)
Speed	18000 r/min

Power	5.5kw	
Voltage	220V	(380V)
Current	20A	
Frequency	600 Hz	
Number of phase	3 ~	
Direction	Look from the middle of spindle : counterclockwise	

Pls see the following U-f curve:



Drive power ( VFD) and parameter adjustment:

The optional VFD should be matched with electric spindle. The current output should be slightly larger than the electric spindle current. Parameter adjustment should refer to Technical Data Sheet and U-f graph and make sure to adjust it properly.

The U-f curve is linear: the relation of voltage and frequency is linear, the output of the voltage will go down when the frequency is down.

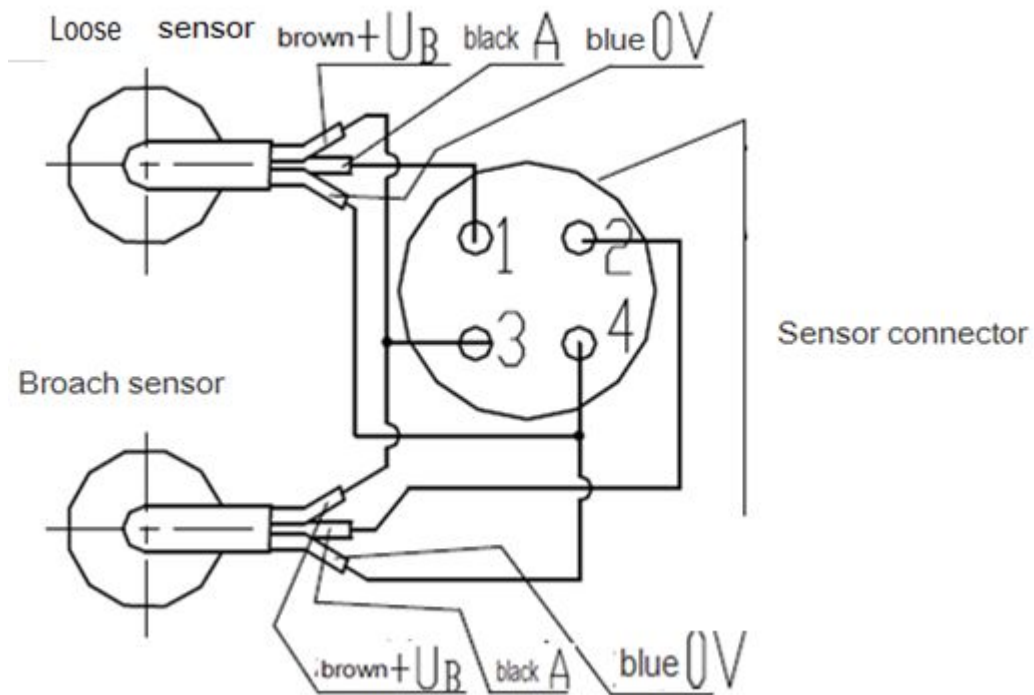
### 3.Related connecting description and demand.

You should refer to the note on the end of the spindle or the outline dimension drawing to connect each interface and power properly.

3.1 Power connectors pin 1,2,3 connect with the VFD output pin . 4&5 are the heat protection component.

3.2 The output and connection of the sensor.

Loose & broach sensor is connected with connector, the corresponding pin number is:1.loose sensor output 2.broach sensor output 3. positive pole of the sensor public power 4. Pls see the sensor's public power connecting digram referring to the sensor and spindle inside connecting digram.



3.3 Water-cooling joint is of nut-locking style standard joint. If adopts the horizontal installation, lower side water-cooling joint connects the water inlet and upper water-cooling joint connect to the water outlet. You should ensure that there is adequate coolant liquid flow through the spindle to ensure enough cooling, the throw of the water pump shall be 6m and above. You can use the special cooling machine for the spindle if you have.

3.4 Air inlet, air return, tool change & dust removal, air seal, all of the connection joint is fast plug-in connector, the diameter of the tube is  $\Phi 6$ , and the pressure of the air seal gas supply is around  $0.5 \text{ kg / c m}^2$ .

3.5 The compress gas should be strictly filtered to remove the moisture

and impurities.

#### 4. Loose & broach working process and sensor:

##### 4.1 Loose & broach working process

The working cylinder of the spindle is the single-acting type double cylinder. The single-acting cylinder is spring return style cylinder.

(1) When the spindle stop working, you should supply compressed air for the tool loosen air inlet(outlet) .and when the tool is loosened, the loose will send out tool loose signal and at this moment, the tool will be loosened. (tool loose signal output should be connected with the cnc control. When locking the spindle in stop state, the spindle shall not start working.)

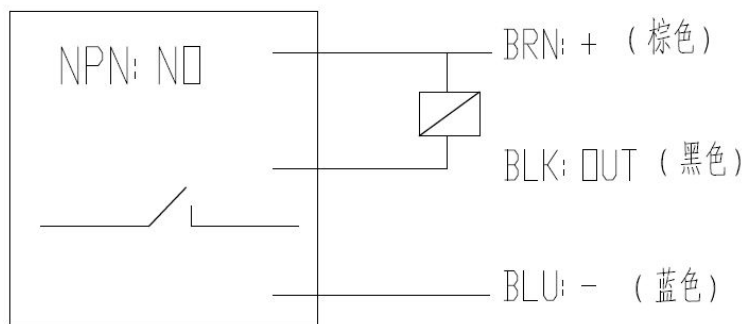
(2) When there is signal output of tool loose ,supply air for the tool change & dust removal channel .The compressed air reaches the cone hole which is on end of the tool, it cleans the tool and cone hole. The close off the hollow blowing after 2 ~ 3 seconds.

(3) When the tool holder inserted into the cone hole properly, cut off air inlet of the loose & broach “ air inlet(outlet) joint” and make it through atmosphere. The channel of loose & broach tube should be connected with the two three-way valves to control and ensure that when in tool broach state, loose & broach air interface put through atmosphere, and make the air cylinder return in place, this point is of great importance.

When there's signal sent out from the broach sensor, the tool holder will be pulled tight at the moment.

Normally the loose & broach pressure is around 0.35-0.4 Mpa, hollow blowing air pressure of "tool change & dust removal" 0.35-0.4 Mpa is suitable (When air supply capacity is low, the air separate outlet should be far away from the loose & broach air supply to avoid the impact of air supply pressure to the air cylinder when removing dust).

**Note: Don't start the spindle operation when the tool is loose and the tool holder is not connected.**

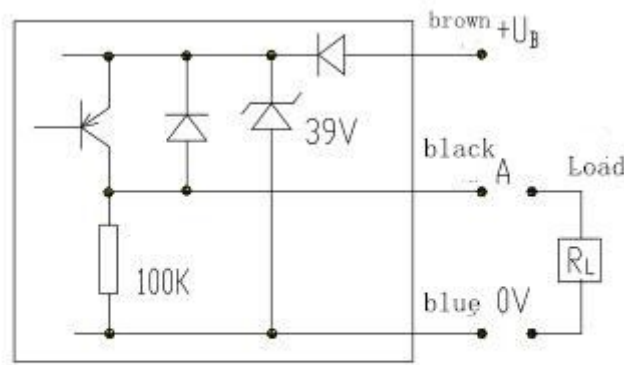


#### 4.2 Signal output description of Loose & broach status

Tool loose sensor:

Tool loose refers that supply gas for the air cylinder and the tool holder is loosened.

The action pattern of spindle's tool loose signal output components is NO, and output specification is NPN output. Power supply voltage is 10-30VDC, output current  $\leq 200\text{mA}$ . Please refer to the sensor connection diagram for wire connection method.



The sensor wiring diagram

Tool broach sensor:

Tool broach refers that the air cylinder is not inflatable and cylinder piston returns to the state of tool strained. The component of the tool broach signal is same as that of the tool broach sensor.

Remarks: Sensor real value table:

	loosened sensor	broach sensor
Cylinder is inflatable	1	0
Cylinder is not inflatable The handle taut tool condition (or not installed tool condition)	0	1
Cylinder is not inflatable and no tool	0	0

## 5. Maintenance and assembly



The maintenance for the spindle should be made by the professionals and be repaired at a corresponding conditions. If you can't create this condition, the spindle needs to be returned to the manufacturer to repair and you cannot casually disassemble the spindle which could damage the precision of the spindle and the spindle component. When repairing, normally you should make the test and adjustment to the spindle to ensure the vibration and rotating precision of the spindle.

Before assemble the spindle, you should clean the bearings and various spare parts with 120 # gasoline. The spindle can be assembled when the components are dry, When you exchange the bearings, you should pay attention to the model of the bearing to check whether is same as the original or similar as the model of high-speed angular contact bearings. Assembly direction (in direction of axial force supporting of the bearing) should be consistent with the direction of the original bearing assembly. The bearing should be fill with the special grease for high-speed spindle.

After the spindle is repaired, the finished spindle should be made running test. Respectively running the spindle at low and medium speed more than 15 minutes. Running should be smooth without abnormal, and then can put into use.

**Pay special attention: Incorrect disassembling can make the**

**spindle lose the precision and damage the bearings and other parts.**

**Disassembling & installation improperly may cause the injury  
accident!**

6.Drawing:

Item No.	120TD18Z5.5A	120TD18Z5.5AV
Speed	18000r/min	
Highest frequency	600Hz	
Torque	2.9Nm	
Power	5.5kw	
Voltage	220V	380V
Current	Max 20A	Max 12A

	loosened sensor	broach sensor
Cylinder is inflatable	1	0
Cylinder is not inflatable		
The handle taut tool condition (or not installed tool condition)	0	1
Cylinder is not inflatable and no tool	0	0

