

Machine Installation Process and the Maintenance of Common Failures



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CNC Ultra-High Pressure Water Cutting Machine Installation Process

Connections:

1. Power Requirements:
 - a. Voltage: 480/3/60
 - b. Motor Horsepower: 50
 - c. Full Load Amps (FLA): 56
 - d. Circuit Breaker Amps: 100
2. Water Requirements:
 - a. The **Intensifier** need **two water inputs**: cutting water and cooling water. (Picture 1)
 - b. Cutting water should be demineralized /filtered water. Total Dissolved Solids (TDS) should be less than 100ppm.
 - c. Water Pressures:
 - i. Cutting water: 40psi - 120psi
 - ii. Cooling water: >8gal/min
 - d. Two drainage/output lines: cooling water and wastewater. BSPT 1/2"
 - i. Cooling water to ensure watch oil temperature is below 45 °C.

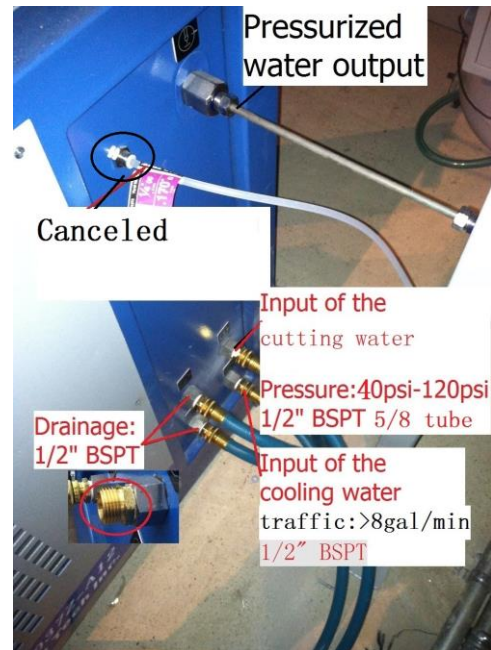


Fig 1: (Green: Drainage; Red: water input)

Note: The machine will not start if the **Cutting Water Input** is below 40 psi.

3. Air (Gas) Requirements: *Connectors may be changed depending on desired size.
 - a. The system needs **two gas/air inputs**. All air must be **dry**. Volume Flow Rate: 95 gal/min.
 - b. The **Cutting Platform** require air inputs at 85 psi. 1/4" BSPT
 - c. **Automatic Sand Tank** (grey) requires air input at 85 psi.

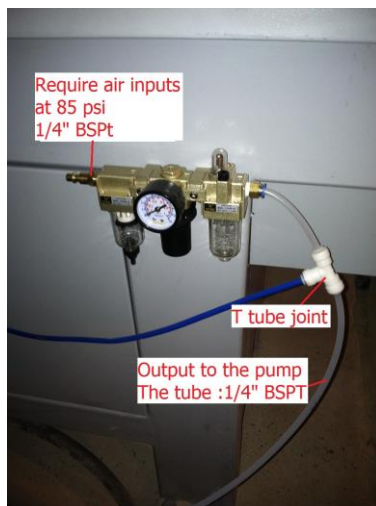


Fig. 2

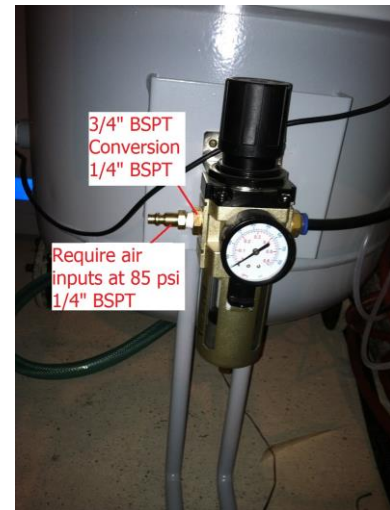
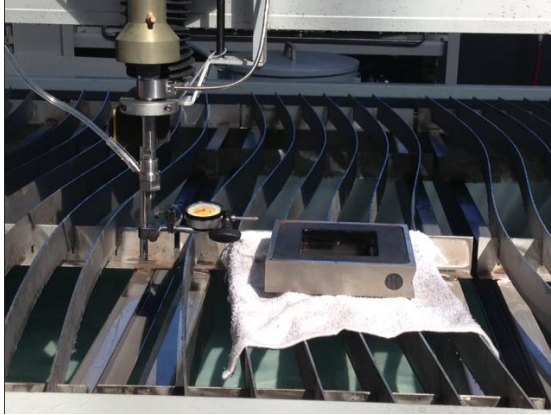


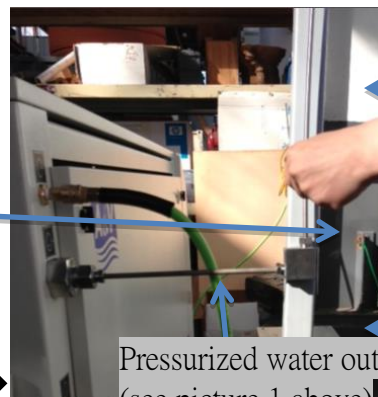
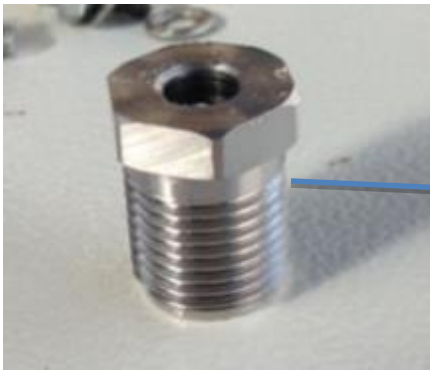
Fig.3

Level and Angle:

1. After the assembly of the **Cutting Platform** and **Power**, it is necessary to adjust the level of the article grate guide rail and tank.
2. Measure the right angle between the X and Y axis of the **Cutting Platform**, keep the error within 0.001in.



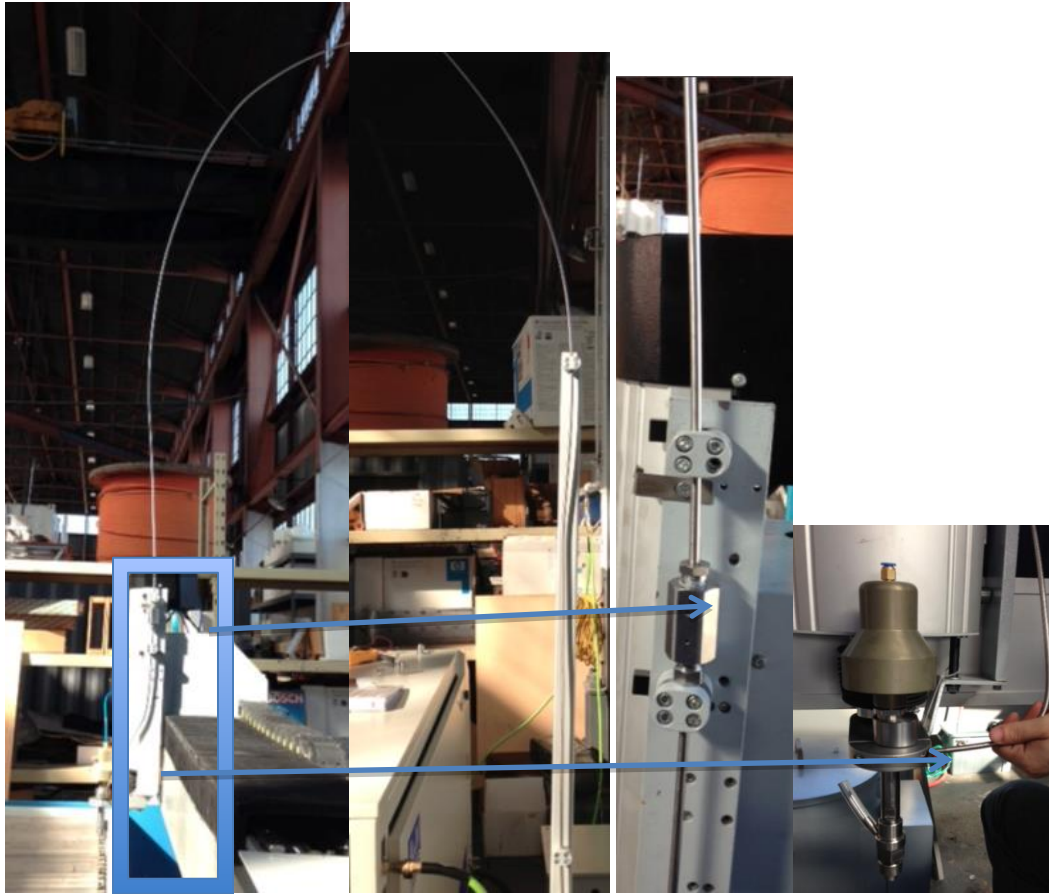
1.Installing The High Pressure Hose:



High Pressure
water hose

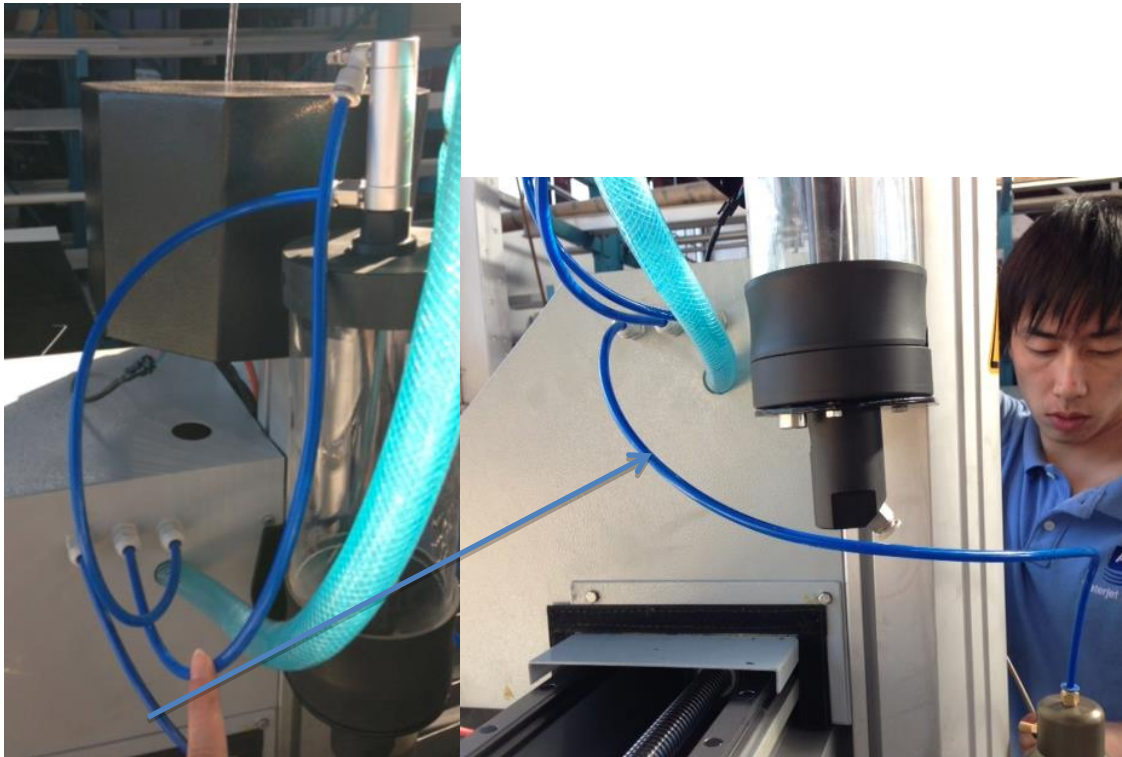
Pressurized water output
(see picture 1 above)

Metal Stand
Needs to be bolted
down



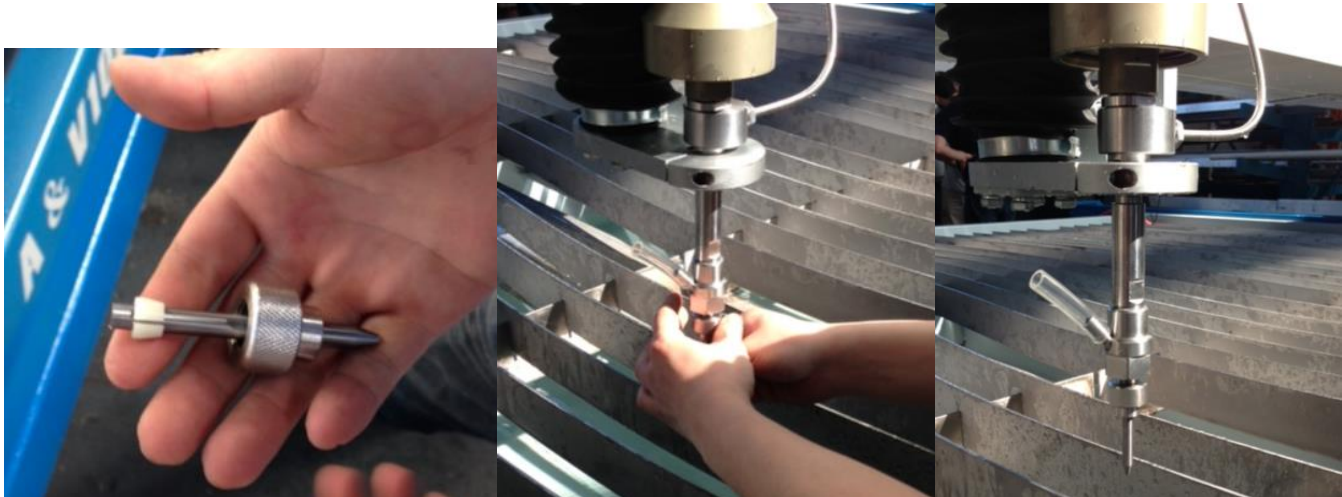
Fix the high-pressure hose and connect to the head.

2.Installing the Air Tubes (Blue):



Left→Head; Middle→Top; Right→Bottom

3.Installing the Nozzle:






Press the nozzle into the head, twist and tighten.

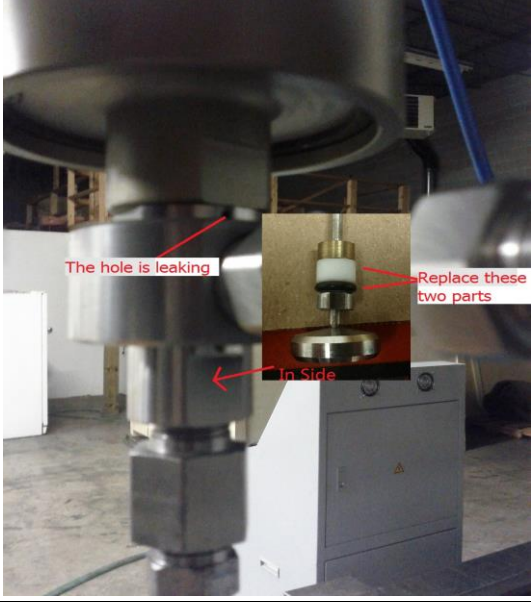
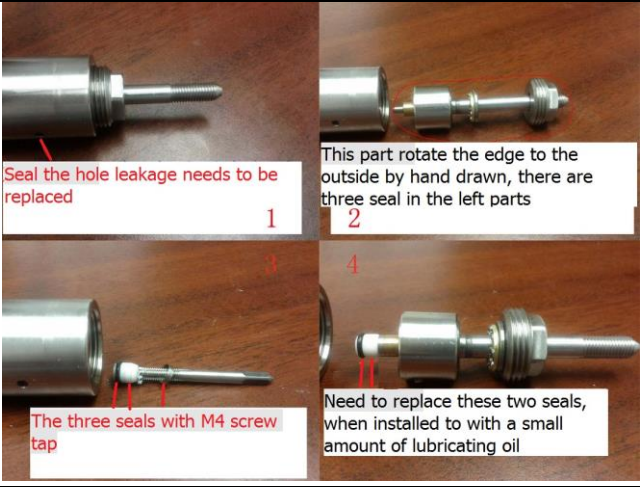

4.Sand Tanks:






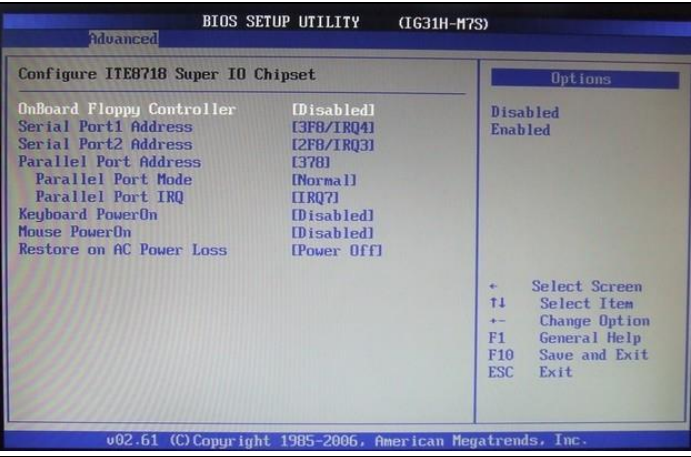
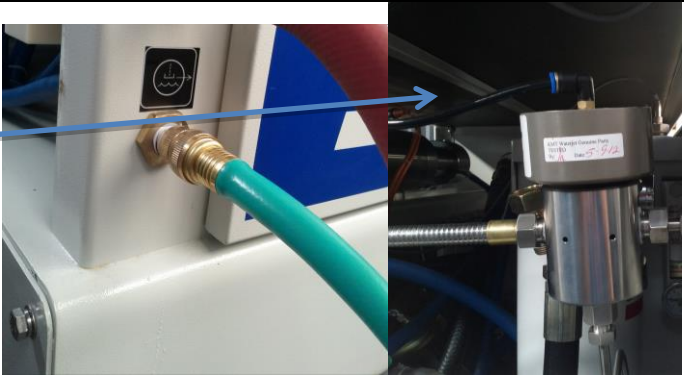
1. The **Automatic Sand Tank** will hold 5-6 bags of sand. The **Bottom Sand Limit** alarm will go off when there is only one bag of sand remaining in the **Automatic Sand Tank**.
2. The air pressure should remain between 30psi-40psi.

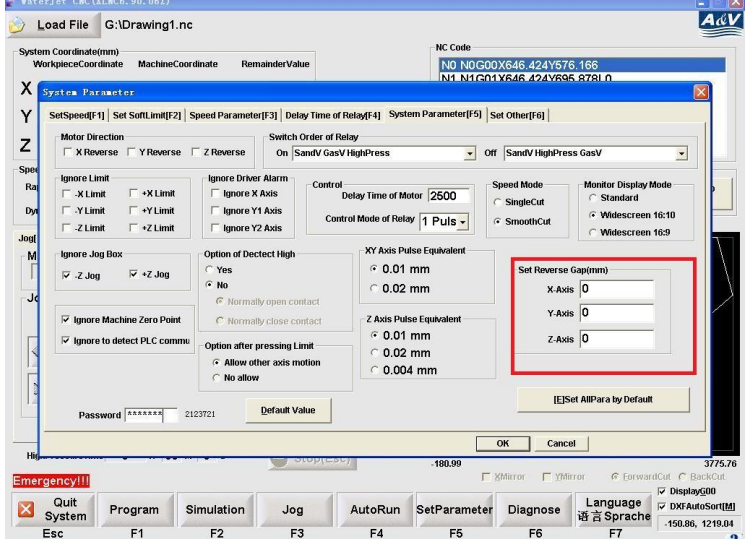
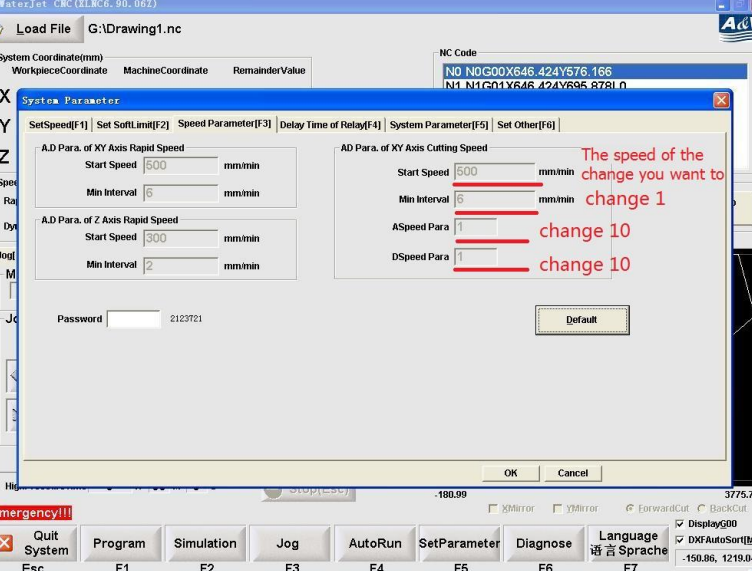
Troubleshooting of Common Problems

| Problem | Solution | Image |
|--|---|---|
| Slow cutting speed, fanning or divergent water (without losing pressure) | <ol style="list-style-type: none"> 1. Change the orifice 2. Change the nozzle 3. Change cutting head |  <p>orifice</p> |
| Cutting head hole leaking water | <ol style="list-style-type: none"> 1. Change the new orifice 2. Buff the surface of the cutting head pipe |  <p>The two sealing surface is damaged</p> <p>The hole is leaking</p> |
| Water retrieving into the sand tube | <ol style="list-style-type: none"> 1. Flip the water switch valve pad to the other side 2. Change the water switch pad. 3. Change the needle |  <p>There is water in the tube</p> <p>The accessories inside, need to replace new one The hole bigger</p> |

| | | |
|--------------------------------------|----------------------------------|--|
| Weeping above the water switch valve | Replace O-ring and pressure ring |  |
| Weeping rotary joint | Replace the seals |  |
| Intensifier cylinder weeping water | Replace high pressure ring |  |

| | | |
|---|---|---|
| <p>Intensifier cylinder weeping oil</p> | <p>Replace U-ring</p> |  |
| <p>Losing pressure during cutting</p> | <p>1. Buff valve spool and valve pad 2. Replace the valve spool and valve pad</p> |  |

| | | |
|--|--|--|
| <p>Mini sand tank spraying sand</p> | <p>1. The sand in the Automatic Sand Tank has reached the lower limit 2. There is blockage at the mouth of the sand outlet of the Automatic Sand Tank.</p> |  |
| <p>Unable to launch the software</p> | <p>1. Make sure the dongle is attached and tightened. 2. Make sure the parallel port address is 378</p> |  |
| <p>When oil pump is on, there should not be water coming out of the bottom drainage tube (green) (see picture 1 above)</p> | <p>1. Make sure there is air going into the High Pressure Dump Valve 2. Change Valve Seat (Pg. 9-30 in KMT manual—#7)</p> |  |

| | | |
|--|--|---|
| <p>X-axis and Y-axis are not aligned, causing circles to be oval shaped.</p> | <p>Under SetParameter, there is the Set Reverse Gap values. Zero the values, cut a square, and then measure the differences of the sides. Enter the value into the corresponding axis.</p> |  |
| <p>Slowing down corners automatically</p> | <p>SetParameter → System Parameter. Decrease Min Interval and increase ASpeed and DSpeed. The greater the difference, the more dramatic the effect.</p> |  |

Maintenance:

1. Hydraulic Oil needs to be changed **once a year** (46 or 68).
2. Leadscrews should be cleaned and greased **every three months**.