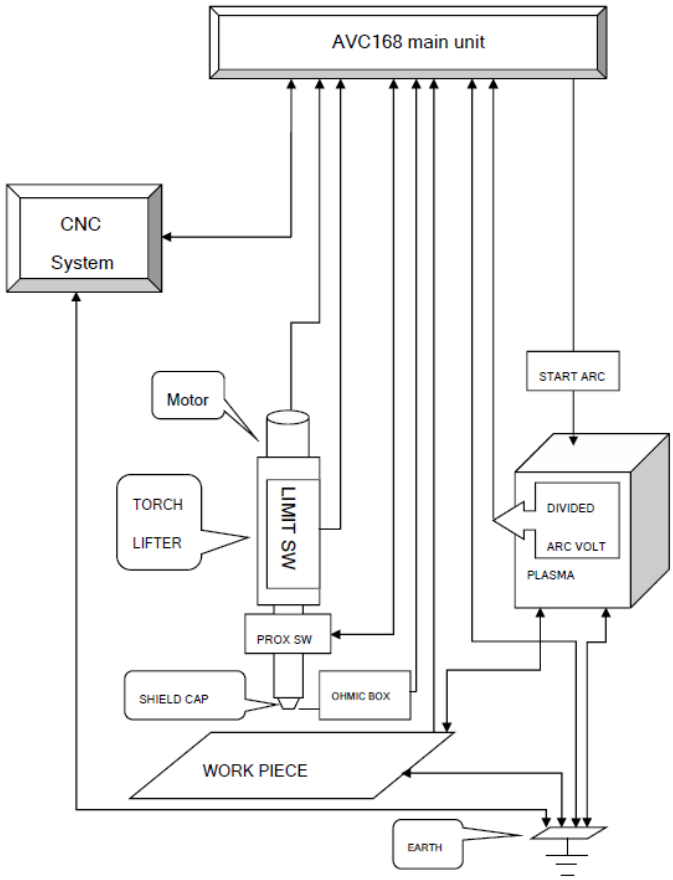
THC Controller

Introduction

The AVC168 controller is a device that helps control the height of a torch during CNC plasma cutting. It does this by sensing changes in the voltage of the cutting arc, which varies based on the distance between the torch and the work piece.

When the torch is farther away from the work piece, the voltage increases, and when it is closer, the voltage decreases. The AVC168 detects these changes and adjusts the height of the torch by controlling a lifting motor. This helps to keep the voltage of the arc within a specific range, ensuring that the height of the torch remains consistent

System Connection



Operation

The AVC168 controller has several operational buttons that can be used to control the device:

MANU UP: This button moves the lifter upward at any time.

MANU DOWN: This button moves the lifter downward at any time.

AUTO/MANU: This button switches the controller between AUTO and MANUAL control modes. If you are using the MANUAL mode, you are responsible for maintaining the torch height correctly.

ARC TEST: Pressing this button starts or stops the arc test procedure.

P-HT TEST: Pressing this button starts the piercing height test procedure.

IHS TEST: Pressing this button starts or stops the IHS height test procedure.

Adjustments

The AVC168 controller also has three knobs that can be used to adjust important parameters:

IHS TIME: This knob is used to set or adjust the parameter of the IHS (Initial Height Sensing). This parameter is the travel distance based on seconds. For example, if you set IHS to 0.1 seconds, the Z axis moves the torch up for 0.1 seconds.

PIERCE HEIGHT: This knob is used to set or adjust the parameter of the pierce height. Once the torch touches the material, it moves up based on the IHS setting. The pierce height is the height set to move above IHS.

PIERCE TIME: This knob is used to set the time it takes to go from IHS to pierce height.

LED Indicators

The AVC168 controller also has several LED indicators that provide important information:

ARC: This LED indicates that the plasma start arc switch is closed when it is lit.

MOTION: This LED indicates that the motion enable signal is active when it is lit.

AUTO: This LED indicates that the controller is in the automatic arc voltage height control status when it is lit.

UP: This LED indicates that the torch is moving upward when it is lit.

DOWN: This LED indicates that the torch is moving downward when it is lit.

TOUCH: This LED indicates that the torch has collided with something when it is lit.

Work Procedure

The AVC168 operates in automatic mode by default when it is powered on. It controls the plasma cutting process and maintains a consistent torch height during cutting.

When the CNC controller sends a start signal, the AVC168 performs the following steps:

1. The torch is lowered to the steel plate until the cutting torch tip makes contact with the plate.
2. The torch is lifted for the duration of the IHS_Time parameter (ignition height setting) before stopping, reaching the start arc height.
3. The start arc switch is closed, and the controller waits for the arc to be successfully transferred to the plate.
4. The torch is lifted for the duration of the PHT_Time parameter (pierce height up time) until it reaches the pierce height.
5. The torch remains stationary for the duration of the PIE_Time parameter (piercing time) until the piercing procedure is complete.

6. The motion enable signal is sent to the CNC controller, and the machine starts cutting movement.
7. The torch remains stationary for the duration of the Creep_Time parameter, allowing the torch to creep over any pile-up areas caused by the piercing procedure.
8. The torch is lowered for the duration of the Cut_Down_Time parameter, and the torch reaches the normal cutting height.
9. The automatic control program is enabled, and the controller monitors the arc voltage and adjusts the torch height as needed throughout the plasma cutting process.
10. After the cutting cycle is complete, the AVC168 controller opens the plasma start arc switch, lifts the torch for a certain time (defined by Torch_Lift_Time), and waits for the next start signal from the CNC controller.

Test Procedure

To use the test functions of the AVC168 controller, follow the instructions below:

ARC TEST:

1. Make sure you are in standby mode.
2. Press the ARC TEST button once to start the arc test procedure.
3. To stop the procedure, press the ARC TEST button again. The test will also stop automatically after about 15 seconds.
4. The controller will return to standby mode after the arc test procedure is complete.

IHS TEST:

1. Make sure you are in standby mode.
2. Press the IHS TEST button once to start the ignition height setting test procedure.
3. The controller will move the torch down to contact the workpiece, then up for a certain time specified by the IHS_TIME parameter.
4. To stop the procedure, press the IHS TEST button.
5. The controller will return to standby mode after the IHS test procedure is complete.

P-HT TEST:

1. Make sure you are in standby mode.
2. Press the P-HT TEST button once to start the pierce height setting test procedure.
3. The controller will move the torch up for a certain time specified by the PHT_TIME parameter.
4. The controller will return to standby mode after the P-HT test procedure is complete.