

SMART CUT-2200
Desktop Cutter Operating Instructions

Please read, understand and observe this machine carefully before installing, using and maintaining it .

Safety Instructions

- The operator of the machine must be familiar with the principle of thermal cutting, understand and master the relevant safe operation regulations. Before operating the machine, he must carefully read the operation manual and the Operation Manual of the CNC System, and be familiar with the performance and technical parameters of the machine. After passing the examination, he shall operate the machine according to the operation certificate.
- When using the cutting machine to cut, the following phenomena will occur: sparks, sputtering of molten slag, high temperature, heat radiation, gas, smoke, noise, light, arc, electromagnetic radiation, etc., which have certain influence and harm to human body. It is suggested to take corresponding protective measures. Because of the use of various flammable and explosive gases, gas leakage or improper operation, explosion and combustion accidents will occur in the cutting process.
- Non-conforming or incorrect operation will cause damage to the equipment. If serious misoperation occurs, the possibility of explosion caused by the escape of flammable gases cannot be ruled out, and there is more danger of electric shock and burns.
- In addition to personal safety requirements, standardized and correct operation is beneficial to the cutting quality of workpieces and the life of the machine.
- Non-professional technicians shall not dismantle the machine without authorization. Please refer to relevant operation manuals or consult relevant technicians when encountering problems.

- In addition to observing various safety regulations and rules and regulations on safe production, relevant personnel must attach importance to safe production, formulate and strictly implement safe operation regulations. The following are some effective safety protection measures recommended by the manufacturer:
 - 1) The working area of the cutting machine must be equipped with relevant fire-fighting devices, such as fire hydrants, fire extinguishers, sand boxes, etc.
 - 2) Operators engaged in cutting must undergo three-level safety education, learn and master the knowledge of safe operation, and be trained before taking up their posts.
 - 3) The operation rules and safety precautions of acetylene cylinders, oxygen cylinders, etc. and various depressurizers must be strictly implemented.
 - 4) Flammable and explosive articles shall not be stacked near the working area of the cutting machine.
 - 5) When the cutting machine is operated, sparks, sputtering of molten slag, soot, noise, photoelectric radiation, etc. will appear. Therefore, appropriate ventilation must be installed in the workshop and appropriate personal protective equipment must be provided to the operator.
 - 6) When igniting with an automatic igniter, the operator should take care that there is no one in the flame area before igniting and cutting.
 - 7) If serious misoperation occurs, the possibility of explosion caused by the escape of flammable gases cannot be ruled out. Therefore, it is recommended to install effective exhaust equipment near the air source.
 - 8) Pay attention to the safety of the gas source before the shift. During the cutting process, there shall be absolutely no gas leakage. If any abnormal situation is found, the machine shall be shut down in time, the gas source and power supply shall be cut off, and relevant personnel shall be invited to inspect. Only after the failure is removed can the work be restarted.

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Introduction to Equipment

Desktop cutting machine is a kind of modern cutting equipment controlled by digital process. In addition to the high automation of cutting operation, it also has the characteristics of high cutting accuracy, high material utilization and high production efficiency. With the progress of mechanical and electronic technology and computer technology, numerical control cutting machine is being paid more and more attention by more and more enterprises for its good man-machine interface, powerful auxiliary support function and relatively low equipment investment, and has been more and more widely used in production. The components of CNC cutting machine mainly include: frame, vertical and horizontal driving devices and guide rails, cutting torch components, CNC system, electrical system and so on.

See the machine outline drawing

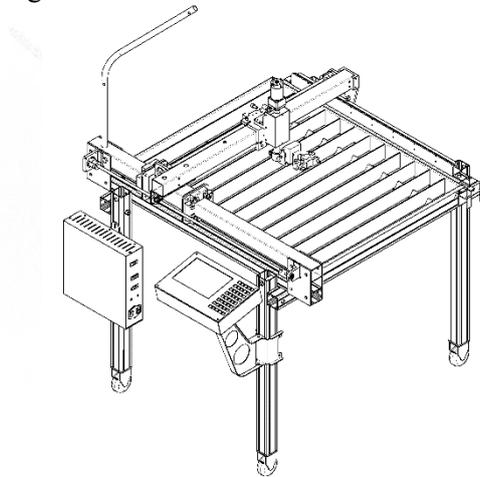


Figure 1: SMARTCUT-2200 Outline

Installation and processing range	4.1	Transverse cutting distance	$\leq 600\text{mm}$
	4.2	Longitudinal cutting distance	$\leq 600\text{mm}$
	4.3	Up and down stroke	$\leq 50\text{ mm}$
Plasma cutting range	4.5	Cutting thickness	1-8mm
	4.6	Cutting speed	100-4000mm/min
Machine Performance	4.7	Running speed of the whole machine	0-6000mm/min
	4.8	Maximum machine speed	6000mm/min
	4.9	Supply Voltage	220V/110V 50/60Hz
	4.10	Total Power	300W

Installation of the machine

2.1 Composition description

SMARTCUT-2200 desktop CNC cutting machine is a professional machine designed and manufactured by Shanghai Huawei Welding and Cutting Machinery Co., Ltd., which is aimed at small-scale cutting places. The machine is beautiful in shape, light in weight, stable in operation, and can be used with various CNC systems at home and abroad. It can also be equipped with any type of plasma cutting system.

This machine is mainly composed of numerical control control system, main frame, transverse guide rail, cutting torch and so on.

The cutting torch assembly is composed of a lifting moving seat, a holder and an anti-collision sensor.

2.2 Plasma Installation

Plasma is selected by the user, the communication interface has been left on the machine.

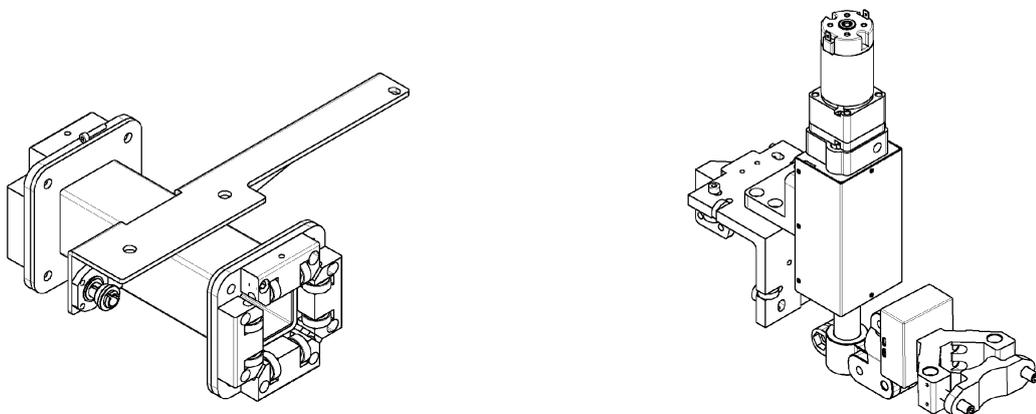
Introduction to Mechanical Components

3.1 Machine cable and air supply hose

Machine gas supply, power supply system including shrinkage air, water, etc. and plant power supply cable to the machine may also include signal cable, plasma cable and grounding cable.

3.2 Mechanical moving structure

The mechanical moving structure consists of a series of individual components.



ongitudinal moving body

3.2. 1. System and host

This part is composed of an electrical box and a PC (PC is provided by the user), which is the basic component to realize the function.

The user's PC first pre installed the programming software, and then through the PC for drawing and programming, in order to achieve complex graphics cutting

3.2. 2. Longitudinal guide rails

The longitudinal guide rail is located on the left side of the machine, and the guide rail is a 50 * 50 square tube. As shown in Figure 2:

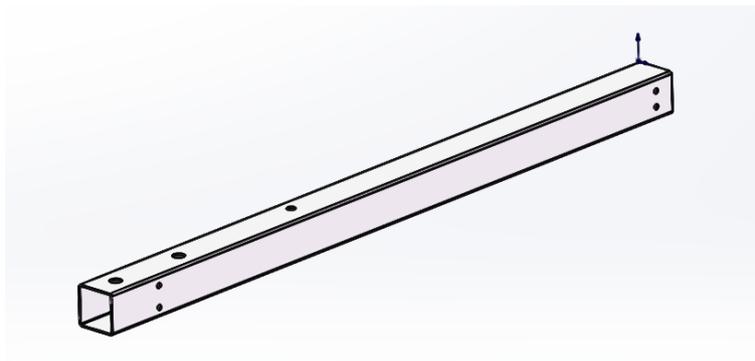


Figure II

3.2. 3. Transverse guide rails

The transverse guide rail is located above the machine, and the guide rail is a 50 * 50 square tube. As shown in Figure 3:

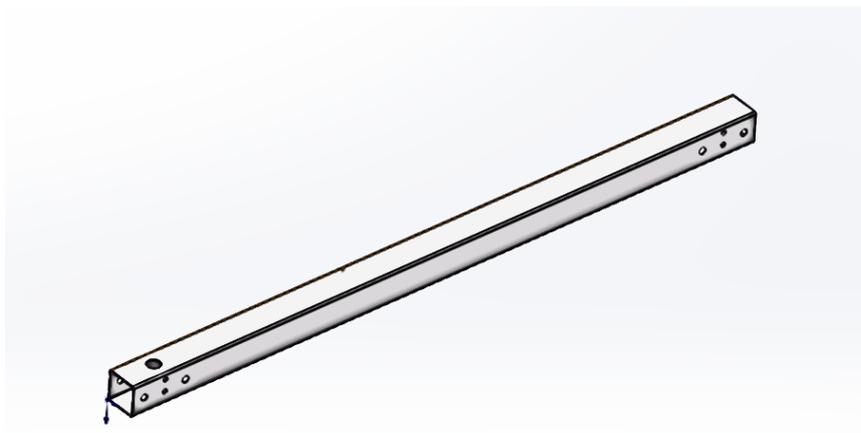


Figure III

3.3 Cutting torch device

The cutting torch device consists of a lifting rod and a V-shaped clamping device. As shown in Figure 4

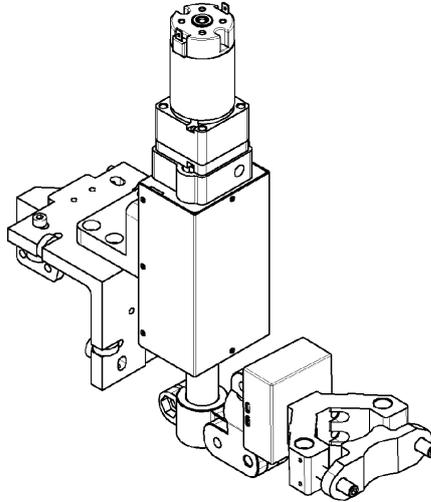


Figure IV

Maintenance and service of the machine

4.1 Cleaning the machine

The working place and working environment of the cutter are relatively harsh, so the cutter must be cleaned and maintained regularly. In order to ensure the smooth operation of the cutter and clear cutting surface, all rails and guide rails of the moving body of the cutter must be scrubbed frequently with clean cloth, and then coated with an oil film. Likewise, all guide wheels must be cleaned regularly. If not cleaned, rust oxide and various kinds of dust will adhere to the surface of the cutting process, so that these parts will wear in a short period of time, the result is that the machine is not running smoothly, the quality of the cutting surface is not satisfactory.

Keeping the screw rod and nut in good cooperation is the key to ensure the normal operation of the machine. Therefore, we must always pay attention to keep the longitudinal and transverse screw rod and nut absolutely clean. The best way is to clean and lubricate the guides and bearings regularly. It is recommended that users spray the longitudinal and transverse screw rods with compressed air every week. The longitudinal track and roller must be cleaned after each shift and wiped with oil cloth to prevent rail corrosion.

4.2 Machine Lubrication

All support and guide wheels are fitted with permanent grease sealed roller bearings. As already mentioned in the previous section, the tracks and rollers must be lubricated once a day, and it is more convenient to carefully clean the guide rails once a week and coat them with lubricating oil.

Operation rules of nc cutting machine

Before operation

- 1) Check each gas pipe and valve. Leakage is not allowed. Check whether the gas safety device is effective.
- 2) Check whether the supplied gas inlet pressure meets the specified requirements.
- 3) Check that the supplied supply voltage meets the specified requirements and that all electrical box door covers are closed.

At work

- 4) Adjust the cut steel plate as parallel to the track as possible.
- 5) Choose the appropriate nozzle according to the thickness and material. The cutting mouth is perpendicular to the steel plate.
- 6) According to different plate thickness and material, the cutting speed and preheating time in the machine are reset, and the preheated oxygen and reasonable pressure for cutting oxygen are set.
- 7) No one shall enter the point cut area at the moment of ignition. Operators should try to adopt a small splash cutting method to protect the cutting nozzle.
- 8) If the cutting nozzle is found to be dirty or damaged, it shall be replaced and cleaned up in a timely manner. Clean the nozzle with a random special tool.
- 9) In case of temper during cutting, power supply shall be cut off in time, gas valve shall be shut down, and temper valve sheet shall be stopped for replacement by manufacturer or professional personnel if it is burned.
- 10) Operators should note that after cutting a workpiece, the cutting torch should be lifted back to its original position and then cut again when running to the next station.

- 11) The operator shall select the cutting speed according to the specified cutting elements. It is not allowed to increase the equipment load solely for the purpose of improving work efficiency. The machine shall hit the limit at medium and low speed. The relationship between the equipment life, efficiency and environmental protection shall be well dealt with.
- 12) When the bridge is hoisted on the lifting object, if there is no guardrail around the guide rail, it is forbidden to pass over the adjacent track and cross over the beam.

After work

- 13) After work, the equipment shall return to the support position and close the air valve. The residual gas inside the pipe shall be exhausted and the power supply shall be turned off.
- 14) Keep the power supply key properly and do not hand it over to the irrelevant personnel. The random special tools shall be counted and retrieved.
- 15) In order to implement the shift handover system, the operation status of the equipment on duty shall be recorded.
- 16) Carefully clean up the site and keep the work area tidy and orderly.

Daily maintenance

- 17) Personnel are not allowed to stand, tread and press heavy objects on the track, and no impact is allowed. After dust removal by compressed air for each shift, wipe the track surface with gauze dipped with 20 # oil. Always keep track surface lubricated and clean.
- 18) Drive motor output gear and drive rack, clean with 20 # oil every day, no particle splash on the rack.
- 19) Wipe the rack plate on the beam with gauze dipped in 20 # oil. Molybdenum disulfide lubricant is used to oil and clean the main shaft of the cutting torch once a year.
- 20) The dust on the beam shall be blown off in time. Only clean gauze shall be allowed to wipe the conductive steel strip between the cutting torches, and no oil cloth shall be allowed.
- 21) The operator is only allowed to disassemble the cutting nozzle, the other parts cannot be disassembled at will, and the electrical junction box can only be opened when the personnel concerned are allowed to overhaul it.

- 22) If the equipment fails, please ask the maintenance personnel to deal with it in time. If the failure is serious, first report to Equipment Dept. For organizing relevant personnel to review and determine the maintenance plan. It is strictly prohibited to dismantle the machine for inspection without permission.

Security

- 23) This type of work belongs to a special type of work, the operator must hold a permit issued by the Labor Bureau for this type of work.
- 24) Staff members shall be put on duty for operation, irrelevant personnel shall not enter, and shall not press the key without authorization, so as to avoid damage to the machine or program and loss of data.
- 25) Avoid strong vibration sources around the equipment. Guard rails shall be provided around the guide rails.
- 26) When lifting the steel plate and workpiece, it shall be noted that decoupling or forward punching is not allowed, and no part of the machine, including the guide rails, shall be impacted.
- 27) The power source line of the equipment shall be used separately with AC voltage stabilizer.
- 28) Cutting is not allowed with the electrical box open.
- 29) The CNC system shall be reliably grounded and the contacts shall be securely fastened.
- 30) No objects are allowed to be placed on the CNC cutter and no cables and air pipes are allowed to pass through the guide rails.
- 31) Ventilation or replacement of gases and cleaning of nozzles must be carried out in accordance with the safety operating procedures for hazardous gases.
- 32) Do not wipe the steel strip while the machine is in operation.
- 33) The operator shall not arbitrarily transfer the foreign software into the hard disk of the machine to prevent viruses, and only the special software approved by the factory shall be used.