

ELECTRICAL DISCHARGE MACHINE

ZNC/PNC/CNC



Jiangsu Sammlite Machinery Co.,Ltd.

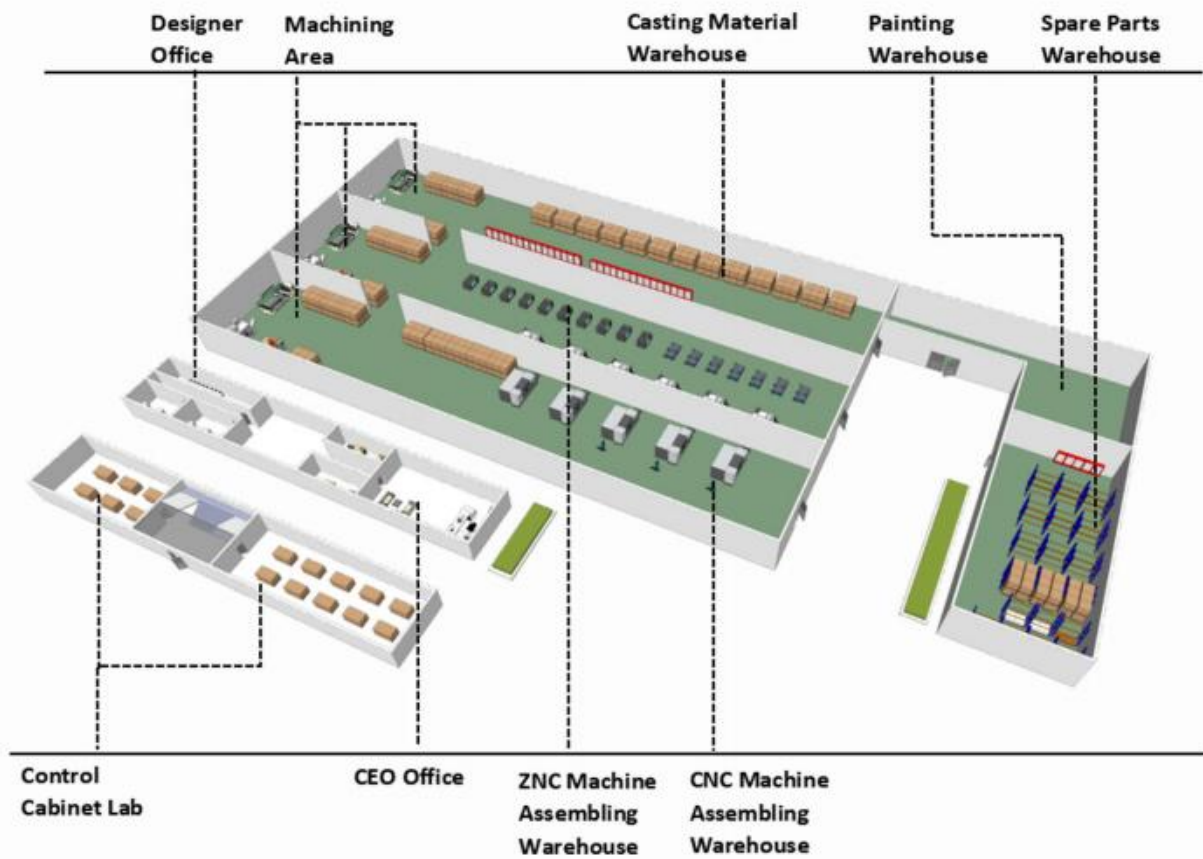
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- 1992 The first prototype of numerical tubes manual control electrical discharge machine came out
- 1999 A successful cooperation with Taiwan EDM manufacturer & introduction of Taiwan Technology
- 2000 Massive production of ZNC, PNC, CNC based on Taiwan technology
- 2005 First assemble of Taiwan C-Tek system control cabinet
- 2006 Supplying C-Tek system cabinet for EDM China mainland area
- 2009 Developing own control system with user-friendly interface suiting mainland users
- 2012 Another cooperation with Beijing DMT, successfully introduce their mirror finishing CNC type
- 2013 Improve of the system to meet tungsten metals & mirror finishing conditions on ZNC series
- 2014 Oversea department established, exporting EDMs to world areas (Malaysia, Thailand, Brazil)
- 2015 Introduce of Sodick EDM system from Beijing DMT Laboratory, new models approval by CE & ISO
- 2016 Extended business markets to Mexico, Australia, Turkey, Argentina & most Mid east countries
- 2017 Invest a share of new factory & two EDM high quality brands
- 2018 Developing customized EDM machine on special materials & complex structure projects



FACTORY OVERVIEW



CNC Machine Assembling Warehouse



ZNC Machine Assembling Warehouse



Control Cabinet Lab



Spare Parts Warehouse



Casting Material Warehouse

CNC Die Sinking EDM

Japan Technology

CNC Model



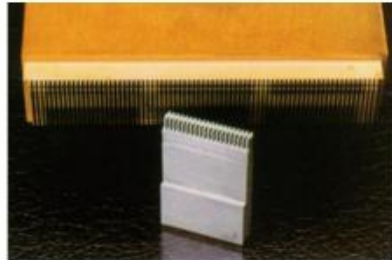
Column Type





Mirror Surface Finishing

Model	<u>CNC40</u>
Electrode Material	<u>Copper</u>
Workpiece Material	<u>Steel</u>
Surface Roughness	<u>0.08um</u>



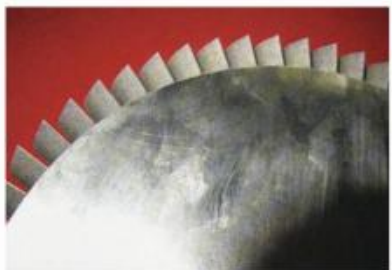
RIB Machining

Model	<u>CNC40</u>
Electrode Material	<u>Copper</u>
Workpiece Material	<u>Steel</u>
Surface Roughness	<u>0.8um</u>



Machining with Graphite Electrode

Model	<u>CNC45</u>
Electrode Material	<u>Graphite</u>
Workpiece Material	<u>Steel</u>
Surface Roughness	<u>0.8um</u>



Machining with Graphite Electrode

Model	<u>CNC45</u>
Electrode Material	<u>Graphite</u>
Workpiece Material	<u>Titanium</u>
Surface Roughness	<u>0.4um</u>

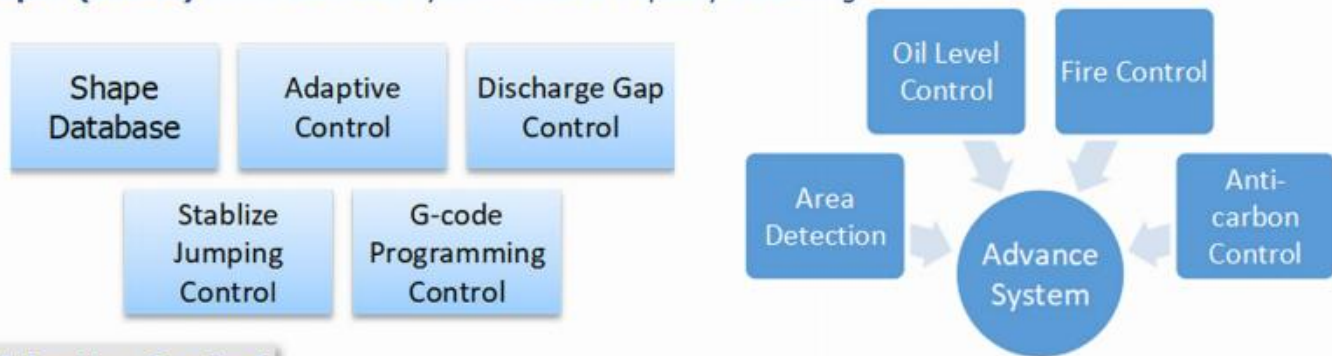


Machining with Graphite Electrode

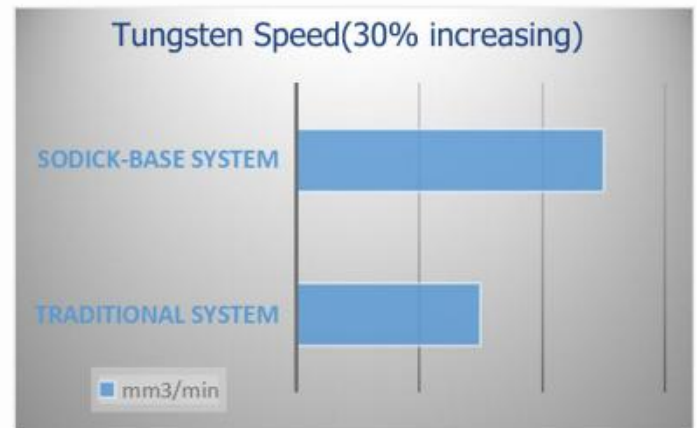
Model	<u>CNC45</u>
Electrode Material	<u>Copper</u>
Workpiece Material	<u>Steel</u>
Surface Roughness	<u>0.5um</u>

Machining Control

Japan (Sodick) based advanced system leads to a quality machining



Adaptive Control



System Overview

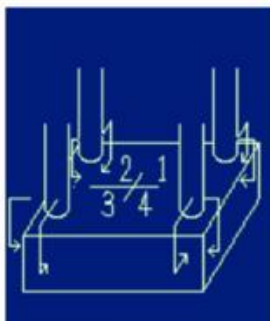
Database

- Expert database for automatic processing
- Selecting best suit processing methods & conditions

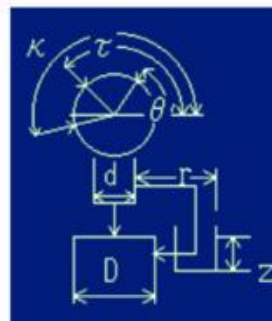


Positioning

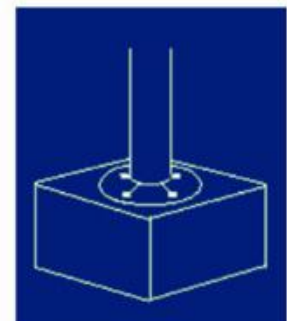
Work piece measure



Corner Positioning



Three Data Positioning



Center Positioning

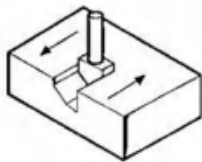
CNC CHARACTERISTIC/ FUNCTIONALITY

G-CODE SYSTEM G-CODE

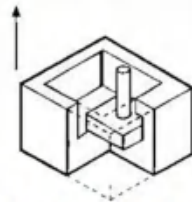
G-code system is designed for experienced processors. It includes sub programming, compensation data and so on to maximize the machine potential.

Variety Loran Function

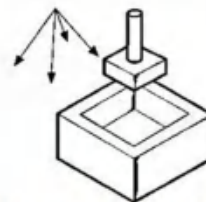
Through LN,LP data setting, total of 135 kinds of loran method are provided



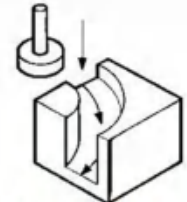
Lateral machining



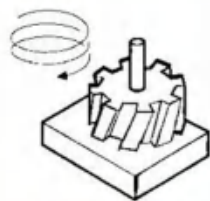
Z-axis machining



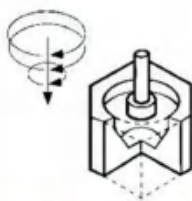
Corner machining



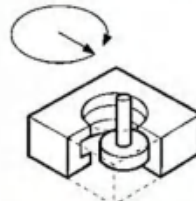
Arc machining



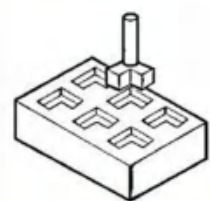
C-axis machining



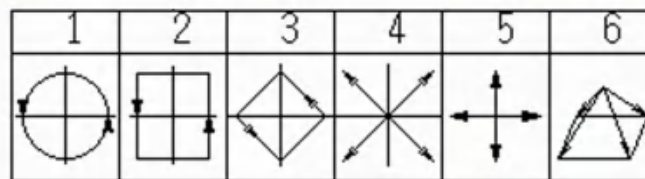
Orbiting



Orbiting



Duplicated machining



Sparking Circuit Selections

Material	Instruction	Notes
Cu-St	C100-C190	No consumption
Cu-St	C200-C290	Working efficiency
Cu-St	C300-C390	Low consumption, through hole
Gr-St	C400-C490	Low consumption
Gr-St	C500-C590	Working efficiency
Gr-St	C600-C690	through hole
CuW-Wc	C700-C790	Hard metals
CuW-Cu Cu-St	C800-C890	Capacitance circuit
Cu-St	C900-C903	Mirror finishing, Pika circuit
Cu-St	C101-C191	No consumption - Pikaden1
Cu-St	C102-C192	No consumption - Pikaden2
CuW-St	C301-C321	Low Consumption - Pikaden3

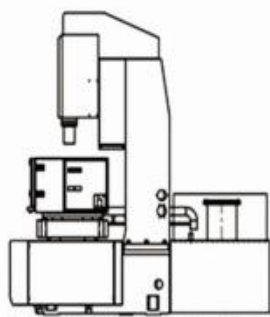
Expert Database

Circuits	Characteristics
Low Voltage	Main Circuits, power resource
High Voltage	Rough processing
Circuit Breaker Control	Increasing processing speed
Mirror Finishing-1	Improve roughness for Ø20mm below
Mirror Finishing-2	Improve roughness for Ø20mm above
Induction	Significantly reduce electrode wear
Resistance - PIKADEN	Avoiding arc burning under large area process
Capacitance- C	For Hard Metals: Tungsten, Polycrystalline Diamond
Gap Detection - GPI	Gap detection, feeding speed control, power control
Finess	Significantly improve roughness

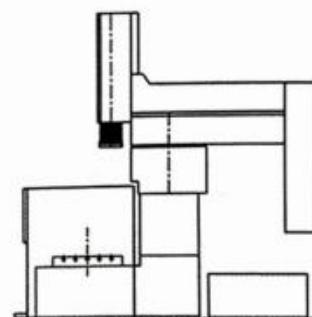
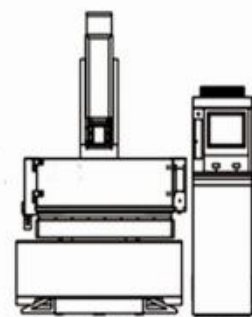
CNC MACHINE SPECIFICATIONS

- Adaptive sparking control
- High speed jump & jump control
- A variety of positioning modes
- Auto fire-extinguish & Anti carbon system
- CNC Sodick supported system & touching screen
- Work piece detection & spark gap detection
- X/Y/Z Panasonic AC motors
- Marble material work table
- code processing & Auto expert database
- Mirror finishing & tungsten circuits
- 1um driven unit

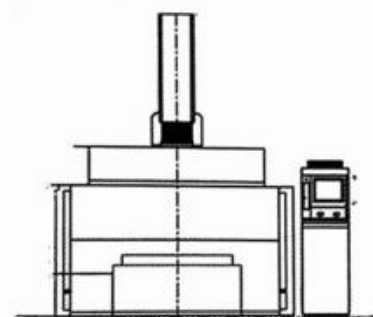
Model	Unit	CNC-300	CNC-350	CNC-400	CNC-450	CNC540	CNC850	CNC1060	CNC1570	CNC1800
Table size (length x width)	mm	600x400	600x400	650x450	700x400	850x450	1100x600	1250x800	1600x1000	2000x1000
X axis Travel	mm	300	350	400	450	500	850	1000	1500	1800
Y axis Travel	mm	210	250	300	350	400	500	600	700	800
Z axis Travel	mm	270	270	300	320	300	400	450	500	600
The internal dimensions of processing tank	mm	950x620x360	950x620x360	1100x640x410	1050x680x410	1350x790x500	1780x1100x580	2000x1300x700	2400x1380x650	3000x1500x650
Maximum electrode weight	kg	25	50	50	30	100	150	150	200	200
Table bearing weight	kg	400	550	400	400	1800	3000	3500	5000	5000
Distance from electrode plate to working table Minimum	mm	295	250	295	300	430	480	550	600	600
Distance from electrode plate to working table Maximum	mm	565	550	615	600	730	880	1000	1150	1200
Total input power	KW	9	9	9	9	9	9	9	18	18
Machine Weight	Kg	2000	2200	2500	3200	2500	5000	5500	11500	15000
Positioning Accuracy	mm	0.006	0.006	0.006	0.008	0.015	0.015	0.015	0.015	0.015
Re-positioning Accuracy	mm	0.003	0.003	0.003	0.005	0.07	0.07	0.011	0.011	0.011



CNC



CNC Column Type



Generators

	Unit	CNC	CNC Column Type
Max Working Current	Amp	40A	50A
Max Speed	mm ³ /min	400	500
Electrode Lose		≤0.1%	≤0.1%
Surface Roughness	um	Ra<0.1	Ra<0.2
Power Consumption	kw	9	9/18

Spare Parts

No	Parts
1	15" CNC Touch Panel
2	Japan Panasonic Servo Motor
3	SODICK Based System
4	Japan NSK Bearing
5	Hi-Win / PMI Linear Guide & Ball Screw
6	Denmark Grundfos Pump
7	FUJI Contactors & Bridge Connection
8	HITACHI Capacitance

Accessories

No.	Standard Accessories
1	Paper Filter
2	Tool Box
3	User Manual
4	Adjusting Pad
5	Electrode Chuck
6	Working Lamp
7	Auto Fire Extinguisher

No.	Optional Accessories
1	Auto Tool Changer
2	C Axis (3R)
3	R Axis (CNC Turntable)



ZNC SERIES



PNC SERIES



ZNC/PNC Series Specification

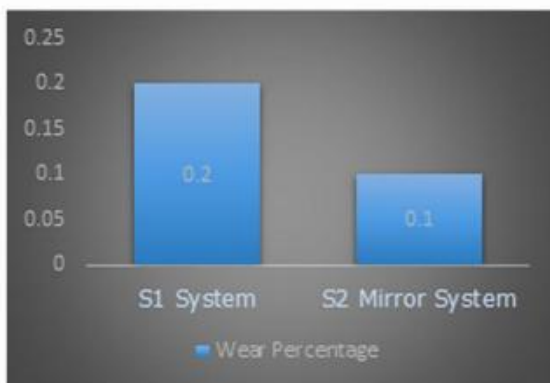
The Main Features Of SAMMLITE Smart Control System



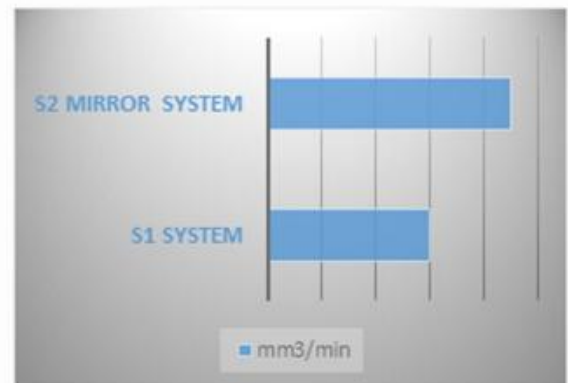
1. Smart system Introduce

A total of 10 step settings can be imputed either by auto-forming or manual allowing users to process the surface from rough to fine. Each step has 13-15 parameters for users to adjust based on their needs. The system can save up to 99 data groups, so that a new table can be formed without deleting of previous one.

2. Processing Time & Electrode Wear

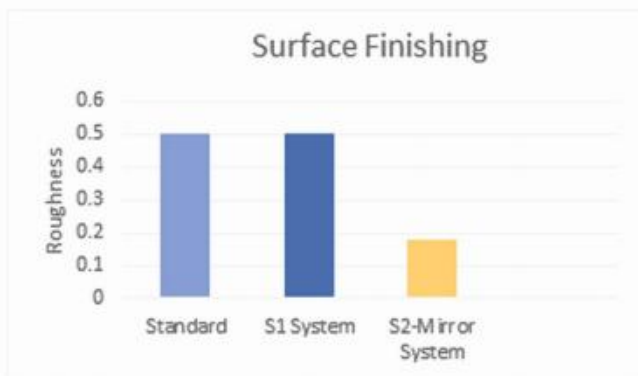


Low electrode consumption circuit



Mirror system has a better speed

3. Surface Finishing



Two types of system meet needs of variety users, S1 for general plastic mould & tungsten metal, S2 mirror for higher surface quality which reduces the polishing work of 30%.

4. Time Saving on Parameter Setting

By imputing data to the table, an auto generated parameter will be formed. Extremely time saving even for beginners.

X		100.000 mm		Machine		Current time	
Y		10.000 mm		X -0.005		10:20:32	
Z		20.000 mm		Y -0.005		Process time	
				Z -0.005		46:28:15	
				Remain		Current depth	
				X 100.005		20.000	
				Y 10.005		Target depth	
				Z 20.000		-9999.995	
						Rising	
						M 0 T 0	
						Volt	
						255	
						Pump2	
						OFF	
						Shake	
						OFF	
						Speed	
						x10	
						Power	
						ON	
						Coor	
						Revers	
						OFF	
						User:4.50	
						F1 F2 F3 F4 F5 F6 F7 F8	
						OK Cancel Return	

ZNC/PNC Series Specification

Mechanical Specifications

	Unit	ZNC/PNC-350	ZNC/PNC-450	ZNC/PNC-500	ZNC/PNC-550	ZNC/PNC-650	ZNC/PNC-700
Table size(length x width)	mm	600x320	700x400	800x350	900/1000x500	1000x600	1200x650
Working slot (X/Y/Z)	mm	1080x580 x350	1200x620 x450	1240x750 x500	1420x850 x550	1920x1060 x620	1950x1050 x650
Maximum oil level (from table)	mm	240	300	320	320	470	470
Longitudinal X travel	mm	350	450	500	550	650	700
Lateral Y travel	mm	250	350	400	450	550	600
Vertical travel Z (Spindle)	mm	180	200	220	250	300	300
Auxiliary(2nd Axis) travel	mm	200	200	250	300	300	350
Maximum distance from worktable to electrode head	mm	350	520	540	540/640	850	950
Maximum electrode weight	KGS	50	80	100	100	150	200
Maximum working weight	KGS	700	1000	1200	1500	2000	2000
Machine weight	KGS	1400	2000	2000	2150	3500	3500
Packing size	mm	1460x1490 x2230	1900x1500 x2200	2100x1470 x2300	2100x1460 x2200	2060x1790 x2300	2400x2010 x2740

Generator

	Unit	S1 Control	S2 Mirror System
Max Working Current	Amp	75A	50A
Max Speed	mm ³ /min	500	450
Electrode Lose		≤0.2%	≤0.1%
Surface Roughness	um	Ra<0.6	Ra<0.18
Power Consumption	kw	6	7

Spare Parts

No.	S1 Control	S2 Mirror System
1	PC Panel with Tungsten Process Function	PC Panel with Mirror Surface Function
2	V-Shape Guide	V-Shape Guide
3	JAPAN SANYO DC Motor	JAPAN PANASONIC AC Servo MOTOR Z-Axis
4	NSK/FAG Bearing	NSK/FAG Bearing
5	Manual Lubrication	Manual Lubrication
6	Manual Extinguisher	Manual Extinguisher

Accessories

No.	Standard Accessories
1	Paper Filter
2	Tool Box
3	Magnet Table (150*350mm)
4	Drilling Chuck
5	Clamping Kit
6	Adjusting Pad
7	Electrode Chuck

No.	Optional Accessories
1	Orbit Head
2	One-Set Cabinet
3	PNC: X/Y Axis Auto Control
4	100Amp ZNC Generator

ZNC/PNC SERIES MECHANICAL FEATURES

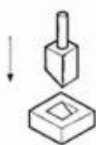
- 15"LCD Screen controller
- Pre-install tungsten hard metal control circuit, 30% less electrode loss
- Adopting fuzzy control theory, carbon deposition can be checked by itself
- On the time of unstable discharge, the machine have auto alert system
- From rough processing to fine processing can be finished at one time.
- Expert data system, simple operating for beginners
- Oil level control, process device will be stopped automatically
- Accelerograph control, if the display is OFF, devices will be stopped automatically
- If temperature of working fluid is too high, the process will be cut off automatically
- Temperature induction. fire alert and cut off the power supply at the same time
- Machine is designed by computer analysis with good structure and high precision
- Good precision screw and DC/AC servo motor are used in Z axis
- High precision bearing and high precision ball screw are used in X,Y axis
- Rails are "V"shape, can move lightly under heavy load



Main Screen Display

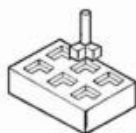
Working Method

ZNC Working Method

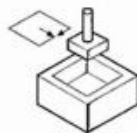


Z-axis Machining

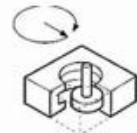
PNC Working Method



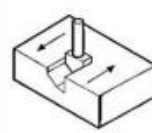
Duplicated



Square

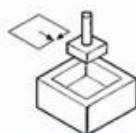


Circle

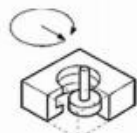


Side

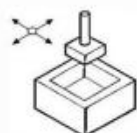
Orbit Head



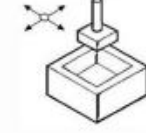
Square



Circle



Cross



Corner

INSTALLATION CONDITIONS

Before setting up the machine, the total electrical capacity should be worked out based on digital controller power, optional components' power and the machine power. An air breaker adaptor needs to install to suit the power consumption.

Total Capacity = Machine + Optional components+Controller

ELECTRICAL EQUIPMENT

1. Electrical capacity equals 11KW or less, a 50amp air breaker should be equipped.

A 100amp air breaker need to replace when the power is between 11-22KW.

2. Separated Air Switch, 100-200mA frequency converter included.

3. In order to prevent electrical shot, grounding construction is must needed. Grounding should be 10 Ω or less.

4. Electrical installation must comply with the safety requirements, and current overload protection must be installed as well.

Over current protection requirements:

A2-50: 25A/Phase A2-100: 30A/phase

5. Grid voltage, frequency, phase: 380V(220V) 50(60) HZ, three phase four wire or three phase five wire power supply

Allowance: 10% differences. Installing a 3 phase stabilizer if the power grid is unstable.

VIBRATION

To ensure accuracy & prevent vibration

1. Take anti-vibration methods

2. Move to the place with small vibration.

DUST

1. The machine should be installed in rooms with minimal dust.

2. Away from other metal cutting machines. For example: metal dust accumulation of the grinder easy to cause the control circuit board short circuited the other metal particles will cause the ball screw, guide and work surface wear.

3. Away from the graphite processing machine due to graphite dust, can cause a short circuit electronic components

CORROSION AND VENTILATION

1. Install the machine in a acid, chemical etching gas, smoke and powder free environment. Especially abrasive and grinding fluid mist will lay a bad influence on the sliding parts of the machine, please note.

2. To avoid toxic and harmful gas environment.

3. For ventilation, not only EDM machines, but cutting tools during machining can produce smoke. the operator working environment ventilation measures should be taken.

INDOOR TEMPERATURE AND HUMIDITY

The best temperature to run the machine is 10-35 c. humidity s 80% .

Considering a high quality finishing surface, following rules should be obey.

1. Discharge mirror finishing(such as PIKA processing). air-conditioning should be installed in the room, so to keep a constant temperature.

2. Keep the temperature in the range of 20+2C

3. EDM machine and the NC device parts do not sensitive to humidity, taking into account the operators working environment, it should be kept humidity at 50%.

4. In places without air conditioning. Machines should avoid direct sunlight or windy air.

5. For touch screen function, pay attention to the sensitivity of the touch screen on the humidity. High humidity occurs the touch screen not function correctly.

ELECTROMAGNETIC INTERFERENCE

EDM often cause electromagnetic interference to TV sets, electronic instruments, A shielded processing room can effectively remove the interference of electromagnetic interference.

HEAT OF THE MACHINE

With full-load operation, each machine can produce 4.2Kcal/h heating energy. With liquid cooling device(optional)1500w heat can also be generated.

EDM LIQUID

Selecting corrected EDM liquid leads to a great processing performance of the machine(especially mirror finish). Please use

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