

**KAIYUAN**

# **PIPE ACE Orbital welding system**

## **Technical Details**

**Kaiyuan Welding & Cutting Automation India Pvt., Ltd.**

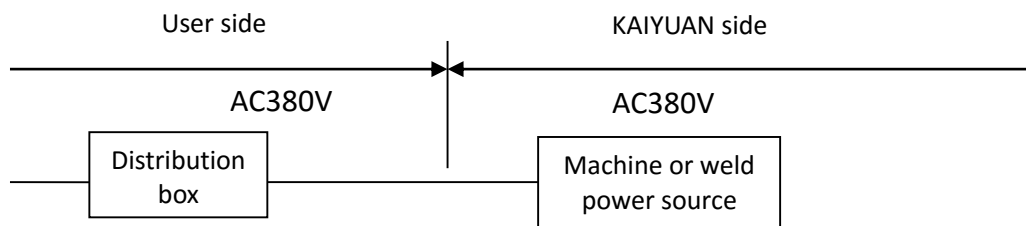
**Ver. 2016**

## 1. General

This welding installation is especially designed for stainless steel pipe TIG butt joint with diameter range from 6.0~114.3mm and thickness below 3mm. There are four types of weld heads for selection. Weld head clamps onto the job during welding, and tungsten electrode travels 360 degree circumferentially along with the job. DC inverter power source is equipped for different types of joints and special shapes of jobs on narrow space or short straight tube section welding.

## 2. Working condition

**2.1. Machine and power source primary voltage:** 3Φ 50HZ AC380V±10%(415V as special order)



### Notes:

- 1) The execution from distribution box to machine or weld power source is responsible by user, and the required cables are prepared by buyer.
- 2) The machine must be grounded according to national or industrial standard requests, which must be executed by the buyer.
- 3) When connecting cables, please make sure distribution box is off.

## 2.2. Working environment

The shell protection is classified by IP21S, which can prevent irrelevant matters with 12mm dia. above to go into the shell and vertical drenching.

The system should be operated under the following conditions:

- Dry, dustless or no heavy rain/wind outdoors. In case of any raining or dewing, please immediately dry treated and then put into use again.
- Indoors where irrelevant metal matters is not easy to go into the machine
- No direct sunlight
- Ambient temperature
  - ①. During welding -10~+40°C
  - ②. Transportation and storage -25~+55°C
- Relative humidity

① . Humidity≤50%, under 40deg centigrade

② . Humidity≤90%, under 20deg centigrade

At least 20cm away from wall;

- No abnormal shaking or hitting
- No oil steam or harmful corrosive gas

\*When two or more power sources are placed together, the room between each two should be at least 30cm.

### 3. Customer Job detail's :

Material to be welded : SS Tube  
Size of Tube : 1.1/4" OD x 2.11 mm Thick  
Type of Joints : Tube to Tube

### 4. System composition and technical specification

#### 4.1. System composition:

The system consists of weld power source, weld head, water cooler, drive and etc.

The main parts are as follows:

**Main system composition**

Sr. no	Description	Model	Remarks
1	NC automated tube weld power source	KAT-220P	
2	Drive	BD-R	Length 8m
3	Water cooler	YX-09KGC1HGE	
4	Weld head along with collet (for tube OD 1.25")	KAT-50P	Selected as per actual demand.
6	Accessories	1kit	

**Note)** The above specification is just a sample, and that is not the final ordered specification.

## 4.2 System parameters:


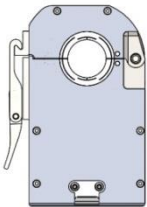
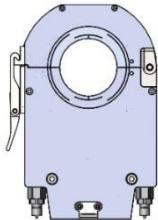
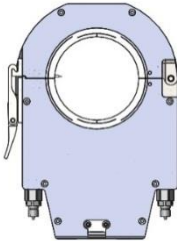
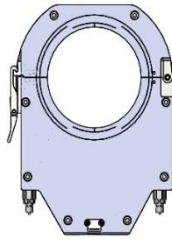
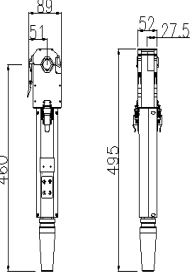
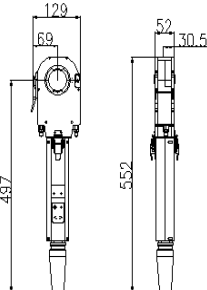
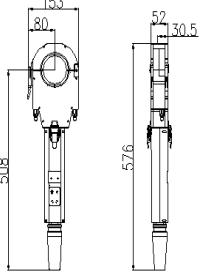
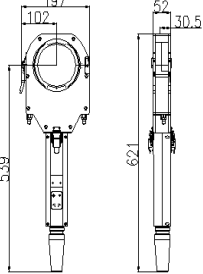
( 1 ) Weld power source

Item	Machine	KAT-220P
	Rated primary	V
Phase	phase	3
Primary fluctuation	V	380±10%*
Power frequency	Hz	50/60
Rated input capacity	kVA	5.5
Rated input power	kW	5.1
Power factor		0.92
Rated OCV	V	59
Weld current	A	5~220
Output mode		CC
Weld voltage	V	10.2~18.8
Starting current	A	5~220
Pulse current	A	5~220
Crater current	A	5~220
Rated duty cycle	%	60
Control type		IGBT inverter
Cooling mde		Forced air
Frequency generator		Sparker
Preflow time	s	1~100
Postflow time	s	1~100
Rotate delay time	s	0.1~9.9
Current upslope	s	0.1~9.9
Current decay	s	0.1~9.9
Crater time	s	0.1~9.9
Pulse frequency	Hz	0~20
Pulse ratio	%	5~95
End angle	deg	0~540
Overall(WxDxH)	Mm	207×606×536
Net weight	Kg	38
Insulation class		130°C(reactor 200°C)
Shell protection class		IP21S



Note:415V,3ph,50Hz can be special ordered.

## ( 2 ) Weld head and drive

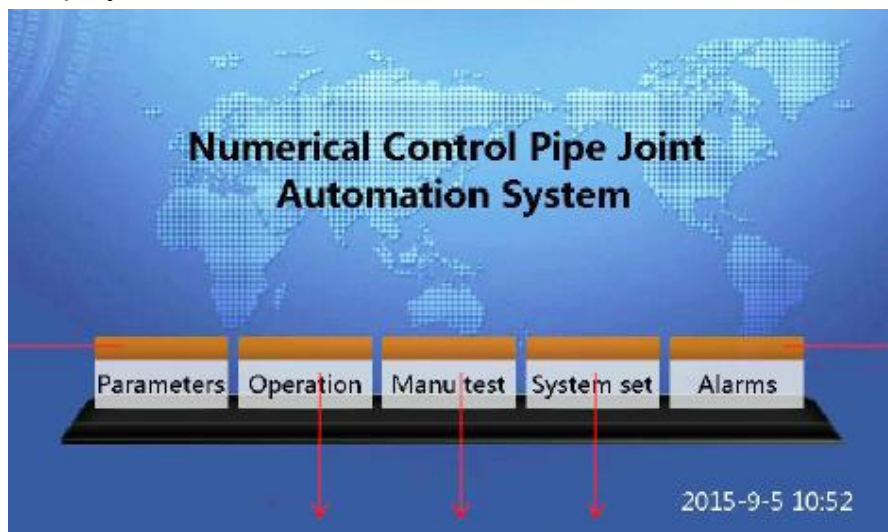
KD-R drive and close type PIPE ACE weld head				
Drive				
Weld head	25TA	50TW	76TW	114TW
Product concept				
Tube range(mm)	$\phi 6 \sim \phi 25.4$	$\phi 12 \sim \phi 50.8$	$\phi 25.4 \sim \phi 76.3$	$\phi 50.8 \sim \phi 114.3$
Overall dimension ( WH and drive )				
Rated current	40A	70A		
Weld speed ( mm/min )	23.9 ~ 666.8	25.1 ~ 856.7	33.4 ~ 950	50.9 ~ 1123.2
Min. tube distance ( mm )	38	45		
Duty cycle	20%	Air cooled : 40%    water cooled : 60%		
Cooling method	Air cooled	Water cooled		
Weld material	Carbon steel, stainless steel, copper, Titanium and etc.			

### (3) Water cooler (Model: YX-09KGC1HGF)

- Rated input: 415V, 1ph, 50Hz
- Cooling capacity: 175 KJ/min
- Cooling flow: 2.2L/min
- Tank load: 9L

### 4.3 Control software

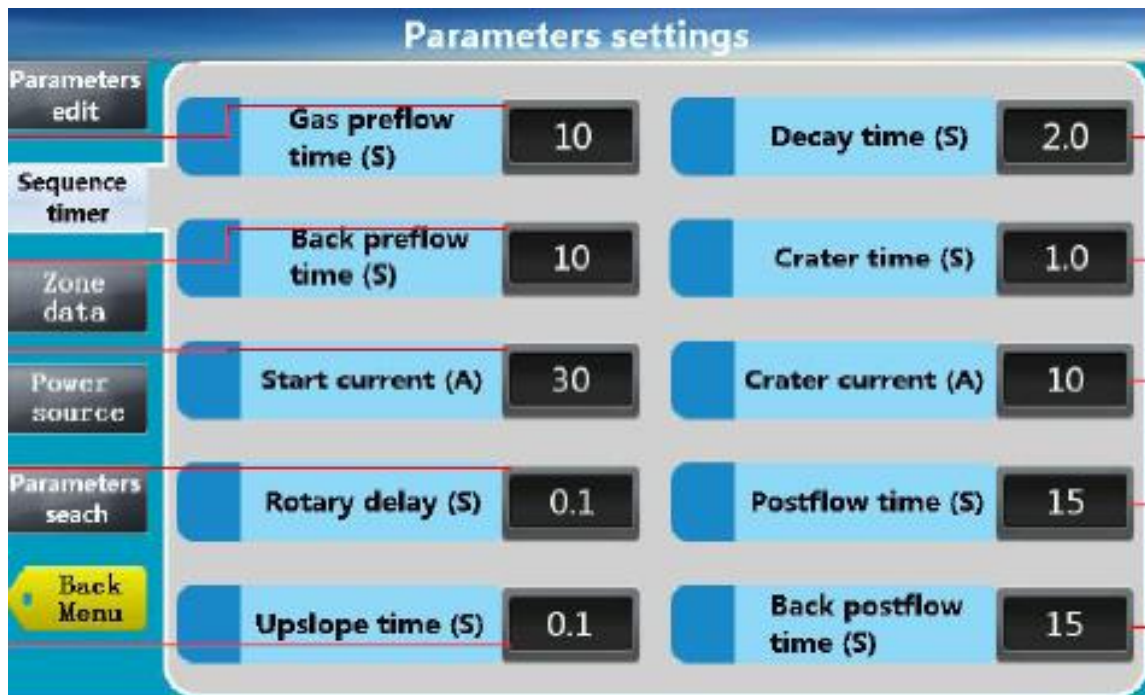
Control system equips with high resolution rate touch screen for simple and intuitive display.



- Plentiful content for all parameters preset operation. The system can save up to 100 weld recipes.



- Weld sequence setting: set up arc, electrode rotation, gas input and series of motion time settings.(upslope setting, downslope setting, crater setting and etc.)



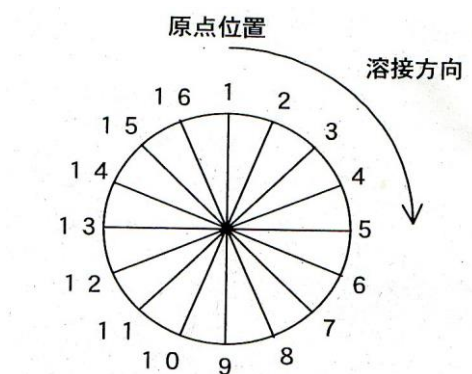
•Test mode: can check gas, motor movement, rotate angle and etc.



·Position control: partition control

Zone #	End angle (deg)	Peak curr. (A)	Basic curr. (A)	Weld speed (mm/min)
1	120	30	10	200
2	240	40	15	200
3	365	20	10	240
4	0	0	0	0

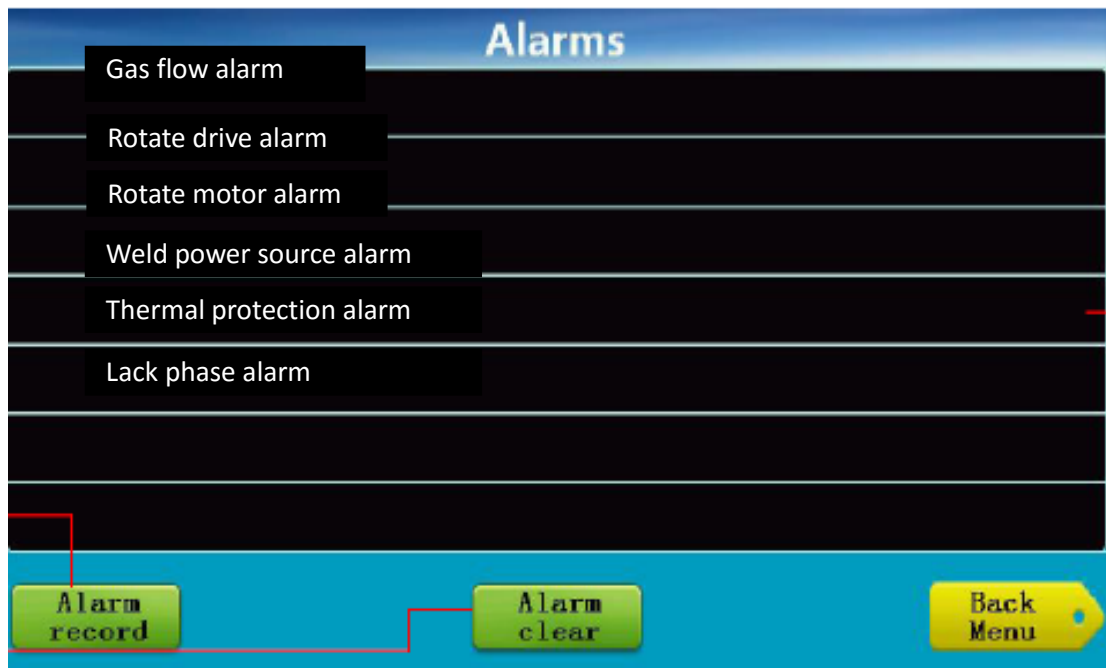
During orbital welding, for different rotation position of position, the welding parameters should be modified. In this welding device, peak/base current, weld head rotation speed can be setup for different data at different circle position. Totally maximum 16 equal zones can be divided, and each zone can be setup separately. And zone quantity and end angle can be setup.



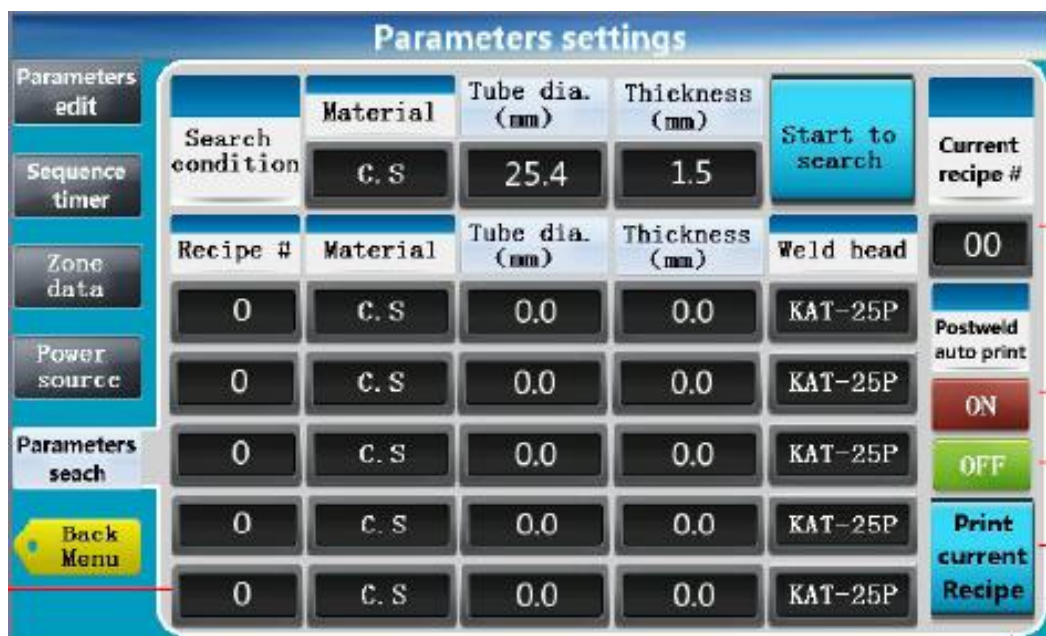
Circle distribution

·Detection and protection function for welding device. Software has alarming status screen. When error or misoperation occurs, the alarm signal will come out and stop operation to guarantee machine or personnel security.

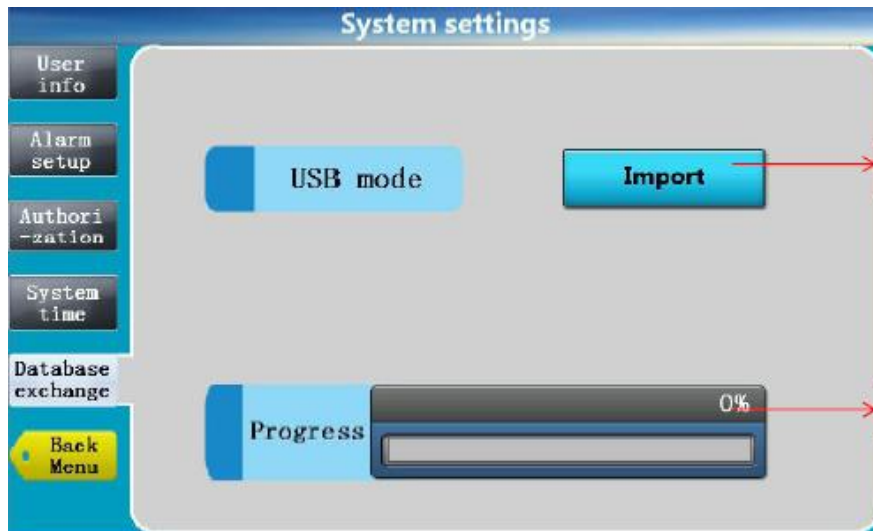




·Data search function is easy for weld parameters managing and recalling; in-built printer can print out relative weld parameters.



·In-built USB interface can achieve offline welding parameters editing and transferring;



## 5. Scope of supply

Sr.	Description	Model	Qty.	Manufacturer	Remark
1	Weld power source	KAT-220P	1	KAIYUAN	
2	Weld drive	KD-R	1	KAIYUAN	8m cable & hose
3	Weld head	KAT-50P	1	KAIYUAN	Select as per actual demand
4	Water cooler	YX-09KGC1HGF	1	Panasonic	
5	Transformer		1		

## 6. Provided technical documents

The following technical documents will be provided together with the shipment:

5.1 Operation manual	1pc
5.2 Packing list	1pc
5.3 Quality certificate	1pc

## 7. Standards for design and manufacture

- 6.1. GB/T1184—1996 《The tolerance of shape and position》
- 6.2. GB/T10089—1988 《The accuracy of cylindrical wormwheel and worm》
- 6.3. GB4064—1983 《Safety guideline on electrical device》
- 6.4. GB6988—86 《Electrical drawing》
- 6.5. Design, manufacture and installation should comply with national relative standards.