



MISARC Industries

MZM-400 Orbital Welding System



Condensator ■ Heat exchanger ■ Air-conditioner



MISARC Industries

ORBITAL WELDING SYSTEM

MZM-400

MZM400 orbital welding system is automatic tube-to-tube-sheet welding equipment that is specially developed for heat exchangers, the electric factory, and other industries. It can be applied to weld carbon steel, stainless steel, titanium alloy, and other metals. Meanwhile, according to different formations of the workpiece, it can be applied to automatically weld workpieces such as flush tubes, protruding tubes, and recessed tubes (slightly). It enjoys many advantages such as easy operations, low cost, and high quality.

Advantages:

- It adopts a 10-inch touch screen as the human-machine communicating interface and graphical operation as the human-machine communicating method, which is simple and easy to operate.
- It adopts a DC servo coreless motor made in Swiss as the drive part both for rotating and wire feeding, which enjoys stepless speed adjustment in the range of rotation speed. It enjoys stable performance and long service life.
- It equips automatic arc following function to ensure the requirement for stable welding and reduce human intervention during welding. Arc length also can be manually adjusted if the arc length control function is switched off.
- It equips a precise unlimited rotating structure without being entangled by wire feeding hose, water hose, electric wire, and gas hose. It also equips an integrated wire feeder to make wire feeding convenient and reliable.
- It can store 60 sets of welding process parameters; one welding process program can be divided into 16 sectors to meet the welding requirements for the workpiece at different periods of time.

Many kinds of welding heads can be applied to meet most welding requirements.
An intelligent robotic welding system realizes unattended operation and automatic welding.

POWER SOURCE AND ACCESSORIES

POWER SOURCE

Features and Benefits

- Programmable automatic digital system, fine control of welding process.
- Real-time fine tuning welding parameters on remote control box, perfect control of welding process.
- Highly integrated design, compact structure, easy to move.
- Functions:CC or pulse current output/Rotation control/ Wire feeding control/ Protection gas control/ Arc length control/ Horizontal swing control, etc.
- Water shortage, overheating, emergency stop and other protection functions, safe and reliable.



PRODUCT SPECIFICATIONS

Item	Parameter
Rated input voltage/frequency	380V±10% 50/60 Hz
Rated input Power	13.5KVA
Welding current	5~400A
Duty cycle (20°C)	400A 60%/315A 100%
Savable programs	60
Sections	16
Display	10 inch touch screen digital display
Main function	CC or pulse current output/Rotation control/ Wire feeding control/Protection gas control/ Auto control of arc length/ Horizontal swing control, etc.
Protection/insulation class	IP21S/H
Weight (no coolant)	99Kg
Dimension (mm /inch)	1100*600*1250 /43*23*49

TOUCH SCREEN CONTROL INTERFACE

12 : 47 : 43

Automatic Welding Power Supply

- Logon
- Weld Setting
- System Setting
- Monitoring

AOTAI Welding Source, Worth to Trust

Main interface

13 : 28 : 26

Automatic Welding Power Supply

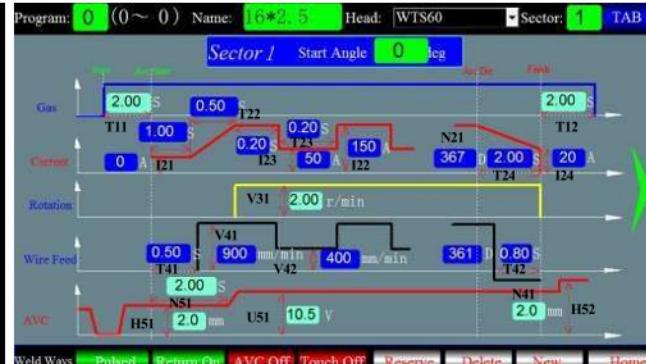
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AOTAI Welding Source, Worth to Trust

Login interface

Features and Benefits

- Soft switch inverter technology, high reliability, energy saving.
- 10-inch touch screen control interface, intuitive image, easy to operate.
- 60 sets of welding specs can be stored and recalled, saving operating time.



Intuitive programming interface

12 : 53 : 13

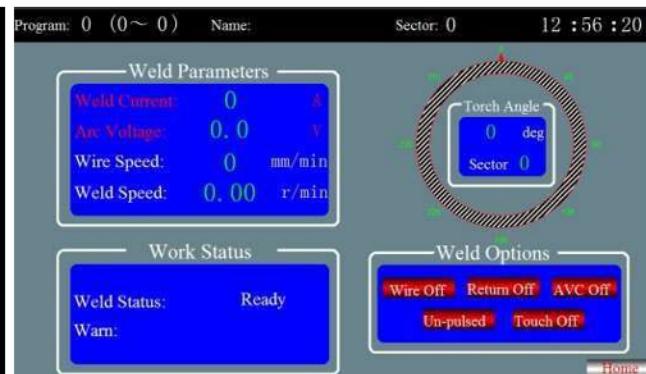
System Setting

English

Weld Speed Increment	0.00 r/min	Manual Rotate Speed	0.00 r/min
Wire Speed Increment	0 mm/min	Manual Wire Feed Speed	0 mm/min
Current Increment	0 A	Manual Torch Rotation	0 mm/min
Voltage Increment	0.0 V		<input type="button" value="Reserve"/>

AOTAI Welding Source, Worth to Trust

System setting interface



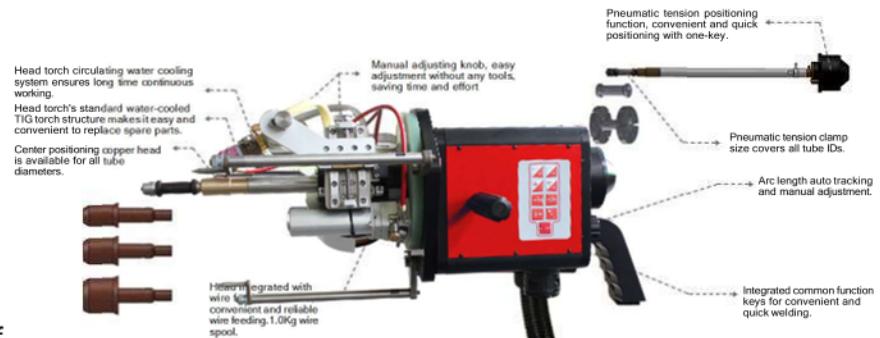
Real-time welding monitoring interface

MW6011

MAINPULATOR TUBE TO TUBE SHEET ORBITAL WELDING HEAD

Features and Benefits

- Simple operation reduces welder skill requirements.
- Tube-sheet welding realizes high reproducibility.
- Infinite rotation structure avoids winding of wire feeding, water, power and gas.
- Unique patent prevents deviation of welding path.



PRODUCT SPECIFICATIONS

Item	MW6011
Model	MW6011
Tube sheet connection form	Tube protrusion or flush tube
Weldable material	Carbon steel, stainless steel, titanium alloy, etc.
Tube diameter (mm /inch)	16-80 /0.6-3.1(For 60-80, it needs to replace related mechanical parts.)
Maximum welding current (A)	300
Wire diameter (mm /inch)	0.8 1.0 /0.031 0.039
Torch rotation speed (rpm)	0.35~6.0
Maximum wire feeding speed (mm/inch/min)	1800 /71
Cooling	Water cooled
Weight (kg /lb)	12.5 /27.5
Duty cycle (A)	300@70%
Dimension (mm/inch)	425*265*210 /17*10*6



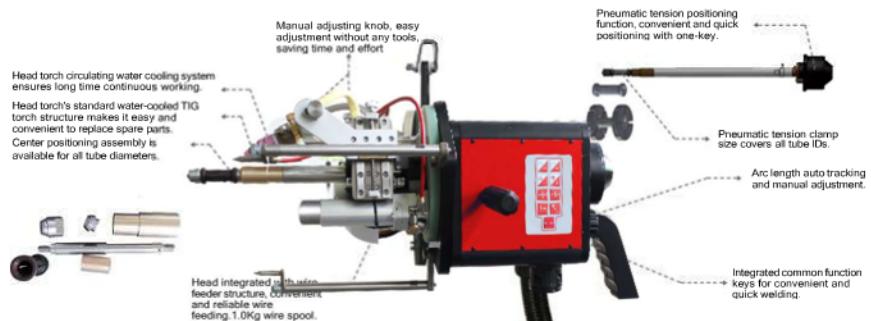
Aluminum structure with light weight makes it look good and move stably.
 Convenient pneumatic locking method
 X/Y/Z triaxial movement realizes rapid and accurate positioning of head.
 4 universal wheels on the base ensures flexible and convenient movement.

MW6011

BALANCER TUBE TO TUBE SHEET ORBITAL WELDING HEAD

Features and Benefits

- Simple operation reduces welder skill requirements.
- Tube-sheet welding realizes high reproducibility.
- Infinite rotation structure avoids winding of wire feeding, water, power and gas.
- Unique patent prevents deviation of welding path.



PRODUCT SPECIFICATIONS

Item	
Model	MW60II
Tube sheet connection form	Tube protrusion or flush tube
Weldable material	Carbon steel, stainless steel, titanium alloy, etc.
Tube diameter (mm/inch)	16-80 /0.6-3.1(For 60-80, it needs to replace related mechanical parts.)
Maximum welding current (A)	300
Wire diameter (mm/inch)	0.8 1.0 /0.031 0.039
Torch rotation speed (rpm)	0.35~6.0
Maximum wire feeding speed (mm/inch/min)	1800 /71
Cooling	Water cooled
Weight (kg/lb)	12.5 /27.5
Duty cycle (A)	300@70%
Dimension (mm/inch)	425*265*210 /17*10*6

HW-15 BALANCER

- Easy to move, adjustable load.
- Mainly applicable to welding large-scale tube sheet structure, such as large heat exchangers, etc.



PRODUCT SPECIFICATIONS

Item	HW-15 Balancer
Stroke (mm/inch)	1500 /59
Weight (kg/lb)	4 /8.8
load (kg)	9-15

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MS40ARC**SELF-MELTING TUBE SHEET HEAD****Features and Benefits**

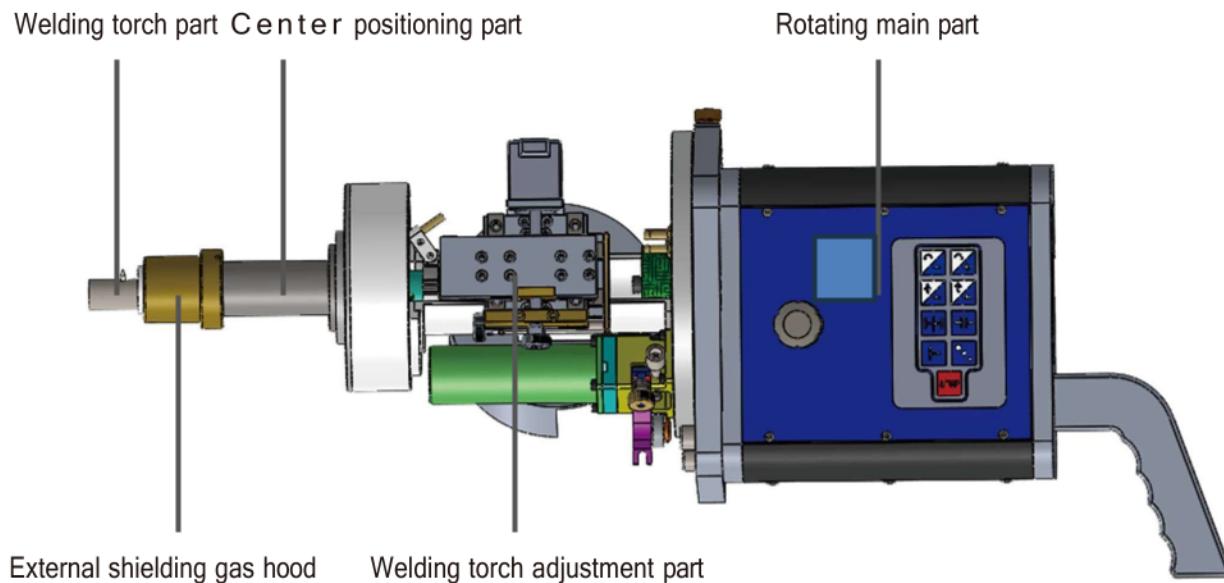
- It is suitable for autogenous welding because of no wire feeding mechanism.
- It provides a fully shielded welding, which is particularly suitable to weld stainless steel and titanium alloy. The welding seam is completely protected through argon gas.
- It is suitable for on-site operation because of small size and light weight.

**Main functions:**

- Rotating
- Manual locking

PRODUCT SPECIFICATIONS

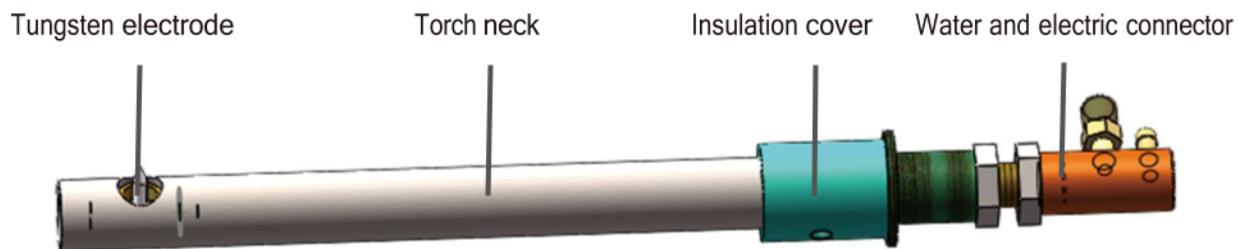
Item	MS40	
Model	MS40	
Weldable material	Carbon steel, stainless steel, titanium alloy etc.	
Main tube sheet connection form	Flush tubes	
Tube diameter	Φ16~Φ38 mm	
Tungsten electrode diameter	Φ2.4	
Torch rotation speed	0.5~610 rpm	
Tungsten electrode angle	7°	Range: Φ16~Φ28 mm
	0°	Range: Φ25~Φ38 mm
Protection gas	Argon	
Cooling	Water cooled	
Cooling water flow	≥600 mL/min	
Weight	3 kg	
Dimension	317×86×148 mm	
Rated welding current	100A, rated duty cycle : 70%	
Power source	WZM-400	

INNER HOLE WELDING TECHNICAL SOLUTION**Equipment introduction****1. Introduction for major body and structure**

WTS40NK welding head mainly consists of welding torch part, welding torch adjustment part, center positioning part, wire feeder part, rotating main part and external shielding gas hood.

2. Welding torch part

Welding torch part is a special torch for inner hole welding that enjoys cycled water-cooling inside.



MS40 INNER HOLE WELDING TECHNICAL SOLUTION

3. Welding torch adjustment part

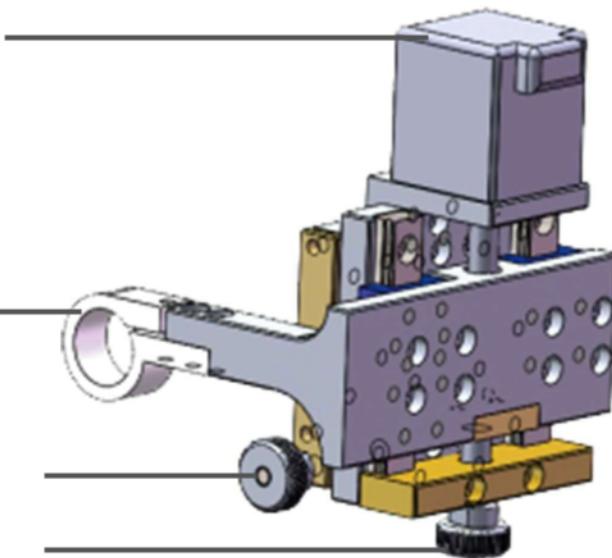
The welding torch adjustment part is used to fine adjust torch position before welding so as to align tungsten electrode to the welding seam, and adjust the arc height during welding. The height can be adjusted automatically according to the arc voltage during welding.

Arc voltage-sensing height adjustment motor

Welding torch holder

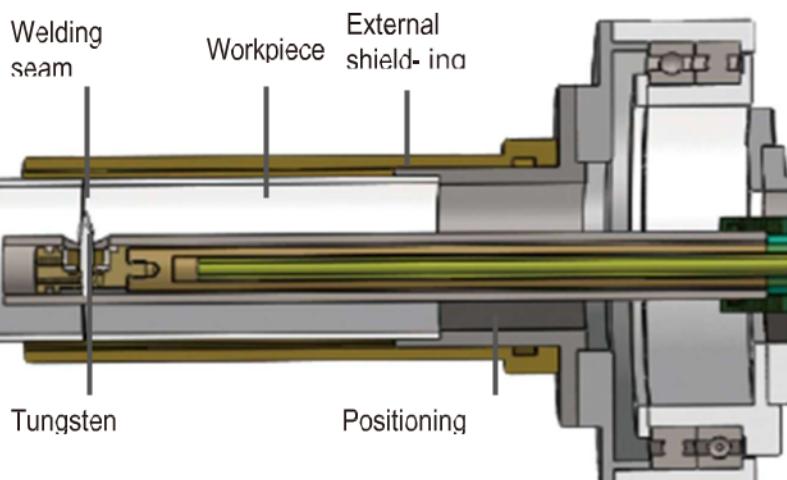
Rotary knob for welding torch axial adjustment

Rotary knob for welding torch radial adjustment



4. Center positioning part

The center positioning part is used for welding head positioning before welding. The inside positioning sleeve need to be replaced according to different tube outer diameter.



5. External shielding gas hood

External shielding gas hood is used to protect the welding seam outside the tube with argon, in order to prevent workpiece from being oxidized. This needs to be customized according to the diameter of welded tube and the position of welding seam.

ADVANCED ALL-POSITION WELDING HEAD

Features and Benefits

- The welding head travelling and wire feeding are drove by constant torque motor. Meanwhile, in the condition of ensuring wire feeding stability, the encoder is equipped to keep welding stable for both downward welding and upward welding.
- The welding head can calculate the travelling position according to the rotation angle, and can provide accurate position signal in the process of all-position welding, which greatly improves the quality of all-position welding.
- Wire feeding angle setting device can be applied to adjust wire feeding tip flexibly in all directions.
- The welding head can be customized according to pipe diameter, which is suitable for several kinds of pipe diameter, 30mm - 168mm



The formation of root welding



Filler welding



Cover welding

RTS60

ROBOTIC TUBE-TO-TUBESHEET WELDING SYSTEM



Features and Benefits

- This welding head is specially designed for a full automatic tube-to-tubesheet TIG welding, which is suitable for the automatic tube-to-tubesheet welding in the boiler, heat exchanger, power construction, chemical, and other industries.
- This welding head adopts a MAXON DC servo motor to drive rotating and wire feeding. Speed is closed-loop controlled. The continuous rotation can be realized because it is not wended by any water hose, electric wire, and gas hose.
- This welding head equips an automatic arc voltage control system that can ensure the stability of the welding seam by controlling the arc length. The arc following function has already been widely applied in autogenous welding and enjoys good welding effects.
- This welding head adopts the standard structure of a water-cooled TIG torch. It adopts a clamping mechanism that the tungsten electrode enters from the rear, to ensure convenient replacement and adjustment of tungsten electrodes. Both $\Phi 2.4\text{mm}$ and $\Phi 3.2\text{mm}$ tungsten electrodes can be adopted, equipped with a standard ceramic nozzle and coolant body, which ensures easy and convenient consumables replacement.

PRODUCT SPECIFICATIONS

Item	Parameter
The connecting method of tube-to-tubesheet	Welding of protruding tubes and flush tubes
Weldable materials	Carbon steel, stainless steel, titanium alloy and so on
Weldable tube diameter	Φ10~Φ60 mm
Welding torch rotating speed	0.35~6.0 rpm
Maximum wire feeding speed	2500 mm/min
Arc length responding speed	0~250mm/min
Radius adjusting speed	0~250mm/min
Welding torch tilt angle	-10°~30°adjustable
Maximum welding current	300 A
Arc length adjusting interval	0~20 mm
Radius adjusting range	0~50mm
Welding wire diameter	0.8 mm、1.0 mm
Shielding gas	Argon
Cooling method	water cooling
Coolant flow rate	≥600mL/min
Weight	7Kg
Duty cycle	70%@300A
Dimension	386×287×220mm

SUPERVISORY COMPUTER CONTROL BOX



The supervisory computer software is divided into drawings editing area, image display area, drawings importing, welding parameters, status monitoring, main control console, workpiece correcting, visual parameters and other parts.

INDUSTRY APPLICATION

