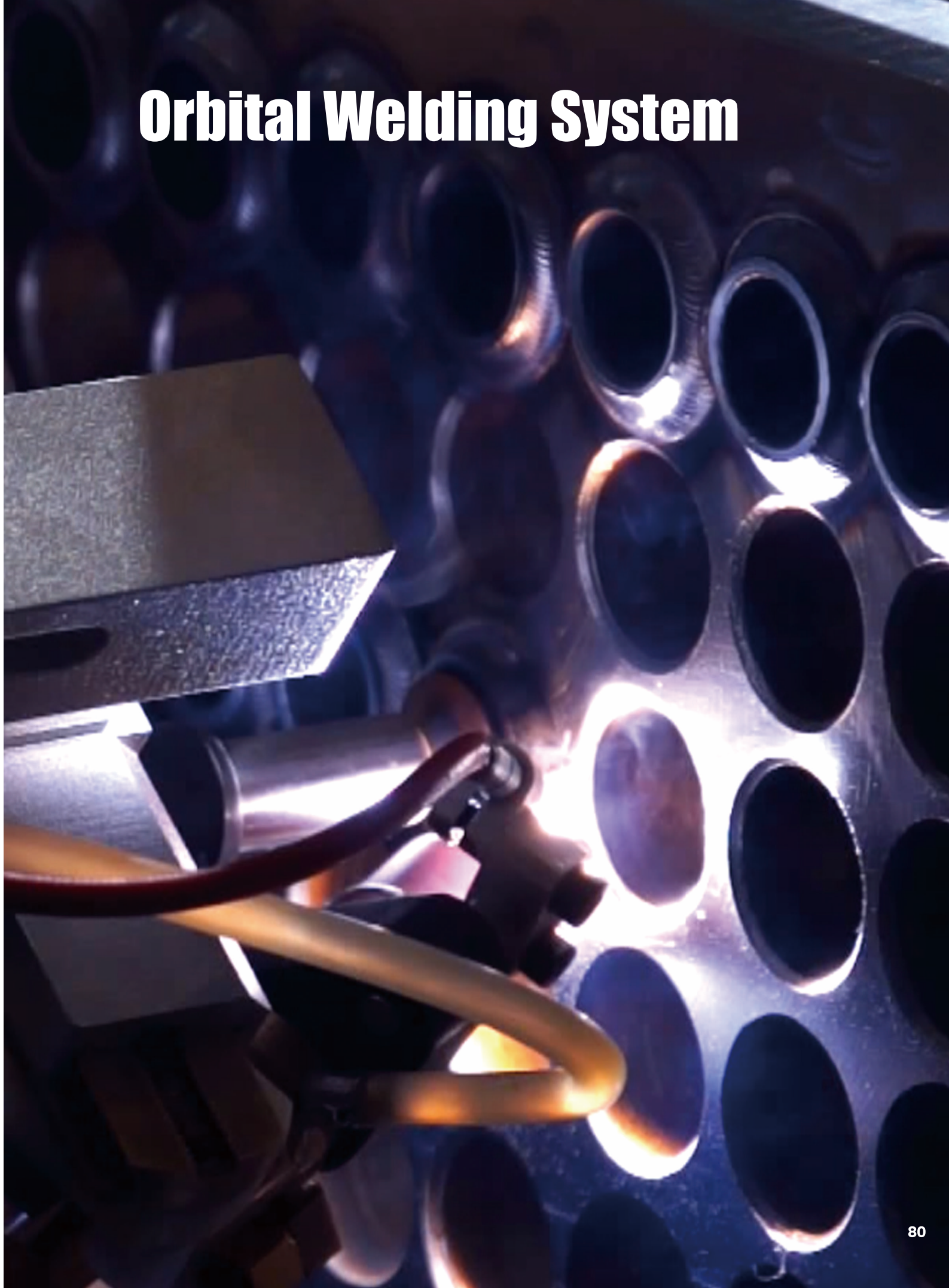


Orbital Welding System



Application /Orbital Welding System

TIG Orbital Welding System

Orbital Welding System

Developed for all position tube - tube sheet automatic welding, Compared with manual welding, more efficient, more reliable, more convenient, and more beautiful.

Brings consistent excellent quality and increases productivity

- Very simple operation program
- Excellent welding performance
- Mature welding process
- Extremely low labor intensity

Recommended Areas of Use

- Boiler
- Chemical industry
- Heat exchanger
- Air-conditioner
- Power plant



Heat Exchanger



Boiler



Condensator

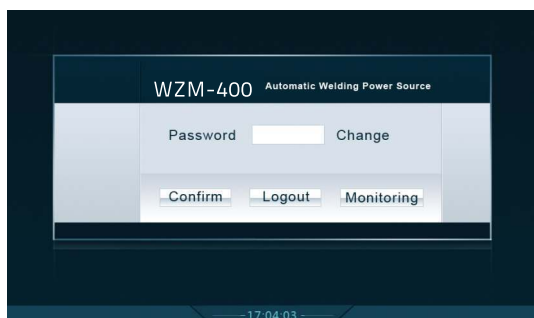
Standard Equipments

- Power Source WZM-400
- Welding Head WTS60II
- Manipulator CZJ1.9*1.2



Features and Benefits

- Portable, beautiful and easy to move
- X / Y / Z triaxial motion, to realize welding head fast pinpoint
- Triaxial motion relay on linear guideway, stable and reliable
- Two locking manner: manual locking, stable and reliable; pneuma-lock, convenient
- Four height adjustable stand bars install on foundation, to ensure holder position level precise
- Four universal trundle install on foundation, easy to move



User management login interface

- User needs to enter password, modify welding standard, safe to use



System setting interface

- Rotate speed increase
- Manual rotate speed
- Wirefeeding speed
- Inch wirefeeding speed
- Current increase
- Voltage increase



Welding monitoring interface

- Real time monitor whole welding process
- Real time check relative welding parameter, running status, current position, welding manner, etc



Adjustable welding parameters interface

- Pre-gas time
- Post gas time
- Peak current
- Base current
- Peak current time
- Wirefeeding speed
- Arc length

Equipment name	Item	Parameter
WZM-400 Power source	Rated input voltage/frequency	380V±10% 50Hz
	Welding current	5~400A
	Duty cycle (20℃)	400A 60%/315A 100%
	Power	13.5KVA
	Savable programs	60
	Sections	16
	Main function	CC or pulse current output/Rotation control/ Wire feeding control/Protection gas control/ Auto control of arc length/ Horizontal swing control, etc.
	Dimension (mm /inch)	1100*600*1250 /43*23*49

■ Orbital Welding System

WZM-200 inverter pulse argon arc welding machine is mainly composed of WZM-200 inverter pulse argon arc welding power supply, control panel, water cooler and digital remote control.

The control functions of WZM-200 pulse argon arc welding machine mainly include providing DC/pulse current output; controlling the rotation movement of the head; shielding gas control; printing control; arc length control (optional) and other functions.

WZM-200 pulsed argon arc welding machine can weld carbon steel, stainless steel, titanium alloy and other materials, realize all-position TIG tube/plate automatic welding, achieve ideal welding results, and obtain highly reproducible welds.



Features and Benefits

- The equipment adopts the current mainstream imported embedded single-chip microcomputer as the central processing unit of the system to monitor various output and feedback signals in real time to accurately control the entire welding process and obtain high-quality welds.
- Soft-switching inverter technology, high reliability of the whole machine, energy-saving and power-saving; 7-inch touch screen control interface, friendly and intuitive programming interface, simple operation;
- 60 sets of welding specifications can be stored and recalled, and the welding specifications can be easily modified and replaced, saving operation time;
- A set of welding specifications can be divided into 16 sections to meet the welding requirements of the workpiece at different times;
- Highly integrated integrated design, compact structure, easy to move;
- Equipped with protection functions such as water shortage, overheating, emergency stop, etc., safe and reliable.
- Abundant expert library, which can automatically calculate and generate welding programs according to different pipe diameters and wall thicknesses.

Orbital Welding System

The system control panel uses a 7-inch touch screen display, as shown in the figure above, which mainly includes five functions: user login, welding parameter setting, system setting, welding monitoring and printing setting.

User login function: The user is required to enter a password to complete the modification of the welding specification, which is safer to use.

Welding parameter setting function: The user can directly edit the welding parameters or modify the expert parameters provided by the system. In addition, the customer can also choose automatic programming according to the pipe diameter and wall thickness of the welding workpiece, which greatly facilitates the user's operation.

System setting function: Set the rotation speed increment, wire feed speed increment, current increment and voltage increment, as well as parameters such as manual rotation speed, manual wire feed speed and welding gun inching speed.

Welding monitoring function: real-time monitoring of the entire welding process; real-time viewing of relevant welding parameters, operating stage, current position, welding method, alarm information, etc.

Print setting function: The user can set the date, time, etc. on the display, and print the content and welding parameters through the printer, which is convenient for customers to archive relevant information.

Technology info:

Equipment name	Item	Parameter
WZM-200 Power source	Machine type	Inverter IGBT
	Applications	Can realize all-position TIG tube/plate welding
	Welding current	5~200A
	Duty cycle	(40℃) 200A 35% / 153A 60% / 118A 100%
	No-load voltage	60V
	Input voltage/frequency	AC220V±5%, 50/60Hz
	Torch cooling	cooling Circulating water cooling
	Display	Display 7-inch touch screen digital display
	Control function	DC/pulse current Rotational movement Shielding gas control Print control Can store 60 programs 16 partitions
	Pump head	30m
	Water tank volume	2L
	Protection/insulation grade	IP21S/F
	Weight (without coolant)	25kg
	Dimensions	500×260×630mm
	Working environment Indoor temperature	-10℃~+40℃ (Humidity: ≤ 95%)

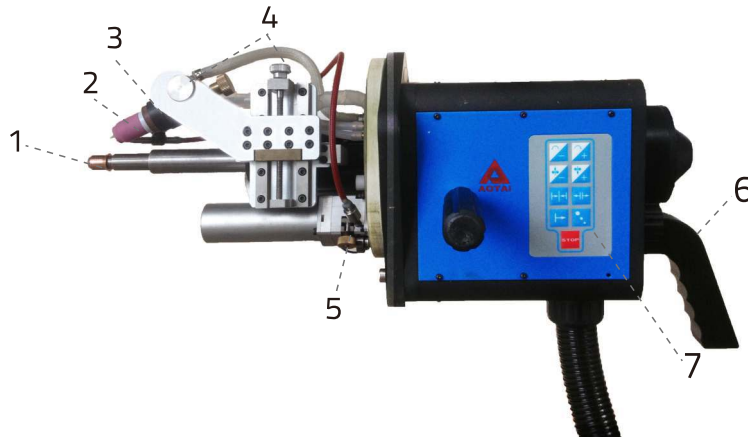
Application /Orbital Welding System

TIG Orbital Welding System

WTS60II tube-sheet head

Features and Benefits

- Easy operation, reduce welder's skill requirements
- Excellent welding performance and appearance
- Infinite rotation device, no intertwine trouble of wire, water, power and gas feeding



1. Center positioning copper head available for all tube diameters (end-user provided, when more than 60mm, the related machinery parts shall be customized)
2. Standard TIG torch, maintenance friendly
3. Longtime continuous working with circulating water cooling
4. Manual adjustment knob, easy adjustment without any tools, save time and energy
5. Integrated wire feeder using 1.0kg wire reel (included)
6. Arc length automatic tracking and manual adjustment
7. One press to start and automatically welds till complete. Efficient and reliable

Item	
Model	WTS60II tube-sheet head
Tube sheet connection form	Tube protrusion or flush tube
Weldable material	Carbon steel, stainless steel, titanium alloy, etc.
Tube diameter (mm /inch)	Φ16-80 /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

Equipment name	Item	Item
Manipulator	X axis stroke (mm /inch)	750 /29
	Y axis stroke (mm/inch)	1900 /75
	Z axis stroke (mm/inch)	1200 /47
	Minimum welding height (mm/inch)	600 /24
	Dimension (mm/inch)	1100*2300*2230 /43*90*88
Balance	Load (kg /lb)	9~ 15 /4~6.7
	Stroke (mm/inch)	1500 /59
	Weight (kg /lb)	4 /8.8

WTS40 Self-melting tube sheet head



Features & Benefits

- Small size, light weight, simple operation, zero requirement for welder skill
- Flexible and accurate positioning, safe and reliable.
- Closed-type welding ensures welding seam quality
- Infinite rotation structure avoids water, power, and gas winding.
- Water cooled, high duty cycle

Summary

- Mainly used for flush tubes, self-melting, tube-tube sheet welding
- Main welding material: stainless steel, titanium alloy, carbon steel, etc.
- Power source WZM-400

Application area

- Power stations, air conditioners, heat exchangers, boilers, nuclear power, chemical and other industries

Item	Technical parameter	
Mode	WTS40	
Weldable material	Carbon steel, stainless steel, titanium alloy etc.	
Main tube sheet connection form	Flush tubes	
Tube diameter (mm)	Φ16~Φ38	
Tungsten electrode diameter	2.4	
Torch rotation speed (rpm)	0.5~10	
Tungsten electrode angle (mm /inch)	7°	Range: Φ16~Φ28
	0°	Range: Φ25~Φ38
Protection gas	Argon	
Cooling	Water cooled	
Cooling water flow (ml/min)	≥600	
Weight (kg/lb)	3 /6.6	
Dimension (mm /inch)	317*86*148 /12*3*6	
Rated welding current	100A, rated duty cycle : 70%	
Power source	WZM-400	

Application /Orbital Welding System

TIG Orbital Welding System

Tube-tube Welding Head -WTC Series



WTC18

WTC40

WTC80

WTC118

WTC158

Summary

- Mainly used for all-position, self- fusion, tube-tube welding
- Mainly suitable for thin-wall tube-tube welding of stainless steel, titanium alloy, etc.
- Can work with power source WZM-400

Application area

Electronic, chemical, food/drinking water, air conditioner, medicine/medical equipment, instrument & meter, aviation/aerospace, engineering installation and nuclear power , etc.

Features & Benefits

- Small size, light weight, simple operation, zero requirement for welder skill
- Flexible automatic centering fixture, accurate positioning, safe and reliable.
- Closed-type welding ensures welding quality.
- Infinite rotation device avoids water, power, and gas winding.
- Water cooled, high duty cycle
- Common function keys on welding head make it convenient for fast welding.

Item	Technical parameters				
Model	WTC18	WTC40	WTC80	WTC118	WTC158
Weldable material	Carbon steel, stainless steel, titanium and titanium alloy etc.				
Tube diameter (mm /inch)	Φ6~Φ12.7	Φ6~Φ38.1	Φ19.05~Φ76.2	Φ38.1~Φ101.6	Φ50.8~Φ152.4
Torch rotation speed (rpm)	0.3~6.0	0.2657~5.3145	0.194~3.877	0.092~1.924	0.073~1.472
Maximum welding current (A)	60	Duty cycle 40%@85	Duty cycle 40%@100	Duty cycle 40%@120	Duty cycle 40%@120
		Duty cycle 60%@65	Duty cycle 60%@75	Duty cycle 60%@100	Duty cycle 60%@90
		Duty cycle 100%@45	Duty cycle 100%@55	Duty cycle 100%@80	Duty cycle 100%@75
Protection gas	Argon				
Cooling	Water cooled				
Cooling water flow (ml/min)	≥450m				
Weight (kg /lb)	2.0 /0.9	3.5 /7.7	5/11.1	6.5 /14.4	10 /22.2
Dimension (mm)	292*96*34	377*70*42	436*156*44.5	540*195*54	577*255*56
Power source					

Orbital Welding System- WTS60



Orbital Welding System- WTS40



Orbital Welding System-Tube



Features and Benefits (HW-15 Balancer)

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



Features and Benefits (Remote control box)

- Fine adjust welding parameter, perfect control whole welding process
- Realize real time welding parameter modification
- LCD on-hand controller can real-timely show welding parameter, faulty information like over-heat or over current, and welding stage like HF arc ignition
- Multi-function buttons save space, make interface simple, beautiful and powerful, improve the cost-efficacy



Features and Benefits (Manipulator)

- 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.

Application

Applications



Heze, Shandong, China
Stainless steel, 25mm
2 passes with wire feeding
1 Min per pipe



Zhengzhou, Henan, China
Heat exchanger in chemical industry
Carbon steel, 51mm
1 pass with wire feeding
1.5 Min per pipe



Jinan, Shandong, China
Stainless steel, 19mm
1 pass without wire feeding
40 seconds per pipe



MAG/MIG Orbital Welding System for Boiler



MAG/MIG orbital welding system avoids traditional manual welding disadvantages like higher welding skill requirement for welders, high labor intensity, serious welding deformation, low welding quality, etc. It realizes low cost, high efficient and high quality automatic welding for smoke tunnel of boiler.

Tube-sheet welding is a key process during manufacturing of boiler pressure vessel, especially shell-tube heat exchanger. Owing to its large number of welding joints, difficult operation, and high quality requirements, normal manual welding can no longer meet development needs of large-scale production. AOTAI energy saving and environment friendly MAG/MIG orbital welding system achieves perfect welding effect.

Features & Benefits

- One-key control of whole welding process, high automation degree, good welding formation
- Collection ring structure of torch rotation, no winding of cable and gas tube.
- LCD display of welding speed, angle and other parameters, simple operation
- Head is pneumatically clamped, and no manual holding is required during operation. One worker can operate multiple devices.
- Positioning core can be replaced according to different tube sizes for wide application.
- Head is small and easy to move, which can realize automatic welding of smoke tube in reburning room.
- Stable welding process, low spatter, good welding formation, high welding quality.
- Welding height is unlimited, working radius is big and movement is convenient.

Welding mode

MAG/MIG vertical ring welding

Model	HGB-MAG-2056Q
Tube diameter (mm)	Φ32~Φ76
Applicable material	Low carbon steel/stainless steel
Applicable hole bridge (inch)	≥16
Tube end inclination	Unlimited
Working radius (mm)	Unlimited
Welding height (mm)	Unlimited
Standard welding power source	AOTAI
Standard welding power source model	AOTAI AMIG500P
Gas source	Compressed air
Air pressure (MPa)	≥0.4
Protection gas	Mixed gas
Protection gas composition	80%Ar+20%CO ₂
Rated input voltage /frequency (Hz)	3 Phase, 380V, 50Hz
Torch head weight (kg)	7.7
Welding speed (mm /s)	5~7
Total weight (kg)	58.9