



# Manipulator Technical Specification

Welding/Cutting expert

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## Welding Manipulator

### Product introduction

Welding manipulator is divided into standard (TZ), heavy duty (TZH) types, suitable for inner and outer of the circumferential and longitudinal seam welding. According to customers' requirements, it can be installed with electrical extension unit inside boom, chair carrier and safeguard ladders. Manipulator control system uses digital or analogous control with the characteristics of easy operation and precise control. It can be jointly controlled with welding rotator or positioner. It is widely used in wind turbine, pressure vessel, petrochemical, repair welding and many other industries.

Heavy duty welding manipulator is compatibly equipped with single or twin welding head, strip cladding or narrow gap welding head. It has high rigidity, great capability and high safety factors, so it is suitable for pressure vessel, petrochemical industry, nuclear electric and overlaying welding.

There are also TZ1, TZ2, TZ3, TZ4 series for customers to choose from.

### 1. Characteristics

- 1) The column is shaped by one piece of steel and welded precisely, flat guide design with excellent solidarity. Boom lifting driven by AC motor, smooth moving with double anti-fall protection. High safety guaranteed.
- 2) Boom uses stepless frequency conversion timing, constant torque output, smooth speed, #45 guide rail, stress relieving annealing treatment, non-deformable.
- 3) Boom driven by pinion and rack, high precision, smooth moving, all data shown in digits and can be preset.
- 4) Boom lifting with electrical plus mechanical double protection device.
- 5) Welding head and electrical slide carriage can be selected.
- 6) Reliable, good-looking, durable, convenient, safe.
- 7) Manual operator connected to the control station makes the remote control feasible, adopting all-digit computerized technology, all parameters can be shown in digits and preset, easy to operate. It can be jointly used with welding rotator or positioner.

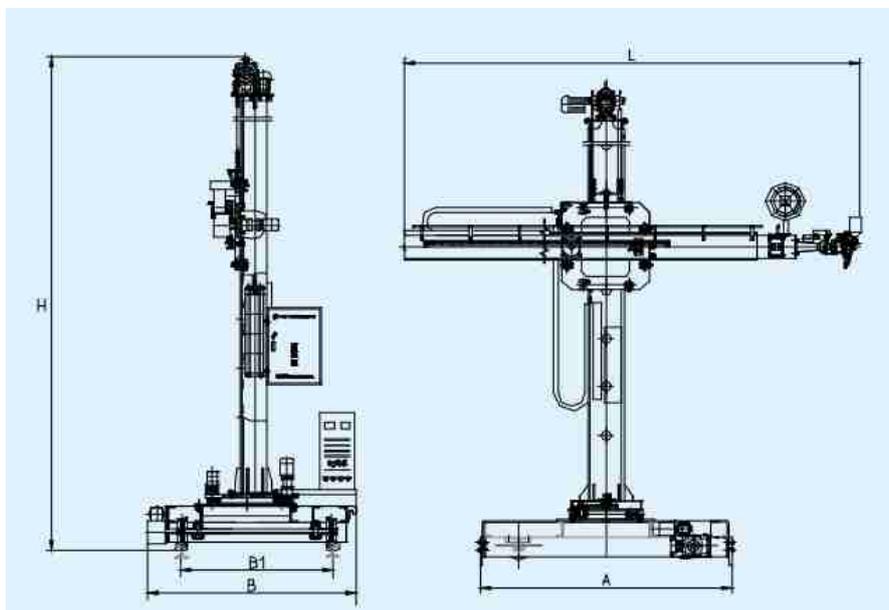
### 2. Parameter (TZ series)

Specification	2×2	3×3	4×4	5×5	6×6	7×7	8×8
Vertical movement distance of boom(m)	2	3	4	5	6	7	8

Horizontal movement distance of boom(m)	2~4	2	3~7	3~8	8	8	4~8
Rotating angle of column(degree)	±180 degrees						
Vertical speed of the boom(mm/min)	1150						
Horizontal speed of the boom(mm/min)	140~1400						
Rotating speed of column(r/min)	0.2						
The total equally distributed load of the boom(kg)	100	200	300	400	500	500	500
Center distance of the track(optional)	P43/2000mm(P43/2000mm)						

### 3. Specification (TZ series)

- TZ: Fixed without rotation
- TZ1: Fixed and manual rotating
- TZ2: Fixed and electric rotating
- TZ3: Electric moving, no rotating
- TZ4: Electric moving, electric rotating



Specification	A(mm)	B(mm)	B1(mm)	H(mm)	L(mm)
2×2	2300	2630	2000	4470	4330
3×3	2300	2630	2000	5470(5820)	5330(5460)
4×4	2300	2630	2000	6570(6920)	6330(6640)
5×5	2300	2630	2000	7920	7640
6×6	2300	2630	2000	8920	8640
7×7	2300	2630	2000	9920	9640

Parameter of rectangular rail in brackets.

#### 4. Selection of pendant controller



Switch relay control type (Standard)

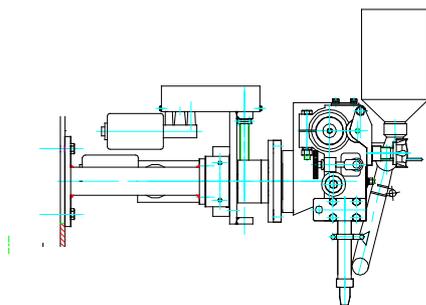
Button digital control type

Switch digital control type

#### 5. Selection for welding head



#### TIME FD10-200 Welding head (example)



单丝机头 (FD10-200)

Welding head (Single head)

**Specification**

- 1) Including one electrical fine tuning slide carriage, one wire feeding adjusting device, and one flux feeding system.
- 2) Electrical fine tuning slide carriage moving distance depends on model.
- 3) With automatic outer-circumferential seam tracker to make sure filler metal in best position. Welding seam tracker consists of sensor, control system and implementation device. Sensor probes the work piece, detects the changing welding surface, and at last implementation device adjusts the distance between welding torch and work piece to be perfect. Good welding quality is to be achieved.
- 4) High quality micro motor adjusts the position of welding torch during welding, easy to operate.
- 5) With rotator and clamper devices integrated in welding head, welding torch can rotate 360 degrees, the axial deflection is 45 degrees, applicable to angle, longitudinal and circumferential welding.
- 6) With wire feeding motor and planetary gear reducer integrated, it is compact, moment of force output increases, wire feeding is stable. Wire feeding wheel has double drive to prolong its life span.
- 7) The standard welding head can do the smallest diameter  $\Phi 800\text{mm}$  of cylinder inner welding.
- 8) This structure is patented (The first company in China), having open-style wire feeding wheel, which can save the consuming amount of filler metal.

Standard filler metal plate weight: 25Kg

Diameter of filler metal applicable:  $\phi 3.2\text{mm} - \phi 5.0\text{mm}$

Wire feeding speed: 50-250cm/min

Voltage adjusting range: 20V-50V

**6. Selection of slide carriage**

Model	Up/down stroke	Left/right stroke
ST1-E	100mm	100mm
ST2-E	200mm	200mm
ST3-E	300mm	300mm



7.

**7. Welding seam tracker**

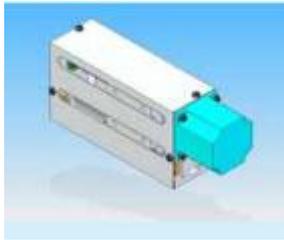
Welding seam tracker consists of sensor, control system and the implementation device, sensor probes the work piece, detects the changing welding surface, and at last implementation device adjusts the distance between torch and work piece, ensuring good welding quality.

Model	Application range
HMG-05	Suitable in TIG welding
HMG-10	Suitable in single wire submerge-arc welding
HMG-20	Suitable in twin wire submerge-arc welding



### 8. Welding oscillator

Welding oscillator consists of control system and implementation device. (Only suitable for TIG and MIG)



Model	Application environment	Environment temperature	Input power	Max amplitude	Max speed	Max staying time	No. of parameter storing	Max load capacity	Input voltage
TF-1	Indoor, non-condensing	-10-40 degrees	<150W	±25mm	99cm/min	9.9s	16sets	10Kg	AC220V±10%

### 9. Industrial monitor



Model	Monitoring range	Image device	Definition	Shutter speed	Min environment luminosity	Input power	Size(L×D)
AWM-S	Less than 6m	Imported module	560 Scanning line	0.01s	1 degree	220V 50/60Hz	114×65

### 10. Flux recovery system LT-HS 100E

This machine is especially made for fixing on the boom of the welding center. It can be assembled with imported air pump or common domestic air pump with external gas source of 0.4-0.6Mpa.



### 11. Product advantages

1) It is designed and tailored for customers to meet their professional needs with beautiful structure. Our company only uses manual operator, all functions can be executed through this

device. It decreases the labor cost and increases efficiency.

- 2) Unique cross section design of column and boom, excellent quality with reasonable price.
- 3) Digital interface screen, all welding parameter (Speed, current, voltage) can be preset and shown in digits, easy to operate.
- 4) To ensure product quality, we use all excellent outsourcing famous brand products, the important parts from imported famous brands to make sure the equipment reliable and durable.

**Parts (manufacturer) brands**

Motor reducer	Guomao guotai
Motor	Equipped with Motor reducer
Transducer	Taida
Adjusting speed method	Stepless Frequency Conversion Timing
Steel	Jinan steel
Electrical relay	Omron/Schneider

**12. Equipment technical service, after-sales contents and measures**

To serve the customers better and build abiding cooperation business relationship, we promise to execute excellent service as following:

- 1) All products of our company meet the national and related international standards.
- 2) We provide free training to the workers, technicians to make sure they can operate the equipment and do the maintenance and basic repair job.
- 3) If there is a quality problem within the warrant period, we shall send the parts within 7 days and keep tracking till the equipment's working properly. After the warrant period, we only charge material cost.
- 4) During the life period of the equipment, we provide the parts and wearing parts in favorable price within 7 days after getting notice from customers.
- 5) We provide free overall maintenance before the end of warrant period to make sure equipment meets the working standard.
- 6) Quick responding. We try our best to solve the problems in a limited time till our customers are satisfied.
- 7) Service standard:
  - (1) One goal: One customer, 100% satisfaction.
  - (2) Two guarantees: Maintenance quality, service quality.
  - (3) Three musts: Taking notes of and taking care of the problems customers have, reporting the problems to the customer service department, solving the problems.
  - (4) Four standards: Maintenance charging fee, parts price, standard service, overall image.
  - (5) Five bans: No declining the reasonable request, No postponing the maintenance request, No taking money, gifts excluding service charge, No attending unnecessary banquet, No impolite behavior towards customers.
- 8) Improving the service, building the concept of active service to maximize the customers' satisfaction.
- 9) Being responsible for customers, TIME makes sure the customers are satisfied with service.

Here are some examples in different industries.



**Welding manipulator used in chemical industry**



**Welding manipulator used in wind power industry**



**Welding manipulator used in pressure vessel industry**



**Welding manipulator used in petroleum industry**

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Valid until April, 2014