Manipulator Technical Specification
Welding/Cutting expert for over 20 years
www.timewelder.com
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)

<table>
<thead>
<tr>
<th>Specification</th>
<th>2×2</th>
<th>3×3</th>
<th>4×4</th>
<th>5×5</th>
<th>6×6</th>
<th>7×7</th>
<th>8×8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical movement distance of boom(m)</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>
### 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
### 4. Selection of pendant controller

<table>
<thead>
<tr>
<th>Specification</th>
<th>A(mm)</th>
<th>B(mm)</th>
<th>B1(mm)</th>
<th>H(mm)</th>
<th>L(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2×2</td>
<td>2300</td>
<td>2630</td>
<td>2000</td>
<td>4470</td>
<td>4330</td>
</tr>
<tr>
<td>3×3</td>
<td>2300</td>
<td>2630</td>
<td>2000</td>
<td>5470(5820)</td>
<td>5330(5460)</td>
</tr>
<tr>
<td>4×4</td>
<td>2300</td>
<td>2630</td>
<td>2000</td>
<td>6570(6920)</td>
<td>6330(6640)</td>
</tr>
<tr>
<td>5×5</td>
<td>2300</td>
<td>2630</td>
<td>2000</td>
<td>7920</td>
<td>7640</td>
</tr>
<tr>
<td>6×6</td>
<td>2300</td>
<td>2630</td>
<td>2000</td>
<td>8920</td>
<td>8640</td>
</tr>
<tr>
<td>7×7</td>
<td>2300</td>
<td>2630</td>
<td>2000</td>
<td>9920</td>
<td>9640</td>
</tr>
</tbody>
</table>

Parameter of rectangular rail in brackets.

### 5. Selection for welding head

TIME FD10-200 Welding head (example)

- **Switch relay control type (Standard)**
- **Button digital control type**
- **Switch digital control type**

### TIME FD10-200 Welding head (example)
**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 clamer 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 Φ800mm 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: φ3.2mm—φ5.0mm
Wire feeding speed: 50-250cm/min
Voltage adjusting range: 20V-50V

6. Selection of slide carriage

<table>
<thead>
<tr>
<th>Model</th>
<th>Up/down stroke</th>
<th>Left/right stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST1-E</td>
<td>100mm</td>
<td>100mm</td>
</tr>
<tr>
<td>ST2-E</td>
<td>200mm</td>
<td>200mm</td>
</tr>
<tr>
<td>ST3-E</td>
<td>300mm</td>
<td>300mm</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Application range</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMG-05</td>
<td>Suitable in TIG welding</td>
</tr>
<tr>
<td>HMG-10</td>
<td>Suitable in single wire submerge-arc welding</td>
</tr>
<tr>
<td>HMG-20</td>
<td>Suitable in twin wire submerge-arc welding</td>
</tr>
</tbody>
</table>
8. Welding oscillator

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

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

9. Industrial monitor

<table>
<thead>
<tr>
<th>Model</th>
<th>Monitoring range</th>
<th>Image device</th>
<th>Definition</th>
<th>Shutter speed</th>
<th>Min environment luminosity</th>
<th>Input power</th>
<th>Size(LxD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWM-S</td>
<td>Less than 6m</td>
<td>Imported module</td>
<td>560 Scanning line</td>
<td>0.01s</td>
<td>1 degree</td>
<td>220V 50/60Hz</td>
<td>114x65</td>
</tr>
</tbody>
</table>

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 endurable.  

**Parts (manufacturer) brands**

<table>
<thead>
<tr>
<th>Component</th>
<th>Brand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor reducer</td>
<td>Guomao guotai</td>
</tr>
<tr>
<td>Motor</td>
<td>Equipped with Motor reducer</td>
</tr>
<tr>
<td>Transducer</td>
<td>Taida</td>
</tr>
<tr>
<td>Adjusting speed method</td>
<td>Stepless Frequency Conversion Timing</td>
</tr>
<tr>
<td>Steel</td>
<td>Jinan steel</td>
</tr>
<tr>
<td>Electrical relay</td>
<td>Omron/Schneider</td>
</tr>
</tbody>
</table>

**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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