WELDING POSITIONERS, WP Series

OPERATION MANUAL

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CAUTION

Your Honor customers:

We appreciate your selecting and using of products produced by Wuxi FOCUS Machinery Equipment Co., Ltd. For your safety and interest, be sure to read carefully this operating manual and all other documents accompanied with the machine. This operating manual includes contents of main technical parameters, structure and features, matters concerned with operation, common trouble-shootings, which will help you a lot for practical application. FOCUS will not hold any responsibility on human or property injury, any other kind of loss caused from operation not on the basis of this manual.

For this manual

1 FOCUS claims rights on this manual;
2 If there exists any discrepancy between this manual and practical product, the latter has priority;
3 This manual is subject to modification and explanation by FOCUS. without written notice, we hereby hope your understanding.

We welcome your making telephone to us if ever you encountered any kind of technical problems. Tel.: 86-510-83270690

Wuxi FOCUS Machinery Equipment Co., Ltd.
PROJECT LIST

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## 1. Safety Requirement

<table>
<thead>
<tr>
<th>WARNING</th>
<th>ARC WELDING MAY BE DANGEROUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH, KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.</td>
<td></td>
</tr>
</tbody>
</table>

Read and understand the following safety highlights, BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.

### 1. ELECTRIC SHOCK can kill.
- The electrode and work (or ground) circuits are electrically “hot” when the welder is on; do not touch these “hot” parts with your bare skin or wet clothing.
- Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.
- In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are electrically “hot”.
- Always be sure the work cable makes a good electrical connection with the metal being welded, the connection should be as close possible to the area being welded.
- Ground the work or metal to be welded to a good electrical (earth) ground.
- Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
- Never dip the electrode in water for cooling.
- Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
- When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.

### 2. ARC RAYS can burn
- Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Head shield and filter lens should conform to nation standard
- Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- Protect other nearby personnel with suitable, non-flame able screening and warn them not to watch the arc or expose themselves to the arc rays or to hot spatter or metal.

### 3. FUMES AND GASES can be dangerous.
- Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and exhaust at the arc to keep fumes and gases away from the breathing zone.
- Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

Read understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet and follow your employer's safety practices.

4. **WELDING SPARKS** can cause fire or explosion.

- Remove fire hazards from the welding area, if this is not possible; cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines.

- Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations.

- When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

- Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside.

- Vent hollow castings or containers before heating, cutting or welding. They may explode.

- Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuff less trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

- Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

5. **CYLINDER** may explode if damaged

- Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc should be suitable for the application and maintained in good condition.

- Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

- Cylinders should be located away from areas where they may be struck or subjected to physical damage and a safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

- Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.

- Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

- Valve protection caps should always be in place and hand tight except when the cylinder is use or connected for use.

6. **FOR ELECTRICALLY** powered equipment (apply in to welding and cutting equipment)

- Turn off input power using the disconnect switch at the fuse box before working on the equipment.

- Install equipment in accordance with J. IRIZAR & COMPANY’s recommendations (as: manual).
7. Other

- Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belt, gears, fans and all other moving parts when starting, operating or repairing or repairing equipment.
- In some cases it may be necessary to remove safety guards to perform required maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.
- Do not put hands near the running fan, do not operate with panel open or guards off.

8. ELECTRIC AND MAGNETIC FIELDS may be dangerous.

- Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines.
- EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
- Exposure to EMF fields in welding may have other health effects which are now not known.
- All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
  a. Rout the electrode and work cables together – Secure them with tape when possible.
  b. Never coil the electrode lead around your body.
  c. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.
  d. Connect the work cable to the workpiece as close as possible to the area being welded.
  e. Do not work next to welding power source.

2. Summarize

This machine is a kind of our advanced welding positioner equipment, which is be researched and manufactured absorbing domestic and international advanced positioner equipment.

The worktable is tilted by motor, accurate and reliable positioning; it makes the workpiece in perfect position for welding. The worktable adopts AC frequency conversion speed, so large range of variable speed and high precision, weld at need speed. Accordingly this device has advantages of compact structure, small cubage, beautiful shape, lightweight, convenient operating and so on. The machine can assort all kinds of auto welding or manual welding, improving welding quality, lessening welding labor and improve productivity.

This machine can be used at automatic welding or manual welding, such as pipe horizontal welding, tube end welding, axle, tray and barrel, it can be wildly used in the pressure vessels equipment, metallurgy, electric power, chemical machine etc industry
3. Technical data

<table>
<thead>
<tr>
<th>Model</th>
<th>WP 0.1</th>
<th>WP 0.3</th>
<th>WP 0.6</th>
<th>WP 1</th>
<th>WP 3</th>
<th>WP 5</th>
<th>WP 10</th>
<th>WP 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated load capacity, tons</td>
<td>0.10</td>
<td>0.30</td>
<td>0.60</td>
<td>1.0</td>
<td>3.0</td>
<td>5.0</td>
<td>10.0</td>
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<tr>
<td>Table rotation speed, rpm</td>
<td>0.4 ~4</td>
<td>0.1 ~1</td>
<td>0.1 ~1</td>
<td>0.05 ~0.05</td>
<td>0.05 ~ 0.5</td>
<td>0.05 ~ 0.5</td>
<td>0.02 ~ 0.2</td>
<td>0.02 ~ 0.2</td>
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<td>manual</td>
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<td>φ 600</td>
<td>φ 1000</td>
<td>φ 1200</td>
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<td>0 - 120°</td>
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<td>0.37</td>
<td>0.75</td>
<td>1.1</td>
<td>1.5</td>
<td>2.2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>tilt</td>
<td>0.18</td>
<td>/</td>
<td>0.75</td>
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<tr>
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<td>200</td>
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<td>200</td>
</tr>
<tr>
<td>Max centroid height, mm</td>
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<td>200</td>
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<td>250</td>
<td>300</td>
<td>300</td>
<td>400</td>
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</tr>
<tr>
<td>Max rotation diameter at 90°</td>
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<td>φ 2000</td>
<td>φ 2100</td>
<td>φ 2500</td>
<td>φ 3200</td>
<td>φ 3400</td>
</tr>
</tbody>
</table>

4. Structure characteristics

4.1 The main machine of positioner includes machine framework, tilting movement, rotation movement, and conduct electricity device and control box.

4.2 The machine framework adopts the steel plate and beam steel welding into one body, is the foundation of the equipments, all welding seam request to weld accord with one class of intensity.

4.3 The tilting movement organization is to adopt the motor to drive the worm, and drive its worm wheel, which is fixed on the tilting body, the whole tilting framework acts
through worm wheel to carry out its movement. The worktable can tilt or stop at any position within 0-90 degree. Driving motor with braking function, tilting angle high-point position has limit-switch. Worm and worm wheel unit transmission has self-lock mechanism, so worktable will not tilt on its own under rated loading.

****WP0.1 WP0.3: The tilting movement organization is to adopt the hand wheel to drive the worm, and drive its worm wheel, which is fixed on the tilting body, the whole tilting framework acts through worm wheel to carry out its movement. The worktable can tilt or stop at any position within 0-90 degree. Worm and worm wheel unit transmission has self-lock mechanism, so worktable will not tilt on its own under rated loading.

4.4 The rotation organization is on the tilting body, the worktable can revolve along its plane infinitely, Functions as FWD, REV, can be realized by control switch on the control board. Transmission of worktable rotation: A.C. motor--worm-gear reducer--worktable etc. It’s motion is transferred by those gearing and carry out welding work. The motor adopts frequency conversion speed control.

Attention: worm and worm wheel unit has self-lock mechanism, when the worktable tilt, loading eccentricity distance not more than stated range, or else it will to arose work table run by one self.

4.5 The conduct electricity device fix at work table underneath, including the carbon stick and rotor, and soft cable connect with the end of base for conducting at the middle. The conduct device safe and conduct electric current can reach 1000A.

4.6 Electric control system are consists of control board and remote control. Partial space inside frame is taken as control board, with installation elements controlling motor ON/OFF and inverter. Through which can control FWD, REV, TILT UP, TILT DOWN and rotation speed of work table.

IMPORTANT NOTICE

"Overload or misuse of a welding positioner can cause PROPERTY DAMAGE, BODY INJURE OR DEATH. Before operating read carefully and understand the information contained on the sheets below.

If you have any questions or concerns call our technical support @1 877 IRIZAR1 or e mail us @jirizar@jirizar.com"
### Centroid Height Table

<table>
<thead>
<tr>
<th>Model</th>
<th>WP 0.1</th>
<th>WP 0.3</th>
<th>WP 0.6</th>
<th>WP 1</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Rated load capacity, tons</td>
<td>0.10</td>
<td>0.30</td>
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<td>3.0</td>
<td>5.0</td>
<td>10.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Table diameter, mm</td>
<td>Φ 400</td>
<td>Φ 600</td>
<td>Φ 1000</td>
<td>Φ 1200</td>
<td>Φ 1400</td>
<td>Φ 1500</td>
<td>Φ 2000</td>
<td>Φ 2500</td>
</tr>
<tr>
<td>Max centroid height, mm</td>
<td>150</td>
<td>200</td>
<td>200</td>
<td>250</td>
<td>300</td>
<td>300</td>
<td>400</td>
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</tr>
<tr>
<td>LD 1, kg</td>
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<td>-</td>
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<tr>
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<td>LD 4, kg</td>
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<td>LD 6, kg</td>
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<td>555</td>
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<td>3333</td>
<td>8888</td>
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<tr>
<td>LD 8, kg</td>
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<td>13333</td>
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</table>

### Centroid Exccentricity Table
### Welding Positioners, WP Series

<table>
<thead>
<tr>
<th>Model</th>
<th>WP 0.1</th>
<th>WP 0.3</th>
<th>WP 0.6</th>
<th>WP 1</th>
<th>WP 3</th>
<th>WP 5</th>
<th>WP 10</th>
<th>WP 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated load capacity, tons</td>
<td>0.10</td>
<td>0.30</td>
<td>0.60</td>
<td>1.0</td>
<td>3.0</td>
<td>5.0</td>
<td>10.0</td>
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<tr>
<td>Table diameter, mm</td>
<td>Φ 400</td>
<td>Φ 600</td>
<td>Φ 1000</td>
<td>Φ 1200</td>
<td>Φ 1400</td>
<td>Φ 1500</td>
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<td>Φ 2500</td>
</tr>
<tr>
<td>Max centroid eccentricity, mm</td>
<td>100</td>
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<td>150</td>
<td>200</td>
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<td>eLD 1, kg</td>
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<td>-</td>
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<td>eLD 2, kg</td>
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<td>600</td>
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<td>1333</td>
<td>2222</td>
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</tr>
</tbody>
</table>
5. Operation Commissioning

5.1 The worm wheel decelerator of the machine adopts lubricating oil, other gears and bearings adopt grease lubrication, periodic change.

Note: The reducers do not have oil when shipping. Users must fill before being use.

5.2 Wiring: see the electric principle diagram, see clearly the AC motor's wire, and pay attention its wire is delta circuit (△) or star (Y) circuit.

5.3 Turn on the power switch, push tilt up or down button, worktable tilt up or down till limited position. Before start to rotation, select (FWD) forward or (REV) reverse, step the footswitch, the AC motor run, make speed setting potentiometer clockwise turning, the worktable rotation clockwise accelerating, counterclockwise, speed decelerates, loose footswitch, motor stop.

5.4 Make the sports such as forward or reverse. In spite of, while needing to change the direction, must turn to the stop position first, and then change the direction.

5.5 That machine can not appear to tremble to move while make the sport of various functions, the deadlock or excrecent voices ring, if have and should stop immediately, the check and troubleshooting.

5.6 Various the welding experiment, when fix the work piece on the rotation worktable, must consult relevant the manual carry on.

5.7 Equipments are after using to complete, keep the center of load gravity stability, then cut off the power supply.

6. Attention items and checking

6.1 Operator must be training of the operation technical ability knowledge, and carry on to the following important point to study in earnest, strictly forbid someone carry on various operation under blindness.

6.2 In the normal circumstance, the installation of positioner has better adopt the bolt to fix originally.

6.3 When finished installation, check whether tight firmware of each part loosens to move the phenomenon or not, if it has, please tighten them immediately
6.4   Check whether the electricity each operation button is failure or not, indicator whether by rule designation.

6.5   The rotation of worktable whether normal, and the inverter of A C frequency conversion speed is failure or not

6.6   When welding, equipments must have the credibility to connect ground wire, to insure the safety.

6.7   When the equipments occurrence break down, should cut off the power supply immediately, then carry on check or maintain, and can continue to use.

6.8   The external connects of control box must accord with the electricity system diagram conjunction, careful check, cannot connect wrong.

6.9   Must usually check the electric cable to insulate the circumstance, if the one who have damage should stop the usage. In addition welding operation must the safety operation, and wear the good protection.

6.10   Each part can't be violated by the rain water or the causticity air; also can't usage under the heat environment, in order to prevent the damage electric appliances component, influence sport function.

7.   The equipments lubricates and maintains

7.1   The reducer of this equipments all adopts the lubricant lubrication, the open type wheel gear and bearings adopt the grease lubrication.

7.2   Before using, reducer box need to add the oil to the mark centerline, while running should usually watch the oil height, add the lubricant of the same oil in time.

7.3   Lubricant and grease should periodically replace, the general first time replace in order to circulate 300 hours, should do away with the survive and dirty oil while replace, hereafter separate to replace a times 6 month each time.

7.4   While already had no usage with long hours, while restarting should replace the lubricant and lubricate grease.

7.5   The lubricant chooses to use lubricant of the industry wheel gear oil or functions very much, lubricate grease recommendation usage the special kind lubricates grease according to your country.
7.6 The periodical check control each electric appliances of circuit component, if have damage piece and can affect to act or become to break down hidden trouble, must take into the repair.

The worm gear reducer use Mobil DTE 24 or equivalent lubrication oil, other gears and shafts use lubricating grease. When first time use, change oil after one month, and then change oil every half year.

Note: See measuring scale for oil level

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>Mobil DTE 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO Grade</td>
<td>32</td>
</tr>
<tr>
<td>cSt @ 40°C</td>
<td>31.5</td>
</tr>
<tr>
<td>cSt @ 100°C</td>
<td>5.29</td>
</tr>
<tr>
<td>Viscosity Index, ASTM D 2270</td>
<td>98</td>
</tr>
<tr>
<td>Specific Gravity @ 15.6°C/15.6°C, ASTM 1298</td>
<td>0.871</td>
</tr>
<tr>
<td>Copper Strip Corrosion, ASTM D 130, 3 hrs @ 100°C</td>
<td>1B</td>
</tr>
<tr>
<td>Rust Characteristics Proc B, ASTM 665</td>
<td>Pass</td>
</tr>
<tr>
<td>Pour Point, °C, ASTM D</td>
<td>-27</td>
</tr>
<tr>
<td>Flash Point, °C, ASTM D 92</td>
<td>220</td>
</tr>
<tr>
<td>FZG 4-Square Load Support, DIN 51354, Fail Stage</td>
<td>12</td>
</tr>
<tr>
<td>Foam Sequence I, II, III, ASTM D 892, ml</td>
<td>200</td>
</tr>
</tbody>
</table>

8. The parameter of inverter and adjustment

8.1 The digital indicator shows the rotation speed, if show the speed out of accordance with actual speed, adjust the potentiometer on the electricity control panel in the box, make indicator value and actual values to agree with.

8.2 When over load or short circuit phenomenon, inverter will alarm on automatically, and stop output.

8.3 Reset or change the parameter of inverter, detailed read to the machine manual.

8.4 The electricity principle diagram sees attach the page
## 9. Troubleshooting

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Causation</th>
<th>Method</th>
</tr>
</thead>
</table>
| Tilting act malfunction                | 1. limit switch act on  
2. motor over load  
3. motor malfunction  
4. contactor, relay malfunction  
5. transformer malfunction             | 1. adjust position  
2. examine gear box  
3. examine it  
4. replacing  
5. examine it |
| Rotation act malfunction               | 1. input power wrong on  
2. motor over load  
3. inverter run wrong  
4. motor malfunction  
5. switch malfunction                   | 1. adjust it  
2. examine gear box  
3. examine it  
4. examine it  
5. replacing |
| Speed and display differ               | RP2 malfunction                                                           | Adjust or replacing |
| Inverter or transducer act malfunction | Read its manual                                                           | Read its manual |
| Rotation motor run but speed cannot change | 1. potentiometer malfunction  
2. inverter malfunction             | 1. examine it  
2. read its manual |
| Speed display is not accurately        | 1. No DC+5V input  
2. potentiometer normal  
3. indicator malfunction                | 1. examine it  
2. replacing  
3. examine it |