Welding Rotator

Operating manual

ZG -5 Type

Safety requirements

WARNING：ARC WELDING MAY BE DANGEROUS

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH.

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

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.

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 nor expose themselves to the arc rays or to hot spatter or metal.

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.

Cylinders may explode if damaged.

- Use only compressed gas cylinders containing 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.
- Cylinder should be located away from areas where they may be struck or subjected to physical damage and a safety 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.
- Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- Keep your head and face away from the cylinder valve outlet when opening the valve.
- Valve protection caps should always be in place and hand tight except when the cylinder is use or connected for use.

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.

Moving Parts

- 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.

Electric and Magnetic Fields may be dangerous

- Electric current flowing through any conductor causes localized Electric 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. 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 work piece as close as possible to the area being welded.

e. Do not work next to welding power source.

1.Safety

1.1 Before operation, please read this manual carefully.

1.2 Earthling is required of the complete equipment.

1.3 All the operation shall follow.

a. Instruction manual

b. Qualified person

c. Error operation can damage

1.4 All the operators shall handle.

a. Control of the equipment

b. Operation of the equipment

1.5 Marks on every switch, button or current, voltage meter in order to indicate the function and operation.

1.6 Safety items.

a. Keep safety equipment included such as Helmet, gloves, the operators should operate without tie, bangle.

b. If the customer has fire extinguisher then it should be put on some special marked place.

c. Keep enough distance between welding machine and oil, clothes.

d. The equipment should be checked before every operation. If abnormal information happens, the operators shall find and eliminate the trouble first before operation.

2.Usage：

The ZG, KG series welding turning roll designed and made by our company is on the basis of learning merits of same kind of products from home and abroad, also considering characteristic of welding process of barrel. It is applicable for manual and automatic welding of different kinds of cylinders, which is requisite equipment for production of pressure vessel. It has advantages of advanced technique, reliable quality and easy operation.

3.Performance

Welding turning roll falls into two broad category as adjustable and self-adjustable. All of these consist of one set of driving rollers and one set of idle rollers.

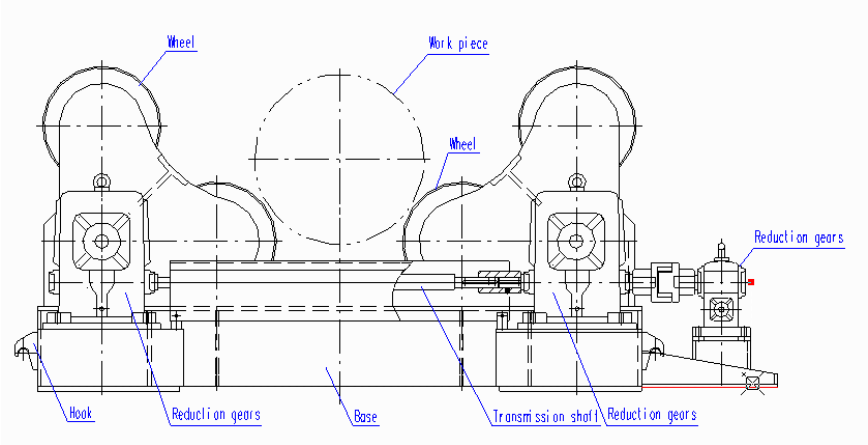
Driving section is the power source for work-piece rotation. By means of electric control and transmission of driving chain, the driving rollers work into rotation, thus driving work-piece into rotation. To adapt various welding technology, electro-magnetic motor or motor controlled with inverter is used for realization of smooth speed control, ensuring linear

speed of work-piece rotation within the range of 6～60 m/hour, catering for welding speed required for various welding technology. The idle rollers mainly serve as support of work-piece during working, guaranteeing smooth rotation of work-piece.

The KG series adjustable turning roll has the structure of adjusting roller distance thru movement of roller bed along the pedestal on the basis of different diameter of work-piece; The ZG series self-adjustable turning roll can be controlled its roller distance automatically according to work-piece diameter, featuring in lessening labor intensity and improving productivity.

4.Technical parameters

4.1. ZG Self-adjustable turning roll



（Fig.1）Self-adjustable Turning Roll diagram]

Technical parameters of self-adjustable turning roll

- Rolling capacity (t): 5
- Workpiece Range (mm): Φ250-Φ2300
- Rubber roller diameter (mm): Φ250
- Rubber roller width (mm): 100
- Motor power (kW) 0.75
- Roller linear speed (m/h): 6-60
- Speed control: VFD

5.Installation：

5.1 It is not necessary to fix the turning roll for installation, but the equipment should be put onto flat floor or rail;

5.2 The turning roll is used in pair including one set of driving and idle roller section respectively, which need to be put into parallel, with the center on the same line.

6.Matters concerned operation：

6.1 Observe whether oil of reduction at stipulated level, whether operating buttons reliable, indicating lamp in good condition, whether electric wiring in conformity with electric diagram;

6.2 Check and secure looseness of fasteners of all sections;

6.3 If ever abnormal noise or vibration happened during work, cut off power and maintain the equipment immediately. Only after problem excluded can the equipment be put into operation again;

6.4 After hoist the work-piece onto turning roll for trial-use, please check whether work-piece lean against rollers tightly, whether there exist salient axial drifting, and adjust position of roller bed accordingly if necessary;

6.5 For start-up of motor, first switch on the control gear on the control board, then turn the speed to its min. value. After that, adjust the speed to the target value gradually upon start-up. The “Forward rotation” or “Reverse rotation” can be selected after power on. However, if it is necessary to change to opposite rotation direction during work, be sure to press “Stop” first, and wait for motor to stop completely, then press “Forward rotation” or “Reverse rotation” button. Choose working state as Manual or Jog according to practical situation;

6.6 For manual welding, the control switch can be wired from control board with reference to electric diagram. Operator can hold the control switch at hand or fix it on the helmet, and select working state on the basis of practical condition as Manual or Jog;

6.7 The operator should go through training on operation and skill first. **It is strictly prohibit to operate the equipment by non-eligible person;**

6.8 It is strictly forbidden to make the motor running in opposite direction when the

equipment still not stopped completely. There is delay unit in control system for restricting the equipment rotation in opposite direction immediately within certain time range, so as to eliminating mechanical shock arised out of frequent changeover among forward and reverse direction. Do not alter set-up of delay unit at will. We will not hold reliable for the equipment damage caused from modification by user themselves;

6.9 A drive and a idler turning roll are applied to workpiece with length is less than 6m,if you used for workpiece with length is more than 6m,causing break of the reduction gears, this is not our repair range, we suggest you should adopt a drive and several idler turning roll. If you insisting to use for workpiece with length is more than 6m,causing break of the reduction gears, this is customer's responsibility.

6.10Ensure that the equipment are on a flat surface or it can't work normally.

7.Maintance and service

7.1 Apply the oil to middle index into reduction box before use. Observe oil level frequently during work, and replenish lubricating oil of same grade in time;

7.2 Lubricating oil and grease should be changed periodically. Generally, it is necessary to replace after 300hours running for initial use, and remove residual dirty oil. Then exchange the oil and grease every 6 months;

7.3 Please replace lubricating oil and grease before actuating the equipment again after long term non-use;

7.4 We suggest the L-CKC68～CKC 150 industrial gear oil or lubricating oil of better performance to be used. As to grease, the special type -2# or 2L-2# lithium-base grease is recommended. Please check and remove obstacles on the equipment, and assign people responsible for use and keep of the equipment delicately.

8.Common trouble-shooting

Trouble	Possible reason	Solution

Indicating lamp not illuminate	1、 Fuse of control circuit fails 2、 Bad connection of air breaker 3、 No output of transformer 4、 Indicating lamp fails	1、 Repair or replace 2、 Replace air breaker 3、 Repair or replace 4、 Replace
Motor no motion	1、 Fuse fails 2、 Contactor fails 3、 Non-connection of contacts 4、 Alarm	1、 Replace 2、 Repair or replace 3、 Repair or replace 4、 Refer to manual of electro-magnetic motor or inverter

9.Electric diagram （See appendix）