

INSTALLATION

The welding equipment should be very carefully uncrated and unpacked. An extensive visual examination should be conducted to verify that all items and accessories have been received and that no damage has occurred during transit.

The following steps should be used for installation:

1. Level the welder and secure it to the floor.
2. Connect all required utilities: Electrical power, water and air.

CAUTION: CHECK EQUIPMENT AND NAMEPLATE OR CONTROL DRAWINGS TO ASSURE THAT POWER AVAILABLE IS OF THE SAME VOLTAGE AND FREQUENCY.

A. Please see Installation Data Sheet in this manual.

B. Attach water inlets and drains. These should be of a size to at least match the inlet and drain connection points on the machine.

Connect water supply line to TOP inlet on water manifold located at left rear of machine (It is important that water "IN" is correct. Water travels down deflector tubes and circulates thru electrodes and back "OUT"). Connect drain (on return) line to lower NPT on manifold.

Due to water conservation efforts and cost, city water should be reserved for small or intermittent water use. In all other cases, a recirculating system or a commercial water chiller should be used. This also provides the ability to control the water parameters for more effective system cooling. Please consult JANDA or your JANDA representative for proper chiller size and additional chiller information if required.

C. Connect air supply line to air regulator on left side of machine.

3. After assuring that all connections are tight, turn on air supply and electrical power.

MACHINE SET-UP

1. The welder should be sequenced carefully through its various functions before applying welding current.
 - A. Please see "Machine Sequences" information sheet.
 - B. Please see "Program of Control" sample and read Control manual.
2. If the machine sequences properly both manually and automatically, the water system should be checked to assure that water is circulating freely and in the proper amount and direction.
3. Welding pressure (Electrode Force) should be adjusted to level recommended for the material being welded.
4. The machine is now ready to make test welds. In all cases, material or stock should be free of scale or oxides. If practical, test welds should be performed on parts (or stock) which will be typical of production parts. Each weld schedule should be carefully set and properly recorded after satisfactory welds are obtained.

NOTE: It is very helpful to prepare a welding schedule chart and attach it to the welder. This chart can be referred to at anytime for reference if doubt occurs as to weld quality. A sample schedule chart is included in this manual.

MACHINE SEQUENCES AND DEFINITIONS

SQUEEZE TIME: The time interval between the initial application of the electrode force on the work and the first application of current. Note that this is the process definition. The control definition is the time interval between sequence initiation and beginning of weld current. Squeeze time is necessary to delay the weld current until electrode force has built up to the desired level.

SQUEEZE DELAY: Is used on a repeat operation, additional time is added to Squeeze on the first weld only.

WELD TIME: Is the time during which welding current is applied to the work in making a weld. It is measured in cycles of line voltage as are all timing functions. One cycle is 1/60 of a second in a 60 Hz power system.

IMPULSE: Amount of weld pulses.

COOL TIME: Time between successive heat impulses.

HEAT TIME: The time duration that welding current flows in one impulse.

HOLD TIME: The time during which electrode force is maintained on the work after the last impulse of welding current ceases. Hold time is

necessary to allow the weld nugget to solidify before releasing the welded parts.

OFF TIME:

In the Repeat mode, the time duration between Hold count and Squeeze count to allow the work to be repositioned.

PREVENTIVE MAINTENANCE

Good housekeeping is a must, and cannot be over-emphasized in today's world of safety-conscious regulations. A well-maintained and clean work environment results in more machine availability and less maintenance overall.

Welders with all of its associated frame work, electrical enclosures, sensing devices, and piping should never be used to store tools, hang coats or hats, or place drinks.

Failure to keep welder clear of incidentals creates a safety hazard for everyone, as well as encouraging poor housekeeping.

Tools used to adjust and maintain welders, should be properly stored in a tool box or cabinet near the machine.

DANGER: Always "Lock Out" all sources of energy before entering or servicing any equipment.

Welders are production machines and require care when working on them. Caution should be exercised to prevent scratching, denting or marring surfaces especially those that carry the secondary current. The marring of mechanical surfaces will cause premature wear and will require more maintenance.

MACHINE RECORDS:

Each machine should have two sections in an equipment record book. The first section should be weld schedules for specific model parts. A given welded part should be able

to be duplicated if machine is properly maintained. The second section should be used to record preventative maintenance, required maintenance or repairs. If the records indicate that repetitive maintenance is required it gives cause for corrective procedures to be implemented. The records can also be used to assist in troubleshooting by existing and new maintenance employees.

SUGGESTED PREVENTATIVE MAINTENANCE:

The following general preventative maintenance suggestions are intended to cover all types of resistance welders. Many items may seem trivial, however, several of the smaller items that make up the total will avoid the "snowball effect". In most instances, the easily-corrected trivial problems, when acted on promptly reflect good preventative maintenance.

If unsure of any of the following procedures, please contact your JANDA representative or JANDA directly at (909) 734-1935. JANDA also offers preventive maintenance programs performed by qualified Service Technicians, please consult factory.

DAILY CHECK LIST

Start of Shift

At the start of each shift, the following items should be done:

- Wipe all surfaces clean of dirt, dust grease, oil and water.
- Clean up vicinity of the welder.
- Dust lenses of any light fixtures, windows and doors, and transparent covers.

CAUTION: Do not use solvents for cleaning paint or Lucite windows.

- Turn on the air supply.
- Turn on the water supply.
- Check for air pressure setting.
- Lubricate the required daily points.
- Turn on the power supplies.
- Check the settings on the weld control.
- Dry cycle the equipment a few times to make sure everything is functioning properly. If machine is erratic at start up and then becomes what appears to be normal this is a indication that a problem exists.
- Refer to weld schedule. Check all variables after a few welds, to see that the water, air, machine settings and contactors are working properly.
- Check the welds for required quality.

At Shift End

At the end of each shift, the following items should be done:

- Turn off power first.

CAUTION: Never leave power applied to an electronic contactor that is directly water cooled, without water flow.

- Turn water off.
- Turn air off and release stored energy.
- Clean up vicinity of the machine.
- Look for metal chips, filings, arcing due to loose bolts or poor fit of current-carrying members.

WEEKLY

General:

- Investigate any unusual operation. (Talk to operator)
- Remove all oil spots from floor and walk areas.
- Wash down floor in area of machine.
- Check for air and water leaks.

Electrical System and Control:

- Check relays for evidence of wear or looseness.
- Check programmable controls for unauthorized changes in the program and correct before placing back into operation.
- Sequence machine through full manual sequence.

Electrodes and Dies:

- Make a thorough inspection of electrode and electrode holders.
- Clean electrode or die holders and clamps.
- Check for misalignment and realign as necessary.

Hydraulic System:

- Check cylinder rod locking nuts.
- Remove sample of oil from reservoir and test for deterioration or contamination. (Testing interval will depend on fluid used, and its age.)

Air System:

- Check cylinder rod locking nuts.
- Check cylinder mounting and tighten if necessary.

QUARTERLY

Cooling System:

- Check water system thoroughly and replace components which show wear or corrosion.

Hydraulic System:

- Change or clean oil filters.

Air System:

- Check air gages and regulators with pressure indicator.
- Replace damaged regulators and gages or those that are sluggish and need calibration.
- Regulator diaphragms should be checked carefully.
- Replace worn or cracked air hoses with new hoses. Be sure connections are tight. Poor connections may blow off and cause injury.
- Clean or replace lubricators and filters.

Electrical System:

- Polish all secondary contact surfaces to remove corrosion.
- Use a good cleaning solution or in the case of excessive corrosion, a fine abrasive.
- Tighten all connections for good contact.
- Check protective and overload devices.

ANNUALLY

General:

- A minor overhaul of the machine should be made annually.
- Remove all grease and rust from machine and apply a coat of machinery paint.
- Check and replace worn or damaged parts.

Cooling System:

- Reverse flush system and replace hoses where required.

Electrical System and Control:

- Check calibration of timing and adjust if necessary.
- Check primary electrical connections. Using a weld monitor, check specific current and secondary voltage.

Air System:

- Replace air hoses where required.

Hydraulic System:

- Change oil if necessary.

PERIODIC INSPECTION AND SERVICE

Cooling System:

- Check for water flow.
- Check solenoid water valve, for chatter or hum to indicate possible problem.
- Check for water leaks and repair.
- Check hydraulic cooling systems.

Electrical System and Control:

- After turning on air and water, turn on electricity. Be cautious if moving parts on power up.
- Check for chattering relays or switches and repair.
- Check timers and controls for proper dial settings according to schedule chart.
- Listen for noises indicating loose secondary connectors.
- Check for burned out bulbs in indicator lights, enclosure lights and other illumination features.
- Check foot switch and connection cord.
- Check initiation buttons and anti-tie down system if so equipped.

Air System:

- Check for air leaks and repair.
- Check line pressure, welding pressure, and electrode force.
- Empty air line filters.
- Check lubricator oil level.
- Feel solenoid valves for overheating - listen for hum indicating improper seating of spool.

Mechanical Equipment:

- Check for broken or loose components.
- Check for loose attachment of cylinders, mechanical arms, worn key ways - Get it repaired with new parts, not just patched. Patched repairs can lead to safety problems.

Hydraulic System:

- Wipe top of reservoir.
- Check for fluid leaks and repair.
- Listen for unusual pump noises.
- Check pressure gauge settings.

Electrodes and Dies:

- Check water hoses to electrode holders.
- Check lubrication of seam welding heads.
- Check for pitted, worn or dirty tips.
- Check for groves or marking of dies.
- Clean or replace as required.
- Check electrode and die alignment

REMOVING EQUIPMENT FROM SERVICE

If a piece of resistance welding equipment is being removed from service for a period of time, the following should be done to prevent unnecessary damage during idle time:

- Isolate and drain water lines and air lines to keep uninvited bugs from plugging up the lines.
 - If machine is to be stored in warehouse, it may be wise to wrap in plastic or shrink wrap to prevent rodents from eating insulation on wires and hoses.
 - Equipment should be stored in dry area to prevent problems with moisture in electrical or solid state components.
 - Drain and blow out water from all cooling lines, especially: Weld controls, including SCR packages, welding transformers, and electrode holders.
 - Protect all non-painted surfaces from rust and corrosion.
 - Protect cylinders inside and out from rust.
 - Cover the equipment to prevent excessive dirt buildup.
- When disconnecting complex welders or welders that require control to be separated a qualified electrical/mechanical person should be used to mark all electrical, mechanical and plumbing connections. Wires, hoses, etc. should be bundled up and tied to machine to prevent problems later.