

# RESISTANCE WELDER SAFETY

All welding department supervisors, plant safety officers and other personnel whose responsibilities include plant safety and/or installation, operation and maintenance of resistance welding equipment must take care to thoroughly familiarize themselves with all applicable codes, regulations and standards regarding the safe installation, use and maintenance of such equipment.

**RWC** resistance welders are designed to meet or exceed the Resistance Welding Manufacturers Association standards for high performance and safety. They comply with all current interpretations of OSHA regulations at time of manufacture. Whenever practical and/or available they incorporate UL and CSA listed electrical components. However, since welder manufacturers do not know and cannot foresee the magnitude of potential hazards when welders are improperly utilized, current OSHA regulations state that it is the responsibility of the user management to assure that any and all necessary guards and shielding be installed and maintained and that installation, operating and maintenance personnel are competent, properly trained with respect to the subject equipment and comply with all applicable safety codes and OSHA regulations.

The following is a general guideline only. Each user plant and machine may have unique characteristics. Use your knowledge, experience and common sense to apply these guideline where applicable.

## **RESISTANCE WELDING GUARDING**

1. It is the responsibility of user management to ascertain that all OEM installation and operating instructions and/or personnel training is complied with and to furnish other safety instructions according to the application.
2. The welder must be set-up in order that it is impossible for personnel to place their hand or any other body part in any pinch point or moving area. All pinch points must be identified with a warning label or sign.
3. Guards, shields or other devices to keep the operator's hands or other body parts out of danger must be furnished by user management and maintained in a safe, operating condition.
4. User management must schedule and ascertain that periodic inspections are conducted to assure safe and proper operation of the welder and collateral tooling and equipment.

## **GENERAL**

1. Installation, operating and maintenance personnel must read and thoroughly understand all welder OEM instructions, cautions and warnings prior to the installation, use, maintenance or repair of resistance welding equipment.
2. User management and supervision must assure that all personnel operating resistance welders are properly trained and are judged competent and physically able to operate such equipment.
3. Using the OEM documentation and warning labels, where applicable, user supervision must alert an operator of the safety hazards which can occur if proper precautions are not followed.
4. Users of resistance welding equipment are responsible for full compliance with all applicable safety and operating procedures, as well as, with all applicable governmental laws and codes.
5. When the OEM documentation, instructions and safety information are provided in the English language, the user supervision is responsible for assuring that all non-English speaking personnel thoroughly understand all instructions and safety procedures.
6. The user should comply with OSHA Regulation 29CFR1910 regarding the installation, operation and maintenance of resistance welding equipment.
7. The user should institute a periodic safety inspection to assure proper and safe operation of resistance welders.
8. All repairs or modifications should be performed by or authorized by the welder OEM.
9. Operators must be instructed in the proper procedures to follow in the event of an emergency.
10. First Aid equipment must be readily available at all times when operating welding equipment.

## **ELECTRICAL**

1. High voltage is present in the controls, tap switch, terminal blocks and transformers. All the necessary precautions are to be observed.
2. Installation of the main disconnect and main power connections to the machine are to be made by a licensed electrician. All local codes must be observed.



3. All HIGH VOLTAGE power wiring must be properly sized.
4. All resistance welding equipment must be grounded with a separate earth ground. The ground lead should be sized sufficiently.
5. Failure to follow electrical safety precautions could result in serious injury or death.

## **PNEUMATIC AND WATER**

1. The operator must monitor the equipment upon start up for air or water leaks.
2. The air filter must be bled regularly and air lines kept clean.
3. Assure that the air pressure is adequate and consistent for the welder.
4. Assure that the water flow is not hampered or obstructed.
5. In the event of an air or water leak, remove all power from machine before qualified personnel attempt to correct problem.
6. Never use electrically conductive water hoses on resistance welders or controls.

## **OPERATOR PRECAUTIONS**

1. A daily safety check should be made prior to powering up the welder. If a problem is found, it should be corrected before proceeding with the work.
2. Only properly trained personnel should operate a welder. Only qualified maintenance personnel should attempt to repair a welder.
3. No modification of the safety devices shall be made without the written authorization of the welder OEM.
4. Keep all body parts clear of all moving parts.
5. Heed all Warning or Caution labels.
6. The operator should be aware of the function and operation of the Emergency Stop switches if so equipped.
7. Do not leave the welder unattended with the power on.
8. It is the user's responsibility that proper safety equipment is used when welder is being operated. These include but are not limited to:
  - Protective glasses
  - Protective shoes
  - Non-flammable outer garments
9. Initiation should normally be made by only one person unless other safety designs have been incorporated by the manufacturer to allow multiple initiations.
10. Operator should be aware of the magnetic fields generated by the welder. The fields can play havoc with watches and other electro-mechanical devices.
11. If a welder malfunctions or operates in an unusual manner, the equipment should be switched off and corrected by qualified personnel.

**NOTE:** In order to properly correct resistance welding safety problems, it may be necessary to apply a thorough understanding of the resistance welding process and welding machine operation, as well as, applicable safety standards.

**EXAMPLE:** A supervisor notices that one spotwelder produces severe expulsion or weld splash with each weld. The supervisor's solution is to place several movable partitions around the spotwelding work station to shield personnel from the weld splash.

Subsequent investigation by a resistance welding specialist discloses that the weld splash is caused by inadequate electrode force resulting from severe leakage of compressed air from the welder's air cylinder. Replacement of worn seals in the air cylinder will stop the air leak, restore normal electrode force and eliminate both the weld splash and the need for the shielding partitions, as well as, improve weld quality.

As demonstrated in the example, when dealing with safety hazards it is necessary to examine not only the effect of the problem but also the cause if one is to find the total solution.