

# 29ID – Safe Work Procedure

## SPOT WELDER

**DO NOT use this machine unless you have been instructed in its safe use and operation and have been given permission**

The spot welder at 29ID (Miyachi Unitek DP-1250) is intended to be used only for fine work with a Ta foil (e.g. sample mounting), or other small thin parts. The foot operated pedal has been preset for XX of force, do not adjust. The hand probe is also low force (~ 1lb), do not adjust. Repeated spot welding (beyond the standard 2-pulse sequence) will result in the heating of the probes and the piece. The stainless steel bench makes a good thermal sink and should be used for repeated-pulse work .

### PERSONAL PROTECTIVE EQUIPMENT



Safety glasses.



Closed-toed footwear.



Long and loose hair must be contained.



Long pants and non-flammable clothing, no fleece. (Cotton lab coat is available).

### POTENTIAL HAZARDS

- ⓘ Electrodes become hot with continued use.
- ⓘ Burns.
- ⓘ Hot metal.
- ⓘ Flying sparks.
- ⓘ Eye injuries.
- ⓘ Power supply has 0.75-125 watt-seconds (joules) of stored energy.

### PRE-OPERATIONAL SAFETY CHECKS

- ✓ Check workspaces and walkways to ensure no slip/trip hazards are present.
- ✓ Check switchgear and cable are in sound condition.
- ✓ Check electrode points are in good condition and meet exactly.
- ✓ Ensure electrodes are securely mounted and clean from contaminants.
- ✓ Use gloves to position and hold work.

### OPERATIONAL SAFETY CHECKS

- ✓ Ensure the spot welder has cooled before making any adjustments.
- ✓ Avoid prolonged use, as this can cause heat to build up in the electrodes and arms.
- ✓ When holding work, be aware of the heat created during welding process.
- ✓ Put spot welder in "No Weld" state when not actively applying a pulse.
- ✓ Ensure that there is good contact and even pressure between the electrodes and the piece. Before welding check the weld parameters, see common setting section for a good starting point.

### ENDING OPERATIONS AND CLEANING UP

- ✓ Switch off the machine when work completed.
- ✓ Leave the work area in a safe, clean and tidy state.

### DON'T

- ✗ Do not use faulty equipment. Immediately report suspect machinery.
- ✗ Do not continue use if sparks are present – you are doing something wrong, contact beamline staff for help.
- ✗ Do NOT perform any electrical maintenance on the power supply.
- ✗ Do not adjust pressure on actuators, pulse width or number of pulses

### COMMON SETTINGS

In dual pulse operation, the 1<sup>st</sup> pulse should be ½ to 1/3 the energy of the 2<sup>nd</sup> pulse.

Ta foil – Ta foil: 1-2.5%

Ta foil – Stainless Steel:

Manually Actuated Clamp: 2-8%

Hand probe: 2-10%

Stainless – Stainless or thermocouple wire: 10-20%

**This SWP does not necessarily cover all possible hazards associated with this equipment and should be used in conjunction with other references. It is designed as a guide to be used to compliment training and as a reminder to users prior to equipment use.**