

## II. Parallel Gap Welder Schedule Setting Guide

Parallel gap welding is based on resistance or ohmic welding principles. Resistance welding is realized when current is allowed to flow through the left and right halves of the electrode and separate pieces of the metal to be joined. The resistance of the base metal to electrical current flow causes localized heating in the joint, and a weld is made. In all cases, the current must flow in order to form a weld. The pressure of the electrode tip on the work piece holds the part in close and intimate contact during the making of the weld. Therefore, four factors, power (amperage or amplitude and time or duration of the electronic pulse), resistance and pressure are the key factors in making an optimal welding joint.

In addition, the type of electrode used plays an important role as well.

On the other hand, too high level setting may damage or reduce the life of electrodes or damage the work pieces. Always start with low welding level. **The recommended initial settings are amplitude: 0.8 V, time: 6.0 ms and force: 10 ounces (300 grams).** Increase the welding parameter setting gradually to obtain the optimum welding joints.

The following three tables show the recommended settings for certain gold ribbons, enameled wires, and types of the electrodes used. As discussed earlier, four factors, voltage amplitude, voltage duration, resistance and pressure are the key factors. In general, for same work piece and selected electrode, the higher welding power (amplitude and duration), the lower the pressure and vice versa. However, the required welding power and pressure may be different due to different work piece or electrode since the total resistance may be different. Therefore, the recommended settings given below are for reference only. The fine adjustment for each case is required in order to obtain the most reliable welding joints.

### 1. Gold Ribbons

Item	Recommended Application	Recommended Setting	Recommended Electrodes
1	Gold ribbon: 5 mils wide x 0.5 mils thick Base material and/or finish: thin film substrate and gold finish	Amplitude (Power): 0.60 V Time (Duration): 6.0 ms Force: 17 ounces (500 grams)	SW-ETD-E2F
2	Gold ribbon: 10 mils wide x 0.5 mils thick Base material and/or finish: thin film substrate and gold finish	Amplitude (Power): 0.70 V Time (Duration): 7.0 ms Force: 20 ounces (600 grams)	SW-ETD-E4F
3	Gold ribbon: 20 mils wide x 0.5 mils thick Base material and/or finish: thin film substrate and gold finish	Amplitude (Power): 0.80 V Time (Duration): 9.0 ms Force: 25 ounces (750 grams)	SW-ETD-N3W
4	Gold ribbon: 20 mils wide x 1.0 mils thick Base material and/or finish: thin film substrate and gold finish	Amplitude (Power): 1.0 V Time (Duration): 9.0 ms Force: 23 ounces (700 grams)	SW-ETD-N3W
5	Gold ribbon: 40 mils wide x 0.5 mils thick Base material and/or finish: thin film substrate and gold finish	Amplitude (Power): 1.1 V Time (Duration): 9.0 ms Force: 30 ounces (950 grams)	SW-ETD-NOF