iQ Series

COLOR FRONT PANEL ULTRASONIC PRESS SYSTEM

ES

HAND PROBE   AUTOMATED   PRESS

Amplitude Segmentation

Amplitude Segmentation

Amplitude Segmentation is a method of changing the weld amplitude during the weld cycle. The weld can be divided into 2 or 3 segments. The amplitude setting is entered for each segment. The division of each segment is set as a percentage of the total weld, based on the primary control parameter i.e.: Distance, Position, Power, Energy or Time.

For example, if welding by Distance, and the 2nd segment is set to begin at 10%, this would mean that the second segment begins after the weld head travels 10% of the total programmed distance.

Examples of where Amplitude Segmentation may be useful:

- Reduction of weld flash at the end of cycle:
Once the energy director is fully melted, the contact surface area dramatically increases. This intensifies the weld energy, which can produce flash as the plastic melts out of the joint area. Reducing the amplitude at this point can reduce the flash.

- Increased weld strength by controlling the temperature rise, as the plastic reaches its melt point:
As the plastic transfers to a molten state, the ability to transfer motion into heat dramatically increases. In a servo welder, this is addressed through our Melt Match feature. This is the preferred method. When Melt Match is not available, being able to reduce the amplitude once the melt begins can reduce overheating of the plastic, thus creating a stronger bond.

- Reduction of part marking at end of cycle:
Reducing the amplitude near the end of the cycle can help to reduce part damage. This includes marking of the part or breaking delicate components.

**- In cut/seal apps, reduction of wear on anvil and horn:**
For cut and seal applications, it can be beneficial to initiate the melt at a high amplitude to accomplish a good seal, and then reduce the amplitude as the cut occurs, to reduce wear on the horn, and potential damage to the stack components.

Programming Amplitude Segmentation

To enable Amplitude Segmentation, select the **Process Settings** tab. In the upper right-hand side of the page, check the **Enable Advanced Settings** box. Then Click on Advanced Settings button.
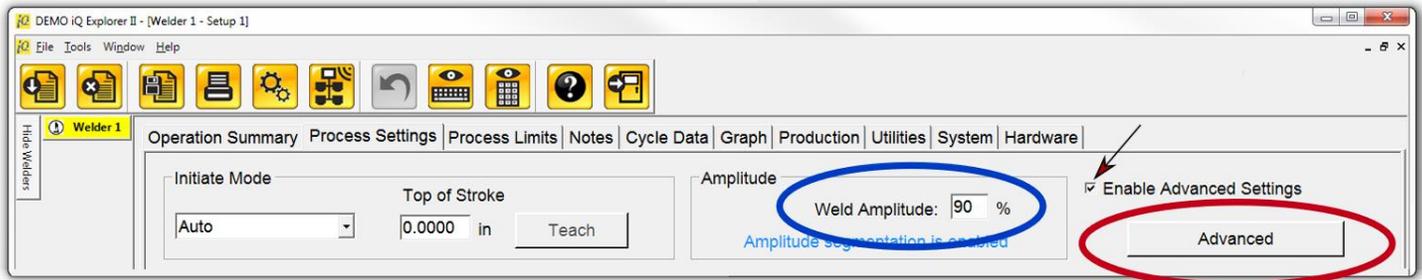
The following screen appears:
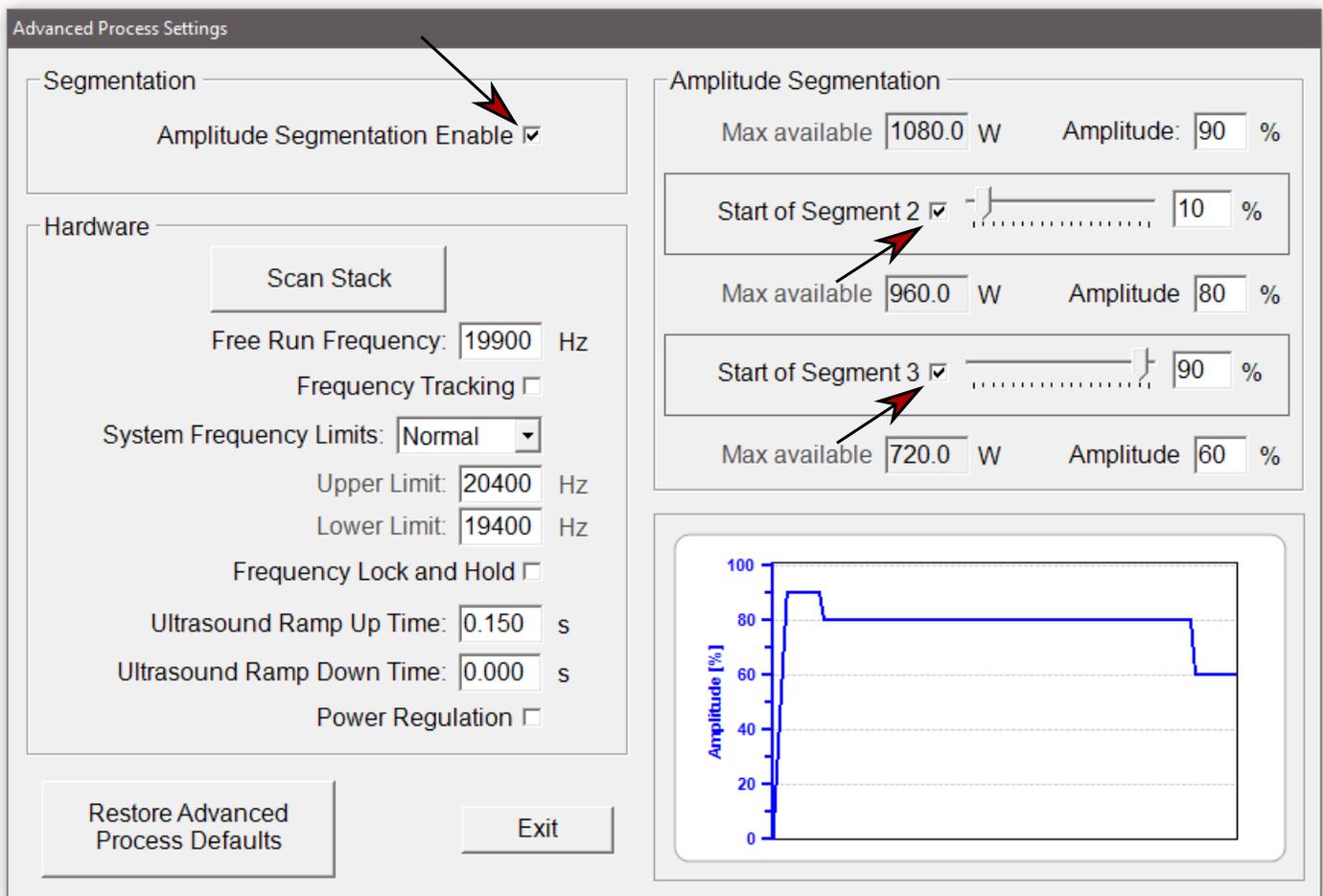
Check the Amplitude Segmentation box. This will open the left side of the screen, displaying the adjustment bars for amplitude segmentation. The weld cycle can be divided into 3 segments. The Amplitude value for the first segment is **circled in Blue**.

Checking the box **Amplitude Segment 2** enables adjustment for the start of the second segment. Checking the box **Amplitude Segment 3** enables the adjustment for the start of the 3rd segment. The value for the start of the segment can be entered directly by typing in a value with the keypad, or by moving the slider left or right. The amplitude value for the corresponding segment is entered by selecting the **Amplitude** box and entering the number with the keypad. A graphical illustration of the weld amplitude is displayed below.

In the example shown, the generator will output 90% of its amplitude for the first 10% of the cycle. The amplitude will be reduced to 80% from 10% to 90% of the cycle. When 90% of the cycle is complete, the amplitude will be reduced to 60%. A graphical illustration is shown below the adjustment boxes.

NOTE: Reducing the weld amplitude also reduces the maximum power rating of the generator. If the weld amplitude is reduced to 90%, the maximum power of the generator is also reduced to 90% of the rated value. For this reason, if the highest amplitude is setting is below 85%, it is recommended to reduce the booster gain instead.

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