

Circuit Board Guidelines

Printed Circuit Board (PC Board) Terminal Board Connections:

All terminals may not be present on your PC board. See “Options” section of this bulletin.

(+) Positive voltage 12VDC or 24VDC depending on the controller ordered.

(-) Negative Side of the voltage

(X) Auxiliary output: Supply voltage is present whenever the controller is turned on. Output current must not exceed 3 amps.

(A) Output terminal to proportional coil when the controller handle is moved in the “A” direction.

(B) Output terminal to proportional coil when the controller handle is moved in the “B” direction.

(C) Common return when high current PC boards are used. The coil’s ground or (-) connection **must be returned to the PC board “C” terminal, not to ground.**

(R) Range Terminal: See Dual Range option.

Trim Pot Adjustment Procedures

Adjustments are made by turning a trimpot adjustment screw. The trimpots are multi-turn, end to end devices. It may be necessary to turn the adjustment screw several turns to observe a change in output.

Clockwise (CW) adjustment of the trimpot increases the output.

Counter-clockwise (CCW) adjustment of the trimpot decreases the output.

Adjustments affect output current, voltage or percentage of duty cycle to the coil. The minimum and maximum output is preset at the factory. However, for optimum performance, they must be adjusted while the equipment is operating.

Although the following adjustments affect the current/voltage or percentage of duty cycle, the best way to adjust the function is to observe the response or speed of the function. The following adjustments affect function response, or speed. There may be some interaction between adjustments, making it necessary to repeat the adjustment in order to achieve the desired response.

Threshold Adjustment

Adjusts the initial current flow or duty cycle, affecting the function response, or speed, when the handle is first moved from the off position. Deflect the handle slowly to the position where the controller first turns on. Adjust the threshold trimpot screw to the point where the controlled function just starts to move, then turn the trimpot screw one full turn in the counterclockwise direction. This adjustment should be done first.

Maxout Adjustment

Adjusts the full stroke current or duty cycle affecting the maximum function response, or speed when the handle is deflected to its full travel. Fully deflect the handle and adjust the maxout trimpot for maximum desired function response or speed. To obtain proportional resolution, it is important that the function starts to slow down as soon as the handle is moved back from the fully deflected position.

The ideal adjustment occurs when the function just begins to move when the handle is deflected and the output increases until it reaches its maximum desired response, or speed, at the end of handle travel.

Options

Depending on the features ordered, your controller may or may not have the optional features listed below.

Integrated Ramp System (IRS)

Provides smooth function response when reacting to an abrupt change in handle deflection. “CW” rotation of the trimpot increases ramp time and slows the response time. “CCW” decreases ramp time and increases the response time. To increase the time, turn the adjusting screw “CW” a few turns, then move the controller handle abruptly. Continue to adjust until a smooth response is observed. Most controllers have on/off contacts which remove power from the PC board when the handle is returned to neutral, the output will not ramp down, and the function will stop.

Ramp Thru Off

The PC Board should be adjusted as outlined in the IRS adjustment procedure. If the handle is abruptly returned to neutral (OFF), the output will ramp down to off. Ramp time is factory set to 2 seconds, unless otherwise specified.

Dual Range

When supply voltage is applied to the (R) terminal, the board is in “Hi Range”. When voltage is not applied to the (R) terminal, the board is in “Lo Range”.

High Range Adjustment

With supply voltage applied to the (R) terminal, fully deflect the handle. Adjust the “High Range” trimpot for desired “High Range” response or speed. Refer to the “Maxout” adjustment procedures. Whenever the dual range switch or contact is closed, the output should be adjusted for the maximum function response or speed.

Lo Range Adjustment

With no voltage on the (R) terminal, fully deflect the handle. Adjust the “Lo Range” trimpot for the desired “Lo Range” response or speed. Again refer to “Maxout” procedures. Whenever the dual range switch or contact is open, you are in “Lo Range”.

When changing from “Hi Range” to “Lo Range”, a change in function speed should be observed.

Dual Max

Allows for separate “Maxout” adjustments in each direction of the handle movement. “A Maxout” adjusts the maximum output when the handle is moved in the “A” direction, and “B Maxout” adjusts the maximum output in the “B” direction. Refer to Maxout Adjustment for adjustment procedures.