SCP-3
Electronic Controller

OXIGEN *Ready 2.4GHz*
SLOT.IT DIGITAL
wireless software updates

Battery NOT included
Compatible with ALL SCP Cartridges
Compatible with Scalextric AIR/PRO
(requires wireless software updates)

Slot.it

Reprogramming Procedures for SCP-3 and SCP-2 Controllers

The manual is applicable to the SCP-1 1.1 (not 1.0) as well

The SCP-3 and SCP-2 eeprom

The SCP controllers determine the trigger position by reading the magnetic field generated by a magnet situated within the trigger. This process is facilitated through a Hall sensor, whose readings are directed to the microcontroller (CPU). Unlike traditional controllers, the SCP series lacks end-of-run switches or mechanical contacts, which eliminates friction between the trigger and the cursor, preventing wear and tear, dust accumulation, and changes in characteristics over time.

Built with advanced software, the SCP controllers can identify end-of-run positions and self-calibrate during normal operation. Each controller comes pre-calibrated from the factory, ensuring optimal performance upon activation.

Beginning with Version 1.1 of the controller (released in November 2010), a significant feature was introduced: the ability to reprogram the factory-set base relationship. This relationship correlates the physical position of the magnet (trigger position, measured in degrees) with a logical point on the mapping. Essentially, beneath the various operating modes of the controller lies a base mapping that informs the controller of the corresponding trigger position for a specific magnetic field reading. This 'base' relationship enables the software to construct the curves of the SCP. Even a minor alteration to this 'base' map, which typically remains concealed from the user, can profoundly impact the behavior of the controller. This base mapping is initially established during production, but necessitates reprogramming each time the trigger magnet is replaced.

This reprogramming feature enables users to modify the *base* setting, effectively simulating the utilization of a distinct magnet, and adjusting curves and responsiveness to their preference
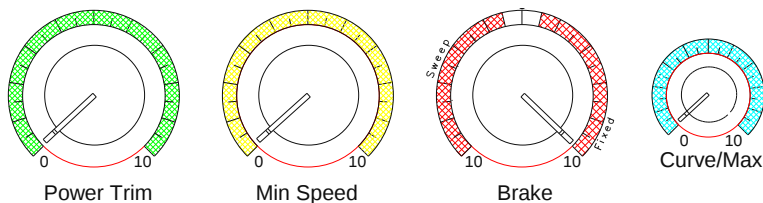
Setting up the SCP for programming mode

1. Ensure that the SCP controller is powered off
2. Locate the LIN/CRV switch and set it to 'CRV' (Curve mode).
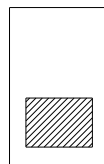
CRV

3. Adjust the knob settings as per the following image:

| Power Trim | Min Speed | Brake | Curve/Max |

Note: The primary knob to pay attention to is the small, blue one labeled as Curve/Max. This knob adjusts the width of the 'dead bands', determining the range (in bits) that defines the 'zero' and 'max' areas. These areas trigger the red and green LEDs to indicate the Min or Max positions have been reached. By default, this width is set to 3, which is what you'll get if you set the knob to zero as suggested. If you wish to expand these areas, you can turn the blue knob to settings like 4, 5, etc., although it's not generally recommended. Another viable option is to reduce the width to '2', but be cautious as it may be too narrow. *If these adjustments seem perplexing, and unless you have a clear understanding and certainty in what you're doing, it's advisable to set the blue knob to zero (default).*

1. **Preparation:**
   - Ensure the controller is unplugged.
   - Ensure the track has power.

2. **Button Press Sequence:**
   - Press and hold the three buttons (arrow up, arrow down, round button) on the controller simultaneously.
   - While keeping these buttons pressed, pull the trigger to its maximum position.

3. **Entering Programming Mode:**
   - While continuing to hold the buttons and keeping the trigger pulled, plug the controller back into its socket.
   - Once the controller is plugged in, verify the power to the track is on.

4. **LED Confirmation:**
   - If the SCP controller is successfully in programming mode, all the LEDs on the controller should now be illuminated: green LED on the left and bi-color (red and green, appearing as orange) LED on the right.

   - If the LEDs do not light up as described, unplug the controller, release the buttons and trigger, and repeat steps 2 to 4 until the LEDs display correctly indicating that the controller is in 'programming' mode.

5. **Note:**
   - The reference points can only be recorded when the controller is in 'programming' mode, indicated by all LEDs being ON as described.

This is the first of four points that need to be entered to complete the reprogramming process.
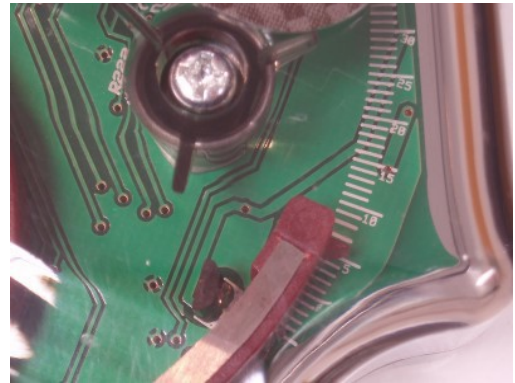
1. **Preparation:**
   - Ensure the SCP controller is in 'programming' mode following the previous procedure.

2. **Setting the Zero Point:**
   - The 'zero' (min) point is identified when the trigger is in the fully released position, typically representing the braking state.
   - Completely release the trigger to position it at the 'zero' (min) point.
   - Press and release the round button.

3. **LED Confirmation:**
   - Upon executing the above step, the left green LED should remain illuminated, the green light on the bi-color LED should turn off, and the red light on the bi-color LED should stay on. This LED state—left LED green, right LED red—confirms the successful recording of the 'zero' point.

4. **Note:**
   - It's imperative to keep the trigger fully released when recording the 'zero' point. Any deviation from the 0° position can result in inaccurate mapping.
   - However, you have the flexibility to adjust the width of the 'zero' area by using the small blue knob labeled Curve/Max. This adjustment affects both the Min and Max areas—the zones where the controller interprets the need to brake or deliver maximum power.
   - The blue knob setting impacts the width of these areas:
     - A setting lower than '2' may cause the controller to malfunction.
     - A setting of '2' could work well, though '3' is the standard setting (default when blue knob is set to zero).
     - Settings greater than '3' can be experimented with based on driving style, but it's advised not to exceed a setting of '4'.
   - If these adjustments seem complex, or you are unsure of the process, it's advisable to set the blue knob to zero (default) to avoid potential controller malfunctions.
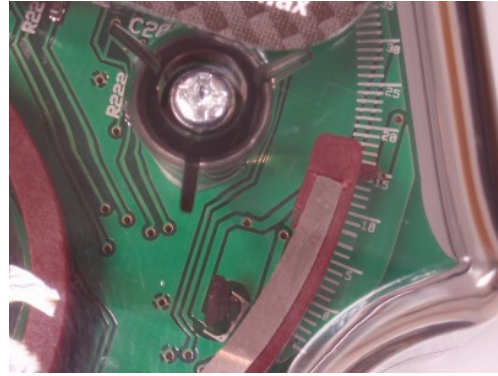
1. **Preparation:**
   - Ensure the SCP controller remains in 'programming' mode from the prior procedure.

2. **Setting the 15° Point:**
   - Press the trigger until the small plastic arrow indicating the angular position reaches the mark '15' on the white scale.
   - While maintaining the trigger in this position, press and release the round button.

3. **LED Confirmation:**
   - Following the above step, the left green LED should remain illuminated, the green light on the bi-color LED should turn on, and the red light on the bi-color LED should turn off. This LED state confirms the successful recording of the 15° point.

4. **Note:**
   - There is an option to vary the 15° point mapping by positioning the small plastic arrow at a value other than 15° during this step.
     - A higher value (e.g., 16°, 17°) will result in a softer response in the initial part of the trigger's range.
     - Conversely, a lower value (e.g., 14°, 13°—not recommended to go lower than 13°) will yield a sharper response.
   - Adjusting this point allows for some customization in the trigger response, catering to personal driving style and preferences.

By following the above procedure, you can successfully record the 15° point on your SCP controller and make adjustments to suit your driving preferences.

This is the second of four points that need to be entered to complete the reprogramming process.
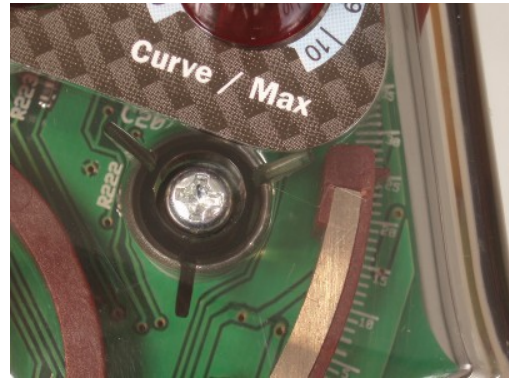
1. **Preparation:**
   - Ensure the SCP controller remains in 'programming' mode from the prior procedures.

2. **Setting the 25° Point:**
   - Press the trigger until the small plastic arrow, indicating the angular position, reaches the mark '25' on the white scale.
   - While maintaining the trigger in this position, press and release the round button.

3. **LED Confirmation:**
   - Following the above step, the left green LED should turn off, while the green light on the bi-color LED should remain on. This LED state confirms the successful recording of the 25° point.

4. **Note:**
   - There is an option to vary the 25° point mapping by positioning the small plastic arrow at a value other than 25° during this step.
     - A higher value (e.g., 26°, 27°) will result in a softer response in the middle part of the trigger's range.
     - Conversely, a lower value (e.g., 24°, 23°) will yield a sharper response.
   - Adjusting this point allows for further customization in the trigger response, catering to personal driving style and preferences.

This is the third of four points that need to be entered to complete the reprogramming process.

1. **Preparation:**
   - Ensure the SCP controller remains in 'programming' mode from the prior procedures.

2. **Setting the 'Max' Point:**
   - Press the trigger fully to reach the 'full throttle' position.
   - While maintaining the trigger in this position, press and release the round button.

3.

4. **LED Confirmation:**
   - Following the step above, the right red LED will illuminate for 1 second.
   - Subsequently, the green LEDs will start blinking, indicating that the programming is finished.

... LEDs start blinking green

5. **Completion:**
   - With the blinking green LEDs, programming is now complete. The controller can be switched off at this point.

Additional Notes:

This reprogramming procedure can be repeated to readjust the base mapping, and **must** be performed if the trigger magnet is replaced.

Once familiar with this reprogramming technique, adjustments to the SCP controller can be made as necessary to better suit personal preferences or to adapt to new hardware configurations.

For the bleeding edge users looking to further customize the trigger's run, modifications such as inserting spacers or filing away plastic to create a shorter run trigger can be done. However, reprogramming the controller is essential once these modifications are made.

Before attempting any advanced modifications that might void your trigger's warranty, ensure a thorough understanding of this document and a level of proficiency with the controllers' programming is achieved.

<p align="center">In any case....</p>

press the large and friendly orange button and contact

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