

# OS3 HO ALL Pro ELITE Instructions

## Safety Precautions

### Operating Voltage

The controller can operate safely up to 24V, probably higher but it is designed to be run from 12 - 20VDC. Outside this voltage range the sensitivity range may no longer be compatible with the car.

### Switch Operation

Switches are always rated for higher current when switching AC. DC Current can cause arcing inside the switch. It is always the best practice to change the position of a switch when not under power. This does not mean you have to unplug the controller to change a switch. When switching Brakes or Coast On or Off try to have the trigger pulled off the resting post. When switching the Sensitivity range try to have the trigger in the fully released position. When switching the Kill Switch try to have the trigger off the Full Power post. Your switch is not going to instantly fail if you don't follow these guidelines but repeated operation of switches under high power can reduce their life. These switches have been switched many times under high current during prototype testing and have shown no sign of issue. But it is always better to play it safe when possible.

### Return Switch Snap Back

Allowing the trigger to consistently snap back against the Return Switch may cause damage to it. The switches are designed for many, many operations of switching but not at extreme velocity. Letting the trigger slam back could also possibly move the Return Switch depending on where it is positioned.

### Over-Pulling the Trigger

Full power is applied when the brass on the trigger touches the Brass Full Power post with the Full Power Kill switch OFF. If both brass pieces are clean, minimal pressure is required to achieve absolute full power. Over squeezing the trigger places excess stress on the Blue Wiperless Pot bushing and can shorten its life. It can also work the Blue Pot loose and possibly change its position. DO NOT Over-Pull the Trigger.

### Wire Life

When storing your controller do NOT wrap the controller wire up and around the handle. It is recommended to leave the wires loose or wrapped in a rubber band like when new in the package. Repeated sharp bends of the wire right at the bottom of the handle will shorten the life of the wires. They will start breaking under the insulation causing them to require replacement. Also be careful if you reassemble your controller. Do NOT pinch the trigger wire or the three main controller wires in the handle. One bad pinch can cause a pressure point where a failure can start to occur.

## **Laying the Controller Down**

When setting the controller down it is not recommended to lay it on the track where the rails are. The metal potentiometers are not electrically connected to the controller but can short out a track. It is also not recommended to lay the controller down on the Blue Wiperless Pot. Not only could the insulation protecting the three connector pins wear through and allow the Pot to receive power from the track that could easily damage the Pot, it could also put stress on the Pot itself if laid down too hard. This leaves the best options for the controller, when not in use, is to either hang on a holder at the track or lay it down on the metal potentiometer side away from the track and rails.

## **COAST Safety**

The COAST function supplies a small amount of power to the car when the trigger is in the rest position. Leaving a car to run around the track at slow speed or worse, sitting still with power still applied will eventually lead to a melted car and a failed controller. Since the Coast current is very low it is not possible to provide conventional fuse protection. PTC resettable fuses are therefore used. PTC fuses do not blow open. They allow half the trip current to still flow when tripped. This will eventually keep building up heat in the controller and the car. The controller can handle the heat, but the car may fail. If the PTC trips, it will need to cool down to permit full Coast function again. Using Coast before the PTC cools may keep the PTC in the tripped condition. DO NOT use Coast to run a CHASE car on another lane. OS3 is not responsible for Coast damage to cars or controllers. Be very CAREFUL using COAST.

# Maintenance

## Checking the Fuse

If the fuse blows the car will not move at all under any trigger or switch position. To verify the fuse hold it up to a light and look through the plastic for the piece of metal shaped like a sine wave. If the metal is missing replace the fuse with another 5A Mini ATC (Brown) fuse. ALL OS3 Pro Series controllers use 5-amp fuses. Selecting a lower amp fuse may cause the fuse to prematurely blow. Selecting a higher amp fuse may not protect the controller when running on a power supply of 10 amps or less.



## Adjusting the Blue Wiperless Pot

If the controller seems to be operating with too much Choke when the Choke knob is at minimum and the Kill switch is off, or if the trigger does not reach the Full Power post, the Blue Wiperless Pot may have moved its position. Adjustment should only be made if ABSOLUTELY sure the position has moved as it can be difficult to move back into the correct position and be properly tightened. Special thin wrenches are required. Sometimes the Return Switch requires removal to obtain access to the securing nuts. Without power applied, the Blue Pot should be positioned so that the resistance between the two solder connections on the main board marked Pot have less than 40 ohms across them when the trigger is fully pulled. The lower the resistance the better but each Pot is different. Some may go to 35 while others may go down to 20. The final value is insignificant to operation if the value is below 40 ohms. Contact [onestopslotshop@gmail.com](mailto:onestopslotshop@gmail.com) for assistance in adjusting and ordering the wrenches.

## Adjusting the Return Switch

With Coast OFF, the car continues to have power when the trigger is fully released or if the trigger must be pulled too far to get the power to come on, the Return Switch may be out of position. The position may be adjusted by loosening the two securing nuts on the back and rotating the top of the switch for the correct position. Then secure the two nuts.

# Controller Setup

## Basic Hookup

ALL OS3 Pro Series electronic controllers are designed to run on Positive tracks. Positive tracks have the White wire connected to the positive post of the Power Source and the Red wire connected to the negative post. The Black wire goes to the track to supply a variable positive voltage to one rail of the track with the other rail being connected to the negative post. Only the Black and White wires are required to power a car. In two wire operation all functions except BRAKES will work. Reversing the two wires will cause the cars to go full speed all the time. If your controller is not operating as expected after hookup, ensure all the wires have their colored boots matched to the same color posts of the track. If they were hooked up wrong check the fuse (See Maintenance Section) and test the operation again. If all the wires are hooked up correctly and the controller is still not operating correctly (Usually cars going full speed without control) your track is probably wired negatively.



## Setting the Sensitivity

Sensitivity determines how fast the car goes when first pulling the trigger. Rotating the SENS knob CCW slows the car's starting speed. Rotating CW increases the starting speed. Use the Bottom slide switch to find the right starting range. The left position (T- Tjets) is the lowest range. The right position (M-Magnet) is the highest range. The middle position is the middle range.

## Setting the Brakes

Brakes use the car's momentum to send power to a Brake Potentiometer. The resistance in the potentiometer opposes the cars momentum and slows it down. The lower the resistance of the potentiometer the greater the braking effect. Brakes are active when enabled and the trigger is fully released and touching the Resting Post. To enable Brakes, ensure the Red wire is connected to the track and position the Top slide switch to the right (B) position. Rotate the Brake/Coast knob CW towards MAX B (0 Ohms) for maximum braking. Rotate CCW for minimum braking (100 ohms). Leave the Red wire off or position the Top slide switch to middle position to disable Brakes.



## Setting the Choke

Choke determines the cars speed at the end of the trigger pull just before hitting the Full Power Post. Rotating the Choke knob CCW reduces the speed giving you less difference between the Starting and ending trigger pull but more precise control of the car. It also causes a bigger jump in speed when the trigger does hit the Full Power Post. Rotating the Choke knob CW increases the speed at the end of the trigger pull and provides the smallest jump in speed when hitting the Full Power Post. This is the most linear position, and most like resistor controllers.

## Setting Coast

Coast allow the car to receive power when the trigger is fully released and hitting the resting post. To enable Coast, position the Top slide switch to the left (C) position. Rotating the Brake/Coast knob CCW towards Max C provides the most Coast power to the car. Rotating the Brake/Coast knob CW provides the least Coast Power to the car. In the fully CW position the car is receiving very little and may not move at all. Just because a car does not move on its own from a resting does not mean it is unaffected by Coast power. Just a little power added to a car can extend its roll upon releasing the trigger or ease the jump to power coming out of the turn.

## Setting the Kill Switch

The Kill switch determines the final voltage to the track when the trigger is fully pulled and hitting the Full Power post. When the switch is closed the Full Power post will provide full track voltage to the car. When the Kill Switch is open the Choked voltage will be applied to the car. This Choked voltage will be the setting you made with the Choke knob. If the Choke knob is set to minimum the output voltage will be about 1V below the Full track power. This is what the transistor takes away. It will vary slightly according to the load the car requires. As the Choke knob is adjusted more towards Max C this voltage will decrease providing a lower final voltage to the track. This switch was selected to be compact and able to be tucked down more in the controller to be difficult to accidentally bump. Most will set it to closed and leave it there, but the feature is available for short twisty tracks where full voltage on the straight would be too much to control. There is no indicator light for this switch. On a controller that must be able to function on two wires only, the only way to light an indicator is to bring power in from the track through the car. This current would either alter the way the Sensitivity works or acts as COAST current and will reduce the natural braking of your car.