



The Smooth Stage PLUS can be operated in two modes of operation:

- 1) Smooth Stage Mode - Typical Staging or Bump Solution Only.
- 2) Smooth Stage PLUS Mode - Transbrake driver along with Stage/Bump Solution

These two modes of operation can be achieved by using the supplied wire harness. Each harness is made for the particular mode of operation and the Smooth Stage PLUS unit will intelligently detect which harness has been connected for operation when it is first powered. The Smooth Stage PLUS Harness will have a Light Blue wire available, which will allow installers to distinguish between the two options.

Smooth Stage Mode Harness	Smooth Stage PLUS Mode Harness
<p>Tan TXL 18AWG - 48 inches</p> <p>Red TXL 18AWG - 48 inches</p> <p>Black TXL 18AWG - 48 inches</p> <p>Green TXL 16AWG - 48 inches</p> <p>Orange TXL 16AWG - 48 inches</p>	<p>Tan TXL 18AWG - 48 inches</p> <p>Red TXL 18AWG - 48 inches</p> <p>Black TXL 18AWG - 48 inches</p> <p>Green TXL 16AWG - 48 inches</p> <p>Orange TXL 16AWG - 48 inches</p> <p>Lt Blue TXL 18AWG - 48 inches</p>

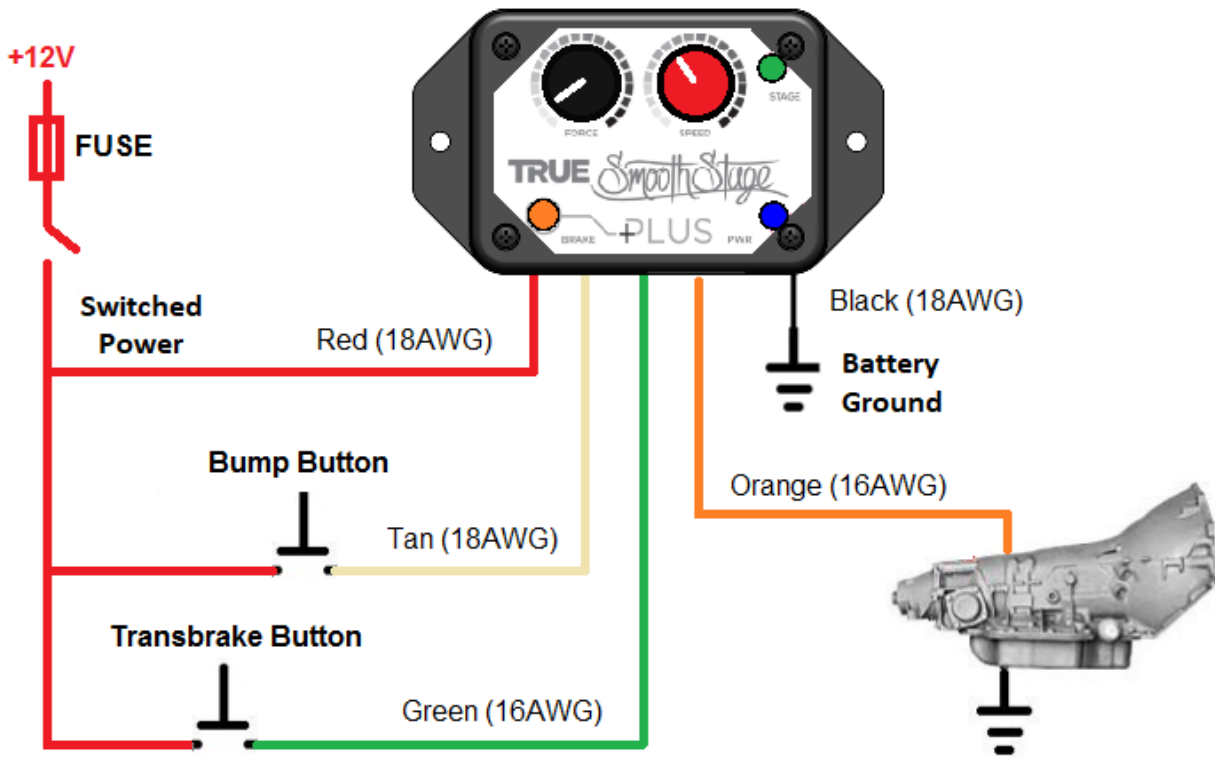
The typical Smooth Stage mode wiring is for installations where another source is enabling the Transbrake On/Off. The Smooth Stage PLUS mode wiring is for installations where the Transbrake enable button must be isolated from the Transbrake Solenoid to prevent Back EMF damage. Most 2-Step's require an input signal that is isolated from the Solenoid. The Smooth Stage PLUS provides this isolation by controlling the Transbrake Solenoid power source from an independent signal path that is isolated from the Light Blue Transbrake Enable Wire.

When the PLUS harness is connected and is wired correctly, the unit will blink the Green Stage LED 3 times quickly at startup. If the other harness is connected at startup, the Green LED will not blink or illuminate unless the Bump Button is pressed.

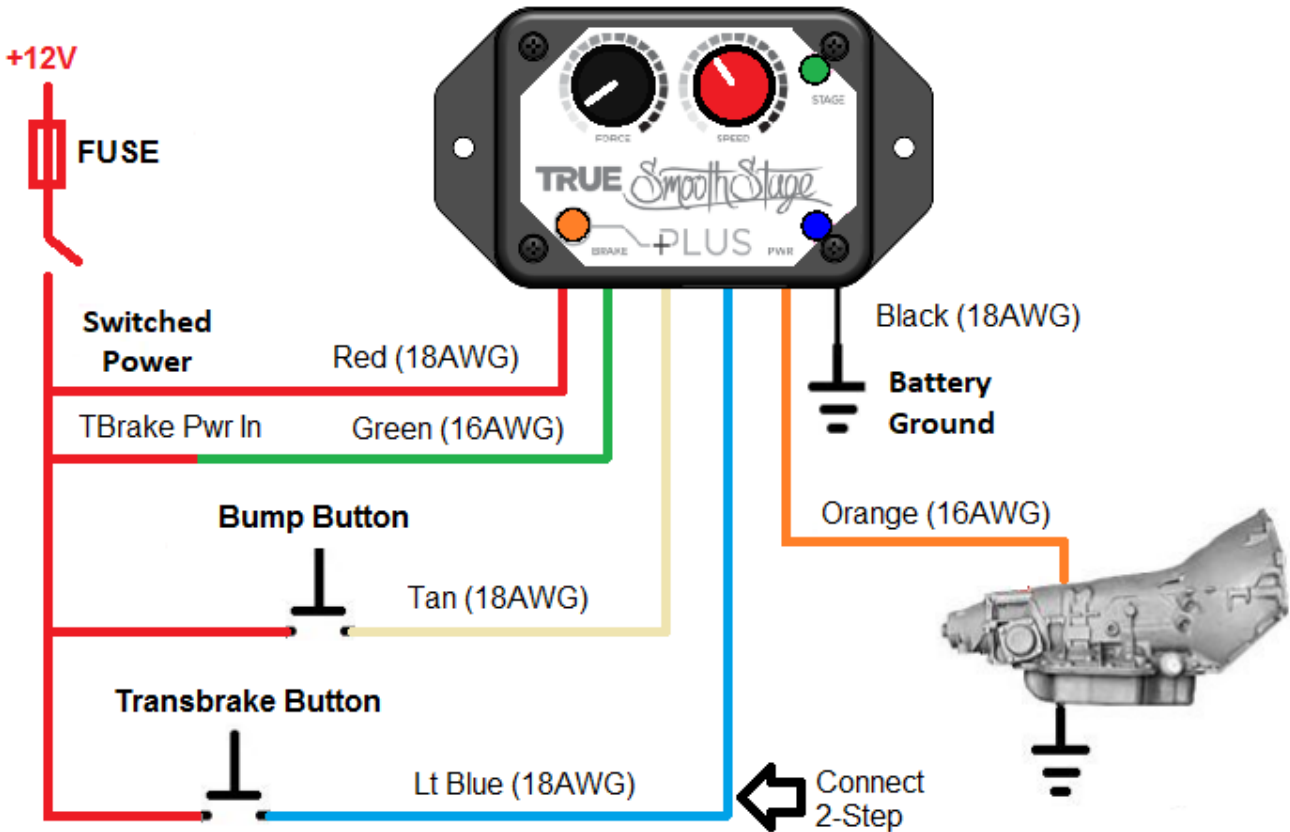
NOTE: The Smooth Stage PLUS unit will consume less than 0.5 Amps. However, the fuse size needed for the Transbrake Solenoid is related to the type of Solenoid that is installed in the Transmission. It is recommended that the battery be disconnected during installation of the system.

Below are wiring diagrams for each Harness Configuration:

### Smooth Stage Wiring Diagram



### Smooth Stage PLUS Wiring Diagram






When the Smooth Stage PLUS harness is connected, the Light Blue wire will be triggered by a 12V source through a normally open button to engage the Transbrake. When the Transbrake button is pressed, the Smooth Stage PLUS will detect the signal and will pass the 12V from the Green wire to the Orange wire that is connected to the Transbrake Solenoid. This will enable the Transbrake while maintaining isolation from other triggered devices that can be connected to the Light Blue Wire.

While in PLUS mode, the Transbrake button must be depressed and engaged prior to the Bump/Stage Button being depressed. The Orange light will be ON when the Transbrake is engaged and the Green light will be ON when the Bump button is being pressed. The Orange light will pulse ON/OFF to indicate the Transbrake solenoid pulsing sequence. Holding or tapping the Stage button while also holding the Transbrake button will enable the vehicle to creep forward slowly to move from the Pre-stage to the Staging beams. Hold the button down to creep forward.

When ready to launch, release the Transbrake button.

The Blue light is ON when power is applied to the box and the Green light is ON when the Smooth Stage is being activated. Finding the right combination of the Force and the Speed setting is the key to creating the staging speed that you prefer. Below you will find a description of the settings to help guide you to find the best setting for your vehicle.

Step 1: Start with the Force to the 9 o'clock position and Speed near the 2 o'clock position.

Step 1	Step 2	Step 3	Step 4
<p>Set Speed to 2 o'clock and Force to 9 o'clock</p>  <p>Press and hold the Bump Button</p>	<p>If NO movement, Increase the Speed 3 clicks</p>  <p>Press and hold the Bump Button</p>	<p>If NO movement, Set Speed to 2 o'clock, increase Force 1 click</p>  <p>Press and hold the Bump Button</p>	<p>If NO movement after Step 3, repeat Step 2 and Step 3 until movement is present.</p> <p>Use the Speed knob to fine tune the vehicle speed while staging</p>

Speed = Vehicle creep speed    Force = Transbrake release power

### ***Adaptive Bump for advanced smoothing...***

The Smooth Stage PLUS is equipped with Adaptive Bump and allows extra Force settings for increased Smooth Staging.

The Smooth Stage and Smooth Stage PLUS has 12 Force settings, while Adaptive Bump provides access to pulse settings that are in-between and beyond each Force setting. In normal operation, the Force settings are 1, 2, 3, 4.... And with the Adaptive feature, when set to a Force position of 1, a time delay offset of 1+a or 1+a+a can be achieved. If set to a Force position of 2, a time delay offset of 2+a or 2+a+a can be achieved. You can think of the value +a as about an extra 1 msec of time for each bump pulse.

There are two methods for activating this adaptive feature:

1. With the Smooth Stage PLUS Powered ON, press and hold the Bump Button. After approximately 4 seconds, the Stage LED will blink momentarily.
  - a. This single blink will increment the Force setting by a small amount (Force + a).
  - b. If the button is held down another 4 seconds longer, a second blink will increment the Force setting another small amount (Force + a + a).
  - c. The number of blinks will continue to tack on additional pulse time for the Force setting.
  - d. This additional time will remain loaded into volatile memory within the unit. If power is cycled, this adaptive time setting will be erased and the Bump Button would need to be held again to achieve the blinks.
2. In some instances while moving from the Pre-Stage to Stage beams, the bump settings may need to change dynamically. The required bump settings when the transmission is hot versus cold may be different. If this is the case, holding the bump button down will gradually increase the Force setting. In the event that the car will not bump forward, simply holding the bump button down until the car moves forward can be achievable with this Adaptive Bump feature. The bump increase will be similar to the previously explained increment amount (Force + a).

#### Troubleshooting Guide:

When multiple attempts to adjust the Force and Speed settings fail to result in movement that is not too violent, ensure that the Transbrake Solenoid has a clean ground connection to the chassis/battery ground terminal connection. It is also recommended that the Smooth Stage unit and the Transbrake Solenoid not be connected to the same Ground point on the chassis.

Ensure that the Transbrake Solenoid is designed to operate with a Staging solution that will momentarily interrupt current by pulsing the Transbrake Solenoid. There are multiple factors ranging from Transmission Line Pressure and Solenoid types that contribute to the overall operation of the system. Discuss your build and goals with your Transmission specialist.

The Smooth Stage PLUS is developed and produced by:



Racing Electronics Imagined Designed and Manufactured in the Midwest

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