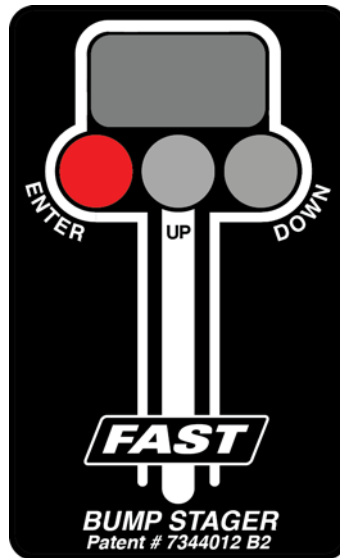




## INSTRUCTIONS

### FAST™ BUMP STAGER™ (#30322)

Thank you for choosing FAST™ products; we are proud to be your manufacturer of choice. Please read this instruction sheet carefully before beginning installation, and also take a moment to review the included limited warranty information. Contact us toll free at 1.877.334.8355 or at [www.fuelairspark.com](http://www.fuelairspark.com) under Tech Help with any questions.



### System Overview

- CNC machined anodized aluminum enclosure with rear cover
- Fully potted internal components
- LED display for ease of use/programming
- Internal solenoid control circuit with 20 amp maximum current capacity
- Relay and shift light outputs rated to 0.75 amps
- Works with external solid state drivers
- Operating voltage range from 9 to 18 volts
- Two pigtail harnesses included for ease of installation

## INSTALLATION AND CONNECTIONS OVERVIEW

All connections must be made with stranded copper wire. Make sure all terminals are clean and free of corrosion. Scrape off paint, dirt, and grease when making connections to ground. Installation will require common hand tools including proper wire stripping and crimping tools. Low cost crimping tools are available at many auto parts stores. Do not attempt to use pliers to crimp terminals.

### 2-position connector harness

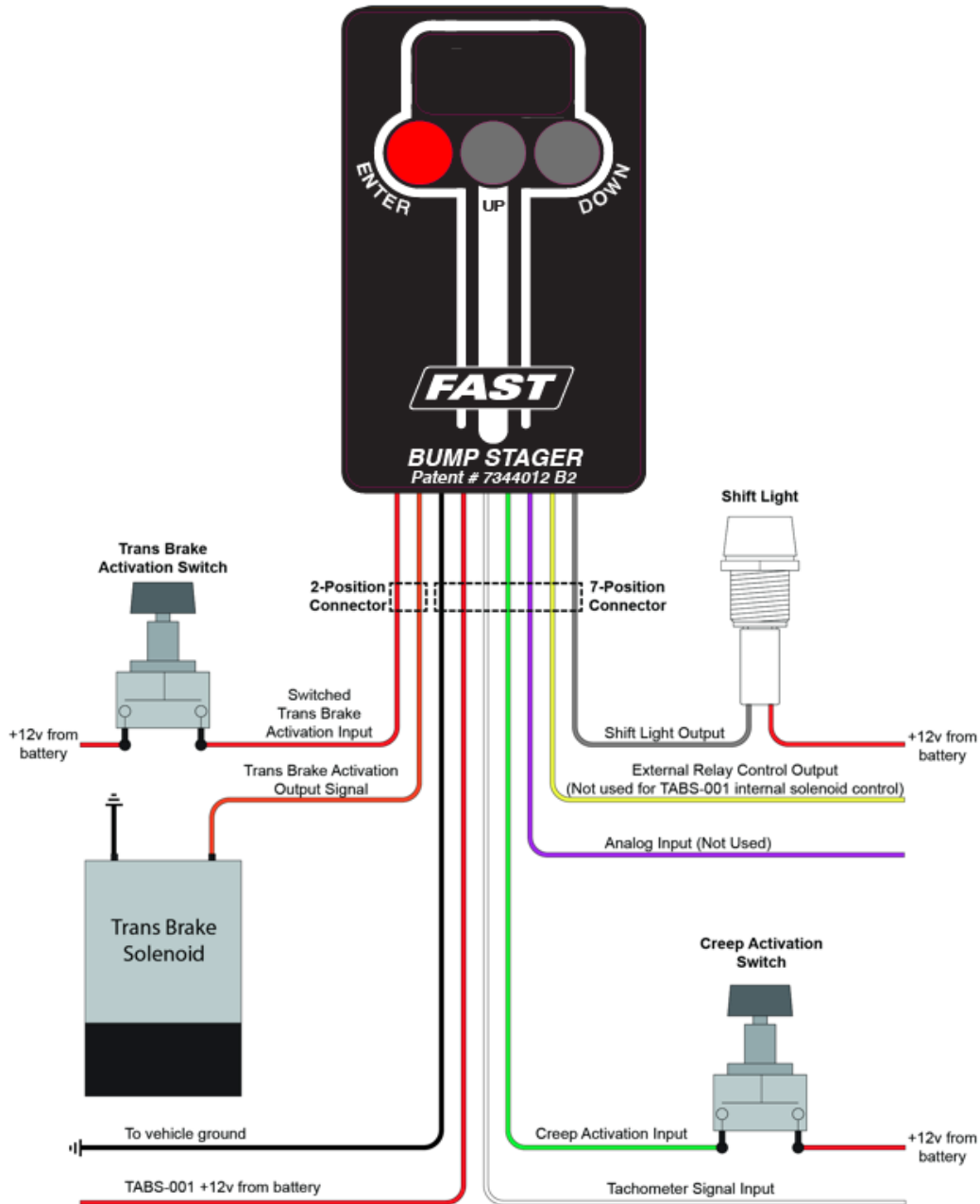
Wire Color	Wire Gauge	Purpose	Notes
Red	16 AWG	+12 VDC trans brake button input	This wire should be connected to the activation wire coming from the button that is used to directly activate the trans brake solenoid if using the internal solenoid driver.
Orange	16 AWG	+12 VDC trans brake solenoid activation	This wire should be connected to the solenoid if using the internal solenoid driver. In order to utilize the internal solenoid driver, the current must be 20 amps or less.

### 7-position connector harness

Wire Color	Wire Gauge	Purpose	Notes
Black	20 AWG	Ground	Connects to a vehicle ground.
Red	20 AWG	+12 VDC switch power	Supplies +12 VDC in key on position.
White	20 AWG	Tachometer Input	Connects to engine speed signal source.
Green	20 AWG	“Creep” control/activation input	Connects to the momentary creep activation/control button used for creep function.
Yellow	20 AWG	External relay control (Ground activation)	Connects to an external relay, which can be used to externally activate a trans brake solenoid. Max current for this output is 0.75 amps.
Gray	20 AWG	Shift light output (Ground activation)	Used to active a shift light when user defined shift RPM is reached.
Purple	20 AWG	Unused	Unused

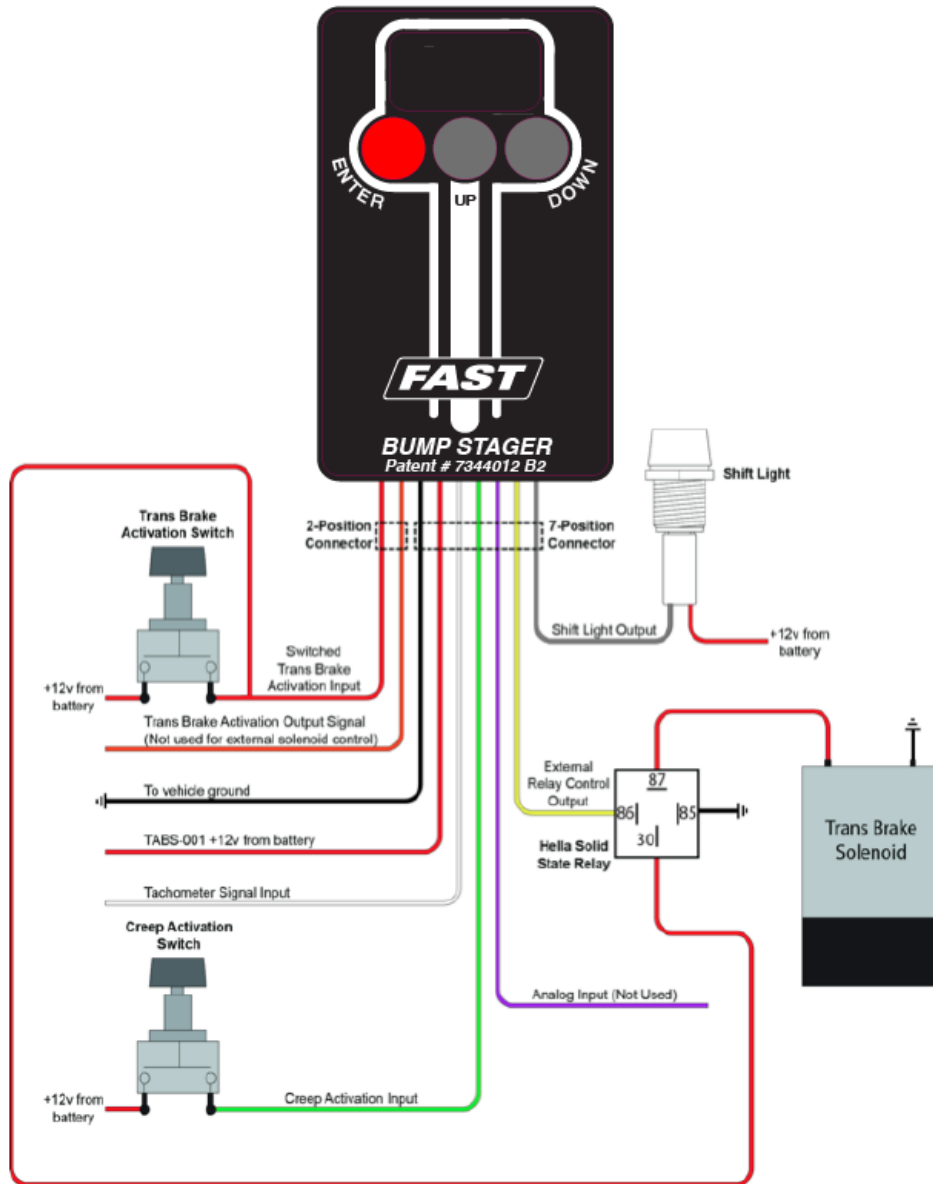
## Installation Utilizing Internal Solenoid Control

Internal control of the solenoid refers to using the built-in trans brake solenoid driver to control a trans brake solenoid. The built-in trans brake solenoid driver is rated to handle up to 20 amps, so a trans-brake solenoid that pulls a current of more than 20 amps will need to be controlled via external solenoid control. In order to use the internal solenoid driver, connect the 16 AWG red wire (located in the 2-position connector pigtail harness) to the momentary button that will be used to pulse the trans brake solenoid. Also connect the 16 AWG orange wire (also located in the 2-position connector pigtail harness) to the trans brake solenoid. A completed wiring diagram for this configuration is shown below.



### Installation Utilizing External Solenoid Control

External control of the solenoid refers to utilizing a relay to activate a trans brake solenoid. This method of control can be used for any trans brake solenoid, but it must be used for trans brake solenoids that pull a current of more than 20 amps. The use of a solid-state relay is required instead of a mechanically actuated relay due to the fact that a solid-state relay is capable of switching at a higher frequency. In order to externally control the trans brake solenoid, connect the 20 AWG green creep control/activation wire (located in the 7-position connector pigtail harness) to the momentary button that will be used to pulse the trans brake solenoid. Then, connect the 20 AWG yellow external relay control (located in the 7-position connector pigtail harness) to the external relay that you will use to control the trans brake solenoid. Finally, connect the external relay to the trans brake solenoid driver. A completed wiring diagram for this configuration is shown below.



## USER INTERFACE

Button(s)	Function(s)
ENTER	<ul style="list-style-type: none"> <li>• Hold down this button for approximately 3 seconds to enter programming mode.</li> <li>• Press this button to select the parameter to be changed in programming mode.</li> <li>• Press this button after making any changes to parameter settings to save the settings.</li> </ul>
UP	<ul style="list-style-type: none"> <li>• Moves to the next parameter in programming mode.</li> <li>• Increments the parameter setting up to the next value.</li> <li>• Press &amp; hold to increase the parameter by a larger increment.</li> <li>• Press &amp; hold for 3 seconds to change the user setup in ready mode.</li> </ul>
DOWN	<ul style="list-style-type: none"> <li>• Moves to the last parameter in programming mode.</li> <li>• Decrements the parameter setting down to the next value.</li> <li>• Press &amp; hold to decrease the parameter by a larger decrement.</li> <li>• Press &amp; hold for 3 seconds to change the user setup in ready mode.</li> </ul>
ENTER + DOWN (ESC)	<ul style="list-style-type: none"> <li>• Press simultaneously to exit back to ready mode.</li> </ul>
UP + DOWN	<ul style="list-style-type: none"> <li>• Press &amp; hold simultaneously to enter RPM viewing mode.</li> </ul>

### Ready Mode

When the Bump Stager is powered up, the device will default to Ready mode, which is the only mode that the unit can be activated from. When in Ready mode, the unit should display "r x", with the "x" value being between 1 and 5 (this number corresponds to which user setup is currently active). To change which user setup is active, press and hold either the "UP" or "DOWN" button for roughly 3 seconds. On the display, the letter "r" should remain while the number increments between 1 and 5.

### Programming Mode

To enter programming mode, the unit must first be in Ready mode. Once in ready mode, select the user setup that you want to program. Then, press and hold the "ENTER" button until "PPP" is displayed, which should take approximately 3 seconds. At this point, the display should now show "P 1", which is parameter #1 (P1). To select a different parameter, press the "UP" or "DOWN" button. To adjust a parameter setting, scroll to the correct parameter and then press "ENTER". There are 9 different parameters (P1-P9) that can be adjusted while in programming mode. The following subsections detail the function of each parameter, as well as their respective adjustment range.



#### P4: Ending Frequency

This setting controls the ending frequency. Press (or press and hold) the UP or DOWN button to change the setting. This setting can be higher or lower than the starting frequency (P3) so that the frequency can be ramped up or down. The time it takes for the ramp to take place, however, is determined by the ramp time parameter (P7). The frequency is measured in Hertz (Hz), which is equal to number of times per second that the solenoid is pulsed. If the starting frequency (P3) is equal to the ending frequency (P4), the solenoid will be pulsed with a fixed frequency. The range of this setting is 10-50 Hz in 1 Hz increments (10 Hz increments if the button is held down). **\*Baseline Setting: 13**

#### P5: Starting Duty Cycle Percentage

This setting sets the starting duty cycle percentage. Press (or press and hold) the UP or DOWN button to change the setting. The ramp rate between the starting and ending controlled by the ramp time parameter (P7). The range of this setting is 1%-99% in 1% increments (10% increments if the button is held down). **\*Baseline Setting: 89**

#### P6: Ending Duty Cycle Percentage

This setting sets the ending duty cycle percentage. Press (or press and hold) the UP or DOWN button to change the setting. The ramp rate between the starting and ending controlled by the ramp time parameter (P7). The range of this setting is 1%-99% in 1% increments (10% increments if the button is held down). **\*Baseline Setting: 89**

#### P7: Ramp Time

This setting dictates how long it will take for the duty cycle and frequency to go from their starting values to their ending values. If the ramp time setting (P7) is longer than the timer setting (P2), the ending duty cycle and frequency will be determined by where the respective values fall on the ramp when the timer expires. If the ramp time (P7) is shorter than the timer setting (P2), the duty cycle and frequency will reach their ending values and then remain there for the remainder of the timer setting. Press (or press and hold) the UP or DOWN button to change the setting. The range of this setting is 0.00-9.90 seconds in .01 second increments (.1 second increments if the button is held down).

~~-if set to 0.00 pulse will be disabled and the ON/OFF control will be based on the timer setting (P2) only.~~ **\*Baseline Setting: 5.00**

#### P8: Shift RPM

This setting dictates the vehicle's shift RPM. Because the Bump Stager is connected to the tachometer signal wire, it can activate a shift light when the shift RPM is reached through the shift light activation wire. On the display, 0-16000 RPM is represented as 0-160. ~~-05000~~ RPM in 100 RPM increments (1000 RPM increments if the button is held down). **\*Baseline Setting: 50**

## P9: Tachometer Input Frequency

This setting determines the number of tachometer pulses per revolution of the crankshaft. Refer to Table 2: RPM Pulse Counts for Various Applications in the Reference Tables section for a table of recommended RPM pulse counts for different applications. This setting has a range of 0-8 in 1 setting increments. **\*Baseline Setting: 3**

*\*Baseline settings provided for reference only based on our experience with TCI® trans brakes. Your application may require different settings.*

## RPM Viewing Mode

RPM viewing mode allows the user to verify that the tachometer input frequency setting for the current user setup has been correctly calibrated for the vehicle. If the tachometer input frequency setting is incorrect for the vehicle that it is connected to, the unit will miscalculate the engine speed. When in RPM Viewing mode, the engine speed (in hundreds) will be displayed. Cross-reference what RPM is displayed with the reading on your dash tachometer to determine whether the unit is correctly calibrated. If the RPM does appear to be correctly calibrated, simultaneously press the "ENTER" and "DOWN" buttons to exit out of RPM Viewing mode and enter back into Ready mode. If the RPM does not appear to be correctly calibrated, refer to Table 2: RPM Pulse Counts for Various Applications to determine what the tachometer input frequency should be for your particular application. Then, adjust the tachometer input frequency parameter (P9) to the correct setting for your application through programming mode.

## OPERATION MODES

### Timer Only Mode

In timer only mode, the ramp time setting (P7) is disabled, so the unit just has ON/OFF control of the trans brake via the timer setting (P2). To enable this mode, set the ramp time (P7) to "0" and the timer setting (P2) to a non-zero value.

### Button Control Mode

In button control mode, the timer control is disabled, so the unit just has ON/OFF control of the trans brake via the creep control/activation switch. In other words, the trans brake will be OFF for as long as the creep control/activation switch is depressed. To enable this mode, set both the timer setting (P2) and the ramp time (P7) to "0".

### Standard Control Mode

In standard control mode, the unit will pulse width modulate the trans brake while the creep control/activation switch is depressed and the timer has not elapsed. To enable this mode, set both the timer setting (P2) and the ramp time (P7) to non-zero values.

## Table 1: Common ECM/PCM Tachometer Signal Wiring Information

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www.fuelairspark.com

FAST™  
3400 Democrat Rd.  
Memphis, TN 38118  
Phone: 901.260.3278

FAST4-216  
Revised 2.9.15



Vehicle	Year(s)	ECM/PCM	ECM/PCM location**	Pin	Wire color	Circuit #
Camaro & Firebird	1996-1997	32U	Connector C1 (Red)	13	White	121
Camaro & Firebird	1998	Warren	Connector C2 (Blue)	35	White	121
Camaro & Firebird	1999-2002	Warren	Connector C2 (Red)	10	White	121
Camaro	2010-2013	E38	Connector C1 (Black)	48	N/A	N/A
C/K Truck*	2000-2006	Warren	Connector C2 (Red or Green)	10	White	121
C/K Truck*	2007-2012	E38	Connector C1 (Black)	48	N/A	N/A
Corvette	1995-1996	32U	Connector C1 (Red)	13	White	121
Corvette	1997-1998	Warren	Connector C2 (Blue)	35	White	121
Corvette	1999-2003	Warren	Connector C2 (Red)	10	White	121
Corvette	2004	Warren	Connector C2 (Green)	10	White	121
Corvette	2005	E40	Connector C1 (Blue)	48	White	121
Corvette	2006-2007	E38	Connector C1 (Black)	48	White	121
Corvette	2008-2013	E38	Connector C1 (Black)	48	White	121
Corvette ZR1	2009-2013	E67	Connector C1 (Blue)	25	White	121
CTS-V	2004-2005	Warren	Connector C2 (Green)	10	White	121
CTS-V	2006-2007	E67	Connector C1 (Blue)	25	White	121
CTS-V	2009-2013	E67	Connector C1 (Blue)	25	N/A	N/A
GTO	2004	Warren	Connector C2 (Green)	10	Brown	121
GTO	2005-2006	E40	Connector C1 (Blue)	48	Brown	121
SSR	2003-2004	Warren	Connector C2 (Blue)	10	White	121
SSR	2005-2006	E40	Connector C1 (Blue)	48	White	121
Trailblazer SS	2006	E40	Connector C1 (Blue)	48	White	121
Trailblazer SS	2007	E67	Connector C1 (Blue)	25	White	121
Trailblazer SS	2008-2009	E67	Connector C1 (Blue)	25	White	121

\* VIN C/K Trucks include:

For 2000-2013:

Chevrolet Avalanche, Suburban, Tahoe, and Silverado

GMC Yukon and Sierra

Cadillac Escalade

\*\* Connectors C1, C2, and C3 (or X1 and X2) may be labeled as J1, J2, and J3 on the ECM itself.

NOTE: The Bump Stager does not have an internal pull-up resistor, so vehicles that do not already have a pull-up resistor in the dashboard for the tachometer signal (such as the 2009-2013 CTS-V, 2010-2013 Camaro, and 2007-2013 C/K Truck) will need to install one when populating the engine speed signal wire from the ECM.

**Table 2: RPM Pulse Counts for Various Applications**

Setting on TABS-001	Pulse/rev	Degrees between pulse	Common Application(s)
0	0.5	720 degrees	Typical 1 cylinder engines & individual coil ignitions such as '99+ V8 Mustang, Suzuki Hayabusa, Kawasaki ZX-14
1	1	360 degrees	Typical 2 cylinder engines & wasted spark coil packs such Viper/SRT10 coil
2	1.5	240 degrees	Typical 3 cylinder engines
3	2	180 degrees	Typical 4 cylinder engines + LS1, LS2 etc.TACH signal
4	2.5	144 degrees	Typical 5 cylinder engines
5	3	120 degrees	Typical 6 cylinder engines
6	4	90 degrees	Typical 8 cylinder engines
7	5	72 degrees	Typical 10 cylinder engines
8	6	60 degrees	Typical 12 cylinder engines

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**FAST™**  
**LIMITED LIFETIME WARRANTY AND LIMITED WARRANTY**

FAST™ warrants that its EZ-EFI™ products are free from defects in material and workmanship for the lifetime of the product. This **Limited Lifetime Warranty** shall cover **only** the original purchaser. All other FAST™ products are covered by a **Limited Warranty** which covers defects in material and workmanship for a period of **one year** from the date of purchase.

**FAST's obligation under this warranty is limited to the repair or replacement of its product.** To make a warranty claim, the part must be returned directly to FAST™ at the address listed below with a valid Return Merchant Authorization Number (RMA), freight prepaid. Items covered under warranty will be returned to you freight collect. To obtain an RMA, call 877-334-8355 to report the issue you are experiencing. At that time, FAST™ will attempt to trouble shoot your issue.

**It is the responsibility of the installer to ensure that all of the components are correct before installation. We assume no liability for any errors made in tolerances, component selection or installation.**

**There is absolutely no warranty on the following:**

- A. Any parts used in racing applications or subject to excessive wear;**
- B. Any product used in marine applications, unless that product is listed by FAST™ as a specific marine product;**
- C. Any product that has been physically altered improperly installed or maintained;**
- D. Any product used in improper applications, abused, or not used in conjunction with the proper parts.**

**There are no implied warranties of merchantability or fitness for a particular purpose.** There are no warranties which extend beyond the description of the face hereof. **FAST™ will not be responsible for incidental and consequential damages, property damage or personal injury damages.** Where required by law, implied warranties or merchantability and fitness are limited to terms outline above.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.