

## **Dynatek Shift Counter DSC-2 USER INSTRUCTIONS**

### GENERAL DESCRIPTION

The Dynatek Shift Counter is a stand-alone device that is useful for implementing shift control functions on drag racing vehicles. The Shift Counter has two major functions:

- Built-in programmable electronic shift kill to momentarily interrupt ignition System operation during shifts (replaces air kill switches). Includes 1-2 auto, 1-2-3 auto, and 1-2-3-4 auto modes.
- Gear indicator outputs allow other systems to be triggered according to which gear the transmission is operating.

The Shift Counter must be used with an electric switching valve on the air shifter and the associated electric shift button on the handlebar (electric over air setup). The Shift Counter gets its shift signal from the electric shift button.

The programmable shift kill function of the Shift Counter allows the user to select a shift kill time from 20 to 90 milliseconds to meet the needs of the vehicle. The Shift Counter produces the selected shift time with extreme accuracy. When in 1-2 auto mode, the Shift Counter simply deletes the kill on the first shift. Similarly, in 1-2-3 auto mode, the Shift Counter deletes the kill on the first two shifts and in 1-2-3-4 auto mode, the Shift Counter deletes the kill on the first three shifts. This is an ideal and simple way to control a semi-auto trans.

The Shift Counter's gear selector outputs consist of six screw terminals at the end of the enclosure. When in 1<sup>st</sup> gear, the 1<sup>st</sup> screw terminal is a source of +12 Volts that can be used to activate other systems. When in second gear, the second screw terminal is activated, etc. There are two modes for the output terminals – Single and Add. In Single Mode only the screw terminal for the gear that you are currently in is active. In Add Mode, once a terminal is activated it stays active even when shifting into the next gear. Single or Add Modes are chosen depending how other systems are activated. As an example, on a multi-stage nitrous system or multi-stage waste gate system, Add Mode would be used to keep previously activated stages active when shifting to the next gear. If activating stages of retard, Single Mode would be used to only one output at a time is active.

### INSTALLATION

The Shift Counter is simple to install. An electric over air shift system must be used with the Shift Counter. Before installation, it is suggested that an electric over air shift system is already installed and functioning properly.

1. Mount the Shift Counter somewhere near the ignition module. The Shift Counter has been designed to be plug-in compatible with the Dynatek 4000 Ignition.

REFER TO THE INCLUDED WIRING DIAGRAMS DURING THE FOLLOWING STEPS

2. Locate the two-wire Black and Red extension harness that came with the Shift Counter kit. This is the main power and ground for the Shift Counter. Plug the terminated end of this harness into the mating two position plug on the Shift Counter. The Red wire in this harness should be connected to a source of switched +12 Volts. This is normally connected to the same +12 Volt supply wire that feeds the ignition module. Connect the Black wire on this harness to a good ground, either to the battery or to a good ground point that is in turn connected to the battery.
3. Locate the purple extension wire supplied with the kit. This is the trigger input that tells the Shift Counter that a shift has occurred. Connect the terminated end of this wire to the mating connector on the Shift Counter. Splice the other end of this wire to the side of your electric switching valve that is fed from your handle bar shift button. The electric switching valve should be wired such that when the handle bar shift button is pressed, +12 Volts is fed to both the switching valve and the purple wire of the Shift Counter
- 4a. This step applies for installation with a Dynatek 4000 Ignition module. If this installation is for an application for another ignition module, proceed to step 4b. Locate the two pin plug on the Shift Counter that has an Orange and Black wire. This is the shift kill output. Plug this output directly to the mating kill input on the Dynatek 4000 module. Skip ahead to step 5.
- 4b. This step applies to installations that do not use a Dynatek 4000 Ignition. The Shift Counter can be adapted to other ignitions by understanding how the kill output works. The kill output of the Shift Counter consists of an Orange and Black wire. The Black wire is a ground. The Orange wire is pulled low (grounded) by the Shift Counter only during the kill period. The Orange wire can also be used to activate a relay during the kill, which in turn can be used to shut off power to coils, ground a magneto, or otherwise interrupt ignition operation to implement a shift kill.

#### SETTING THE SHIFT COUNTER MODES

The Shift Counter has 6 DIP switches that are used to select the proper operating modes. The DIP switches are located under the top cover of the Shift Counter. To access the DIP switches, remove the four screws that secure the cover and remove the cover.

##### SWITCH 1 – OUTPUT MODE

<u>MODE</u>	<u>SW1</u>
Single Mode	ON
Add Mode	OFF

In Single Mode, only the output for the currently selected gear will be active. When a gear is left, the output for that gear will be deactivated.

In Add Mode, outputs will remain active after shifting into a higher gear. When the highest gear is reached, all outputs for lower gears will still remain active.

##### SWITCH 2 AND 3 – KILL MODE

<u>MODE</u>	<u>SW2</u>	<u>SW3</u>
Manual Mode	ON	ON
1-2 Auto Mode	ON	OFF
1-2-3 Auto Mode	OFF	ON
1-2-3-4 Auto Mode	OFF	OFF

In Manual Mode, a shift kill period is generated for all shifts. In 1-2 Auto Mode there is no kill during the first shift. In 1-2-3 Auto Mode, there is no kill during the first two shifts. In 1-2-3-4 Auto Mode, there is no kill during the first three shifts.

#### SWITCH 4, 5, AND 6 – SHIFT KILL TIME SELECTION

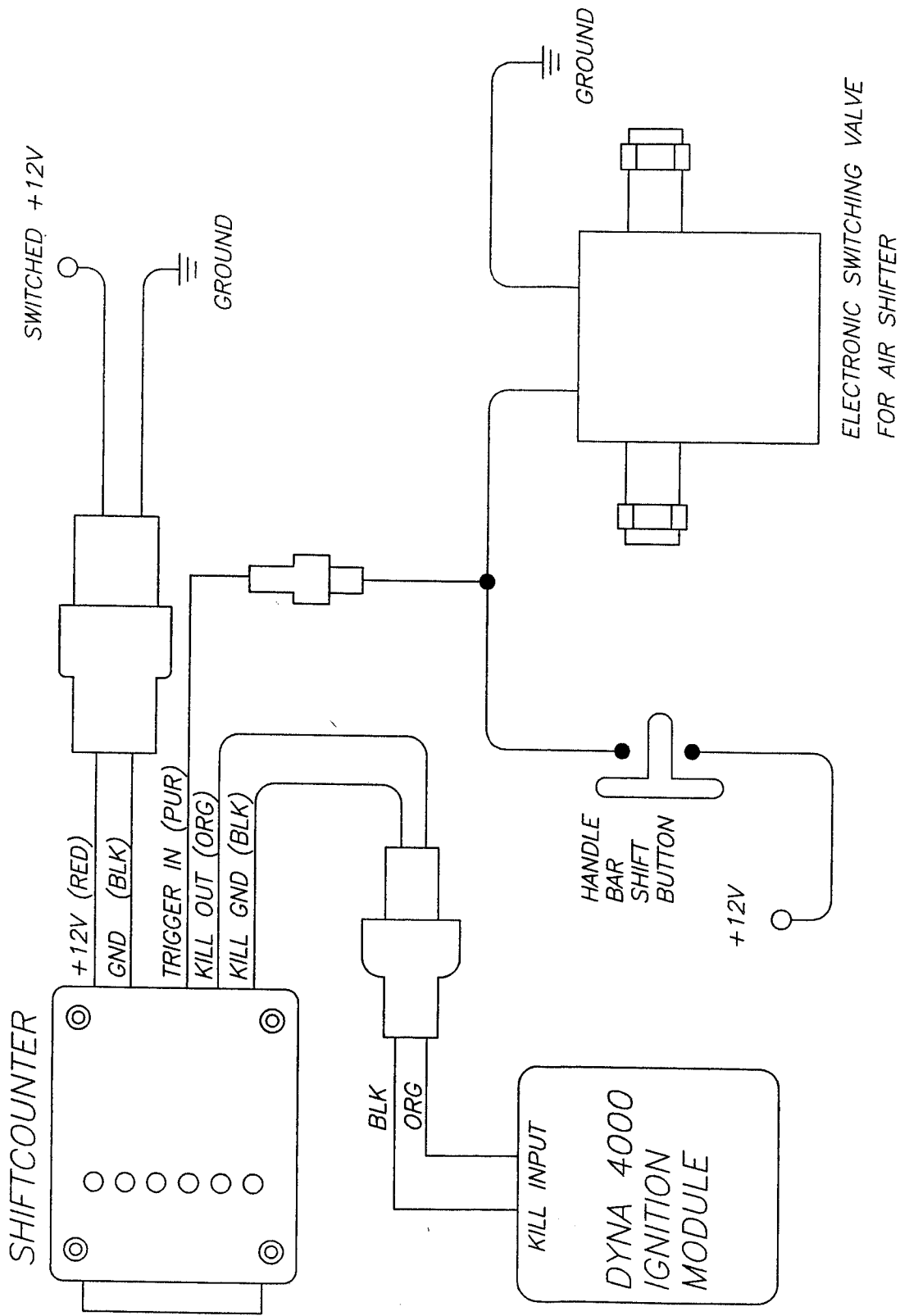
<u>MODE</u>	<u>SW4</u>	<u>SW5</u>	<u>SW6</u>
90 millisecond kill	ON	ON	ON
80 millisecond kill	OFF	ON	ON
70 millisecond kill	ON	OFF	ON
60 millisecond kill	OFF	OFF	ON
50 millisecond kill	ON	ON	OFF
40 millisecond kill	OFF	ON	OFF
30 millisecond kill	ON	OFF	OFF
20 millisecond kill	OFF	OFF	OFF

The selected shift kill time is generated at the appropriate shift. The Shift Counter generates a very accurate kill time that does not vary. When in doubt regarding which kill time is appropriate, start with a long kill time and work your way to a shorter time. If the kill time is too short, the vehicle may not shift correctly.

#### TESTING THE SHIFT COUNTER

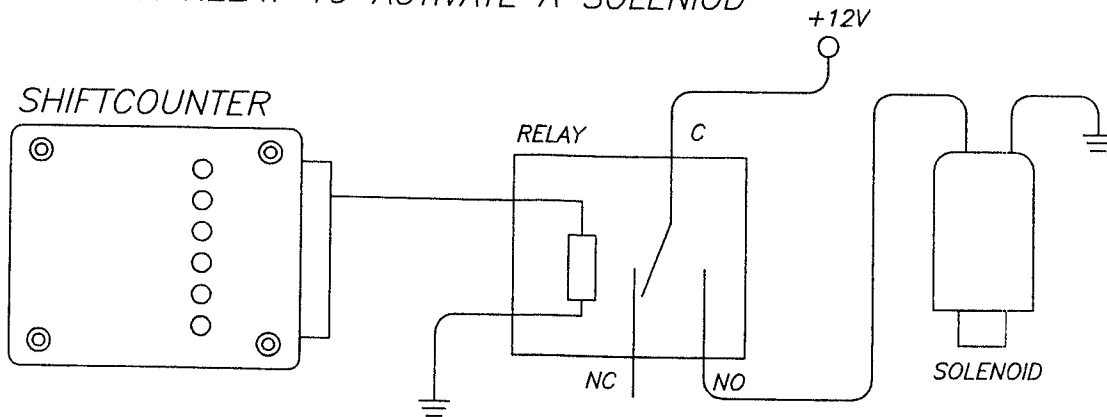
The Shift Counter is easy to test. To test the output modes, turn on ignition power (don't start the engine and don't put air in the shifter during this test). Push the shift button on the handle bar and watch the LED output indicators on the top of the Shift Counter. The Shift Counter will progress through the gears each time the shift button is pressed. The Shift Counter always starts in first gear upon power up. If a gear other than 1<sup>st</sup> gear is used for burn-out, the Shift Counter will remain set to 1<sup>st</sup> gear as long as the air shifter is not used. Try both Single and Add modes and watch how the LEDs respond differently as shifts occur.

To test using the shift kill function, try the above test with the engine running (do not put air in the shifter during this test). Each time the shift button is pressed, the engine will die for an instant when a shift kill period is generated. To reset the Shift Counter, turn off the ignition and power it back on.



<b>DYNATEK</b>			
164 S. VALENCIA ST., GLENDORA, CA 91741			
DSC-2 SHIFT COUNTER WIRING			
DATE	REV	DRAWN	FILE
5/30/03	A	L.F.	2801171A-1

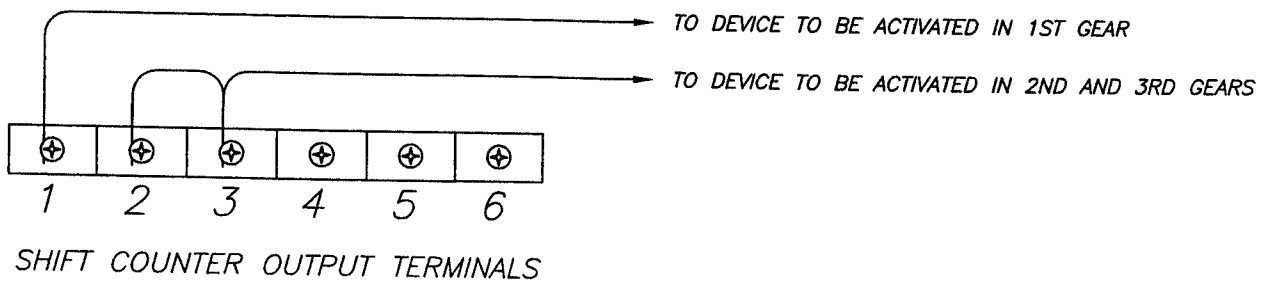
## USING A RELAY TO ACTIVATE A SOLENIOD



NOTE - THE SHIFT COUNTER OUTPUTS SUPPLY +12 VOLTS WHEN ACTIVATED.

CAUTION - DO NOT DIRECTLY DRIVE A LOAD OF MORE THAN 0.1 AMPS WITH ANY ONE SHIFT COUNTER OUTPUT

## CONNECTING ONE DEVICE TO MORE THAN ONE OUTPUT



<b>DYNATEK</b>			
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DSC-2 SHIFT COUNTER WIRING			
DATE	REV	DRAWN	FILE
5/29/03	A	L.F.	2801170A-2