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Elite Time
or
RPM Switch V2

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Elite Time or RPM Switch

Part # 1068 V2

Instructions

Digital Delay designed the Elite Time or RPM Switch for racers, who, want to shift by Time, RPM, or a combination of the two. The new Elite Time or RPM Switch can shift up to five times by either time or RPM. The RPM shift range has been expanded over the original Elite RPM switch, now any RPM from 3000 to 19,999 can be entered for any shift. Now each time a shift occurs during a pass, the Time and RPM of the shift is stored in memory for Review after the pass. A new pushbutton input allows the Elite Time or RPM switch to start the shifting routine with the release of a button. This button input can also be tied to the Transbrake solenoid, if used, instead of a pushbutton to start the shift routine when the Transbrake releases. When the Start Pass RPM is being used to start the shift routine instead of the Pushbutton input, the pushbutton can be set to Burnout Mode to keep the box from shifting during the burnout. These are just a few of the new improvement over the original Elite RPM switch.

Contents:

Operation

Making a Pass using the Pushbutton Trigger:

With the engine running, when the Pushbutton is released the shift routine is started. The shifts occur sequentially starting with the first Shift Point. Each time the Time or RPM for a Shift Point is reached, the Shift output will activate for the amount of time entered for the Shift On Pulse Time. When the Shift Pulse On Time completes the Shift output will deactivate. The Elite RPM Switch will then wait for the amount of time entered into the Shift Off Pulse Time before looking for the next shift. This process is repeated until all shifts have been completed. Also while making a pass, the screen will display the engine RPM. Once all of shifts have been made the screen will display "Shift Complete" for a couple of seconds before returning to the current engine RPM. As each shift occurs the Time and RPM are stored in memory for review after the pass. The Elite Time or RPM Switch will automatically resets back to the first Shift Point any time the engine RPM goes below 2,500 RPM.

Note: When using the Pushbutton Trigger mode, the Pushbutton Terminal can be connected to the Transbrake solenoid, instead of a separate pushbutton, to automatically start the shift routine when the Transbrake releases.

For version 2 (V2) units only; if the engine is running but below 3000 RPM and the Transbrake is activated to back up the vehicle the Elite Time or RPM switch will not start a shift cycle.

Making a Pass using the Start Pass RPM:

The Start Pass RPM is used as the starting point for by the Elite Time or RPM switch when not using the Pushbutton Trigger Mode. The Start Pass RPM is usually set 500 RPM greater than your launch RPM. When the vehicle leaves the starting line the RPM will quickly rise, and once the Start Pass RPM has been reached the shift routine will be started. The shifts then occur sequentially starting with the first Shift. Each time the Time or RPM for a Shift Point is reached, the Shift output will activate for the amount of time entered for the Shift On Pulse Time. When the Shift Pulse On Time completes the Shift output will deactivate. The Elite RPM Switch will then wait for the amount of time entered into the Shift Off Pulse Time before looking for the next shift. This process is repeated until all shifts have been completed. Also while making a pass, the screen will display the engine RPM. Once all of shifts have been made the screen will display "Shift Complete" for a couple of seconds before returning to the current engine RPM. As each shift occurs the Time and RPM are stored in memory for review after the pass. The Elite Time or RPM Switch will automatically resets back to the first Shift Point any time the engine RPM goes below 2,500 RPM.

Using the Burnout feature:

When used, the Burnout feature keeps the Elite Time or RPM Switch from shifting during the burnout. To use the Burnout feature the Pushbutton selection in the Setup screens must be set to Burnout. Connect the Pushbutton Terminal to the wire going to the Line Lock solenoid(s). If the vehicle does not have Line Locks, install a pushbutton for the burnout feature with one wire going to power and the other wire going to the Pushbutton terminal. Then while the engine RPM is below 2500 RPM the pushbutton is pressed to activate the Burnout feature. While in Burnout mode the screen will display Burnout and the current engine RPM. Once the burnout is completed and the engine rpm falls back below 2500 Rpm the Burnout feature is automatically terminated and the Elite Rpm switch returns to normal shift mode.

The Data Buttons

There are four data pushbuttons under the display screen. Each button has two functions, a primary function and a secondary function. The primary functions are listed above each button with the secondary functions listed below the buttons. The primary functions are for changing shift points or settings. The secondary functions are used to select which set of screens are being displayed or to enable the changing of a value or setting. The 4 primary functions are **Enter, Down Arrow, Up Arrow, and Next/Right Arrow**. While the secondary functions are **Change, Setup, Review, and Shifts**. To use any of the secondary functions, the corresponding button must be pressed and held until the screen changes, about 2 seconds.

The Setup Screens

Setup Screens allow the Elite RPM Switch to be configured to best meet your needs. There are six Setup screens that need to be set before the Elite RPM Switch can be used. Once set, these values should not need to be adjusted again unless a change is made to the vehicle setup.

The Setup values can only be changed when the engine RPM is below 2,500 RPM or off. To enter Setup mode, press and hold the **Setup** button until the Shift On Time screen is displayed, about 2 seconds. While in Setup mode uses the **Next** button to view the next Setup screen. To change a value or a setting on a displayed Setup screen, press and hold down the **Change** button until the second line goes blank, about 2 seconds. Then use the **primary functions** of the buttons to make the adjustment.

Shift On Pulse Time

Setup screen number 1, is the Shift On Pulse Time which is the amount of time the Shift output is activated for, when the shift point is reached. The Shift Pulse time can be set from 200mS to 599mS. We recommended 400mS (.400) which will work for most setups.

Shift Off Pulse Time

Setup screen number 2, is the Shift Off Pulse time which is the amount of time the Shift output is deactivated after the Shift On Pulse Time. While the Shift output is deactivated no shifts will occur even if the next shift point RPM is reached. The main benefit of the Shift Off Pulse Time is to keep wheel spin or hop from causing an undesired shift. The Shift Off Pulse time can be set from 200mS to 999mS. We recommend 500mS (.500) this keep the vehicle from double shifting if the RPM doesn't cleanly fall at any of the shift points.

Start Pass RPM

Setup screen number 3, is the Start Pass RPM which is used to set at what RPM the Elite Time or RPM switch will start a pass. This value is usually set slightly above launch RPM. We recommend setting this value 500 RPM above the vehicle (2-Step) launch RPM. The Elite Time or RPM Switch uses this RPM value to know that the pass has started. Once this RPM is reached the Elite Time or RPM starts the shift routine and starts looking for first shift point.

Pushbutton Function

Setup screen number 4, is the Pushbutton Function setting which is used to select how the pushbutton will be used. There are three setting;

1) Functions Off, the button with this setting has no function.
2) Burnout No Shift, when pressed before a burnout disables the shifting for the burnout.
3) Trigger, uses the Pushbutton input to start the shift routine when making a pass.

Shift Output

Setup screen number 5, is the Shift Output mode which is used to select whether power will be removed or applied for the shift. The Normally Open setting will apply power to the shift terminal when the Shift point is reached. The Normally Closed setting will remove power from the shift terminal when the shift point is reached.

Number of Cylinders

Setup screen number 6, is the Number of Cylinders setting which is used to calculate engine RPM. Therefore it must be set correctly for proper operation of the unit. Cylinder settings of 2, 4, and 6 are available.

The Shift Point Screens

Shift Screens are the screens used to set the shift points and whether the each of the 5 shifts will be by Time or RPM. The Shift Point screens can only be viewed when the engine is off or the RPM is below 2,500. To view the shift points, press and hold the Shifts button until the screen displays Shift Point # 1, about 2 seconds. The second line on the screen will display "Time" or "RPM" to the left of the = sign to indicate whether the shift will be by Time or RPM. To the right of the = sign is the time or the RPM for the shift.

To change a shift point and/or select whether the shift will be by time or RPM, first use the Next button to select the Shift number to be changed. Then hold down the Change button until the left side of the second line goes blank, about 2 seconds. Next using the Up Arrow set whether the shift will be by time or RPM. Then use the Right Arrow button to move to the right side of the = to change the time or the RPM value for the shift. Any RPM value from 3000 to 19,999 can be used. A RPM of zero turns off that shift and any further shifting. When entering a time shift point any value from 0.001 to 9.999 seconds can be used for the first three shifts and from 0.01 to 19.99 seconds for the last two shifts. Entering all zeros for a shift point turns off that shift and any further shifting.

Digital Tach with Peak RPM Recall

The Digital Tach screen can only be selected when the engine is off or the RPM is below 2,500. The Digital Tach screen is right after the 5th shift point screen. When the 5th shift point screen is being displayed, pressing the Next button will bring up Digital Tach with Peak RPM recall screen. When the Digital Tach screen is being shown, if the engine is running the current engine RPM will be displayed. If the engine is off the Peak RPM will be displayed. The Peak RPM is the highest RPM the engine has reached, since the last time the Peak RPM was cleared. To clear the Peak RPM hold down the Change button until the displayed Peak RPM resets back to zero.

The Review Screens

Review Screens allow the time and RPM of each shift that occurred on the last pass to be reviewed. The Review screens can only be viewed when the engine RPM is below 2,500 RPM or off. To Review the shift points, press and hold the Review button until the screen displays Shift # 1 Review, about 2 seconds. The second line on the screen will display the Time and RPM when the first shift occurred. Use the Next button to review the other shift points.

Features and Specifications

Features:

- Microprocessor controlled timing
- Programmable on pulse lengths for shifts (.200 - .599)
- Programmable off pulse lengths for shifts (.200 - .999)
- Retains all numbers even with power disconnected from unit
- Back lit 2 line LCD
- Works on 4, 6, and 8 cylinder engines
- Shift by Time or RPM
- 5 programmable shift points
- Pushbutton shift override for burnouts
- Digital Tachometer with peak RPM recall

Specifications:

- Input Voltage Range: 10 to 18 Volts DC (16 Volt compatible)
- Operating Temperature Range: 0 to 150 degrees F.
- Tach and RPM Switch Range: 3000-19,999 in 1 RPM increments
- Shift (40Amp Capacity)

The Terminal Strip

Shift Terminal: Connect the Shift terminal to the shift solenoid.

Ign Terminal: Connect the Ign terminal to the switched power for the Ignition Box.

+12V Terminal: Connect the +12V terminal to 12-16 Volt source capable of supplying enough current for the shift solenoid.

Push-button Terminal: Connect to one of the wires from the Push-button, the other wire goes to power.

Ground Terminal: Connect the Ground terminal to the Neg. terminal on the battery or to a good steel ground, <u>not</u> aluminum.

Tach Terminal: Connect the Tach terminal to the Tach output on the ignition. The Tach terminal must be connected for proper operation of the unit.