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ELITE 500

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How the Elite 500 works

Features and Specifications

Features:

- Microprocessor controlled timing
- Discrete I/O (input - output) construction
- Retains all numbers even with power disconnected from unit
- Large illuminated LCD (liquid crystal display) and keypad for easy reading of information day or night
- Dust & splash-proof keypad with detent (positive feel)
- Hit the tree twice with one or two separate buttons
- Separate Bracket and Pro Mode screens and settings
- Line Lock push-button input
- Can run two separate throttle stops at once
- Range settings for the 4 Stage Timers Bracket & Pro Screens
- Range settings for the 2 Stage Timers on Pro Screen
- Instant timing cycle reset
- Programmable push-button interrupt time
- Programmable Tap Up and Tap Down feature for the delay
- New Multi-Tap feature
- Shift on Time up to 5 times
- Selectable Function Output (S.F.O.) with four separate functions
    - Secondary transbrake
    - Second throttle stop timer
    - Starting Line Enhancer (S.L.E.)
    - Line Lock Controller
- Programmable Throttle Stop Override for the 4 Stage Timer (Timer 1 only)
- A second 4 Stage Timer
- Programmable Starting Line Enhancer
- Built-in drivers reaction tester with large LED bulb

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Specifications:

- Input Voltage Range: 10 to 18 Volts DC (16 Volt compatible)
- Operating Temperature Range: 0 to 150 degrees F.
- Push-button Current: .1 AMPS at 12 VDC
- Four Separate Output all rated at 15 Amps.
    - Transbrake
    - Selectable Function Output (S.F.O.)
    - Throttle Stop
    - Shifter
- Five Separate Inputs
    - P.B. 1
    - P.B. 2
    - Tap P.B. Up
    - Tap P.B. Down
    - L.L. P.B.

The Terminal Strip

+12VDC Terminal: Connect the +12VDC terminal to a switched +12 Volt source with enough amperage capable of driving all outputs at the same time. **(Recommended 10 Ga. Wire)**

Transbrake Terminal: Connect the Transbrake terminal to the Transbrake solenoid. If using a MSD 2-Step connect the red wire from the 2-Step here. **(Recommended 10 Ga. Wire)**

S.F.O. Terminal: Connect the S.F.O. (Selectable Function Output) to a device that is to function in one of the following four ways.

1) A device to be used as the Starting Line Enhancer, usually a linkage style throttle stop.
2) A device to be controlled by the second 4 Stage Timer. (Timer 2)
3) Connect to the Line Locks, if the Line Locks are to be engaged when the Transbrake is engaged and/or the Line Lock push-button is pressed.
4) Connect to the Transbrake solenoid, this is to be used only as a temporary back-up output.

Make sure that the S.F.O. mode setting is correct for the device being used.
Incorrect settings will cause undesirable results.
(Recommended 10 Ga. wire)

Throttle Stop Terminal: Connect the Throttle Stop terminal to a throttle stop or some other device to be controlled by a 4 Stage Timer down track. This is the main 4 Stage Timer (Timer 1). **(Recommended 10 Ga. wire)**

Shift Terminal: Connect the Shift terminal to the shifter solenoid. It is recommended that the wire going from the Elite 500 shift terminal to the shift solenoid be separated from all other wires to eliminate cross talk between the wires. If all wires are bundled together undesirable results may occur. **(Recommended 10 Ga. Wire)**

Ground Terminal: Connect the Ground terminal to the Neg. terminal on the battery or to a good steel ground, not aluminum.
(Recommended 14 Ga. Wire)

Button-1 Terminal: Connect the P.B. 1 terminal to either wire of the primary (Transbrake) push-button. The other wire from the primary button is then connected to ground. See page 9 for information on setting button modes and double hitting the tree.
(Recommended 16 Ga. Wire or 18 Ga. Corded buttons)

Button-2 Terminal: Connect the P.B. 2 terminal to either wire of an optional push-button. The other wire from the push-button is then connected to ground. This button can be used for 2 different operations.

1) When unit is set in P.B. mode 2 this button is used for the second of two hits at the tree.
2) When unit is set in P.B. mode 1 or 3 this button can be used as a by-pass button.

(Recommended 16 Ga. Wire or 18 Ga. Corded buttons)

Tap Up Terminal: Connect the Tap Up terminal to either wire of an optional push-button. The other wire from the push-button is then connected to ground. This button can be used for 2 different operations.

1) If the Starting Line Enhancer feature is turned on and the Tap Up push-button is pressed the throttle will close allowing the car to be staged at a preset RPM before the Transbrake is applied.
2) After a Transbrake push-button has been released, every time the Tap Up push-button is depressed a programmable amount of time is added to the first delay time started until the Transbrake is released.

(Recommended 16 Ga. Wire or 18 Ga. Corded buttons)

Tap Down Terminal: Connect the Tap Down terminal to either wire of an optional push-button. The other wire from the push-button is then connected to ground. This button can control three different operations.

1) If the Starting Line Enhancer feature is turned on and the Tap Down push-button is pressed the throttle will close allowing the car to be staged at a preset RPM before the Transbrake is applied.
2) After a Transbrake push-button has been released, every time the Tap Down push-button is depressed a programmable amount of time is subtracted from, the first delay time started until the Transbrake is released.
3) A third of a second after the Transbrake releases and for every time the Tap Down push-button is depressed a programmable amount of time is subtracted from the second or fourth stage times. See *Understanding the P.T.S.O.*

(Recommended 16 Ga. Wire or 18 Ga. Corded buttons)

Line Lock P.B. Terminal: Connect the Line Lock terminal to either wire of an optional push-button. The other wire from the push-button is then connected to +12V. This button can control two different operations.

1) If the Line Lock push-button is pressed and the S.F.O. mode is set to 3 (Line Lock Control) before the Transbrake is engaged, the Line Locks hooked to the S.F.O. Terminal will be engaged.
2) After a Transbrake push-button has been released and before the Transbrake solenoid releases, every time the L.L. push-button is depressed the programmable Multi-tap is activated. See Multi-Tap on page **20.**

(Recommended 16 Ga. Wire or 18 Ga. Corded buttons)

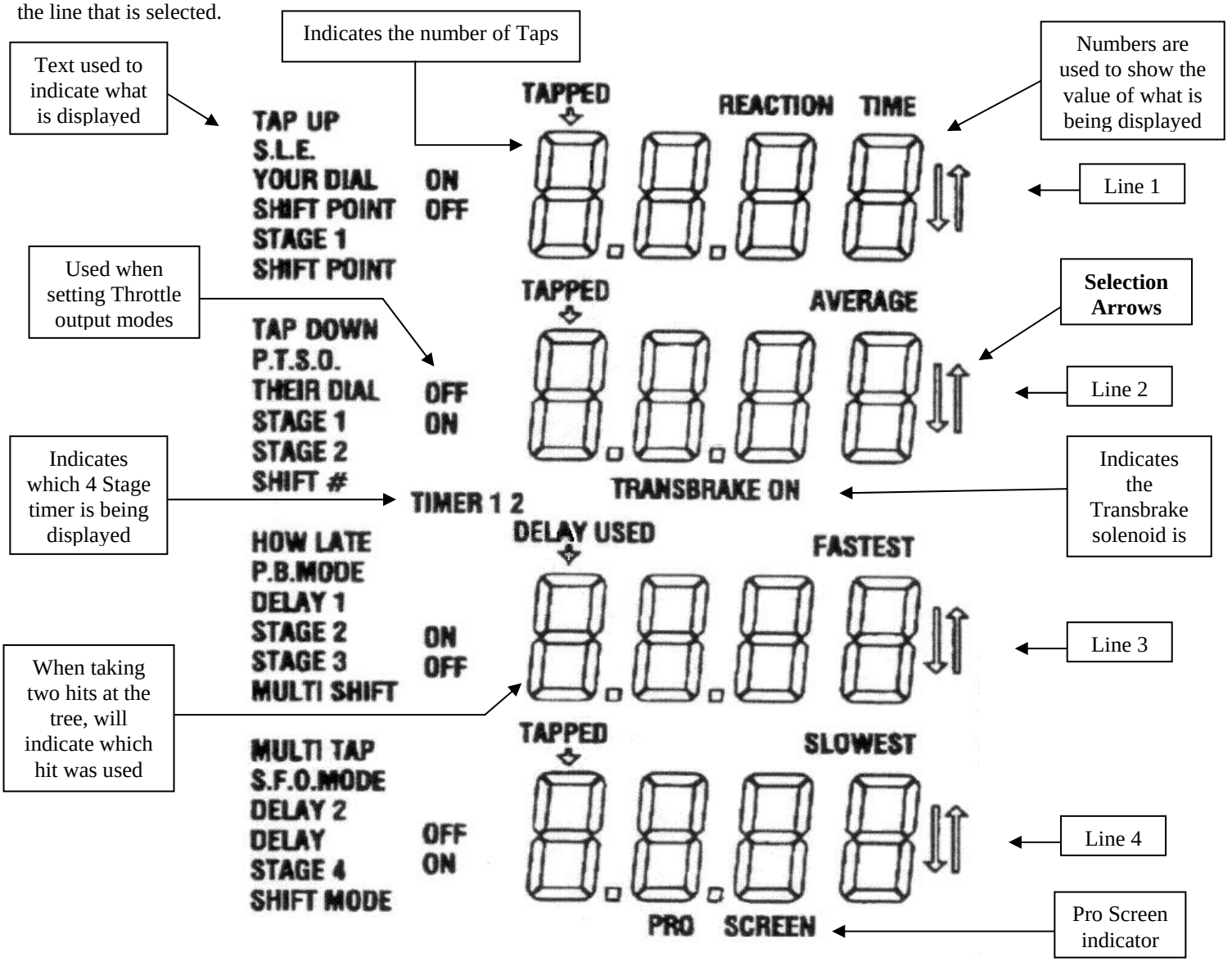
The Keypad

The keypad is made up of numerical and function keys that are used to control the information that is either entered into the unit or shown on the displays. There are six blue function keys they are BRKT, SET UP, NEXT, CLEAR, Up Arrow, and Down Arrow. The main use of each of the function keys is listed below. On certain screens some of the functions keys have special uses. These are described later.

1) The Bracket key (BRKT) is used to return to the Bracket Screen or to exit from Pro Mode back to Bracket Mode.
2) The Set up key is used to scroll through screens 2 through 7 in Bracket Mode and all five screens in Pro Mode. The Set Up key is also used to enter into Pro Mode, explained in Pro Mode screens (page 11).
3) The Next key moves the selection arrows on the right side of the LCD from one line to the next.
4) The Clear key is used to blank out a number so that a new number can be entered.
5) The Up and Down arrows are mainly used to make small changes in a number.

The Liquid Crystal Display (LCD)

The LCD is made up of text, numbers, and selection arrows. The text is used to indicate the information displayed while the numbers are used to show the value of the information displayed. When viewing most screens a pair of selection arrows will indicate the line that is selected.



Bracket Mode Screens

The easiest way to make sure the Elite 500 is in Bracket Mode is to press the Bracket key (BRKT). When in Bracket Mode the Elite 500 LCD will display seven different screens. The different screens are broken into three types. The first type of screen is the Bracket Screen, this is the main screen. The second type of screen is the Set Up screen. There are five different Set Up screens. The last screen type is the Driver's Reaction Tester. See page 19 for more information.

There are four lines of information shown on the Bracket Screen and all the Set Up screens. The information displayed for each screen along with the screen number or the location of each screen is shown below.

Screen Number and Type	Line 1	Line 2	Line 3	Line 4
1) Bracket	Your Dial-in	Their Dial-in	Delay 1	Delay 2
2) Set Up	Tap Up	Tap Down	How Late	Multi-Tap
3) Set Up	* S.L.E.	P.T.S.O.	P.B. Mode	S.F.O. Mode
4) Set Up	Stage 1 - Timer 1	Stage 2 - Timer 1	Stage 3 - Timer 1	Stage 4 – Timer 1
5) Set Up **	Stage 1 - Timer 2	Stage 2 - Timer 2	Stage 3 - Timer 2	Stage 4 – Timer 2
6) Set Up	Shift Point	Shift Number	Multi-Shift	Shift Mode
7) Drivers Reaction Tester	Reaction Time	Average	Fastest	Slowest

* Will only display value if S.F.O. is set to corresponding mode.
** Will only be displayed if S.F.O. is set to mode 2

The main way to move from screen to screen is to use the Set Up key. If the Elite 500 is displaying Screen 3, which has the SLE, PTSO, P.B. Mode, and S.F.O. information and the Set Up key is pressed and released the Elite 500 will now display Screen 4, which has the first 4 Stage Timer settings. By repeatedly pressing the Set Up key the Elite 500 will cycle through screens two through seven. If the S.F.O. mode is not set to 2 to enable the second 4 Stage Timers, Screen 5 will be skipped as the screens are cycled through. However all settings for Screen 5 will still be stored in memory and will reappear when the second 4 Stage Timer is turned on again. If the Elite 500 is displaying Screen 7 and the Set Up key is pressed and released the Elite 500 will go back to Screen 2. To get back to Screen 1 (Bracket Screen) use the BRKT key. This can be done from any screen including any of the Pro Screens.

When viewing any of the first six screens there will be a set of arrows on the right side of the LCD. These selection arrows point to the selected line on the screen. There will only be one selected line on the screen at a time, with the one exception being when changing the Shift Point on Screen 6. Once a line has been selected the setting or value for that line can be changed. To change the selected line, press and release the Next key. The selection arrows will move to the next line on the screen. If the line selected is at the bottom of the screen the selection arrows will return to the top of the screen when the Next key is pressed and released again.

Bracket Mode Settings for Screen 1

When the Elite 500 is displaying Screen 1 the Bracket Screen, Your Dial is displayed on line 1, Their Dial is displayed on line 2, Delay 1 is displayed on line 3, and Delay 2 is displayed on line 4. The Elite 500 uses the Dial-ins for two functions, first to see whether to Crossover or not and secondly if Crossing over how much time will be added to Delay 1. To cancel out the Dial-ins either enter all zeros or enter the same number in both Dial-ins. When just starting out, a good starting value for Delay 1 is 1.000 second.

Setting Dial-In or Delay Times

To enter a new Dial-In or Delay time the Elite 500 must first be displaying the Bracket Screen. If the Bracket Screen is not being displayed press and release the BRKT key. When the Bracket Screen is first displayed the selection arrows will be on line 1 (Your Dial-in). This means that line 1 is selected, to change which line is selected use the Next key. Once the desired line has been selected press and release the Clear key the selected display line will now be blank indicating the unit is ready to accept the new time. Now using numerical keys enter the new time, leading zeros do not have to be entered. For example if 9.90 for a Dial-In time is desired 990 would be entered on the keypad. If less than four digits are entered for a time, pressing the Next key will act as an enter key and the leading zeros will displayed on the LCD.

As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the time, press and release the Clear key and reenter the time again.

The Scrolling Arrow keys can also be used to change a Dial-in or Delay time. First make sure that the selection arrows are on the line to be changed. If not, change which line is selected using the Next key. Once the desired line has been selected pressing and releasing the Up Arrow key will cause the time to increase by one. While pressing and releasing the Down Arrow key will cause the time to decrease by one. If the Up Arrow key is held down the time will scroll up and if the Down Arrow key is held down the time will scroll down.

Bracket Mode Settings for Screen 2

When the Elite 500 is displaying Screen 2, Tap Up information is displayed on line 1, Tap Down information is displayed on line 2, the How Late information is displayed on line 3, and the Multi-tap information is displayed on line 4. The Tap features of the Elite 500 are used by the driver to make small preprogrammed time adjustments to the delay time before the Transbrake releases. The How Late feature is only used when taking two shots at the tree, to help fine tune the two Delay times.

Setting and Displaying the Tap-Up and Tap-Down Information

To display the Tap information, repeatedly press the Set Up key until the text Tap Up is displayed on the left side of line 1. The Tap Up and Tap Down information is made up of two parts separated by a blank space. On line 1 the left most digit shows the Tap Up count or the number of times the Tap Up push-button was pressed. The two right hand digits on line 1 show the programmable time (0 to 99 thousandths of a second) to be added to the delay time every time the Tap Up push-button is pressed. To change the Tap amount, repeatedly press the Next Key until the selection arrows are to the right of line 1. Once line 1 has been selected, press and release the Clear key, the right two digits will now be blank indicating the unit is ready to accept the new time. Now using numerical keys enter the new time, leading zeros do not have to be entered. For example if 20 thousandths for a Tap amount is desired 20 would be entered on the keypad. If only one number is entered for a time, pressing the Next key will act as an enter key and the leading zero will displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the time, press and release the Clear key and reenter the time again.

The Tap Down on line 2 is displayed and changed the same way as the Tap Up information on line 1. However the Tap Down amount is subtracted from the delay every time the Tap Down push-button is pressed, instead of added. To change Tap Down use the Next key to move selection arrows to line 2 and follow the same steps as above used to set the Tap Up.

Clearing the How Late Time and the Tap Counts

The How Late information is displayed on line 3. This How Late is not a setting and therefore can not be changed, only cleared. When the How Late is cleared, all three Tap counts are also cleared. To clear the How Late and Tap Counts, use the Next key to position the Selection arrows on line 3. Then press and release the Clear key, the How Late and Tap Counts should now be set to zero.

Note: The How Late and Tap Counts do not have to be cleared to function properly.

Setting and Understanding the Multi-Tap

This new and exclusive feature of the Elite 500 Delay Box was added to subtract large amounts of time from delay 1 with every press of the Multi Tap push-button. This is used when the driver feels they have completely missed the start of the tree.

The Multi Tap information is displayed on line 4. The Multi Tap information is made up of two parts separated by blanks. The left most digit shows the Multi Tap count or the number of times the Multi Tap push-button was pressed. The right most digit is the programmable Multi-tap amount. To enter a new Multi-tap amount, first use the Next key to move selection arrows to line 4 of the screen. Next press and release the Clear key and then enter a number from 1 to 9, the entered number is the new Multi-tap value. Every time the Multi-tap push-button is pressed, the Multi-tap value is multiplied by the Tap Down amount (on line 2) and then subtracted from the first delay used. For example if the Tap down amount is .030 seconds and the Multi Tap value is 5, then every time the Multi tap push-button is pressed .150 seconds will be subtracted from the first delay used. Another way of looking at this is, each press of the Multi Tap button is the equivalent of pressing the Tap Down button 5 times.

Bracket Mode Settings for Screen 3

When the Elite 500 is displaying Screen 3, the Starting Line Enhancer time is displayed on line 1, the P.T.S.O. time is displayed on line 2, the Push-button Mode and Interrupt time is displayed on line 3, and the S.F.O. Mode is displayed on line 4. Once these settings are set they usually do not have to be changed unless the setup of the vehicle changes or the style of racing.

Setting the Starting Line Enhancer

If the S.F.O. mode is set to one the Starting Line Enhancer will be turned on, if the S.F.O. mode is set to any mode other than mode one, the Starting Line Enhancer will be turned off. To set the Starting Line Enhancer Time, which is displayed on line 1 of Screen 3, repeatedly press the Set Up key until the text S.L.E**.** is displayed on the left side of line 1. If two dashes are being displayed, the Starting Line Enhancer is turned off. If a number is being displayed the Starting Line Enhancer is turned on. When the Starting Line Enhancer is on to enter a new time, first press the Next key until the selection arrows are positioned to the right of the S.L.E. time. Then press and release the Clear key the selected display line will now be blank indicating the unit is ready to accept the new time. Now using numerical keys enter the new time, leading zeros do not have to be entered. For example if 01.00 for a S.L.E. 1 time was desired 100 would be entered on the keypad. If less than four digits are entered for a time, pressing the Next key will act as an enter key and the leading zeros will displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the time, press and release the Clear key and reenter the time again.

The Scrolling Arrow keys can also be used to change the S.L.E. time. First make sure that the selection arrows are on the line to be changed. If not change which line is selected using the Next key. Once the desired line has been selected pressing and releasing the Up Arrow key will cause the time to increase by one. While pressing and releasing the Down Arrow key will cause the time to decrease by one. If the Up Arrow key is held down the time will scroll up and if the Down Arrow key is held down the time will scroll down.

Note: The S.L.E. output mode is controlled by the Throttle mode for Timer 2. This mean if the Throttle stop is working backwards change the Throttle mode for Timer 2.

Setting the Programmable Throttle Stop Override (P.T.S.O.)

To set the P.T.S.O. amount, which is displayed on line 2 of Screen 3, repeatedly press the Set Up key until the text P.T.S.O. is displayed on the left side of line 2. If the P.T.S.O. is turned off, two dashes will be displayed on line 2. If a number is displayed the P.T.S.O. is turned on and the number shown is the current P.T.S.O. time. To turn the P.T.S.O. off when it is turned on, repeatedly press the Next key until the selection arrows are on line 2. Then press and release the Clear key followed by the Next key. To turn on the P.T.S.O. or enter a new P.T.S.O. amount repeatedly press the Next key until the selection arrows are on line 2. Next press and release the Clear key, the selected display line will now be blank indicating the unit is ready to accept the new time. Now using numerical keys enter the new time, leading zeros do not have to be entered. For example if 1.00 for a P.T.S.O. amount is desired 100 would be entered on the keypad. If less than four digits are entered for an amount, pressing the Next key will act as an enter key and the leading zeros will displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the time, press and released the Clear key and reenter the amount again. If a number greater than zero is entered, any number from 00.01 to 99.99 seconds, the P.T.S.O. will automatically be turned on.

The Scrolling Arrow keys can also be used to change a P.T.S.O. amount. First make sure that the selection arrows are on line 2. If not, change which line is selected using the Next key. Once line 2 has been selected pressing and releasing the Up Arrow key will cause the time to increase by one. While pressing and releasing the Down Arrow key will cause the time to decrease by one. If the Up Arrow key is held down the time will scroll up and if the Down Arrow key is held down the time will scroll down.

Setting Push-button Mode and the Push-button Interrupt Time

To set the Push-button Mode, this is displayed on line 3 of Screen 3, repeatedly press the Set Up key until the text P.B. Mode is displayed on the left side of line 3. The P.B. Mode information displayed is made up of two parts separated by a blank space. The left most digit indicates which button mode the Elite 500 is in and the right two digits represent the Push-button Interrupt Time (in seconds). To change the Push-button Interrupt Time, repeatedly press the Next key until the selection arrows are to the right of line 3. Once line 3 has been selected, press and release the Clear key the right two digits will now be blank indicating the unit is ready to accept the new time. Now using numerical keys enter the new time, leading zeros do not have to be entered. For example if a Push-button Interrupt Time of 10 seconds is desired 10 would be entered on the keypad. If only one number is entered for a time, pressing the Next key will act as an enter key and the leading zero will displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the time, press and release the Clear key and reenter the time again.

While line 3 is selected the Up arrow and Down arrow keys can be used to switch between the three Push-button Modes.

1) One button – one hit at the tree
2) Two buttons – two hits at the tree
3) One button – two hits at the tree

Setting the Selectable Function Output Mode (S.F.O.)

To set the Selectable Function Output mode, which is displayed on line 4 of Screen 3, repeatedly press the Set Up key until the text **S.F.O. Mode** is displayed on the left side of line 4. There are five different S.F.O. modes (1-5) that are listed below. To change the S.F.O. mode repeatedly press the Next key until the selection arrows are on the right side of line 4. Next use the Up Arrow key to add one to the S.F.O. mode or the Down Arrow key to subtract one from the S.F.O, mode.

1) This sets the S.F.O. terminal up to Function as a Starting Line Enhancer (S.L.E.).
2) This sets the S.F.O. terminal up to function as a second Throttle Stop.
3) This sets the S.F.O. terminal up to function as a Line Lock Control.
4) This sets the S.F.O. terminal up to function as a second Transbrake output.
5) This turns the S.F.O. terminal completely off (no voltage out).

Bracket Mode Settings for Screens 4 & 5

The Elite 500 has two 4 Stage Timers called Timer 1 and Timer 2. All of the settings for Timer 1 are on Screen 4 and all of the settings for Timer 2 are on Screen 5. When the Elite 500 is displaying Screen 4 or 5, the Stage 1 time is displayed on line 1, the Stage 2 time is displayed on line 2, the Stage 3 time is displayed on line 3, and the Stage 4 time is displayed on line 4.

Setting Time Ranges (xx.xx or x.xxx) for Timer 1 and Timer 2

To change the Time Range for Timer 1, repeatedly press the Set Up key until the text Timer 1 is displayed on the screen. **The Time Range controls the resolution of the first and second stages times only.** The first and second stage times can be set to any number from 0.000 to 9.999 seconds when in "x.xxx" Range and from 00.00 to 99.99 seconds when in "xx.xx" Range. The settings for Timer 1 and for Timer 2 do not have to be the same. However care should be taken to notice the decimal point location when entering a stage time. To change a Timer Range press and hold the number **8** key until the decimal point moves to desired location. The Range for Timer 2 can only be set if the S.F.O. mode is set to 2, if the S.F.O. mode is set to any other number other than 2, Timer 2 will not be displayed.

Setting Timer 1 and 2 Stage Times

To enter a new stage time for Timer 1, which is displayed on Screen 4, or Timer 2, which is displayed on Screen 5, repeatedly press the Set Up key until the desired screen is displayed. Keep in mind that the screen for Timer 2 will only be displayed if the S.F.O. mode is 2. When either Timer screen is first displayed, the selection arrows will be on line 2 (Stage 2). This means that line 2 is selected, to change which line is selected use the Next key. Once the desired line has been selected press and release the Clear key. The selected display line will now be blank indicating the unit is ready to accept the new time.

Now using numerical keys enter the new time, leading zeros do not have to be entered. For example if a time of 00.50 for a Stage 1 was desired and the Timer Range was set to xx.xx, 50 would be entered on the keypad. If less than four digits are entered for a time,

pressing the Next key will act as an enter key and the leading zeros will displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the time, press and released the Clear key and reenter the time again.

The Scrolling Arrow keys can also be used to change stage time. First make sure that the selection arrows are on the line to be changed. If not change which line is selected using the Next key. Once the desired line has been selected pressing and releasing the Up Arrow key will cause the time to increase by one. While pressing and releasing the Down Arrow key will cause the time to decrease by one. If the Up Arrow key is held down the time will scroll up and if the Down Arrow key is held down the time will scroll down.

Note: Entering all zeros into any stage turns that stage off.

Throttle Modes

The Throttle Modes for Timer 1 and 2 are displayed on Screens 4 and 5 respectively. Keep in mind that the S.F.O. mode must be 2 for Screen 5 to be viewable. The words “off on off on” or “on off on off” to the left of the stage times indicate the two possible Throttle modes. To change the Throttle mode press and hold down the zero key. After about two seconds the words “off on off on” or “on off on off” to the left of the stage times will toggle to the opposite setting. Once this takes place release the Zero key, the Throttle mode has now been changed. Each time the Zero key is pressed, held and then released the Throttle mode will switch between the two modes. To prevent an accidental switch between the two Throttle modes when entering a new stage time, the Zero key will be disabled for two seconds after the fourth number is entered for the new stage time.

Bracket Mode Settings for Screen 6

The Elite 500 can handle up to five shifts on each pass. The shifts occur in sequence 1 through 5, after the Transbrake releases. When the Elite 500 is displaying Screen 6 the Shift Points are displayed on line 1, the Shift Numbers are displayed on line 2, Multi-shift is displayed on line 3, and Shift Mode is displayed on line 4.

Setting Multi-Shift

The Multi-Shift value is displayed on line 3, The Elite 500 uses the information entered for the Multi-shift to help reduce errors and speed up data entry for the Shift Points. The Multi-shift setting should be set to the same number as the number of shifts the vehicle requires. To set the Multi-shift, use the Setup key to get to Screen 6 then use the Next key to select line 3. Next use the Up or Down Arrow key to set the Multi-shift amount.

Setting Shift Number and Shift Points

The Shift Number is displayed on line 2 and corresponds to the displayed Shift Point, which means if the Shift Number being displayed is a 2, the displayed Shift Point would be for the second shift. To view all of the Shift Points, move the selection arrows until they appear on lines 1 and 2 by repeatedly pressing the Next key. Now each time a Scrolling Arrow key is pressed and released the Shift Number will increase or decrease by one and the corresponding Shift Point will be displayed on line 1. After making sure the correct Shift Number is selected and selection arrows are on the top 2 lines, press the Clear key. Now using numerical keys enter the new Shift Point, leading zeros do not have to be entered. For example if a time of 0.800 for a Shift Point was desired 800 would be entered on the keypad. If less than four digits are entered for a Shift Point, pressing the Next key will act as an enter key and the leading zeros will be displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the Shift Point, press and release the Clear key and reenter the Shift Point again.

Setting Shift Mode

The Shift Mode setting corresponds to the operation of Shift terminal on the Elite 500. To change the Shift Mode, move the selection arrows to line 4, press and release a Scrolling Arrow key. Each time a Scrolling Arrow key is pressed and released the Shift Mode will toggle between the “HI” and “LO” settings. When the Shift Mode is set to “HI” (normally open) it means that every time a Shift Point is reached the Shift terminal will go from a low (0 Volts) to a high (12 Volts). When the Shift Mode is set to “LO” (normally closed) it means that every time a Shift Point is reached the Shift terminal will go from a high (12 Volts) to a low (0 Volts).

Pro Mode Screens

To enter into Pro Mode, while displaying any of the first five bracket screens, press and release the Set Up key and then press and release the number nine key. This will turn on the Pro Mode and display the Pro Screen. This is the only way to enable the Pro Mode features of the Elite 500. When Pro Mode is turned on the Bracket Mode settings are turned off with the exception of the S.F.O. and the P.T.S.O. settings. However all Bracket Mode settings are retained in memory and will be available when the Elite 500 returns to Bracket Mode. The Pro Mode of the Elite 500 has 5 different screens. While in Pro Mode, the Set Up key is used to move from screen to screen. When viewing a Pro Screen there will be a set of arrows on the right side of the LCD. These selection arrows point to the selected line on the screen. There will only be one selected line on the screen at a time, with the exception of lines 1 and 2 on Screen 4. To change the selected line, press and release the Next key. The selection arrows will move to the next line on the screen. If the line selected is at the bottom of the screen the selection arrows will return to the top of the screen when the Next key is pressed and released again. Once a line has been selected the setting or value for that line can be changed.

Each of the Pro Screens display four lines of information, these are shown below.

Screen Number and Type	Line 1	Line 2	Line 3	Line 4
1) Pro	Shift Point	Stage 1	Stage 2	Delay
2) Set Up	Stage 1 - Timer 1	Stage 2 - Timer 1	Stage 3 - Timer 1	Stage 4 – Timer 1
3) Set Up *	Stage 1 - Timer 2	Stage 2 - Timer 2	Stage 3 - Timer 2	Stage 4 – Timer 2
4) Set Up **	Shift Point	Shift Number	Multi-Shift	Shift Mode
5) Driver's Reaction Tester	Reaction Time	Average	Fastest	Slowest

* Will only be displayed if S.F.O. is set to mode 2
** Will only display if Multi-Shift is greater than 1.

Pro Mode Settings for Screen 1

When the Elite 500 is displaying Screen 1 the Pro Screen, The Shift Point for the first shift is displayed on line 1, Stage 1 of Pro Timer 1 is displayed on line 2, Stage 2 of Pro Timer 1 is displayed on line 3, and the Delay is displayed on line 4. Only the first Shift Point can be displayed on line 1 the rest of the Shift Points are shown on Screen 4. The first two stage times shown on the Pro Screen are the same as the first two stage times shown on Screen 2.

Setting the First Shift Point

When the Pro Screen is first displayed the selection arrows will be on line 3 (Stage 2), this means that line 3 is selected. To change the Shift Point, line 1 must first be selected. Use the Next key to move the selection arrows to line 1. Once the first line has been selected press and release the Clear key, line 1 will now be blank indicating the unit is ready to accept the Shift Point. Now using numerical keys enter the new time, leading zeros do not have to be entered. For example if 0.800 for a Shift Point time is desired 800 would be entered on the keypad. If less than four digits are entered for a time, pressing the Next key will act as an enter key and the leading zeros will displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the Shift Point, press and release the Clear key and reenter the Shift Point again.

The Scrolling Arrow keys can also be used to change the Shift Point. First make sure that the selection arrows are on line 1. If not, use the Next key to move the selection arrows to line 1. Once line 1 has been selected pressing and releasing the Up Arrow key will cause the Shift Point to increase by one. While pressing and releasing the Down Arrow key will cause the Shift Point to decrease by one. If the Up Arrow key is held down the Shift point will scroll up and if the Down Arrow key is held down the Shift Point will scroll down.

Setting the Time Range (xx.xx or x.xxx)

The Time Range controls the resolution of the first and second stages times only. The first and second stage times can be set to any number from 0.000 to 9.999 seconds when in "x.xxx" Range and from 00.00 to 99.99 seconds when in "xx.xx" Range. The settings for Pro Timer 1 and for Pro Timer 2 do not have to be the same. However care should be taken to notice the decimal point location when entering a stage time. To change the Time Range on the Pro Screen, the selection arrows must first be on either line 2 or 3. If the selection arrows are not on line 2 or 3 use the Next key until line 2 has been selected. Next press and hold the number **8** key until the decimal point moves to desired location. Setting the Time Range for Pro Timer 2 is explained on page 13.

Setting Stage Times

To enter a new stage time, first using the Next key move the selection arrows to the line to be changed, line 2 for Stage 1 or line 3 for Stage 2. Once the desired line has been selected press and release the Clear key the selected display line will now be blank indicating the unit is ready to accept the new time. Now using numerical keys enter the new time, leading zeros do not have to be entered. For example if a time of 00.50 for a Stage 1 is desired, 50 would be entered on the keypad. If less than four digits are entered for a time, pressing the Next key will act as an enter key and the leading zeros will displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the time, press and release the Clear key and reenter the time again.

The Scrolling Arrow keys can also be used to change stage times. First make sure that the selection arrows are on the line to be changed. If not change which line is selected using the Next key. Once the desired line has been selected pressing and releasing the Up Arrow key will cause the time to increase by one. While pressing and releasing the Down Arrow key will cause the time to decrease by one. If the Up Arrow key is held down the time will scroll up and if the Down Arrow key is held down the time will scroll down.

Note: Entering all zeros into any stage turns that stage off.

Setting Throttle Modes

The words "off on" or "on off" to the left of the stage times indicate the two possible Throttle modes for Pro Timer 1 on the Pro Screen. To change the Throttle mode, while the selection arrows are on either line 2 or line 3, press and hold down the zero key until the words "off on" or "on off" to the left of the stage times change to the opposite setting. Then release the zero key, the Throttle mode has now been changed. Each time the Zero key is pressed, held, and then released, the Throttle mode will switch between the two modes. To prevent an accidental switch between the two Throttle modes when entering a new stage time, the Zero key will be disabled for two seconds after the fourth number is entered for the new stage time.

Note: Any changes made to the Pro Timer 1 setting on the Pro Screen will be shown on Screen 2. Additionally any changes made to Pro Timer 1 on Screen 2 will be shown on the Pro Screen.

Setting the Delay Time

To enter a new Delay time, first using the Next key move the selection arrows to line 4. Once line 4 has been selected, press and release the Clear key, the Delay time will now be blank indicating the unit is ready to accept a new time. Now using numerical keys enter the new time, leading zeros do not have to be entered. For example if 0.010 for a Delay time is desired 10 would be entered on the keypad. If less than four digits are entered for a time, pressing the Next key will act as an enter key and the leading zeros will displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the time, press and release the Clear key and reenter the time again.

The Scrolling Arrow keys can also be used to change the Delay time. First make sure that the selection arrows are on line 4. If not, change which line is selected using the Next key. Once line 4 has been selected pressing and releasing the Up Arrow key will cause the time to increase by one. While pressing and releasing the Down Arrow key will cause the time to decrease by one. If the Up Arrow key is held down the time will scroll up and if the Down Arrow key is held down the time will scroll down.

Pro Mode Settings for Screens 2 & 3

The Elite 500 has two Pro Mode 4 Stage Timers called Pro Timer 1 and Pro Timer 2. All of the settings for Pro Timer 1 are on Screen 2 and all of the settings for Pro Timer 2 are on Screen 3. When the Elite 500 is displaying Screen 2 or 3, the Stage 1 time is displayed on line 1, the Stage 2 time is displayed on line 2, the Stage 3 time is displayed on line 3, and the Stage 4 time is displayed on line 4.

Setting Time Ranges (xx.xx or x.xxx) For Pro Timer 1 and Pro Timer 2

To change the Time Range for Pro Timer 1, repeatedly press the Set Up key until the text Timer 1 is displayed on the screen. **The Time Range controls the resolution of the first and second stages times only.** The first and second stage times can be set to any number from 0.000 to 9.999 seconds when in "x.xxx" Range and from 00.00 to 99.99 seconds when in "xx.xx" Range. The settings for Pro Timer 1 and for Pro Timer 2 do not have to be the same. However care should be taken to notice the decimal point location when entering a stage time. To change a Timer Range press and hold the number **8** key until the decimal point moves to desired location. The Range for Pro Timer 2 can only be set if the S.F.O. mode is set to 2, if the S.F.O. mode is set to any other number other than 2, Pro Timer 2 will not be displayed. The S.F.O. can only be viewed and changed while in Bracket Mode.

Setting Pro Timer 1 and 2 Stage Times

To enter a new stage time for Pro Timer 1, which is displayed on Screen 2, or Pro Timer 2, which is displayed on Screen 3, repeatedly press the Set Up key until the desired screen is displayed. Keep in mind that the screen for Pro Timer 2 will only be displayed if the S.F.O. mode is 2 on the Bracket side. When either Pro Timer screen is first displayed, the selection arrows will be on line 2 (Stage 2). This means that line 2 is selected, to change which line is selected use the Next key. Once the desired line has been selected, press and release the Clear key. The selected display line will now be blank indicating the unit is ready to accept the new time. Now using numerical keys enter the new time, leading zeros do not have to be entered. For example if a time of 00.50 for a Stage 1 was desired and the Timer Range was set to xx.xx, 50 would be entered on the keypad. If less than four digits are entered for a time, pressing the Next key will act as an enter key and the leading zeros will displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the time, press and released the Clear key and reenter the time again.

The Scrolling Arrow keys can also be used to change stage time. First make sure that the selection arrows are on the line to be changed. If not use the Next key to change which line is selected. Once the desired line has been selected pressing and releasing the Up Arrow key will cause the time to increase by one. While pressing and releasing the Down Arrow key will cause the time to decrease by one. If the Up Arrow key is held down the time will scroll up and if the Down Arrow key is held down the time will scroll down.

Note: Entering all zeros into any stage turns that stage off.

Throttle Modes

The Throttle Modes for Pro Timer 1 and 2 are displayed on screens 2 and 3 respectively. Keep in mind that the S.F.O. mode on the Bracket side must be 2 for Screen 3 to be viewable. The words "off on off on" or "on off on off" to the left of the stage times indicate the two possible Throttle modes. To change the Throttle mode press and hold down the zero key. After about two seconds the words "off on off on" or "on off on off" to the left of the stage times will toggle to the opposite setting. Once this takes place release the Zero key, the Throttle mode has now been changed. Each time the Zero key is pressed, held and then released the Throttle mode will switch between the two modes. To prevent an accidental switch between the two Throttle modes when entering a new stage time, the Zero key will be disabled for two seconds after the fourth number is entered for the new stage time.

Pro Mode Settings for Screen 4

The Elite 500 can handle up to five shifts on each pass. The shifts occur in sequence 1 through 5, after the Transbrake releases. The Elite 500 will only display Screen 4 if Multi-shift is set to more than one shift on the Bracket side. When Screen 4 is displayed the Shift Points are displayed on line 1, the Shift Numbers are displayed on line 2, Multi-shift is displayed on line 3, and Shift Mode is displayed on line 4.

Setting Multi-Shift

The Multi-Shift value is displayed on line 3. The Elite 500 uses the information entered for the Multi-shift to help reduce errors and speed up data entry for the Shift Points. The Multi-shift setting should be set to the same number as the number of shifts the vehicle requires. To set the Multi-shift, use the Setup key to get to Screen 6 then use the Next key to select line 3. Next use the Up or Down Arrow key to set the Multi-shift amount.

Setting Shift Number and Shift Points

The Shift Number is displayed on line 2 and corresponds to the displayed Shift Point, which means if the Shift Number being displayed is a 2, the displayed Shift Point would be for the second shift. To view all of the Shift Points, move the selection arrows until they appear on lines 1 and 2 by repeatedly pressing the Next key. Now each time a Scrolling Arrow key is pressed and released the Shift Number will increase or decrease by one and the corresponding Shift Point will be displayed on line 1. After making sure the correct Shift Number is selected and selection arrows are on the top 2 lines, press the Clear key. Now using numerical keys enter the new Shift Point, leading zeros do not have to be entered. For example if a time of 0.800 for a Shift Point was desired 800 would be entered on the keypad. If less than four digits are entered for a Shift Point, pressing the Next key will act as an enter key and the leading zeros will be displayed on the LCD. As the numbers are entered they are shown on the display, indicating the numbers are accepted and entered into memory. If a mistake is made while entering the Shift Point, press and release the Clear key and reenter the Shift Point again.

Setting Shift Mode

The Shift Mode setting corresponds to the operation of Shift terminal on the Elite 500. To change the Shift Mode, move the selection arrows to line 4, press and release a Scrolling Arrow key. Each time a Scrolling Arrow key is pressed and released the Shift Mode will toggle between the “HI” and “LO” settings. When the Shift Mode is set to “HI” (normally open) it means that every time a Shift Point is reached the Shift terminal will go from a low (0 Volts) to a high (12 Volts). When the Shift Mode is set to “LO” (normally closed) it means that every time a Shift Point is reached the Shift terminal will go from a high (12 Volts) to a low (0 Volts).

How the Elite 500 Works

Understanding Pro Mode

The Pro Mode feature of the Elite 500 was designed especially for vehicles that are used in Pro Light racing. Pro Mode has its own set of screens and settings. Most of these settings are unique to Pro Mode and have no effect on the unit when the Elite 500 is running in Bracket Mode. However some settings are common to both Bracket Mode and Pro Mode. These are the P.T.S.O. value, the S.F.O mode, Multi-shift, and the Shift Output Mode. If you are in Pro Mode and want to change either the P.T.S.O. value or the S.F.O mode, you will have to do so in the Bracket Mode set up screens. If Multi-shift is set to more than one shift you can the Shift Output Mode in both Bracket and Pro Mode. If Multi-shift is set to only one shift the Shift Output Mode can only be set in Bracket Mode. Like anything else in the Elite 500, once set, these settings will not change unless you go in and change them.

The main screen for Pro Mode is the Pro Screen, which has the first Shift Point, Stages 1 and 2 of Pro Timer 1, and the Pro Delay. When in Pro Mode, the Pro Screen has the settings that are needed most when racing.

The Push-buttons for Pro Mode

The push-button connected to the P.B. 1 terminal controls the Delay time. The P.B. 2 terminal functions only as a by-pass push-button when in Pro Mode. The Tap Up P.B. is only used to set the S.L.E if being used. The Tap Down P.B. will also set the S.L.E. if being used and will work as P.T.S.O. down track if desired. The L.L. P.B. (Line Lock push-button) can only be used to control the Line Locks solenoids (S.F.O. Mode must be set to 3).

The Outputs for Pro Mode

When the push-button, connected to P.B.1, is depressed and held, the Trans terminal will go to 12VDC and the Transbrake solenoid will engage and the words "Transbrake On" will be displayed on the screen. When the yellow lights on the tree come on, the push-button is released and the Elite 500 will start counting down the delay time. When the delay count down reaches zero the Transbrake will release and the words "Transbrake On" will be removed from the display.

Stage 1, of Pro Timers 1, starts counting down when the Transbrake is released. When the Stage 1 count down reaches zero, the T-stop terminal will change to the opposite voltage state. This means the Terminal will go from "Off" (0VDC) to "On" (12VDC) or from "On" (12VDC) to "Off" (0VDC) depending on the Throttle mode setting. The Stage 2 time also starts counting down when the Stage 1 time reaches zero. The T-stop terminal will stay in this opposite voltage state for the amount of time entered in Stage 2 of Pro Timer 1. When the Stage 2 is done, the T-stop terminal will again change voltage states. The Stage 3 time also starts counting down when the Stage 2 time reaches zero. The T-stop terminal will stay in this voltage state for the amount of time entered in Stage 3 of Pro Timer 1. When the Stage 3 is done, the T-stop terminal will again change voltage states for the amount of time in Stage 4. When Stage 4 is done the T-stop terminal will again change voltage states completing the timing of Pro Timer 1. If Stage 3 is set to zero, Pro Timer 1 will be complete at the end of Stage 2. Any time during the operation of the Pro Timer 1, from when the Transbrake releases to the completion of Pro Timer 1, the Programmable Throttle Stop Override (P.T.S.O.) can be used. The P.T.S.O. only works with Pro Timer 1.

Pro Timer 2 works the same as Pro Timer 1 with two exceptions. The output for Pro Timer 2 is the S.F.O. terminal, which must be enabled (S.F.O. mode set to 2) and the P.T.S.O. has no effect on Pro Timer 2.

The Shift controller also starts with the release of the Transbrake. This means the count down of the all the shift times will start at the release of the Transbrake. When a shift time count reaches zero, the shift terminal will change to its opposite voltage state. Meaning the Shift terminal will go from either 0VDC to 12VDC or from 12VDC to 0VDC depending on the Shift Output Mode setting. The Shift Terminal will return to the normal state three tenths of a second after changing to the opposite state. This completes a Shift on time.

Pro S.F.O. Settings

When in Pro Mode the **S.F.O**. works the same as in Bracket Mode and is explained in *Understanding the S.F.O.* With one exception, which is if the S.F.O. mode is set to 1 (S.L.E.). Only the Pro S.L.E. setting of 22.22 will work. If the S.L.E. is set to any other number, the S.L.E. will automatically be turned off when in Pro Mode.

Understanding Bracket Mode

When the Elite 500 is in Bracket Mode the Pro Mode is turned off. However all of the settings for the Pro Mode are saved in memory for when you go back to Pro Mode. Bracket Mode has a main screen that displays the Dial-ins and the Delays (you can access this screen by pressing the BRKT key at any time). While in bracket mode you can go through several "set up" screens by pressing the Set Up key. These "set up" screens allow access to all of the additional features that the Elite 500 has to offer. Some of these additional features are, the ability to tap up or tap down, to take two hits at the tree, enter a programmable starting line enhancer time, shift up to five times on time, and to select one or two push-buttons to start the delay times. The Driver's Reaction Tester is the only screen between Bracket Mode and Pro Mode that is the same. This means that the Driver's Reaction Tester will work the same in either mode.

Understanding the Dial-ins and Delays

The Bracket Screen displays both of the Dial-in times and both of the Delay times. These four time settings are used to control how long the Transbrake solenoid stays engaged after the push-button is released. The main feature here is the ability to Crossover, to go off the opponent's top yellow light if you are the faster vehicle. The Elite 500 always does a subtraction of Your Dial-in time from Their Dial-in time. If the result is greater than zero it's added to Delay 1. This new combined time of Delay 1 plus the difference of the Dial-ins is called the Crossover time. When a push-button connected to the P.B. 1 terminal is pressed the Transbrake will engage and the words "Transbrake On" will be displayed on the screen.

When the opponent's top yellow light comes on the button is released the Crossover time starts counting down. When the Crossover time reaches zero the Transbrake is released and the words "Transbrake On" are removed from the display. When it is desirable to go off your top yellow, set the Dial-ins to the same number. When the Elite 500 does the subtraction of Your Dial-in time from Their Dial-in time the difference will be zero. This result is then added to Delay 1 but because the added value was zero only the Delay 1 time will be used as the delay amount for the Transbrake.

The Elite 500 also allows a second hit at the tree. This is where the Delay 2 time is used. Depending on the Push-button Mode, the second hit at the tree can be done with the same button connected to P.B. 1 or a second push-button connected to P.B. 2., this is explained in *Understanding the Push-button Modes*. The Delay 2 time is usually set so that the second hit at the tree is on your top yellow. The Delay 2 time can be used even if the main Crossover delay is not being used, however this is not recommended.

For this example of two hits at the tree, two buttons are used and the Push-button Mode is set to two. The vehicle would be staged and both push-buttons would be pressed and held. This would engage the Transbrake and the words "Transbrake On" would be displayed on the screen. When the opponent's top yellow light comes on the button connected to P.B. 1 would be released. This would start the countdown of the Crossover time. Then when your top yellow light comes on the push-button connected to P.B.2 would be released. This would start the count down of the Delay 2 time. When either the Crossover time or the Delay 2 time reaches zero the Transbrake is released and the words "Transbrake On" are removed from the display. If the two times do not reach zero at the same time a new How Late time is generated and stored in memory. The How Late time is displayed on line 2 of Screen 2 and is explained in *Understanding the How Late*.

Note: **No Delay Box** including the Elite 500 can tell which hit at the tree is better, only which hit at the tree reached zero first. This means that if the first release on the opponent's top yellow was a perfect light and the second release on your top yellow was red, you will red light.

Understanding the Tap-Up and Tap-Down Feature

This improved feature of the Elite 500 allows the driver to Tap Up and Tap Down on the same pass. The tap information displayed is made up of two parts separated by a blank space. The left most digit shows the Tap count or the number of times the Tap push-button was pressed. The two right hand digits show the programmable time (0 to 99 thousandths of a second) to be subtracted from or added to the delay time every time the Tap-Up or Tap-Down push-button is pressed. For this example the Elite 500 is in Tap-Down mode with a Tap amount of .010 seconds and set in Push-button Mode 1 with one second of delay for Delay 1. If after the push-button connected to P.B. 1 is released and before the Transbrake releases, every time the push-button connected to the Tap terminal is pressed and released .01 seconds will be subtracted from the Delay time. Assuming the Tap push-button was pressed twice, the total amount of delay time the box would count down before releasing the Transbrake would be shortened to .980 seconds. Then after the pass when viewing the Tap information the numbers 2 .10 would be displayed on the Tap line. With the left digit indicating the Tap push-button was pressed twice and the two right digits showing the amount of time subtracted for each press of the button.

N**OTE:** When taking two hits at the tree the Tap will only affect the Delay that is started first.
Both the How Late and Tap information are stored in memory until either a new How Late or Tap count replaces the old one or the Clear is pressed and released will the selection arrows are on line 3 of Screen 2.

Understanding the How Late

To display the How Late information, repeatedly press the Set Up key until the text "**How Late**" is displayed on the left side of line 3. When taking two hits at the tree, the How Late feature of the Elite 500 will display which hit at the tree was used to release the Transbrake. Displaying a 1 in the left digit means delay 1 was used, displaying a 2 means delay 2 was used. The remaining digits are used to display the How Late time. For example if the number displayed is "2.012" the left most digit indicates that Delay 2 was used to release the Transbrake and that Delay 1 would have released .012 seconds later. This means if your reaction time was .510 on the time slip, add the How Late time of .012 to the .510 for a total reaction time of .522 on the crossover delay.

Understanding Push-button Modes and Push-button Interrupt Time

To view the current Push-button Mode, repeatedly press the Set Up key until the text **P.B. Mode** is displayed on the left side of line 3. The Push-button Mode information displayed is made up of two parts separated by a blank space, with the left digit indicating the Push-button Mode and the two right digits indicating the Interrupt time. There are 3 different Push-button Modes listed below, each button mode changes how the Elite 500 handles the input from the push-buttons, allowing the driver to select the preferred method.

1) One button – one hit at the tree: This button mode should be used by anyone only planning on hitting the tree once.
2) Two buttons – two hits at the tree: This mode is used when wanting to hit the tree twice with two separate buttons.
3) One button – two hits at the tree: This mode is used when wanting to hit the tree twice with one button.

The Push-button Interrupt time is used to disable both the P.B. 1 and P.B. 2 inputs after the Transbrake releases. While the push-buttons inputs are disabled, dashes will be shown on the display and if a push-button is pressed it will have no affect on the Elite 500. The main use of this feature is to protect against the reapplication of the Transbrake solenoid by accidentally hitting a push-button connected to either P.B. 1 or P.B. 2 while making a pass.

Selectable Function Output (S.F.O.)

The Selectable Function Output is a single output that can be programmed to function in four separate ways. Each of the separate functions is listed below with an explanation of the setting basic function. Once the basic understanding of the settings is understood, additional uses may be thought of.

1) When the S.F.O. is set to a one, the S.F.O. Functions as a Starting Line Enhancer (S.L.E.). This means a Throttle Stop connected to the S.F.O. will control the starting line RPM.
2) When the S.F.O. is set to a two, the S.F.O. Functions as a second 4 Stage Timer. This means that a Throttle Stop with dual solenoids can have a separate 4 Stage Timer driving each solenoid. Another function would be to control a stage of NOS.
3) When the S.F.O. is set to a three, the S.F.O. Functions as a Line Lock Control. This means that when the Line Lock solenoids are connected to the S.F.O. terminal they will engage when either the push-button connected to the Line Lock terminal is pressed (burn out) or when the Transbrake is engaged (starting line).
4) When the S.F.O. is set to a four the S.F.O. functions as a second Transbrake output. This means that if the main Transbrake output has been damaged in some way, the S.F.O. can be used as a spare until the box can be shipped back for repairs.
5) When the S.F.O. is set to a five the output is turn off.

Because the S.F.O. can be used to control the Transbrake solenoid a safety circuit for the S.F.O. had to be designed into the Elite 500. When the S.F.O. mode is set to 3, 4, or 5 the operation of the safety circuit is transparent. When the S.F.O. mode is set to either 1 or 2 the Elite 500 will always work when a push-button is pressed. However when setting the Throttle modes for Timer 2 the terminal strip output will not respond until the safety circuit is first reset. To reset the safety circuit simply run a delay cycle by pressing and releasing a push-button connected to either P.B. 1 or P.B. 2.

Understanding the Starting Line Enhancer

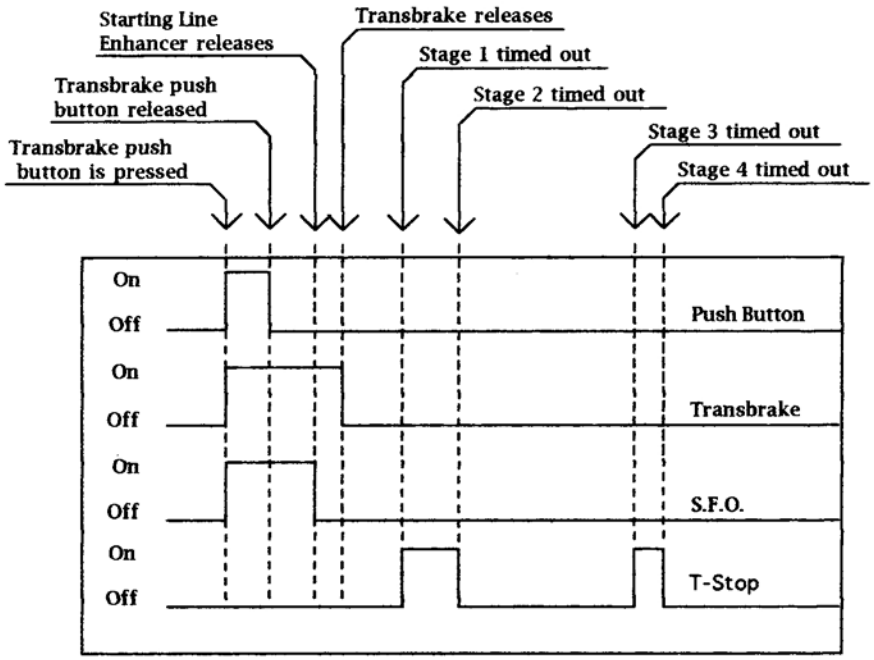
This is to help the racer understand how the Starting Line Enhancer works. When turned on, the Starting Line Enhancer will close the throttle under two different conditions, first if either the Tap-Up push-button or Tap-Down push-button is pressed before a Transbrake button and second when the Transbrake Push Button is pressed. After the throttle has been closed the Starting Line Enhancer will open the throttle at the programmed amount of time before the Transbrake is released.

The S.L.E. time is shown as four digits on line 1 of Screen 3. The four digits show the amount of time that the throttle will open up before the **TRANSBRAKE RELEASES.** All number from 00.00 to 99.99 can be used as a S.L.E. time, with the exceptions of 11.11 and 22.22, which are described below. If the Starting Line Enhancer time is greater than the delay time, the throttle will open as soon as a **Transbrake push-button is released**. If this is desired simply enter all nines (99.99). If all zeros (00.00) are entered the throttle will open up when the Transbrake releases. Using all ones (11.11) will pre-set the release of the throttle at eight tenths of a second before the Transbrake releases. This means that approximately two tenths of a second after your top yellow the throttle will open up. The benefit of the throttle opening up at this time is that it will not be a distraction when using your top yellow for a second hit at the tree.

Using all twos (22.22) will set the S.L.E. to Pro Mode. When the S.L.E. is set to Pro Mode, the release of the throttle will occur .25 seconds after the Transbrake is engaged. This means that the throttle must be closed using the Tap P.B. before staging.

NOTE: Use the Throttle mode for Timer 2, which can only be set while viewing the 4 Stage times for Timer 2 on Screen 5, to change
output voltage of the S.F.O. for the type of Throttle Stop being used as a Starting Line Enhancer.

Crossover Delay	= 01.35
Starting Line Enhancer	= 00.40
Timer 1	= 1.000
Timer 2	= 2.000
Timer 3	= 08.00
Timer 4	= 00.50



How the Programmable Throttle Stop Override works

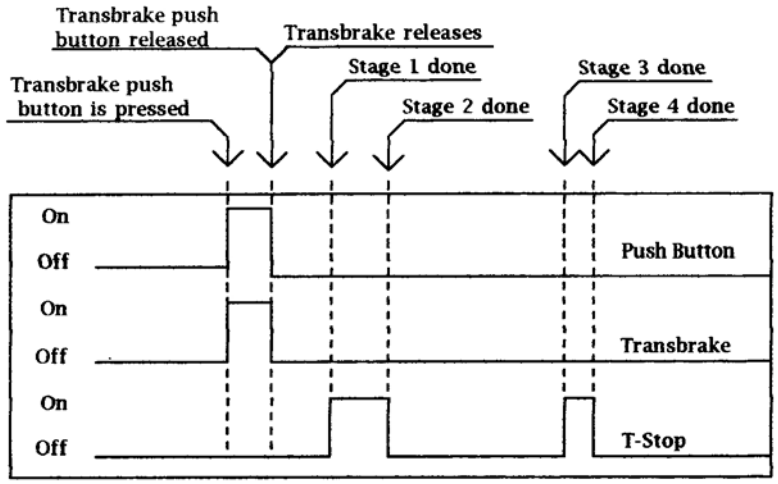
The Programmable Throttle Stop Override allows a programmable amount of time to be subtracted from either or both Stages 2 and 4 by pressing the Tap push-button. After the Transbrake releases there is a quarter of a second disable time before the Programmable Throttle Stop Override is enabled. This is to insure that a late delay Tap is not registered as a Programmable Throttle Stop Override. If the Programmable Throttle Stop Override is turned on and after the Programmable Throttle Stop Override is enabled, every time the Tap push-button is pressed while in either Stage 1 or 2 the Programmable Throttle Stop Override amount will be subtracted from Stage 2. The P.T.S.O. can also be used with Stages 3 and 4. This done by pressing and releasing the Tap push-button while in either Stage 3 or 4, the P.T.S.O. amount will be subtracted from Stage 4.

NOTE: Only the main 4 Stage Timer (Timer 1) is affected by the P.T.S.O.

Understanding the 4-Stage Timer

This is to help the racer understand the 4 Stage Timer when controlling a throttle stop. The 4 Stage Timer can also be used to control other timed devices, nitrous, or timing retarders.

Stage 1 represents when the throttle stop turns on. Stage 2 represents the amount of time (duration) the throttle stop will stay on. Stage 3 represents when the throttle stop will turn on the second time during the run. Stage 4 represents the amount of time (or duration) the throttle stays on the second time. Both Stage 1 and Stage 3 start counting from the release of the Transbrake. Stage 2 starts counting after the amount of time set in Stage 1 is completed. Stage 4 starts counting after the amount of time set in Stage 3 is completed.



Possible 8.90 S/C pass

Timer 1	= 1.000
Timer 2	= 2.000
Timer 3	= 08.00
Timer 4	= 00.50

Understanding the Driver's Reaction Tester

This improved feature in the Elite 500 allows a driver using the buttons mounted in the vehicle to test their reaction time. This can also be used to test different kinds of buttons and button locations in the vehicle for the quickest release possible.

To select the Driver's Reaction Tester, repeatedly press the Set Up key until Reaction Time appears on the top right of the screen. Once in Reaction Test Mode, press a push-button connected to either P.B. 1 or P.B. 2. After a preset amount of time the bulb on the top of the Elite 500 turns on, at which time the driver releases the push-button being held. On the top line the display will now show the amount of time from when the bulb came on to when the push-button was released, this is the reaction time.

If the driver takes more than one practice shot while in The Driver's Reaction Tester, line 2 will display the average reaction time, line 3 will display the fastest reaction time and line 4 will display the slowest reaction time.

If the driver lets go of the button too soon, before the bulb turns on, dashes will be shown on the top line to indicate a red light. If the driver does not let go of the button within .75 seconds after the bulb comes on, the top line will show a reaction time of 0999 to indicate a missed light. To exit the Driver's Reaction Test Mode press the Set Up or BRKT key. If neither P.B. 1 nor P.B. 2 push-button is pressed, the unit will automatically exit the Driver's Reaction Test Mode after 30 seconds. Each time a push-button is pressed the 30 second timer resets.

NOTE: The Clear key can be used to reset the Drivers Reaction Screen times.

NOTE: <u>When in the Driver's Reaction Test Mode, the Transbrake solenoid will not be activated when a push-button is pressed.</u> This is to prevent any damage to the solenoid from over-heating.

Understanding
Line Lock/Multi- Tap Push-button

The push-button connected to Line Lock terminal can be used for two separate functions.

1) To control the Line-Lock solenoids when doing a burn-out (S.F.O. mode must be set to 3).
2) To control the Multi-tap when the Transbrake is applied.

If the vehicle has Line Lock Solenoids, but the Elite 500 is **not** going to be used to control the Line Locks at the starting line, it is not necessary to connect either the Line Lock push-button or the Line Lock solenoids to the unit.

Understanding Multi-tap

This new and exclusive feature of the Elite 500 was added to subtract large amounts of time from the first delay started (usually Delay 1) with every press of the Multi Tap push-button (L.L.P.B.). This is used when the driver feels they have completely missed the start of the tree. The Multi-Tap mount is displayed on Screen 2 line 4. The left digit is the Multi-Tap count, this is the number of times the Multi-tap P.B. (L.L.P.B.) was pressed. The digit on the right is the Tap Multiplier and can be any number from 1 to 9. The Tap Multiplier will be multiplied by the Tap Down amount and subtracted from the first delay used every time the Multi-Tap push-button (L.L.P.B.) is pressed.

For example, if you have programmed 05 for a Tap-Down amount which is .005 and 2 for a Multi-Tap amount, while the transbrake is applied every time you press and release the L.L.P.B. a .010 is subtracted from the delay. Another example is 08 and 3 .024 would be subtracted from the delay.

Another example, if the Tap down amount is .020 seconds and the Multi Tap value is 5, then every time the Multi tap push-button is pressed .100 seconds will be subtracted from the first delay used. Another way of looking at this example would be, each press of the Multi Tap button is the equivalent of pressing the Tap Down button 5 times.

Connecting and Understanding a By-pass Push-button

A by-pass push-button is used to engage the Transbrake solenoid without starting a timing cycle. This can be helpful if the vehicle needs the Transbrake engaged to back up. There are two ways to do this with the Elite 500.

1) If the Push-button Mode is set to either 1 or 3, any button connected to the P.B. 2 input on the terminal strip will act as a by-pass push-button.
2) If the Push-button mode is set to 2 and a by-pass button is desired, connect one side of a push-button to the Transbrake terminal and the other side of the push-button to +12 Volts.

Connecting Two or More Output Together

Applying 12 Volts to any of the outputs will not damage the unit. Connecting one or more outputs together will also not damage the unit. An example of this would be connecting the S.F.O. and the Throttle Stop terminals together. This would be done if the same Throttle Stop was to used as a S.L.E. stop and a down track stop.

Connecting or shorting any output terminal directly to ground will cause damage to the unit. This damage will not be covered by the warranty. It is strongly recommended that a 15 Amp fuse be put in each of the wires coming from the output terminals.

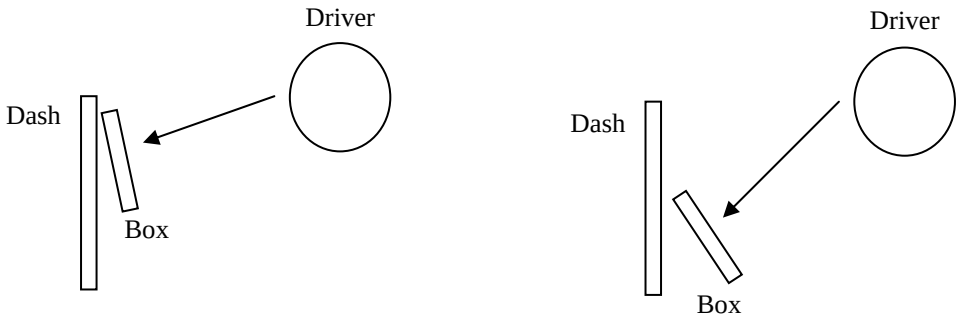
Understanding How to Cancel
a Timing Cycle Using the Clear Key

Pressing the Clear key after the Transbrake has released, will cancel any push-button interrupt time, stage timers, and shift points that have not completed. This special feature of the Clear key should be considered a reset of the Elite 500. Resetting of the Elite 500 is usually done when using the Transbrake button connected to either PB1 or PB2 is used to back up the vehicle. Pressing the Clear key after backing up will cancel undesired activations of the throttle stops and or shifter solenoids. We recommend using a by-pass push-button; however there is not always room for another button. In which case using the Clear key is the only alternative.

When using the Clear key to cancel a timing cycle, great care should be taken to insure that the Clear key is pressed before completion of both the shifter and the stage timers cycles. If the Clear key is pressed after completion of both the shifter and stage timers cycles, the Elite 500 will be in data entry mode and Clear key will function normally causing the currently selected line on the screen to be blanked.

Mounting the Elite 500

For complete viewing of the large LCD, care should be taken when mounting the unit to make sure that the display is angled towards the driver's eyes. Before mounting the Elite 500, place the box in the desired location and check the legibility of the display in both day and night conditions. As shown below, the lower the box is placed below eye level, the more the angle amount needs to increase for viewing.



Wiring the Elite 500