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ELITE 625

With
Dial Display Control

Instruction Manual

The
ELITE 625
From
DIGITAL DELAY

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Congratulations on your purchase of the Elite 625 delay box from Digital Delay. The Elite 625 offers new and upgraded features, while retaining the best features of the Mega 450, Elite 500, and the Elite 700. This makes the Elite 625 a very versatile and powerful Delay Box.

The Elite 625 may seem overwhelming at first. But even if you have never owned a Mega or Elite series Delay Box, the layout of the screens, and the commonality of how data is entered and viewed on the screens, eases the learning process of the Elite 625.

The Elite 625 comes with an external Relay board and a 6.5 foot cable to connect them. If you require a longer cable for your application please call Digital Delay.

Digital Delay also offers a wiring kit for the Elite 625 to help with the installation. Please call or check our website for more information.

Upgrading from a Mega 350,450, or Elite 500

If you are upgrading from a Mega 350, 450 or an Elite 500 you will find the Elite 625 is similarly laid out. The Keypad is the same and the screens are laid out in the same four-line fashion. For the most part, the six blue function keys; BRKT, Setup, Next, Clear, Up Arrow and Down Arrow, work the same. Switching between Bracket and Pro is also done in the same fashion as the earlier units. Pressing the Setup key followed by the number 9 key sets the unit in Pro Mode. Pressing the Bracket key (BRKT) sets the unit in Bracket Mode.

While there are several new features in the Elite 625, the biggest changes you will notice are the Dial Board control and the separate Relay Board. By moving all the connections to the vehicle to a separate board, we were able to increase the number of outputs from four on the older boxes to seven on the Elite 625. The current capability of the Shift and all three Timer outputs has also been increased from 15 Amps to 40 Amps. With the new Relay Board, the S.F.O. setting is no longer needed as the S.L.E., Line Lock, Shift, and all 3 Timers now have their own outputs.

Even if you feel very comfortable with how the earlier boxes work, it is recommended you review the following upgrades to these features.

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Basic Overview

The Elite 625 is really two Delay Boxes in one, a Bracket Delay Box and a Pro Delay Box each with their own independent screens and settings. There are ten Bracket Mode screens and seven Pro Mode screens.

The Elite 625 has the capability to run three 4-Stage Timers at one time. The 4-Stage Timers are labeled Timer 1, Timer 2, and Timer 3. Each of the Timers has its own set of settings for both Bracket and Pro Modes.

The Elite 625 can also shift the vehicle by time or RPM, up to five shifts. Here again, the shifter has separate shift points for both Bracket and Pro Mode.

The Tach and Replay Tach are now accurate to individual RPM. RPM Shifts can also now be set to an individual RPM. The Replay Tach now can hold 9 passes.

The Startling Line Enhancer (S.L.E.) now has its own output and can be set from 0.00 to 9.99 seconds in Bracket Mode. In Pro Mode the S.L.E. now has a fixed Hold Time. This allows the Transbrake solenoid to fully set before the engine goes to full throttle. The all new S.L.E. Starting Line Mode allows the driver to select if the Transbrake Button will set the S.L.E. or not.

The Line Lock now has its own output and the Burn-out feature allows the Line Locks to be activated during a burn-out for a pre-set amount of time. The Line Lock Starting Line Mode allows the driver to select if the Line Locks will engage along with the Transbrake solenoid or not.

Along with being able to Tap Up and Down in the same pass, the Elite 625 has a Multi Tap feature. That allows large amounts of time to be subtracted from the first Delay started.

The Driver's Reaction Tester has an LED for practicing, giving the most realistic reaction times possible. The Elite 625 also keeps track of and displays your statistics while practicing.

Getting Started

Before using the Elite 625, a basic understanding of how the screens and keypad are structured, is needed.

Basics for the Screen and Keypad

There are two home screens, one for Bracket Mode and one for Pro Mode. The Bracket Screen is the home screen for Bracket Mode. The Bracket Screen has the Dial-ins and Delays settings. The Bracket Screen can be returned to at any time by pressing the **Bracket** key (BRKT) on the keypad. This will also put the Elite 625 into Bracket Mode. The Pro Screen is the home screen for Pro Mode. The Pro Screen can be returned to at any time by pressing the **Setup** key followed by the **Number 9** key. This will also put the Elite 625 into Pro Mode.

All of the screens have four lines of information. A line displaying " -- " indicates that feature or time is turned off. For most screens, the text is to the left of each line to tell you what value or mode setting is being displayed for that line. The exceptions are the Replay Tach, where the text is above each line and Driver's Reaction Tester, where the text is below each line.

On the far right side of the screen, Selection Arrows are used to show which line is currently selected. The **Next** key is used to move the Selection Arrows. When the **Next** key is pressed the Selection Arrows will move to the next available line on the screen. If the bottom line is selected and the **Next** key is pressed, the Selection Arrows will move to the top most available line.

If the selected line has a number value, pressing the **Clear** key will clear the number allowing a new value to be entered using the numerical keys. Also often when a line with a number value is selected, pressing the **Up Arrow** or

Down Arrow key will cause the value to increase or decrease by one each time the Arrow key is pressed.

If the selected line has a mode setting, use the **Up Arrow** or **Down Arrow** key to change the mode settings. In a few cases the **Zero**, the **Seven** or the **Eight** key is used to change mode settings. Example, the **Zero** key changes Throttle mode for the Timers.

The **Setup** key is used to view other screens, each time the **Setup** key is pressed the next screen will be shown.

Note: The only way to get to the Bracket home screen is to press the Bracket (BRKT) key.

Initial Setup of the Elite 625

When the Elite 625 arrives and you turn it on, you will see the Bracket Mode Dial-In and Delay Screen. With the initial factory settings, the Elite 625 will function as a basic Crossover Delay Box, without any changes done to it.

To use the additional features of the Elite 625, information needs to be entered. There are two sets of screens, one set for Bracket Mode and one set for Pro Mode. Some of the features can only be set while in Bracket Mode. For example, the Line Lock Control is only accessible when in Bracket Mode. For this reason it is recommended that you setup the Bracket Mode screens first. Once the initial settings have been entered, most will not need to be changed unless the setup of the vehicle is changed.

Setting Bracket & Pro Mode Screens

The next section of the instructions will list what is on each line of the 10 Bracket screens (pages 12-19) and the 8 Pro screens (pages 20- 24). Also listed, are which keypad keys are used, to change the value or setting for each line.

The Dial-In and Delay Screen

Bracket Mode Screen 1

The Dial-in and Delay screen is the "home" Bracket Mode screen. Press the **BRKT** key to return to this screen at any time. This screen is where you enter your dial-in and delay times.

The **Selection Arrows** on the right side of the screen are used to show the line that is currently selected.

Use the **NEXT** key to change the selected line.

Your Dial

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one. **A Dial time entered above 19.99 will be set to 19.99.** Dial Display explained page 25.

Their Dial

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Delay 1

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Delay 2 (used for second hit at the tree)

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

The Delay 2 line is only used with Push Button Modes 2, 3, or 4.

Press the **SET UP** key to go to the Tap / Multi Tap and How Late Screen.

The Tap / Multi Tap & How Late Screen

Bracket Mode Screen 2

The three Tap features allow you to make adjustments to your Delay time if you feel you have released the Transbrake Push-button at the wrong time. The Tap features only work while the Transbrake time is counting down and only affects the first delay started. So if Delay 1 is started before Delay 2 the Tap features only affects Delay 1.

The **Selection Arrows** on the right side of the screen are used to show the line that is currently selected.

Use the **NEXT** key to change the selected line.

Tap Up

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Tap Down

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Multi Tap (Takes several tap downs with a single press)

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a value time. Or use the ↑ or ↓ key to increase or decrease the value by one.

How Late (Only used when taking two shots at the tree)

This shows the amount of time that was remaining on the unused Delay when taking two shots at the tree. Use the **CLEAR** key, to clear both the How Late information and all the Tap Counts.

Press the **SET UP** key to go to the Special Functions Screen.

Special Functions Screen

Bracket Mode Screen 3

This screen has settings for the S.L.E. (Starting Line Enhancer), P.T.S.O. (Programmable Throttle Stop Override), Push-button Mode with Push-button Interrupt Time, and Burn-out Control.

The **Selection Arrows** on the right side of the screen are used to show the line that is currently selected.

Use the **NEXT** key to change the selected line.

S.L.E.

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Use the ↑ or ↓ key to turn starting line mode on or off. Hold the **ZERO** key down to change the S.L.E. Throttle Mode.

P.T.S.O

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

P.B. Mode and Interrupt Time

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a Push-button Interrupt time. Use the ↑ or ↓ key to change the P.B. Mode. Push Button Modes are explained on page 31.

Burn-out

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a Burn-out time. Use the ↑ or ↓ key to turn the Starting Line Mode on or off.

Press the **SET UP** key to go to the Timer 1 screen.

<u>Timer 1, 2, and 3 Screens</u>

Bracket Mode Screens 4, 5, and 6

The next three screens are the 4-Stage Timer screens. All of the Timer screens are adjusted in the same way.

The **Selections Arrow** on the right side of the screen are used to show the line that is currently selected.

Use the **NEXT** key to change the selected line.

<u>Stage 1</u>

Use the **CLEAR** key, next use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

<u>Stage 2</u>

Use the **CLEAR** key, next use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

<u>Stage 3</u>

Use the **CLEAR** key, next use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

<u>Stage 4</u>

Use the **CLEAR** key, next use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

To change the **<u>Throttle Mode</u>**, hold down the **ZERO** key for 2 seconds, explained on page 36.

To change the **<u>Throttle Range</u>**, hold down the **EIGHT** key for 2 seconds, explained on page 36.

Use the **SET UP** key to get to the Shift Control screen.

Shift Control

Bracket Mode Screen 7

The Elite 625 can handle up to 5 shifts by time or RPM in a single pass.

The **Selection Arrows** on the right side of the screen are used to show the line that is currently selected.

Use the **NEXT** key to change the selected line.

Tach

Displays engine RPM when running. When the engine is not running, displays the Peak RPM. This is the highest RPM the engine reached, since the last time the Peak PRM was cleared. Use the **CLEAR** key, when the engine is off to clear the Peak RPM.

Shift Point

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a Shift Point. Or use the ↑ or ↓ key to increase or decrease the Shift Point value by one.

Number of Cylinders

Settings of 2, 4, 5, 6, 8, 10, and 12 are available. Use the ↑ or ↓ key to select the desired setting.

Shift mode

Use the ↑ to select the Shift mode HI or LO. The Shift Mode can only be changed when Shift 1 is displayed. Use the **ZERO** key to change which Shift 1 through 5 is being displayed. Use the ↓ key to select if the shift will be by time or RPM for the displayed shift.

Press the **SET UP** key to go to the Driver's Reaction Tester screen.

The Driver's Reaction Tester Screen

Bracket Mode Screen 8

This screen allows you to test your reaction time using the Push-buttons mounted in the vehicle. To practice, press and hold down a Push-button connected to either the P.B. 1 or P.B. 2 terminal. When the light above the keypad comes on, release the button. The Elite 625 will now display your reaction time. Keep in mind that the reaction time does not directly correlate to the Delay times used on the Dial-in and Delay screen. This is because the Reaction Tester does not take into account the vehicle's roll out time.

NOTE: While using the Driver's Reaction Tester, the Transbrake solenoid will not be activated. This is to prevent any damage to the solenoid from over-heating.

The **Clear** key can be used to clear all the times on the Driver's Reaction Tester Screen.

Reaction Time

This is your current reaction time while practicing.

Average

This is your average reaction time this session.

Fastest

This is your fastest reaction time this session.

Slowest

This is your slowest reaction time this session.

Note: After 30 seconds of non-use the Elite 625 will automatically return to the Dial-In and Delay Screen.

Press the **SET UP** key to go to the Replay Tach screen.

The Replay Tach Screen

Bracket Mode Screen 9

This screen allows you to review the last nine recorded passes you made.

Note: The Replay Tach screen can only be viewed when the engine is not running. If the engine is started while viewing the Replay Tach the Elite 625 will automatically return to the Dial-in and Delay screen.

Replay Tach

This is the recorded engine RPM, for the time shown on the next line.

Time

The time is in relation to the release of the Transbrake solenoid. To jump to a specific time, use the **CLEAR** key, then use the **NUMERICAL** keys to enter the time. Or use the ↑ or ↓ key to scroll through the pass.

Pass #

This is the pass being viewed. With 1 being the last pass and 9 being 9 passes ago. Use the **NEXT** key to select the desired pass to replay.

Shift #

The shifts can be directly viewed by pressing the **NUMERICAL** keys 1 through 5. Pressing the **Zero** key will return you to the starting line RPM.

Press the **SET UP** key to go to the Dial Board Intensity Control Screen.

Dial Board Intensity Control

Bracket Mode Screen 10

The Elite 625 has separate Day and Night intensity settings. Values from zero (Off) to six, the brightest, can be set for both Day and Night.

The **Selection Arrows** on the right side of the screen are used to show the line that is currently selected.

Use the **NEXT** key to change the selected line.

Day Intensity Setting (Top Line)

Use the ↑ or ↓ key to increase or decrease the intensity value by one. A zero turns off the Day Dial Display Controller feature of the Elite 625.

Night Intensity Setting (2nd Line)

Use the ↑ or ↓ key to increase or decrease the intensity value by one. A zero turns off the Night Dial Display Controller feature of the Elite 625.

Note: To turn off the Dial Display control part of the Elite 625, set the intensity setting for either Day or Night to zero. This would be done if the Elite 625is not connected to a Dial Display or if there is communication failure that can't be resolved.

Press the **SET UP** key to go to the Tap / Multi Tap and How Late Screen.

The Pro Screen

Pro Mode Screen 1

The Pro screen is the "home" Pro Mode screen. Press the **SET UP** key followed by the **9** key to return to this screen at any time. This screen allows you quick access to the values needed most for Pro light racing. Your Delay, first Shift Point, and the first two Stage Times for Timer 1.

The **Selection Arrows** on the right side of the screen are used to show the line that is currently selected.

Use the **NEXT** key to change the selected line.

Shift 1

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Stage 1 (Timer 1)

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Stage 2 (Timer 1)

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Delay

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Press the **SET UP** key to go to the Pro Mode Timer 1 screen.

Timer 1, 2, and 3 Screens

Pro Mode Screens 2, 3, and 4

The next three screens are the 4-Stage Timer screens. All of the Timer screens are adjusted in the same way.

The **Selections Arrow** on the right side of the screen are used to show the line that is currently selected.

Use the **NEXT** key to change the selected line.

Stage 1

Use the **CLEAR** key, next use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Stage 2

Use the **CLEAR** key, next use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Stage 3

Use the **CLEAR** key, next use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

Stage 4

Use the **CLEAR** key, next use the **NUMERICAL** keys to enter a time. Or use the ↑ or ↓ key to increase or decrease the time by one.

To change the **Throttle Mode**, hold down the **ZERO** key for 2 seconds, explained on page 36.

To change the **Throttle Range**, hold down the **EIGHT** key for 2 seconds, explained on page 36.

Use the **SET UP** key to get to the Shift Control screen.

Shift Control

Pro Mode Screen 5

The Elite 625 can handle up to 5 shifts by time or RPM in a single pass.

The **Selection Arrows** on the right side of the screen are used to show the line that is currently selected.

Use the **NEXT** key to change the selected line.

Tach

Displays engine RPM when running. When the engine is not running, displays the Peak RPM. This is the highest RPM the engine reached, since the last time the Peak PRM was cleared. Use the **CLEAR** key, when the engine is off to clear the Peak RPM.

Shift Point

Use the **CLEAR** key, then use the **NUMERICAL** keys to enter a Shift Point. Or use the ↑ or ↓ key to increase or decrease the Shift Point value by one.

Number of Cylinders

Settings of 2, 4, 5, 6, 8, 10, and 12 are available. Use the ↑ or ↓ key to select the desired setting.

Shift mode

Use the ↑ to select the Shift Mode HI or LO. The Shift Mode can only be changed when Shift 1 is displayed. Use the **ZERO** key to change which Shift 1 through 5 is being displayed. Use the ↓ key to select if the shift will be by time or RPM for the displayed shift.

Press the **SET UP** key to go to the Driver's Reaction Tester screen.

The Reaction Tester Screen

Pro Mode Screen 6

This screen allows you to test your reaction time using the Push-buttons mounted in the vehicle. To practice, press and hold down a Push-button connected to either the P.B. 1 or P.B. 2 terminal. When the light above the keypad comes on, release the button. The Elite 625 will now display your reaction time. Keep in mind that the Reaction time does not directly correlate to the Delay times used on the Dial-in and Delay screen. This is because the Reaction Tester does not take into account the vehicle's roll out time.

NOTE: While using the Driver's Reaction Tester, the Transbrake solenoid will not be activated. This is to prevent any damage to the solenoid from over-heating.

The **Clear** key can be used to clear all the times on the Driver's Reaction Tester Screen.

Reaction Time

This is your current reaction time while practicing.

Average

This is your average reaction time this session.

Fastest

This is your fastest reaction time this session.

Slowest

This is your slowest reaction time this session.

Note: After 30 seconds of non-use the Elite 625 will automatically return to the Dial-In and Delay Screen.

Press the **SET UP** key to go to the Replay Tach screen.

The Replay Tach Screen

Pro Mode Screen 7

This screen allows you to review the last nine recorded passes you made.

Note: The Replay Tach screen can only be viewed when the engine is not running. If the engine is started while viewing the Replay Tach the Elite 625 will automatically return to the Dial-in and Delay screen.

Replay Tach

This is the recorded engine RPM, for the time shown on the next line.

Time

The time is in relation to the release of the Transbrake solenoid. To jump to a specific time, use the **CLEAR** key, then use the **NUMERICAL** keys to enter the time. Or use the ↑ or ↓ key to scroll through the pass.

Pass #

This is the pass being viewed. With 1 being the last pass and 9 being 9 passes ago. Use the **NEXT** key to select the desired pass to replay.

Shift #

The shifts can be directly viewed by pressing the **NUMERICAL** keys 1 through 5. Pressing the **Zero** key will return you to the starting line RPM.

Press the **SET UP** key to go to the Pro Screen.

Understanding the Dial-ins and Delays

The Dial-in and Delay 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 625 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.

Example, when the vehicle is staged, the push-button connected to the P.B. 1 terminal is pressed. When the push-button is pressed the Transbrake will engage. When the opponent's top yellow light comes on, the button is released and then the Crossover time starts counting down. When the Crossover time reaches zero the Transbrake is released. Thus, releasing the vehicle from the starting line and starting the pass.

When it is desirable not to Crossover, set the Dial-ins to the same number. When the Elite 625 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 625 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 or bottom yellow. The Delay 2 time can be used even if the

main Crossover delay is not being used, however this is not commonly done.

For this example of two hits at the tree, two buttons are used and the Push-button Mode is set to Two Hits with Two Buttons. The vehicle would be staged and both push-buttons would be pressed and held. This would engage the Transbrake. 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 bottom 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. 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 4 of the Tap / Multi Tap & How Late screen.

Note: No Delay Box including the Elite 625 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 bottom yellow was red, you will red light.

If you are new to using a Delay Box, a good way to get started is to cancel out the Dial-ins, by either entering all zeros, or the same number in both Dial-ins. Then enter 1.000 second for Delay 1 as this is a good starting value. Make some time trial passes, releasing the Push-button on your top amber light. Adjust the Delay 1 time, by adding more time for a red light or subtracting time if late, to get as close to a perfect reaction time as possible. Once Eliminations start, make sure to enter the Dial-ins for you and your opponent. Release the Push-button on the first amber light that comes on, regardless of the side of the tree.

Understanding the
Tap / Multi Tap and Howlate Screen

Tap Count

The Tap Count is shown by the left digit for each line. The count is used to show how many times the Tap Up, Tap Down, and Multi Tap Push-buttons were pressed. If a Tap Up, Tap Down, or Multi Tap button is not used during a pass the corresponding Tap Count will be zero. The Tap Count is stored until the next time the Transbrake is used.

Tap Up

The Tap Up feature is used to keep from red lighting if you released the Transbrake Push-button too early. The right 2 digits of this line show the amount of time that will be added each time the Tap Up button is pressed. This Tap Up amount will only be added to the first delay started. Any number from .000 to .099 can be used for the Tap Up amount. The push-button connected to the P.B. 4 input is the Tap Up Push-button.

Tap Down

The Tap Down is used to keep from having a bad light if you released the Transbrake push-button a little late. The right 2 digits of this line show the amount of time that will be subtracted each time the Tap Down button is pressed. This Tap Down amount will only be subtracted from the first delay started. Any number from .000 to .099 can be used for the Tap Down amount. The push-button connected to the P.B. 3 input is the Tap Down Push-button.

Multi Tap

The Multi Tap is used to keep from having a bad light if you released the Transbrake Push-button very late. The Multi Tap feature works by taking several Tap Downs

with the single press of a button. An example is, if the Multi Tap amount is set to 5, each time the Multi Tap button is pressed it's the same as pressing the Tap Down button five times.

The right digit of this line shows the Multi Tap amount. The Multi Tap amount will only be subtracted from the first delay started. Any number from 0 to 9 can be used for the Multi Tap amount. The push-button connected to the P.B. 2 input is the Multi Tap Push-button. The Multi Tap feature cannot be used when the P.B. Mode is set to 2.

How Late

When taking two shots at the tree, the How Late time shows how much later the Transbrake would have released using the other delay time. For example if the Delay Used shows a "2" it indicates that Delay 2 was used to release the Transbrake. And if the How Late time is ".012" it indicates that Delay 1 would have released .012 seconds later. This means if your reaction time was .010 on the time slip, add the How Late time of .012 to the .010 for a total reaction time of .022 this is what your reaction time would have been if Delay 1 had been used.

The How Late is only enabled by when the Push-button Mode is set to either P.B. Mode 2 or 3. In either of these two cases the Elite 625 is set up to take two shots at the tree. When both Delay 1 and Delay 2 are counting down at the same time, a How Late time is generated. The Delay Used indicates which delay was used to release the Transbrake solenoid, displaying either a 1 for Delay 1 or a 2 for Delay 2.

Note: No Delay box including the Elite 625 can tell which of the two shots at the tree was better, only which was faster. This means the Transbrake will release when either of the delay times reaches zero, even if it results in a red light.

Understanding the Special Functions Sreen

S.L.E.

S.L.E. stands for Starting Line Enhancer. The S.L.E. feature is typically used in-conjunction with an in-line Throttle Stop. When activated, the S.L.E. will close the Throttle Stop. This allows the driver to push the gas pedal to wide open throttle position and have the engine rev only to the preset RPM level.

Bracket Mode S.L.E.

In Bracket Mode the S.L.E. can be activated two different ways. First, before the vehicle is staged, if the Tap Down button is pressed the S.L.E. is activated. Secondly, when the starting line setting is turned on, pressing the Transbrake Push-button during the staging of the vehicle will cause the S.L.E. to activate. Once activated, the S.L.E. stays on until the Transbrake Delay time is counting down. While the Transbrake Delay time is counted down the Elite 625 compares the S.L.E time to the remaining Delay time. When the Delay time becomes less than the S.L.E. time the S.L.E. Output is turned off and the engine is returned to full throttle.

Any value between 0.00 and 9.99 can be used as a S.L.E. time. A typical S.L.E. value is eight tenths (0.800). This setting will open the throttle eight tenths (0.800) of a second before the Transbrake releases. If the motor does not get up against the 2 Step in this amount of time, an S.L.E. value greater than eight tenths (0.800) should be used.

If all nines (9.99) are entered the throttle will open up as soon as the **Transbrake push-button is released.** If all zeros (0.00) are entered the throttle will open up **when the Transbrake releases.**

Pro Mode S.L.E.

In Pro Mode the S.L.E. can only be activated by pressing the Tap-Down button before the Transbrake is engaged. When activated, the S.L.E. will close the Throttle Stop. This allows the driver to push the gas pedal to wide open throttle position and have the engine rev only to the preset RPM level. Once activated the S.L.E. stays on until the Push-button used to apply the Transbrake is pressed, at which time the S.L.E. waits about 1/4 of a second for the Transbrake to fully engage then turns off, and the engine is returned to full throttle.

Note: Pressing the Seven key while the S.L.E is activated, cancels the S.L.E. and returns full throttle control.

S.L.E. Throttle Mode

There are two S.L.E. Throttle Mode settings, High and Low. If set to High, when the S.L.E. Output is activated it will put out +12Volts. If set to Low, when the S.L.E. output is activated it will remove +12Volts. With the S.L.E. line selected, the S.L.E. Throttle Mode is changed by holding down the **ZERO** key until the output changes states.

S.L.E. Starting Line Mode

The Starting Line Mode only affects the S.L.E. in Bracket Mode. When turned on the S.L.E. will activate with the Transbrake solenoid or the Tap Down button. This feature is used when the driver wants to stage the vehicle without having the gas pedal on the floor. Or if a Tap Down button has not been installed in the vehicle. With the S.L.E. line selected, use the ↑ or ↓ key to turn the starting line mode on or off. When turned on an "**L**" will be displayed just before the S.L.E. time.

P.T.S.O.

P.T.S.O. stands for Programmable Throttle Stop Override. The P.T.S.O. only affects Timer 1. The P.T.S.O. feature can be thought of as a Tap Down for Timer 1. By using a button connected to the P.B. 3 input, the P.T.S.O. allows a programmable amount of time to be subtracted from either or both Stages 2 and 4 of Timer 1.

After the Transbrake releases the Elite 625 waits a quarter of a second before enabling the P.T.S.O. This is to ensure that a late Delay Tap Down is not registered as a P.T.S.O. Once the P.T.S.O. is enabled, each time the Tap Down button is pressed while in either Stage 1 or 2 the P.T.S.O. time amount is subtracted from Stage 2. Each time the Tap Down button is pressed while in either Stage 3 or 4, the P.T.S.O. time amount is subtracted from Stage 4.

Note: To turn off the P.T.S.O. enter all zeros for the P.T.S.O. value. When off, " -- " will be displayed.

Push-button Mode and Interrupt Time

There are 5 different Push-button Modes listed below, each button mode changes how the Elite 625 handles the input from the push-button(s) to activate the Transbrake, allowing the driver to select the preferred method.

1) PB Mode 1 – one hit at the tree with one button: Use this mode if you only planning on taking one hit at the tree. This is the most commonly used mode.
2) PB Mode 2 – two hits at the tree with two buttons: Use this mode if you want to take two hits at the tree with two separate buttons.
3) PB Mode 3 – two hits at the tree with one button: Use this mode if you want to take two hits at the tree with one button.

4) PB Mode 4 – two hits at the tree with one button: Use this mode if you flinch a lot at the starting line. In this mode you can cancel the first hit because of a potential red light due to a flinch and switch to a second hit.

5) PB Mode 5 – Set and Go: Use this mode if you want the start the delay timing on the press of the button instead of the release. One hit at the tree using two buttons. Explained further on page 33.

In P.B. Mode 1 only Push-button 1 is used to apply the Transbrake. Every time the button connected to the P.B. 1 input is pressed, the transbrake solenoid is applied and the Cross time (dial-in difference + Delay 1) is reset to the starting point. When the button is released the delay time starts counting down. If the button is pressed and released again before the Transbrake releases the Elite 625 will restart the full delay sequence again. This can be very helpful if you flinch and let go of the Push-button before the tree comes on.

In P.B. Mode 2 Push-button 1 and Push-button 2 can be used to apply the Transbrake. P.B. 1 is used to control the Cross time (dial-in difference + Delay 1) and P.B. 2 to control Delay 2. If you flinch, either timer can be reset just like P.B. Mode 1, with P.B. 1 restarting the Delay 1 time and P.B. 2 restarting the Delay 2 time.

In P.B. Mode 3 only Push-button 1 is used to apply the Transbrake. When the button connected to the P.B. 1 input is pressed, the transbrake solenoid is applied and the Cross time (dial-in difference + Delay 1) is reset to the starting point. When the button is released the Cross time starts counting down. If the button is pressed again the Delay 2 time is reset to the starting point. When the button is released the second time the Delay 2 time starts counting down. Whichever timer reaches zero first releases the Transbrake solenoid and generates a How Late time.

If you flinch, you can't restart Cross time. This means if you let go of the Push-button before tree comes on you will red light. This is the only drawback to using one button for two shots at the tree.

In P.B. Mode 4 only Push-button 1 is used to apply the Transbrake. When the button connected to the P.B. 1 input is pressed, the Transbrake solenoid is applied and the Cross time (dial-in difference + Delay 1) is reset to the starting point. When the button is released the Cross time starts counting down. If the button is pressed again the Delay 2 time is set to the starting point and the counting down of the Cross time is canceled to keep from red lighting. When the button is released the second time the Delay 2 time starts counting down. When the Delay 2 timer reaches zero the Transbrake solenoid is released.

In P.B. Mode 5 the push-button connected to the P.B. 2 terminal is used to apply the Transbrake and set the Cross time (dial-in difference + Delay 1) to the starting point. When the button connected to the P.B. 1 input is pressed, the Cross time starts counting down. If the button is pressed again the again before the Transbrake releases the Elite 625 will restart the full delay sequence again. This can be very helpful if you flinch and press the push-button before the tree comes on.

Push-button Interrupt

The Push-button Interrupt Time is a safety feature that keeps the Transbrake from being reapplied when a button is accidentally bumped or pressed during a pass. This safety feature only affects the Transbrake button(s) after the vehicle leaves the starting line. The time entered is in seconds and is the amount of time that any button used to apply the Transbrake will be disabled after the Transbrake releases. In most cases, the amount of time entered in Push-button Interrupt Time is just long enough to get the vehicle out of low gear. This is because most Transbrake Solenoids

will not function in high gear. However if the vehicle's Transbrake will function in high gear, a larger time is recommended.

Note: A setting of 00 will turn this feature off.

Line Lock Mode

The Line Lock Mode is used to select whether the Line Locks will be used only for the burnout or for both the burn-out and at the starting line. The Line Lock Mode is only set in Bracket Mode but works the same in both Bracket and Pro Mode. When turned on the Line Locks are activate by themselves for a burn-out and with the Transbrake solenoid when staging the vehicle. Use the ↑ or ↓ key to turn the starting line mode on or off. When turned on an "**L**" will be displayed just before the Burn-out time.

Burn-out Timer

The Burn-out Timer is used to control the length of the burn-out. This has the benefit of making the length of the burn-outs the same every time. The Burn-out Timer has two modes of operation, one with the Tach wire connected and one without the Tach wire connected.

With the Tach wire connected, the Elite 625 will wait to start counting down the Burn-out Time, until the engine reaches 3500 RPM. With the Tach wire connected and the engine running, when the Line Lock button is pressed the Line Lock solenoid(s) is turned on. The Line Lock button can be released at this point and the Line Lock will stay engaged. Then when the Burn-out is started and the engine RPM exceeds 3500 RPM the Burn-out Timer starts timing. When the count reaches zero the timer will release the Line Lock solenoid(s) allowing the car to move forward.

Without the Tach wire connected, the Elite 625 will start counting down the Burn-out Time when the Line Lock push-button is released. When the Line Lock button is

pressed and held the Line Lock solenoid(s) is turned on. The engine is then brought up to the desired RPM at which time the Line Lock button is released. When the button is released the Elite 625 will start counting down the Burn-out Time. When the count reaches zero the timer will release the Line Lock solenoid(s) allowing the car to move forward.

Understanding the Timers

All the Timers in the Elite 625 are 4-Stage Timers. The 4-Stage Timers are used to control down-track events, using a pre-programmed time. Some examples of what a 4-Stage Timer may control are Throttle Stops, Nitrous solenoids, a Lockup Converter, Electrically controlled shocks, and Lean-out Valves.

Since all of the Timer screens function the same, the information below and on the next page can be used for Timer 1 Settings, Timer 2 Setting, or Timer 3 Settings.

Timing of a 4-Stage Timer starts at the release of the Transbrake solenoid. When the Transbrake releases, the times for both Stages 1 and 3 start counting down. At the completion of Stage 1, the time for Stage 2 starts counting down and at the completion of Stage 3, the time for Stage 4 starts counting down. Additionally, the Stage 3 time must be greater than the Stages 1 and 2 times added together. If the Stage 3 time is less than the total of Stages 1 and 2 added together, or if Stages 3 and 4 are set to zero, Stages 3 and 4 will be turned off.

Another way of looking at the Stage timing is, Stage 1 is how far out the vehicle goes before the Stage 2 time starts. The Stage 2 time would be how long a device is active (its duration). Stages 3 and 4 can be used to repeat what Stages 1 and 2 did further down the track. Using only Stages 1 and 2 an example is, if a Throttle Stop is being used, Stage 1 would be how far out the vehicle went in time

before the Throttle Stop closed. Stage 2 would be how long the Throttle Stop stayed closed. Another example using only Stages 1 and 2 is, if Nitrous is being used, Stage 1 would be how far out the vehicle went in time before the Nitrous turned on. Stage 2 would be how long the Nitrous stayed on. If it is desired to have the Nitrous on for the rest of the pass, enter a Stage 2 time greater than the vehicle's ET.

Understanding Throttle Mode

The Throttle Mode is used to control whether the output will supply 12 Volts (On) or remove 12 Volts (Off) for the Stages. Each 4-Stage Timer has a Throttle Mode associated with it. The Throttle Mode has two settings shown as on/off/on/off or off/on/off/on. The Throttle Mode for each Timer is displayed vertically down the right side of the screen next to the time for the corresponding Stage. A Stage set to *on*, indicates +12Volts out for that Stage. A Stage set to *off* indicates no Voltage out for that Stage. For example, if next to Stage 1 the Throttle Mode is off then no voltage will be put out for the duration of the Stage 1 time. As the Stage 2 Throttle Mode is always the opposite of Stage 1, in this example the Throttle Mode for Stage 2 has to be on. Therefore at the completion of Stage 1 the output will switch and put out +12Volts for the duration of the Stage 2 time.

To change the Throttle Mode on any 4-Stage Timer screen, hold down the Zero key for two seconds.

Understanding the Timer Range

Timer Ranges

Each 4-Stage Timer also has a Timer Range setting. The Timer Range setting is used to control whether Stages 1 and 2 go from 0.000 to 9.999 or 00.00 to 99.99 seconds.

Stages 3 and 4 can't be changed and are always 00.00 to 99.99 seconds. Setting the Timer Range is explained on pages 15 for Bracket Mode and 21 for Pro Mode.

To change the Timer Range on any 4-Stage Timer screen, hold down the Eight key for two seconds.

Understanding the Shift Control Screen

Tach and Peak RPM

Anytime the engine is running, the top line of the Shift control screen will function as a digital Tach, displaying the engine RPM. When the engine is shut off the Peak RPM is shown on the display in place of the Tach. The Peak RPM value will be the highest RPM the engine has reached since the last time the Peak RPM cleared. To clear the Peak RPM, move the selection arrows to line 1 using the Next key. While the selection arrows are on line 1, pressing the Clear key clears the Peak RPM resetting it to zero.

Shift Points

The Shift Points are displayed on the second line. In both Bracket Mode and Pro Mode the Elite 625 can handle up to 5 shifts each pass. The 5 shifts can be made by time, RPM, or a combination of both. The shifts occur in sequence starting with Shift Number 1 and progressing to Shift Number 5. As each shift is completed the Elite 625 checks to see if the next Shift Point setting is valid. If the next shift point is invalid the shift routine is terminated and no further shifts will occur. The only invalid RPM setting is zero. If the next Shift Point is a Time, the Elite 625 checks to make sure that the time setting for the Shift Point is greater than the amount of time that has gone by since the release of the Transbrake. If the amount of time is not

greater, the next Shift Point is invalid. This means that for vehicles that require only one shift, the driver should set the second Shift Point to zero regardless if the shift is by RPM or Time.

Note: The Elite 625 only checks for valid shifts, for 20 seconds <u>after</u> the Transbrake releases.

<u>Number of Cylinders</u>

This setting is used by the Tach, RPM shift, and the Replay Tach in calculating the engine RPM.

<u>Shift Number</u>

The Shift Number is displayed on the right side of line 4 and corresponds to the displayed Shift Point, which means if the Shift Number was a 2, the Shift Point for the second shift is being displayed on line 2. To view all of the Shift Points, move the selection arrows to line 4 using the **NEXT** key. With the selection arrows on line 4, each time the **ZERO** key is pressed and released the Shift Number will increase by one and the corresponding Shift Point will be displayed on line 2. If the Shift Number is five and the Zero key is pressed and released, the Shift Number will be set to one.

<u>Shift Mode</u>

The Shift Mode is used to select whether +12 Volts is applied or removed from the output for the shift. Select a setting of "LO" for shifter requiring the removal of +12Volts to shift. Select a setting of "HI" for a shifter requiring +12Volts to shift. The Shift Mode can only be changed when viewing the first shift. To change the Shift Output, while the Shift Number is set to one and the selection arrows are on line 4, press and release the Down Arrow key. Each time the Down Arrow key is pressed and released the Shift Output Mode will toggle between the "HI" and "LO" settings.

Shift by RPM or Time

The Elite 625 can handle up to five shifts on each pass. These five shifts can be made by time, RPM, or a combination of both. To select if a shift will be by time or RPM, while the selection arrows are on line 4, press and release the Up Arrow key. Each time the Up Arrow key is pressed and released the Shift will toggle between either an RPM or a Time shift. On line two, as the Shift is toggled between RPM and Time, the text TIME and a decimal will be shown for a Time shift or the text RPM for an RPM shift.

Changing the Shift Points

New for Elite 625**:** Each Shift Point now has two memory slots, one for RPM and one for time. This means the Elite 625 will remember both the last RPM and the last time value for each Shift Point.

After making sure the correct Shift Number and Shift Mode has been selected, the Shift Point can be adjusted in three ways.

The first way is using the ↑ or ↓ key. To use the ↑ or ↓ key to adjust the Shift Point, the selection arrows must first be on line 2. Then use either the Up arrow key, to scroll up, or the Down arrow key to scroll down.

The second way to change the Shift Point is by using the Clear key while the selection arrows are on line 2. Press and release the Clear key, the display line 2 will go blank indicating the unit is ready to accept the new Shift Point. Now using numerical keys enter the new Shift Point, leading zeros do not have to be entered. For example if a time of 2.35 for a Shift Point was desired 235 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 re-enter the Shift Point again.

The last way to change the Shift Point is by using the Clear key while the selection arrows are on line 4. This is the easiest way to change the Shift Point for a couple of reasons. First, when the Shift Control screen is brought up, the selection arrows will already be displayed on line 4. Secondly, all other shift settings are controlled from line 4. The only difference in using the Clear key from line 4 as opposed to line 2 is that when the Clear key is pressed and released the selection arrows will be displayed on both line 2 and line 4. This is to indicate that line 2 is being updated from line 4.

Testing the Shift Routine

First test the Shift terminal for output. The easiest way to test the shift output, is to toggle the Shift Mode (explained on the previous page) between the HI and LO settings. Each time the Shift Output Mode changes states the shifter should also move. If the shifter does not move, disconnect all wires connected to the Shift terminal. Then using a Digital Volt Meter or a test light, check the Shift terminal for power. It should have 12 Volts when the Shift Output Mode is set to LO and zero Volts when the Shift Output Mode is set to HI. If the Elite 625 passes the first test, move onto the second test. If the output does not change, check to see if the fuse for the shift output is good. If the fuse is good, contact Digital Delay.

The second test is a time shift; this checks the input side or the push-button side of the Elite 625. Set the Elite 625 to a one second shift on time. After entering the shift, press and release the button connected to the P.B. 1 terminal. One second after the Transbrake releases, the shifter should move from low gear to second gear. If the Elite 625 passes the second test continue on to the final test. If the shifter

does not move, check to see if when the button connected to the P.B. 1 terminal is pressed and held that the red LED for P.B. 1 lights up. If the LED does not light check the button for proper operation and wiring from the button to the P.B. 1 terminal. If you can't find a problem with the button or the wiring, disconnect the button from the P.B. 1 terminal. Next test the P.B. 1 input, by using a short piece of wire to jump from the power stud to the P.B. 1 terminal. When the wire is connected between the two points the wire will act as a temporary button and the red LED for P.B. 1 should light up. If the LED for P.B. 1 does not light, contact Digital Delay.

The Final test is an RPM shift, this checks the Tach input. Set the Elite 625 to shift at 3000 RPM. Then while looking at the Tach on the Elite 625 start the engine, once started the Tach should go from Peak RPM to current engine RPM. Next while idling at 800 or more, press and release the button connected to the P.B. 1 terminal. <u>After the Transbrake releases, the Elite 625 will compare the Shift Point against the current engine RPM for 20 seconds</u>. So slowly bring the engine RPM up past the 3000 RPM shift point and then back down to an idle within the 20 second limit. The shifter should move, and hold for four tenths of a second, when the RPM reaches 3000. After the four tenths of a second the Shifter should release and the Elite 625 will move on to the second Shift Point. **If all three tests pass, all of the Elite 625 shift features are working.** If the Tach on the Elite 625 does not work check the wire from the ignition box Tach output to the Tach terminal on the Elite 625. If the Tach is showing an RPM but seems to be off, check the Number of Cylinders setting on line 3. If you are still having problems, contact Digital Delay.

Understanding the Driver's Reaction Tester

This improved feature in the Elite 625 allows a driver using the buttons mounted in the vehicle to test their reaction time. This feature can also be used to test different kinds of buttons and button locations in the vehicle for the quickest release possible.

To practice, press and hold down a Push-button connected to the P.B. 1 terminal or the button connected to the P.B. 2 terminal if in P.B. Mode 2. When the light above the keypad comes on, release the button. The Elite 625 will now display your reaction time. When in P.B. mode 5, press and the button connected to the P.B. 2 terminal. When the light above the keypad comes on, press the button connected to the P.B. 1 terminal. The Elite 625 will now display your reaction time.

Keep in mind that the Reaction time does not directly correlate to the Delay times used on the Dial-in and Delay screen. This is because the Reaction Tester does not take into account the vehicle's roll out time. A close approximation of the vehicle's roll out can be calculated by subtracting the average of 10 passes from your normal Delay 1 time. If you take 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 you let 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 you do 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. The Elite 625 will automatically exit the Driver's Reaction Test Mode after 30 seconds of inactivity. Each time a push-button is pressed for a practice hit, the 30 second timer resets.

The Driver's Reaction Tester can also be used to check different buttons and button locations for consistency and speed. Start by getting a reaction time average, at least 10 passes. Then compare with an average from either another push-button or the same button mounted in a different location.

NOTE: The **CLEAR** key can be used to reset the Driver's Reaction Screen times.

NOTE: When in the Driver's Reaction Test Mode, the Transbrake solenoid will not be activated.

Understanding the Replay Tach

The Elite 625 has a built-in Replay Tach that can store 9 passes. When the Elite 625 records a pass, the engine RPM is recorded every hundredth of a second for fifteen seconds after the Transbrake releases. After a pass has been recorded and the engine is turned off the pass can be reviewed on the screen of the Elite 625.

Recording A Pass

To start the Elite 625 recording, the unit must first be armed. This is done by pressing and releasing the push-button that is connected to the P.B. 4 terminal, before the Transbrake is engaged. With the Elite 625 armed, the recording starts at the release of the Transbrake, when a delay cycle is run. While the Elite 625 is recording,

“Recording” will be displayed on the screen. Each time a pass is recorded the oldest pass, pass 9, is erased.

Replaying A Pass

To replay a recorded pass the engine must be turned off. Then when the Replay Tach screen is being displayed, the top row of digits display the engine RPM, with the next row down being the corresponding time. The time is relative to the release of the Transbrake. The third line will display which of the 9 passes is being replayed. The last line will show the current Shift Point being displayed.

Use the **NEXT** key to select the desired pass to be replayed. Each time the **NEXT** key is pressed the pass number will increase by one. Keep in mind that pass 1 is the most current and pass 9 is the oldest recorded pass.

Once a pass has been selected, there are three ways to look at information. First, if any shifts occurred during the recording of a pass, the time and RPM of each shift will also have been recorded. To recall the Shift Point(s) press the number key corresponding to the shift desired. An example would be, if at least two shifts had been recorded, the Replay Tach will display the time and RPM that the second shift occurred, when you press the number 2 key. If a second shift had not been recorded the Elite 625 will display the starting line RPM, when the Transbrake released.

The Second way is to use the Up and Down Arrow keys to scroll the time up and the down. There are four scrolling speeds in each direction with the scrolling stopped in the middle. Each time a corresponding Arrow key is pressed and released the scrolling speed will speed up. If while the time is scrolling and the opposite Arrow key is pressed and released the scrolling speed will slow down. Example if the Up Arrow key was pressed three times to get a faster scrolling speed, pressing the Down Arrow key once would cause the scrolling speed to slow down. Pressing the Down arrow an additional two times would cause the

scrolling to stop. If the Down Arrow was then pressed again the time would start scrolling down.

The last way is to use the Clear key and the numerical keys to jump directly to a specific time during the pass. When you press the Clear key the time will go blank indicating the Elite 625 is ready for you to enter the time you want to go directly to. All four digits must be entered. Example if time of 5.50 is wanted, enter 0550 on the keypad. Once the desired time is displayed you can scroll forward or back from that point using the Arrows keys.

Note: To return to starting point of the recorded pass, press the Zero key.

Understanding Dial Board Control

When Your Dial is selected using the Selection Arrows, after a short pause, Your Dial time will flash between the 3 dashes and the dial amount. While Your Dial is flashing, the Dial Display Board will show 3 dashes indicating the Dial-in is being updated. Once you are done updating Your Dial, press the NEXT key to enter and send the new Dial time to the Dial Display.

If the time entered for Your Dial is above 19.99, the Elite 625 will automatically set Your Dial to 19.99 seconds.

The Dial Display board has two separate intensity settings, one for Day and one for Night. Both the Day and Night settings have seven intensity levels 0 – 6, with zero being off and six being the brightest. Line 1 of screen 10 is the Day setting and line 2 is the Night setting. The Night intensity setting is used when the tan wire is supplied power. The Day intensity setting is used when power is removed from the tan wire or if the tan wire is left disconnected.

Typically the tan wire is connected to the Taillight circuit. Then anytime the taillight is turned on the Night intensity level is used and when the taillight is off the Day intensity level is used.

Turning off the Dial Board Feature

Selecting an intensity level of zero for either the Day or Night settings turns off the Dial Controller part of the Elite 625. This should be done anytime the Elite 625 is being used without a dial board, to keep from getting constant error messages.

Error Messages

In the event of a communication error between the Elite 625 and the Dial Display board, the bottom line on the Elite 625 screen will flash between three dashes and an error code number.

E-01: A “No Board” error code of 1 shown as E-01 on the screen, means the Elite 625 cannot detect the Dial Display board. This can be caused by the Dial Display not having power, or there is a problem with the purple wire not making connection between the Elite 625 and the Dial Display board.

E-02: A “Communication Fail” error code of 2 shown as E-02 on the screen, means the Dial Display board not receiving good data. This is usually caused by a problem with the blue wire not making connection between the Elite 625 and the Dial Display board.

A error code of Err shown on the Dial Display, is caused by a problem with the blue wire not making connection between the Elite 625 and the Dial Display board.

The Push-button Inputs

The buttons are used to start all timing sequences of the Elite 625. While up to four buttons can be connected to the Elite 625 at one time, for the Elite 625 to work a button must be connected to the P.B. 1 input terminal.

The Additional Button Functions Chart on page 54 shows the primary function along with any other functions for each of the buttons.

What the primary, second, and third function of each button is, depends on whether the Elite 625 is in Bracket or Pro Mode and what the Push-button Mode is. Each button is listed below individually to explain their functions depending on these conditions.

Button 1 Functions

When in Bracket Mode

P.B. Mode Set to 1

This is the most commonly used setting. Press the button down when staging the vehicle, and then release the button, usually on the top yellow light. When the button is released the Elite 625 will start counting down the Crossover/Delay 1 time.

If the button is pressed again the countdown is terminated. Then when the button is then released again the Elite 625 will start counting down the full Crossover/Delay 1 time again. This is helpful if the driver flinches (lets go of the button before the top yellow comes on).

P.B. Mode Set to 2

Uses two Push-buttons, one for each Delay time. With Button 1 starting the Crossover/Delay 1 time and Button 2 starting the Delay 2 time. The main benefit of this setting is, it allows two shots at the tree, in case you missed

the tree with your first release. Also if the driver flinches on the first hit, Button 1 can be pressed again to avoid a red light. The downside is, having to use two separate Push-buttons at the starting line is a loss of a Button input for other uses.

P.B. Mode Set to 3

Allows two shots at the tree with one button, this is usually both top yellows but can be set for top and bottom on the same side of the tree. When the button is released the first time, the Crossover/Delay 1 time starts counting down. The button is then pressed and released a second time, which starts the Delay 2 time counting down. The Transbrake will release when either of the delay times reaches zero, even if this results in a red light.

The main benefit of this setting is, it allows two shots at the tree using only one Push-button, in case you missed the tree with your first release. The downside is you cannot reset the first delay to stop a red light if you flinch. The second press of the button switches to Delay 2 while Crossover/Delay 1 time continues counting down.

P.B. Mode Set to 4

Similar to P.B. Mode 3. The main difference is that when the button is pressed the second time, the Crossover/Delay 1 time is canceled. When Button 1 is released the first time, the Crossover/Delay 1 time starts counting down. If Button 1 is then pressed a second time, the Crossover/Delay 1 time is canceled. Then when Button 1 is released a second time, Delay 2 time starts counting down.

The Transbrake will only release on Crossover/Delay 1 if Button 1 is not pressed a second time. However if Button 1 is pressed and released a second time the Transbrake will be released when Delay 2 time reaches zero.

P.B. Mode Set to 5

This mode requires two buttons to operate the Transbrake. If the Transbrake has not already been activated, pressing Button 1 has no effect. If the Transbrake has been set by Button 2, pressing Button 1, usually on the top yellow light, starts the counting down of the Crossover/Delay 1 time.

If the button is pressed again the Elite 625 will start counting down the full Crossover/Delay 1 time again. This is helpful if the driver flinches (presses the button before the top yellow comes on).

When in Pro Mode

P.B. Mode is set to 1, 2, 3, or 4

When the P.B. mode is set to 1, 2, 3, or 4 the Elite 625 will automatically use P.B. Mode 1 for Pro mode. This is because P.B. modes 2, 3, and 4 won't work with a Pro Tree. Press the button down when staging the vehicle, and then release the button when the three yellow lights come on. When the button is released the Elite 625 will start counting down the Pro Delay time.

P.B. Mode Set to 5

This mode requires two buttons to operate the Transbrake. If the Transbrake has not already been activated pressing Button 1 has no effect. If the Transbrake has been set by Button 2, when the three yellow lights on the tree come on, press the Button 1 to start the countdown of the Pro Delay time.

Button 2
When in Bracket Mode

P.B. Mode is Set to 1,3, or 4

The first function for Button 2 is to be the Back-up button. This feature is used by vehicles that require the Transbrake solenoid to be engaged to back-up. The Back-up feature is explained on page 53.

The second function for Button 2 is Multi Tap, , allowing large amounts of time to be subtracted from the first delay started. The Multi Tap feature is explained on page 27.

There is no third function for Button 2 in Bracket Mode.

P.B. Mode is Set to 2

Button 2 is only used to activate Delay 2. Each time Button 2 is pressed the Transbrake solenoid is engaged and the Delay 2 time value is loaded into a counter. When the button is then released the counter starts timing down. When the counter reaches zero the Transbrake solenoid is released.

P.B. Mode is Set to 5

The only function for Button 2 is to set the Transbrake solenoid. When the button is pressed the Transbrake will engage.

There is no second or third function for Button 2 in Bracket Mode.

When in Pro Mode

P.B. Mode is Set to 1, 2, 3, or 4

The first function for Button 2 is to be the Back-up button. This feature is used by vehicles that require the Transbrake solenoid to be engaged to back-up. The Back-up feature is explained on page 49.

There is no second or third function for Button 2 in Pro Mode.

P.B. Mode is Set to 5

The only function for Button 2 is to set the Transbrake solenoid. When the button is pressed the Transbrake will engage.

There is no second or third function for Button 2 in Bracket Mode.

Button 3 Settings

When in Bracket Mode

Any P.B. Mode

The first function for Button 3 is to set the S.L.E. so the vehicle can be staged with the gas pedal fully depressed. The S.L.E. feature is explained on page 28.

The second function for Button 3 is to Tap Down, allowing time to be subtracted from the first delay started. The Tap Down feature is explained on page 26.

The third function for Button 2 is to activate the P.T.S.O., a Timer 1 Tap feature. The P.T.S.O. feature is explained on page 30.

When in Pro Mode

Any P.B. Mode

The first function for Button 3 is to set the S.L.E. so the vehicle can be staged with the gas pedal fully depressed. The S.L.E. feature is explained on page 29.

The second function for Button 3 is to activate the P.T.S.O., a Timer 1 Tap feature. The P.T.S.O. feature is explained on page 30.

There is no third function for Button 3 in Pro Mode.

Button 4 Settings
When in Bracket Mode

Any P.B. Mode

The first function for Button 4 is to activate the Burn-out Timer for the Line Lock solenoid(s). The Burn-out feature is explained on page 32.

The second function for Button 4 is Tap Up, allowing time to be added to the first delay started. The Tap Up feature is explained on page 26.

There is no third function for Button 4 in Bracket Mode.

When in Pro Mode

Any P.B. Mode

The first function for Button 4 is to activate the Burn-out Timer for the Line Lock solenoid(s). The Burn-out feature is explained on page 32.

There is no second or third function for Button 4 in Pro Mode.

Back-up Feature

If the P.B. Mode is set to 1, 3, or 4, a button connected to the P.B. 2 input can be used to back up the vehicle without starting a delay cycle. The advantage of using a Back-up button over a bypass button is the current for the Transbrake solenoid does not pass through the switch. It is possible to wire more than one switch to the P.B. 2 input. Example, a toggle switch could be used for backing up and then a separate push-button could be used for Tapping up.

Note: If a toggle switch is going to be used to activate the Back-up feature, care must be taken to remember to turn off the switch to avoid damage to the solenoid and Relay Board.

Bypass Button

If Button 2 is not going to be used to back up the vehicle, a bypass button can be used. To wire in a bypass button take one wire from your button and connect it to the Power post on the Relay Board. Then connect the other wire from the button to the Transbrake terminal on the Relay Board.

Note: The button and wiring used for the bypass button will need to be able to handle the current of the Transbrake solenoid.

Additional Button Functions Chart for Bracket Mode

Button	Push-button Mode	Section 1 Before Trans Applies	Section 2 While Trans is Applied	Section 3 After Trans Releases
1	1	Applies Transbrake	Restarts the Crossover Timer	Resets to Section 2 and applies Transbrake
	and	Applies S.L.E. if S.L. Mode On	Restart S.L.E. Timer	Reapplies S.L.E. if used
	2	Applies L.L. if S.L. Mode On	Reapplies L.L. if used	Reapplies L.L. if used
	3	Same as Above	Second Press -- Starts Delay 2 / additional presses restarts Delay 2	Same as Above
	4	Same as above	Second Press -- Cancels Delay 1 / Second release starts Delay 2	Same as Above
	5	starts the Crossover Timer	Restarts the Crossover Timer	N/A
2	1	Transbrake -- Back-up	Subtracts X times the Tap Down amount from the first delay started	N/A
	2	Applies Transbrake -- Delay 2	Restarts Delay 2	Restarts Delay 2
	3	Transbrake -- Back-up	Subtracts X times the Tap Down amount from the first delay started	N/A
	4	Transbrake -- Back-up	Subtracts X times the Tap Down amount from the first delay started	N/A
	5	Applies Transbrake	N/A	Restarts the Crossover Timer
		Applies S.L.E. if S.L. Mode On		Restart S.L.E. Timer
		Applies L.L. if S.L. Mode On		Reapplies L.L. if used
3	1	Applies S.L.E. if used	Tap Down -- Subtracts Tap Down amount from first delay started	P.T.S.O.
	2	Applies S.L.E. if used	Tap Down -- Subtracts Tap Down amount from first delay started	P.T.S.O.
	3	Applies S.L.E. if used	Tap Down -- Subtracts Tap Down amount from first delay started	P.T.S.O.
	4	Applies S.L.E. if used	Tap Down -- Subtracts Tap Down amount from first delay started	P.T.S.O.
	5	Applies S.L.E. if used	Tap Down -- Subtracts Tap Down amount from first delay started	P.T.S.O.
4	1	Applies Line Lock -- Burn-out	Tap Up -- adds Tap Up amount to first delay started	N/A
	2	Applies Line Lock -- Burn-out	Tap Up -- adds Tap Up amount to first delay started	N/A
	3	Applies Line Lock -- Burn-out	Tap Up -- adds Tap Up amount to first delay started	N/A
	4	Applies Line Lock -- Burn-out	Tap Up -- adds Tap Up amount to first delay started	N/A
	5	Applies Line Lock -- Burn-out	Tap Up -- adds Tap Up amount to first delay started	N/A

The Relay Board

The Relay Board is where all the electrical connections are made. There are 2 cables that connect the Elite 625 to the Relay board. The larger one handles all the delay box functions. The smaller one is only for the Dial Display board and is not necessary for the Delay box to function. The Relay Board has two power studs, one for ground and one for power. It also has a Tach input, four push-button inputs, and 7 fused outputs.

The Colored Status LED's.

The green LEDs are used to indicate whether the Relay Board has power and if a fuse has blown. When power is applied to the Relay Board the green LEDs will light. If power is applied, and there is an unlit green LED, the fuse for that output has blown indicating there is a problem with the wiring or the device connected to that output. Once the problem is fixed, replace the fuse with a new one.

The yellow LEDs are used to indicate which output is turned on and supplying battery power to a device.

The red LEDs are used to indicate that a button is pressed (or active).

Wiring the Power and Ground Studs

The **power stud** should be connected to a power source capable of supplying enough current to run all the devices connected to the Elite 625's outputs at the same time. In most cases this will either be the Master Cutoff switch or the Starter Solenoid. Use whichever one is closer to the Relay Board. The gauge of the power wire needs to be selected according to current load. To figure out your total

current load, add up the individual current draw of each device connected to an output. Then use the list below to see what gauge power wire you need.

1-15	Amps 14 gauge
16-25	Amps 12 gauge
26-40	Amps 10 gauge
41-60	Amps 8 gauge
61-80	Amps 6 gauge
81-120	Amps 4 gauge

For wire gauges of 6 or 4, the Relay Board needs to be sent to Digital Delay to have the power stud upgraded to a heavy duty power stud.

The **power stud** can also be used for each button that is connected to any of the push-button inputs.

The **ground stud** should be connected to a non-aluminum chassis ground with a 14 gauge wire. If additional devices are going to use the ground stud as a common connection point, the 14 gauge wire going to the chassis should be increased to handle the additional current.

Wiring the Tach Input

If you are planning on shifting by RPM or using the Replay Tach, the Tach input needs to be connected to the Tach output on the ignition box.

Wiring the Push-buttons

There are four push-button inputs, labeled P.B. 1, P.B. 2, P.B. 3, and P.B. 4. P.B. 1 is always the primary Transbrake push-button.

All four push-button inputs wire the same, so only P.B. 1 will be explained, follow the same procedure for

the other push-buttons. Most push-buttons only have two wires. Connect one wire to the power stud and the other wire to the P.B. 1 terminal. No other connections to the push-button wires should be made. If your push-button has three wires you will only need to use two of them. The two wires are the Common (C) and the Normally Open (N O). The Normally Closed (N C) wire is not used.

Wiring the Delay Box Outputs

The Relay board has seven Delay Box outputs. They are Trans, Line Lock, S.L.E., Timer 1, Timer 2, Timer 3, and Shift. Each of the seven outputs has its own fuse. The Trans, Line Lock, and S.L.E. outputs are each rated at 15 Amps max and come with a 15 Amp fuse installed on the Relay Board. The three Timer and the Shift outputs are each rated at 40 Amps max and come with a 20 Amp fuse installed on the Relay Board. Any of the 20 Amp fuses can be increased up to 40 Amps when needed. When wiring a device to the any of the outputs on the Relay Board it is important to use the correct wire gauge for the current load. Use the list below to see what wire gauge is needed for the device.

1-15	Amps 14 gauge
16-25	Amps 12 gauge
26-40	Amps 10 gauge

The **Trans** terminal is the Transbrake output. The Trans output is where the Transbrake solenoid and the 2 step wire would connect.

Connect one wire from your Transbrake solenoid to the Trans terminal. Connect the other wire from the Transbrake solenoid to ground. Also connect the red wire from a 2 Step or the wire coming from the Launch terminal on the ignition box to the Trans terminal.

The **Line Lock** terminal is a dedicated output for use with a Line Lock solenoid(s). The Line Locks can be used to hold the vehicle for a timed burn-out and/or to assist the Transbrake solenoid at the starting line. If you want to use either of the Line Lock features, connect one wire from your Line Lock solenoid(s) to the Line Lock terminal. Connect the other wire from the Line Lock solenoid(s) to a ground.

The **Starting Line Enhancer** (**S.L.E.**) terminal is a dedicated output for use with a **Linkage** style Throttle Stop to control the engine RPM at the starting line. If you want to use the S.L.E. feature, connect one wire from your Linkage Stop solenoid to the S.L.E. terminal. Connect the other wire from the Linkage Stop solenoid to a ground.

If you want to use an **Air** Under the Carb Throttle Stop as an S.L.E. you can use the S.L.E. output Terminal.

If you want to use an **Electric** Under the Carb Throttle Stop as an S.L.E. you <u>must</u> wire in an external relay to handle the higher current of the Electric Throttle stops.

The **Timer** terminals all work the same. So only the Timer 1 will be explained. When you receive the Relay Board the Timer 1 output will have a 20 Amp fuse. This can be increased to a 40Amp fuse if more current is needed. Depending on what is being controlled by Timer 1 the Throttle mode can be set so the output will supply or remove 12 Volts. <u>The Timer output cannot supply ground.</u> One wire from the device needs to be connected to the Timer 1 terminal and the other wire from the device needs to be connected to ground.

Note: If the device to be controlled needs Ground, instead of +12 Volts, an additional relay will need to be installed between the device and the Relay Board.

To wire the additional relay;

Connect pin 85 to the desired Relay Board output.
Connect pin 86 and 30 to Ground.
Connect pin 87 to the device.

The **Shift** terminal is a dedicated output for use with a Shift solenoid. The Shift output can be used to shift the vehicle up to 5 times by either RPM or Time. Combinations of RPM and time can also be used. If you want to use the Shift feature, connect one wire from your Shift solenoid to the Shift terminal. Connect the other wire from the Shift solenoid to a ground.

Wiring the Dial Board

There are five terminals used to connect a Dial Display board(s). Power (Red), ground (black), data out (Blue), data in (Purple), and Taillight (Tan).

Red Terminal: Connect the Red wire from a V2 Mega Dial display board to this terminal. This wire supplies power to the Dial Display board.

Black Terminal: Connect the Black wire from a V2 Mega Dial display board to this terminal. This wire is the ground for the Dial Display board.

Tan Terminal: Use the Tan wire to connect a wire from the vehicle Taillight circuit to this terminal. When the taillight circuit is turned on, the Tan wire is supplies power and the Night intensity setting is selected. When the taillight is turned off, power is removed from the Tan wire and the Day intensity is selected.

Blue Terminal: Connect the Blue wire from a V2 Mega Dial display board to this terminal. This wire is the data in to the Dial Display.

Purple Terminal: Connect the Purple wire from a V2 Mega Dial display board to this terminal. This wire is the data out from the Dial Display.

Note: If you don't want the intensity to change when you turn the taillight on and off, set the Day and Night intensity levels the same. You can also just leave the tan wire disconnected.

CAUTION: Reading these instructions may cause headaches and a strong desire to sleep!

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