PRO-CUBE® II
INSTALLATION AND OPERATING INSTRUCTIONS

Congratulations on your purchase of the most advanced combination delay box/timer unit available for today's precision drag racing. The new ***PRO-CUBE®II*** has been designed to give you unprecedented control of your reaction time and ET with a host of standard features, plus three general purpose timers, all in one super-compact unit that can be mounted almost anywhere. The precision available with these timers makes them perfect for controlling a variety of equipment including throttle stops, shifters, and multi-stage nitrous systems. You should read and understand this entire manual, including the warranty section beginning on page 10, before proceeding with installation.

STANDARD FEATURES

- ### NEW! Z−Force™ Switch Mode [1]
  This is a whole **new** concept for reacting to the tree (Patent pending). **"ZERO"** force required on transbrake button once staged---thus eliminating the "pressure" issues associated with conventional methods.

- ### Automatic Cross-Over
  Allows you to react to a <u>slower</u> opponent's top bulb on a "Cross-Talk" or full "Open" Tree simply by entering dial-ins.

- ### Second Hit
  Allows you a second shot at the tree and leaving on the better of the two.

- ### Bump-Down®/Bump-Up
  A powerful tool, enabling you to correct for a late or early reaction. Also allows you to **"Bump"** your throttle stop timer to quicken your run a "programmed" amount.

- ### Built-in Flinch Protection™
  There are built-in methods to avoid a **known** red light caused by a *"Flinch"* (accidental early reaction).

- ### Pro-Stage ™
  A <u>must</u> for the "Cross-Talk" tree, the patented ***Pro-Stage***™ starting line control provides better driver concentration, improved consistency, and reduced wear and tear on the engine and converter.

- ### Timers
  Three built-in <u>versatile </u>timers that can be used to control a throttle-stop, timed shift, nitrous, etc.

- ### Full-Tree / Pro-Tree
  Allowing you to enter two totally separate "run" programs, one for *Full-Tree* and one for *Pro-Tree*.

- ### Transbrake Output
  High current output for use on all types of transmission brakes, and clutch release solenoids.

---

[1] *Patent Pending*

- ## Line Lock Output

  This <u>versatile</u> output is activated and released simultaneously with the transbrake output but includes a blocking diode to prevent back feed into the transbrake circuit.

- ## Transbrake Lockout

  An <u>adjustable</u> built-in timer prevents <u>re-activation</u> of the Transbrake and Line Lock outputs during a run.

- ## Reset Switch

  When toggled, it instantly stops all outputs and timers. Simply "reset" to instantly release transbrake and stop timers from "cycling". Great for releasing *"pro-brake"* reverse after backing-up.

- ## Run Info

  Information will **automatically** be displayed to indicate the <u>difference</u> in your reaction times for double-hits, as well as the number of times you "***Bumped-Down/Up"*** your reactions and the number of times TIMER 1 was ***Bumped-Down***.

- ## Output Protection

  All outputs are fully protected against shorts and severe overloads by advanced electronic circuit breaker technology. Faulty outputs are indicated by a flashing LED for the corresponding output, allowing fast diagnosis and correction of system problems.

SPECIFICATIONS

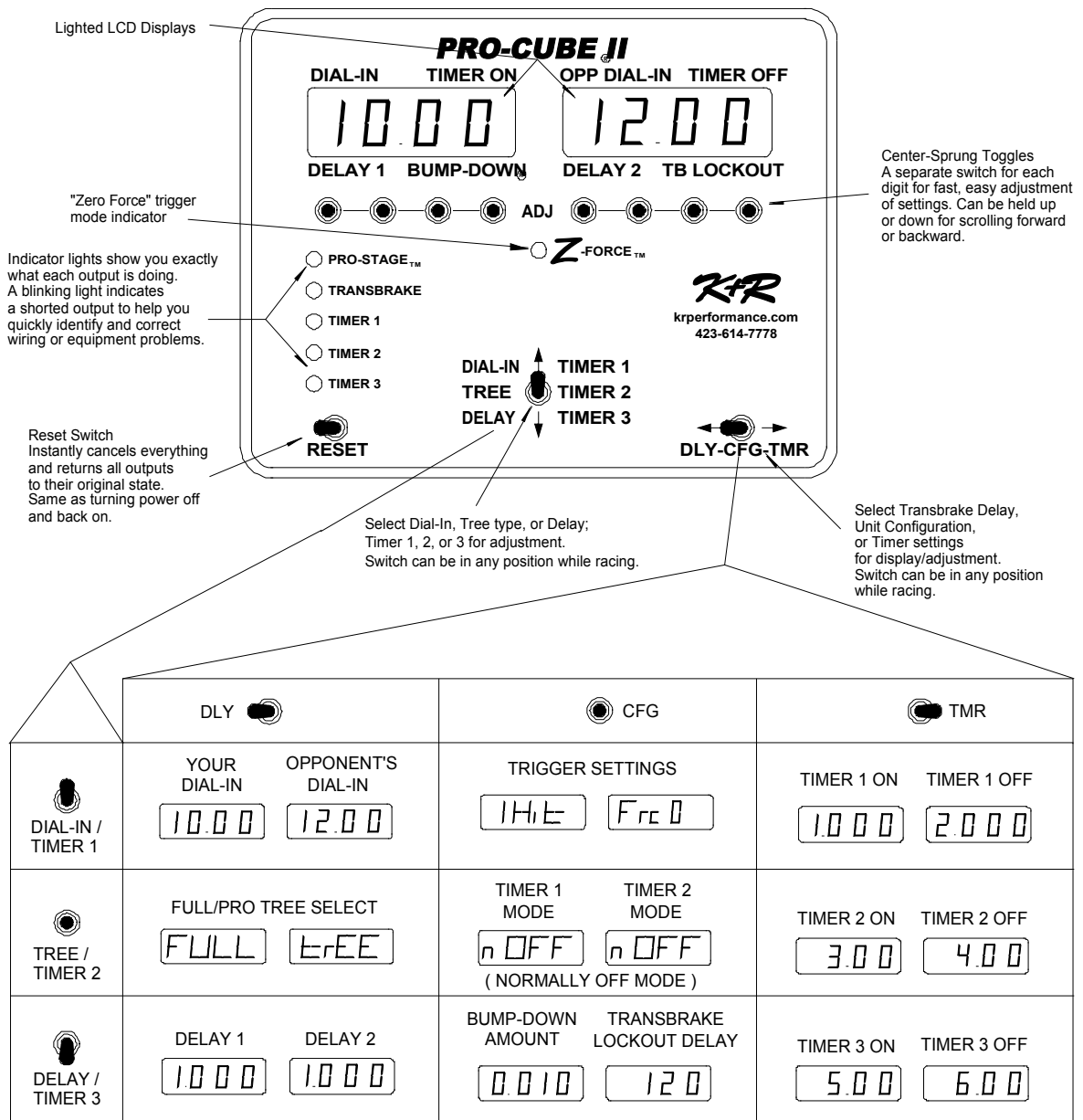|	
Overall Dimensions (H x W x D):	4.3" x 4.7" x 2.95"
Power Supply Voltage:	10 - 18 Vdc
Power Supply Input Current (no outputs activated):	0.1 Amps
Output Current, Transbrake:	20 Amps for 1 minute
Output Current, Line Lock:	2 Amps continuous
Output Current, Timers and ***Pro-Stage***:	10 Amps continuous

INSTALLATION

1. Mount the unit in a convenient location where you can easily read the display and reach the front panel when strapped in the driver's seat.

2. Refer to the wiring diagram for electrical connections. BE SURE TO DISCONNECT BATTERY OR TURN MASTER SWITCH "OFF" WHILE MAKING ELECTRICAL CONNECTIONS!

<div style="border:1px solid black; text-align:center">

Important! Warranty Void if not followed!

</div>

3. IN ORDER TO DAMPEN VIBRATION, THE UNIT <u>MUST</u> BE MOUNTED USING THE THREE RUBBER MOUNTS LOCATED ON THE BACK. SUFFICIENT CLEARANCE SHOULD BE MAINTAINED ALL AROUND THE UNIT SO THAT IT DOESN'T VIBRATE AGAINST ANY SURROUNDING OBJECTS. **NOTE:** RUBBER MOUNTS ARE NOT REMOVEABLE.

4. FOR THRU-DASH INSTALLATIONS ALLOW CLEARANCE BETWEEN DASH AND UNIT. <u>USE FOAM RUBBER MOLDING (SUPPLIED WITH DASH KIT) TO FILL THE GAP</u>. <u>THE UNIT MUST FIT SNUG IN OPENING</u>. **SEE** **<u>TEMPLATE</u>.**

5. ALWAYS COMPLETELY DISCONNECT THE UNIT BEFORE ANY WELDING IS DONE ON THE CHASSIS.

HOW TO SELECT AND CHANGE SETTINGS

Two three-position switches are used to select the various screens. These switches may be left in any position while racing; they simply select what is being displayed. The table below shows the content of each screen and the factory default settings. Use the adjustment ("**ADJ**") switches just below the displays to change settings. There is one switch for each digit in the display, simply adjust each digit up or down by "toggling" a switch. For faster changes, you may hold a switch in an up or down position to scroll a digit in the direction held. **Note: Changes to any of the settings are automatically and permanently saved four seconds after making the change. You may change to another screen during this time without loosing just entered settings. The decimal points in both displays will blink to indicate when the save operation is performed. If power is turned off or the unit is reset within four seconds after making a change, those changes will NOT be saved.**

Lighted LCD Displays

PRO-CUBE II

DIAL-IN   TIMER ON   OPP DIAL-IN   TIMER OFF

10.00   12.00

DELAY 1   BUMP-DOWN   DELAY 2   TB LOCKOUT

Center-Sprung Toggles
A separate switch for each digit for fast, easy adjustment of settings. Can be held up or down for scrolling forward or backward.

"Zero Force" trigger mode indicator

ADJ   **Z**-FORCE™

Indicator lights show you exactly what each output is doing. A blinking light indicates a shorted output to help you quickly identify and correct wiring or equipment problems.

○ PRO-STAGE™
○ TRANSBRAKE
○ TIMER 1
○ TIMER 2
○ TIMER 3

K+R
krperformance.com
423-614-7778

Reset Switch
Instantly cancels everything and returns all outputs to their original state. Same as turning power off and back on.

RESET

DIAL-IN   TIMER 1
TREE   TIMER 2
DELAY   TIMER 3

DLY-CFG-TMR

Select Dial-In, Tree type, or Delay; Timer 1, 2, or 3 for adjustment. Switch can be in any position while racing.

Select Transbrake Delay, Unit Configuration, or Timer settings for display/adjustment. Switch can be in any position while racing.

	DLY	CFG	TMR
DIAL-IN / TIMER 1	YOUR DIAL-IN OPPONENT'S DIAL-IN 10.00 12.00	TRIGGER SETTINGS IHit Frc0	TIMER 1 ON TIMER 1 OFF 1.000 2.000
TREE / TIMER 2	FULL/PRO TREE SELECT FULL trEE	TIMER 1 MODE TIMER 2 MODE n OFF n OFF (NORMALLY OFF MODE)	TIMER 2 ON TIMER 2 OFF 3.00 4.00
DELAY / TIMER 3	DELAY 1 DELAY 2 1.000 1.000	BUMP-DOWN AMOUNT TRANSBRAKE LOCKOUT DELAY 0.010 120	TIMER 3 ON TIMER 3 OFF 5.00 6.00

FACTORY DEFAULT SETTINGS ARE SHOWN IN THIS TABLE

INITIAL SETUP "CFG" MODE----*How you want the PRO-CUBE II to work for you!*

### *Z* –Force Switch Mode vs. Standard Switch Mode (Transbrake button modes)

The *Z* –**Force** switch mode is a revolutionary concept of activating the transbrake and starting your reaction time delay. Once final staged, you activate the transbrake output by "*pushing*" or "*bumping*" the transbrake button once **(do not continue to hold button down)**. You initiate the delay by simply "*bumping*" the transbrake button again when the "tree" is activated. This eliminates inconsistency due to varied amounts of pressure exerted on the transbrake button while staged, thus the name *Z* –**Force** for "**Zero**" force exerted on your transbrake button while waiting for the "tree" to activate. You can even take "2-hits" in this mode (explained in next section).

In "Standard" switch mode, the conventional transbrake activation is used. When final staged, simply depress and hold transbrake button-----releasing when "tree" is activated to start your delay.

TO CHANGE SWITCH MODES

With the bottom right 3-postion switch set to the middle position **"CFG"** and the 3-position switch in the center of the unit switched in the <u>up</u> position, you can then set how you want the transbrake button to work. Your choices are set in the right-hand display, **"Frc0"** for the new *Z* –**Force** mode or **"Std"** for the standard transbrake button mode. You may "*toggle*" any of the "ADJ" switches under the right-hand display to change from one mode to the other.

When the unit is "configured**"** to the *Z* –**Force** (**"Frc0"**) switch mode, a **Blue LED** in the center of the box will be brightly **illuminated**. When "configured" to the standard (**"Std")** mode, the **Blue LED** will be turned <u>off</u>, making it very obvious which switch mode you have selected.
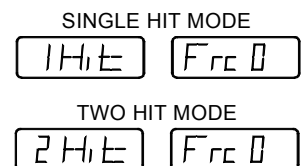
ZERO FORCE MODE
| 1Hit | Frc 0 |

STANDARD MODE
| 1Hit | Std |
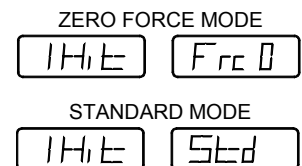
"1-Hit" vs. "2-Hit" Interface Modes

The **PRO-CUBE II** allows you to "hit" the tree twice and launch your vehicle on the quicker of two reactions. If attempting two "hits", the unit must be configured to "**2-Hit**" mode. This allows you two "hits" with one button. Using the "**2-Hit**" mode to "hit" both top bulbs (on an "*open*" tree), or top bulb and second bulb (on a "*cross-talk*" tree) is generally not recommended unless you're at least 1.0 second faster than your opponent. If you do not want to attempt two hits, it is generally recommended to select "**1-Hit**" mode as it provides the preferred *Flinch Protection* (explained in next section).

TO CHANGE INTERFACE MODES

Just as the switches were set for the "configuration" of the switch modes (prior section), also displayed in the left-hand display is the "configuration" of the **hit** mode. You may toggle any of the "ADJ" switches under the left-hand display to change from one mode to the other, "**1Hit**" or "**2Hit**".

SINGLE HIT MODE
| 1Hit | Frc 0 |

TWO HIT MODE
| 2Hit | Frc 0 |

"2-Hit" with *Z* –Force mode

As previously described how the *Z* –**Force**™ switch mode works, you can also "hit" the tree twice by "*bumping*" the transbrake button on the first bulb and "*bumping*" again on another bulb. On an "open" tree, that would typically be both top bulbs (a secondary delay would typically be set the same as the primary delay). On a "cross-talk" tree, that would typically be the top bulb and your second bulb (a secondary delay would typically be set .500 seconds **less** for the second "hit"). Each "hit" starts a delay timer and the car will react on the better of the two reactions. The reaction "differential" will be automatically displayed after the run (discussed in later section). YOU DO <u>NOT</u> HAVE TO TAKE A SECOND "HIT" IF YOU ARE CONTENT WITH YOUR FIRST "HIT".

"2-Hit" in **Standard ("Std")** mode

In **"Std"** mode you release the transbrake button on the first bulb, and then reapply the transbrake button and release on another bulb. On an "open" tree, that would typically be both top bulbs (a secondary delay would typically be set the same as the primary delay). On a "cross-talk" tree, that would typically be the top bulb and your second bulb (a secondary delay would typically be set .500 seconds less for the second "hit"). Each "hit" starts a delay timer and the car will react on the better of the two reactions. The reaction "differential" will be automatically displayed after the run (discussed in later section). YOU DO <u>NOT</u> HAVE TO TAKE A SECOND "HIT" IF YOU ARE CONTENT WITH YOUR FIRST "HIT".

Built-in Flinch Protection®

Another important difference between these modes involves the *Flinch Protection* feature. Simply stated, flinch protection can prevent you from red-lighting when you accidentally "react" before the tree starts. When this occurs using "**1-Hit**" "**Std**" mode, just depress the transbrake switch again and release when the tree is activated. The delay will be reset with full delay again and the "flinch" will be ignored. If this occurs using "**1-Hit**" "**Frc0**" mode, just "bump" the transbrake switch again when the tree is activated (must be bumped before delay "times-out"). The delay will be reset with full delay again and the "flinch" will be ignored.

In "**2-Hit**" mode, we have developed a whole new concept of *Flinch Protection*. If you "flinched" with <u>one</u> of your "2-hits", the built-in *Flinch Protection* will save you from your "flinch" and will take the other "hit". If your "2-hits" (two reactions) are reasonably close, *Flinch Protection* will **not** be activated, and your reaction time will be determined by your "quicker" reaction as described earlier. An "**F**" symbol will be automatically displayed after the run, if a "flinch" was detected and averted (further discussed in later section).

Timer Output Configuration

The **PRO-CUBE II** has three totally independent "timed" outputs that can universally control most any devise during a run. For compatibility with all types of equipment, "**Timer 1**" and "**Timer 2**" can be configured for either "normally off" or "normally on" mode. "**Timer 3**", however, is fixed in "normally off" mode for most common equipment and cannot be changed. With the bottom right 3-postion switch set to the middle position "**CFG**" and the 3-position switch in the center of the unit switched to the <u>middle</u> position, you can then set how you want the timers configured. Configuration of "**Timer 1**" is set by "toggling" any "ADJ" switch up or down under the left-hand display. Configuration of "**Timer 2**" is set by "toggling" any "ADJ" switch up or down under the right-hand display. If configured to normally on (**"nOn"**), the LED for that timer will be **illuminated**.

NORMALLY OFF MODE

```
 n OFF
```

NORMALLY ON MODE

```
 n On
```

A common application for a "**nOn**" timer would be for an "electric blade" type throttle stop or a "spring" shift actuator which require constant power (except when cycled). Most all other applications require a "**nOff**" configured timer. The yellow LED's for each timer **illuminate** to indicate power (12volts) on that output. For loads that exceed the limits of a "timer" output, a relay will need to be used in the system.
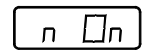
Bump-Down®/Bump-up

One of this unit's most powerful bracket racing features, **Bump-Down/Bump-up** allow you to correct for late or early reactions by subtracting or adding delay time as the tree is coming down. You can have both "Bump-Down" and "Bump-Up" if both optional switches are connected as illustrated in the *wiring diagram*. The "Bump-Down" feature can be used to subtract time from your delay and timer **TIMER 1** (as a "programmed" amount of throttle stop over-ride), however you cannot "Bump-Up" **TIMER 1**. To adjust the amount of "bump" time, set the bottom right 3-postion switch to the middle position to "**CFG**" and the 3-position switch in the center of the unit to the <u>down</u> position. You can then set in the

left-hand display how much time you want added/subtracted for each "hit" of a "bump" switch. Range for this value is 0.000 - 0.099 seconds. These time settings are independently set for "Full tree" and "Pro tree" run programs.

Transbrake Lockout Timer

To prevent accidental re-engagement of the transbrake after launch, a lockout timer is built-in to disarm the transbrake and line lock outputs for a programmed period of time The displays will show all dashes (- - - -) during the lockout delay and no changes can be made until the lockout timer completes. The **RESET** switch can be used to manually override this delay and allow the transbrake to be reactivated (after backing up from burnout, for example). The transbrake lockout time settings are independently set for "Full tree" and for "Pro tree" run programs.

To adjust the amount of "lock-out" time, set the bottom right 3-postion switch to the middle position "**CFG**" and the 3-position switch in the center of the unit to the *down* position. Adjust the right-hand display for the amount of "lock-out" time desired. The factory setting is 120 seconds, but you can program it to any value up to 3999 seconds….it is NOT recommended to set lower than the amount of time required to shift into "high" gear.

"Full-Tree" and "Pro-Tree"

The **PRO-CUBE II** has the capability of entering *two* completely different run programs, one for the "Full-tree" and another for the "Pro-tree". With the bottom right-hand switch set to "**DLY**" and the center 3-position switch set in the "**TREE**" position, enter the run mode you prefer in the left-hand display. You can change between these two run modes at any time very easily by going to this screen mode. **All settings** are independently memorized from "Full-tree" to "Pro-tree" allowing you to enter *two* completely different run programs. It is like having **two** separate delay boxes and being able to switch from one to the other. Even all the "*configured*" settings are independently set, such as the "*bump*" time, "*transbrake lockout*", etc. NOTE: DIAL-INS CAN **NOT** BE ENTERED IN "PRO-TREE" MODE, "**Pro**" WILL BE DISPLAYED WHERE DIAL-INS ARE VIEWED.

OPERATION-----*Now we're ready to race!*

Dial-Ins and Delay Times

Now its time to enter your dial-ins. First make sure the unit is set in "Full-tree" mode. With the bottom right-hand switch set to "**DLY**" and the center 3-position switch set in the "**DIAL-IN**" position, enter **your** dial-in in the left-hand display. Now enter your **opponent's** dial-in in the right-hand display. ANY TIME YOUR OPPONENT'S DIAL-IN IS SET "HIGHER" THAN YOUR DIAL-IN, IT ASSUMES YOU ARE "CROSSING-OVER" AND LEAVING OFF THEIR TOP BULB. IT IS AN **AUTOMATIC CROSS-OVER** AND THE DIAL-IN DIFFERENCE WILL BE ADDED TO YOUR DELAY SETTING. A **"CROSS-TALK"** TREE IS STILL A "CROSS-OVER" TREE, WHERE BOTH TOP BULBS COME ON AT THE SAME TIME. If you are leaving first, you can simply enter your **opponent's** dial-in equal or lower than **your** dial-in.

Now its time to enter your delay time(s). With the bottom right-hand switch set to "**DLY**" and the center 3-position switch set to "**DELAY**", enter your "**DELAY 1**" in the left-hand display. If you are set-up to take 2-hits, you would enter your "**DELAY 2**" in the right display. For further explanation, see "**1-Hit**" vs. **"2-Hit"** Mode in prior section.

The *Pro-Stage*™ Starting Line System

The **Pro-Stage** system requires a compatible (pneumatic) throttle control adjusted to hold the engine to near idle with the throttle pedal in the full throttle position. The system reduces the amount of work

you have to do on the starting line and minimizes the amount of time the engine is at full throttle. By eliminating part of the work, your concentration on the tree is improved and your reactions are more consistent. By minimizing the amount of time the engine is at full throttle, less heat is generated in the engine and converter which should also result in greater consistency. Furthermore, mechanical stress potentially caused by deliberate misfire RPM limiting devices is also reduced.

The **Pro-Stage** output is activated by "bumping" the **Bump-Down** switch as you roll up to the starting line and prepare to stage. Once activated, you can then final stage with your foot to the floor (in the wide open position) as the engine is held to near idle by the "throttle control". On a Pro tree, the "throttle control" will automatically release and bring the engine wide open soon after the transbrake is activated. On a full tree, the engine will remain at near idle until **your delay** starts. Wide open throttle (WOT) will be further delayed by any cross-over time to keep the engine at low RPM until your side of the tree is activated. With the **Pro-Stage** system, high engine RPM will be limited to a short and consistent amount of time before launch.

The wiring diagram shows a typical installation using the **PRO-CUBE II** to control a dual cylinder **Pro-Stage II** system for starting line <u>and</u> ET control. Though it is possible to use a single cylinder throttle stop for both, the dual cylinder allows two different throttle settings, one for near idle on the starting line and the other for down track ET control (usually ¼ to ½ throttle).

NOTE: TO PREVENT ACCIDENTAL REACTIVATION OF THE **Pro-Stage** DURING THE RUN, THERE IS A **15 SECOND ACTIVATION LOCKOUT** OF THE **Pro-Stage** FROM THE TIME THE TRANSBRAKE RELEASES. SIMPLY USE THE "**RESET"** SWITCH TO CLEAR THIS LOCKOUT IF YOU HAVE JUST ACTIVATED THE TRANSBRAKE (Example: activating "pro-brake" to back-up after burnout).

Timer Settings

Now its time to enter your timer settings. ALL "TIMER" SETTINGS ARE RELATIVE TO WHEN THE TRANSBRAKE RELEASED AND ARE **NOT** DURATION TIMES. TIMER SETTING MUST ALWAYS BE SET HIGHER IN THE RIGHT-HAND DISPLAY FOR TIMER TO "CYCLE". With the bottom right-hand switch set to "**TMR**" and the center 3-position switch set in the "**TIMER 1**" position, enter the **start** time in the left-hand display for "timer 1" and the **end** time in the right-hand display for "timer 1". **NOTE:** The decimal place for "**TIMER 1**" **only,** is adjustable to the .001 second. **NOTE:** "TIMER 1" USUALLY IS THE THROTTLE STOP TIMER- - - FOR "TIMER 1" IS THE ONLY TIMER THAT CAN BE "**BUMPED-DOWN**" AS DISCRIBED IN OTHER SECTIONS. HOWEVER, "TIMER 1" CAN BE USED UNIVERALLY AS NEEDED.

Follow the same steps for "**TIMER 2**" and "**TIMER 3**". These timer settings are adjustable to the .01 second. For any timer **not** being used, simply "zero" (0.00) **both** sides of display for that timer. **NOTE:** ALL TIMER SETTINGS ARE INDEPENDENTLY SET FOR "FULL-TREE" AND "PRO-TREE" MODES.

"Full-Tree" and "Pro-Tree"

The **PRO-CUBE II** has the capability of entering *two* completely different run programs, one for the "Full-tree" and another for the "Pro-tree". With the bottom right-hand switch set to "**DLY**" and the center 3-position switch set in the "**TREE**" position, enter the run mode you prefer in the left-hand display. You can change between these two run modes at any time very easily by going to this screen mode. <u>**All settings**</u> are independently memorized from "Full-tree" to "Pro-tree" allowing you to enter *two* completely different run programs. All the "configured*"* settings are also independently set, such as the "*bump*" time, "*transbrake lockout",* etc. **NOTE:** DIAL-INS CAN **NOT** BE ENTERED IN "PRO-TREE" MODE.

Run Information

If you hit the tree twice or use the **Bump-Down/Bump-up** feature, reaction time information and bump-down/up counts will be automatically displayed approximately 15 seconds after you launch. The reaction time display will indicate which side of the tree you launched on as well as the difference in your reaction times. The quicker reaction is indicated with 0000 in the window its corresponding dial-in, and the differential (slower reaction) is displayed with its corresponding dial-in. Also if a "flinch" is detected, an "**F**" symbol will be displayed in the corresponding dial-in window. The bump-down display simply indicates how many times you bumped down or bumped up. The bump-down/up count for the transbrake release is displayed in the left window and the bump-down count for **TIMER 1** is displayed in the right window. The reaction and bump-down/up information displays alternate about every four seconds until you clear it by using the **RESET** switch. Since the information is not saved, you may want to record it for future reference. Note: Only **TIMER 1** can be bumped down (subtract time), it can not be bumped up.

EXAMPLES

Example 1: "Cross-Talk" Tree, 2-Hits with **Z –Force**

The **"Cross-Talk"** tree in use, **your** dial-in is 9.30; your **opponent's** dial-in is 10.92. Your delay time is 1.105 seconds and you're in "**2-Hit**" mode. Enter 9.30 for your dial-in, 10.92 for your opponent's dial-in, and 1.105 for **DELAY 1** and .605 for **DELAY 2** (.500 less for reacting to **second** bulb). The difference between the dial-in's (cross-over delay) will be automatically calculated and added to **DELAY 1** (1.105). Using the **Z –Force** switch mode, stage your car and activate the transbrake output by "*pushing*" or "*bumping*" the transbrake button once **(do not continue to hold button down)**. The transbrake will be activated. "Bump" the transbrake button ("**TRIGGER**") again on the first "flash" of the tree. "Bump" the "**TRIGGER**" again on "your" second bulb. You will launch on the quicker reaction. If your reaction time was quicker on your tree by 0.009 seconds the display will show 0.000 in the left window, and 0.009 in the right window for reaction time information. A bump-down/up count of 0 will appear every 4 seconds in each window indicating that you did not use the feature.

Your time slip indicates your actual reaction time was 0.015. This was your reaction time to your side of the tree. The reaction time information indicated you were 0.009 slower reacting to your opponent's tree, so your <u>actual</u> reaction to your opponent's side of the tree would have been: 0.015 + 0.009, or 0.024.

Example 2: Flinch Protection using **Standard Switch Mode, 1-Hit**

You're using "**1-Hit**" mode. After staging, the starter takes longer than usual to start the tree and you flinch, releasing the trigger switch too soon. Just press the switch again and release it when the tree starts. If you're late, use Bump-Down to correct for it. (In "**1-Hit**" mode, the delay time is reset whenever the trigger switch is re-depressed, and started over when released.)

Example 3: Flinch Protection using **Z –Force** **Switch Mode, 1-Hit**

You're using the **Z –Force** switch mode and set in "**1-Hit**" mode. After staging you "bumped" the trigger switch once to set the transbrake, the starter takes longer than usual to start the tree and you flinched ("bumped" the trigger switch too soon). Just "bump" the switch again when the tree starts.

If you're late, use Bump-Down to correct for it. (In "**1-Hit**" mode, the delay time is reset whenever the trigger switch is "bumped" again.)

Example 4: Flinch Protection using **Z –Force** Switch Mode, 2-Hit

You're using the **Z –Force** switch mode and set in "**2-Hit**" mode. You reacted to the cross-over bulb but anticipated the next hit and "flinched" way before the next bulb was lit. No worry, the built-in **Flinch Protection** will ignore the "flinch" and you will leave on the first reaction. The "Run Info" will display 0.000 in the right window (indicating you left on the "cross-over"), and "**F**" will be displayed in the left window which indicates you "flinched" on your side.

Example 5: Timer Bump-Down

You're racing a Pro tree and equipped with a throttle stop. You're in "Pro tree" run mode with times set in **TIMER 1** to control the throttle stop, and you have the **Bump-Down** set for .020. Your throttle stop ratio is "2 to1" (every .020 in "timer" affects ET by .010). When the car launches you feel the tires spin. When the throttle stop comes on, you tap the "bump-down" switch twice. After the run the display shows "**0**" in the left window and "**2**" in the right window, indicating you bumped-down **TIMER 1** a total of 2 times. So you subtracted .040 seconds from **TIMER 1**, which affected your ET by .020 and put you right back on your "8.90" run.

TIPS FOR ADVANCED RACERS

1. If you bracket race and also Pro tree race, use the Full/Pro tree select feature to store your delay and timer settings for each type of racing. In Pro tree mode "Pro" is displayed where you would normally set dial-in times. (This feature is purely for convenience.) Note: This allows two totally different "Run programs".

2. While unit is set to the Pro-tree mode, a great feature is the timer **Bump-Down**. Obviously you will not have time to "bump-down" your reaction time on a Pro-tree, but you will have the ability to "Bump-Down" your throttle stop timer. With the unit in "Pro-tree" mode and "configured" to view the *bump* time, set the amount of "bump" to equal your throttle stop ratio. In the event you spun or were late on reaction, you can "Bump-Down" your throttle stop timer for each *hundredth* of a second you needed to make-up. NOTE: THE THROTTLE STOP MUST BE WIRED TO "TIMER 1" AND THE "BUMP-DOWN" SWITCH MUST BE CONNECTED TO HAVE THIS CAPIBILITY.

3. Use a timer with the **Pro-Stage** system to setup a "programmed dump" near the finish line. Connect a jumper wire from the **Pro-Stage** to the Timer output so that the timer can also activate the **Pro-Stage** throttle stop. The **Pro-Stage** throttle setting is at near idle which will provide quick deceleration and make it virtually impossible for a faster opponent to judge a slim victory.

4. Use a timer for extremely accurate shifts. Set the timer for "normally off" (**nOff**) mode and adjust the ON time for when you want the shift to occur (this may require a little experimentation). Add 0.5 second to the ON time and use that for the OFF time to send a 0.5 second pulse to the shifter. NOTE: THE USE OF OUR **K+R** SWITCH PANEL/WIRING KIT OR AN EXTERNAL RELAY **MUST** BE USED FOR AN ELECTRIC SHIFTER SOLENOID. AN "AIR" SHIFTER SOLENOID DOES NOT REQUIRE A RELAY.

TROUBLESHOOTING

The front panel includes an indicator light for each output. These lights give you direct indication of whether the corresponding output is off or on. A flashing light indicates a shorted or overloaded output. If this occurs, first underline disconnect the output and cycle the unit again, watching the indicators. If the output operates normally while disconnected, then the problem is in your wiring or equipment. If the unit operates erratically when the engine is running, and normally when the engine is off, check for sources of electrical interference. The **PRO-CUBE II** is designed to tolerate extreme interference but the ignition coil, spark plug wires, and ignition unit are powerful sources of RF interference and a minimum distance of 12" is recommended. If you're using solid core spark plug wires, replace them with an RF suppressive spiral core wire set.

TECHNICAL SUPPORT

Contact: *K+R Performance Engineering, Inc.*
Telephone: 423-614-7778
Address: 4252 Spring Place Rd SE
                      Cleveland, TN 37323

WARRANTY

We at K&R Performance Engineering Inc. warrant to the original purchaser the products manufactured by us to be free from defects in material and workmanship under normal use and service, for which it was intended, but only if it has been properly installed and operated. Our obligation under this warranty shall be limited to the repair of any product or products which may thus prove defective under normal use and service, for which it was intended, within two (2) years from the date of installation by the original purchaser, and which our examination shall disclose to our satisfaction to be thus defective. Any defect affecting operation of the unit will be repaired at no charge. You will be billed only for shipping. Damage caused by severe vibration and metal-to-case contact or restricted movement due to improper mounting is NOT covered.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND OF ALL OTHER OBLIGATIONS OR LIABILITIES ON OUR PART, AND WE NEITHER ASSUME, NOR AUTHORIZE ANY OTHER PERSON TO ASSUME FOR US, ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF THIS PRODUCT. THIS WARRANTY SHALL NOT APPLY TO THIS PRODUCT OR ANY PART THEREOF WHICH HAS BEEN SUBJECT TO ACCIDENT, NEGLIGENCE, ALTERATION,
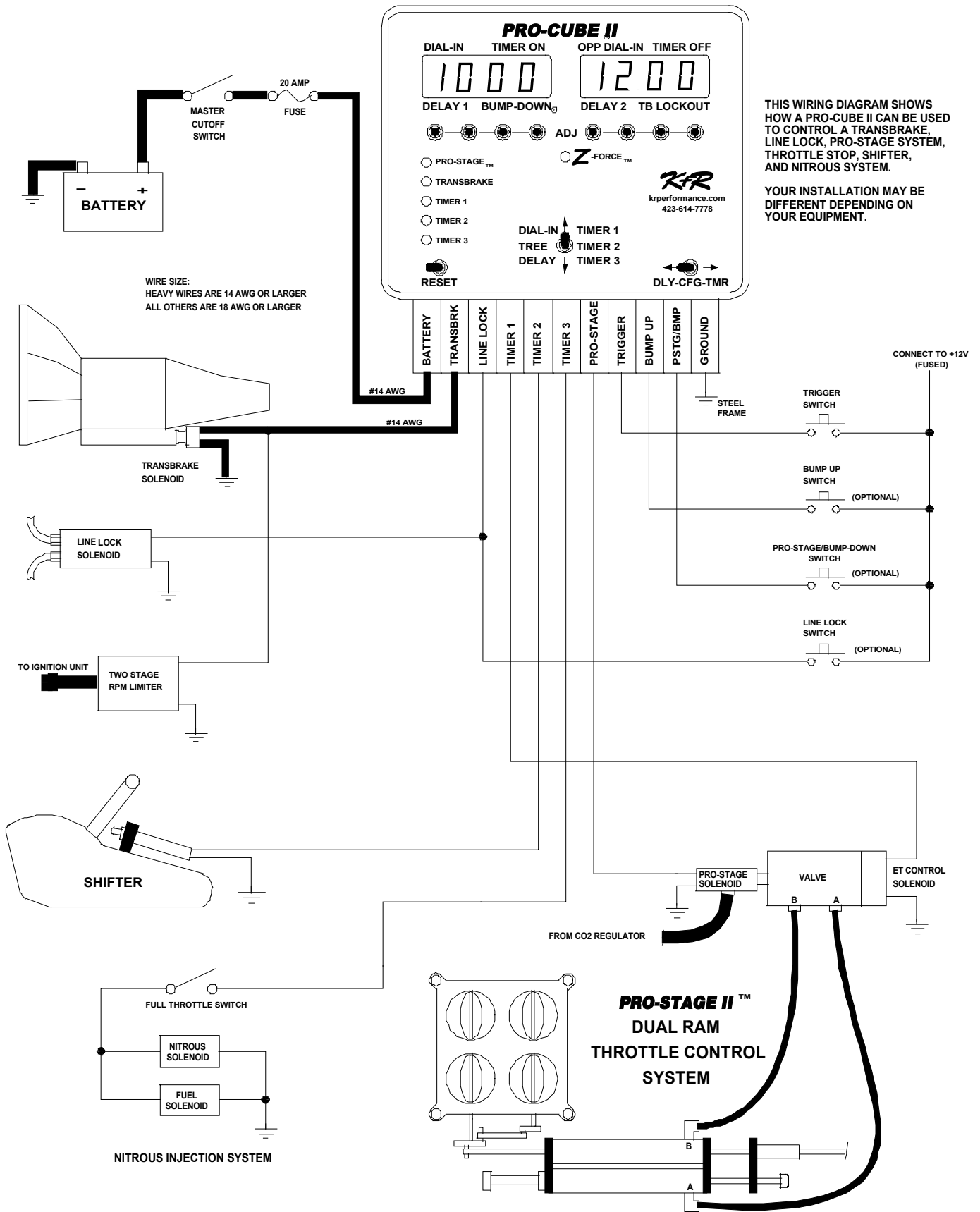
<u>ABUSE, OR MISUSE. WE MAKE NO WARRANTY WHATSOEVER IN RESPECT TO ACCESSORIES OR PARTS NOT SUPPLIED BY US. THE TERM "ORIGINAL PURCHASER" AS USED IN THIS WARRANTY, SHALL BE DEEMED TO MEAN THAT PERSON OR ENTITY WHO ORIGINALLY PURCHASED THE PRODUCT. THIS WARRANTY SHALL APPLY ONLY WITHIN THE BOUNDARIES OF THE CONTINENTAL UNITED STATES.</u>

Original Purchaser must notify K&R Performance Engineering, Inc. of a breach of warranty within thirty (30) days after discovery thereof, but not later than the guarantee period; otherwise, such claims shall be deemed waived. No allowance will be granted for any repairs or alterations made by the Original Purchaser without K&R Performance Engineering, Inc.'s prior written consent. No person, firm, or corporation is authorized to assume for us any other liability in connection with the sale of these goods.

This warranty shall not apply to any K&R Performance Engineering, Inc. product, or parts thereof, which has been repaired or altered, without K&R Performance Engineering, Inc.'s written consent, outside K&R Performance Engineering, Inc.'s factory, or altered in any way so as, in the judgement of K&R Performance Engineering, Inc. to affect adversely the stability or reliability of the K&R Performance Engineering, Inc.'s product, or has been subject to misuse, negligence, or accident, or has not been operated in accordance with K&R Performance Engineering, Inc.'s printed instructions or has been operated under conditions more severe than, or otherwise exceeding, normal use for such product.

K&R Performance Engineering, Inc. shall not be liable for any injury, whether to person or property, or for any damages, whether direct, indirect, consequential, or special, or any other damage resulting from the use, or misuse, of this product. Any injury or damage so incurred will be limited to the original purchase price of the product.

The **PRO-CUBE**®**II** is protected and licensed under the following US Patents:
Re: 32,474; 4,784,099; 5,600,185; 5,642,712; 5,839,419; 5,855,196
Other Patents Pending

PRO-CUBE II

DIAL-IN   TIMER ON   OPP DIAL-IN   TIMER OFF

10.00 12.00

DELAY 1   BUMP-DOWN   DELAY 2   TB LOCKOUT

ADJ

Z-FORCE

PRO-STAGE™
TRANSBRAKE
TIMER 1
TIMER 2
TIMER 3

krperformance.com
423-614-7778

DIAL-IN   TIMER 1
TREE   TIMER 2
DELAY   TIMER 3

RESET

DLY-CFG-TMR

THIS WIRING DIAGRAM SHOWS
HOW A PRO-CUBE II CAN BE USED
TO CONTROL A TRANSBRAKE,
LINE LOCK, PRO-STAGE SYSTEM,
THROTTLE STOP, SHIFTER,
AND NITROUS SYSTEM.

YOUR INSTALLATION MAY BE
DIFFERENT DEPENDING ON
YOUR EQUIPMENT.

MASTER
CUTOFF
SWITCH

20 AMP
FUSE

BATTERY

− +

WIRE SIZE:
HEAVY WIRES ARE 14 AWG OR LARGER
ALL OTHERS ARE 18 AWG OR LARGER

BATTERY
TRANSBRK
LINE LOCK
TIMER 1
TIMER 2
TIMER 3
PRO-STAGE
TRIGGER
BUMP UP
PSTG/BMP
GROUND

#14 AWG

#14 AWG

TRANSBRAKE
SOLENOID

STEEL
FRAME

CONNECT TO +12V
(FUSED)

TRIGGER
SWITCH

BUMP UP
SWITCH
(OPTIONAL)

PRO-STAGE/BUMP-DOWN
SWITCH
(OPTIONAL)

LINE LOCK
SWITCH
(OPTIONAL)

LINE LOCK
SOLENOID

TO IGNITION UNIT

TWO STAGE
RPM LIMITER

SHIFTER

PRO-STAGE
SOLENOID

VALVE

B   A

ET CONTROL
SOLENOID

FROM CO2 REGULATOR

FULL THROTTLE SWITCH

NITROUS
SOLENOID

FUEL
SOLENOID

NITROUS INJECTION SYSTEM

PRO-STAGE II™
DUAL RAM
THROTTLE CONTROL
SYSTEM

B

A

Wiring Diagram – Complete System

MOUNTING TEMPLATE

DASH CUTOUT 5.0" x 4.0"   **0.3" RADIUS**

FRONT PANEL: 4.5" x 3.5"

TOP

HOLE SIZE: 11/64" (3 PL)
NOTE: RUBBER MOUNTS ARE NOT REMOVEABLE

3.820

5.900

HOLE SIZE: 11/64"
FOR THRU-DASH
MOUNTING BRACKET
(4 PL, COUNTERSINK)
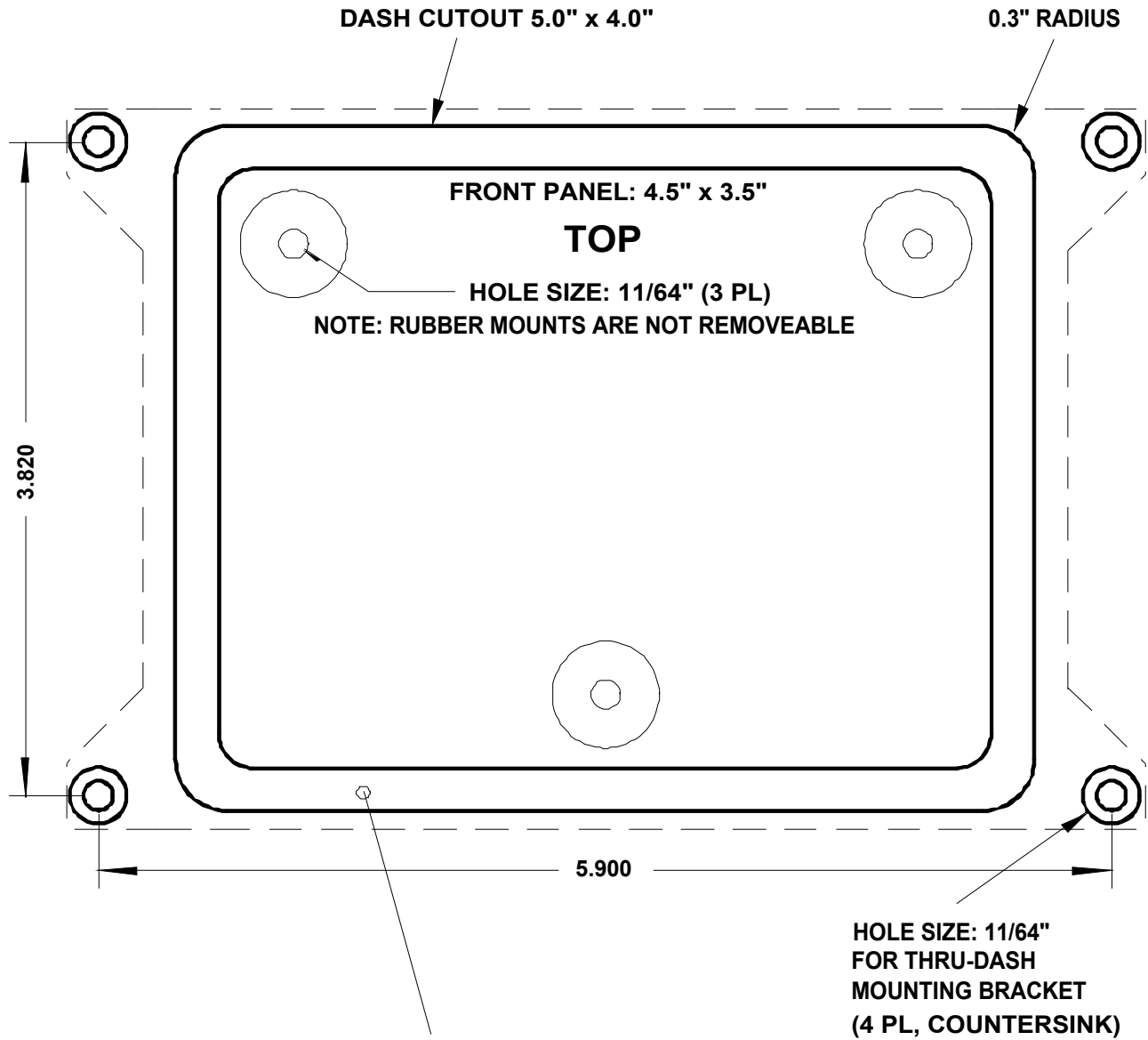
IMPORTANT!
FOR THRU-DASH INSTALLATIONS, ATTACH RUBBER GASKET TO PRO-CUBE
TO FILL GAP AND PREVENT METAL-TO-METAL CONTACT WITH DASH.
UNIT MUST FIT SNUG IN DASH OPENING.

ORDER OUR INSTALLATION KIT FOR FAST, EASY THRU-DASH MOUNTING.
KIT INCLUDES A BEHIND THE DASH MOUNTING BRACKET, GASKET, AND SCREWS.