BIONDO RACING PRODUCTS, INC.

Premium Starting Line Control

Part # SLP

MOUNTING/ INSTALLATION

Remove your throttle cable from your carburetor and remove the rod end that's hooked to your carb. The base of the air cylinder has been tapped to fit either a solid rod (1/4 -28) or cable (10-32) linkage. In most cases it is necessary to reroute your cable, move your cable mount back, or shorten your throttle rod length (a throttle stop cable bracket is available from BRP). Mount the air cylinder on your cable or rod linkage. Install the other end of the cylinder to your carburetor with the rod end supplied. During these steps the cylinder should be in it's retracted (shortest) position- use the adjustment collars to insure this. It is important to verify that there is no catching or binding anywhere in the system that will interfere with cylinder expansion. After installation, have a friend step on the gas pedal and check for full throttle (this should be done without the engine running). Also check to make sure your pedal is stopped by an absolutely solid and rigid pedal stop. At this point you will never have to re-adjust your throttle cable or rod again, all stroke adjustments are done separately.

Mount the "square" solenoid valve in a spot suitable to allow easy plumbing and access. Use 6-32 screws through the 2 mounting holes, with washers between the mounting surface and the solenoid valve– do not over tighten the solenoid when mounting, this can cause the solenoid to leak. If you purchased the throttle cable bracket from BRP, it has a place to mount the solenoid valve.

WIRING

As a downtrack ET control T/S:

The solenoid has 2 wires, connect one wire to a GOOD chassis ground and connect the other wire to your throttle stop timer. Refer to your timer for proper wiring (it usually goes to the terminal labeled "off/on", "throttle stop" or "N.O.")

As a starting line control (with a delay box):

The solenoid has 2 wires, connect one wire to a GOOD chassis ground and connect the other wire to the appropriate terminal on your delay box. If you are using the starting line enhancer feature in one of our Mega Series Delay boxes, refer to delay box manual as it will with connect to either the SFO terminal or the Throttle Stop terminal depending on the box.

As a starting line control (without a delay box):

The solenoid has 2 wires, connect one wire to a GOOD chassis ground and connect the other wire to the "hot" transbrake solenoid solenoid wire.

PLUMBING

The solenoid is remotely mounted. Extra air line included to go out from the solenoid to the throttle stop cylinder. Connect the air line between the "2" or "out" port on the solenoid and the fitting on the cylinder. **Connect the air line from the bottle to the number "3" or "exh" port on the solenoid. **Use a preset regulator, or adjust your regulator from 80–115 PSI.**

Note: If you purchased a needle valve (part # NV), you should install the needle valve in the #3 (exhaust) port. This is where you connect the air line from the co2 bottle.

STROKE ADJUSTMENT

The stroke adjustment (to set the throttle closed position) is made with the bracket assembly provided. Use the allen wrench to loosen or tighten the "stop" which sets your adjustment. The "stop" consists of 2 locking col-lars. Only one collar is needed, the second collar is a backup.

Maintenance- It is a good idea to lubricate this system once a year. To do this, turn off the CO2 bottle valve and disconnect the air line that goes from the bottle into the fitting on the solenoid. Place 2 or 3 drops of a light oil into the solenoid fitting. Air tool oil is good, do not use a solvent based oil.

DO NOT OVERTIGHTEN FITTINGS AS THAT WILL CAUSE TEFLON TO GET INTO SOLENOID AND CAUSE LEAKAGE

TIPS ON USING A THROTTLE STOP

Written by Peter Biondo

1) FINDING THE RIGHT THROTTLE STOP "CLOSED POSITION" OR "BLADE ANGLE"

Finding how much to mechanically shut your throttle down is crucial. You want to find a setting that will work well and be consistent. I have found 3 blade angles that work well (find the settings below). The most accurate way to adjust your "blade angle" is by RPM- (the rpm your engine drops to while the throttle stop is engaged). Once you have found the right throttle stop rpm, you are done with the mechanical part of it and all ET adjustments should be made with a timer.

As mentioned above, I have found 3 blade angles that work well:

- A "a throttle stop rpm" of 3900- this will work well if your car runs 1 second+ under the index.
- A "throttle stop rpm" of 4300- this will work well if your car runs .3 to .9 under the index.
- A "throttle stop rpm" of 4800- this will work well if your car runs less than .3 under the index.

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2) FIGURING OUT YOUR THROTTLE STOP RATIO

Before figuring out your ratio you first must enter a number in timer 1 of your throttle stop timer. This number indicates when the throttle stop will come on after launch. Most people prefer to have this number set early for high mph. I recommend letting the car fully launch and flash the converter berfore the throttle stop coming on (.3 to 1.00). After setting this, you will never change it again. To adjust your ET you will change timer 2.

Whether you are using a weather station to predict a throttle stop or not, I highly recommend you learning your throttle stop ratio. The Throttle Stop Ratio is the effect the throttle stop time has on your ET.
Here's an example- if you add 2 tenths (.2) to your throttle stop timer and it changes your ET by 1 tenth (.1), then you have a 2 to 1 ratio. To learn your ratio do the following:
Make one run with a small amount of time (duration) in the throttle stop timer (.5). Make a second run with a large amount of time (2.5). Let's say run # 1 was an 8.40 and run # 2 was an 9.40. You can figure out your throttle stop ratio by dividing the change in the throttle stop time by the change in ET.

$$\frac{\text{Change in throttle stop time}}{\text{Change in ET}} = \text{T/S RATIO} \quad \text{OR} \quad \frac{2.00}{1.00} = 2 \quad \text{Ratio is 2 to}$$

This is called a 2 to 1 ratio. Learning your ratio will allow you to correct for changing track and air conditions. Your ratio depends on your "throttle stop rpm". For most applications a 3900 T/S rpm results in a 2 to 1 ratio, a 4300 T/S rpm results in a 3 to 1 ratio, and a 4800 T/S rpm results in a 5 to 1 ratio. Ratio's may be a little different if your converter is extremely loose or tight.

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3) YOUR THROTTLE LINKAGE (Applies only to an in-line throttle stop, if you purchased one of our 'base-plate' style stops, disregard this part)

An "In-linkage" throttle control is sensitive to the entire throttle linkage system. It is very important to have an absolutely solid and rigid pedal stop. Without this you can stretch your linkage causing inconsistency. Your cable attaching bracket must also be rigid. Any flexing or binding will ruin the consistency.

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4) TIME SHIFTING WHILE ON THE STOP

Is it beneficial to shift on time (have a timer shift the car during the stop duration) while on the stop?

The answer really depends on how fast your car runs. Example: If your car runs well under the index (over 1 second under the index), you can gain consistency by shifting on a time. There are 2 major benefits for shifting on time.

- The car will come off the stop in high gear, lessening the chances of spinning the tires at that point.
- The rpm's on the stop will be much more stable when in high gear. In other words, your stop rpm's will climb at a much slower rate when in high gear compared to low gear. This will result in more consistency and a more predictable throttle stop ratio.

*** Cars running less than 1 second under the index will most likely not benefit from shifting by time.
*** When shifting on time, it is good have it shift a few tenths (.3 to .9) after the stop comes on.
*** When shifting on time you should raise your throttle stop rpm 300 to 500 rpm higher than the suggested rpm mentioned in the above #1 example. (Example: cars running one second or more under the index should have a throttle stop rpm of 4200 to 4400 as opposed to the 3900 suggested rpm described above.)