



Installation and Operation Instructions

Electronic Boost Controller (Rev. AAD)

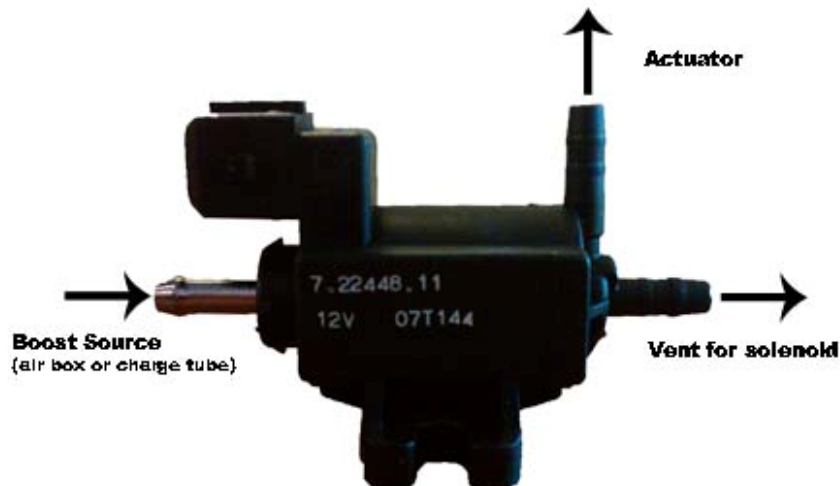
Contents list:

Before installation, check the contents of your kit. Find the appropriate list for your sled in Appendix B.

Installation

After installation, calibration is required! (See page 2.)

Install the boost solenoid in a pressure line between the charge tube and wastegate actuator. Attach the metal port of the solenoid with a 3/16" hose to the charge tube fitting (see the figure below). Connect the right-angle port of the solenoid with a 3/16" hose to the wastegate actuator. Attach a short length of hose to the third port and point it downward so that it won't get water in it. This is the actuator vent hose. Attach the solenoid so that it is supported. Use small zip ties to secure the hoses to the ports.



Installation (continued)

Attach the electronic boost controller (EBC) mounting bracket to a convenient location on the console or handlebars. Slide the EBC onto the bracket.

For Polaris, the EBC harness plugs into accessory power near the top of the firewall. This connector has a red/white and brown wire. Be sure that the molded rubber EBC connector having the male pin with the red wire plugs into the sled harness, aligning with the red/white wire. The other EBC connector having the female pin with the red wire can be used for the oil pump and/or fan. Be sure that red (or red/white) wires go to red wires and brown wires go to brown wires.

For '09 or '10 M1000 with a fuel booster, the 2-pin rubber molded connector plugs into AC accessory power near the top of the firewall (yellow and black wires). The 3-pin rubber molded connector plugs between the voltage regulator connectors at the front right of the sled. Find the fuel pump wires where they pass through the firewall into the fuel tank. Disconnect the pump connector and plug the two mating EBC harness connectors between these.

For '07 or '08 M1000 with fuel booster, the 2-pin rubber molded connector plugs into DC accessory power near the top of the firewall (red/blue and black wires). If using a "Y" or "Splitter" harness to provide more power sources, be sure that red (or red/blue) wires go to red wires and brown wires go to brown wires. Find the fuel pump wires where they pass through the firewall into the fuel tank. Disconnect the connector and plug the two mating EBC harness connectors between these.

For '09 or '10 M8, the 3-pin rubber molded connector plugs between the voltage regulator connectors at the front right of the sled.

For '07 or '08 M8, the 2-pin rubber molded connector plugs into DC accessory power near the top of the firewall (red/blue and black wires). If using a "Y" or "Splitter" harness to provide more power sources, be sure that red (or red/blue) wires go to red wires and brown wires go to brown wires.

Attach the handlebar button in a convenient location on the left side of the handlebar and plug it into the EBC harness. This is your +HP button. According to your Plus HP button setting (+HP BTN), this gives more boost when the button is pressed. Plug this button into the mating connector on the EBC harness.

Plug the EBC harness into the boost solenoid. Plug the 6-pin connector of the EBC harness into the EBC pigtail.

The supplied ADA (Air Density Advantage) harness attaches to the Boondocker Control Box. (If you are not using a Boondocker fuel control box, then this harness is not needed.) The final EBC harness connector attaches to the mating connector on the ADA harness. Refer to the ADA instructions to install the remainder of the ADA kit.

Feed one end of the 1/8" poly line through the EBC pigtail sheath and insert it into the push-to-connect fitting marked "B" on the back of the EBC. On Polaris, route this line to the air box, cut to length and insert it into a similar fitting. On an Arctic Cat, "Y" into the fuel pressure boost line.

Calibration

Calibration is required only if using a Boondocker Fuel Control Box. Even if you are using a Boondocker Fuel Control Box, if you are using a separate pressure transducer, this calibration is NOT required.

The EBC provides an electrical signal to the Boondocker Fuel Control Box that represents boost pressure. The Control Box uses this signal to determine how much fuel to add for boost air. It is vital that when boost is zero, the Control Box reads zero. This is to avoid adding fuel at idle or failing to add enough fuel when on boost. This signal is calibrated at the factory so will be very close, but might need minor adjustment. Go to the first “STATS” screen on the Control Box. If it shows zero boost, then no calibration is needed. If it shows positive or negative boost, then with the motor idling scroll down to “PT CAL” in the configuration menu. If “PT CAL” does not appear, go to the altitude screen and hold the button for five seconds until it advances to “CFG”. After “PT” and “CAL” are displayed, the screen will display a number. Hold the button one second to make this number flash. Use short pushes of the button on the EBC face to adjust this value up or down. Hold the button down for one second to change direction, shown by the “+” or “-” sign. Change the number until control box reads zero boost. Changing the direction twice without making an adjustment will lock the calibration and the flashing will stop. More information on using the buttons and menus follows.

Using the EBC

There are several user menus, some having numbers or selections that are adjustable by the user. Each value or selection is preceded by one or more scrolling screens that describe the value or selection. These descriptive labels along with the value comprise one element. The button on the box can be used to display the element description, make adjustments, or advance to the next element. For example, the altitude compensation element works like this:

ALT These first two labels (“ALT” and “CMP”) each show for a fraction of a second each, then the display stops on the value (“12” in this example). If the number is showing, a quick button push will display “ALT” and “CMP” again, to remind you which value is currently displayed. Since this number is adjustable, holding the button for one second causes the “2” to flash. While it is flashing, quick presses of the button will cause this digit to scroll zero through nine. Holding a button for one second will advance to the next digit (“1” in this example) which will then flash. Quick button presses adjust this value. When the third digit value is set, holding the button for one second locks in the value and the flashing stops. While “ALT” or “CMP” are showing, a quick button press will advance to the next element.

Some elements have text selections, such as “YES” and “NO”, rather than numbers.

There are four elements in normal mode: SET HP, Altitude Compensation (ALT CMP), Plus HP Button (+HP BTN), and Altitude (ALT). (There is a fifth element (Reference Altitude, REF ALT), which is normally hidden as it is used only for special cases. See Appendix A for application and instructions.) Whenever you are on boost, actual boost pressure is displayed. When off boost, the last menu shows again.

Using the EBC (continued)

There are five elements in user configuration mode. To get to user configuration mode, go to the altitude screen, then press the button for five seconds until CFG is displayed. You now have access to all the configuration elements. You can exit configuration mode so that the menu only shows four elements.

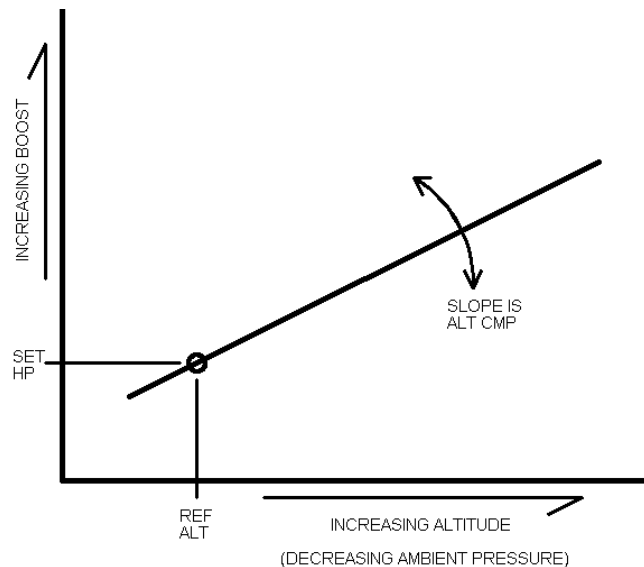
Theory

SET HP is used to achieve the desired boost at your present altitude. When you lock in SET HP, your current altitude (reference altitude, or REF ALT) is automatically locked in. (See the figure below.) In some cases, you may want to set REF ALT manually. See Appendix A for application and instructions.

After this reference point is set, altitude compensation (ALT CMP) is used to prescribe how much boost to add as you go up in altitude. This is the slope of the line in the figure. As you change the slope, the line will pivot around the reference point.

A SET HP value of zero will give you minimum actuator boost. A SET HP value of 99 will give you maximum possible boost for your sled and turbo setup. **WARNING: Don't exceed safe boost for your setup and fuel octane!**

One way to set the boost parameters is to first adjust SET HP at your present altitude to give the boost you desire. The reference altitude will lock in automatically. Then go to a higher altitude and adjust only ALT CMP to give the desired boost there. That will preserve the first setting and set the slope of the line to pass through your current altitude and boost level.



Menu Description

SCREEN
DISPLAY

DESCRIPTION

SET

SET HP

HP

15

Adjust this number until your observed boost pressure is what you want at your present altitude. This number does NOT represent actual boost or horsepower. It represents the percentage of time the solenoid is on, blocking boost pressure to the actuator and draining the actuator to ambient. The minimum boost is at zero. This minimum boost is whatever your wastegate actuator would give you if the boost pressure was connected straight to the actuator. A higher number will give higher boost. (When you set this value, your current altitude is automatically captured. This altitude is used as the reference point when adding or subtracting altitude adjustment.) When not setting this number, it shows the total value after including altitude adjustment. (Altitude adjustment is calculated as the altitude compensation (ALT CMP, explained below) times the change in ambient air pressure due to weather and/or altitude.)

ALT

ALTITUDE COMPENSATION

CMP

12

Choose how much boost to add as you go up in altitude or how much to subtract as you go down. Use a small number to be conservative if going uphill from where you locked in your SET HP so that not too much boost is added. Use a large number to be conservative if going down hill from where you locked in your SET HP so that at least enough boost will be subtracted. This number represents solenoid percentage change per psi of ambient air pressure change. (This pressure change is about 0.5psi per 1000ft under 5000ft altitude and 0.4psi per 1000 from 5000ft to 10,000ft. In metric units, it is about 0.011bar per 100m under 1500m and about 0.009bar per 100m from 1500m to 3000m.)

+HP

PUSH TO PASS

BTN

10

You can set how much extra boost you desire when you press the handlebar button. This number also represents the percentage of time the solenoid is on, not actual boost or horsepower.

ALT

ALTITUDE ABOVE SEA LEVEL

2.7

This is shown in thousands of feet or thousands of meters. Under normal weather conditions it will be accurate within about +/-300 feet or 100m. Good or improving weather is associated with high pressure which will make the gauge read low. Bad or declining weather will make the gauge read high.

CFG CONFIGURATION MODE
In normal mode (showing only the four elements above), a short button press while ALT is displayed will take you back to the top of the menu (SET HP). Holding the button for five seconds while the altitude value is displayed will take you to the configuration menu, described below.

PT PRESSURE TRANSDUCER CALIBRATION
Calibrate the pressure transducer input to your Boondocker Control Box for proper fuel regulation, but only if you are not using a separate Boondocker pressure transducer. Set the fuel control box to show boost, then adjust this value up or down until control box reads zero boost. See calibration procedure above for more details.

CAL

50

SOL SOLENOID TEST
While BZZ is showing, the boost solenoid is operating at 50% duty cycle (on half the time). This is provided so you can test the solenoid operation.

TST

BZZ

BST BOOST UNITS SELECTION
Choose English or metric units for boost pressure. When changing these units you must re-enter your SET HP and reference altitude, if used (See Appendix A).

U-M

PSI/BAR

ALT ALTITUDE UNITS SELECTION
Choose English or metric units for altitude, displayed in thousands.

U-M

KFT/KM

REV REVISION
This shows the current revision of the EBC code. Have this available whenever contacting Boondocker or your dealer with questions.

AAD

XIT EXIT CONFIGURATION MODE
After calibrating and configuring your EBC, select “YES” to exit configuration mode. Then you see only the main four user elements.

CFG

YES/NO

Appendix A – Manually Setting Reference Altitude

In certain circumstances you may want to set your boost factors to known good settings, but you are not at an altitude where you can use those numbers. For example, you may want zero boost increase until you are over 6000 feet altitude, but you are setting the numbers while at 3000 feet. Or you may be copying a previous setup or someone else's setup, but you're not at the correct altitude for the known numbers. In these cases you can manually set the reference altitude as follows:

REF REFERENCE ALTITUDE

ALT Use SET HP to select the amount of boost you want at a known altitude. When locking your SET HP number in, keep holding the button for five seconds. This will access the reference altitude menu for manual setting. Set this altitude as desired to correspond to the SET HP number you just entered. If you like the number showing, you don't have to enter set mode because when you exit this element, the value showing will be locked in regardless. (If you later decide to use altitude auto capture, just re-enter SET HP and lock it in with a one second button push.) After setting these parameters, the SET HP number showing may be different from what you entered because altitude adjustment is included.

6.0

Appendix B

Kit Contents list for Arctic Cat:

- | | |
|---|-------------------------------------|
| 1- Electronic Boost Controller (EBC) | 24" length x 1/8" O.D. Poly line |
| 1- Boost Solenoid | 24" length x 3/16" I.D. vacuum line |
| 1- Mounting bracket | 4- small zip ties |
| 1- Handlebar Push Button | 4- large zip ties |
| 1- Push-to-Connect Y | 1- Long self-tapping screw |
| 1- M8 or M1000 EBC Harness (w/6 pin connector) | |
| 1- ADA kit with harness (w/10 pin connector, only for use with Boondocker Fuel Control Box) | |

Snow Pro Differences

- 1- Snow Pro Bracket
- 2- Bolts for bracket
- 1- Small self tapping screw

Kit Contents list for Polaris Dragon:

- | | |
|---|-------------------------------------|
| 1- Electronic Boost Controller (EBC) | 24" length x 1/8" O.D. Poly line |
| 1- Boost Solenoid | 30" length x 3/16" I.D. vacuum line |
| 1- Mounting bracket | 4- small zip ties |
| 1- Polaris Handlebar Push Button | 4- large zip ties |
| 1- Polaris EBC Harness (w/6 pin connector) | 1- 1/4-20 x 1" bolt and lock washer |
| 1- ADA kit with harness (w/10 pin connector, only for use with Boondocker Fuel Control Box) | |

Kit Contents list for Nvtro:

- | | |
|---|-------------------------------------|
| 1- Electronic Boost Controller (EBC) | 36" length x 1/8" O.D. Poly line |
| 1- Boost Solenoid | 30" length x 3/16" I.D. vacuum line |
| 1- Mounting bracket | 4- small zip ties |
| 1- Handlebar Push Button | 4- large zip ties |
| 1- Nvtro EBC Harness (w/6 pin connector) | 1- 1/4-20 x 1" bolt and lock washer |
| 1- ADA kit with harness (w/10 pin connector, only for use with Boondocker Fuel Control Box) | |