

Augment Automotive Technical Manual

Title: Augment Automotive AugTronic
Electronic Boost Control Configuration

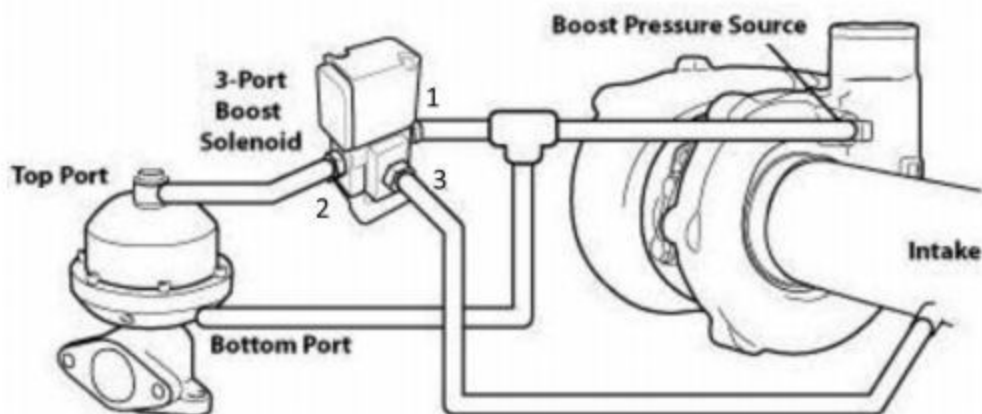
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This manual has been written to support installation and setup of electronic boost control for the AugTronic series of ECUs. The aim is to provide an electronically controlled method of boost control. AugTronic manages electronic boost control through pulse width modulation of a solenoid driven air valve. This valve produces an electronically controlled pressure in a secondary port of a dual port wastegate which opposes the boost pressure opening the wastegate.

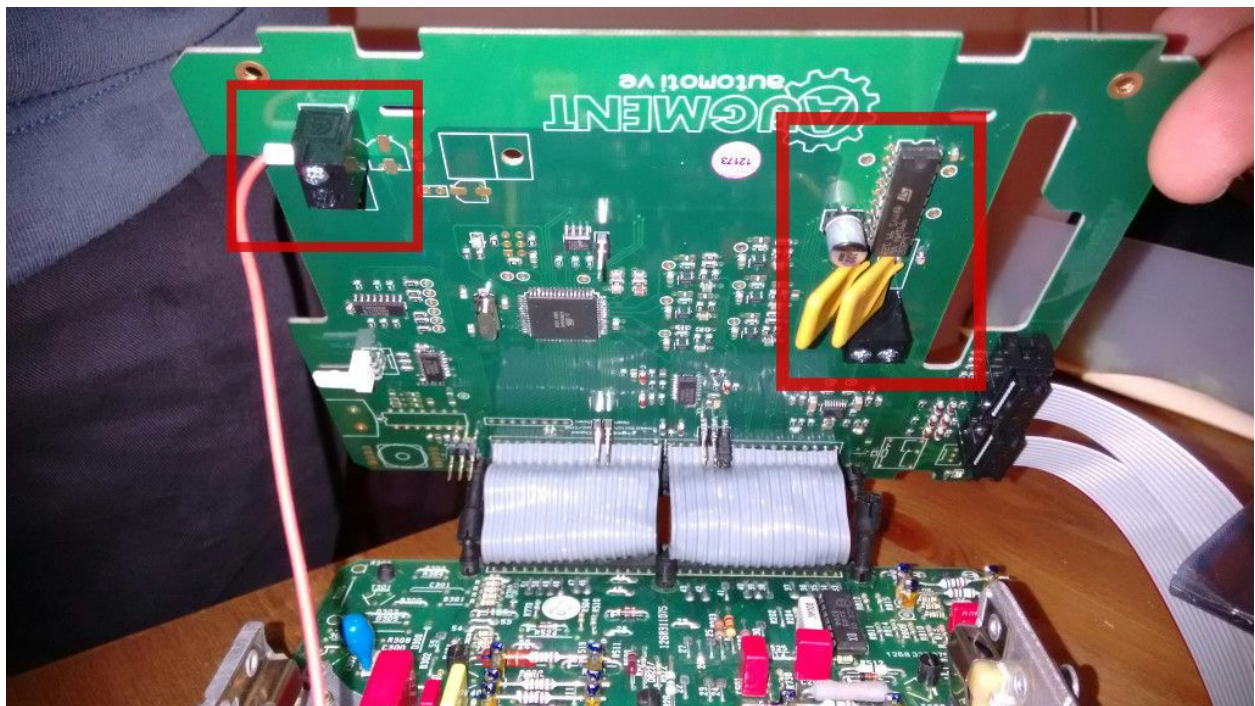
Physical wastegate and solenoid valve connections

The following diagram shows the physical pressure line connections required for electronic boost control. Line 3 may be vented to atmosphere. The wastegate in this image lifts from the valve seat into the body of the wastegate. Some wastegates lift away from the wastegate body, in this case the wastegate connection ports should be reversed. The general principle is that when the boost solenoid is electrically isolated and in its de-energised state the top port is connected to atmosphere and boost is controlled purely by wastegate spring pressure. Activating the boost solenoid raises pressure in the top port which opposes wastegate opening and increases boost.



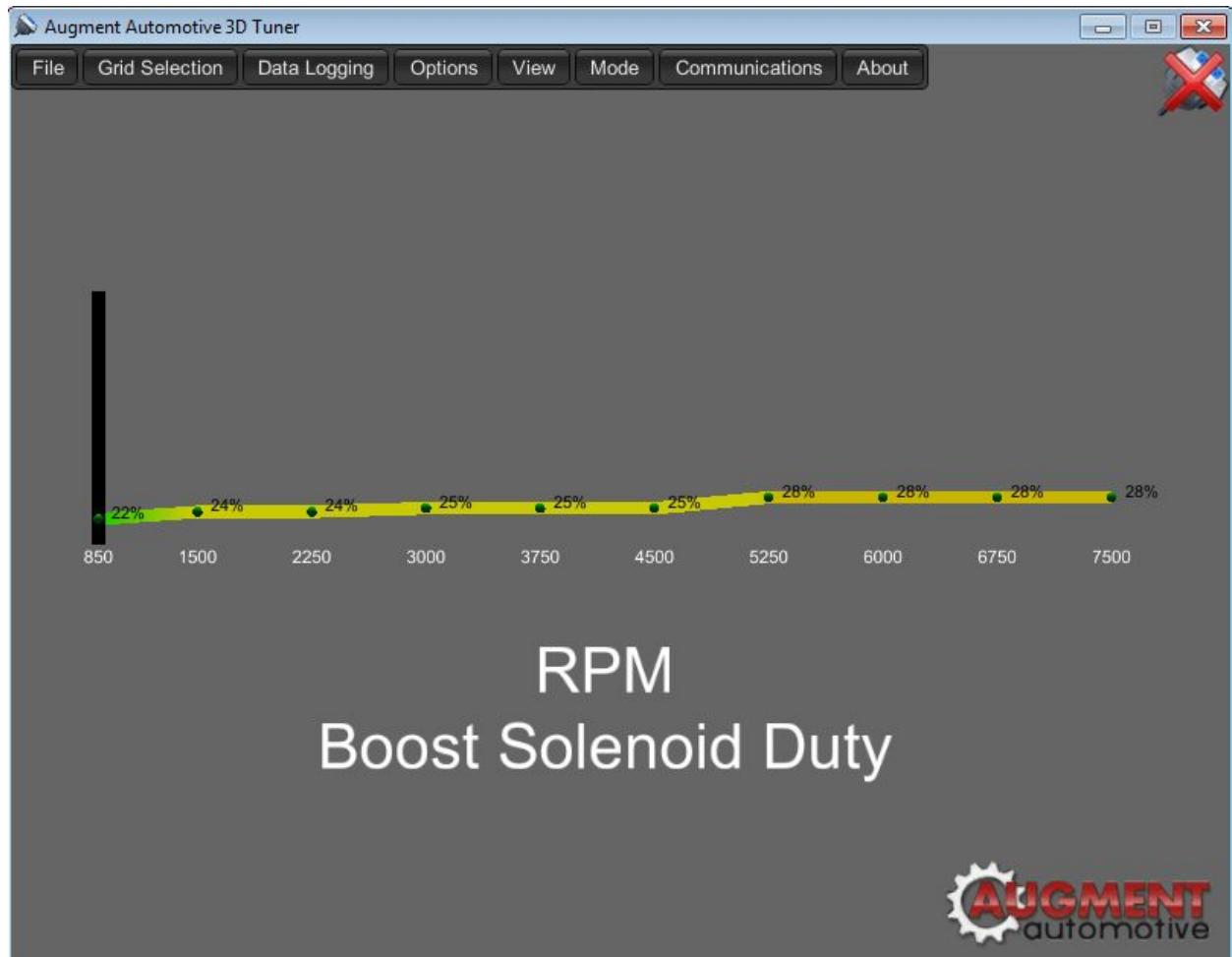
Electrical connections to boost solenoid valve

The solenoid valve should be connected to the boost control circuitry on the AugTronic ECU board. This is a two pin screw terminal header on the AugTronic ECU board. Polarity is not significant. Two core shielded cable suitable for 1A minimum is recommended. A 12V feed is required to drive the boost solenoid, a bridging cable between pin 35 of the DME plug to the 12V input header on the AugTronic board is required. This is usually fitted during the AugTronic installation by Augment Automotive. The image below shows the two pin 12V header on the left and the boost control circuitry and its separate two pin header on the right. The boost solenoid should be connected to the two pin header on the right. The 12V feed should be connected to the bottom (oriented as per the image below) pin of the two pin header shown on the left.

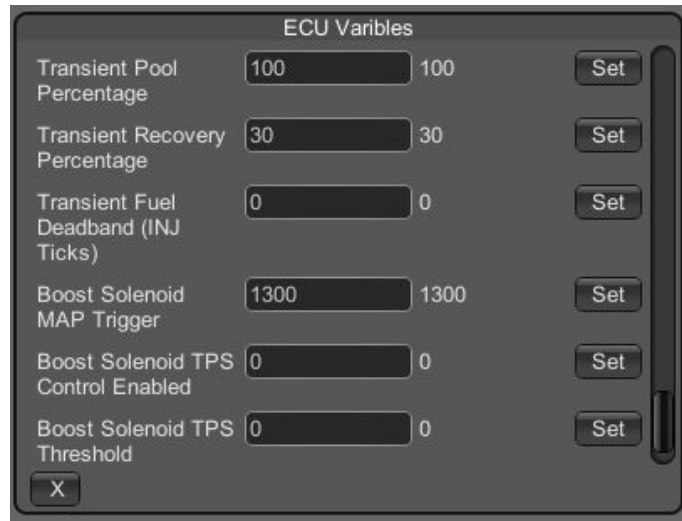


Control of boost solenoid duty

Control of boost solenoid duty is achieved through the Augment Automotive 3D Tuner application. A map of PWM valve duty vs RPM is available which allows adjustment of the boost solenoid duty cycle at adjustable RPM sites. This allows boost to be set differently across the engine speed range. A higher duty means higher boost!



Several control variables are also available under the ECU variables settings panel:



The 'Boost Solenoid MAP Trigger' variable specifies at what pressure the boost solenoid is activated.

TPS based boost solenoid control is available from AugTronic firmware V1.07 and is controlled through the 'Boost Solenoid TPS Control Enabled' and 'Boost Solenoid TPS Threshold'. When 'Boost Solenoid TPS Control Enabled' is set to 1, specify the 'Boost Solenoid TPS Threshold' as a value between 0 and 100% throttle, the boost duty is scaled by the current throttle position in between the 'Boost Solenoid TPS Threshold' and 100% throttle. The result of this is that boost pressure is controlled based on the throttle position and can therefore be more easily regulated by the driver.