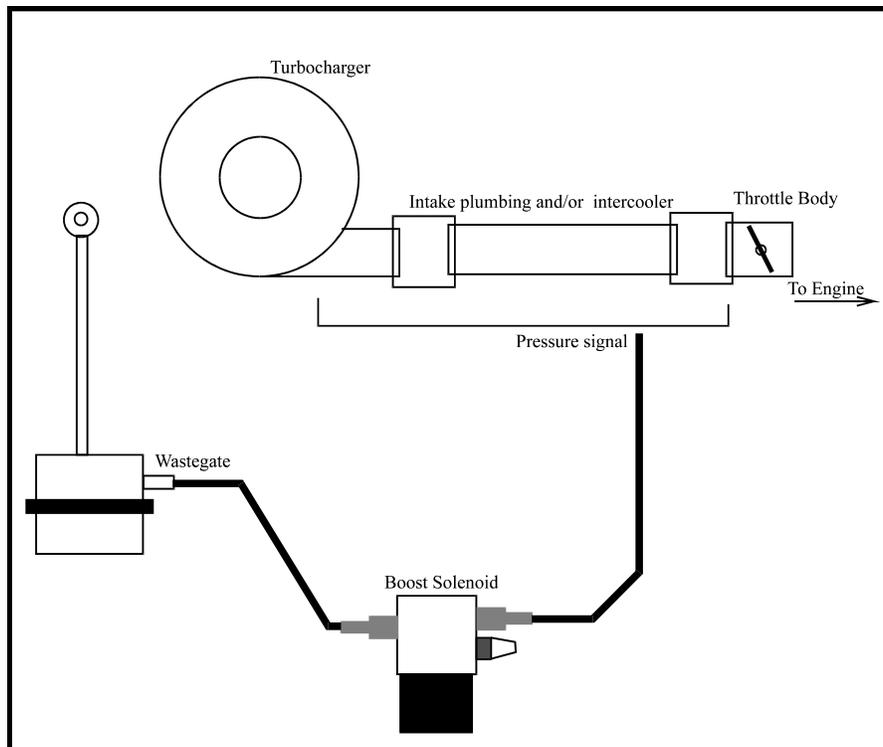
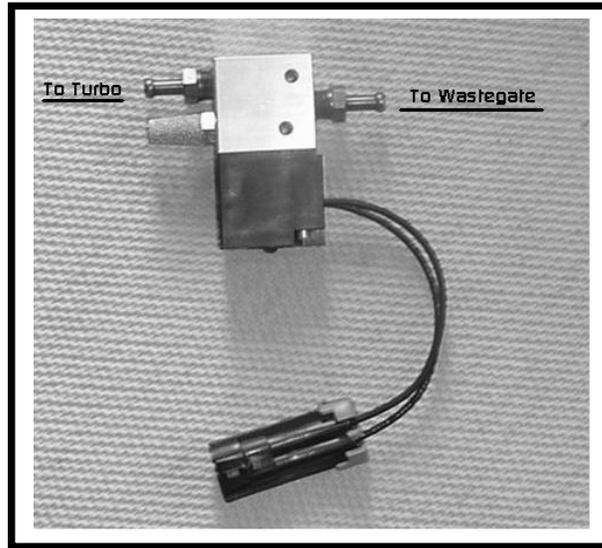


Boost Control Solenoid

For boost control with Translator Pro



Operation:

The Translator Pro controls boost by operating the solenoid with a "Dutycycle", which is the ratio of the time the solenoid is energized, to the time it is off. 100% Dutycycle means the solenoid is full on. 50% Dutycycle means the solenoid is being turned on and off with equal timing. 10% Dutycycle means that the solenoid is on briefly, then off for much longer.

The Translator Pro controls boost as follows: During normal driving, the solenoid is not activated. When the Throttle and RPM thresholds are exceeded, Spool mode is activated, and the solenoid is fully energized (100% dutycycle) which prevents any pressure from passing thru the solenoid and causes the turbo to spool as quickly as possible. Once the boost pressure exceeds "**PSI Start**" the solenoid is operated at the "**Start DC%**". If the boost pressure exceeds the desired target boost "**PSI Set**" (or "**PSI Aux**" if the Aux input is activated) the solenoid dutycycle is reduced at a rate determined by the "**Gain**" setting. The solenoid dutycycle will only be increased to raise the boost if the throttle position exceeds "**TPS Start**".

Installation:

This solenoid is used to modify the pressure signal that regulates the boost pressure of a turbocharged engine. By reducing the pressure signal that the wastegate receives, the boost pressure is increased until the reduced pressure is equal to the original unreduced pressure. For example, if the "base boost" is 10 psi with the wastegate receiving a pressure signal directly from the turbo/intake plumbing, reducing the wastegate pressure signal by 50% will raise the boost pressure to 20 psi, since the wastegate is still receiving its designed 10 psi. Note: this example ignores many other factors that affect boost like pressure leaks, exhaust backpressure, wastegates that are improperly sized, turbos that are improperly sized, etc.

The solenoid has 3 "ports", 2 ports have hose nipples and are connected in-line with the pressure signal to the wastegate. The third port has a muffler/filter to keep contaminants out of the solenoid. Connect the ports as follows:

- EXH: This port receives the pressure signal from the intake plumbing, the signal it receives must be tapped from between the turbo compressor housing and the throttle blade.
- OUT: This port goes to the wastagete actuator. In twin turbo applications "T" this signal and run it to both wastagates.
- IN: This port receives the muffler/filter. (do not block/plug this port)

NOTE: Tie-wrap or clamp all hose connections, if a hose comes loose overboost will occur

Setup:

The Translator Pro can control the boost pressure to a desired setting as long as a MAP sensor is connected to the unit. Adjust the Boost Control parameters as follows:

- TPS Spool: Throttle sensor voltage to enable Boost Control. Usually adjusted to 1.25 - 2.5 volts. Lower settings can improve spoolup time. Higher settings can reduce part throttle surge. It should be set higher than typical cruising TPS voltages.

- RPM Spool: Engine RPM to enable Boost Control. Set higher than typical cruising RPM.
- TPS Start: Once Boost control has started, TPS must exceed than this for the system to increase solenoid duty cycle. Set this to about 80% throttle. If it is set too low, the Translator Pro will attempt to raise the boost pressure as the driver "backs out" of the throttle. If the driver were to floor the throttle again a boost spike could occur.
- PSI Start: Boost pressure at which the system changes from Spool mode (solenoid full on) to Start mode. Set this half way between the base boost of the vehicle and the desired boost. If boost overshoots are excessive, reduce this setting. If boost overshoot is desired, set this closer to the target boost.
- DC% Start: The Solenoid dutycycle that is set when spool mode completes. The approximate setting to start with is $(1 - (\text{base boost} / \text{target boost})) * 100$. First tests should start with about half of this. Example, base pressure = 10 psi, target boost = 18 psi. Estimated Dutycycle = $(1 - (10/18)) * 100 = 44\%$. So start at 22% for initial testing.
- PSI Set: Boost Pressure the system will try to maintain
- PSI Aux: Boost Pressure the system will try to maintain when the Aux Trigger input is activated.
- Gain: How fast the system will change the solenoid dutycycle to try to adjust the boost. Set this only high enough to achieve good boost control. Too much gain will cause the boost to surge/oscillate. Setting the Gain to 0.0 will prevent the system from adjusting the solenoid to control boost.

Base/Target	DC% Start	Suggested initial setting
1	0.0%	0%
1.1	9.1%	5%
1.2	16.7%	8%
1.3	23.1%	12%
1.4	28.6%	14%
1.5	33.3%	17%
1.6	37.5%	19%
1.7	41.2%	21%
1.8	44.4%	22%
1.9	47.4%	24%
2	50.0%	25%
2.1	52.4%	26%
2.2	54.5%	27%
2.3	56.5%	28%
2.4	58.3%	29%
2.5	60.0%	30%
2.6	61.5%	31%
2.7	63.0%	31%
2.8	64.3%	32%
2.9	65.5%	33%
3	66.7%	33%
3.1	67.7%	34%
3.2	68.8%	34%
3.3	69.7%	35%
3.4	70.6%	35%
3.5	71.4%	36%