

19.15 BoostController

The active control function of the wastegate valve pressure is used for a more precise control of turbo pressure in street, circuit and, mostly, drag race cars. The control can be performed by time after 2-step, by gear and engine RPM, by gear elapsed time, by a single target or by engine RPM, besides specific targets for 2-step, 3-step and burnout mode.



IMPORTANT:

- The pressure controlled by BoostController is the pressure at the top of the wastegate valve.
- You can set the maximum MAP pressure and maximum MAP pressure on 2-step.
- When the BoostController is off the target is zero, and each time the read pressure, for any reason, exceeds 1.1psi the decrease solenoid is activated.

Installation diagram

- 1 - Decrease solenoid/injector trigger – connected to the blue or yellow output;
- 2 - Decrease solenoid;
- 3 - Increase solenoid/injector trigger – connected to the blue or yellow output;
- 4 - Increase solenoid;
- 5 - 12V from relay;
- 6 - Intake or CO2 bottle;
- 7 - Pressure sensor;
- 8 - Pressure sensor hose;
- 9 - Intake;
- 10 - Free air;
- 11 - Injectors block;
- 12 - 3-way Valve or N75;
- 13 - Actuation of 3-way valve or N75;
- 14 - Control pressure Wategate;
- 15 - FT dual valve block;
- 16 - Connection to second Wategate or must be blocked;

Diagram with regular solenoids

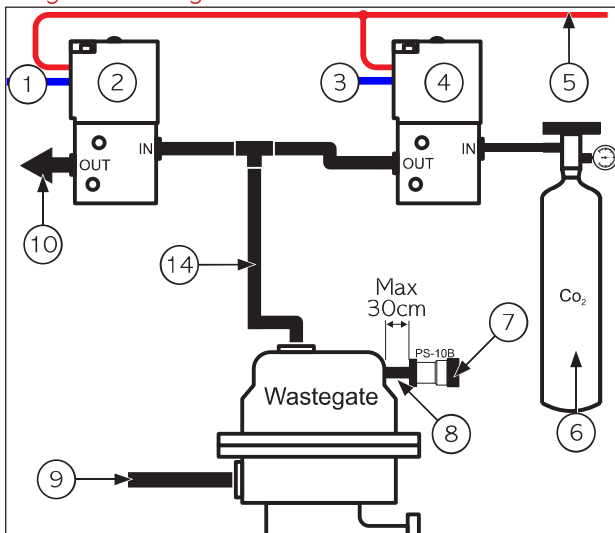


Diagram with injectors block

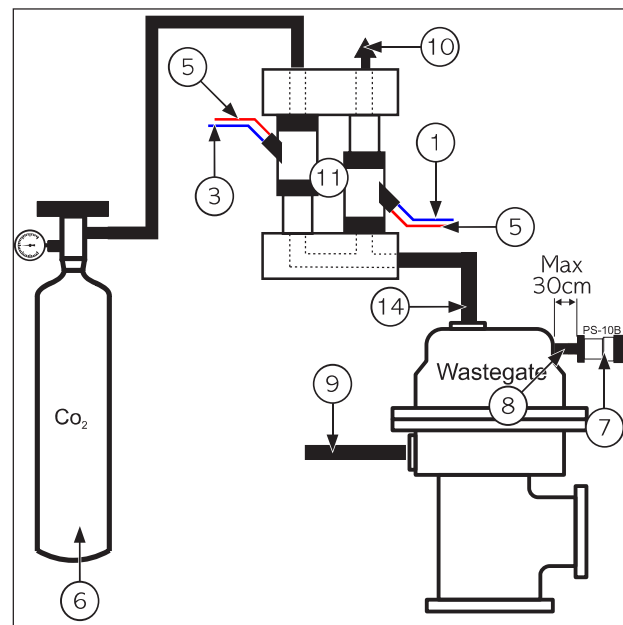


Diagram with 3 way Valve

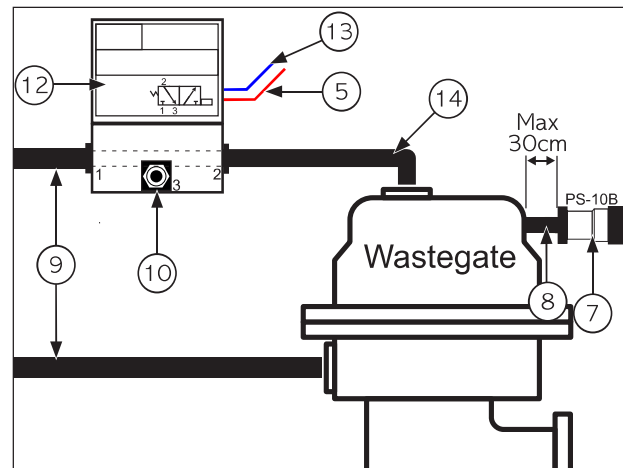


Diagram with N75 Valve

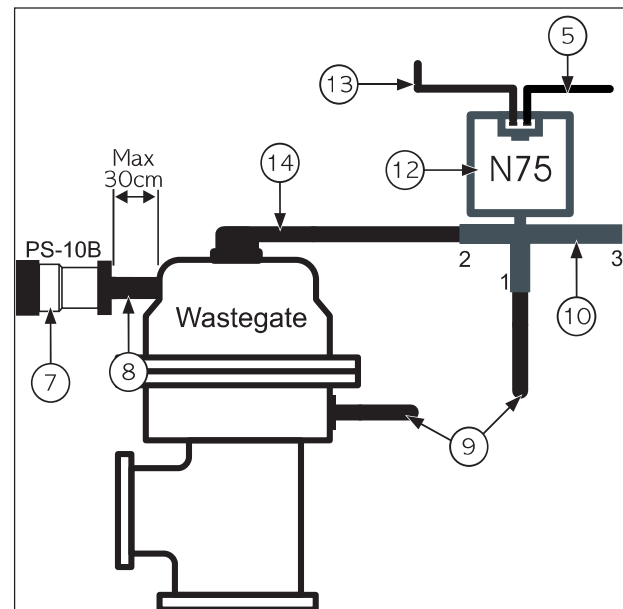
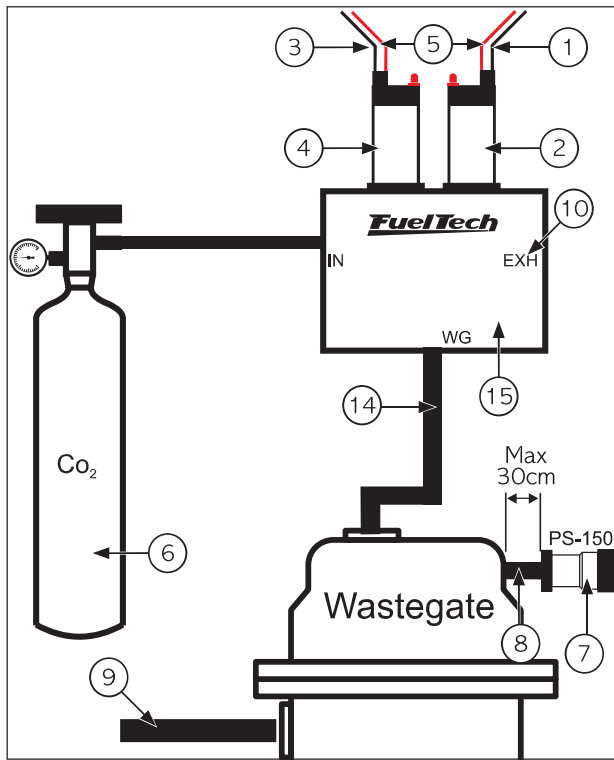
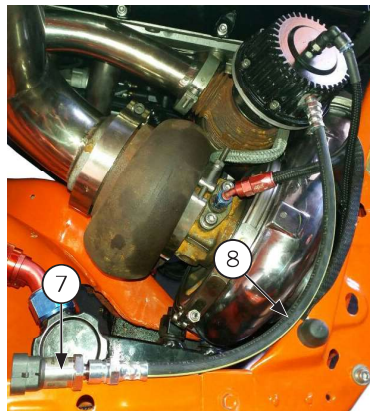


Diagram with FT dual valve block



IMPORTANT:
Use a PS150 pressure sensor connected to any white input. Setup as "Wastegate pressure".



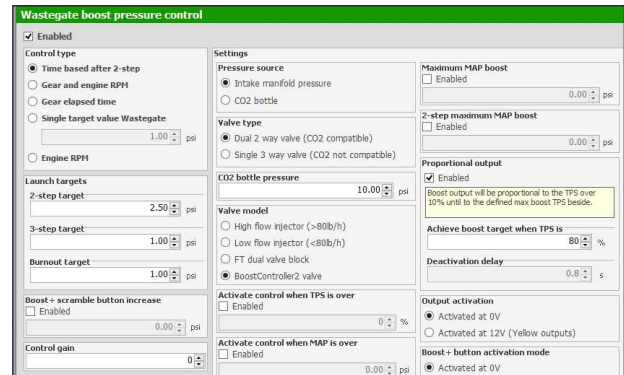
NOTE:
The pressure sensor (7) must be connected to the top of the wastegate with a hose (8) with a maximum length of 1ft. It prevents damage to the pressure sensor caused by vibration.

IMPORTANT:
- The pressure sensor must be installed on an exclusive line, and not shared with any other connection, to avoid reading errors.

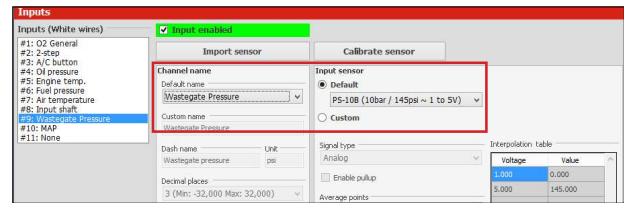
- For the correct operation of the system, use only FuelTech PS sensors line: PS-150, PS-300, etc.

FTManager setting

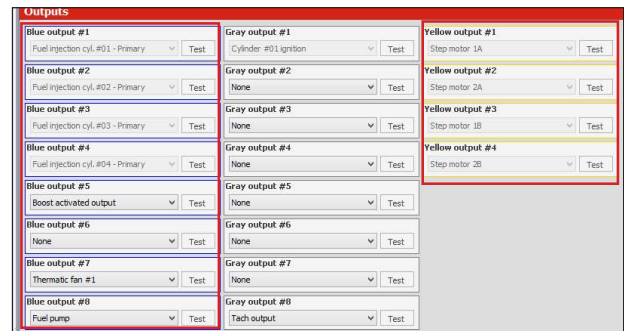
Through FTManager you can make all settings required for the operation of BoostController.



Set the input for the pressure sensor as PS-10B, PS-20B, PS-150 and PS-300 or BoostController2 MAP. In FTManager access the menu "sensors and calibration/inputs".



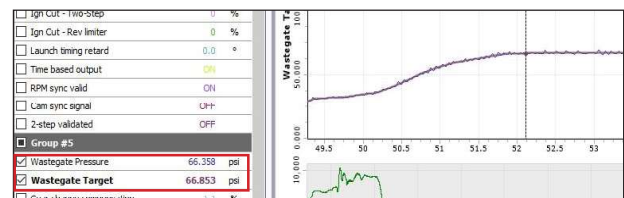
Set the outputs of the increase and decrease solenoid valves.



NOTE:
It is recommended to use the yellow or blue outputs for connecting the solenoids.

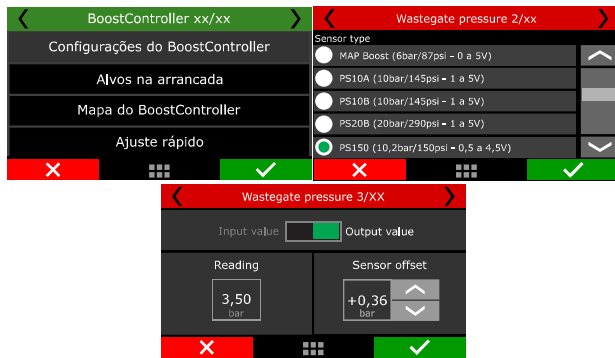
IMPORTANT:
Avoid using different color outputs for solenoids. Use two yellow outputs or two blue outputs.

In datalogger you can configure the channels for monitoring BoostController pressure.



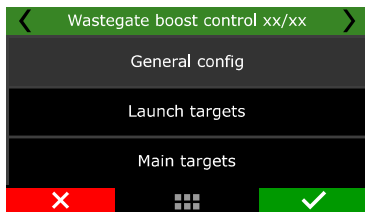
FT500 Input setting

In the “Sensors and calibration” menu select the “Wastegate pressure”, after this set the associated input and the sensor type used.



FT500 setting

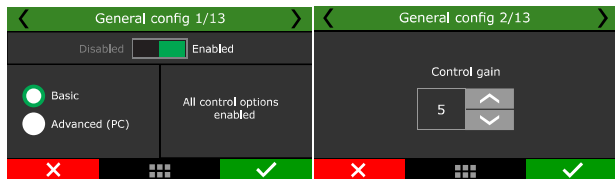
In this menu should inform the BoostController its basic settings.



Basic: You can access all control settings through the FT500 screen.

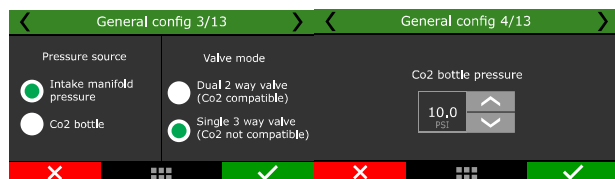
Control gain: Adjust the control gain according to the valve response. If it is taking to achieve the target it is necessary to increase the gain, if it overshoots the target it is necessary to reduce this value.

Advanced (PC): Some settings are available only in FTManager software.

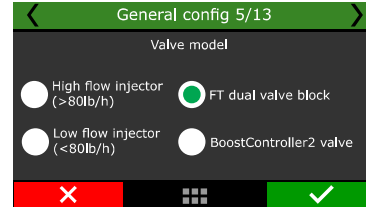


Pressure source: In the BoostController configuration will be necessary to inform what is your source of pressure: intake manifold or CO2 bottle.

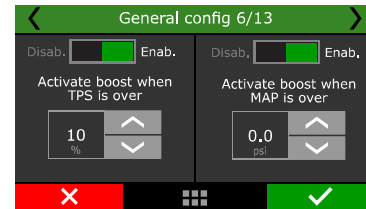
When using a bottle, an industrial pressure regulator is required, limiting the line pressure according to the desired configuration. Two manometers must be used, one before the regulator indicating the pressure in the bottle and the other after the regulator showing pressure in the line.



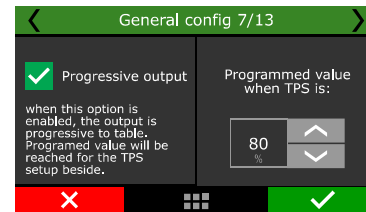
Valve model: You can choose which valve type will be used, high or low flow injectors, FuelTech 2 valve block or BoostController2 solenoid.



You can set a minimum value for BoostController activation by TPS and MAP.



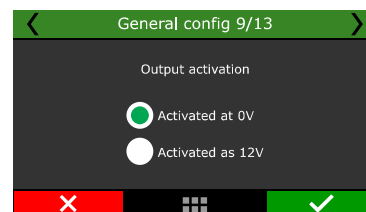
Proportional output: from 10% TPS the output is proportional to the map. The programmed pressure is reached when the TPS reaches the value set.



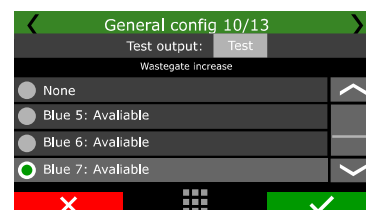
MAP maximum pressure and MAP maximum pressure on 2-step: Allows to set a MAP maximum pressure during 2-step and out of the 2-step. This function will not adjust the MAP pressure according to a target and will make the pressure bounces around the target. This maximum pressure must be used only as a safety feature to prevent overboost.



Output activation: the output can be triggered at 0V or 12V



Set the solenoid trigger output

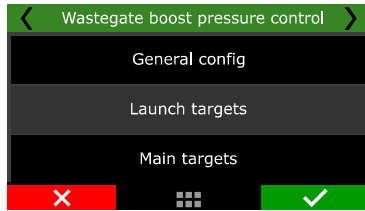


Boost+ button: Increases boost pressure while is switched on.



Launch targets

Defines the target pressure at the top of the valve in 2-step, 3-step and burnout mode.



2-step target: Set the target pressure during 2-step.

3-step target: Set the target pressure during 3-step.

Burnout target: Set the target pressure during burnout mode.



Boost maps

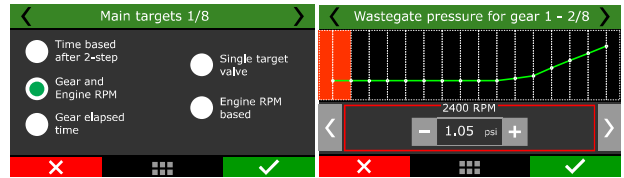
In this function you can set modes of boost maps by time after 2-step (single-stage), by gear and engine RPM (a stage for each gear), by gear elapsed time (a stage by each gear) and single value target.



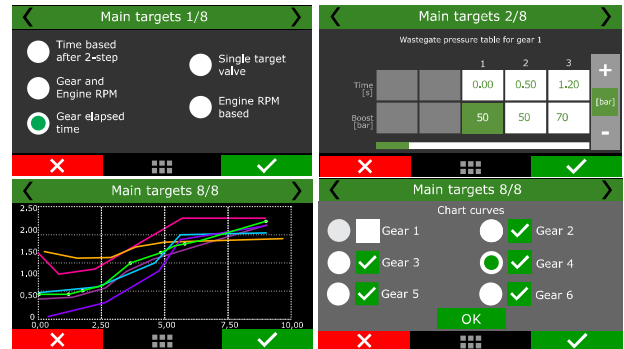
By time after 2-step: Allows a detailed ramp up to 32 time points. The intermediate values are interpolated.



By gear and engine RPM: set up a stage for each gear, with up to 8 points per engine RPM. It is necessary that the gear change detection function is enabled. It does not depend on 2-step.

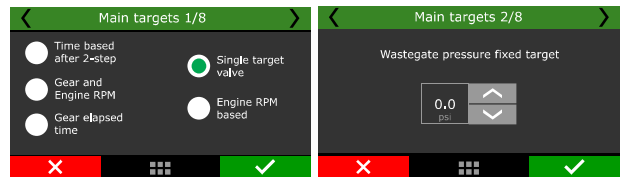


By gear elapsed time: Set up a stage for each gear, with up to 8 time points after the shift.



Single target value: Sets a fixed pressure for BoostController. The wastegate valve will always work this pressure.

This mode is recommended for dynamometer tests.



By engine RPM: Adjust the wastegate pressure according to the engine RPM only.

