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Function : Idle and Engine Brake Ctrl

Part : Throttle Body Stepper

Version : 1.3 (20/02/19)

Machine : KAWASAKI ZX6-R

Application : World Supersport

ECU: : WSS600_A

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This quick reference document is drawn up with the aim to be simple and fast for user consultation, assisting the user or technician in their calibration work.

Will not be in-depth concepts considered fundamental, technical control, PID logic and procedures for writing data or parameters.

This document is the reference for the STRATEGIES section of the control firmware only.

Mectronik will not be responsible for all the effects resulting from the calibrations performed by the user using the tools provided, of not achieved competitive results or not achieved goals. The user is always suggested to verify through simulation, the effect of the calibrations on control algorithms.



IN THE DRIVE BY WIRE SYSTEM, THE INCONSISTENCY OF CERTAIN PARAMETERS REGARDING THE MANAGEMENT OF THE THROTTLE BODY, MAY DETERMINE NOT ITENDED AND UNCONTROLLED EVENTS. THE USER ASSUMES THE FULL RESPONSIBILITY WHEN USING ANY TOOL ABLE TO MODIFY CALIBRATION PARAMETERS.

In cases where it is deemed useful to verify through simulation actions resulting from the changes made to the data, and not being in possession of the appropriate tools, contact technical service.

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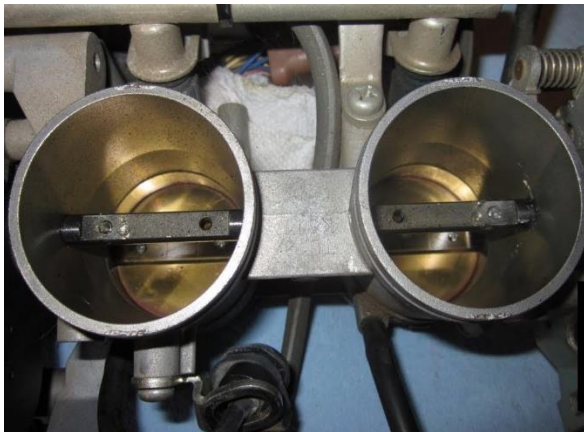
INTRODUCTION

To obtain the maximum benefits from the ECU and its engine brake control strategy, we recommend a small adjustment to the throttle bodies. This enables the stepper motor actuator for the secondary throttle butterflies to achieve a greater opening of the primary throttles.

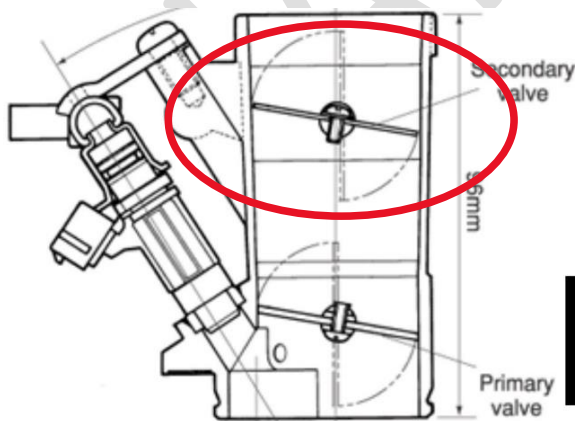
SECONDARY BUTTERFLY REMOVAL

Firstly all 4 secondary butterflies must be removed leaving the actuating shaft and mechanism in place. The throttle bodies should be removed to ensure that no screws or parts fall into the inlet ports.

Butterfly/Valve removed, shaft remains:



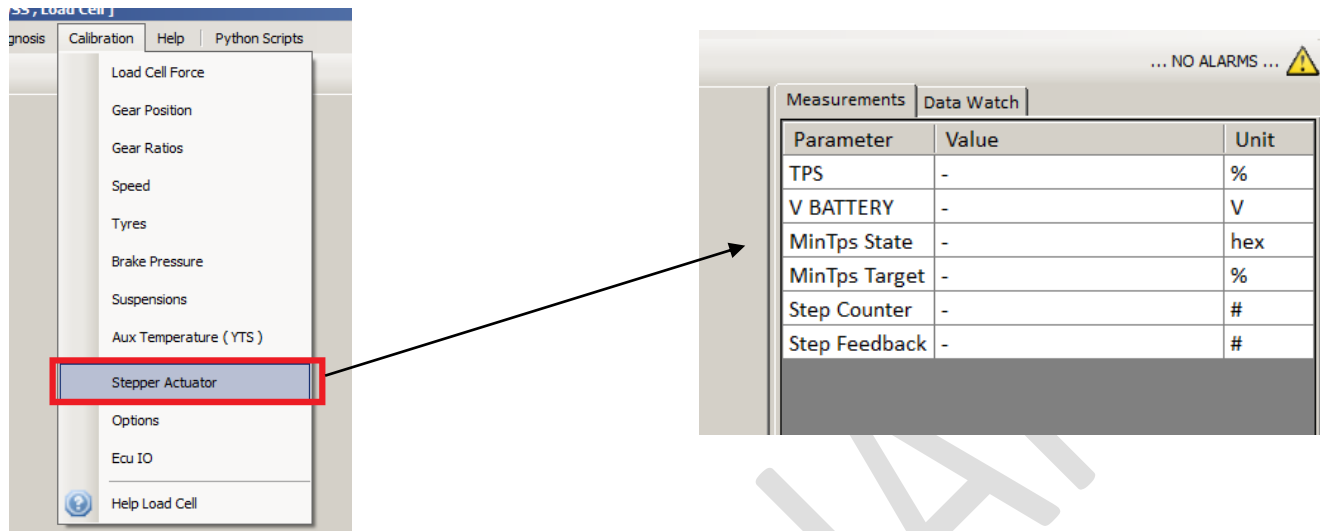
Butterfly / Valve to remove:



STEPPER ACTUATOR CALIBRATION AND ADJUSTMENT

To be able to use the idle control stepper motor in an optimized way for engine brake and idle control you need to calibrate the maximum stroke of the actuator.

First select the stepper information page from menu CALIBRATION / STEPPER ACTUATOR:

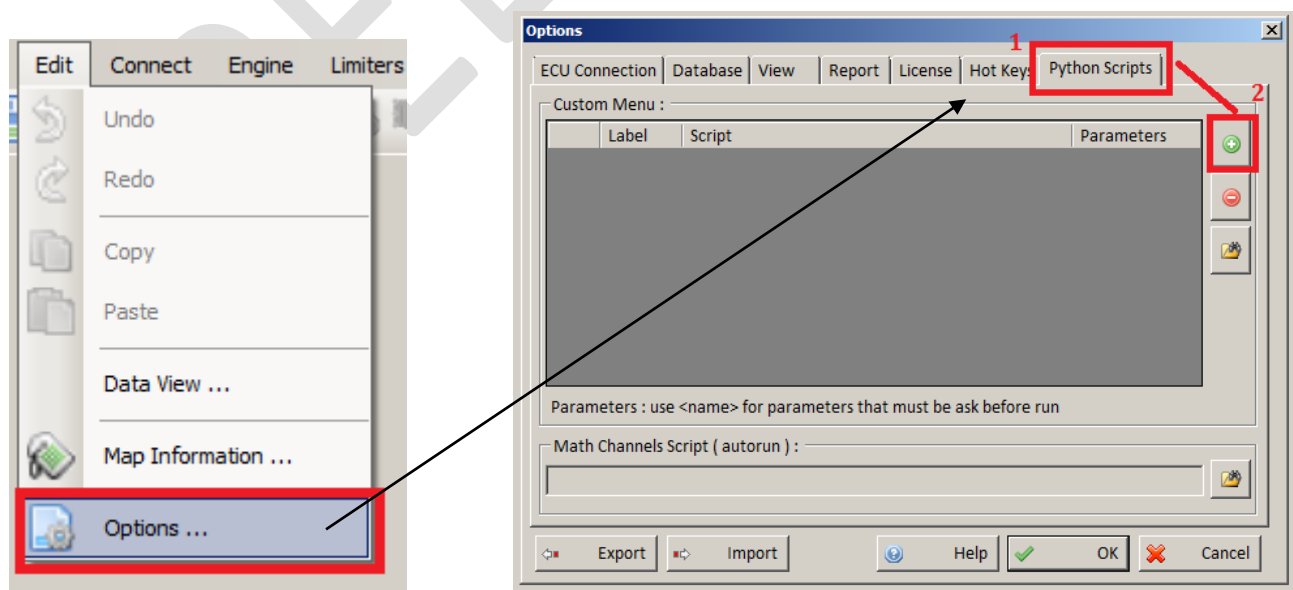


When you are connected with MeCal to the ECU, you will see some information about the actuator.

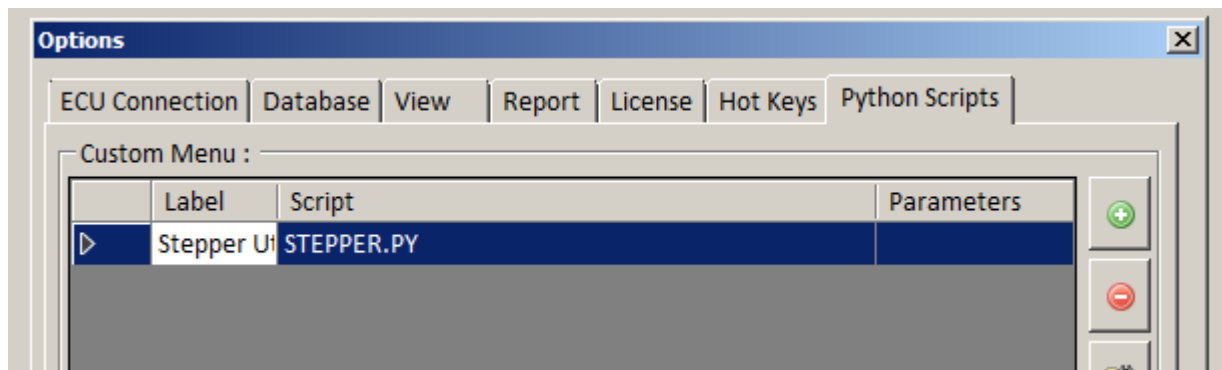
The **MinTps State** shows you if the actuator is working in closed loop, in case the ECU has detected a problem with the secondary throttle sensor it will set the actuator to a safe position, to allow a safe minimum opening (safe closed position) for the main throttle.

We supply a python script that can help you to manage the stepper, to install this script perform the following steps:

First download the STEPPER.PY script from the MECAL CLOUD, then insert the script in your menu:



Double click on the new line, and select STEPPER.PY from your hard disk, under label you can write a name/description of your choice that will be added to the menu.

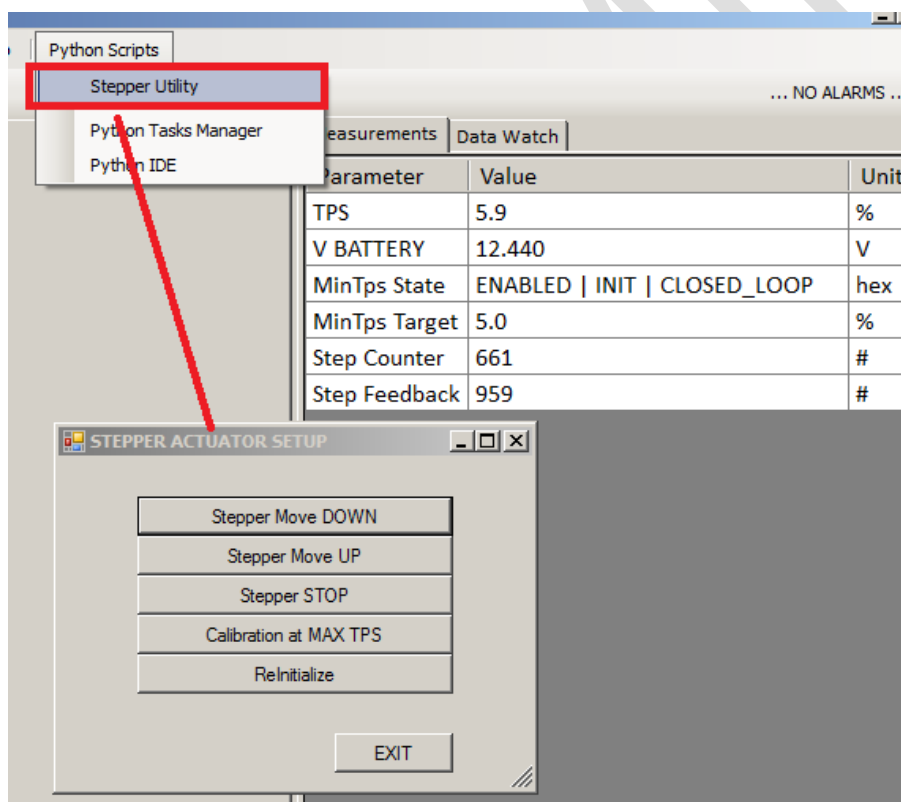


After that You will have a new menu item and pressing it a utility window will be shown. Below a screenshot of what you will see when you calibrate your throttle body:

From this window you will have full control of the stepper actuator. You can move the stepper DOWN and UP or you can STOP it.

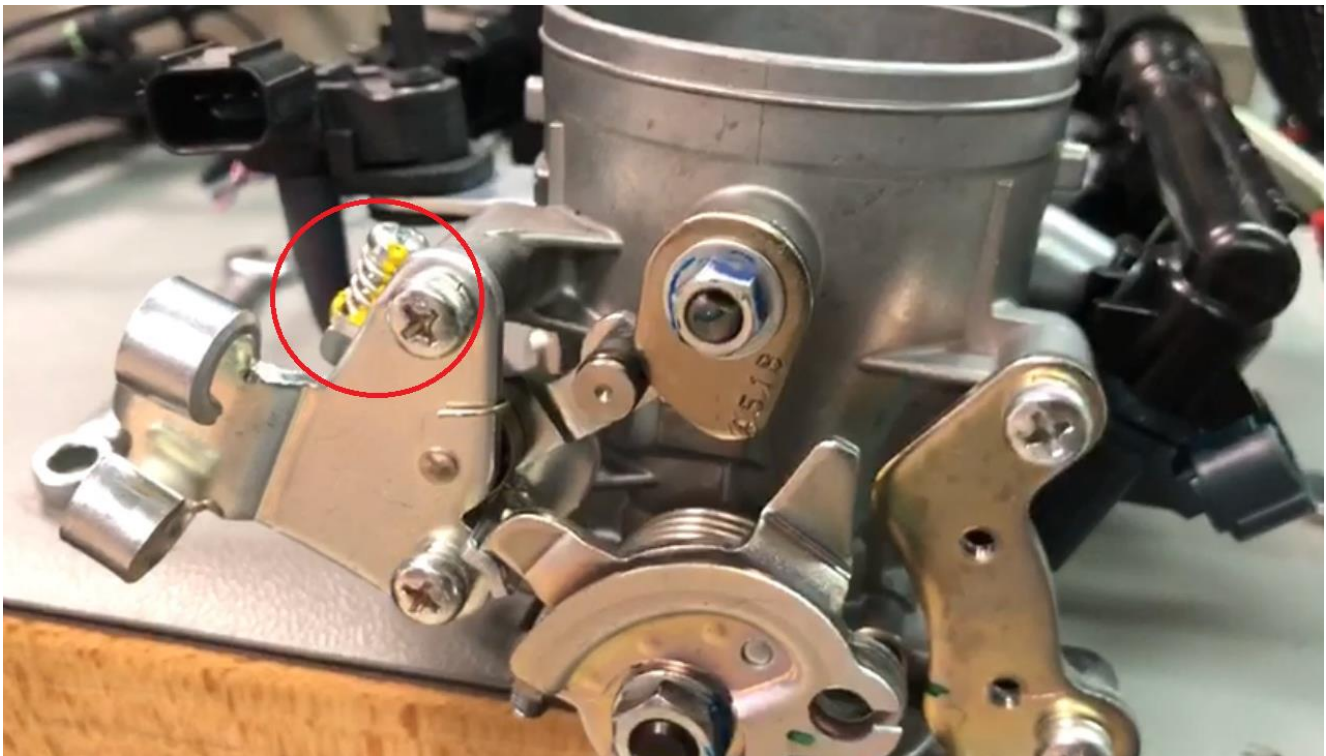
You can also enter a special CALIBRATION for Max position.

Finally you can REINITIALIZE it, this is the same initialization that ECU makes at startup.



We recommend performing the following steps:

1. Fully open the STEPPER by using the 'Stepper Move UP' button. As soon as you see that stepper is at maximum position, press 'Stepper STOP'.
2. Adjust the BOLT (see image below) that adjusts the stepper actuator whilst looking at TPS channel in MeCal. Adjust the bolt until the TPS channel reads between 7.2 and 7.5%.
3. Finally press 'Reinitialize' - the ECU will move the TPS to a better position for engine starting.



BAP SENSOR PIPE DISCONNECTION

By default , on throttle body You have 2 intake pressure sensors . On image below , inside RED circle the MAP sensor (manifold air pressure) , inside the BLUE circle the BAP sensor (barometric air pressure) :



One of this (MAP inside RED circle) is connected to one Cylinder only trough a short pipe . This sensor must be keep UNMODIFIED .

The second one(BAP inside BLUE circle) is connected to all 4 Cylinders trough few pipes . This sensors must be DISCONNECTED FROM PIPES , and rear pressure of free atmospheric pressure . The pipes to Cylinders must be closed .



This will permit to ECU to adapt fueling in function of barometric air pressure automatically .