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**Function : Idle and Engine Brake Ctrl**

**Parts : Throttle Body**

**Version : 1.2 (01/01/19)**

**Machine : Honda CBR600RR**

**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.

## INTRODUCTION

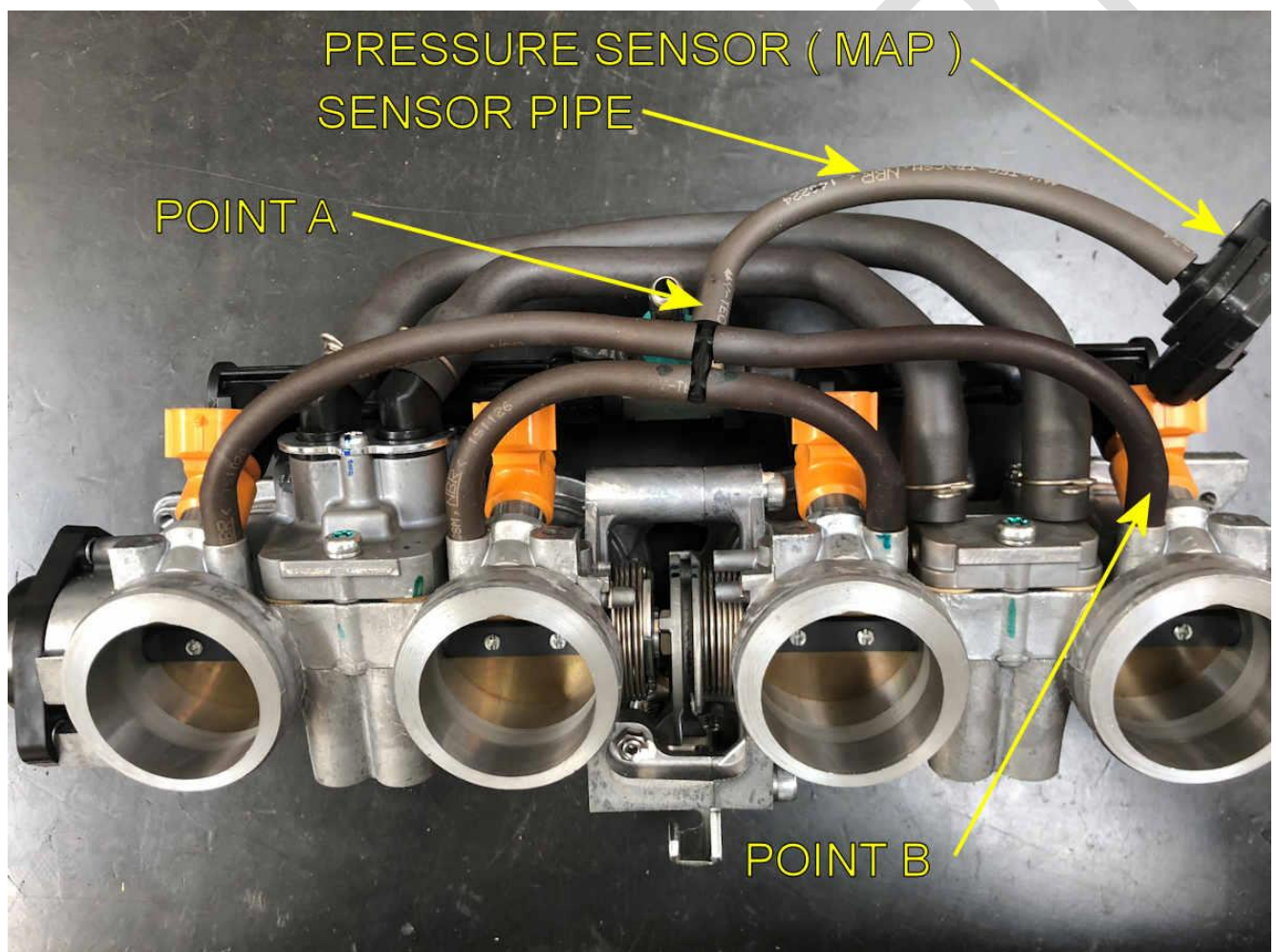
To obtain the maximum benefits from the ECU, a reconfiguration of the hoses mounted on the throttle bodies is necessary.

Specifically, the standard configuration has a MAP (manifold air pressure) sensor that measures pressure from pipes connected to all 4 cylinders.

The race ECU, is able to read pressure with angle base sample (every 5 crank shaft degrees). By using this type of sampling, it is possible to more accurately measure and calculate the intake air quantity.

At the same time, the ECU uses this signal to detect the Intake Stroke for cylinder 4 (for synchronisation).

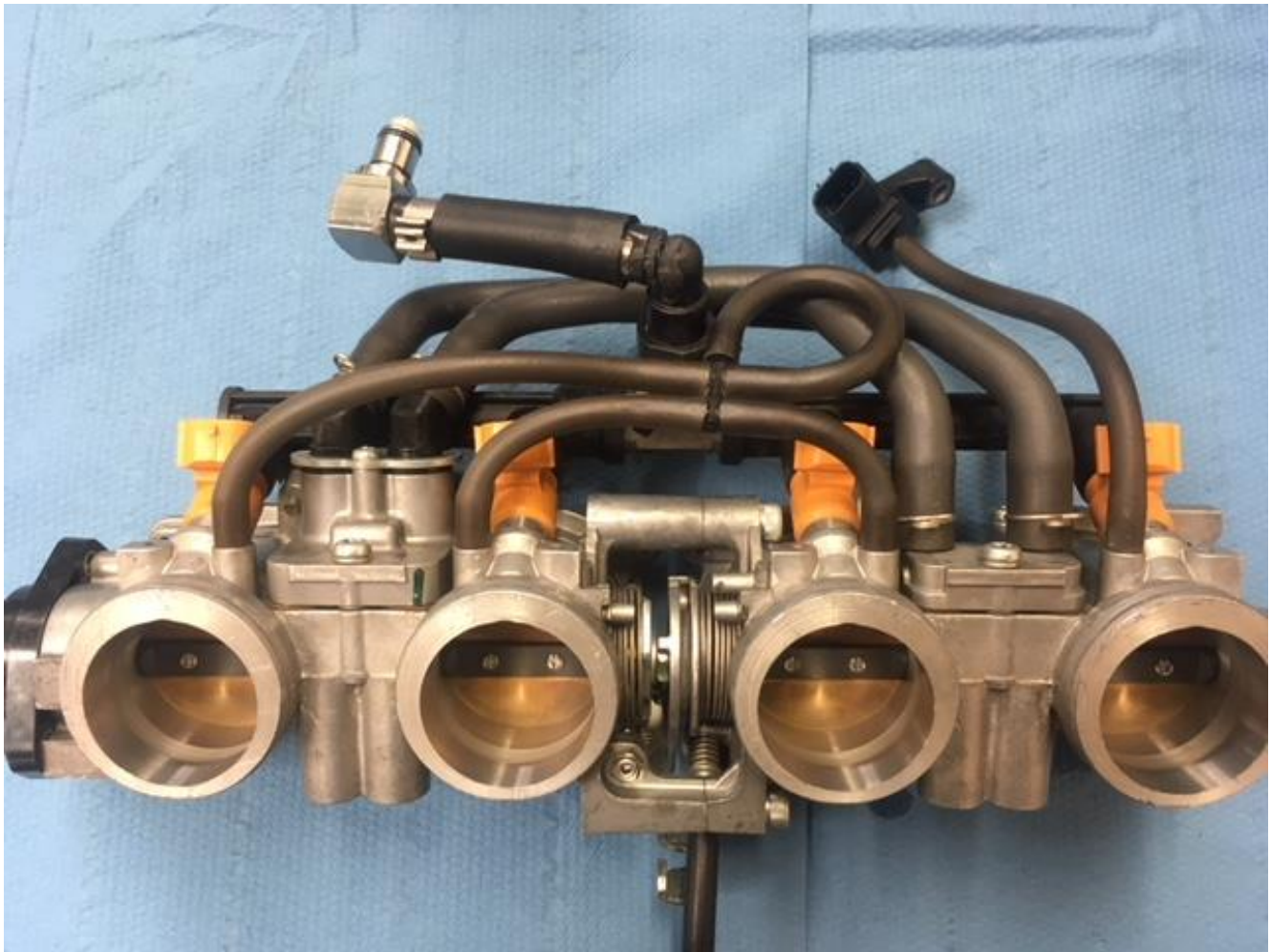
Below is an image of original connections on throttle bodies:



The required modifications are:

- Disconnect Pipe at **POINT B**
- Disconnect **Sensor Pipe** from **POINT A**
- Connect **Sensor Pipe** to **POINT B**
- Connect Pipe disconnected from **POINT B** to **POINT A** (this is to close all open holes)

Below are the throttle body hoses after the reconfiguration:



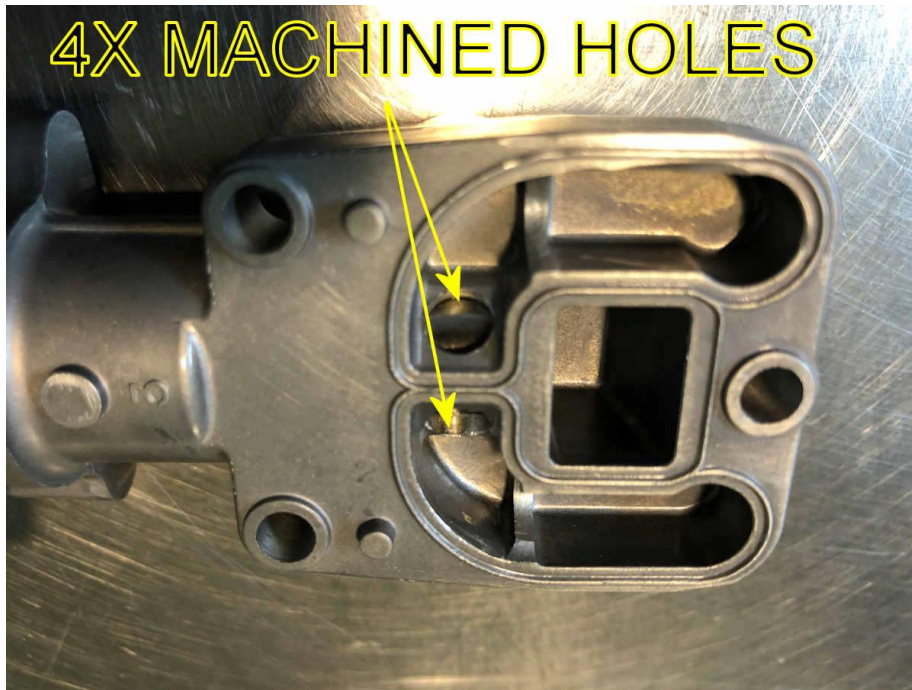
Finally MAP sensor must only be connected to Cylinder 4, and cylinders 1,2 and 3 must be connected together through the hoses.



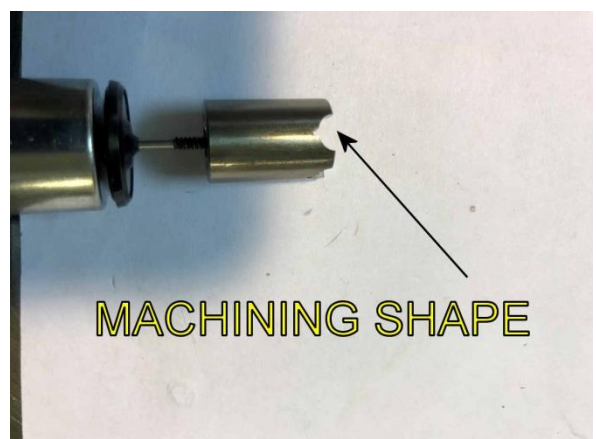
## STEPPER ACTUATOR MODIFICATION

To be able to use the idle control stepper motor in an optimized way for engine brake and idle control, some parts must be machined. The target is to increase the maximum air flow.

The holes in the housing must be increased to 5.5 mm .



For the same reason, the actuator piston must be modified as below :



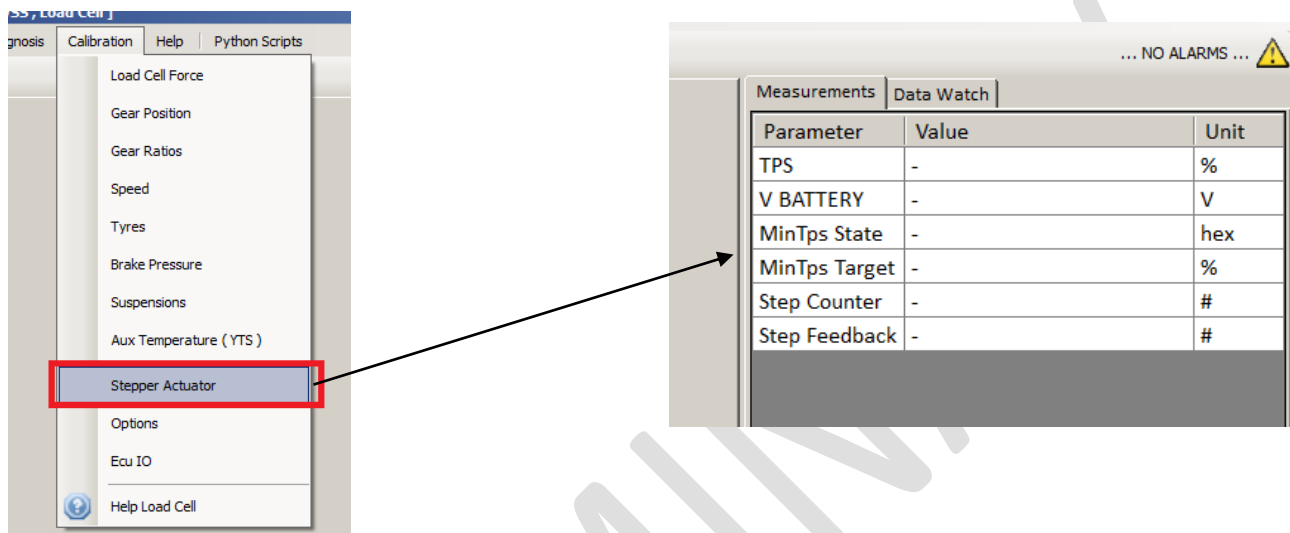
After

modification, be sure to remove all mechanical machining burrs, and check that the actuator moves freely inside the his case without binding. To check it when controlled by the ECU you can use the Python script for stepper manual check (Stepper.py) as described on following pages .

## STEPPER ACTUATOR TEST

To be able to use the idle control stepper motor in an optimized way for engine brake and idle control you need to check that it work fine without problems for its complete stroke .

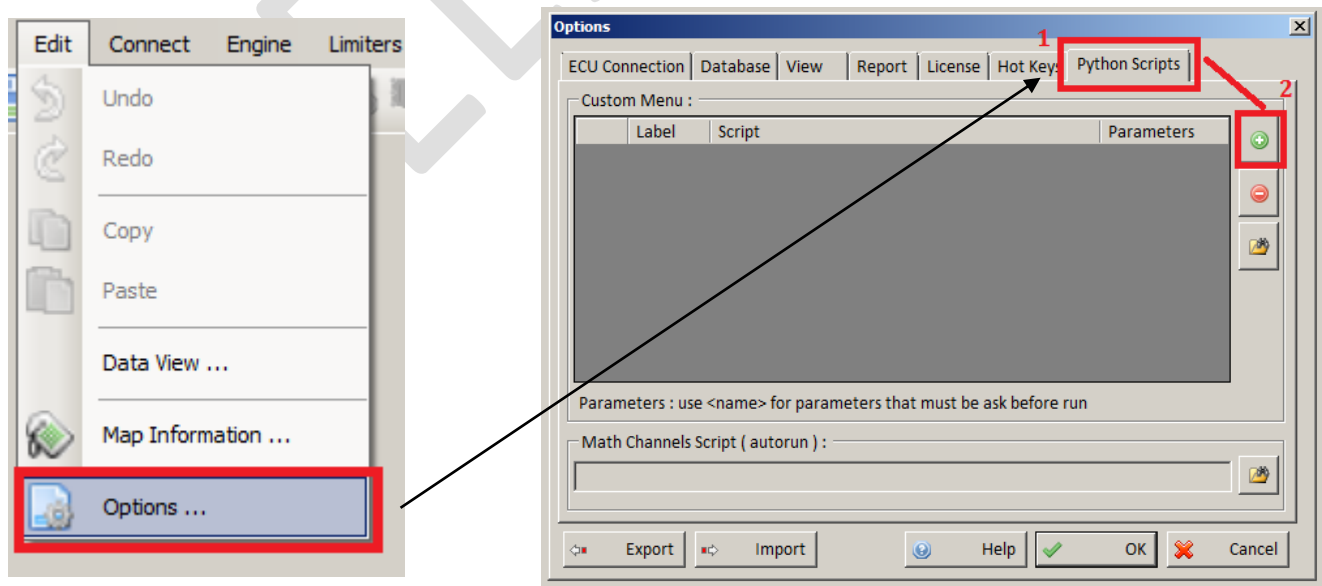
First select the stepper information page from menu CALIBRATION / STEPPER ACTUATOR:



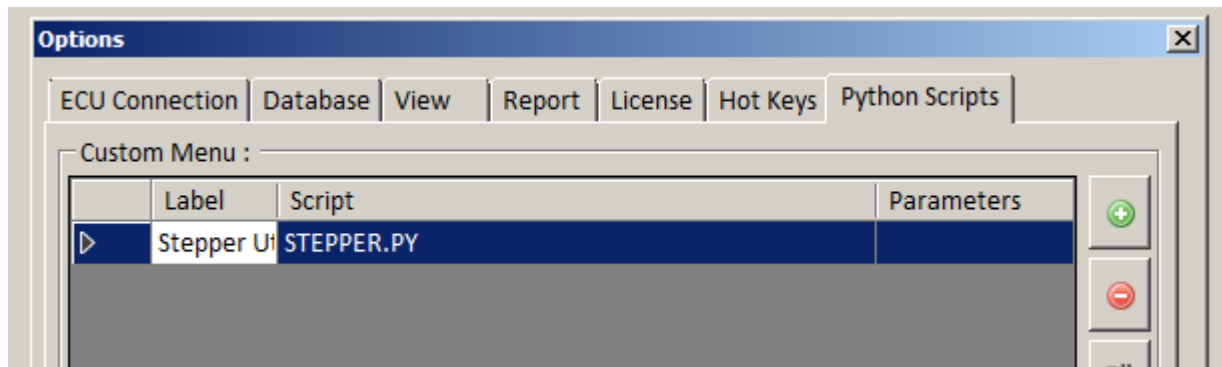
When You are connected with MeCal to the ECU, you will see some information about the actuator.

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:



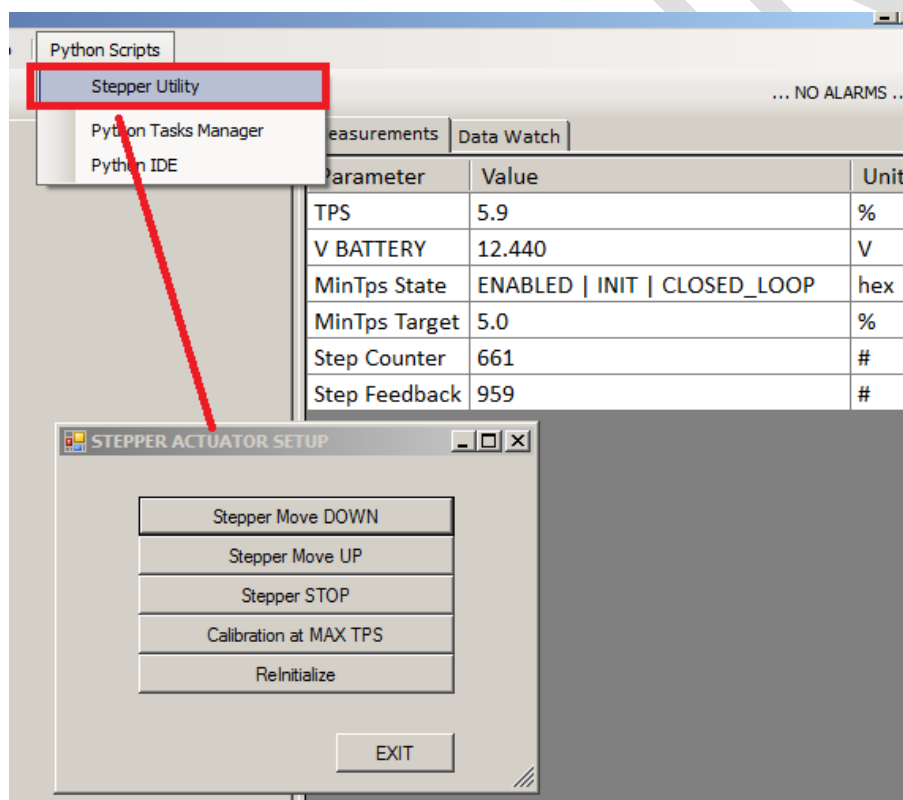
Double click on the new line, and select STEPPER.PY from your hard disk, under label you can write a name/description of your choice that will be added to the menu.



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.

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



We recommend checking that actuator moves correctly for its full stroke using buttons:

***Stepper Move DOWN*** and ***Stepper Move UP***

The button ***Reinitialize***, makes the same self test that ECU perform at switch on.

The button ***Calibration at MAX TPS*** is not present for the Honda application because the actuator can only work in open loop and does not require regulation.