# GAP Flasher

## For all supported Vehicles

### By

## GAP Innovation

# 1 Introduction

This quick guide summarizes the operations needed to update the engine map and or GAP Flasher firmware version. Some operations are abbreviated. This guide is not a substitute for the user's manual. Other functions offered by the GAP Flasher are not described in this guide.

# 2 Getting started

## 2.1 Before first usage

Here is a compendium of operations to be performed before first usage. Each of these operations is described in detail in the referenced section of this manual. This table can serve as a fulfillment check list prior to using the tool.

| √ | Steps | Operation | Manuel section |
|---|-------|-----------|----------------|
| | 1st | **Installation of the updater software** on a computer | *section 2.2* |
| | 2e | **Interface Installation** GAP Flasher mobile App | *section 2.3* |
| | 4th | Synchronizing the Mobile Application | *section 2.4* |
| | 5th | **Updating** the GAP Flasher firmware | *section 2.5* |

**Table 1.** Abstract of operations to complete before first usage

## 2.2 Installing the Updater Software

**Prerequisites**
- Having access to a PC type personal computer with Windows XP operating system or higher
- Have access to an internet service

**Steps for Installing the updater software**
1- Download the updater from the following location:
*http://www.gapinnovation.com/docs/TurboDynamics/*
2- Once downloaded, click the file and follow instructions on the screen to complete the installation. **For computers running Windows, click the right mouse button and select "run as administrator".**

## 2.3 GAP Flasher App installation

**Prerequisites**
- Own at least one supported mobile device (see user manual).
- Have access to an internet service

**Installing the mobile App**

Download (free) the GAP Flasher App from Apple App Store or Google Play Store in each mobile device. Before using the App, the files will have to be synchronized with the current GAP Flasher firmware (see *section 2.4)*

## 2.4 Synchronizing the Mobile Application

**Purpose**

Refresh files in the Mobile Application GAP Flasher to achieve consistency with the firmware of the newly updated tool

*Note: Performing synchronization immediately after updating the tool or before first usage will prevent prolong file loading when connected to the vehicle due to a poor internet connection.*

**Prerequisites**
- Having access to a PC personal computer.
- Own a compatible mobile device connected on the internet.
- The GAP Flasher App is installed and up-to-date
- The GAP Flasher firmware was updated or a new mobile device is used with the tool for the first time.

**Steps**
1- Connect the GAP Flasher on the USB port.
2- Launch the mobile Application GAP Flasher in the mobile device.
3- Click on " Search for tool".
4- Select the tool in "Bootloader". For the first synchronization, fill the required fields.
5- Wait while all data files are downloaded : the word "Loaded" indicates completion.
6- Exit the application by pressing "Disconnect".
7- Repeat previous steps for each mobile device that may be used with the tool.
8- Unplug the tool from the computer.

**Figure  1.**  File download or synchronization

## 2.5 Updating the GAP Flasher firmware

**Purpose**

Allow the evolution of the GAP Flasher, even after its manufacture.

**Principle**

Updates are made by reprogramming the firmware.
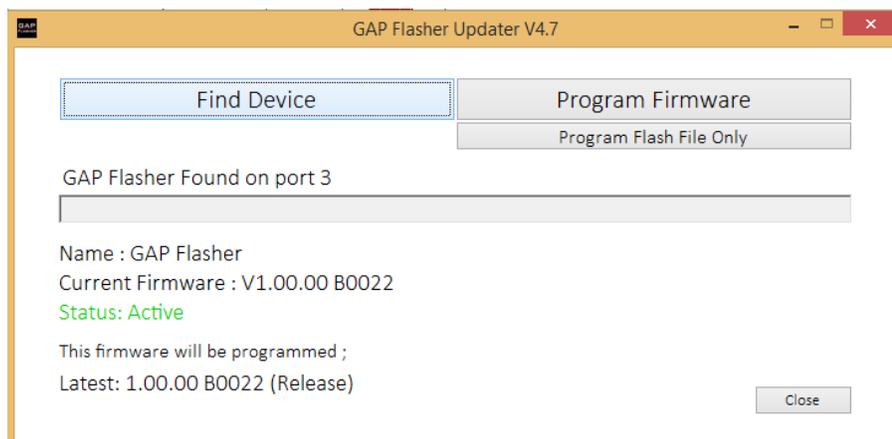
**Benefits of updating the GAP Flasher**
- Take advantage of bug fixes (if any)
- Take advantage of operational improvements such as execution speed... and more
- New additions in the tool and application

**Prerequisites**
- Having access to a PC type personal computer connected to an internet service
- Having completed installation of the updater software (*section 2.2*)
- Having completed the mobile App installation or update (*section 2.3*)

### 2.4.1 Steps for updating the GAP Flasher

1- Connect the tool to the USB port of the computer using the supplied USB cable
2- Start the updater software previously installed in the computer
3- Click on "FIND DEVICE" and wait until pairing of the tool with the updater software is completed. Once paired, the user information, vehicle information and current firmware version of the tool will be displayed.
4- Select the desired version of the firmware in the right combo or radio box (if available).
5- Click on "PROGRAM FIRMWARE". The evolution of each data file is observable in succession on the progress bar.
6- A subsequent window will appear with "ACTION NEEDED". The requested operation is synchronization of the mobile App with the tool. Keep the tool connected to the computer to complete this step described in section, *section 2.4*. **Note:** Performing synchronization immediately after updating the tool or before first usage will prevent prolong file loading when connected to the vehicle due to a poor internet connection.



**Figure 2.** Updater software overview

## 2.6 General operation of the GAP Flasher

This section explains how to connect the GAP Flasher to the vehicle, interface commands to navigate through the various interface menus.

### 2.5.1 Diagnostic port location



**Arctic Cat 9000 series and Yamaha Sidewinder: Open the right side panel**

The diagnostic port is located behind the chain case. It's the white connector in the photo.

**Figure 3.** Diagnostic connector

### 2.6.2 Connecting the GAP Flasher on the vehicle

Once the diagnostic socket is located, it is possible to connect the tool to the vehicle.
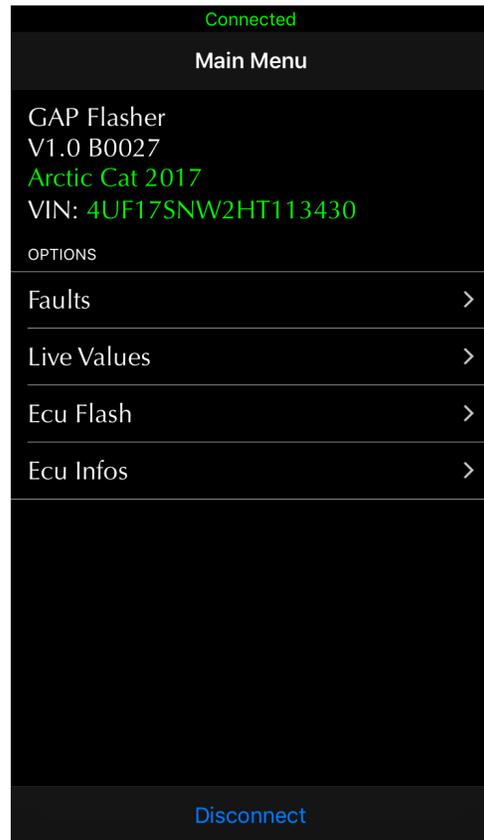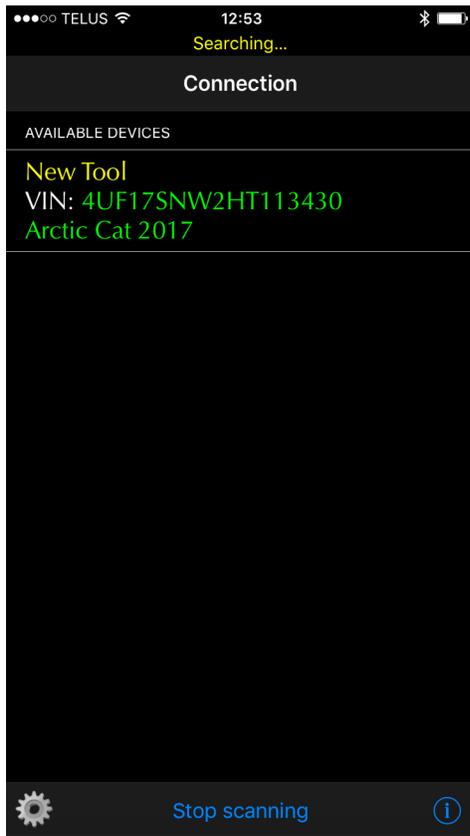
**Connecting steps**
1- Remove the cap from the diagnostic connector.
2- Turn on the ignition.
3- Connect the tool on the vehicles diagnostic port and wait for about 5 seconds.
4- Launch the mobile App of the GAP Flasher and navigate as described in the next segment.

### 2.5.3 Mobile Application, Navigation and Controls

**Steps to navigate the Mobile Application**
1- Proceed with connecting the GAP Flasher as per
2- Lunch the GAP Flasher App
3- Click on "Search for tool" at the bottom of the screen
4- Select the desired tool available in the list ("available tools").

**Mobile App representation**

**Figure 4.** Mobile App representation

*Important note:* *It is not required to add the GAP Flasher to the Device List on the mobile device or to pair. The Application provides connectivity between the two. Disconnect from any other Bluetooth devices before using GAP Flasher.*

# 3 Steps to update the engine ECU, modified mapping

<table>
<tr><td rowspan="2">⚠️</td><td rowspan="2"><em>WARNING</em></td><td><em>Modified mapping is for use on a race course only! Neither GAP Innovation nor the tuner shall be held responsible for damages incurred while using the GAP Flasher.</em></td></tr>
<tr><td><em>As with any diagnostic tool, there is always a risk of failure when re-flashing an ECU. It should only be done when the vehicle is not needed immediately afterwards. Access to the internet is highly recommended in case support is needed. GAP Innovation assumes no liability for damages or injuries incurred during or resulting from the use of the GAP Flasher. Do not do anything to the vehicle or disconnect the flasher until the firmware update is finished. Read the recovery instructions prior to updating an ECU.<br><br>When using the Flasher, it is considered good practice to connect a power supply (Midtronic's PSC-550, CTEK MXS 25 or equivalent) to the battery. This will ensure that the battery voltage is sufficient. Note: Battery chargers are not suitable due to poor line regulation.</em></td></tr>
</table>

Here is a compendium of operations to be performed in order to update the ECU with a modified mapping. Each of these operations is described in detail in the referenced section of this manual.

| √ | Steps | Operations | Manual section |
|---|---|---|---|
|  | 1ˢᵗ | **Provide** the required information to the modified mapping provider. | *section 3.1* |
| **Mobile device connected on the internet in presence of the vehicle** | | | |
|  | 2ᵉ | **Update** the engine ECU | *section 3.2* |
| **Mobile device not connected on the internet when in presence of the vehicle** | | | |
|  | 2ᵉ | **Update** the GAP Flasher and mobile App synchronization. | *section 3.3.1* |
|  | 3ʳᵈ | **Updating** the engine ECU | *section 3.3.2* |

**Table 2.** Steps to update the engine ECU, modified mapping

## 3.1 Provide information to the mapping provider

**Definition**

In order to build a customized file, the supplier will need to know the current version of the ECU engine as well as the Vehicle Identification Number (VIN).

**Access**

1- Perform the initial stages of access, *section 2.6*
2- Select the "ECU Info" function
3- Wait until the GAP Flasher finishes with interrogating the ECU
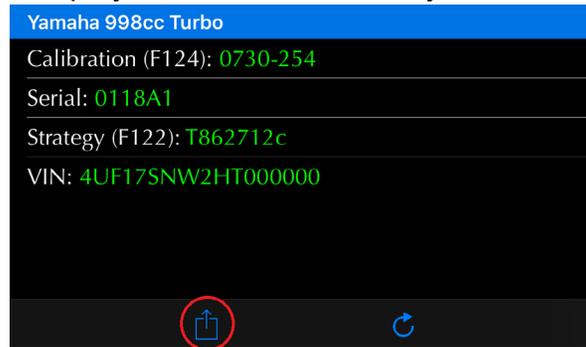4- The resulting list will be displayed and can be sent by e-mail.



**Figure 5.** ECU Info example

5- Click on the circled button to send the information by e-mail

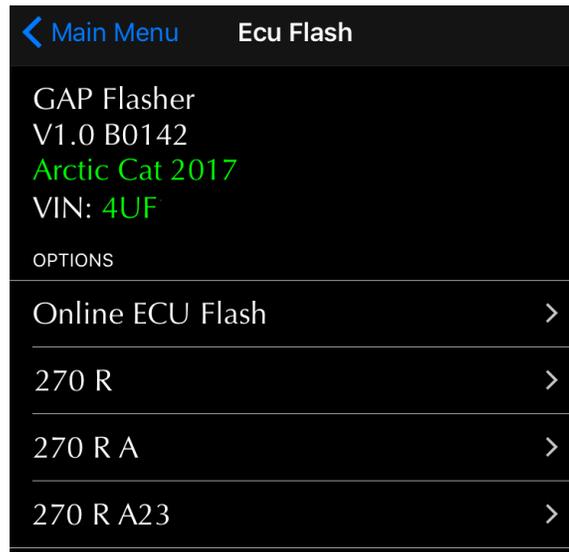## 3.2 Mobile device connected on the internet when in presence of the vehicle

**Definition**

This method allows the application, the GAP Flasher and the engine ECU to be updated in a single operation. The file will be downloaded from the server to the mobile device and the engine ECU update will start automatically. The GAP Flasher does not need to be updated using a computer in this scenario.

**Access**

1- Perform the initial steps of access, *section 2.6*
2- Select the function «ECU Updates» and «Online ECU Flash»
3- If offered, choose the required version

When finished, disconnect the tool from the vehicle and turn off the ignition. The engine ECU is now updated.

**Figure 6.** ECU Flash fonction

## 3.3 Mobile device NOT connected on the internet when in presence of the vehicle

### 3.3.1 Update the GAP flasher and mobile App synchronization

Once the provider confirms that a custom file is ready, proceed with updating the GAP Flasher as follow:

1- Connect the tool to the USB port of the computer using the USB cable
2- Start the updater software previously installed in the computer
3- Click on "FIND DEVICE" and wait for pairing of the tool with the updater software. Once paired, the user information, vehicle information and current firmware version of the tool will be displayed.
4- Click on "PROGRAM FLASH FILES ONLY". The evolution of each data file is observable in succession on the progress bar.
5  A subsequent window will appear with "ACTION NEEDED". The requested operation is synchronization of the mobile App with the tool. Keep the tool connected to the computer to complete this step described in section *section 2.4.*
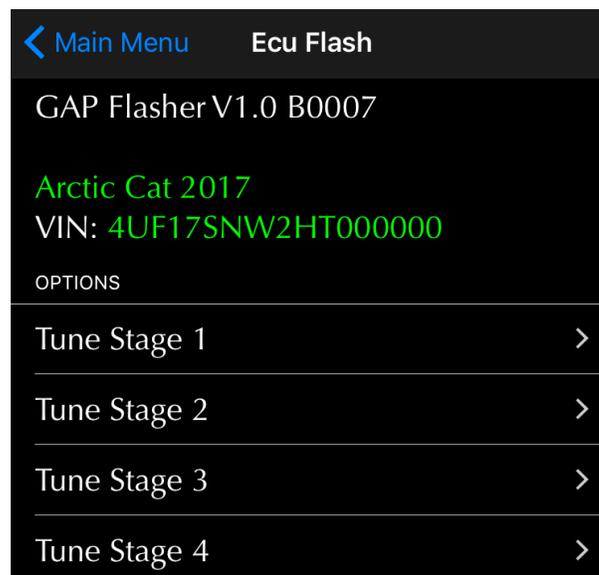
**Figure 7.** Updater software overview

### 3.3.2 Updating the engine ECU

**Definition**

This operation allows updating the engine ECU firmware to the latest available version or with a modified mapping.

**Access**

1- Perform the initial stages of access, *section 2.6*
2- Select the "ECU Flash" function
3- Choose the required file
4- Wait until completion



**Figure 8.** ECU Flash fonction

When finished, disconnect the tool from the vehicle and turn off the ignition. The engine ECU is now updated.